Deutsche Bank

Pillar 3 Report 2021

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Regulatory framework

Introduction

This Pillar 3 Report provides disclosures for the consolidated Deutsche Bank Group (the Group) as required by the global regulatory framework for capital and liquidity, which was established by the Basel Committee on Banking Supervision, also known as Basel 3.

In the European Union (EU), the Basel 3 framework is implemented by the amended versions of "Regulation (EU) 575/2013 on prudential requirements for credit institutions and investment firms" (Capital Requirements Regulation or "CRR") and the "Directive (EU) 2013/36 on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms" (Capital Requirements Directive or "CRD"). As a single rulebook, the CRR is directly applicable to credit institutions and investment firms in the European Union and provides the grounds for the determination of regulatory capital requirements, regulatory own funds, leverage and liquidity as well as other relevant requirements. In addition, the CRD was implemented into German law by means of further amendments to the German Banking Act ("Kreditwesengesetz" or "KWG") and the German Solvency Regulation (SolvV) and accompanying regulations. Jointly, these laws and regulations represent the regulatory framework applicable in Germany.

The disclosure requirements are provided in Part Eight of the CRR and in Section 26a of the KWG. Further disclosure guidance has been provided by the European Banking Authority ("EBA") in its "Final draft implementing technical standards on public disclosures by institutions of the information referred to in Titles II and III of Part Eight of Regulation (EU) No 575/2013" (EBA ITS).

The information provided in this Pillar 3 Report is unaudited. Due to rounding, numbers presented throughout this document may not add up precisely to the totals we provide and percentages may not precisely reflect the absolute figures.

Basel 3 and CRR/CRD

Regarding the regulatory minimum capital requirements, the CRR/CRD lays the foundation for the calculation of risk weighted assets (RWA) for credit risk, including counterparty credit risk, credit valuation adjustments, market risk and operational risk.

As a reaction to the COVID-19 pandemic, certain legislative changes to the prudential framework have been made and are applicable since the reporting period ended June 30, 2020. Regulation (EU) 2020/866 increased the diversification benefit applicable to aggregate additional value adjustments from 50 % to 66 % until year end 2020. Regulation (EU) 2020/873 introduced various changes to the determination of risk weighted assets and leverage exposure. For example, the risk weights applicable to certain small or medium sized enterprises (SME) are reduced by applying scaling factors depending on the exposure value. Changes with respect to leverage exposure include for example, cash receivables and cash payables are allowed to be offset where the related regular-way sales and purchases are both settled on a delivery versus payment basis. In addition, certain Euro-based exposures facing Eurosystem central banks may be excluded from the leverage exposure subject to having obtained permission from the European Central Bank. Based on Decision (EU) 2020/1306 of the European Central Bank, the Group was allowed for the first time for the period ended September 30, 2020 to exclude these exposures from the leverage exposure. This exclusion applied until June 27, 2021. Decision (EU) 2021/1074 of the European Central Bank extends the exemption of certain Euro-based exposures facing Eurosystem central banks until March 31, 2022.

Regulation (EU) 2019/876 and Directive (EU) 2019/878 introduced amendments to the CRR/CRD with various changes to the regulatory framework that are applicable since the reporting period ended June 30, 2021. A new standardized approach for counterparty credit risk (SA-CCR) was introduced and replaces the mark-to-market method to determine the exposure value for derivatives that are not in scope of the internal model method. In addition, a new framework to determine the risk weight for banking book investments in collective investment undertakings and default fund contributions to central counterparties was introduced. The large exposure framework was also modified such that a stricter definition of eligible capital is used. Eligible capital is now limited to Tier 1 capital, while previously it was Tier 1 and Tier 2 capital capped at one third of Tier 1 capital. This effectively reduces the general large exposure limit of 25 % of eligible capital. In addition, a new large exposure limit of 15 % of Tier 1 capital was introduced for exposures between Global Systemically Important Institutions (G-SIIs). At the same time the exposure measure for large exposure purposes was modified such that for derivatives SA-CCR is applied instead of the internal model method. Moreover, credit risk mitigation techniques became mandatory where credit risk mitigation is applied for RWA purposes, and entails a mandatory substitution of the exposure to the provider of the credit risk mitigation (e.g. to the issuer of the financial collateral).

Regulation (EU) 2021/558 and Regulation (EU) 2021/557 introduced targeted amendments to the securitization framework for securitizations of non-performing exposures and extended the framework applied to simple, transparent and standardized securitizations to synthetic securitizations. These changes applied for the first time in our reporting period ended June 30, 2021.

Since June 30, 2020, the Group applies the transitional arrangements in relation to IFRS 9 as provided in the current CRR/CRD for all CET 1 measures.

We present in this report certain figures based on the CRR definition of own fund instruments on a “fully loaded” basis. We calculate such “fully loaded” figures excluding the transitional arrangements for own fund instruments as provided in the currently applicable CRR/CRD.

For CET 1 instruments we do not make use of transitional provisions.

Transitional arrangements are applicable for Additional Tier 1 (AT 1) and Tier 2 (T 2) instruments. Capital instruments issued on or prior to December 31, 2011, that no longer qualify as AT 1 or T 2 instruments under the fully loaded CRR/CRD, as currently applicable, are subject to grandfathering rules during the transitional period and are being phased out from 2013 to 2022, with their recognition capped at 30 % in 2019, 20 % in 2020 and 10 % in 2021 (in relation to the portfolio eligible for grandfathering which was still outstanding on December 31, 2012). The current CRR as applicable since June 27, 2019, provides further grandfathering rules for AT 1 and T 2 instruments issued prior to June 27, 2019. Thereunder, AT 1 and T 2 instruments issued through special purpose entities are grandfathered until December 31, 2021, and AT 1 and T 2 instruments that do not meet certain new requirements that apply since June 27, 2019 are grandfathered until June 26, 2025.

Regulation (EU) 2019/876 has introduced a minimum regulatory leverage ratio of 3 % determined as the ratio of Tier 1 capital and the regulatory leverage exposure. The binding leverage ratio is applicable since the reporting period ended June 30, 2021. The minimum regulatory leverage ratio of 3 % is increased if certain Euro-based exposures facing Eurosystem central banks are excluded from the leverage exposure. This is currently the case based on Decision (EU) 2021/1074 of the European Central Bank. The regulatory leverage exposure is generally determined based on the accounting carrying value as the relevant exposure measure for assets. Specific regulatory exposure measures apply to derivatives, where a modified version of SA-CCR applies, and securities financing transactions (SFT) as well as off balance sheet exposures. The exposure for SFT is determined based on the sum of an asset component and an add-on for counterparty credit risk. When determining the asset component netting of SFT receivables and payables is only allowed where specific conditions are met. The add-on for counterparty credit risk is determined as a net exposure from the transaction towards the institution’s counterparty, taking the securities legs and regulatory netting into account. For off-balance sheet items the leverage exposure is determined based on the credit conversion factors used in the credit risk standardized approach subject to a floor of 10 %. From January 1, 2023 an additional leverage ratio buffer requirement of 50 % of the applicable G-SII buffer rate will apply. It is currently expected that this additional requirement will equal 0.75 %.

The CRR/CRD framework further defines liquidity standards. The Liquidity Coverage Ratio (LCR) aims to measure a bank’s short-term resilience to a severe liquidity stress scenario during a stress period of 30 calendar days. Detailed rules for the calculation of the LCR are set out in the Commission Delegated Regulation 2015/61. The binding minimum liquidity coverage ratio is set to 100 % since 2018.

Regulation (EU) 2019/876 has introduced a minimum Net Stable Funding Ratio (NSFR) of 100 % that requires banks to maintain a stable funding profile in relation to their on and off balance sheet exposures. The NSFR is calculated as the ratio of available stable funding (ASF) divided by required stable funding (RSF) and is applicable since the reporting period ended June 30, 2021. All liabilities and capital instruments are assigned an ASF weight, while assets and certain off balance sheet positions receive an RSF weight.

There is still uncertainty as to how some of the CRR / CRD rules should be interpreted and there are still related binding Technical Standards for which a final version is not yet available. Thus, we will continue to refine our assumptions and models in line with evolution of these regulations, as well as, the industry’s understanding and interpretation of the rules. Against this background, current CRR/CRD measures may not be comparable to previous expectations. Also, our CRR/CRD measures may not be comparable with similarly labeled measures used by our competitors as our competitors’ assumptions and estimates may differ from ours.

MREL (SRMR/BRRD) and TLAC (CRR)

Banks in the European Union are required to meet at all times a Minimum requirement for own funds and eligible liabilities (“MREL”) which ensures that banks have sufficient loss absorbing capacity in resolution to avoid recourse to taxpayers’ money. Relevant laws are the Single Resolution Mechanism Regulation (“SRMR”) and the Bank Recovery and Resolution Directive (“BRRD”) as implemented through the German Recovery and Resolution Act (Sanierungs- und Abwicklungsgesetz, “SAG”).

In addition and as required in the CRR, Global Systemically Important Institutions (G-SIIs) in Europe need to have at least the maximum of 16 % plus the combined buffer requirement of their Risk Weighted Assets (RWA) and 6 % of their Leverage Ratio Exposure (LRE) as Total Loss Absorbing Capacity (“TLAC”). The requirement will increase to the maximum of 18 % of RWA plus the combined buffer requirement and 6.75 % of LRE starting January 1, 2022.

Instruments which qualify for MREL and TLAC are own funds (Common Equity Tier 1, Additional Tier 1 and Tier 2) and certain eligible liabilities (mainly plain-vanilla unsecured bonds). Instruments qualifying for TLAC need to be fully subordinated to general creditor claims (e.g. senior non-preferred bonds). While this is not required for MREL, current and future MREL regulations allow the Single Resolution Board (“SRB”) to also set an additional “subordination” requirement within MREL (but separate from TLAC) against which only subordinated liabilities and own funds can be counted.

MREL is determined by the competent resolution authorities for each supervised bank individually and depending on the preferred resolution strategy. In the case of Deutsche Bank AG, MREL is determined by the SRB. While there is no statutory minimum level of MREL, the CRR, SRMR, BRRD and delegated regulations set out criteria which the resolution authority must consider when determining the relevant required level of MREL. Guidance is provided through an MREL policy published annually by the SRB. Any binding MREL ratio determined by the SRB is communicated to Deutsche Bank via the German Federal Financial Supervisory Authority (BaFin).

In the fourth quarter of 2021, the SRB provided Deutsche Bank AG with the next update of its total MREL and subordinated MREL requirement. The update now reflects for the first time the legal changes of the banking reform package via amendments to the SRMR and the BRRD provided in June 2019 with the publication of Regulation (EU) 2019/877 and Directive (EU) 2019/879. The total MREL and subordinated MREL requirement are therefore now set as a percentage of RWA and LRE.

ICAAP, ILAAP and SREP

The internal capital adequacy assessment process (“ICAAP”) as stipulated in Pillar 2 of Basel 3 requires banks to identify and assess risks, to apply effective risk management techniques and to maintain adequate capitalization. Our internal liquidity adequacy assessment process (“ILAAP”) aims to ensure that sufficient levels of liquidity are maintained on an ongoing basis by identifying the key liquidity and funding risks to which the Group is exposed, by monitoring and measuring these risks, and by maintaining tools and resources to manage and mitigate these risks.

In accordance with Article 97 CRD supervisors regularly review, as part of the supervisory review and evaluation process (“SREP”), the arrangements, strategies, processes and mechanisms implemented by banks and evaluate: (a) risks to which the institution is or might be exposed; (b) risks the institution poses to the financial system; and (c) risks revealed by stress testing.

New Definition of Default

In the third quarter of 2021, the Group introduced the new definition of default after ECB approved, which consists of two EBA guidelines. One guideline comprises an EBA technical standard regarding the materiality threshold for credit obligations past due (implemented with ECB regulation (EU) 2018/1845) and the second guideline covers the application of the definition of default. Both of these new requirements are jointly referred to below as EBA Guidelines on definition of default. The EBA Guidelines on definition of default replaced the default definition under Basel II and is applied to all key risk metrics throughout this Report, including as a trigger to Stage 3 in our IFRS 9 ECL model.

Key metrics

Key metrics (Article 447 (a-g) and Article 438 (b) CRR)

In the following table EU KM1 we provide key regulatory metrics and ratios as well as related input components as defined by the amended versions of CRR and CRD. They comprise own funds, RWAs, capital ratios, additional requirements based on SREP, capital buffer requirements, leverage ratio, liquidity coverage ratio and net stable funding ratio.

EU KM1 – Key metrics

		a	b	c
	in € m. (unless stated otherwise)	Dec 31, 2021	Sep 30, 2021	Jun 30, 2021
	Available own funds (amounts)			
1	Common Equity Tier 1 (CET 1) capital	46,506	45,633	45,476
2	Tier 1 capital	55,375	53,751	53,595
3	Total capital	62,732	61,203	61,128
	Risk weighted exposure amounts			
4	Total risk-weighted exposure amount	351,629	350,733	344,945
	Capital ratios (as percentage of risk.weighted exposure amount)			
5	Common Equity Tier 1 ratio (%)	13.2	13.0	13.2
6	Tier 1 ratio (%)	15.7	15.3	15.5
7	Total capital ratio (%)	17.8	17.5	17.7
	Additional own funds requirements based on SREP (as a percentage of risk-weighted exposure amount)			
EU 7a	Additional own funds requirements to address risks other than the risk of excessive leverage (%)	2.5	2.5	2.5
	of which:			
EU 7b	to be made up of CET 1 capital (percentage points)	1.4	1.4	1.4
EU 7c	to be made up of Tier 1 capital (percentage points)	1.9	1.9	1.9
EU 7d	Total SREP own funds requirements (%)	10.5	10.5	10.5
	Combined buffer requirement (as a percentage of risk-weighted exposure amount)			
8	Capital conservation buffer (%)	2.5	2.5	2.5
EU 8a	Conservation buffer due to macro-prudential or systemic risk identified at the level of a Member State (%)	0.0	0.0	0.0
9	Institution specific countercyclical capital buffer (%)	0.03	0.02	0.02
EU 9a	Systemic risk buffer (%)	0.0	0.0	0.0
10	Global Systemically Important Institution buffer (%)	1.5	1.5	1.5
EU 10a	Other Systemically Important Institution buffer (%)	2.0	2.0	2.0
11	Combined buffer requirement (%)	4.5	4.5	4.5
EU 11a	Overall capital requirements (%)	15.0	15.0	15.0
12	CET 1 available after meeting the total SREP own funds requirements	25,738	24,376	24,909
	Leverage ratio			
13	Leverage ratio total exposure measure[2]	1,124,628	1,119,468[3]	1,111,115[3]
14	Leverage ratio (%)	4.9	4.7[3]	4.7[3]
	Additional own funds requirements to address risks of excessive leverage (as a percentage of leverage ratio total exposure amount)			
EU 14a	Additional own funds requirements to address the risk of excessive leverage (%)	0.0	0.0	0.0
EU 14b	of which: to be made up of CET 1 capital (percentage points)	0.0	0.0	0.0
EU 14c	Total SREP leverage ratio requirements (%)	3.2	3.2	3.2
	Leverage ratio buffer and overall leverage ratio requirement (as a percentage of total exposure measure)			
EU 14d	Leverage ratio buffer requirement (%)	0.0	0.0	0.0
EU14e	Overall leverage ratio requirements (%)	3.2	3.2	3.2
	Liquidity Coverage Ratio			
15	Total high-quality liquid assets (HQLA) (Weighted value - average)	219,604	220,467	221,606
EU 16a	Cash outflows - Total weighted value	212,302	212,397	212,712
EU 16b	Cash inflows - Total weighted value	57,441	58,515	61,603
16	Total net cash outflows (adjusted value)	154,861	153,882	151,109
17	Liquidity coverage ratio (%)	142	143	147
	Net Stable Funding Ratio			
18	Total available stable funding	602,317	592,566	590,835
19	Total required stable funding	497,510	483,164	483,982
20	NSFR ratio (%)	121	123	122[1]

[1] NSFR has been updated for June 30, 2021
[2] The fully phased in numbers follow EBA guidance and do not include the IFRS 9 transitional provision as per Article 473a of the CRR. The transitional impact amounted to € 39 million as of December 31, 2021 and € 29 million as of September 30, 2021 as well as of June 30, 2021.
[3] Leverage ratio exposure measure and Leverage ratio have been updated for June 30, 2021 and September 30, 2021.

Key metrics of own funds and eligible liabilities (Article 447 (h) CRR and Article 45i(3)(a,c) BRRD)

This template provides summary information about Deutsche Bank Group's "Minimum requirement for own funds and eligible liabilities" ("MREL") and its "G-SII Requirement for own funds and eligible liabilities" ("TLAC"). It has to be disclosed by Deutsche Bank AG as the resolution entity on the basis of the consolidated situation of its resolution group.

EU KM2 – Key metrics - MREL and G-SII Requirement for own funds and eligible liabilities (TLAC)

		Minimum requirement for own funds and eligible liabilities (MREL)		G-SII Requirement for own funds and eligible liabilitites (TLAC)		
		a		b	c	d
	in € m. (unless stated otherwise)	Dec 31, 2021	Sep 30, 2021	Dec 31, 2021	Sep 30, 2021	Jun 30, 2021
	Own funds and eligible liabilities, ratios and components					
1	Own funds and eligible liabilities	114,853	113,871	109,094	108,721	108,145
EU-1a	Own funds and subordinated liabilities	109,094	108,721	–	–	–
	Total liabilities and own funds of the resolution group (TLOF)	1,050,022	1,075,044	1,050,022	1,075,044	1,069,315
	Own funds and eligible liabilities as percentage of TLOF	10.94	10.59	10.39	10.11	10.11
	of which:					
	Own funds and subordinated liabilities	10.39	10.11	–	–	–
2	Total risk exposure amount of the resolution group (TREA)	351,629	350,733	351,629	350,733	344,945
3	Own funds and eligible liabilities as percentage of TREA	32.66	32.47	31.03	31.00	31.35
	of which:					
EU-3a	Own funds and subordinated liabilities	31.03	31.00	–	–	–
4	Total exposure measure of the resolution group (TEM)	1,124,667	1,104,845	1,124,667	1,104,845	1,100,461
5	Own funds and eligible liabilities as percentage of TEM	10.21	10.31	9.70	9.84	9.83
	of which:					
EU-5a	Own funds and subordinated liabilities	9.70	9.84	–	–	–
6a	Does the subordination exemption in Article 72b(4) of the CRR apply? (5% exemption)	–	–	no	no	no
6b	Pro-memo item - Aggregate amount of permitted non-subordinated eligible liabilities instruments if the subordination discretion as per Article 72b(3) CRR is applied (max 3.5% exemption)	–	–	0	0	0
6c	Pro-memo item: If a capped subordination exemption applies under Article 72b (3) CRR, the amount of funding issued that ranks pari passu with excluded liabilities and that is recognized under row 1, divided by funding issued that ranks pari passu with excluded Liabilities and that would be recognized under row 1 if no cap was applied (%)	–	–	0	0	0
	Minimum requirement for own funds and eligible liabilities (MREL)					
	MREL requirement expressed as percentage of TLOF	–	8.58	–	–	–
	of which:					
	to be met with own funds or subordinated liabilities	–	6.11	–	–	–
EU-7	MREL requirement expressed as percentage of the TREA	24.05	–	–	–	–
	of which:					
EU-8	to be met with own funds or subordinated liabilities	20.27	–	–	–	–
EU-9	MREL requirement expressed as percentage of TEM	6.88	–	–	–	–
	of which:					
EU-10	to be met with own funds or subordinated liabilities	6.88	–	–	–	–

As of December 31, 2021 our MREL ratio was 32.66 % as percentage of Total Risk Exposure Amount (TREA) compared to a requirement of 28.58 % of TREA including the combined buffer requirement. This means Deutsche Bank has a MREL surplus of € 14.4 billion above its MREL requirement. Our subordinated MREL ratio was 31.03 % as percentage of TREA compared to a requirement of 24.79 % of TREA including the combined buffer requirement. Our subordinated MREL surplus is € 21.9 billion.

Deutsche Bank AG's total MREL and subordinated MREL requirement are now expressed as percentage of Total Risk Exposure Amount (TREA) and Leverage Ratio Exposure (LRE), given the SRB has communicated updated MREL requirements in the fourth quarter of 2021, based on the latest amendments of the Single Resolution Mechanism Regulation and the Bank Recovery and Resolution Directive provided in June 2019 with the publication of Regulation (EU) 2019/877 and Directive (EU) 2019/879.

As of December 31, 2021 our TLAC ratio was 31.03 % as percentage of TREA compared to a requirement of 20.53 % (including 4.53 % combined buffer requirement) resulting in a surplus of € 36.9 billion. TLAC as a percentage of TEM was 9.84 % compared to a requirement of 6.00 % which corresponds to a surplus of € 42.4 billion.

General requirements for disclosures

Pillar 3 disclosure concept (Article 431 (1), (2) CRR)

This report provides the full set of Pillar 3 disclosures for Deutsche Bank Group applicable for the year ended December 31, 2021 according to Part Eight of the CRR and the EBA guidance provided by the “Final draft implementing technical standards on public disclosures by institutions of the information referred to in Titles II and III of Part Eight of Regulation (EU) No 575/2013” (EBA ITS).

Disclosures in this Pillar 3 include comparative periods in accordance with the requirements of EBA ITS. For those disclosures required only on an annual basis, the comparative period will be to the prior year; except for newly adopted disclosures as of December 31, 2021, whereby the Group does not provide comparative information. For those disclosures only required on a semi-annual basis, the comparative period is June 30, 2021. Disclosures required on a quarterly basis generally include comparative information for September 30, 2021 and in certain cases also June 30, 2021.

Disclosure policy (Article 431 (3) CRR)

For purposes of Article 431 (3) CRR, the Group’s Pillar 3 Report is in compliance with applicable legal and regulatory requirements and is prepared in accordance with the Group’s internal policies, processes, systems and internal controls as defined by the Group’s Risk Disclosure Policy. The Group’s Management Board approved this Pillar 3 Report for publication and affirmed that Deutsche Bank has complied with the requirements under Article 431 (3) CRR.

Based upon our assessment and verification the Group also believes that the risk and regulatory disclosures presented throughout this Pillar 3 Report appropriately and comprehensively convey the Group’s overall risk profile as of December 31, 2021.

On February 24, 2022, Russia commenced a large-scale invasion against Ukraine. In response, the West has moved to impose broad-based sanctions targeting Russia, including but not limited to certain Russian banks and the Russian Central Bank, companies, parliamentary members and members of the Russian elite and their families. It is possible that additional sanctions and other measures may be imposed in the future. Developments with regards to the military conflict are fast moving and the extent of any financial and non-financial impact on the Group is currently not known.

As of December 31, 2021, the Group’s operating subsidiary in Russia, OOO "Deutsche Bank" (DB Moscow), had capital of € 0.2 billion, with the foreign currency risk being actively managed and fully hedged as of January 2022. Total assets of DB Moscow amounted to € 1.5 billion, of which approximately € 0.5 billion (Russian Ruble equivalent) was deposited with the Central Bank in Russia. The Group also operates a technology service center in Russia, OOO "Deutsche Bank TechCentre" (DBTC), which is one of several technology centers around the world, with close to 1,600 employees at the end of 2021 (approximately 5% of the Group’s technology workforce). The Group is continuously assessing the operational setup of DBTC, which could result in additional costs to our cost base in the future.

As of December 31, 2021, the Group’s loan exposure to Russia amounted to € 1.4 billion on a gross basis, which represents approximately 0.3 % of the total loan book. On a net basis, after taking into account guarantees and asset collateral, the loan exposure amounted to € 0.6 billion. The majority of this loan exposure relates to large Russian companies with material operations and cash-flow outside of Russia. Loans may be provided onshore by DB Moscow, or offshore by other Group entities outside of Russia. In addition, the wealth management business has offshore loans to counterparties with a Russian connection, collateralized in line with the Group’s policies. As of December 31, 2021, the Group also had derivative exposures to Russia. The majority of these positions are currently in the process of being unwound with the Group being in a net liability position. Accordingly, no additional material credit risk exists, while contagion market risk and settlement risk may arise. In addition, as of December 31, 2021, exposures related to undrawn commitments amounted to € 1.0 billion and to written financial and trade guarantees to € 0.5 billion.

The Group has managed its market risk to Russia by performing regular risk assessments of its risk profile. To mitigate a broader contagion risk, action was taken was to reduce direct exposure prior to and immediately after events unfolded. This was achieved by entering into additional hedges and selective de-risking. The Group continues to closely monitor the situation by performing further contagion stress testing on different scenarios, with a key focus on potential reactions from the Central Bank of Russia.

The Group’s financial and non-financial exposure to Ukraine is not material but is being closely monitored.

Overall, the potential financial and non-financial impact of the ongoing situation on the Group will depend on how the crisis unfolds. The crisis and its impact on local and global economic conditions could impact our ability to generate revenues or meet our financial targets, increase our costs, negatively impact specific portfolios, result in higher-than-expected credit losses or potential impairments of assets, and potentially have a negative impact on our operations in Russia or Ukraine. Given the uncertainty of the situation, it is currently not possible to estimate any future impact on the financial statements.

Explanation of rating decisions (Article 431 (5) CRR)

Deutsche Bank Group, if requested, provides explanations of rating decisions to small and medium entities and other corporates.

Non-material, proprietary or confidential information (Article 432 CRR)

In line with the Group's internal Risk Disclosure Policy a dedicated process has to be followed in case the Group considers to omit certain disclosures due to these disclosures being immaterial, proprietary or confidential. In the rare cases where the Group classifies information as non-material in this report this has been stated accordingly in the related disclosures.

Frequency of disclosures (Article 433 and 433a CRR)

Deutsche Bank Group as a large institution based on Article 4 No. (146) CRR publishes its Pillar 3 Disclosures as required according to Article 433 and 433a CRR. In this regard the Group also adheres to the frequency of disclosure requirements as provided within the EBA Guideline "Final draft implementing technical standards on public disclosures by institutions of the information referred to in Titles II and III of Part Eight of Regulation (EU) No 575/2013".

Means of disclosures (Article 434 CRR)

This Pillar 3 Report is published on the bank's website at db.com/ir/en/regulatory-reporting.htm .

In addition, a description of the main features of the Group's capital instruments as well as its senior non-preferred subordinated eligible liabilities instruments eligible for subordinated MREL and TLAC, to the extent that these do not constitute private placements and are treated confidentially, is published on Deutsche Bank's website (db.com/ir/en/capital-instruments.htm).

Scope of application of the regulatory framework

Name of the institution (Article 436 (a) CRR)

Deutsche Bank Aktiengesellschaft ("Deutsche Bank AG"), headquartered in Frankfurt am Main, Germany, is the parent institution of the Deutsche Bank Group (the "regulatory group"). Deutsche Bank Group is subject to the CRR. Under Section 10a KWG in conjunction with Articles 11 and 18 CRR, a regulatory group of institutions consists of an institution as the parent company, and all other institutions, financial institutions (comprising inter alia financial holding companies, payment institutions, asset management companies) and ancillary services undertakings that are its subsidiaries within the meaning of Article 4 (1) (16) CRR, or are jointly managed together with other parties within the meaning of Article 18 (4) CRR. Subsidiaries are fully consolidated, while companies which are not subsidiaries but consolidated according to Art. 18 (4) CRR are subject to proportional consolidation.

Insurance companies and companies outside the banking and financial sector are not consolidated in the regulatory group. We do not qualify as a financial conglomerate and are not subject to the respective supplementary supervisions.

Differences in the scopes of consolidation (Article 436 (b) CRR)

The principles of consolidation for our regulatory group are not identical to those applied for our financial statements. Nonetheless, the majority of our subsidiaries in the regulatory group are also fully consolidated in accordance with IFRS in our consolidated financial statements.

The main differences between regulatory and accounting consolidation are:

- Subsidiaries outside the banking and financial sector are not consolidated within the regulatory group of institutions but are included in the consolidated financial statements according to IFRS.
- Most of our Special Purpose Entities ("SPEs") consolidated under IFRS do not meet the regulatory subsidiary definition pursuant to Article 4 (1) (16) CRR and were consequently not consolidated within our regulatory group. However, the risks resulting from our exposures to such entities are reflected in the regulatory capital requirements.
- Only a few entities included in the regulatory group are not consolidated as subsidiaries for accounting purposes but are treated differently: three, mostly immaterial subsidiaries which are not consolidated for accounting purposes are consolidated within the regulatory group; one further entity is jointly managed by us and other owners and was consolidated on a pro-rata basis within the regulatory group while for financial accounting purposes it was treated as an fair value through profit or loss asset.

As of year-end 2021, our regulatory group comprised 328 entities (excluding the parent Deutsche Bank Aktiengesellschaft), of which one was consolidated on a pro-rata basis. The classification applied for these entities is in accordance with CRR. The regulatory group comprised 22 credit institutions, 2 payment institutions, 1 investment firm, 202 financial institutions, 17 financial holding companies, 10 asset management companies and 74 ancillary services undertakings. As of year-end 2020, our regulatory group comprised 362 entities (excluding the parent Deutsche Bank Aktiengesellschaft), of which one was consolidated on a pro-rata basis. The regulatory group comprised 22 credit institutions, 2 payment institution, 29 investment firms, 201 financial institutions, 16 financial holding companies, 11 asset management companies and 81 ancillary services undertakings.

33 entities were exempted from regulatory consolidation pursuant to Section 31 (3) KWG in conjunction with Article 19 CRR as per year end 2021 (year end 2020: 45 entities). These regulations allow the exclusion of small entities in the regulatory scope of application from consolidated regulatory reporting if either their total assets (including off-balance sheet items) are below € 10 million or below 1 % of our Group's total assets. Also, these entities were not required to be consolidated in our financial statements in accordance with IFRS.

These regulatory unconsolidated entities have to be included in the deduction treatment for significant investments in financial sector entities pursuant to Article 36 (1) (i) CRR in conjunction with Article 43 (c) CRR. The book values of our participations in their equity included in the deduction treatment amounted to in total € 3 million as per year end 2021 (year end 2020: € 3 million).

In applying Article 436 (b) CRR table EU LI3 below illustrates the differences in the scopes of consolidation for financial accounting and regulatory purposes for the Group. It considers all entities for which the method of the accounting consolidation is different from the method of the regulatory consolidation. On an entity-by-entity level the table presents the method of accounting consolidation and then in the following columns whether and how – under the regulatory scope of consolidation – the entity is recognized. This is then finally supplemented by a short description of the entity.

EU LI3 – Outline of the differences in the scopes of consolidation (entity by entity)

a	b	c	d	e	f	g	h
		Method of prudential consolidation					
Name of the entity	Method of accounting consolidation	Full consolidation	Proportional consolidation	Equity method	Neither consolidated nor deducted	Deducted	Description of the entity
Alfred Herrhausen Gesellschaft mbH	Full consolidation				x		Other Enterprise
Alguer Inversiones Designated Activity Company	Full consolidation				x		Ancillary Services Undertaking
Alixville Invest, S.L.	Full consolidation				x		Other Enterprise
Altersvorsorge Fonds Hamburg Alter Wall Dr. Juncker KG	Full consolidation				x		Other Enterprise
Asset Repackaging Trust Five B.V.	Full consolidation				x		Other Enterprise
Atlas Investment Company 1 S.à r.l.	Full consolidation				x		Financial Institution
Atlas Investment Company 2 S.à r.l.	Full consolidation				x		Financial Institution
Atlas Investment Company 3 S.à r.l.	Full consolidation				x		Financial Institution
Atlas Investment Company 4 S.à r.l.	Full consolidation				x		Financial Institution
Atlas Portfolio Select SPC	Full consolidation					x	Financial Institution
Atlas SICAV - FIS	Full consolidation				x		Other Enterprise
Australian Secured Personal Loans Trust	Full consolidation				x		Other Enterprise
Axia Insurance, Ltd.	Full consolidation				x		Other Enterprise
Bankers Trust Investments Limited (in members' voluntary liquidation)	Full consolidation				x		Other Enterprise
Benefit Trust GmbH	No consolidation	x					Financial Institution
Borfield Sociedad Anonima	Full consolidation				x		Other Enterprise
BT Globenet Nominees Limited	Full consolidation				x		Other Enterprise
Cardales UK Limited (in members' voluntary liquidation)	Full consolidation				x		Other Enterprise
Cathay Advisory (Beijing) Co., Ltd.	Full consolidation				x		Other Enterprise
Cathay Capital (Labuan) Company Limited	Full consolidation				x		Other Enterprise
Cathay Capital Company Limited	Full consolidation					x	Financial Institution
Cathay Strategic Investment Company Limited	Full consolidation				x		Financial Institution
Cathay Strategic Investment Company No. 2 Limited	Full consolidation				x		Financial Institution
Cayman Reference Fund Holdings Limited	Full consolidation				x		Ancillary Services Undertaking
Cedar (Luxembourg) S.à r.l.	Full consolidation				x		Other Enterprise
Ceto S.à r.l.	Full consolidation				x		Financial Institution
Charitable Luxembourg Four S.à r.l.	Full consolidation				x		Financial Institution
Charitable Luxembourg Three S.à r.l.	Full consolidation				x		Financial Institution
Charitable Luxembourg Two S.à r.l.	Full consolidation				x		Financial Institution
CLASS Limited	Full consolidation				x		Other Enterprise
Collins Capital Low Volatility Performance II Special Investments, Ltd.	Full consolidation				x		Financial Institution
Crofton Invest, S.L.	Full consolidation				x		Other Enterprise
Danube Properties S.à r.l., en faillite	Full consolidation				x		Other Enterprise
Dariconic Designated Activity Company	Full consolidation				x		Ancillary Services Undertaking
DB (Malaysia) Nominee (Asing) Sdn. Bhd.	Full consolidation				x		Other Enterprise
DB (Malaysia) Nominee (Tempatan) Sendirian Berhad	Full consolidation				x		Other Enterprise
DB Holding Fundo de Investimento Multimercado Investimento no Exterior Crédito Privado	Full consolidation					x	Financial Institution
DB Immobilienfonds 1 Wieland KG	Full consolidation				x		Other Enterprise
DB Immobilienfonds 5 Wieland KG i.L.	Full consolidation				x		Other Enterprise
DB International Trust (Singapore) Limited	Full consolidation				x		Other Enterprise
DB Management Support GmbH	Full consolidation					x	Ancillary Services Undertaking
DB Nominees (Hong Kong) Limited	Full consolidation					x	Ancillary Services Undertaking
DB Nominees (Jersey) Limited	Full consolidation				x		Other Enterprise
DB Nominees (Singapore) Pte Ltd	Full consolidation				x		Other Enterprise
db PBC	Full consolidation				x		Other Enterprise
DB Re S.A.	Full consolidation					x	Reinsurance Undertaking
DB SPEARs/LIFERs, Series DB-8074 Trust	Full consolidation					x	Ancillary Services Undertaking
DB SPEARs/LIFERs, Series DB-8075 Trust	Full consolidation					x	Ancillary Services Undertaking
DB SPEARs/LIFERs, Series DB-8076 Trust	Full consolidation					x	Ancillary Services Undertaking
DB SPEARs/LIFERs, Series DB-8077 Trust	Full consolidation					x	Ancillary Services Undertaking
DB SPEARs/LIFERs, Series DB-8080 Trust	Full consolidation					x	Ancillary Services Undertaking
DB SPEARs/LIFERs, Series DBE-8052 Trust	Full consolidation					x	Ancillary Services Undertaking
DB SPEARs/LIFERs, Series DBE-8054 Trust	Full consolidation					x	Ancillary Services Undertaking
DB SPEARs/LIFERs, Series DBE-8055 Trust	Full consolidation					x	Ancillary Services Undertaking
DB SPEARs/LIFERs, Series DBE-8056 Trust	Full consolidation					x	Ancillary Services Undertaking

a	b	c	d	e	f	g	h
		Method of prudential consolidation					
Name of the entity	Method of accounting consolidation	Full consolidation	Proportional consolidation	Equity method	Neither consolidated nor deducted	Deducted	Description of the entity
DB SPEARs/LIFERs, Series DBE-8057 Trust	Full consolidation					x	Ancillary Services Undertaking
DB SPEARs/LIFERs, Series DBE-8059 Trust	Full consolidation					x	Ancillary Services Undertaking
DB SPEARs/LIFERs, Series DBE-8060 Trust	Full consolidation					x	Ancillary Services Undertaking
DB SPEARs/LIFERs, Series DBE-8061 Trust	Full consolidation					x	Ancillary Services Undertaking
DB SPEARs/LIFERs, Series DBE-8062 Trust	Full consolidation					x	Ancillary Services Undertaking
DB SPEARs/LIFERs, Series DBE-8063 Trust	Full consolidation					x	Ancillary Services Undertaking
DB SPEARs/LIFERs, Series DBE-8064 Trust	Full consolidation					x	Ancillary Services Undertaking
DB SPEARs/LIFERs, Series DBE-8065 Trust	Full consolidation					x	Ancillary Services Undertaking
DB SPEARs/LIFERs, Series DBE-8066 Trust	Full consolidation					x	Ancillary Services Undertaking
DB SPEARs/LIFERs, Series DBE-8067 Trust	Full consolidation					x	Ancillary Services Undertaking
DB SPEARs/LIFERs, Series DBE-8068 Trust	Full consolidation					x	Ancillary Services Undertaking
DB SPEARs/LIFERs, Series DBE-8069 Trust	Full consolidation					x	Ancillary Services Undertaking
DB SPEARs/LIFERs, Series DBE-8070 Trust	Full consolidation					x	Ancillary Services Undertaking
DB SPEARs/LIFERs, Series DBE-8071 Trust	Full consolidation					x	Ancillary Services Undertaking
DB SPEARs/LIFERs, Series DBE-8073 Trust	Full consolidation					x	Ancillary Services Undertaking
DB SPEARs/LIFERs, Series DBE-8081 Trust	Full consolidation					x	Ancillary Services Undertaking
DB SPEARs/LIFERs, Series DBE-8082 Trust	Full consolidation					x	Ancillary Services Undertaking
DB SPEARs/LIFERs, Series DBE-8083 Trust	Full consolidation					x	Ancillary Services Undertaking
DB SPEARs/LIFERs, Series DBE-8084 Trust	Full consolidation					x	Ancillary Services Undertaking
DB SPEARs/LIFERs, Series DBE-8901 Trust	Full consolidation					x	Ancillary Services Undertaking
DB Trustee Services Limited	Full consolidation				x		Other Enterprise
DB Trustees (Hong Kong) Limited	Full consolidation				x		Other Enterprise
DB VersicherungsManager GmbH	Full consolidation				x		Other Enterprise
DB Vita S.A.	Full consolidation					x	Insurance Undertaking
DBUSBZ1, LLC	Full consolidation				x		Other Enterprise
DBX ETF Trust	Full consolidation				x		Other Enterprise
De Heng Asset Management Company Limited	Full consolidation				x		Financial Institution
Deloraine Spain, S.L.	Full consolidation				x		Ancillary Services Undertaking
Deutsche Aeolia Power Production Société Anonyme	Full consolidation				x		Other Enterprise
Deutsche Bank (Cayman) Limited	Full consolidation				x		Other Enterprise
Deutsche Bank Insurance Agency Incorporated	Full consolidation				x		Other Enterprise
Deutsche Bank Luxembourg S.A. - Fiduciary Deposits	Full consolidation				x		Other Enterprise
Deutsche Bank Luxembourg S.A. - Fiduciary Note Programme	Full consolidation				x		Other Enterprise
Deutsche Bank Representative Office Nigeria Limited	Full consolidation					x	Ancillary Services Undertaking
Deutsche Bank SPEARs/LIFERs, Series DBE-8011 Trust	Full consolidation					x	Ancillary Services Undertaking
Deutsche Cayman Ltd.	Full consolidation				x		Other Enterprise
Deutsche Custody N.V.	Full consolidation					x	Financial Institution
Deutsche Gesellschaft für Immobilien-Leasing mit beschränkter Haftung	Full consolidation					x	Financial Institution
Deutsche Grundbesitz Beteiligungsgesellschaft mbH i.L.	Full consolidation					x	Financial Institution
Deutsche Grundbesitz-Anlagegesellschaft mit beschränkter Haftung	Full consolidation				x		Other Enterprise
Deutsche International Corporate Services Limited	Full consolidation				x		Other Enterprise
Deutsche International Custodial Services Limited	Full consolidation				x		Other Enterprise
Deutsche Investor Services Private Limited	Full consolidation				x		Other Enterprise
Deutsche Private Asset Management Limited (in members' voluntary liquidation)	Full consolidation				x		Other Enterprise
Deutsche StiftungsTrust GmbH	Full consolidation				x		Other Enterprise
Deutsche Trustee Company Limited	Full consolidation				x		Other Enterprise
Deutsche Trustee Services (India) Private Limited	Full consolidation				x		Other Enterprise
Deutsche Trustees Malaysia Berhad	Full consolidation				x		Other Enterprise
Deutsches Institut für Altersvorsorge GmbH	Full consolidation				x		Other Enterprise
DI Deutsche Immobilien Treuhandgesellschaft mbH	Full consolidation				x		Other Enterprise
Durian (Luxembourg) S.à r.l.	Full consolidation				x		Other Enterprise
DWS Access S.A.	Full consolidation				x		Other Enterprise
DWS Alternatives (IE) ICAV	Full consolidation				x		Other Enterprise
DWS Alternatives France	Full consolidation				x		Other Enterprise
DWS Funds	Full consolidation				x		Other Enterprise
DWS Garant	Full consolidation				x		Other Enterprise
DWS Invest (IE) ICAV	Full consolidation				x		Other Enterprise

a	b	c	d	e	f	g	h
		Method of prudential consolidation					
Name of the entity	Method of accounting consolidation	Full consolidation	Proportional consolidation	Equity method	Neither consolidated nor deducted	Deducted	Description of the entity
DWS Noor Islamic Funds Public Limited Company (in liquidation)	Full consolidation				x		Other Enterprise
DWS Zeitwert Protect	Full consolidation				x		Other Enterprise
DWS-Fonds Treasury Liquidity (EUR)	Full consolidation				x		Other Enterprise
Dynamic Infrastructure Securities Fund LP	Full consolidation				x		Financial Institution
Earls Four Limited	Full consolidation				x		Other Enterprise
EARLS Trading Limited	Full consolidation				x		Financial Institution
EC EUROPA IMMOBILIEN FONDS NR. 3 GmbH & CO. KG i.I.	Full consolidation				x		Other Enterprise
Einkaufszentrum "HVD Dresden" S.à.r.l & Co. KG i.I.	Full consolidation				x		Other Enterprise
Eirles Three Designated Activity Company	Full consolidation				x		Other Enterprise
Eirles Two Designated Activity Company	Full consolidation				x		Other Enterprise
Elizabethan Holdings Limited	Full consolidation					x	Financial Institution
Elizabethan Management Limited	Full consolidation				x		Other Enterprise
Emerging Markets Capital Protected Investments Limited	Full consolidation				x		Other Enterprise
Emeris	Full consolidation				x		Financial Institution
Encina Property Finance Designated Activity Company	Full consolidation				x		Financial Institution
Epicuro SPV S.r.l.	Full consolidation				x		Ancillary Services Undertaking
Fiduciaria Sant' Andrea S.r.l.	Full consolidation				x		Other Enterprise
Finanzberatungsgesellschaft mbH der Deutschen Bank	Full consolidation					x	Ancillary Services Undertaking
Fondo Privado de Titulizacion Activos Reales 1 B.V.	Full consolidation				x		Other Enterprise
Fondo Privado de Titulización PYMES I Designated Activity Company	Full consolidation				x		Ancillary Services Undertaking
Franz Urbig- und Oscar Schlitter-Stiftung Gesellschaft mit beschränkter Haftung	Full consolidation					x	Ancillary Services Undertaking
Freddie Mac Class A Taxable Multifamily M Certificates Series M-037	Full consolidation					x	Ancillary Services Undertaking
Freddie Mac Class A Taxable Multifamily M Certificates Series M-039	Full consolidation					x	Ancillary Services Undertaking
Freddie Mac Class A Taxable Multifamily M Certificates Series M-040	Full consolidation					x	Ancillary Services Undertaking
Freddie Mac Class A Taxable Multifamily M Certificates Series M-041	Full consolidation					x	Ancillary Services Undertaking
Freddie Mac Class A Taxable Multifamily M Certificates Series M-043	Full consolidation					x	Ancillary Services Undertaking
Freddie Mac Class A Taxable Multifamily M Certificates Series M-044	Full consolidation					x	Ancillary Services Undertaking
Freddie Mac Class A Taxable Multifamily M Certificates Series M-047	Full consolidation					x	Ancillary Services Undertaking
Fünfte SAB Treuhand und Verwaltung GmbH & Co. Suhl "Rimbachzentrum" KG	Full consolidation				x		Other Enterprise
Galene S.à r.l.	Full consolidation				x		Other Enterprise
Gladyr Spain, S.L.	Full consolidation				x		Ancillary Services Undertaking
Global Opportunities Co-Investment Feeder, LLC	Full consolidation				x		Financial Institution
Global Opportunities Co-Investment, LLC	Full consolidation				x		Financial Institution
Groton Invest, S.L.	Full consolidation				x		Financial Institution
Grundstücksgesellschaft Frankfurt Bockenheimer Landstraße GbR	Full consolidation				x		Other Enterprise
Grundstücksgesellschaft Kerpen-Sindorf Vogelrutherfeld GbR	Full consolidation				x		Other Enterprise
Grundstücksgesellschaft Wiesbaden Luisenstraße/Kirchgasse GbR	Full consolidation				x		Other Enterprise
Hamildak Designated Activity Company	Full consolidation				x		Ancillary Services Undertaking
Havbell Designated Activity Company	Full consolidation				x		Ancillary Services Undertaking
Histria Inversiones Designated Activity Company	Full consolidation				x		Financial Institution
Iberia Inversiones Designated Activity Company	Full consolidation				x		Other Enterprise
Iberia Inversiones II Designated Activity Company	Full consolidation				x		Ancillary Services Undertaking
Immobilienfonds Büro-Center Erfurt am Flughafen Bindersleben I GbR	Full consolidation				x		Other Enterprise
Immobilienfonds Büro-Center Erfurt am Flughafen Bindersleben II GbR	Full consolidation				x		Other Enterprise
Immobilienfonds Wohn- und Geschäftshaus Köln-Blumenberg V GbR	Full consolidation				x		Other Enterprise

a	b	c	d	e	f	g	h
		Method of prudential consolidation					
Name of the entity	Method of accounting consolidation	Full consolidation	Proportional consolidation	Equity method	Neither consolidated nor deducted	Deducted	Description of the entity
Infrastructure Debt Fund S.C.Sp. SICAV-RAIF	Full consolidation				x		Other Enterprise
Infrastructure Holdings (Cayman) SPC	Full consolidation				x		Financial Institution
Inn Properties S.à r.l., en faillite	Full consolidation				x		Other Enterprise
Investor Solutions Limited	Full consolidation				x		Other Enterprise
Isar Properties S.à r.l., en faillite	Full consolidation				x		Other Enterprise
IVAF (Jersey) Limited	Full consolidation				x		Ancillary Services Undertaking
J R Nominees (Pty) Ltd	Full consolidation				x		Other Enterprise
Kelona Invest, S.L.	Full consolidation				x		Other Enterprise
KH Kitty Hall Holdings Limited	Full consolidation				x		Financial Institution
Kratus Inversiones Designated Activity Company	Full consolidation				x		Financial Institution
Ledyard, S.L.	Full consolidation				x		Other Enterprise
Leonardo Charitable 1 Limited	Full consolidation				x		Ancillary Services Undertaking
Leonardo III Initial GP Limited	Full consolidation					x	Financial Institution
Lerma Investments 2018, Sociedad Limitada	Full consolidation				x		Financial Institution
Life Mortgage S.r.l.	Full consolidation				x		Ancillary Services Undertaking
Lockwood Invest, S.L.	Full consolidation				x		Financial Institution
Lunashadow Limited	Full consolidation				x		Financial Institution
M Cap Finance Mittelstandsfonds GmbH & Co. KG	No consolidation		x				Financial Institution
Malabo Holdings Designated Activity Company	Full consolidation				x		Financial Institution
Merlin XI	Full consolidation				x		Financial Institution
Meseta Inversiones Designated Activity Company	Full consolidation				x		Ancillary Services Undertaking
Micro-E Finance S.r.l. in liquidazione	Full consolidation				x		Ancillary Services Undertaking
Oder Properties S.à r.l., en faillite	Full consolidation				x		Other Enterprise
OPAL, en liquidation volontaire	Full consolidation				x		Other Enterprise
OPB-Oktava GmbH	Full consolidation					x	Financial Institution
OPB-Quarta GmbH	Full consolidation					x	Financial Institution
OPPENHEIM PRIVATE EQUITY Manager GmbH	Full consolidation					x	Financial Institution
OPPENHEIM PRIVATE EQUITY Verwaltungsgesellschaft mbH	Full consolidation					x	Financial Institution
Opus Niestandaryzowany Sekurytyzacyjny Fundusz Inwestycyjny Zamknięty	Full consolidation				x		Ancillary Services Undertaking
OTTAM Mexican Capital Trust Designated Activity Company	Full consolidation				x		Other Enterprise
Palladium Global Investments S.A.	Full consolidation				x		Other Enterprise
Palladium Securities 1 S.A.	Full consolidation				x		Other Enterprise
PanAsia Funds Investments Ltd.	Full consolidation				x		Financial Institution
PEIF II SLP Feeder, L.P.	Full consolidation					x	Financial Institution
PEIF III SLP Feeder GP, S.à r.l.	Full consolidation				x		Financial Institution
PEIF III SLP Feeder, SCSp	Full consolidation				x		Other Enterprise
PERUS 1 S.à r.l., en liquidation volontaire	Full consolidation				x		Financial Institution
PES Carry and Employee Co-Investment Feeder SCSp	Full consolidation					x	Financial Institution
PES Carry and Employee Co-Investment GP S.à r.l.	Full consolidation				x		Financial Institution
Plantation Bay, Inc.	Full consolidation				x		Other Enterprise
Postbank Akademie und Service GmbH	Full consolidation				x		Other Enterprise
Postbank Finanzberatung AG	Full consolidation				x		Other Enterprise
Postbank Immobilien GmbH	Full consolidation				x		Other Enterprise
Property Debt Fund S.C.Sp. SICAV-RAIF	Full consolidation				x		Other Enterprise
Quartz No. 1 S.A.	Full consolidation				x		Ancillary Services Undertaking
Radical Properties Unlimited Company	Full consolidation				x		Financial Institution
Residential Mortgage Funding Trust	Full consolidation				x		Financial Institution
Rhine Properties S.à r.l., en faillite	Full consolidation				x		Other Enterprise
Riviera Real Estate	Full consolidation				x		Other Enterprise
ROCKY 2021-1 SPV S.r.l.	Full consolidation				x		Ancillary Services Undertaking
Romareda Holdings Designated Activity Company	Full consolidation				x		Financial Institution
RREEF China REIT Management Limited	Full consolidation				x		Other Enterprise
RREEF India Advisors Private Limited	Full consolidation				x		Other Enterprise
SAB Real Estate Verwaltungs GmbH	Full consolidation					x	Financial Institution
Samburg Invest, S.L.	Full consolidation				x		Other Enterprise
Sanne Trust Company Limited Japan (Trust Account Project Narita 7303)	Full consolidation				x		Other Enterprise
SCB Alpspitze UG (haftungsbeschränkt)	Full consolidation				x		Financial Institution
Seaconview Designated Activity Company	Full consolidation				x		Ancillary Services Undertaking
Somkid Immobiliare S.r.l.	Full consolidation				x		Other Enterprise
SP Mortgage Trust	Full consolidation				x		Other Enterprise

a	b	c	d	e	f	g	h
		Method of prudential consolidation					
Name of the entity	Method of accounting consolidation	Full consolidation	Proportional consolidation	Equity method	Neither consolidated nor deducted	Deducted	Description of the entity
Stelvio Immobiliare S.r.l.	Full consolidation				x		Other Enterprise
Style City Limited	Full consolidation				x		Financial Institution
Swabia 1 Designated Activity Company	Full consolidation				x		Ancillary Services Undertaking
Tasman NZ Residential Mortgage Trust	Full consolidation				x		Other Enterprise
Tender Option Bond Series 2019-BAML3502AB Trust	Full consolidation					x	Ancillary Services Undertaking
Tender Option Bond Series 2019-BAML3503AB Trust	Full consolidation					x	Ancillary Services Undertaking
TESATUR Beteiligungsgesellschaft mbH & Co. Objekt Halle I KG i.L.	No consolidation	x					Financial Institution
TESATUR Beteiligungsgesellschaft mbH & Co. Objekt Nordhausen I KG i.L.	No consolidation	x					Financial Institution
Trave Properties S.à r.l., en faillite	Full consolidation				x		Other Enterprise
Treuinvest Service GmbH	Full consolidation				x		Other Enterprise
TRS Aria LLC	Full consolidation					x	Financial Institution
TRS Leda LLC	Full consolidation					x	Financial Institution
TRS Scorpio LLC	Full consolidation					x	Financial Institution
TRS SVCO LLC	Full consolidation					x	Financial Institution
TRS Venor LLC	Full consolidation					x	Financial Institution
VCJ Lease S.à r.l.	Full consolidation				x		Other Enterprise
Vermögensfondmandat Flexible (80% teilgeschützt)	Full consolidation				x		Other Enterprise
Waltzfire Limited	Full consolidation				x		Financial Institution
Wealthspur Investment Ltd.	Full consolidation					x	Financial Institution
Wedverville Spain, S.L.	Full consolidation				x		Other Enterprise
Wendelstein 2017-1 UG (haftungsbeschränkt)	Full consolidation				x		Ancillary Services Undertaking
Xtrackers ETC Public Limited Company	Full consolidation				x		Other Enterprise
Xtrackers (IE) Public Limited Company	Full consolidation				x		Other Enterprise
2755 LVB I LLC	Full consolidation					x	Other Enterprise
5353 WHMR LLC	Full consolidation					x	Other Enterprise

Reconciliation of regulatory own funds to the IFRS balance sheet (Article 436 (c, d) CRR)

The table EU LI1 below provides a comparison between the consolidated balance sheet for accounting and prudential purposes and also highlights how the amounts reported in our financial statements, once the regulatory scope of consolidation is applied, are impacted by the different risk frameworks in Part Three of the CRR. The regulatory balance sheet is split further into the parts subject to credit risk, counterparty credit risk, securitization positions in the regulatory banking book, market risk as well as the part which is not subject to capital requirements or relevant for deduction from capital. The market risk framework in column (f) includes our trading book exposure, our banking book exposure which is booked in a currency different from Euro as well as securitization positions in the regulatory trading book. Specific assets and liabilities may be subject to more than one regulatory risk framework. Therefore the sum of values in column (c) to (g) may not equal to the amounts in column (b). Moreover the allocation of positions to the regulatory trading or banking book, as well as the product definition, impacts the allocation to and treatment within a regulatory framework and might be different to the product definition or trading classification under IFRS.

Differences between carrying values on the regulatory balance sheet in column (b) and amounts deducted from CRR/CRD capital are explained further in the footnotes of the table “EU CC1 Composition of regulatory own funds” as referenced in the last column of this table.

EU LI1 – Differences between accounting and regulatory scopes of consolidation and the mapping of financial statement categories with regulatory risk categories

								Dec 31, 2021
	a	b	c	d	e	f	g	
			Carrying values of items:					
in € m.	Carrying values as reported in published financial statements	Carrying values under scope of prudential consolidation	Subject to the credit risk framework	Subject to the counterparty credit risk framework	Subject to the securitization framework	Subject to the market risk framework	Not subject to capital requirements or subject to deduction from capital	References[1]
Assets:								
Cash and central bank balances	192,021	192,006	191,979	0	0	90,480	0	
Interbank balances (w/o central banks)	7,342	7,079	6,196	0	0	5,761	0	
Central bank funds sold and securities purchased under resale agreements	8,368	8,368	0	7,489	0	4,593	0	
Securities borrowed	63	63	0	63	0	0	0	
Financial assets at fair value through profit or loss								
Trading assets	102,396	100,811	5,339	1,063	286	98,400	0	
Positive market values from derivative financial instruments	299,732	299,956	89	299,848	19	299,037	0	
Non-trading financial assets mandatory at fair value through profit and loss	88,965	89,455	8,205	77,590	1,674	85,613	0	
Financial assets designated at fair value through profit or loss	140	139	139	0	0	139	0	
Total financial assets at fair value through profit or loss	491,233	490,361	13,772	378,501	1,978	483,189	0	
Financial assets at Fair Value through OCI								
Financial assets mandatory at fair value through OCI	28,979	28,826	27,524	1,231	68	22,064	0	
Equity Instruments designated at fair value through OCI	0	0	0	0	0	0	0	
Total financial assets at fair value through OCI	28,979	28,826	27,524	1,231	68	22,064	0	
Equity method investments	1,091	1,091	1,091	0	4	1,091	78	
of which: Goodwill	78	78	0	0	0	0	78	D
Loans at amortized cost	471,319	474,170	449,519	100	24,353	160,638	199	
Property and equipment	5,536	5,508	5,508	0	0	2,363	0	
Goodwill and other intangible assets	6,824	6,824	1,581	0	0	0	5,242	D
Other assets	103,785	103,674	25,999	49,037	3,158	38,908	18,450	
of which: Defined benefit pension fund assets	1,209	1,209	0	0	0	0	1,209	F
Assets for current tax	1,214	1,211	1,211	0	0	0	0	
Deferred tax assets	6,218	6,170	4,846	0	0	2,462	1,323	E
Total assets	**1,323,993**	**1,325,351**	**729,228**	**436,422**	**29,560**	**811,549**	**25,292**	
Liabilities and equity:								
Deposits	603,750	604,930	0	1,090	61	105,467	498,312	
Central bank funds purchased and securities sold under repurchase agreements	747	747	0	747	0	198	0	
Securities loaned	24	24	0	24	0	24	0	
Financial liabilities at fair value through profit or loss								
Trading liabilities	54,718	54,756	0	0	0	54,717	(154)	
Negative market values from derivative financial instruments	287,108	287,223	0	286,692	62	287,223	0	
Financial liabilities designated at fair value through profit or loss	58,468	58,249	0	57,460	0	57,776	34	
Investment contract liabilities	562	0	0	0	0	0	0	
Total financial liabilities at fair value through profit or loss	400,857	400,227	0	344,153	62	399,715	(119)	
Other short-term borrowings	4,034	3,976	0	0	0	550	3,426	
Other liabilities	97,796	96,272	0	53,912	0	32,150	12,346	
Provisions	2,641	2,614	0	0	0	628	1,985	
Liabilities for current tax	600	587	0	0	0	138	450	
Deferred tax liabilities	501	417	0	0	0	0	417	
Long-term debt	144,485	146,818	0	0	0	25,594	121,224	
of which: Subordinated long-term debt[2]	8,896	8,896	0	0	0	2,463	6,433	H.I
Trust preferred securities[2]	528	528	0	0	0	0	528	H.I
Obligation to purchase common shares	0	0	0	0	0	0	0	
Total liabilities	**1,255,962**	**1,257,141**	**0**	**399,927**	**122**	**564,464**	**638,570**	
Common shares, no par value, nominal value of € 2.56	5,291	5,291	0	0	0	0	5,291	A
Additional paid-in capital	40,580	40,580	0	0	0	0	40,580	A
Retained earnings	12,607	12,871	0	0	0	0	12,871	B
Common shares in treasury, at cost	(6)	(6)	0	0	0	0	(6)	A

								Dec 31, 2021
	a	b	c	d	e	f	g	
			Carrying values of items:					
in € m.	Carrying values as reported in published financial statements	Carrying values under scope of prudential consolidation	Subject to the credit risk framework	Subject to the counterparty credit risk framework	Subject to the securitization framework	Subject to the market risk framework	Not subject to capital requirements or subject to deduction from capital	References[1]
Equity classified as obligation to purchase common shares	0	0	0	0	0	0	0	A
Accumulated other comprehensive income, net of tax	(444)	(444)	0	0	0	0	(444)	C
Total shareholders' equity	58,027	58,292	0	0	0	0	58,292	
Additional equity components	8,305	8,305	0	0	0	0	8,305	G
Noncontrolling interests	1,698	1,613	0	0	0	0	1,613	
Total equity	68,030	68,211	0	0	0	0	68,211	
Total liabilities and equity	1,323,993	1,325,351	0	399,927	122	564,464	706,780	

1 References provide the mapping of regulatory balance sheet items used to calculate regulatory capital as reflected in the column "References" in "EU CC1– Composition of regulatory own funds". Where applicable, more detailed information are provided in the respective reference footnote section.
2 Eligible Additional Tier 1 and Tier 2 instruments are reflected in these balance sheet positions based on their IFRS carrying values.

								Dec 31, 2020
	a	b	c	d	e	f	g	
			Carrying values of items:					
in € m.	Carrying values as reported in published financial statements	Carrying values under scope of prudential consolidati on	Subject to the credit risk framework	Subject to the counterparty credit risk framework	Subject to the securi-tization framework	Subject to the market risk framework	Not subject to capital re-quirements or subject to deduction from capital	References[1]
Assets:								
Cash and central bank balances	166,208	166,082	165,904	0	0	77,438	0	
Interbank balances (w/o central banks)	9,130	8,887	8,024	0	0	7,291	0	
Central bank funds sold and securities purchased under resale agreements	8,533	8,533	0	7,715	0	4,888	0	
Securities borrowed	0	0	0	0	0	0	0	
Financial assets at fair value through profit or loss								
Trading assets	107,929	106,659	6,225	1,661	341	101,915	0	
Positive market values from derivative financial instruments	343,455	343,757	38	343,452	26	342,346	0	
Non-trading financial assets mandatory at fair value through profit and loss	76,121	76,693	11,324	62,449	1,908	71,220	0	
Financial assets designated at fair value through profit or loss	437	437	437	0	0	437	0	
Total financial assets at fair value through profit or loss	527,941	527,546	18,023	407,561	2,274	515,918	0	
Financial assets at Fair Value through OCI								
Financial assets mandatory at fair value through OCI	55,834	55,681	54,102	1,543	36	26,713	0	
Equity Instruments designated at fair value through OCI	0	0	0	0	0	0	0	
Total financial assets at fair value through OCI	55,834	55,681	54,102	1,543	36	26,713	0	
Equity method investments	901	901	901	0	0	901	64	
of which: Goodwill	64	64	0	0	0	0	64	D
Loans at amortized cost	426,995	428,882	409,947	99	18,666	130,950	170	
Property and equipment	5,549	5,512	5,512	0	0	2,173	0	
Goodwill and other intangible assets	6,725	6,544	1,608	0	0	0	4,936	D
Other assets	110,399	110,236	21,691	74,724	2,734	47,238	10,758	
of which: Defined benefit pension fund assets	891	891	0	0	0	0	891	F
Assets for current tax	986	983	983	0	0	0	0	
Deferred tax assets	6,058	6,030	4,704	0	0	2,240	1,325	E
Total assets	1,325,259	1,325,817	691,398	491,643	23,710	815,750	17,253	
Liabilities and equity:								
Deposits	568,031	568,898	0	1,260	29	83,430	484,180	
Central bank funds purchased and securities sold under repurchase agreements	2,325	2,325	0	2,325	0	1,892	0	
Securities loaned	1,697	1,697	0	1,697	0	1,697	0	
Financial liabilities at fair value through profit or loss								
Trading liabilities	44,316	44,356	0	0	0	44,198	(86)	
Negative market values from derivative financial instruments	327,775	327,950	0	327,507	46	327,950	0	
Financial liabilities designated at fair value through profit or loss	46,582	46,346	0	44,359	0	45,901	30	
Investment contract liabilities	526	0	0	0	0	0	0	
Total financial liabilities at fair value through profit or loss	419,199	418,652	0	371,866	46	418,049	(56)	
Other short-term borrowings	3,553	3,493	0	0	0	281	3,212	
Other liabilities	114,208	113,026	0	76,269	0	28,413	20,900	
Provisions	2,430	2,406	0	0	0	386	2,020	
Liabilities for current tax	574	559	0	0	0	114	444	
Deferred tax liabilities	561	479	0	0	0	0	479	
Long-term debt	149,163	150,587	0	0	1	26,720	123,867	
of which: Subordinated long-term debt[2]	7,669	7,669	0	0	1	1,320	6,348	H.I
Trust preferred securities[2]	1,321	1,321	0	0	0	4	1,318	H.I
Obligation to purchase common shares	0	0	0	0	0	0	0	
Total liabilities	1,263,063	1,263,444	0	453,418	75	560,986	636,363	
Common shares, no par value, nominal value of € 2.56	5,291	5,291	0	0	0	0	5,291	A
Additional paid-in capital	40,606	40,606	0	0	0	0	40,606	A
Retained earnings	10,014	10,279	0	0	0	0	10,279	B
Common shares in treasury, at cost	(7)	(7)	0	0	0	0	(7)	A
Equity classified as obligation to purchase common shares	0	0	0	0	0	0	0	A

								Dec 31, 2020
	a	b	c	d	e	f	g	
			Carrying values of items:					
in € m.	Carrying values as reported in published financial statements	Carrying values under scope of prudential consolidati on	Subject to the credit risk framework	Subject to the counterparty credit risk framework	Subject to the securi- tization framework	Subject to the market risk framework	Not subject to capital re- quirements or subject to deduction from capital	References[1]
Accumulated other comprehensive income, net of tax	(1,118)	(1,118)	0	0	0	0	(1,118)	C
Total shareholders' equity	54,786	55,050	0	0	0	0	55,050	
Additional equity components	5,824	5,824	0	0	0	0	5,824	G
Noncontrolling interests	1,587	1,498	0	0	0	0	1,498	
Total equity	62,196	62,372	0	0	0	0	62,372	
Total liabilities and equity	1,325,259	1,325,817	0	453,418	75	560,986	698,735	

1 References provide the mapping of regulatory balance sheet items used to calculate regulatory capital as reflected in the column "References" in "Own funds template (incl. RWA and Capital Ratios)". Where applicable, more detailed information are provided in the respective reference footnote section.
2 Eligible Additional Tier 1 and Tier 2 instruments are reflected in these balance sheet positions with their values according to IFRS.

Movements in carrying values as reported in published financial statements, i.e. under IFRS scope of consolidation for December 31, 2020 and December 31, 2021 are primarily driven by the following factors:

Positive and negative market values of derivative financial instruments decreased by € 43.7 billion and € 40.7 billion, respectively, due to interest rate products partly offset by increases in foreign exchange rate products. Financial assets at fair value through other comprehensive income decreased by € 26.9 billion, as a result of rebalancing of our strategic liquidity reserve in light of market conditions. These decreases were offset by a € 44.3 billion increase in loans at amortized cost, driven by growth across our Investment Bank, Private Bank and Corporate Bank as well as a large episodic financing in our Investment Bank that is expected to reverse in the first quarter 2022. Deposits increased by € 35.7 billion, driven by growth in the Corporate Bank and Private Bank as well as short term wholesale funding supporting financing needs towards year-end in our Investment Bank. Cash, central bank and interbank balances increased by € 24.0 billion mainly due to aforementioned decrease in financial assets at fair value through other comprehensive income. The overall movement of the balance sheet included an increase of € 35.6 billion due to foreign exchange rate movements, mainly driven by a strengthening of the U.S. Dollar against the Euro.

Table EU LI2 presents a description of the differences between the financial statements' carrying value amounts under the regulatory scope of consolidation and the exposure amounts used for regulatory purposes.

EU LI2 – Main sources of differences between regulatory exposure amounts and carrying values in financial statements

						Dec 31, 2021
		a	b	c	d	e
			Items subject to:			
	in € m.	Total	Credit risk framework	Securitization framework	Counterparty credit risk framework	Market risk framework
1	Assets carrying value amount under the scope of prudential consolidation (as per template LI1)	1,325,351	729,228	29,560	436,422	811,549
2	Liabilities carrying value amount under the scope of prudential consolidation (as per template LI1)	1,257,141	0	122	399,927	564,464
3	Total net amount under the scope of prudential consolidation	68,210	729,228	29,438	36,495	247,085[5]
4	Off-balance-sheet amounts	282,456	266,321	15,198	0	0
5,6	Differences in valuations (incl. impact from different netting rules)[1]	0	0	87	68,931	0
7	Differences due to consideration of provisions[3]	0	7,349	0	0	0
8	Differences due to the use of credit risk mitigation techniques (CRMs)	0	(4,231)	0	0	0
9	Differences due to credit conversion factors	0	(160,174)	0	0	0
10	Differences due to Securitization with risk transfer[2]	0	(21,429)	19,555	0	610
11	Other differences[4]	0	17,723	0	5,677	0
12	Exposure amounts considered for regulatory purposes	1,012,602	834,786	64,278	111,103	2,435[6]

1 Includes effects due to differences in exposure modelling applying the effective expected positive exposure (EEPE) as well as the SA-CCR for derivatives and financial collateral comprehensive method for SFT respectively; that also reflects differences as a result of the application of credit risk mitigation and regulatory netting rules.
2 Included in the sum of € 19.6 billion are FX mismatches amounting to € 0.8 billion. The amount represents the retained synthetic tranches after consideration of bought credit protection.
3 Includes credit-risk related purchase price adjustments arising in the context of asset purchases as well as business combinations.
4 Primarily reflects valuation differences as a result of regulatory product definition being different from the accounting product definition; moreover under the counterparty credit risk framework funded default fund contribution in form of securities are considered in the exposure amounts for regulatory purposes.
5 Included in the sum of € 247.1 billion are € 1.8 billion net carrying amount attributable to securitization positions in the regulatory trading book covered under the market risk standardized approach.
6 Exposure at default is only considered for securitization positions in the regulatory trading book as the remaining exposure is considered within the internally developed market risk models.

						Dec 31, 2020
		a	b	c	d	e
						Items subject to:
	in € m.	Total	Credit risk framework	Securitization framework	Counterparty credit risk framework	Market risk framework
1	Assets carrying value amount under the scope of prudential consolidation (as per template LI1)	1,325,817	691,398	23,710	491,643	815,750
2	Liabilities carrying value amount under the scope of prudential consolidation (as per template LI1)	1,263,444	0	75	453,418	560,986
3	Total net amount under the scope of prudential consolidation	62,372	691,398	23,635	38,225	254,764[5]
4	Off-balance-sheet amounts	262,914	245,832	13,983	1,701	0
5,6	Differences in valuations (incl. impact from different netting rules)[1]	–	0	79	61,167	0
7	Differences due to consideration of provisions[3]	–	7,953	0	0	0
8	Differences due to the use of credit risk mitigation techniques (CRMs)	–	(3,439)	0	(54)	0
9	Differences due to credit conversion factors	–	(151,353)	0	0	0
10	Differences due to Securitization with risk transfer[2]	–	(24,209)	22,369	0	696
11	Other differences[4]	–	10,520	0	3,032	0
12	Exposure amounts considered for regulatory purposes	940,839	776,700	60,067	104,072	2,505[6]

[1] Includes effects due to differences in exposure modelling applying the effective expected positive exposure (EEPE) as well as the mark to market method for derivatives and financial collateral comprehensive method for SFT respectively; that also reflects differences as a result of the application of credit risk mitigation and regulatory netting rules.
[2] Included in the sum of € 22.4 billion are FX mismatches of € 0.9 billion. The amount represents the retained synthetic tranches after consideration of bought credit protection.
[3] Includes credit-risk related purchase price adjustments arising in the context of asset purchases as well as business combinations.
[4] Primarily reflects valuation differences as a result of regulatory product definition being different from the accounting product definition; moreover under the counterparty credit risk framework funded default fund contribution in form of securities are considered in the exposure amounts for regulatory purposes.
[5] Included in the sum of € 254.8 billion are € 1.8 billion net carrying amount attributable to securitization positions in the regulatory trading book covered under the market risk standardized approach.
[6] Exposure at default is only considered for securitization positions in the regulatory trading book as the remaining exposure is considered within the internally developed market risk models.

Reconciliation of regulatory own funds to the balance sheet according to IFRS (Article 437 (a) CRR)

The table below highlights the difference in the basis of consolidation for accounting and prudential purposes as it compares the carrying values as reported under IFRS with the carrying values under the scope of the regulatory consolidation. References in the last column of the table provide the mapping of regulatory balance sheet items used to calculate regulatory capital. The reference-columns presented below reconcile to the references-columns as presented in the template “EU CC1– Composition of regulatory own funds”.

EU CC2 – Reconciliation of regulatory own funds to balance sheet in the audited financial statements

			Dec 31, 2021			June 30, 2021
	a	b		a	b	
in € m.	Carrying values as reported in published financial statements	Carrying values under scope of regulatory consoli-dation	References[1]	Carrying values as reported in published financial statements	Carrying values under scope of regulatory consoli-dation	References[1]
Assets:						
Cash and central bank balances	192,021	192,006		198,268	198,126	
Interbank balances (w/o central banks)	7,342	7,079		8,359	8,089	
Central bank funds sold and securities purchased under resale agreements	8,368	8,368		8,519	8,519	
Securities borrowed	63	63		33	33	
Financial assets at fair value through profit or loss of which:						
Trading assets	102,396	100,811		112,120	110,640	
Positive market values from derivative financial instruments	299,732	299,956		273,877	274,171	
Non-trading financial assets mandatory at fair value through profit and loss	88,965	89,455		83,412	84,051	
Financial assets designated at fair value through profit or loss	140	139		90	90	
Total financial assets at fair value through profit or loss	491,233	490,361		469,498	468,952	
Financial assets at Fair Value through OCI						
Financial assets mandatory at fair value through OCI	28,979	28,826		37,186	37,032	
Equity Instruments designated at fair value through OCI	0	0		0	0	

	Dec 31, 2021			June 30, 2021		
	a	b		a	b	
in € m.	Carrying values as reported in published financial statements	Carrying values under scope of regulatory consoli-dation	References[1]	Carrying values as reported in published financial statements	Carrying values under scope of regulatory consoli-dation	References[1]
Total financial assets at fair value through OCI	28,979	28,826		37,186	37,032	
Financial assets available for sale	0	0		0	0	
Equity method investments	1,091	1,091		1,110	1,110	
of which: Goodwill	78	78	D	75	75	D
Loans at amortized cost	471,319	474,170		440,308	442,522	
Securities held to maturity	0	0		0	0	
Property and equipment	5,536	5,508		5,378	5,346	
Goodwill and other intangible assets	6,824	6,824	D	6,846	6,659	D
Other assets	103,785	103,674		137,954	137,843	
of which: Defined benefit pension fund assets	1,209	1,209	F	1,055	1,055	F
Assets for current tax	1,214	1,211		1,036	1,034	
Deferred tax assets	6,218	6,170	E	5,890	5,860	E
Total assets	**1,323,993**	**1,325,351**		1,320,384	1,321,122	
Liabilities and equity:						
Deposits	603,750	604,930		581,329	582,501	
Central bank funds purchased and securities sold under repurchase agreements	747	747		3,144	3,144	
Securities loaned	24	24		1,123	1,123	
Financial liabilities at fair value through profit or loss						
of which:						
Trading liabilities	54,718	54,756		56,121	56,057	
Negative market values from derivative financial instruments	287,108	287,223		264,556	264,693	
Financial liabilities designated at fair value through profit or loss	58,468	58,249		52,921	52,652	
Investment contract liabilities	562	0		560	0	
Total financial liabilities at fair value through profit or loss	400,857	400,227		374,158	373,401	
Other short-term borrowings	4,034	3,976		3,428	3,358	
Other liabilities	97,796	96,271		137,855	136,444	
Provisions	2,641	2,614		2,556	2,531	
Liabilities for current tax	600	587		871	857	
Deferred tax liabilities	501	417		509	430	
Long-term debt	144,485	146,818		149,139	150,877	
of which: Subordinated long-term debt[2]	8,896	8,896	H.I	8,740	8,740	H.I
Trust preferred securities[2]	528	528	H.I	1,044	1,044	H.I
Obligation to purchase common shares	0	0		0	0	
Total liabilities	**1,255,962**	**1,257,140**		1,255,157	1,255,711	
Common shares, no par value, nominal value of € 2.56	5,291	5,291	A	5,291	5,291	A
Additional paid-in capital	40,580	40,580	A	40,460	40,460	A
Retained earnings	12,607	12,871	B	11,800	12,065	B
Common shares in treasury, at cost	(6)	(6)	A	(28)	(28)	A
Equity classified as obligation to purchase common shares	0	0	A	0	0	A
Accumulated other comprehensive income, net of tax	(444)	(444)	C	(954)	(954)	C
Total shareholders' equity	**58,027**	**58,292**		56,569	56,834	
Additional equity components	8,305	8,305	G	7,068	7,068	G
Noncontrolling interests	1,698	1,613		1,591	1,509	
Total equity	**68,030**	**68,211**		65,228	65,411	
Total liabilities and equity	**1,323,993**	**1,325,351**		1,320,384	1,321,122	

[1] References provide the mapping of regulatory balance sheet items used to calculate regulatory capital as reflected in the column "References" in "EU CC1– Composition of regulatory own funds". Where applicable, more detailed information are provided in the respective reference footnote section.
[2] Eligible Additional Tier 1 and Tier 2 instruments are reflected in these balance sheet positions based on their IFRS carrying values.

Prudent valuation adjustments (Article 436 (e) CRR)

We determined the amount of the Prudent Valuation Adjustment based on the methodology defined in the Commission Delegated Regulation (EU) 2016/101, and disclosed below in accordance with Regulation (EU) 2019/876, Article 436 (e) CRR for exposures from the trading book and the non-trading book that are adjusted in accordance with Article 34 and Article 105, a breakdown of the amounts of the constituent elements of an institution's prudent valuation adjustment, by type of risks, and the total of constituent elements separately for the trading book and non-trading book positions.

EU PV1 – Prudent valuation adjustments (PVA)

						Dec 31, 2021
		a	b	c	d	e
	in € m.					Risk Category
	Category level AVA	Equity	Interest Rates	Foreign Exchange	Credit	Commodities
1	Market price uncertainty	338	806	85	585	1
3	Close-out cost	232	366	66	106	1
4	Concentrated positions	15	152	6	97	0
5	Early termination	0	0	0	0	0
6	Model risk	12	9	0	0	0
7	Operational risk	0	0	0	0	0
10	Future administrative costs	4	23	1	23	0
12	Total Additional Valuation Adjustments (AVAs)	601	1,356	157	811	2

						Dec 31, 2021
		EU e1	EU e2	f	g	h
	in € m.	Category level AVA - Valuation uncertainty		Total category level post-diversification		
	Category level AVA	Unearned credit spreads AVA	Investment and funding costs AVA	Total	Of which: Total core approach in the trading book	Of which: Total core approach in the banking book
1	Market price uncertainty	145	45	1,019	963	56
3	Close-out cost	5	3	390	368	22
4	Concentrated positions	0	0	270	255	15
5	Early termination	0	0	0	0	0
6	Model risk	119	2	81	77	5
7	Operational risk	0	0	0	0	0
10	Future administrative costs	0	0	50	48	3
12	Total Additional Valuation Adjustments (AVAs)	270	50	1,811	1,711	100

Impediments to fund transfers (Article 436 (f) CRR) (EU LIB)

The Group entities within the scope of prudential consolidation are subject to local regulatory and tax requirements as well as potentially exchange controls. We are not aware of any material impediments existing for capital distribution within the Group.

Potential capital shortfalls in unconsolidated subsidiaries (Article 436 (g) CRR) (EU LIB)

Our subsidiaries which were not included in our regulatory consolidation due to their immateriality did not have to comply with own regulatory minimum capital standards in 2021.

Derogations from prudential requirements for the parent company and subsidiaries (Article 436 (h) CRR) (EU LIB)

As of December 31, 2021, Deutsche Bank AG fully applied the exemptions pursuant to Section 2a (1) KWG in conjunction with Article 7 (3) CRR, Art. 6 (5) CRR and Section 2a (2) KWG in conjunction with Section 25a (1) sentence 3 KWG (so-called "parent waiver") pursuant to which it may waive the application of provisions on own funds and eligible liabilities (Part II CRR), capital requirements (Part III CRR), large exposures (Part IV CRR), exposures to transferred credit risks (Chapter 2 of

Regulation (EU) 2017/2402), leverage (Part VII CRR), reporting requirements (Part VII A CRR) and disclosure by institutions (Part VIII CRR) as well as certain risk management requirements (Section 25a (1) sentence 3 KWG) on a stand-alone basis.

Deutsche Bank AG's subsidiaries norisbank GmbH, Deutsche Bank Europe GmbH and Deutsche Oppenheim Family Office AG, which all were consolidated within the Deutsche Bank regulatory group, fully applied the exemptions pursuant to Section 2a (1) KWG in conjunction with Article 7 (1) CRR, Art. 6 (5) CRR and Section 2a (2) KWG in conjunction with Section 25a (1) sentence 3 KWG (so-called "subsidiary waiver") pursuant to which they may waive certain regulatory requirements to the same extent as Deutsche Bank AG (see preceding paragraph) on a stand-alone basis. In addition, Deutsche Bank AG's subsidiaries Deutsche Immobilien Leasing GmbH and Leasing Verwaltungsgesellschaft Waltersdorf mbH, also consolidated within the Deutsche Bank regulatory group, applied the "subsidiary waiver" rules to the extent applicable to them, i.e. with regard to certain risk management requirements pursuant to Section 25a (1) sentence 3 KWG.

These exemptions are available only for group companies in Germany and can only be applied if, amongst others, the risk strategies and risk management processes of Deutsche Bank AG or the Group also include the companies that apply the "waiver" rules and there is no material practical or legal impediment to the prompt transfer of own funds or repayment of liabilities from Deutsche Bank AG to the respective subsidiaries or from subsidiaries in the Group to Deutsche Bank AG.

The application of the aforementioned exemptions and the fulfillment of the respective requirements were notified to the BaFin and Deutsche Bundesbank on the basis of Section 2a (1) or (6) KWG in its version applicable until December 31, 2013. Pursuant to Section 2a (5) KWG the exemptions based on these notifications are grandfathered, i.e. the "waivers" are deemed to be granted under the current CRR and KWG rules.

Additional disclosure requirements for large subsidiaries (Article 13 (1) CRR)

In line with Article 13 (1) CRR our large subsidiaries are required to disclose information to the extent applicable in respect of own funds, capital requirements, capital buffers, credit risk adjustments, remuneration policy, leverage and use of credit risk mitigation techniques on an individual or sub-consolidated basis.

For some of our subsidiaries located in Germany it is not mandatory to calculate or report regulatory capital or leverage ratios on a stand-alone basis if they qualify for the exemptions codified in the waiver rule pursuant to Section 2a KWG in conjunction with Article 7 CRR. In these cases, the above-mentioned disclosure requirements are also not applicable for those subsidiaries.

Large subsidiaries are identified in accordance with Article 4 No. 146 and 147 CRR, applied to all subsidiaries classified as "credit institution" or "investment firm" under the CRR and not qualifying for a waiver status pursuant to Section 2a KWG in conjunction with Article 7 CRR. A subsidiary is required to comply with the requirements in Article 13 (1) CRR (as described above) if at least one criterion mentioned in the list below has been met. The total value of assets referenced below is calculated on an IFRS basis as of December 31, 2021:

- It is a global systemically important institution (G-SII):
- It has been identified as an other systemically important institution (O-SII) in accordance with Article 131(1) and (3) of Directive 2013/36/EU;
- It is, in the Member State in which it is established, one of the three largest institutions in terms of total value of assets;
- Total value of assets on an individual basis or sub-consolidated basis is equal to or greater than € 30 billion.

As a result of the selection process described above, we identified two subsidiaries as "large" for the Group and hence required to provide additional disclosure requirements as laid down in Article 13 (1) CRR:

- DB USA Corporation, United States of America
- BHW Bausparkasse AG, Germany

The additional disclosures for our large subsidiaries in relation to Article 13 (1) CRR can be found either within the Pillar 3 Reports of the respective subsidiary as published on its website or on the Group's website for DB USA Corporation.

Risk management objectives and policies

Enterprise Risk Management

Risk management structure and organization (Article 435 (1)(b) CRR) (EU OVA)

Governance principles

The Management Board is responsible for managing Deutsche Bank AG in accordance with the law, the Articles of Association, and its Terms of Reference.

The Management Board is responsible for ensuring the proper business organization of the Group, which includes appropriate and effective risk management as well as compliance with legal requirements and internal guidelines, along with taking the necessary measures to ensure that adequate internal guidelines are developed and implemented.

The bank's Code of Conduct is designed to ensure ethical conduct, in accordance with Deutsche Bank's policies and procedures as well as the laws and regulations that apply to us worldwide.

Accountability of senior management is ensured through transparency of their specific position and associated decision-making authority. Each position requires a separate position description with responsibilities against which individual performance is assessed.

Management committees (i.e. decision making bodies) are only permitted where true joint decision making is required. When committees are established, all members are equally accountable for all topics and decisions within the committees' scope of responsibility.

Risk management principles

Our business model inherently involves taking risks. Risks can be financial and non-financial and include on and off-balance sheet risks. The risk management framework aligns our planned and actual risk taking with our risk appetite as expressed by the Management Board, while being in line with our available capital and liquidity.

Our risk management framework consists of various components. Principles and standards are set for each component:

- Organizational structures must follow the Three Lines of Defense ("3LoD") model with a clear definition of roles and responsibilities for all risk types.
  - The 1st Line of Defense ("1st LoD") refers to those roles in the Bank whose activities generate risks, whether financial or non-financial, and who own and are accountable for these risks. The 1st LoD manages these risks within the defined risk appetite, establishes an appropriate risk governance and risk culture, and adheres to the risk type frameworks defined by the 2nd Line of Defense ("2nd LoD").
  - The 2nd LoD refers to the roles in the Bank who define the risk management framework for a specific risk type. The 2nd LoD independently assesses and challenges the implementation of the risk type framework and adherence to the risk appetite, and acts as an advisor to the 1st LoD on how to identify, assess and manage risks.
  - The 3rd Line of Defense ("3rd LoD") is Group Audit, which is accountable for providing independent and objective assurance on the adequacy of the design, operating effectiveness and efficiency of the risk management system and systems of internal control.
- Every employee must act as a risk manager consistent with our risk appetite, risk management standards and values.
- The Management Board approved risk appetite must be cascaded and adhered to across all dimensions of the Group, with appropriate consequences in the event of a breach.
- Risks must be identified and assessed.
- Risks must be actively managed including via appropriate risk mitigation and effective internal control systems.
- Risks must be measured and reported using accurate, complete and timely data using approved models.
- Regular stress tests must be performed against adverse scenarios and appropriate crisis response planning must be established.

We promote a strong risk culture where every employee must fully understand and take a holistic view of the risks which could result from their actions, understand the consequences and manage them appropriately against our risk appetite. We expect employees to exhibit behaviors that support a strong risk culture in line with our Code of Conduct. To promote this, our policies require that risks taken (including against risk appetite) must be taken into account during our performance assessment and compensation processes. This expectation continues to be reinforced through communications campaigns and mandatory training courses for all DB employees. In addition, our Management Board members and senior management frequently communicate the importance of a strong risk culture to support a consistent tone from the top

Risk governance

Our operations throughout the world are regulated and supervised by relevant authorities in each of the jurisdictions in which we conduct business. Such regulation focuses on licensing, capital adequacy, liquidity, risk concentration, conduct of business as well as organizational and reporting requirements. The European Central Bank (the “ECB”) in connection with the competent authorities of EU countries which joined the Single Supervisory Mechanism via the Joint Supervisory Team act in cooperation as our primary supervisors to monitor our compliance with the German Banking Act and other applicable laws and regulations.

Several layers of management provide cohesive risk governance:

The Supervisory Board is informed regularly on our risk situation, risk management and risk controlling, including reputational risk related items as well as material litigation cases. It has formed various committees to handle specific topics as outlined below.

- At the meetings of the Risk Committee, the Management Board reports on current and forward-looking risk exposures, portfolios, on risk appetite and strategy and on matters deemed relevant for the assessment and oversight of the risk situation of Deutsche Bank AG. It also reports on loans requiring a Supervisory Board resolution pursuant to law or the Articles of Association. The Risk Committee advises on issues related to the overall risk appetite, aggregate risk position and the risk strategy and keeps the Supervisory Board informed of its activities.
- The Integrity Committee, among other responsibilities, advises and monitors the Management Board with regard to the management’s commitment to an economically sound, sustainable development of the company, monitors the Management Board’s measures that promote the company’s compliance with legal requirements, authorities’ regulations and the company’s own policies, including risk policies. It also reviews the Bank’s Code of Conduct and Ethics, and, upon request, supports the Risk Committee in monitoring and analyzing the Bank’s legal and reputational risks.
- The Audit Committee, among other matters, monitors the effectiveness of the risk management system, particularly the internal control system and the internal audit system.

The Management Board established the Group Risk Committee (“GRC”) as the central forum for review and decision on material risk and capital-related topics. The GRC has various duties and dedicated authority, including approval of new or materially changed risk and capital models and review of the inventory of risks, high-level risk portfolios, risk exposure developments, and internal and regulatory Group-wide stress testing results. In addition, the GRC reviews and recommends items for Management Board approval, such as key risk management principles, the Group Risk Appetite Statement, the Group Recovery Plan and the Contingency Funding Plan, over-arching risk appetite parameters, and recovery and escalation indicators. The GRC also supports the Management Board during Group-wide risk and capital planning processes.

The GRC has delegated some of its duties to sub-committees as follows:

- The Non-Financial Risk Committee (NFRC) oversees, governs and coordinates the management of non-financial risks in Deutsche Bank Group and establishes a cross-risk and holistic perspective of the key non-financial risks of the Group, including conduct and financial crime risk. It is tasked to define the non-financial risk appetite tolerance framework, to monitor and control the effectiveness of the non-financial risk operating model (including interdependencies between business divisions and control functions), and to monitor the development of emerging non-financial risks relevant for the Group.
- The Group Reputational Risk Committee (GRRC) is responsible for the oversight, governance and coordination of reputational risk management and provides for a look-back and a lessons learnt process. It reviews and decides all reputational risk issues escalated by the Regional Reputational Risk Committees (RRRCs) and RRRC decisions which have been appealed by the business divisions, infrastructure functions or regional management. It provides guidance on Group-wide reputational risk matters, including communication of sensitive topics, to the appropriate levels of Deutsche Bank Group. The RRRCs which are sub-committees of the GRRC, are responsible for the oversight, governance and coordination of the management of reputational risk in the respective regions on behalf of the Management Board.
- The Enterprise Risk Committee (ERC) has been established with a mandate to focus on enterprise-wide risk trends, events and cross-risk portfolios, bringing together risk experts from various risk disciplines. As part of its mandate, the ERC approves the enterprise risk inventory, certain country and industry threshold increases, and scenario design outlines for more severe group-wide stress tests as well as reverse stress tests. It reviews group-wide stress test results in accordance with risk appetite, reviews the risk outlook, emerging risks and topics with enterprise-wide risk implications.
- The Product Governance Committee has the mandate to ensure that there is appropriate oversight, governance and coordination of Product Governance in the Group by establishing a cross-risk and holistic perspective of key financial and non-financial risks associated with products and transactions throughout the lifecycle.

The Financial Resource Management Council (FRMC) is an ad-hoc governance body, chaired by the Chief Financial Officer and the Chief Risk Officer with delegated authority from the Management Board, to oversee financial crisis management at the bank. The FRMC provides a single forum to oversee execution of both the Contingency Funding Plan and the Group Recovery Plan. The council recommends upon mitigating actions to be taken in a time of anticipated or actual capital or liquidity stress. Specifically, the FRMC is tasked with analyzing the bank's capital and liquidity position, in anticipation of a stress scenario recommending proposals for capital and liquidity related matters, and oversee execution of decisions.

The Group Asset & Liability Committee has been established by the Management Board. Its mandate is to optimize the sourcing and deployment of the bank's balance sheet and financial resources within the overarching risk appetite set by the Management Board.

Our Chief Risk Officer, who is a member of the Management Board, has Group-wide, supra-divisional responsibility for establishing a risk management framework with appropriate identification, measurement, monitoring, mitigation and reporting of liquidity, credit, market, enterprise, model and non-financial risks (including operational and reputational risks). However, frameworks for certain risks are established by other functions as per the Business Allocation Plan.

The Chief Risk Officer has direct management responsibility for the CRO function. Risk management and control duties in the CRO function are generally assigned to specialized risk management units focusing on the management of specific risk types, risks within a specific business, or risks in a specific region.

These specialized risk management units generally handle the following core tasks:

- Foster consistency with the risk appetite set by the Management Board and applied to Business Divisions;
- Determine and implement risk and capital management policies, procedures and methodologies that are appropriate to the businesses within each division;
- Establish and approve risk limits;
- Conduct periodic portfolio reviews to keep the portfolio of risks within acceptable parameters; and
- Develop and implement risk and capital management infrastructures and systems that are appropriate for each division.

Chief Risk Officers for each Business Division challenge and influence the divisions' strategies, risk awareness and ownership as well as their adherence to risk appetite.

Organizational change

Responsibility for Compliance and Anti-Financial Crime has transferred from the Chief Risk Officer to the Chief Administrative Officer in the first half of 2021.

Risk management strategies and processes (Article 435 (1)(a) CRR) (EU OVA)

Enterprise risk relates to the potential losses or adverse consequences from strategic risk, insufficient capital, unduly portfolio concentrations, climate and environmental, social or governance risks on an enterprise level. Enterprise risk therefore covers various risk types with cross-risk character impacting Deutsche Bank holistically:

- Strategic risk is the risk of a shortfall in earnings (excluding other material risks) due to incorrect business plans (owing to flawed assumptions), ineffective plan execution or a lack of responsiveness to material plan deviations.
- Capital risk is the risk that Deutsche Bank has an insufficient level or composition of capital supply to support its current and planned business activities and associated risks during normal and stressed conditions.
- Portfolio concentration risk is the risk of exposures to common drivers, including on a country, industry or asset class basis.
- Climate and environmental, social and governance risks are the risks arising from the crystallization of transition or physical risks and from the exposure to counterparties that may potentially be negatively affected by social or governance factors.

Enterprise Risk Management (ERM) function establishes strategies and processes to manage enterprise risks. This includes inter alia the establishment of an appropriate risk governance, setting of a risk appetite and risk measurement and reporting. The management of these risks is also closely integrated with Deutsche Bank's overall strategy and processes on internal capital and liquidity adequacy.

ERM is also responsible for defining a bank-wide framework for risk management and risk appetite, integrating and aggregating risks to provide greater enterprise risk transparency and support decision making, commissioning forward-looking stress tests and managing group recovery plans.

The stress test framework defined by ERM satisfies internal as well as external stress test requirements. The internal stress tests are based on in-house developed methods and inform a variety of risk management use cases (risk type specific as well as cross risk). Internal stress tests form an integral part of our risk management framework, complementing traditional risk measures. The cross-risk stress test framework, the Group Wide Stress Test (GWST), serves a variety of bank management processes, in particular the strategic planning process, the ICAAP, the risk appetite framework and capital allocation. Capital plan stress testing is performed to assess the viability of our capital plan in adverse circumstances and to demonstrate a clear link between risk appetite, business strategy, capital plan and stress testing. The time-horizon of internal stress tests is between one and five years, depending on the use case and scenario assumptions. The regulatory stress tests, e.g. the EBA stress test and the US-based CCAR (Comprehensive Capital Analysis and Review) stress tests, strictly follow the processes and methodologies prescribed by the regulatory authorities.

Our internal stress tests are performed on a regular basis in order to assess the impact of a severe economic downturn as well as adverse bank-specific events on our risk profile and financial position. Our stress testing framework comprises regular, sensitivity-based and scenario-based approaches addressing different severities and regional hotspots. We include all material risk types in our stress testing activities. These activities are complemented by portfolio- and country-specific downside analyses as well as further regulatory requirements, such as reverse stress tests and additional stress tests requested by our regulators at group or legal entity level. The results of the stress tests also inform our recovery planning. Our methodologies undergo regular scrutiny from Deutsche Bank's internal validation team (Model Risk Management) to assess whether they correctly capture the impact of a given stress scenario.

Scope and nature of risk measurement and reporting systems (Article 435 (1)(c) CRR) (EU OVA)

Our risk measurement systems support regulatory reporting and external disclosures, as well as internal management reporting across credit, market, liquidity, operational, reputational, enterprise and model risks. The risk infrastructure incorporates the relevant legal entities and business divisions and provides the basis for reporting on risk positions, capital adequacy and limit, threshold or target utilization to the relevant functions on a regular and ad-hoc basis. Established units within the CFO and CRO-Function assume responsibility for measurement, analysis and reporting of risk while promoting sufficient quality and integrity of risk-related data. Our risk management systems are reviewed by Group Audit following a risk-based audit approach.

Deutsche Bank's reporting is an integral part of Deutsche Bank's risk management approach and as such aligns with the organizational setup by delivering consistent information on Group level and for material legal entities as well as breakdowns by risk types, business division and material business units.

The following principles guide Deutsche Bank's "risk measurement and reporting" practices:

– Deutsche Bank monitors risks taken against risk appetite and risk-reward considerations on various levels across the Group, e.g. Group, business divisions, material business units, material legal entities, risk types, portfolio and counterparty levels.
– Risk reporting is required to be accurate, clear, useful and complete and must convey reconciled and validated risk data to communicate information in a concise manner to ensure, across material Financial and Non-Financial Risks, the bank's risk profile is clearly understood.
– Senior risk committees, such as the Enterprise Risk Committee (ERC) and the Group Risk Committee (GRC), as well as the Management Board who are responsible for risk and capital management receive regular reporting (as well as ad-hoc reporting as required).
– Dedicated teams within Deutsche Bank proactively manage material Financial and Non-Financial Risks and must ensure that required management information is in place to enable proactive identification and management of risks and avoid undue concentrations within a specific Risk Type and across risks (Cross-Risk view).

In applying the previously mentioned principles, Deutsche Bank maintains a common basis for all risk reports and aims to minimize segregated reporting efforts to allow Deutsche Bank to provide consistent information, which only differs by granularity and audience focus.

The Bank identifies a large number of metrics within its risk measurement systems which support regulatory reporting and external disclosures, as well as internal management reporting across risks and for material risk types. Deutsche Bank designates a subset of those as "Key Risk Metrics" that represent the most critical ones for which the Bank places an appetite, limit, threshold or target at Group level and / or are reported routinely to senior management for discussion or decision making. The identified Key Risk Metrics include Capital Adequacy and Liquidity metrics; further details can be found in the section "Key risk metrics".

While a large number of reports are used across the Bank, Deutsche Bank designates a subset of these as "Key Risk Reports" that are critical to support Deutsche Bank's Risk Management Framework through the provision of risk information to senior management and therefore enable the relevant governing bodies to monitor, steer and control the Bank's risk taking activities effectively. To ensure that Key Risk Reports meet recipients' requirements, report producing functions regularly check whether the Key Risk Reports are clear and useful.

The main reports on risk and capital management that are used to provide Deutsche Bank's central governance bodies with information relating to the Group risk profile are the following:

- The monthly Risk and Capital Profile (RCP) report is a Cross-Risk report, provides a comprehensive view of Deutsche Bank's risk profile and is used to inform the ERC, the GRC as well as the Management Board and subsequently the Risk Committee of the Supervisory Board. The RCP includes Risk Type specific and Business-Aligned overviews and Enterprise-wide risk topics. It also includes updates on Key Group Risk Appetite Metrics and other Key Portfolio Risk Type Control Metrics as well as updates on Key Risk Developments, highlighting areas of particular interest with updates on corresponding risk management strategies.
- The Weekly Risk Report (WRR) is a weekly briefing covering high-level topical issues across key risk areas and is submitted every Friday to the Members of the ERC, the GRC and the Management Board and subsequently to the Members of the Risk Committee of the Supervisory Board. The WRR is characterized by the ad-hoc nature of its commentary as well as coverage of themes and focuses on more volatile risk metrics.
- Deutsche Bank runs several Group-wide macroeconomic stress tests. A monthly Risk Appetite scenario serves the purpose to set and regularly monitor our stress loss appetite. In addition, there are topical scenarios (typically once per quarter) which are reported to and discussed in the ERC and escalated to the GRC if deemed necessary. The stressed key performance indicators are benchmarked against the Group Risk Appetite thresholds.

While the above reports are used at a Group level to monitor and review the risk profile of Deutsche Bank holistically, there are other, supplementing standard and ad-hoc management reports, including for Risk Types or Focus Portfolios, which are used to monitor and control the risk profile.

Policies for hedging and mitigating risk (Article 435 (1)(d) CRR) (EU OVA)

The bank is utilizing a variety of risk mitigation techniques to manage financial and non-financial risk exposures. More detailed risk type specific considerations can be found in following chapters.

Declaration on the adequacy of risk management arrangements (Article 435 (1)(e) CRR) (EU OVA)

Our Management Board confirms, for the purpose of Article 435 CRR, that our risk management arrangements are adequate with regard to our risk profile and strategy, and maintains appropriate resources to implement selected enhancements.

Concise risk statement approved by the board (Article 435 (1)(f) CRR) (EU OVA & EU LIQA)

Our Management Board approves, for the purpose of Article 435 CRR, this concise risk statement succinctly describing the institution's overall risk profile associated with the business strategy.

Our business model inherently involves taking risks. Risk types as reflected in our risk type taxonomy include credit risk, market risk, liquidity risk, enterprise risk (including capital, strategic, portfolio concentration, climate & environmental, social and governance risks), model risk, reputational risk and operational risk.

The risk management framework aims to align our planned and actual risk taking with our risk appetite as expressed by the Management Board, while being in line with our available capital and liquidity. Our risk management framework consists of various components including risk governance, risk organization, risk culture, risk appetite, strategy & planning, risk identification & assessment, mitigation & controls, risk measurement & reporting, stress planning & execution.

Risk appetite is an integral element in our business planning processes via our risk strategy and plan, to promote the appropriate alignment of risk, capital and performance targets, while at the same time considering risk capacity and appetite constraints from both financial and non-financial risks. Compliance of the plan with our risk appetite and capacity is also tested under stressed market conditions. Top-down risk appetite serves as the limit for risk-taking for the bottom-up planning from the business functions.

The table below shows the risk profile of our business divisions as measured by economic capital calculated for credit, market, operational and strategic risk.

Risk profile of our business divisions as measured by economic capital

								Dec 31, 2021
in € m. (unless stated otherwise)	Corporate Bank	Investment Bank	Private Bank	Asset Management	Capital Release Unit	Corporate & Other	Total	Total (in %)
Credit risk	2,984	4,869	2,519	60	376	917	11,725	50
Market risk	306	2,094	570	83	140	4,728	7,920	34
Operational risk	446	2,002	602	269	1,619	0	4,937	21
Strategic risk[1]	242	10	32	0	1	2,888	3,173	13
Diversification benefit[2]	(478)	(1,533)	(540)	(145)	(826)	(693)	(4,213)	(18)
Total EC	3,500	7,442	3,183	267	1,309	7,840	23,542	100
Total EC in %	15	32	14	1	6	33	100	N/M

N/M – Not meaningful
1 Formerly reported as business risk. This category includes the model output for strategic risk and tax risk, as well as capital charges for risk related to software assets and IFRS deferred tax assets on temporary differences.
2 Diversification benefit across credit, market, operational and strategic risk.

The Corporate Bank's risk profile is dominated by its Trade Finance, Commercial Banking and Cash Management products and services offered. Economic capital demand largely arises from credit risk and is predominantly driven by the Trade Finance and Commercial Clients businesses. The Investment Bank's risk profile is dominated by its trading activities to support origination, structuring and market making activities, which give rise to all major risk types. Credit risk in Investment Bank is broadly distributed across business units but most prominent in Global Credit Trading, Rates and Leveraged Debt Capital Markets. Market risk arises mainly from trading and market making activities. The remainder of Investment Bank's risk profile is largely derived from strategic risk reflecting earnings volatility risk. The Private Bank's risk profile comprises business with German retail, international retail and business clients as well as wealth management clients generating credit risks as well as non-trading market risks from investment risk, modelling of client deposits and credit spread risk. Asset Management, as a fiduciary asset manager, invests money on behalf of clients. As such, the main risk drivers are non-financial. The economic capital demand for market risk is mainly driven by non-trading market risk component, which arises on guarantee products and co-investments in the funds. Corporate & Other's risk profile mainly comprises non-trading market risk from structural foreign exchange risk, pension risk and equity compensation risk, as well as strategic risk from the tax risk model and capital charges related to software assets and IFRS deferred tax assets on temporary differences.

The table below shows the results of the Bank's stressed Net Liquidity Position (sNLP) under various scenarios. The sNLP is an internal liquidity risk management tool.

Global All Currency Daily Stress Testing Results

			Dec 31, 2021			Dec 31, 2020
in € bn.	Funding Gap[1]	Gap Closure[2]	Net Liquidity Position	Funding Gap[1]	Gap Closure[2]	Net Liquidity Position
Systemic market risk	100	220	119	82	189	107
1 notch downgrade (DB specific)	78	220	141	17	145	128
Severe downgrade (DB specific)	152	240	88	157	216	59
Combined[3]	195	243	48	177	220	43

1 Funding gap caused by impaired rollover of liabilities and other projected outflows.
2 Based on liquidity generation through Liquidity Reserves and other business mitigants.
3 Combined impact of systemic market risk and severe downgrade.

As part of the stress testing and scenario analysis the business portfolios are categorized under various Liquidity Risk Drivers (LRDs) and appropriate models are defined for each of the LRDs to arrive at the above results. The Corporate Bank and Private Bank are primarily loan and deposit businesses, which on a net basis generate liquidity for Deutsche Bank due to their surplus deposits in excess of their loan portfolios. This surplus liquidity is passed to Group Treasury. The Investment Bank by contrast is a net consumer of liquidity, predominantly due to its large loan and securities portfolios, and borrows from Group Treasury. The Investment Bank holds a portion of its liquid securities unencumbered as part of Deutsche Bank's liquidity reserves. The Capital Release Unit's liquidity consumption has reduced materially in 2021 due to the migration of the Prime Finance business to BNP Paribas. Group Treasury raises funding primarily from long-term debt issuance, participation in central bank money market operations (e.g. ECB TLTRO) as well as short-term wholesale deposits. Group Treasury holds Deutsche Bank's liquidity reserves in the form of Central Bank cash and a highly liquid unencumbered securities portfolio.

Additional key risk ratios and figures are included in EU KM1, EU KM2, EU OVC and the various risk type specific sections.

Information on capital and risk measurement is based on the principles of consolidation. Intragroup transactions and transactions with related parties do not have any material impact on the Group's capital risk profile. For the Bank's consolidated LCR, NSFR (Pillar 1) and sNLP (Pillar 2), available surplus that resides in entities with restriction to transfer liquidity to other group entities, for example due to regulatory lending requirements, is considered to be trapped and as such not counted in the calculation of the consolidated group liquidity surplus.

Risk committee and number of meetings (Article 435 (2)(d) CRR) (EU OVB)

Dedicated risk committees are in place both to support the Supervisory Board (the Risk Committee of the Supervisory Board) as well as the Management Board (the Group Risk Committee, “GRC”).

The Risk Committee of the Supervisory Board has held 7 meetings in 2021.

The Group Risk Committee has held 40 meetings in 2021.

Information flow (Article 435 (2)(e) CRR) (EU OVB)

Details on the information flow to Deutsche Bank's management body and senior risk committees can be found in chapter “Scope and nature of risk measurement and reporting systems (Article 435 (1)(c) CCR) (EU OVA)”.

Number of directorships held by board members (Article 435 (2)(a) CRR) (EU OVB)

The number of directorships held by members of the management board are listed below in the table:

Number of directorships

	Dec 31, 2021	
	Number of executive and non-executive directorships	Number of supervisory board directorships
Christian Sewing	0	0
Karl von Rohr	0	1[1]
Fabrizio Campelli	0	2
Bernd Leukert	0	2[2]
Stuart Lewis	0	0
James von Moltke	0	0
Alexander von zur Mühlen	0	0
Christiana Riley	1[1]	1
Rebecca Short	0	0
Stefan Simon	0	1

[1] within Deutsche Bank Group
[2] one mandate within Deutsche Bank Group

Recruitment policy for board members (Article 435 (2)(b) CRR) (EU OVB)

Together with the Management Board, the Supervisory Board arranges for a long-term succession planning: The Nomination Committee supports the Chairman’s Committee and the Supervisory Board in identifying candidates to fill a position on the bank’s Management Board. In doing so, the Committee prepares a position description with a candidate profile and states the expected time commitment. Suitable candidates are identified, in some cases in collaboration with external recruiting consultants, and structured interviews are conducted. Besides this external succession planning, the Management Board and Supervisory Board maintain a list of internal candidates. The Nomination Committee and the Supervisory Board regularly receive reports from the Management Board on the internal succession planning and the process from the perspective of the Management Board. For the selection of suitable candidates, external and internal, the Nomination Committee takes into account the balance and diversity of the knowledge, skills and experience of all members of the Management Board. It also seeks to foster diversity on the Management Board, for example, with regard to gender, nationality and age. Building on the work of the Nomination Committee, the Chairman’s Committee submits a recommendation for the Supervisory Board’s resolution. Based on this, the Supervisory Board decides on the appointment of Management Board members. Besides proposals for the appointment of members of the Management Board, the Chairman’s Committee also submits proposals for the dismissal of Management Board members. The decision on such dismissal is the Supervisory Board’s responsibility.

Policy on diversity for board members (Article 435 (2)(c) CRR) (EU OVB)

Goals for the proportion of women in management positions/gender quota

As of the date of this Corporate Governance Statement, the percentage of women on the Supervisory Board of Deutsche Bank AG is 30 %. The statutory minimum of 30 % pursuant to Section 96 (2) of the German Stock Corporation Act (AktG) is thereby fulfilled.

On July 27, 2017, the Supervisory Board set a goal off at least 20 % for the percentage of female members of the Management Board as of June 30, 2022. For a Management Board size of between eight and 12 members, this corresponds to two women. When the decision was made two women were members of the Management Board. At the end of the financial year and as of the date of this Statement, there are two women on the Management Board of Deutsche Bank AG, Christiana Riley and Rebecca Short.

In accordance with the legal framework conditions and based on the bank's own strategy on diversity and inclusion on May 4, 2021 the Management Board renewed its goals for the representation of women at the two management levels below the Management Board: These goals are now at least 30% at the first management level and at least 30% at the second management level below the Management Board, and are to be reached by December 31, 2025. These goals were also announced at the bank's Sustainability Deep Dive on May 20, 2021. Deutsche Bank believes that improved gender balance in leadership roles will meaningfully contribute to the bank's future success and hence set more ambitious goals.

The population of the first management level comprises Managing Directors and Directors who report directly to the Management Board and managers with comparable responsibilities. The population of the second management level comprises Managing Directors and Directors who report to the first management level.

Implementing German gender quota legislation at Deutsche Bank AG

in % (unless stated otherwise)	Status as of Dec 31, 2020	Status as of Dec 31, 2021	Target for Dec 31, 2020	Target for Jun 30, 2022
Women on the Supervisory Board	30.0 %	30.0 %	30.0 %	-
Women on the Management Board	10.0 %	20.0 %	-	20.0 %
First management level below the Management Board	20.0 %	20.0 %	20.0 %	-
Second management level below the Management Board	23.9 %	27.5 %	25.0 %	-

1 Legal requirement.
2 For a Management Board size of between eight and 12 members, this corresponds to two women.

As of December 31, 2021, the proportion of women is 20 % (2020: 20 %) in the first management level below the Management Board and 27,5 % (2020: 23,9 %) on the second management level below the Management Board.

Key conditions have changed since the target was set in September 2015 for the percentage of women on the two levels below the Management Board. These changes include the bank's transformation program approved in July 2019, as well as our decisions regarding the IPO of DWS and the merging of the DB Privat- and Firmenkundenbank AG into Deutsche Bank AG. Furthermore, our extensive cost reduction program imposed restrictions on hiring and appointments at these two levels. In fact, the already relatively low number of employees on the two levels below the Management Board declined further in the period since September 2015, by nearly 36 % (2020: 36 %). Small changes in absolute numbers led to relatively high fluctuations in terms of percentages.

While our commitment to increase representation of women in senior leadership positions is global our implementation is local. Each region, each business has its own diversity and inclusion needs because cultures and current social challenges differ from nation to nation and from business area to business area. However, the Management Board remains committed to these goals and focused initiatives are put in place to accelerate change. These initiatives impact on the full lifecycle of people spanning across Talent Attraction, Talent Development, Talent Retention and Promotion.

Within this framework, our decisions on promotions and appointments are aligned, in particular, to the suitability of the candidates for the respective roles, their demonstrated performance and their future potential. In line with our basic diversity concept, we also take into account the knowledge and skills required for the proper performance of tasks and the necessary experience of the employees for the composition of the two levels below the Management Board.

Diversity concept

As an integral part of our strategy as a leading European bank with a global reach and a strong home market in Germany, Diversity is a decisive factor for our success. Diversity & Inclusion help Deutsche Bank in forming sustainable relationships with our clients and partners and in taking part in the societies where we do business.

Age, gender as well as educational and professional backgrounds have long been accepted as key aspects of our far more comprehensive understanding of Diversity at Deutsche Bank.

We are convinced that Diversity & Inclusion stimulate innovation, for example, and help us to take more balanced decisions and thus play a decisive role for the success of Deutsche Bank. Diversity & Inclusion are therefore integral components of the bank's values and beliefs and its Code of Conduct.

The Supervisory Board and Management Board strive to and should serve as role models for the bank regarding Diversity & Inclusion. In accordance with our values and beliefs specified above, diversity in the composition of the Supervisory Board and the Management Board also facilitates the proper performance of the tasks and duties assigned to them by law, the Articles of Association and Terms of Reference.

Based on Deutsche Bank's understanding of Diversity & Inclusion, the values and beliefs and the measures described in the following for their implementation also apply – to the extent legally admissible – to the Supervisory Board and the Management Board of Deutsche Bank AG. The Supervisory Board considers diversity in the company, in particular, when filling positions on the Management Board and Supervisory Board.

On October 30, 2020, the Supervisory Board of Deutsche Bank AG updated the Suitability Guideline for selecting members of the Supervisory Board and Management Board of Deutsche Bank AG, which also continues to comprise diversity principles. This Suitability Guideline implements the "Guidelines on the assessment of the suitability of members of the management body and key function holders" issued jointly by the European Banking Authority and European Securities and Markets Authority.

Diversity concept and succession planning for the Management Board

Through the composition of the Management Board, it is to be ensured that its members have, at all times, the required knowledge, skills and experience necessary to properly perform their tasks. Accordingly, when selecting members for the Management Board, care is to be taken that they collectively have sufficient expertise and diversity within the meaning of our objectives specified above. Furthermore, the Supervisory Board and the Management Board should ensure long-term succession planning.

By way of resolution of the Supervisory Board, the Management Board should be composed of at least 20 % women by June 30, 2022. For a Management Board size of between eight and 12 members, this corresponds to two women.

In general, a Management Board member should not be older at the end of his or her appointment period than the regular retirement age according to the rules of the statutory pension insurance scheme applicable in Germany for the long-term insured to claim an early retirement pension.

Implementation

In accordance with the law, the Articles of Association and Terms of Reference, the Supervisory Board adopted candidate profiles for the members of the Management Board, based on a proposal from the Nomination Committee. These profiles take into account an "Expertise and Capability Matrix", specifying, among other things, the required knowledge, skills and experience to perform the tasks as Management Board member, in order to successfully develop and implement the bank's strategy in the respective market or the respective division and as a management body collectively. The Management Board reviews succession plans for Management Board positions, both individually and as a group. Successions plans are reviewed and succession candidates are discussed in detail based on potential, leadership, fit and proper suitability. As gender diversity is a key focus of Deutsche Bank respective succession metrics and data analytics support this process. After approval by the Management Board these plans are submitted to the Nomination Committee and the Supervisory Board in principle at a meeting for extensive deliberation.

In identifying candidates to fill a position on the bank's Management Board, the Supervisory Board's Nomination Committee takes into account the appropriate diversity balance of all Management Board members collectively. Furthermore, it also considers the targets set by the Supervisory Board in accordance with statutory requirements for the percentage of women on the Management Board.

The Nomination Committee supports the Supervisory Board with the periodic assessment, to be performed at least once a year, of the knowledge, skills and experience of the individual members of the Management Board and of the Management Board in its entirety.

Results achieved in the 2021 financial year

At the end of the financial year, the Management Board comprised two women (20 %) and nine men. The target of 20 % of the members or two women adopted for June 30, 2022 for the Management Board was met. As of the date of this Corporate Governance Statement, the Management Board of Deutsche Bank AG comprised two women and eight men.

The age structure is diverse, ranging from 43 to 56 years of age as of the date of this Corporate Governance Statement. As of the date of this Corporate Governance Statement the length of experience as member of the Management Board of Deutsche Bank ranged from under one year to around nine years.

Also with our strategy in mind of being a leading European bank with a global reach and a strong home market in Germany, six of the ten Management Board members as of the date of this Corporate Governance Statement have a German background. The other members of the Management Board come from Italy, the United Kingdom, New Zealand and the USA. However, the ethnic diversity of the Management Board does not currently reflect the full diversity of the markets where we do business or the diversity of our employees.

The diverse range of the members' educational and professional backgrounds includes banking, business administration, economics, law, linguistics and engineering.

The bank transparently reports on Management Board diversity in addition to the information presented above in this Corporate Governance Report in the section "Management Board and Supervisory Board:

Management Board" as well as on the bank's website: www.db.com (Heading "Corporate Governance", "Management Board").

Own funds

Own Funds composition, prudential filters and deduction items (Article 437 (a,d-f) CRR)

Development of Own Funds

Our Total Regulatory capital as of December 31, 2021 amounted to € 62.7 billion compared to € 61.1 billion at the end of June 30, 2021. Our Tier 1 capital as of December 31, 2021 amounted to € 55.4 billion, consisting of a Common Equity Tier 1 (CET 1) capital of € 46.5 billion and Additional Tier 1 (AT1) capital of € 8.9 billion. The Tier 1 capital was € 1.8 billion higher than at the end of June 30, 2021, driven by an increase in CET 1 capital of € 1.0 billion and an increase in AT1 capital of € 0.8 billion.

The CET 1 capital increase of € 1.0 billion was mainly the result of a release of regulatory capital deductions by € 0.7 billion following improvements in our valuation control framework in fourth quarter of 2021. Additional increases include the result of positive effects from Currency Translation Adjustments of € 0.7 billion net of foreign exchange counter-effects of capital deduction items. Furthermore our capital increased due to the increase in net profit by € 0.6 billion in the second half of 2021 which was partially offset by regulatory deductions for future common share dividend and AT1 coupon payments of € 0.3 billion which is in line with the ECB Decision (EU) (2015/656) on the recognition of interim or year-end profits in CET 1 capital in accordance with the Article 26(2) of Regulation (EU) No 575/2013 (ECB/2015/4).

These positive impacts were partly offset by negative effects from increased capital deduction of € 0.2 billion as per ECB's supervisory recommendation for prudential provisioning of non-performing exposures, application of a 10 % threshold related tax deduction of € 0.2 billion, increased regulatory adjustments from prudential filters of € 0.1 billion (additional value adjustments) due to exposure change, increased capital deduction from negative amounts resulting from the calculation of expected loss amounts of € 0.1 billion and unrealized loss from financial instruments at fair value through other comprehensive income of € 0.1 billion driven mainly by rising interest rates and widening credit spreads.

The AT1 capital increase of € 0.8 billion was mainly the result of a newly issued AT1 capital instrument with a notional amount of € 1.250 billion during the fourth quarter of 2021, partially offset by call and redemption of one legacy hybrid Tier 1 instrument, recognizable as AT1 capital during the transition period, with a notional amount of € 0.5 billion in the fourth quarter of 2021.

Our fully loaded Total Regulatory capital as of December 31, 2021 was € 62.1 billion, compared to € 60.0 billion at the end of June 30, 2021. Our fully loaded Tier 1 capital as of December 31, 2021 was € 54.8 billion, compared to € 52.5 billion at the end of June 30, 2021. Our fully loaded AT1 capital amounted to € 8.3 billion as per end of December 31, 2021 which increased by € 1.3 billion compared to June 30, 2021 due to the above-mentioned issuance. Our CET 1 capital amounted to € 46.5 billion as of December 31, 2021, compared to € 45.5 billion as of June 30, 2021.

EU CC1 – Composition of regulatory own funds

		Dec 31, 2021		Jun 30, 2021		
	in € m.	CRR/CRD fully-loaded[12]	CRR/CRD	CRR/CRD fully loaded[12]	CRR/CRD	Refe-rences[1]
	Common Equity Tier 1 (CET 1) capital: instruments and reserves					
1	Capital instruments, related share premium accounts and other reserves	45,864	45,864	45,723	45,723	A
	of which: Instrument type 1 (ordinary shares)[2]	45,864	45,864	45,723	45,723	A
	of which: Instrument type 2	0	0	0	0	
	of which: Instrument type 3	0	0	0	0	
2	Retained earnings	10,506	10,506	10,268	10,268	B
3	Accumulated other comprehensive income (loss), net of tax	(444)	(444)	(954)	(954)	C
3a	Funds for general banking risk	0	0	0	0	
4	Amount of qualifying items referred to in Art. 484 (3) and the related share premium accounts subject to phase-out from CET 1	N/M	0	N/M	0	
5	Minority interests (amount allowed in consolidated CET 1)	910	910	890	890	
5a	Independently reviewed interim profits net of any foreseeable charge or dividend[3]	1,379	1,379	1,151	1,151	B
6	Common Equity Tier 1 (CET 1) capital before regulatory adjustments	**58,215**	**58,215**	57,078	57,078	
	Common Equity Tier 1 (CET 1) capital: regulatory adjustments					
7	Additional value adjustments (negative amount)[4]	(1,812)	(1,812)	(1,720)	(1,720)	
8	Goodwill and other intangible assets (net of related tax liabilities) (negative amount)	(4,897)	(4,897)	(4,714)	(4,714)	D
10	Deferred tax assets that rely on future profitability excluding those arising from temporary differences (net of related tax liabilities where the conditions in Art. 38 (3) are met) (negative amount)	(1,466)	(1,466)	(1,527)	(1,527)	E
11	Fair value reserves related to gains or losses on cash flow hedges of financial instruments that are not valued at fair value	42	42	(13)	(13)	
12	Negative amounts resulting from the calculation of expected loss amounts	(573)	(573)	(490)	(490)	
13	Any increase in equity that results from securitized assets (negative amount)	(0)	(0)	(0)	(0)	
14	Gains or losses on liabilities designated at fair value resulting from changes in own credit standing[5]	(56)	(56)	(65)	(65)	
15	Defined benefit pension fund assets (net of related tax liabilities) (negative amount)	(991)	(991)	(884)	(884)	F
16	Direct, indirect and synthetic holdings by an institution of own CET 1 instruments (negative amount)[6]	0	0	0	0	
17	Direct, indirect and synthetic holdings of the CET 1 instruments of financial sector entities where those entities have reciprocal cross holdings with the institution designed to inflate artificially the own funds of the institution (negative amount)	0	0	0	0	
18	Direct, indirect and synthetic holdings by the institution of the CET 1 instruments of financial sector entities where the institution does not have a significant investment in those entities (amount above 10 % threshold and net of eligible short positions) (negative amount)[7]	0	0	0	0	
19	Direct, indirect and synthetic holdings by the institution of the CET 1 instruments of financial sector entities where the institution has a significant investment in those entities (amount above 10 % threshold and net of eligible short positions) (negative amount)	0	0	0	0	
20a	Exposure amount of the following items which qualify for a risk weight of 1,250 %, where the institution opts for the deduction alternative	0	0	0	0	
	of which:					
20b	Qualifying holdings outside the financial sector (negative amount)	0	0	0	0	
20c	Securitization positions (negative amount)	0	0	0	0	
20d	Free deliveries (negative amount)	0	0	0	0	
21	Deferred tax assets arising from temporary differences (amount above 10 % threshold, net of related tax liabilities where the conditions in Article 38 (3) are met) (negative amount)	(151)	(151)	0	0	E
22	Amount exceeding the 17.65 % threshold (negative amount)	0	0	0	0	
	of which:					
23	Direct, indirect and synthetic holdings by the institution of the CET 1 instruments of financial sector entities where the institution has a significant investment in those entities	0	0	0	0	
25	Deferred tax assets arising from temporary differences	0	0	0	0	E
25a	Losses for the current financial year (negative amount)	0	0	0	0	
25b	Foreseeable tax charges relating to CET 1 items except where the institution suitably adjusts the amount of CET 1 items insofar as such tax charges reduce the amount up to which those items may be used to cover risks or losses (negative amount)	0	0	0	0	
27	Qualifying AT1 deductions that exceed the AT1 items of the institution (negative amount)	0	0	0	0	

	in € m.	Dec 31, 2021 CRR/CRD fully-loaded[12]	Dec 31, 2021 CRR/CRD	Jun 30, 2021 CRR/CRD fully loaded[12]	Jun 30, 2021 CRR/CRD	References[1]
27a	Other regulatory adjustments (including IFRS 9 transitional adjustments when relevant)[8]	(1,805)	(1,805)	(2,188)	(2,188)	
28	Total regulatory adjustments to Common Equity Tier 1 (CET 1) capital	**(11,709)**	**(11,709)**	(11,602)	(11,602)	
29	Common Equity Tier 1 (CET 1) capital	**46,506**	**46,506**	45,476	45,476	
	Additional Tier 1 (AT1) capital: instruments					
30	Capital instruments and the related share premium accounts	8,328	8,328	7,078	7,078	G
	of which:					
31	Classified as equity under applicable accounting standards	8,328	8,328	7,078	7,078	G
32	Classified as liabilities under applicable accounting standards	0	0	0	0	
33	Amount of qualifying items referred to in Article 484 (4) and the related share premium accounts subject to phase out from AT1 as described in Article 486(3) of CRR	N/M	600	N/M	1,100	H
	of which:					
EU-33a	Amount of qualifying items referred to in Article 494a(1) subject to phase out from AT1	0	600	0	1,100	
EU-33b	Amount of qualifying items referred to in Article 494b(1) subject to phase out from AT1	0	0	0	0	
34	Qualifying Tier 1 capital included in consolidated AT1 capital issued by subsidiaries and held by third parties	0	0	0	0	
35	of which: instruments issued by subsidiaries subject to phase out	N/M	0	N/M	0	
36	Additional Tier 1 (AT1) capital before regulatory adjustments	**8,328**	**8,928**	7,078	8,178	
	Additional Tier 1 (AT1) capital: regulatory adjustments					
37	Direct, indirect and synthetic holdings by an institution of own AT1 instruments (negative amount)	(60)	(60)	(60)	(60)	G
38	Direct, indirect and synthetic holdings of the AT1 instruments of financial sector entities where those entities have reciprocal cross holdings with the institution designed to inflate artificially the own funds of the institution (negative amount)	0	0	0	0	
39	Direct, indirect and synthetic holdings of the AT1 instruments of financial sector entities where the institution does not have a significant investment in those entities (amount above the 10 % threshold and net of eligible short positions) (negative amount)[7]	0	0	0	0	
40	Direct, indirect and synthetic holdings by the institution of the AT1 instruments of financial sector entities where the institution has a significant investment in those entities (amount above the 10 % threshold net of eligible short positions) (negative amount)	0	0	0	0	
42	Qualifying T2 deductions that exceed the T2 items of the institution (negative amount)	0	0	0	0	
42a	of which: Other regulatory adjustments to AT1 capital	0	0	0	0	
43	Total regulatory adjustments to Additional Tier 1 (AT1) capital	**(60)**	**(60)**	(60)	(60)	
44	Additional Tier 1 (AT1) capital	**8,268**	**8,868**	7,018	8,118	
45	Tier 1 capital (T1 = CET 1 + AT1)	**54,775**	**55,375**	52,495	53,595	
	Tier 2 (T2) capital: instruments and provisions					
46	Capital instruments and the related share premium accounts[9]	7,402	7,402	7,575	7,575	I
47	Amount of qualifying items referred to in Article 484 (5) and the related share premium accounts subject to phase out from T2 as described in Article 486(4) of CRR	N/M	30	N/M	30	I
	of which:					
EU-47a	Amount of qualifying items referred to in Article 494a (2) subject to phase out from T2	0	0	0	0	
EU-47b	Amount of qualifying items referred to in Article 494b (2) subject to phase out from T2	0	30	0	30	
48	Qualifying own funds instruments included in consolidated T2 capital issued by subsidiaries and held by third parties	5	5	9	9	I
49	of which: instruments issued by subsidiaries subject to phase out	N/M	0	N/M	0	
50	Credit risk adjustments	0	0	0	0	
51	Tier 2 (T2) capital before regulatory adjustments	**7,408**	**7,438**	7,584	7,614	
	Tier 2 (T2) capital: regulatory adjustments					
52	Direct, indirect and synthetic holdings by an institution of own T2 instruments and subordinated loans (negative amount)	(80)	(80)	(80)	(80)	I
53	Direct, indirect and synthetic holdings of the T2 instruments and subordinated loans of financial sector entities where those entities have reciprocal cross holdings with the institution designed to inflate artificially the own funds of the institution (negative amount)	0	0	0	0	

	in € m.	Dec 31, 2021		Jun 30, 2021		
		CRR/CRD fully-loaded[12]	CRR/CRD	CRR/CRD fully loaded[12]	CRR/CRD	Refe-rences[1]
54	Direct, indirect and synthetic holdings of the T2 instruments and subordinated loans of financial sector entities where the institution does not have a significant investment in those entities (amount above 10 % threshold and net of eligible short positions) (negative amount)[7]	0	0	0	0	
55	Direct, indirect and synthetic holdings by the institution of the T2 instruments and subordinated loans of financial sector entities where the institution has a significant investment in those entities (net of eligible short positions) (negative amount)	0	0	0	0	
56a	Qualifying eligible liabilities deductions that exceed the eligible liabilities items of the institution (negative amount)	0	0	0	0	
56b	Other regulatory adjustments to T2 capital	0	0	0	0	
57	Total regulatory adjustments to Tier 2 (T2) capital	**(80)**	**(80)**	(80)	(80)	
58	Tier 2 (T2) capital	**7,328**	**7,358**	7,504	7,534	
59	Total capital (TC = T1 + T2)	**62,102**	**62,732**	59,998	61,128	
60	Total risk-weighted assets	**351,629**	**351,629**	344,945	344,945	
	Capital ratios and buffers					
61	Common Equity Tier 1 capital ratio (as a percentage of risk-weighted assets)	13.2	13.2	13.2	13.2	
62	Tier 1 capital ratio (as a percentage of risk-weighted assets)	15.6	15.7	15.2	15.5	
63	Total capital ratio (as a percentage of risk-weighted assets)	17.7	17.8	17.4	17.7	
64	Institution CET 1 overall capital requirement (CET 1 requirement in accordance with article 92 (1) of Regulation (EU) No 575/2013, plus additional CET 1 requirement which the institution is required to hold in accordance with Article 104(1)(a) of Directive 2013/36/EU, plus combined buffer requirement in accordance with Article 128(6) of Directive 2013/36/EU) expressed as a percentage of risk exposure amount)[10]	10.4	10.4	10.4	10.4	
	of which:					
65	Capital conservation buffer requirement	2.5	2.5	2.5	2.5	
66	Countercyclical buffer requirement	0.03	0.03	0.02	0.02	
67	Systemic risk buffer requirement	0.0	0.0	0.0	0.0	
67a	Global Systemically Important Institution (G-SII) or Other Systemically Important Institution (O-SII) buffer	2.0	2.0	2.0	2.0	
67b	additional own funds requirements to address the risks other than the risk of excessive leverage	1.4	1.4	1.4	1.4	
68	Common Equity Tier 1 capital available to meet buffers (as a percentage of risk-weighted assets)[11]	7.2	7.3	6.9	7.2	
	Amounts below the thresholds for deduction (before risk weighting)					
72	Direct, indirect and synthetic holdings of the capital of financial sector entities where the institution does not have a significant investment in those entities (amount below 10 % threshold and net of eligible short positions)[7]	2,847	2,847	2,827	2,827	
73	Direct, indirect and synthetic holdings by the institution of the CET 1 instruments of financial sector entities where the institution has a significant investment in those entities (amount below 10 % threshold and net of eligible short positions)	878	878	911	911	
75	Deferred tax assets arising from temporary differences (amount below 10 % threshold, net of related tax liability where the conditions in Article 38 (3) CRR are met)	4,846	4,846	4,535	4,535	
	Applicable caps on the inclusion of provisions in Tier 2 capital					
76	Credit risk adjustments included in T2 in respect of exposures subject to standardized approach (prior to the application of the cap)	0	0	0	0	
77	Cap on inclusion of credit risk adjustments in T2 under standardized approach	256	256	266	266	
78	Credit risk adjustments included in T2 in respect of exposures subject to internal ratings-based approach (prior to the application of the cap)	0	0	0	0	
79	Cap for inclusion of credit risk adjustments in T2 under internal ratings-based approach	1,240	1,240	1,171	1,171	
	Capital instruments subject to phase-out arrangements					
80	Current cap on CET 1 instruments subject to phase out arrangements	N/M	0	N/M	0	
81	Amount excluded from CET 1 due to cap (excess over cap after redemptions and maturities)	N/M	0	N/M	0	
82	Current cap on AT1 instruments subject to phase out arrangements	N/M	1,253	N/M	1,253	
83	Amount excluded from AT1 due to cap (excess over cap after redemptions and maturities)	N/M	0	N/M	0	
84	Current cap on T2 instruments subject to phase out arrangements	N/M	338	N/M	338	
85	Amount excluded from T2 due to cap (excess over cap after redemptions and maturities)	N/M	0	N/M	0	

N/M – Not meaningful

[1] References provide the mapping of regulatory balance sheet items used to calculate regulatory capital as reflected in the column "References" in the section "EU LI1 - Differences between accounting and regulatory scope of consolidation and the mapping of financial statement categories with regulatory risk categories" and "EU CC2 - Reconciliation of regulatory own funds to balance sheet in the audited financial statements". Where applicable, more detailed information is provided in the respective reference footnote section.
[2] Based on EBA list as referred to in Article 26 (3) CRR.
[3] Full year profit is recognized as per ECB Decision (EU) 2015/656 in accordance with the Article 26(2) of Regulation (EU) No 575/2013 (ECB/2015/4).
[4] The € 1.8 billion (June 2021: € 1.7 billion) additional value adjustments were derived from the EBA Regulatory Technical Standard on prudent valuation and are before consideration of a benefit from the related reduction of the shortfall of provisions to expected losses of € 0.1 billion (June 2021: € 0.1 billion).
[5] Gains and losses on liabilities of the institution that are valued at fair value that result from changes in the own credit standing of the institution according to Article 33 (1) (b) CRR as well as fair value gains and losses on derivative liabilities of the institution that result from changes in the own credit risk of the institution according to Article 33 (1) (c) CRR.
[6] Excludes holdings that are already considered in the accounting base of Common Equity.
[7] Based on our current interpretation no deduction amount expected.
[8] Includes capital deductions of 1.1 billion (June 2021: € 1.0 billion) based on ECB guidance on irrevocable payment commitments related to the Single Resolution Fund and the Deposit Guarantee Scheme, € 0.7 billion (June 2021: € 0.5 billion) based on ECB's supervisory recommendation for a prudential provisioning of non-performing exposures, € 17 million (June 2021: € 18 million) resulting from minimum value commitments as per Article 36 (1)(n) of the CRR and CET 1 increase of € 39 million (June 2021: € 29 million) from IFRS 9 transitional provision as per Article 473a of the CRR. Capital deductions of € 0.7 billion, based on regular ECB review, included at June 2021, have been released as of December 31, 2021.
[9] Amortization is taken into account.
[10] Includes CET1 Pillar 2 Requirement.
[11] Calculated as the CET1 Capital less the institution's CET1 capital requirements in accordance with article 92(1)(a) of Regulation (EU) No 575/2013 and following Article 104(1)(a) of Directive 2013/36/EU, and less any Common Equity Tier 1 items used by the institution to meet its additional Tier 1 and T2 capital requirements. June 2021 numbers have been restated accordingly.
[12] For our understanding of the term "fully-loaded" please refer to our definition as provided in section "Basel 3 and CRR/CRD" of this report.

[A] Common shares, additional paid-in capital and common shares in treasury reflect regulatory eligible CET 1 capital instruments.
[B] The position retained earnings in the regulatory balance sheet includes net income (loss) attributable to Deutsche Bank shareholders and additional equity components of € 2,365 million (June 2021: € 1,796 million). This item is excluded from the position retained earnings in the Own funds template (incl. RWA and capital ratios) and shown separately along with accrual for dividend and AT1 coupons of € (987) million (June 2021: € (646) million) in the position independently reviewed interim profits net of any foreseeable charge or dividend.
[C] Difference to regulatory balance sheet position driven by prudential filters for unrealized gains and losses.
[D] Regulatory applicable amount is goodwill and other intangible assets of € 6,824 million (June 2021: € 6,659 million) plus goodwill from equity method investments of € 78 million (June 2021: € 75 million) as per regulatory balance sheet reduced by deferred tax liabilities on other intangibles of € 423 million (June 2021: € 402 million) and prudent software assets as per Art. 36 (1) (b) CRR of € 1,581 million (June 2021: € 1,618 million).
[E] Differences to balance sheet position mainly driven by adjustments as set out in Article 38 (2) to (5) CRR (e.g. regulatory offsetting requirements).
[F] Regulatory applicable amount is defined benefit pension fund assets of € 1,209 million (June 2021: € 1,055 million) reduced by deferred tax liabilities on defined benefit pension fund assets of € 218 million (June 2021: € 171 million).
[G] Additional equity components reflects regulatory eligible AT1 capital instruments.
[H] Difference to regulatory balance sheet driven by regulatory adjustments as set out in Articles 51 to 61 CRR (e.g. current cap on AT1 instruments subject to phase-out arrangements).
[I] Difference to regulatory balance sheet driven by regulatory adjustments as set out in Articles 62 to 71 CRR (e.g. amortization, minority interest).

Reconciliation of shareholders' equity to Own Funds

in € m.	Dec 31, 2021	Jun 30, 2021
Total shareholders' equity per accounting balance sheet	**58,027**	56,569
Deconsolidation/Consolidation of entities	265	265
of which:		
Additional paid-in capital	0	0
Retained earnings	265	265
Accumulated other comprehensive income (loss), net of tax	0	0
Total shareholders' equity per regulatory balance sheet	**58,292**	56,834
Minority Interests (amount allowed in consolidated CET 1)	910	890
AT1 coupon and shareholder dividend deduction[1]	(987)	(646)
Common Equity Tier 1 (CET 1) capital before regulatory adjustments	**58,215**	57,078
Prudential filters	(1,825)	(1,799)
of which:		
Additional value adjustments	(1,812)	(1,720)
Any increase in equity that results from securitized assets	(0)	(0)
Fair value reserves related to gains or losses on cash flow hedges and gains or losses on liabilities designated at fair value resulting from changes in own credit standing	(14)	(79)
Regulatory adjustments	(9,884)	(9,803)
of which:		
Goodwill and other intangible assets (net of related tax liabilities) (negative amount)	(4,897)	(4,714)
Deferred tax assets that rely on future profitability	(1,617)	(1,527)
Negative amounts resulting from the calculation of expected loss amounts	(573)	(490)
Defined benefit pension fund assets (net of related tax liabilities) (negative amount)	(991)	(884)
Direct, indirect and synthetic holdings by the institution of the CET 1 instruments of financial sector entities where the institution has a significant investment in those entities	0	0
Other[2]	(1,805)	(2,188)
Common Equity Tier 1 capital	**46,506**	45,476
Additional Tier 1 capital	**8,868**	8,118
Additional Tier 1 Notes (AT1 Notes)	8,268	7,018
Per balance sheet	8,305	7,068
Deconsolidation/Consolidation of entities	0	0
Regulatory adjustments to balance sheet position	(37)	(49)
Hybrid capital securities	600	1,100
Per balance sheet	528	1,044
Deconsolidation/Consolidation of entities	0	0
Regulatory adjustments to balance sheet position	72	56
Other regulatory adjustments	0	0
Deductions from Additional Tier 1 capital	0	0
Tier 1 capital	**55,375**	53,595
Tier 2 capital	**7,358**	7,534
Subordinated debt	7,358	7,534
Per balance sheet	8,896	8,740
Deconsolidation/Consolidation of entities	0	0
Regulatory adjustments to balance sheet position	(1,538)	(1,207)
of which:		
Amortization according to Art. 64 CRR	(1,221)	(830)
Other	(318)	(377)
Other regulatory adjustments	0	0
Deductions from Tier 2 capital	0	0
Total capital	**62,732**	61,128

1 Full year profit is recognized as per ECB Decision (EU) 2015/656 in accordance with the Article 26(2) of Regulation (EU) No 575/2013 (ECB/2015/4).
2 Includes capital deductions of 1.1 billion (June 2021: € 1.0 billion) based on ECB guidance on irrevocable payment commitments related to the Single Resolution Fund and the Deposit Guarantee Scheme, € 0.7 billion (June 2021: € 0.5 billion) based on ECB's supervisory recommendation for a prudential provisioning of non-performing exposures, € 17 million (June 2021: € 18 million) resulting from minimum value commitments as per Article 36 (1)(n) of the CRR and CET 1 increase of € 39 million (June 2021: € 29 million) from IFRS 9 transitional provision as per Article 473a of the CRR. Capital deductions of € 0.7 billion, based on regular ECB review, included at June 2021, have been released as of December 31, 2021.

Development of Own Funds

in € m.	six months ended Dec 31, 2021	six months ended Jun 30, 2021
Common Equity Tier 1 (CET 1) capital - opening amount	**45,476**	44,885
Common shares, net effect	0	0
of which:		
New shares issued (+)	0	0
Shares retired (–)	0	0
Additional paid-in capital	119	(145)
Retained earnings	807	2,028
of which:		
Actuarial gains (losses) rel. to defined benefit plans, net of tax and Currency Translation Adjustment (CTA)	238	355
Net income attributable to Deutsche Bank Shareholders	569	1,796
Common shares in treasury, net effect/(+) sales (–) purchase	22	(21)
Movements in accumulated other comprehensive income	510	164
of which:		
Foreign currency translation, net of tax	653	475
Unrealized gains and losses	(103)	(305)
Other	(40)	(6)
AT1 coupon and shareholder dividend deduction[1]	(341)	(646)
of which:		
Gross dividends (deduction)	(114)	(575)
Shares issued in lieu of dividends (add back)	0	0
Gross AT1 coupons (deduction)	(227)	(70)
Additional value adjustments	(91)	(290)
Goodwill and other intangible assets (net of related tax liabilities) (negative amount)	(183)	(79)
Deferred tax assets that rely on future profitability (excluding those arising from temporary differences)	61	(174)
Negative amounts resulting from the calculation of expected loss amounts	(83)	(391)
Removal of gains/losses resulting from changes in own credit standing in liabilities designated at fair value (net of tax)	10	35
Defined benefit pension fund assets (net of related tax liabilities) (negative amount)	(108)	(111)
Direct, indirect and synthetic holdings by the institution of the CET 1 instruments of financial sector entities where the institution has a significant investment in those entities	0	0
Securitization positions not included in risk-weighted assets	0	0
Deferred tax assets arising from temporary differences (amount above 10 % and 15 % threshold, net of related tax liabilities where the conditions in Art. 38 (3) CRR are met)	(151)	75
Other, including regulatory adjustments	459	147
Common Equity Tier 1 (CET 1) capital - closing amount	**46,506**	45,476
Additional Tier 1 (AT1) capital - opening amount	**8,118**	6,848
New Additional Tier 1 eligible capital issues	1,243	1,240
Matured and called instruments	(500)	0
Transitional arrangements	0	0
of which:		
Amount excluded from Additional Tier 1 capital due to cap	0	0
Goodwill and other intangible assets (net of related tax liabilities)	0	0
Negative amounts resulting from the calculation of expected loss amounts	0	0
Direct, indirect and synthetic holdings by the institution of the CET 1 instruments of financial sector entities where the institution has a significant investment in those entities	0	0
Other, including regulatory adjustments	7	30
Additional Tier 1 (AT1) capital - closing amount	**8,868**	8,118
Tier 1 capital (T1 = CET 1 + AT1)	**55,375**	53,595
Tier 2 (T2) capital - opening amount	**7,534**	6,944
New Tier 2 eligible capital issues	0	1,030
Matured and called instruments	0	(286)
Amortization adjustments	(391)	(312)
Transitional arrangements	0	0
of which:		
Inclusion of amount excluded from Additional Tier 1 capital due to cap	0	0
Amount to be deducted from or added to Additional Tier 2 capital with regard to additional filters and deductions required pre-CRR	0	0
Negative amounts resulting from the calculation of expected loss amounts	0	0
Direct, indirect and synthetic holdings by the institution of the CET 1 instruments of financial sector entities where the institution has a significant investment in those entities	0	0
Other, including regulatory adjustments	215	158
Tier 2 (T2) capital - closing amount	**7,358**	7,534
Total regulatory capital (TC = T1 + T2)	**62,732**	61,128

[1] Full year profit is recognized as per ECB Decision (EU) 2015/656 in accordance with the Article 26(2) of Regulation (EU) No 575/2013 (ECB/2015/4).

Transitional arrangements for mitigating the impact of the introduction of IFRS 9 on own funds (Article 473a CRR)

As of June 30, 2020, we applied the transitional arrangements in relation to IFRS 9 as provided in Article 473a CRR to all of our CET 1 measures. The CRR allowed for a phase-in of the CET 1 reduction due to the increase in credit loss allowance, as a result of the implementation of IFRS 9, over a five year period until year end 2022. The transitional provisions were structured such that there is a static component relating to increases of credit loss allowance observed as of January 2018 and a dynamic component relating to credit loss allowance increases observed between January 2018 and the current reporting date.

As per the CRR amendment published on June 26, 2020 the transitional provisions have been modified such that the dynamic component is reset, i.e. it separately covers the periods from January 1, 2018 to January 1, 2020 and the period from January 1, 2020 to the current reporting date, the phase-in period is extended until 2024, and the phase-in percentages are modified.

In addition, the CRR amendment simplifies the implementation of the transitional provisions as the requirement to recalculate the exposure at default (EAD) for each individual credit risk standardized approach (CRSA) exposure taking into account the amounts added back to CET 1 no longer applies. Instead, an additional credit risk RWA amount equal to 100 % times the credit loss allowance for the CRSA portfolio that has not reduced CET 1 due to the application of the transitional provisions is determined. The same amount is included in the leverage exposure. We do make use of this simplification in our application of transitional provisions.

The capital add back as of December 31, 2021 of € 38.8 million is only driven by the static component solely stemming from the CRSA portfolio due to the increase in credit loss allowances for the CRSA portfolio at transition from IAS 39 to IFRS 9 at the end of 2017 and beginning of 2018. There was no contribution from the IRBA portfolios, given the regulatory expected loss exceeded IFRS 9 Credit Loss Allowances for the relevant reporting dates.

There is no contribution from the dynamic component for both CRSA and IRBA portfolios which compares credit loss allowance levels between January 1, 2018 and the reporting date. This is due to a reduction in credit loss allowance levels in aforementioned period for the CRSA portfolio and the regulatory expected loss exceeding the credit loss allowance levels for the IRBA portfolio.

The impact of the € 38.8 million capital add back as of December 31, 2021 on our CET 1, Tier 1 and Total Capital as well as risk weighted assets and leverage exposure did not lead to a material change of the related ratios. Template 'IFRS 9-FL: Comparison of institutions' own funds and capital and leverage ratios with and without the application of transitional arrangements for IFRS 9 or analogous ECLs" is not being disclosed due to immateriality.

Temporary treatment of unrealized gains and losses measured at fair value through other comprehensive income (Article 468 CRR)

Deutsche Bank choose not to apply the new Article 468 of CRR 'quick fix' which relates to the temporary treatment of unrealized gains and losses measured at fair value through other comprehensive income in view of the COVID-19 pandemic.

Main features of capital instruments (Article 437 (b-c) CRR)

A description of the main features of the Common Equity Tier 1, Additional Tier 1 and Tier 2 capital instruments issued by Deutsche Bank is published on Deutsche Bank's website (db.com/ir/en/capital-instruments.htm). In addition, this website provides full terms and conditions of all Common Equity Tier 1, Additional Tier 1 and Tier 2 capital instruments to the extent that these do not constitute private placements and are treated confidentially.

Capital ratios different to CRR (Article 437 (f) CRR)

The own funds capital ratios provided for Deutsche Bank Group are built upon the CRR regulations.

Capital buffers (Article 440 CRR)

Minimum capital requirements and additional capital buffers

The Pillar 1 CET 1 minimum capital requirement applicable to the Group is 4.50 % of risk-weighted assets (RWA). The Pillar 1 total capital requirement of 8.00 % demands further resources that may be met with up to 1.50 % Additional Tier 1 capital and up to 2.00 % Tier 2 capital.

Failure to meet minimum capital requirements can result in supervisory measures such as restrictions of profit distributions or limitations on certain businesses such as lending. We complied with the minimum regulatory capital adequacy requirements in 2021.

In addition to these minimum capital requirements, the following combined capital buffer requirements were fully effective beginning 2021 onwards. These buffer requirements must be met in addition to the Pillar 1 minimum capital requirements, but can be drawn down in times of economic stress.

The capital conservation buffer is implemented in Section 10c German Banking Act, based on Article 129 CRD and equals a requirement of 2.50 % CET 1 capital of RWA in 2021 and onwards.

The countercyclical capital buffer is deployed in a jurisdiction when excess credit growth is associated with an increase in system-wide risk. It may vary between 0 % and 2.50 % CET 1 capital of RWA by 2022. In exceptional cases, it could also be higher than 2.50 %. The institution-specific countercyclical buffer that applies to Deutsche Bank is the weighted average of the countercyclical capital buffers that apply in the jurisdictions where our relevant credit exposures are located. As per December 31, 2021, the institution-specific countercyclical capital buffer was at 0.03 %.

In addition to the aforementioned buffers, national authorities, such as the BaFin, may require a systemic risk buffer to prevent and mitigate long-term non-cyclical systemic or macro-prudential risks that are not covered by the CRR. They can require an additional buffer of up to 5.00 % CET 1 capital of RWA. As of the year-end 2021, no systemic risk buffer applied to Deutsche Bank.

Deutsche Bank continues to be designated as a global systemically important institution (G-SII) by the German Federal Financial Supervisory Authority (BaFin) in agreement with the Deutsche Bundesbank, resulting in a G-SII buffer requirement of 1.50 % CET 1 capital of RWA in 2021 based on the indicators as published in 2019. This assessment has been confirmed by the FSB in 2020 and 2021. We will continue to publish our indicators on our website.

Additionally, Deutsche Bank AG has been classified by BaFin in agreement with the Deutsche Bundesbank as an "other systemically important institution" (O-SII) with an additional capital buffer requirement of 2.00 % in 2021 that has to be met on a consolidated level. Hence, for Deutsche Bank, the O-SII buffer amounts to 2.00 % in 2021. The higher of the buffers for systemically important institutions (G-SII buffer or O-SII buffer) must be applied.

In addition, pursuant to the Pillar 2 Supervisory Review and Evaluation Process (SREP), the European Central Bank (ECB) may impose capital requirements on individual banks which are more stringent than statutory requirements (so-called Pillar 2 requirement).

On December 9, 2019, Deutsche Bank was informed by the ECB of its decision regarding prudential minimum capital requirements for 2020 that applied from January 1, 2020 onwards, following the results of the 2019 SREP. The decision set ECB's Pillar 2 requirement (P2R) to 2.50 % of RWA, effective as of January 1, 2020. As of December 31, 2021, Deutsche Bank needs to maintain on a consolidated basis a CET 1 ratio of at least 10.43 %, a Tier 1 ratio of at least 12.40 % and a Total Capital ratio of at least 15.03 %. The CET 1 requirement comprises the Pillar 1 minimum capital requirement of 4.50 %, the Pillar 2 requirement (SREP add-on) of 1.41 %, the capital conservation buffer of 2.50 %, the countercyclical buffer (subject to changes throughout the year) of 0.03 % and the higher of our G-SII/O-SII buffer of 2.00 %. Correspondingly, the Tier 1 capital requirement includes additionally a Tier 1 minimum capital requirement of 1.50 % plus a Pillar 2 requirement of 0.47 %, and the Total Capital requirement includes further a Tier 2 minimum capital requirement of 2.00 % and a Pillar 2 requirement of 0.63 %. Also, the ECB communicated to Deutsche Bank that its individual expectation to hold a further Pillar 2 CET 1 capital add-on, commonly referred to as 'Pillar 2 guidance' will be seen as guidance only and – until at least year-end 2022 – a breach of this guidance will not trigger the need to provide a capital restoration plan or a need to execute measures to re-build CET 1 capital.

In February 2022, the ECB informed us of its decision effective 1 March 2022 that our Pillar 2 requirement remains unchanged. In 2021, Deutsche Bank has participated in the EBA Stress Test 2021 which was postponed from 2020 due to the COVID-19 pandemic. By its standard procedures, the ECB has considered our quantitative performance in the adverse scenario as an input when reconsidering the level of the Pillar 2 guidance in its 2021 SREP assessment and our qualitative performance as one aspect when holistically reviewing the Pillar 2 requirement.

In January 2022, BaFin announced a countercyclical buffer of 0.75 % for Germany effective February 1, 2023, which translates into approximately 30 bps CET1 capital requirement for Deutsche Bank Group given our current share of German credit exposures. Additionally, BaFin is considering a sectoral systemic risk buffer of 2 % for German residential real estate exposures effective February 1, 2023. If implemented as considered, this sectoral buffer could increase the CET1 capital requirement for Deutsche Bank Group by approximately 20 bps, considering our current German residential real estate exposure.

The following table gives an overview of the different Pillar 1 and Pillar 2 minimum capital requirements (but excluding the Pillar 2 guidance) as well as capital buffer requirements applicable to Deutsche Bank for years 2021 and 2022.

Overview total capital requirements and capital buffers

	2021	2022
Pillar 1		
Minimum CET 1 requirement	4.50 %	4.50 %
Combined buffer requirement	4.53 %	4.53 %
Capital Conservation Buffer	2.50 %	2.50 %
Countercyclical Buffer	0.03 %	0.03 %[1]
Systemic Risk Buffer	0.00 %	0.00 %[2]
Maximum of:	2.00 %	2.00 %
G-SII Buffer	1.50 %	1.50 %
O-SII Buffer	2.00 %	2.00 %
Pillar 2		
Pillar 2 SREP Add-on of CET 1 capital	2.50 %	2.50 %
of which covered by CET 1 capital	1.41 %	1.41 %
of which covered by Tier 1 capital	1.88 %	1.88 %
of which covered by Tier 2 capital	0.63 %	0.63 %
Total CET 1 requirement from Pillar 1 and 2[3]	10.43 %	10.43 %
Total Tier 1 requirement from Pillar 1 and 2	12.40 %	12.40 %
Total capital requirement from Pillar 1 and 2	15.03 %	15.03 %

1 Deutsche Bank's countercyclical buffer requirement is subject to country-specific buffer rates decreed by EBA and the Basel Committee of Banking Supervision (BCBS) as well as Deutsche Bank's relevant credit exposures as per respective reporting date. The countercyclical buffer rate for 2022 has been assumed to be 0.03 % as per beginning of the year 2022. The countercyclical buffer is subject to changes throughout the year depending on its constituents.
2 The systemic risk buffer has been assumed to remain at 0 % for the projected year 2022, subject to changes based on further directives.
3 The total Pillar 1 and Pillar 2 CET 1 requirement (excluding the "Pillar 2" guidance) is calculated as the sum of the SREP requirement, the systemic risk buffer requirement, the capital conservation buffer requirement and countercyclical buffer requirement as well as the higher of the G-SII, O-SII.

Geographical distribution of credit exposures (Article 440 (a) CRR)

The following tables disclose the amount of the institution's specific countercyclical buffer as well as the geographical distribution of credit exposures relevant for its calculation in the standard format as set out in Commission Delegated Regulation (EU) 2015/1555. The geographical split table shows countries on an individual basis if they impose a countercyclical capital buffer rate or their total own funds requirements exceed € 20 million. The values for the remaining countries are shown as "Other".

Countercyclical capital buffer rates are determined by Basel Committee member jurisdictions. Countercyclical capital buffer varies according to a percentage of risk weighted assets. The "General credit exposures" include only credit exposures to the private sector. Exposures to the public sector and to institutions are not in scope. The "Trading book exposures" contain market risk standardized approach non-securitization and trading book securitization positions as well as the IRC ("Incremental Risk Charge").

EU CCyB1 - Geographical distribution of credit exposures relevant for the calculation of the countercyclical capital buffer

Dec 31,2021

	General credit exposures		Relevant credit exposures – Market risk				Own funds requirements						
in € m.	Exposure value for SA	Exposure value for IRB	Sum of long and short positions of trading book exposures for SA	Value of trading book exposures for Internal models	Securitisation exposures Exposure value for non-trading book	Total exposure value	Relevant credit risk exposures - Credit risk	Relevant credit exposures – Market risk	Relevant credit exposures – Securitisation positions in the non-trading book	Total	Risk-weighted exposure amounts	Own fund requirements weights (%)	Countercyclical buffer rate (%)
Australia	94	4,079	318	0	1,716	6,208	135	15	19	170	2,120	0.83	0.00
Austria	25	1,362	0	0	0	1,388	37	2	0	39	484	0.19	0.00
Bahrain	185	63	0	0	0	248	22	0	0	22	269	0.11	0.00
Belgium	71	2,151	0	0	30	2,252	54	3	0	57	713	0.28	0.00
Bermuda	33	1,130	1	0	167	1,331	65	2	2	69	861	0.34	0.00
Brazil	15	797	0	304	0	1,116	35	17	0	52	653	0.26	0.00
British Virgin Islands	92	7,651	0	6	0	7,748	77	0	0	77	962	0.38	0.00
Bulgaria	0	21	0	1	0	22	1	0	0	1	7	0.00	0.50
Canada	147	1,682	0	0	526	2,355	78	0	6	84	1,050	0.41	0.00
Cayman Islands	340	7,578	2	24	626	8,571	334	3	8	345	4,309	1.68	0.00
China	80	6,489	0	554	0	7,122	298	25	0	323	4,040	1.58	0.00
Colombia	3	349	0	12	0	364	20	1	0	21	265	0.10	0.00
Czech Republic	13	215	0	0	0	228	6	0	0	6	81	0.03	0.50
Denmark	33	1,351	0	0	0	1,384	53	0	0	53	663	0.26	0.00
France	147	8,270	9	0	619	9,044	250	5	8	262	3,276	1.28	0.00
Germany	9,964	278,389	14	0	3,899	292,267	7,957	6	80	8,043	100,539	39.27	0.00
Ghana	0	483	0	1	0	484	30	0	0	30	372	0.15	0.00
Hong Kong	172	4,088	0	255	0	4,516	155	3	0	159	1,982	0.77	1.00
India	2,299	7,385	0	320	3,081	13,086	442	21	63	526	6,576	2.57	0.00
Indonesia	65	1,225	0	366	0	1,657	51	12	0	63	783	0.31	0.00
Ireland	528	6,015	31	41	3,249	9,863	200	15	107	322	4,025	1.57	0.00
Israel	4	920	0	348	0	1,272	153	14	0	167	2,093	0.82	0.00
Italy (incl. San Marino)	2,052	23,194	55	0	230	25,532	1,128	18	10	1,156	14,455	5.65	0.00
Ivory Coast	0	459	0	27	0	486	26	0	0	26	323	0.13	0.00
Japan	130	4,007	0	681	94	4,913	136	4	1	141	1,769	0.69	0.00
Jersey	73	2,697	0	25	464	3,259	117	0	9	126	1,572	0.61	0.00
Luxembourg	2,420	13,927	0	166	4,416	20,929	610	11	71	692	8,653	3.38	0.50
Malaysia	18	621	0	289	0	929	23	2	0	25	315	0.12	0.00
Mauritius	168	299	0	0	0	468	31	0	0	31	385	0.15	0.00
Mexico	3	1,140	0	0	0	1,144	54	0	0	54	680	0.27	0.00
Netherlands	790	12,833	68	122	598	14,410	490	7	24	521	6,510	2.54	0.00
Norway	7	719	0	18	0	744	18	0	0	18	228	0.09	1.00
Poland	34	2,625	0	22	0	2,680	56	0	0	56	706	0.28	0.00
Portugal	83	604	0	0	43	729	26	6	1	33	410	0.16	0.00
Russian Federation	8	910	0	0	0	918	49	0	0	49	615	0.24	0.00
Saudi Arabia	30	1,615	0	0	0	1,645	25	0	0	25	312	0.12	0.00
Singapore	246	6,628	0	406	0	7,280	201	2	0	204	2,548	1.00	0.00
Slovakia	0	96	0	0	0	96	1	0	0	1	17	0.01	1.00
South Korea	13	7,137	0	2,336	0	9,486	94	69	0	163	2,043	0.80	0.00
Spain	404	19,512	40	0	81	20,037	632	46	3	681	8,517	3.33	0.00

Dec 31,2021

	General credit exposures		Relevant credit exposures – Market risk				Own funds requirements						
in € m.	Exposure value for SA	Exposure value for IRB	Sum of long and short positions of trading book exposures for SA	Value of trading book exposures for Internal models	Securitisation exposures Exposure value for non-trading book	Total exposure value	Relevant credit risk exposures - Credit risk	Relevant credit exposures – Market risk	Relevant credit exposures – Securitisation positions in the non-trading book	Total	Risk-weighted exposure amounts	Own fund requirements weights (%)	Countercyclical buffer rate (%)
Sri Lanka	1	210	0	27	0	238	23	1	0	24	295	0.12	0.00
Sweden	6	2,047	0	103	0	2,157	97	0	0	97	1,214	0.47	0.00
Switzerland	87	18,555	0	81	0	18,723	291	1	0	292	3,646	1.42	0.00
Taiwan	7	1,113	0	38	0	1,159	29	0	0	29	359	0.14	0.00
Thailand	1	1,239	0	263	0	1,503	48	7	0	54	681	0.27	0.00
Turkey	30	588	0	0	0	618	30	0	0	31	383	0.15	0.00
United Arab Emirates	33	2,017	0	20	0	2,070	34	0	0	34	431	0.17	0.00
United Kingdom	613	17,577	7	506	693	19,395	700	22	10	733	9,157	3.58	0.00
United States of America (incl. Puerto Rico)	1,669	107,553	1,586	0	43,466	154,274	3,159	177	544	3,880	48,503	18.95	0.00
Vietnam	1	584	0	0	0	584	46	0	0	47	582	0.23	0.00
Other	185	9,860	309	488	409	11,251	316	40	8	365	4,560	1.78	0.00
Total	23,422	602,060	2,441	7,850	64,409	700,183	18,943	561	975	20,479	255,992	100.00	0.03

Jun 30, 2021

in € m.	General credit exposures		Relevant credit exposures – Market risk				Own funds requirements						
	Exposure value for SA	Exposure value for IRB	Sum of long and short positions of trading book exposures for SA	Value of trading book exposures for Internal models	Securitisation exposures Exposure value for non-trading book	Total exposure value	Relevant credit risk exposures - Credit risk	Relevant credit exposures – Market risk	Relevant credit exposures – Securitisation positions in the non-trading book	Total	Risk-weighted exposure amounts	Own fund requirements weights (%)	Countercyclical buffer rate (%) [1]
Australia	166	3,599	288	0	2,031	6,083	133	19	27	180	2,245	0.92	0.00
Austria	4	1,287	0	829	0	2,121	42	63	0	104	1,305	0.53	0.00
Belgium	104	1,871	0	356	25	2,356	52	12	0	65	813	0.33	0.00
Bermuda	19	657	0	0	162	837	39	0	3	42	525	0.22	0.00
Brazil	15	905	0	268	0	1,189	47	19	0	66	824	0.34	0.00
British Virgin Islands	133	7,724	0	0	0	7,858	81	0	0	81	1,017	0.42	0.00
Bulgaria	0	21	0	0	0	21	1	0	0	1	7	0.00	0.50
Canada	132	1,464	0	238	756	2,589	84	0	9	93	1,161	0.48	0.00
Cayman Islands	399	5,441	9	21	871	6,741	242	5	13	260	3,254	1.33	0.00
China	35	5,951	0	285	0	6,271	285	49	0	334	4,178	1.71	0.00
Czech Republic	2	139	0	0	0	141	4	0	0	4	50	0.02	0.50
Denmark	21	1,151	0	0	0	1,173	57	0	0	57	708	0.29	0.00
France	163	8,638	6	0	547	9,354	267	0	5	273	3,410	1.40	0.00
Germany	10,456	268,751	0	1,863	3,379	284,450	7,229	0	54	7,283	91,042	37.29	0.00
Ghana	0	486	0	7	0	493	37	0	0	37	465	0.19	0.00
Hong Kong	78	4,226	0	229	0	4,533	134	2	0	136	1,698	0.70	1.00
India	2,103	7,172	0	451	2,831	12,558	384	38	43	464	5,804	2.38	0.00
Indonesia	51	1,180	0	384	0	1,615	49	14	0	63	789	0.32	0.00
Ireland	361	6,098	63	402	2,964	9,887	192	32	104	328	4,101	1.68	0.00
Israel	1	557	0	296	0	854	74	18	0	91	1,138	0.47	0.00
Italy (incl. San Marino)	1,719	23,679	34	0	254	25,685	1,165	10	13	1,188	14,855	6.08	0.00
Ivory Coast	2	137	0	42	0	181	26	1	0	26	329	0.13	0.00
Japan	124	4,409	0	199	108	4,839	175	4	1	180	2,253	0.92	0.00
Jersey	144	1,992	0	0	459	2,594	101	0	9	110	1,373	0.56	0.00
Luxembourg	2,174	11,380	0	115	4,837	18,507	515	7	76	598	7,471	3.06	0.50
Malaysia	5	605	0	389	0	999	22	6	0	28	349	0.14	0.00
Mauritius	210	304	0	0	0	514	35	0	0	35	434	0.18	0.00
Mexico	5	1,405	0	0	0	1,409	47	0	0	47	590	0.24	0.00
Netherlands	723	12,744	115	0	742	14,325	523	18	23	563	7,035	2.88	0.00
Norway	22	619	0	80	0	721	21	0	0	21	265	0.11	1.00
Pakistan	3	255	0	0	0	258	49	0	0	49	608	0.25	0.00
Poland	18	2,572	0	8	0	2,597	49	1	0	50	625	0.26	0.00
Portugal	116	490	0	0	62	667	22	15	1	37	468	0.19	0.00
Russian Federation	9	764	0	0	0	773	45	0	0	45	562	0.23	0.00
Saudi Arabia	15	2,172	0	0	0	2,188	26	0	0	26	326	0.13	0.00
Singapore	212	5,932	6	566	45	6,761	186	5	12	203	2,534	1.04	0.00
Slovakia	0	69	0	28	0	98	1	1	0	2	21	0.01	1.00
South Africa	0	238	0	0	0	238	23	0	0	23	288	0.12	0.00
South Korea	19	3,618	0	2,281	0	5,918	63	95	0	158	1,971	0.81	0.00
Spain	373	19,879	67	0	114	20,433	631	4	1	635	7,943	3.25	0.00
Sri Lanka	1	187	0	41	0	229	15	6	0	21	261	0.11	0.00

Jun 30, 2021

	General credit exposures		Relevant credit exposures – Market risk				Own funds requirements						
in € m.	Exposure value for SA	Exposure value for IRB	Sum of long and short positions of trading book exposures for SA	Value of trading book exposures for Internal models	Securitisation exposures Exposure value for non-trading book	Total exposure value	Relevant credit risk exposures - Credit risk	Relevant credit exposures – Market risk	Relevant credit exposures – Securitisation positions in the non-trading book	Total	Risk-weighted exposure amounts	Own fund requirements weights (%)	Countercyclic al buffer rate (%) [1]
Sweden	0	1,720	0	210	0	1,930	77	0	0	77	958	0.39	0.00
Switzerland	78	11,133	0	0	0	11,211	206	2	0	208	2,600	1.07	0.00
Taiwan	25	1,262	0	50	0	1,336	41	0	0	41	510	0.21	0.00
Thailand	1	961	0	191	0	1,152	42	6	0	47	590	0.24	0.00
Turkey	70	555	0	5	0	631	32	3	0	35	440	0.18	0.00
United Arab Emirates	77	1,567	0	9	0	1,653	36	7	0	43	541	0.22	0.00
United Kingdom	674	16,031	25	0	919	17,648	681	14	14	709	8,866	3.63	0.00
United States of America (incl. Puerto Rico)	1,479	114,881	1,256	0	40,752	158,368	3,245	136	511	3,892	48,655	19.93	0.00
Vietnam	1	655	0	0	0	656	47	0	0	47	592	0.24	0.00
Other	312	8,469	421	507	343	10,051	336	79	10	424	5,303	2.17	0.00
Total	22,850	578,001	2,290	10,351	62,200	675,692	17,915	690	928	19,532	244,156	100.00	0.02

[1] Own fund requirements weights (%) and Countercyclical buffer rate (%) for June 30, 2021 have been updated.

Institution specific countercyclical capital buffer (Article 440 (b) CRR)

The following table shows an overview of our institution specific countercyclical exposure and buffer requirements.

EU CCyb2 – Institution-specific countercyclical capital buffer

		Dec 31, 2021	Jun 30, 2021
1	Total risk exposure amount (in € m.)	351,629	344,945
2	Institution specific countercyclical buffer rate	0.03 %	0.02 %
3	Institution specific countercyclical buffer requirement (in € m.)	91	81

Indicators of global systemic importance (Article 441 CRR)

Global systemic importance is measured in terms of the impact an institution's failure might have on the global financial system and the wider economy, rather than the risk that a failure could actually occur. The measurement approach of the global systemic importance is indicator-based, with the indicators reflecting size, interconnectedness, substitutability or financial infrastructure for the services provided, as well as complexity and global (cross-jurisdictional) activity.

The European Banking Authority ("EBA") issued Revised Guidelines on the further specification of the indicators of global systemic importance and their disclosure used for determining the score of G-SII's under Article 441 CRR as published in the Commission Implementing Regulation (EU) 2016/818 amending Implementing Regulation (EU) No 1030/2014. This regulation sets forth implementing technical standards with regard to the uniform formats and date for the disclosure of the values used to identify global systemically important institutions according to Regulation (EU) No 575/2013 of the European Parliament and of the Council. Moreover, the Commission Delegated Regulation (EU) 2016/1608 as well as the EBA Guideline "EBA/RTS/2020/08" amended Delegated Regulation (EU) No 1222/2014 with regard to regulatory technical standards for the specification of the methodology for the identification of global systemically important institutions and for the definition of subcategories of global systemically important institutions. Further specifications are laid down in the Instructions for the end-2021 G-SIB assessment, as published by the Basel Committee on Banking Supervision ("BCBS") on January 21, 2022.

The underlying methodology is outlined in the aforementioned documents. It falls under the aegis of the Financial Stability Board ("FSB") and is intended to develop a methodology comprising both quantitative and qualitative indicators that can contribute to the assessment of the systemic importance of financial institutions at a global level.

The systemic importance of banks is assessed by the FSB in a global context. In the European Union, national competent authorities are responsible for identifying G-SIIs. In Germany, the Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin) is responsible for this assessment as prescribed by the German Banking Act.

Deutsche Bank continues to be designated as a global systemically important institution (G-SII) by the German Federal Financial Supervisory Authority (BaFin) in agreement with the Deutsche Bundesbank, resulting in a G-SII buffer requirement of 1.50 % CET 1 capital of RWA in 2021 based on the indicators as published in 2019. This assessment has been confirmed by the Financial Stability Board (FSB) in 2020 and 2021.

The disclosures as of December 31, 2021 provided below show indicators used for determining the score of the institutions which are calculated based on the aforementioned specific instructions and thus are not directly comparable to other disclosed information. The EBA respectively the BCBS instructions are based on the regulatory, not the IFRS accounting consolidated Group. Further, calculation methods as per EBA's / BCBS' instructions may lead to further deviations from other disclosures.

End-2021 G-SIB Assessment Exercise reporting template

General Bank Data

Section 1 - General Information	GSIB	Response
a. General information provided by the relevant supervisory authority:		
(1) Country code	1001	DE
(2) Bank name	1002	Deutsche
(3) Reporting date (yyyy-mm-dd)	1003	2021-12-31
(4) Reporting currency	1004	EUR
(5) Euro conversion rate	1005	1
(6) Submission date (yyyy-mm-dd)	1006	2022-04-29
b. General Information provided by the reporting institution:		
(1) Reporting unit	1007	1,000,000
(2) Accounting standard	1008	IFRS
(3) Date of public disclosure (yyyy-mm-dd)	1009	2021-04-08
(4) Language of public disclosure	1010	English
(5) Web address of public disclosure	1011	https://www.db.com/ir/en/regulatory-reporting.htm
(6) LEI code	2015	7LTWFZYICNSX8D621K86

Size Indicator

Section 2 - Total Exposures	GSIB	Amount in million EUR
a. Derivatives		
(1) Counterparty exposure of derivatives contracts	1012	44,486
(2) Capped notional amount of credit derivatives	1201	15,573
(3) Potential future exposure of derivative contracts	1018	77,670
b. Securities financing transactions (SFTs)		
(1) Adjusted gross value of SFTs	1013	86,103
(2) Counterparty exposure of SFTs	1014	4,509
c. Other assets	1015	888,486
d. Gross notional amount of off-balance sheet items		
(1) Items subject to a 0% credit conversion factor (CCF)	1019	56,998
(2) Items subject to a 20% CCF	1022	96,134
(3) Items subject to a 50% CCF	1023	165,759
(4) Items subject to a 100% CCF	1024	7,699
e. Regulatory adjustments	1031	9,118
f. Total exposures prior to regulatory adjustments (sum of items 2.a.(1) thorough 2.c, 0.1 times 2.d.(1), 0.2 times 2.d.(2), 0.5 times 2.d.(3), and 2.d.(4))	1103	1,232,332
g. Exposures of insurance subsidiaries not included in 2.f net of intragroup:		
(1) On-balance sheet and off-balance sheet insurance assets	1701	816
(2) Potential future exposure of derivatives contracts for insurance subsidiaries	1205	0
(3) Investment value in consolidated entities	1208	28
h. Intragroup exposures with insurance subsidiaries reported in 2.g that are included in 2.f	2101	0
i. Total exposures indicator, including insurance subsidiaries (sum of items 2.f, 2.g.(1) thorough 2.g.(2) minus 2.g.(3) thorough 2.h)	1117	1,233,119

Interconnectedness Indicators

Section 3 - Intra-Financial System Assets	GSIB	Amount in million EUR
a. Funds deposited with or lent to other financial institutions	1216	24,509
(1) Certificates of deposit	2102	47
b. Unused portion of committed lines extended to other financial institutions	1217	10,676
c. Holdings of securities issued by other financial institutions	-	
(1) Secured debt securities	2103	706
(2) Senior unsecured debt securities	2104	11,494
(3) Subordinated debt securities	2105	714
(4) Commercial paper	2106	0
(5) Equity securities	2107	3,096
(6) Offsetting short positions in relation to the specific equity securities included in item 3.c.(5)	2108	62
d. Net positive current exposure of SFTs with other financial institutions	1219	7,609
e. OTC derivatives with other financial institutions that have a net positive fair value	-	
(1) Net positive fair value	2109	8,641
(2) Potential future exposure	2110	22,282
f. Intra-financial system assets indicator, including insurance subsidiaries (sum of items 3.a, 3.b through 3.c.(5), 3.d, 3.e.(1), and 3.e.(2), minus 3.c.(6))	1215	89,663

Section 4 - Intra-Financial System Liabilities	GSIB	Amount in million EUR
a. Funds deposited by or borrowed from other financial institutions	-	
(1) Deposits due to depository institutions	2111	41,912
(2) Deposits due to non-depository financial institutions	2112	45,832
(3) Loans obtained from other financial institutions	2113	1,757
b. Unused portion of committed lines obtained from other financial institutions	1223	0
c. Net negative current exposure of SFTs with other financial institutions	1224	14,237
d. OTC derivatives with other financial institutions that have a net negative fair value	-	
(1) Net negative fair value	2114	8,892
(2) Potential future exposure	2115	22,090
e. Intra-financial system liabilities indicator, including insurance subsidiaries (sum of items 4.a.(1) through 4.d.(2))	1221	134,722

Section 5 - Securities Outstanding	GSIB	Amount in million EUR
a. Secured debt securities	2116	14,210
b. Senior unsecured debt securities	2117	73,250
c. Subordinated debt securities	2118	9,131
d. Commercial paper	2119	1,840
e. Certificates of deposit	2120	1,630
f. Common equity	2121	22,768
g. Preferred shares and any other forms of subordinated funding not captured in item 5.c.	2122	8,305
h. Securities outstanding indicator, including the securities issued by insurance subsidiaries (sum of items 5.a through 5.g)	1226	131,134

Substitutability/Financial Institution Infrastructure Indicators

Section 6 - Payments made in the reporting year (excluding intragroup payments)	GSIB	Amount in million EUR
a. Australian dollars (AUD)	1061	168,758
b. Canadian dollars (CAD)	1063	451,231
c. Swiss francs (CHF)	1064	228,821
d. Chinese yuan (CNY)	1065	1,290,539
e. Euros (EUR)	1066	38,128,653
f. British pounds (GBP)	1067	2,834,186
g. Hong Kong dollars (HKD)	1068	178,484
h. Indian rupee (INR)	1069	501,085
i. Japanese yen (JPY)	1070	647,871
j. New Zealand dollars (NZD)	1109	14,887
k. Swedish krona (SEK)	1071	158,505
l. United States dollars (USD)	1072	68,603,001
m. Payments activity indicator (sum of items 6.a through 6.l)	1073	113,206,021

Section 7 - Assets Under Custody	GSIB	Amount in million EUR
a. Assets under custody indicator	1074	3,351,771

Section 8 - Underwritten Transactions in Debt and Equity Markets	GSIB	Amount in million EUR
a. Equity underwriting activity	1075	21,465
b. Debt underwriting activity	1076	254,847
c. Underwriting activity indicator (sum of items 8.a and 8.b)	1077	276,312

Section 9 - Trading Volume	GSIB	Amount in million EUR
a. Trading volume of securities issued by other public sector entities, excluding intragroup transactions	2123	4,816,561
b. Trading volume of other fixed income securities, excluding intragroup transactions	2124	666,214
c. Trading volume fixed income sub-indicator (sum of items 9.a and 9.b)	2125	5,482,775
d. Trading volume of listed equities, excluding intragroup transactions	2126	2,334,119
e. Trading volume of all other securities, excluding intragroup transactions	2127	235
f. Trading volume equities and other securities sub-indicator (sum of items 9.d and 9.e)	2128	2,334,354

Complexity indicators

Section 10 - Notional Amount of Over-the-Counter (OTC) Derivatives	GSIB	Amount in million EUR
a. OTC derivatives cleared through a central counterparty	2129	26,914,990
b. OTC derivatives settled bilaterally	1905	11,823,308
c. Notional amount of over-the-counter (OTC) derivatives indicator, including insurance subsidiaries (sum of items 10.a and 10.b)	1227	38,738,298

Section 11 - Trading and Available-for-Sale Securities	GSIB	Amount in million EUR
a. Held-for-trading securities (HFT)	1081	121,445
b. Available-for-sale securities (AFS)	1082	23,225
c. Trading and AFS securities that meet the definition of Level 1 assets	1083	98,815
d. Trading and AFS securities that meet the definition of Level 2 assets, with haircuts	1084	11,576
e. Trading and AFS securities indicator (sum of items 11.a and 11.b, minus the sum of 11.c and 11.d)	1085	34,279

Section 12 - Level 3 Assets	GSIB	Amount in million EUR
a. Level 3 assets indicator, including insurance subsidiaries	1229	24,875

Cross-Jurisdictional Activity Indicators

Section 13 - Cross-Jurisdictional Claims	GSIB	Amount in million EUR
a. Total foreign claims on an ultimate risk basis	1087	636,644
b. Foreign derivative claims on an ultimate risk basis	1146	268,880
c. Cross-jurisdictional claims indicator (sum of items 13.a and 13.b)	2130	905,524

Section 14 - Cross-Jurisdictional Liabilities	GSIB	Amount in million EUR
a. Foreign liabilities on an immediate risk basis, excluding derivatives and including local liabilities in local currency	2131	482,049
b. Foreign derivative liabilities on an immediate risk basis	1149	256,734
c. Cross-jurisdictional liabilities indicator (sum of items 14.a and 14.b)	1148	738,783

Disclosure of own funds and eligible liabilities (Article 437a CRR and Article 45i(3)(b) BRRD)

This section provides detailed information on the composition of Deutsche Bank Group's own funds and eligible liabilities, their main features, their ranking in the creditor hierarchy and their maturities.

Composition of own funds and eligible liabilities

As of December 31, 2021 our available own funds and eligible liabilities amounted to € 114.9 billion, consisting of € 62.7 billion own funds, € 46.4 billion subordinated liabilities and € 5.8 billion non-subordinated liabilities. Our regulatory CET1 capital included in the own funds contains € 39 million from the IFRS 9 transitional impact.

Deutsche Bank predominantly relies on own funds and subordinated eligible liabilities counting towards TLAC and subordinated MREL for meeting its MREL requirement. Only 5.01 % of our MREL capacity is contributed from eligible liabilities which are not subordinated. Deutsche Bank has no permission as per CRR Article 72b (3) or (4) to use non-subordinated eligible liabilities for meeting subordinated MREL or TLAC. As of December 31, 2021, 48.93 % of the subordinated liabilities were issued prior to June 27, 2019 and therefore grandfathered regarding the eligibility criteria newly established through Article 72b CRR.

As of December 31, 2021, Deutsche Bank has excess of CET 1 capital of 7.32 % of TREA after meeting the resolution group's requirements. This is well above the institution specific combined buffer requirement of 4.53 % and establishes a comfortable distance to triggering distribution restrictions under the MREL Minimum Distributable Amount ("M-MDA") rules.

EU TLAC1 – Composition of MREL and G-SII requirement for own funds end eligible liabilities

		Dec 31, 2021		
		a	b	c
	in € m.	Minimum requirement for own funds and eligible liabilities (MREL)	G-SII Requirement for own funds and eligible liabilities (TLAC)	Memo item: Amounts eligible for the purposes of MREL, but not TLAC
	Own funds and eligible liabilities and adjustments			
1	Common Equity Tier 1 capital (CET1)	46,506	46,506	0
2	Additional Tier 1 capital (AT1)	8,869	8,869	0
6	Tier 2 capital (T2)	7,358	7,358	0
11	Own funds for the purpose of Articles 92a CRR and 45 BRRD	62,732	62,732	0
	Own funds and eligible liabilities: Non-regulatory capital elements			
12	Eligible liabilities instruments issued directly by the resolution entity that are subordinated to excluded liabilities (not grandfathered)	22,852	22,852	0
EU 12a	Eligible liabilities instruments issued by other entities within the resolution group that are subordinated to excluded liabilities (not grandfathered)	0	0	0
EU 12b	Eligible liabilities instruments that are subordinated to excluded liabilities, issued prior to 27 June 2019 (subordinated grandfathered)	22,301	22,301	0
EU 12c	Tier 2 instruments with a residual maturity of at least one year to the extent they do not qualify as Tier 2 items	1,208	1,208	0
13	Eligible liabilities that are not subordinated to excluded liabilities (not grandfathered pre cap)	4,707	–	4,707
EU 13a	Eligible liabilities that are not subordinated to excluded liabilities issued prior to 27 June 2019 (pre-cap)	1,051	–	1,051
14	Amount of non subordinated instruments eligible, where applicable after application of Article 72b (3) CRR	–	–	–
17	Eligible liabilities items before adjustments	52,120	46,361	5,759
EU 17a	of which: subordinated	46,361	46,361	0
	Own funds and eligible liabilities: Adjustments to non-regulatory capital elements			
18	Own funds and eligible liabilities items before adjustments	114,853	109,094	5,759
19	(Deduction of exposures between MPE resolution groups)	–	0	–
20	(Deduction of investments in other eligible liabilities instruments)	–	0	–
22	Own funds and eligible liabilities after adjustments	114,853	109,094	5,759
EU 22a	of which: Own funds and subordinated	109,094	–	–
	Risk-weighted exposure amount and leverage exposure measure of the resolution group			
	Total own funds and liabilities (TLOF)	1,050,022	1,050,022	0
23	Total risk exposure amount	351,629	351,629	0
24	Total exposure measure	1,124,667	1,124,667	0
	Ratio of own funds and eligible liabilities			
	Own funds and eligible liabilities (as a percentage of TLOF)	10.94	10.39	–
	of which: Own funds and subordinated	10.39	–	–
25	Own funds and eligible liabilities (as a percentage of total risk exposure amount)	32.66	31.03	–
EU 25a	of which: Own funds and subordinated	31.03	–	–
26	Own funds and eligible liabilities (as a percentage of total exposure measure)	10.21	9.70	–
EU 26a	of which: Own funds and subordinated	9.70	–	–
27	CET1 (as a percentage of TREA) available after meeting the resolution group's requirements	7.32	7.32	–
28	Institution-specific combined buffer requirement	–	4.53	–
29	of which: Capital conservation buffer requirement	–	2.50	–
30	Countercyclical buffer requirement	–	0.03	–
31	Systemic risk buffer requirement	–	0.00	–
EU 31a	Global Systemically Important Institution (G-SII) or Other Systemically Important Institution (O-SII) buffer	–	2.00	–
	Memorandum items			
EU 32a	Total amount of excluded liabilities referred to in Article 72a(2) CRR	–	482,170	–

				Jun 30, 2021
		a	b	c
	in € m.	Minimum requirement for own funds and eligible liabilities (MREL)	G-SII Requirement for own funds and eligible liabilities (TLAC)	Memo item: Amounts eligible for the purposes of MREL, but not TLAC
	Own funds and eligible liabilities and adjustments			
1	Common Equity Tier 1 capital (CET1)	45,476	45,476	0
2	Additional Tier 1 capital (AT1)	8,118	8,118	0
6	Tier 2 capital (T2)	7,534	7,534	0
11	Own funds for the purpose of Articles 92a CRR and 45 BRRD	61,128	61,128	0
	Own funds and eligible liabilities: Non-regulatory capital elements			
12	Eligible liabilities instruments issued directly by the resolution entity that are subordinated to excluded liabilities (not grandfathered)	19,748	19,748	0
EU 12a	Eligible liabilities instruments issued by other entities within the resolution group that are subordinated to excluded liabilities (not grandfathered)	0	0	0
EU 12b	Eligible liabilities instruments that are subordinated to excluded liabilities, issued prior to 27 June 2019 (subordinated grandfathered)	26,438	26,438	0
EU 12c	Tier 2 instruments with a residual maturity of at least one year to the extent they do not qualify as Tier 2 items	830	830	0
13	Eligible liabilities that are not subordinated to excluded liabilities (not grandfathered pre cap)	3,997		3,997
EU 13a	Eligible liabilities that are not subordinated to excluded liabilities issued prior to 27 June 2019 (pre-cap)	1,068		1,068
14	Amount of non subordinated instruments eligible, where applicable after application of Article 72b (3) CRR			
17	Eligible liabilities items before adjustments	52,081	47,016	5,065
	of which:			
EU 17a	subordinated	47,016	47,016	0
	Own funds and eligible liabilities: Adjustments to non-regulatory capital elements			
18	Own funds and eligible liabilities items before adjustments	113,209	108,145	5,065
19	(Deduction of exposures between MPE resolution groups)	–	0	–
20	(Deduction of investments in other eligible liabilities instruments)	–	0	–
22	Own funds and eligible liabilities after adjustments	113,209	108,145	5,065
	of which:			
EU 22a	Own funds and subordinated	108,145		
	Risk-weighted exposure amount and leverage exposure measure of the resolution group			
	Total own funds and liabilities (TLOF)	1,069,315	1,069,315	0
23	Total risk exposure amount	344,945	344,945	0
24	Total exposure measure	1,100,461	1,100,461	0
	Ratio of own funds and eligible liabilities			
	Own funds and eligible liabilities (as a percentage of TLOF)			
	of which:			
	Own funds and subordinated	10.11		
25	Own funds and eligible liabilities (as a percentage of total risk exposure amount)	32.82	31.35	1.47
	of which:			
EU 25a	Own funds and subordinated	31.35	–	–
26	Own funds and eligible liabilities (as a percentage of total exposure measure)	10.29	9.83	0.46
	of which:			
EU 26a	Own funds and subordinated	9.83	–	–
27	CET1 (as a percentage of TREA) available after meeting the resolution group's requirements	7.22	7.22	–
28	Institution-specific combined buffer requirement	–	4.52	–
	of which:			
29	Capital conservation buffer requirement	–	2.50	–
30	Countercyclical buffer requirement	–	0.02	–
31	Systemic risk buffer requirement	–	0.00	–
EU 31a	Global Systemically Important Institution (G-SII) or Other Systemically Important Institution (O-SII) buffer	–	2.00	–
	Memorandum items			
EU 32a	Total amount of excluded liabilities referred to in Article 72a(2) CRR	–	482,731	–

Main features of eligible liabilities instruments

As of December 31, 2021, 64 % of the volume of DB's senior non-preferred subordinated eligible liabilities instruments (with remaining tenor of > 1 year) were public benchmarks with volume-weighted average original tenor of 4.8 years. 83 % out of these senior non-preferred public benchmarks had a fixed coupon rate with a volume-weighted average coupon of 2.00 % and remaining maturity of 5.0 years. The main funding currencies were Euro and US Dollar which provide more than 85 % of our senior non-preferred public benchmarks.

A description of the main features of our senior non-preferred subordinated eligible liabilities instruments eligible for subordinated MREL and TLAC and issued by Deutsche Bank is published on Deutsche Bank's website (db.com/ir/en/capital-instruments.htm) to the extent that these do not constitute private placements and are treated confidentially.

Ranking in the creditor hierarchy and maturity

The following table provides a simplified overview of the ranking of liabilities in an insolvency proceeding under German law. The ranking is presented from the more junior liabilities to the more senior liabilities. Deutsche Bank AG's subordinated eligible liability instruments qualifying for MREL and TLAC through meeting all of the conditions in CRR Article 72b (2) or being grandfathered pursuant to CRR Article 494b (3) are exclusively rank at position 11 in the below order. Non-subordinated eligible liabilities instruments which are eligible for MREL rank in position 12. Deutsche Bank has no permission as per CRR Article 72b (3) or (4) to include eligible liability instruments ranking in position 12 into eligible liabilities for meeting subordinated MREL or TLAC requirements.

Ranking of liabilities in an insolvency proceeding under German law

Rank	Label of claims	Code
1	**Common equity Tier 1 instruments**	Section 199 of the Insolvency Code
2	**Additional Tier 1 instruments**	
3	**Tier 2 instruments**	Section 39 (2) of the Insolvency Code
4	Claims subordinated by virtue of a contractual subordination clause not specifying the pertinent rank (other than Additional Tier 1 or Tier 2 instruments)	
5	Claims for repayment of shareholder loans and accrued interest thereon	Section 39 (1) no. 5 of the Insolvency Code
6	Claims for the delivery of goods or provision of services free of charge	Section 39 (1) no. 4 of the Insolvency Code
7	Criminal and administrative fines	Section 39 (1) no. 3 of the Insolvency Code
8	Creditors' costs related to the insolvency proceeding	Section 39 (1) no. 2 of the Insolvency Code
9	Interest and late payment surcharges accrued after the opening of insolvency proceedings	Section 39 (1) no. 1 of the Insolvency Code
10	Claims subordinated by virtue of a contractual subordination clause which specifies the relevant ranking	Section 39 (2) of the Insolvency Code
11	**Non-preferred creditor claims arising from non-subordinated, unsecured non-structured debt instruments which** (i) are issued before 21 July 2018 and are neither deposits within the positions of no. 13 and 14 nor money market instruments (ii) are issued from 21 July 2018 onwards, have an original contractual maturity of at least one year, do not qualify as deposits within the position of no. 13 and 14 and the contractual documentation and, where applicable, the prospectus explicitly refer to the lower ranking	
12	**General creditors' claims**	Section 38 of the Insolvency Code in conjunction with Section 46f (5) of the Banking Act, including instruments covered by Section 46f (6) sentence 3 and 46f (7) of the Banking Act
13	Deposits not covered, but preferential	Section 46f (4) no. 2 of the Banking Act
14	Deposits covered and preferential	Section 46f (4) no. 1 of the Banking Act
15	Costs of proceeding and obligations binding on the estate	Sections 53 to 55 of the Insolvency Code
16	Claims subject to a right of separation in insolvency proceedings	Sections 49 to 51 of the Insolvency Code
17	Claims subject to a right of segregation in insolvency proceedings	Sections 47 and 48 of the Insolvency Code

Deutsche Bank Group's own funds and eligible liabilities fall into these insolvency ranks as per below table on the basis of German insolvency law. The "subset of liabilities and own funds less excluded liabilities that are own funds and liabilities potentially eligible for meeting MREL" is identical to Deutsche Bank Group's own funds and eligible liabilities available to meet MREL for which maturities are provided in addition. Eligible liabilities included in insolvency rank 11 and 12 in these lines are exclusively issued out of the resolution entity Deutsche Bank AG at the individual level. Other ranks - including own funds - represent Deutsche Bank Group values as Deutsche Bank AG is not subject to capital requirements on individual level given it has been granted a capital waiver.

EU TLAC3a – Creditor ranking

	Dec 31, 2021									
	1	2	3	4	5	6	7	8	9	
in € m.										Total
Description of insolvency rank	R1	R2	R3	R11	R12	R13	R14	R16	R17	
Liabilities and own funds	46,506	8,868	8,578	52,417	404,832	85,749	170,192	252,259	20,622	1,050,022
of which:										
Excluded liabilities	0	0	0	0	39,098	0	170,192	252,259	20,622	482,170
Liabilities and own funds less excluded liabilities	46,506	8,868	8,578	52,417	365,733	85,749	0	0	0	567,852
Subset of Liabilities and own funds less excluded liabilities that are own funds and liabilities potentially eligible for meeting TLAC/MREL	46,506	8,868	8,566	45,153	5,759	0	0	0	0	114,853
of which:										
Residual maturity ≥ 1 year < 2 years	0	0	121	5,708	3,406	0	0	0	0	9,235
Residual maturity ≥ 2 year < 5 years	0	0	3,599	16,889	2,189	0	0	0	0	22,677
Residual maturity ≥ 5 years < 10 years	0	0	2,899	12,821	106	0	0	0	0	15,825
Residual maturity ≥ 10 years, but excluding perpetual securities	0	0	1,945	9,736	57	0	0	0	0	11,739
Perpetual securities	46,506	8,868	0	0	0	0	0	0	0	55,375

Capital requirements

Summary of Deutsche Bank's ICAAP approach (Article 438 (a) CRR) (EU OVC)

The internal capital adequacy assessment process (ICAAP) consists of several elements that aim to ensure that Deutsche Bank maintains, on an ongoing basis, an adequate capitalization to cover the risks to which it is exposed.

– Risk identification and assessment: The risk identification process forms the basis of the ICAAP and results in an inventory of risks for the group, and where appropriate, material legal entities, key branches and business units. The process identifies risks across key risks types (e.g. credit, market, operational, liquidity) and incorporates input from both the first line and second line of defense. Materiality of all identified risks is assessed, based on their severity and likelihood to materialize in stressed conditions.

  The risk identification process adopts a descriptive (as opposed to taxonomy-driven) risk approach, eliciting how identified risks could manifest themselves based on potential real-world scenarios and events. This descriptive risk approach ensures the inventory covers both normative and economic perspectives and allows contributors to focus on future developments, risk behavior under stress, and impact of mitigating actions. The risks in the risk inventory are mapped to Deutsche Bank's group risk type taxonomy. The resulting inventory of risks, after review and challenge by senior management, informs key risk management processes, including the development of stress scenarios tailored to Deutsche Bank's risk profile, informing business unit risk appetite statements, and risk profile monitoring and reporting.

– Capital demand/risk measurement: Risk measurement methodologies and models are applied to quantify the capital demand required to cover all material risks, excluding those that cannot be adequately limited by capital, e.g. liquidity risk. ICAAP differentiates between the normative and economic internal perspective and this is reflected in the risk measurement process, which distinguishes between regulatory capital models (which form an input into the normative internal perspective) and economic capital models (which form an input into the economic internal perspective).

  Under the normative internal perspective, Deutsche Bank applies regulatory models to measure risk-weighted assets in order to determine the regulatory capital demand:
  – Credit risks are predominantly measured via the Advanced Internal Ratings Based Approach (A-IRBA). For the majority of our derivative counterparty exposures as well as securities financing transactions (SFT), we make use of the internal model method (IMM), in accordance with the CRR.
  – Market risks are measured by internally developed risk metrics (as approved by our regulator) and regulatory-defined market risk approaches, namely the Value-at-Risk (VaR), Stressed Value-at-Risk (sVaR) and Incremental Risk Charge (IRC). The Market Risk Standardised Approach (MRSA) is used to determine the regulatory capital charge for the specific market risk arising on securitizations in the trading book.
  – Operational risks are measured using the Advanced Measurement Approach (AMA) methodology.

  For the measurement of capital demand under the economic internal perspective, Deutsche Bank applies various internally developed capital models in line with our economic capital framework and set at a level to absorb, with a confidence level of 99.9 %, aggregate unexpected losses within a one-year time period. Our economic capital model landscape covers all material risks, i.e. quantifies credit, market, operational and strategic risk. Diversification and concentrations are calculated on a group-wide basis. Further details on our economic capital models are provided in the following sections.

– Capital supply: Capital supply quantification refers to the definition of available capital resources to absorb losses. We distinguish between capital supply definitions for the normative internal and for the economic internal perspectives. The capital supply definition under the normative perspective follows the regulatory requirements in the CRR/CRD while the economic perspective follows an internal capital supply definition.

– Risk appetite: Risk appetite is an expression of the level of risk that Deutsche Bank is willing to assume to achieve its strategic objectives. Risk appetite plays an integral part in our business planning processes via our risk strategy and plan, and promotes the appropriate alignment of risk, capital and performance targets. Compliance of the plan with our risk appetite and capacity is also tested under stressed market conditions. We assign risk metrics that are sensitive to the material risks to which we are exposed, and which function as indicators of financial health. In addition to that, we link our risk and recovery management governance framework with the risk appetite framework.

  From an ICAAP perspective, risk appetite is set for key capital adequacy metrics and thereby covers the normative (via the CET 1 ratio, leverage ratio and minimum requirements for own funds and eligible liabilities (MREL)) and the economic (via the economic capital adequacy (ECA) ratio) perspective. These metrics are fully integrated across strategic planning, risk appetite framework, stress testing (except MREL), and recovery and resolution planning practices. Threshold breaches are subject to a dedicated governance framework triggering management actions up to the execution of Deutsche Bank's recovery plan. The Management Board reviews and approves our risk appetite and capacity on an annual basis, or more frequently in the event of unexpected changes to the risk environment, with the aim of ensuring that they are consistent with our group's strategy, business and regulatory environment and stakeholders' requirements.

– Capital planning: Deutsche Bank's capital management is built on a triad of elements to steer the bank's capital stack and capital demand in the short, middle and long term, namely the strategic and capital plan, the rolling forecast, and the downside and countermeasures analysis process. Our holistic management of Deutsche Bank's capital position looks at each of these elements, with differing focuses driven by the decision-making context.

  The integrated strategic and capital plan translates Deutsche Bank's overall risk and business objectives as well as external targets into risk, capital, liquidity, and performance targets for the group, divisions/business units, and infrastructure functions. The strategic plan is based on assumptions regarding the future development of regulatory requirements and supervisory practices, the banking market and revenue pools, expected client behavior and relative strengths and capabilities to serve the clients in a competitive environment. The strategic and capital plan is built over a 5-year horizon and thoroughly reviewed on an annual basis, including changes to the macro-economic and competitive landscape as well as any other updates to key planning assumptions, e.g. to the regulatory environment. The strategic plan is finalized with the Management Board approval and thereafter sent to the Supervisory Board.

  As actual developments might deviate from the strategic plan, Deutsche Bank conducts a monthly rolling forecast. The granularity of each forecast is designed to cover the development of Deutsche Bank's earnings as well as balance sheet, resources and capital components. The development of capital and resources is part of the monthly discussions in the GRC and ALCO. The forecast develops a best estimate of the base case development at the time, including all material impacts of likely events at an expected level. These assumptions contain a judgmental element and might include a range of outcomes. To address this, Deutsche Bank complements the base case with a well-established downside and countermeasure analysis framework.

– Stress testing: Capital plan figures are also considered under various stress test scenarios to prove resilience and overall viability of the bank. Regulatory and economic capital adequacy metrics are also subject to regular stress tests throughout the year to constantly evaluate Deutsche Bank's capital position in hypothetical stress scenarios and to detect vulnerabilities. Our stress testing framework comprises regular, sensitivity-based and scenario-based approaches addressing different severities and regional hotspots. These activities are complemented by portfolio- and country-specific downside analyses as well as regulatory-driven exercises such as reverse stress tests.

– Capital adequacy assessment: In addition to the constant monitoring process that capital adequacy undergoes throughout the year, the ICAAP concludes with a dedicated annual capital adequacy assessment (CAS). The assessment consists of a Management Board statement about Deutsche Bank's capital adequacy that is linked to specific conclusions and management actions to be taken to safeguard capital adequacy on a forward-looking basis.

Credit risk economic capital model

We calculate economic capital for counterparty risk, transfer risk and settlement risk as elements of credit risk. In line with our economic capital framework, economic capital for credit risk is set at a level to absorb with a probability of 99.9 % very severe aggregate unexpected losses within one year.

Our economic capital for credit risk is derived from the loss distribution of a portfolio via Monte Carlo Simulation of correlated rating migrations. The portfolio loss distribution is calculated as follows: in a first step, potential credit losses are quantified on transactional level based on available exposure and loss-given-default information. In a second step, the probability of joint defaults is modeled stochastically in terms of risk factors representing the relevant countries and industries that the counterparties are linked to. The simulation of portfolio losses is then performed by an internally developed model, which takes rating migration and maturity effects into account. Effects due to wrong-way derivatives risk (i.e., the credit exposure of a derivative in the default case is higher than in non-default scenarios) are modeled by applying our own alpha factor when deriving the exposure at default for derivatives and securities financing transactions under the Basel 3 Internal Models Method ("IMM"). We allocate expected losses and economic capital derived from loss distributions down to transaction level to enable management on transaction, customer and business level.

Our asset value credit portfolio model is based on the assumption that an obligor firm defaults when its value is no longer high enough to cover its liabilities. The obligor's asset value or "ability to pay" is modeled as a random process, the Ability to Pay Process (APP). An obligor is taken to default when its asset value or ability to pay falls below a given default point. Changes in the value of systematic and specific factors are simulated in terms of multivariate distributions. The weight assigned to systematic and specific components and the covariance of systematic factors are estimated using equity and rating time series or are based on standard settings for particular portfolio segments.

Modeling correlations via a factor model: A factor model describes the dynamics of a large number of random variables by making use of a reduced and fixed number of other random variables, called factors. The approach has the advantage of reducing computing time: fewer correlations need to be evaluated, and the factor correlation matrix does not change when new obligors are introduced. The parameters that specify the factor model are:

- The factor model characteristics for the different borrowers, i.e., the weights for the systematic country and industry factors (our model uses 39 systematic factors) and the R^2, which determines the weight for the specific factor
- The covariance matrix between the country and industry factors

Modeling rating migration: The rating migration methodology requires additional information, namely yield curves and transition matrices describing the probabilities of migrating between different credit ratings.

- Migration matrix: For K non-default credit rating grades and 1 default credit rating, a migration matrix is a (K + 1) × (K + 1) matrix with entries π_{ij}. It expresses in percentage terms the probability π_{ij} that any borrower with the credit rating i moves to the credit rating j in the next time step.
- Risk-free curve: The risk-free curve required as an input for different points in time is used to derive the corresponding risk-free discount factors.

Economic capital is derived from Value-at-Risk (VaR) with confidence level α = 99.9 %. The economic capital is allocated to individual transactions using expected shortfall allocation. Portfolio information includes exposure, loss given default, one-year default probability and maturity. The parameters are consistent with the parameters used for the regulatory reporting, with the exception of those from the exposure for derivatives.

Market risk economic capital model

Economic capital for market risk measures the amount of capital needed to absorb very severe, unexpected losses arising from our exposures over the period of one year. "Very severe" in this context means that the underlying economic capital is set at a level which covers, with a probability of 99.9 %, all unexpected losses over a one year time horizon. Market Risk Economic Capital consists of the following three components:

- Traded Market Risk, capturing the risk due to valuation changes from market price movements
- Traded Default Risk, capturing the risk due to valuation changes caused by issuer default and migration risk
- Non-traded Market Risk, market risk arising outside of the core trading activities

Traded market risk economic capital ("TMR EC")

Our traded market risk economic capital model - scaled Stressed VaR based EC (SVaR based EC) - comprises two core components, the "common risk" component covering risk drivers across all businesses and the "business-specific risk" component, which enriches the Common Risk via a suite of Business Specific Stress Tests (BSSTs). Both components are calibrated to historically-observed severe market shocks.

Common risk is calculated using a scaled version of the SVaR framework. The SVaR based EC uses the Monte Carlo SVaR framework. The SVaR measure itself replicates the Value-at-Risk calculation that would be generated on the bank's current portfolio if the relevant market factors were experiencing a period of stress. In particular, the model inputs are calibrated to historical data from a continuous 12-month period of significant financial stress relevant to the bank's portfolio. The SVaR model is then scaled-up to cover a different liquidity horizon (up to 1 year) and confidence level (99.9 %). The liquidity horizon framework that is utilized in the SVaR based EC model accounts for different levels of market liquidity as well as risk concentrations in the bank's portfolios. In terms of coverage, the "common risk" captures outright linear and some non-linear risks (e.g. Gamma, Vega etc.) to systematic and idiosyncratic risk drivers. The model incorporates the following risk factors: interest rates, credit spreads, equity prices, foreign exchange rates, commodity prices, volatilities and correlations.

The "business-specific risk" captures more product/business-related bespoke risks (e.g. complex basis risks) as well as higher order risks (e.g. for equity options) not captured in the common risk component. The concept of business-specific risk is in particular important in areas where the lack of meaningful market data prevents direct use of the common risk model. BSSTs are in general calibrated to available historical data to obtain a stress scenario. Where appropriate, risk managers use their expert judgment to define severe market shocks, based upon the knowledge of past extreme market conditions. In addition to the BSSTs the business specific risk component of the SVaR based EC model also contains placeholders which carry an estimated EC component on a temporary basis, while efforts are being made to cover those risks with a proper business-specific stress test or integrate it in the common risk framework.

We also continuously assess and refine our market risk EC model to ensure the capture of new material risks as well as the appropriateness of the shocks applied. The calculation of the Traded Market Risk EC is performed weekly.

Traded default risk economic capital ("TDR EC")

TDR refers to changes in the value of instruments caused by default or rating changes of the issuer. For credit derivatives like credit default swaps (CDS), the rating of the issuer of the reference asset is modeled. TDR covers the following positions:

– Fair value assets in the banking book;
– Unsecuritized credit products in the trading book;
– Securitized products in the trading book.

The TDR methodology is similar to the credit risk methodology. An important difference between the EC calculation for traded default risk and credit risk is the capital horizon of 6 months which is used for most TDR positions compared to 12 months used for credit risk. Recognizing traded default risk EC for unsecuritized credit products corresponds to the calculation of the incremental risk charge for the trading book for regulatory purposes. EC for TDR represents an estimate of the default and migration risks of credit products at a 99.9 % confidence level, taking into account the liquidity horizons of the respective sub-portfolios.

TDR EC captures the relevant credit exposures across our trading and fair value banking books. Trading book exposures are monitored by market risk management via single name concentration and portfolio thresholds which are set based upon rating, size and liquidity. Single name concentration risk thresholds are set for two key metrics: Default Exposure, i.e., the P&L impact of an instantaneous default at the current recovery rate (RR), and bond equivalent Market Value (MV), i.e. default exposure at 0 % recovery. In order to capture diversification and concentration effects we perform a joint calculation for traded default risk economic capital and credit risk economic capital. Important parameters for the calculation of traded default risk are exposures, recovery rates and default probabilities as well as maturities. For trading book positions exposures, recovery rates and default probabilities are derived from market information and external ratings and for banking book positions from internal assessments analogous to the credit risk economic capital model. Rating migrations are governed by issuer type specific migration matrices, which are obtained from historical rating time series from rating agencies and internal observations. The probability of joint rating downgrades and defaults is determined by the default and rating correlations of the portfolio model. These correlations are specified through systematic factors that represent countries, geographical regions and industries.

Non-traded market risk economic capital ("NTMR EC")

Non-traded market risk arises from market movements, primarily outside the activities of our trading units, in our banking book and from off-balance sheet items. Significant market risk factors which the bank is exposed to and are overseen by risk management groups in that area are:

– Interest rate risk (including risk from embedded optionality and changes in behavioral patterns for relevant product types), credit spread risk, foreign exchange risk, equity risk (including investments in public and private equity as well as real estate, infrastructure and fund assets); and
– Market risks from off-balance sheet items such as pension schemes and guarantees as well as structural foreign exchange risk and equity compensation risk.

Non-traded market risk economic capital is being calculated either by applying the standard traded market risk EC methodology (SVaR based EC model) or through the use of non-traded market risk models that are specific to each risk class and which consider, among other factors, large historically observed market moves, the liquidity of each asset class, and changes in client's behavior in relation to products with behavioral optionalities. The calculation of EC for non-traded market risk is performed monthly.

An independent model validation team reviews all quantitative aspects of our MR EC model on a regular basis. The review covers, but is not limited to, model assumptions and calibration approaches for risk parameters.

Operational risk economic capital model

For the quantification of economic capital requirements the Group uses the Advanced Measurement Approach ("AMA"). To absorb very severe unexpected losses within one year, both economic and regulatory capital are calculated at a 99.9 % percentile.

For detailed information on our Operational risk measurement approaches refer to our Pillar 3 report section "Operational risk measurement (Article 446 CRR)".

Strategic risk economic capital model

The strategic risk economic capital model projects the earnings distribution for the next twelve months on group level. Important input parameters of the model are the expected revenues and costs from the strategic plan and monthly forecasts on business unit level. This ensures that the model includes strategic decisions or changes to the business environment in a timely manner. These projections determine the mean values of the revenue and cost distributions. The volatilities of the revenue distributions are derived from historical revenue time series of our business units. Risk concentrations within and across businesses are specified by revenue drivers for individual business units. The correlations of revenue drivers, e.g. market or macroeconomic factors, are calibrated with historical time series. Revenues are then simulated together with costs to allow for a partial offset of revenue decreases by cost reductions, e.g. reduced bonus payments. The resulting earnings distribution for the Group is used to derive the economic capital amount. Strategic risk economic capital is held to protect against potential operating losses covering twelve months with a confidence level of 99.9 %, in line with our general economic capital definition.

In addition, the strategic risk economic capital category includes the tax risk model output and capital charges for risk related to IFRS deferred tax assets on temporary differences and software assets.

Tax risk is determined by reference to corporate income tax, indirect and operational tax re-determination risk with respect to transactions undertaken by the bank. Tax re-determination risk is the risk that the eventual tax treatment of a transaction differs from that initially determined by the bank because of a judicial determination or a compromise by the bank with a tax authority. Examples of tax re-determination risk include a tax ceasing to be creditable, taxable income being treated as arising, a tax deduction not being granted, a tax consolidated group not being respected, or an anti-avoidance rule being determined to apply. Tax related inputs of the process are under the direction and control of tax professionals of the bank who are independent of business units. The calculation of tax risk economic capital is performed in a portfolio model which incorporates issues with a one-year time horizon. The notional exposure for each “tax issue” is determined and is then modified for reserves and a settlement adjustment. A probability is assigned to each “tax issue”. Tax risk economic capital is computed at the 99.9 % confidence level of the portfolio loss distribution, which is obtained through a Monte Carlo simulation.

The capital charges to account for the risk of software assets and deferred tax assets on temporary differences are incorporated through economic capital placeholders.

Risk type diversification

The economic capital model for risk type diversification and aggregation (RTD&A) is a key component of Deutsche Bank’s economic capital framework. The purpose of the RTD&A model is to reflect the diversification effects across all risk types, resulting in the diversified economic capital at group level. The RTD&A methodology is based on the specification of analytical loss distributions for individual risk types (i.e. credit, market, operational and strategic risk), which are linked via a copula function to reflect their dependence structure. Using advanced simulation techniques, an aggregate loss distribution across all risk types is calculated for the whole portfolio. Total diversified economic capital is then derived from the aggregate loss distribution at the 99.9 % quantile, i.e. to absorb aggregate unexpected losses at group level over a one-year horizon with a confidence level of 99.9 %.

Result of ICAAP (Article 438 (c) CRR) (EU OVC)

Our internal capital adequacy assessment process concludes that Deutsche Bank is adequately capitalized to cover its material risks and relevant regulatory requirements under the economic and normative perspective.

We assess capital adequacy from an economic perspective as the ratio of our economic capital supply divided by our economic capital demand as shown in the table below. A ratio of more than 100 % indicates that the available capital is sufficient to cover the risk positions. The economic capital adequacy ratio was 206 % as of December 31, 2021, with compared to 179 % as of December 31, 2020. The change in the ratio was due to a decrease in capital demand, which was partially offset by lower capital supply.

Total economic capital supply and demand

in € m. (unless stated otherwise)	Dec 31, 2021	Dec 31, 2020
Components of economic capital supply		
Shareholders' equity	58,027	54,786
Noncontrolling interests[1]	858	880
AT1 coupons deduction	(298)	(242)
Gain on sale of securitizations, cash flow hedges	42	(11)
Fair value gains on own debt and debt valuation adjustments, subject to own credit risk	(56)	(100)
Additional valuation adjustments	(1,812)	(1,430)
Intangible assets	(3,583)	(3,463)
IFRS deferred tax assets excl. temporary differences	(1,653)	(1,503)
Expected loss shortfall	(573)	(99)
Defined benefit pension fund assets	(991)	(772)
Other adjustments[2]	(1,492)	(1,566)
Additional tier 1 equity instruments[3]	0	4,659
Economic capital supply	**48,470**	51,138
Components of economic capital demand		
Credit risk	11,725	11,636
Market risk	7,920	10,894
Operational risk	4,937	5,512
Strategic risk[4]	3,173	5,949
Diversification benefit	(4,213)	(5,429)
Total economic capital demand	**23,542**	28,560
Economic capital adequacy ratio	**206 %**	179 %

[1] Includes noncontrolling interest up to the economic capital requirement for each subsidiary.
[2] Includes € 1.1 billion capital deduction based on ECB guidance on irrevocable payment commitments related to the Single Resolution Fund and the Deposit Guarantee Scheme. Capital deductions of € 0.7 billion based on regular ECB review have been released from December 2021 due to remediation.
[3] Additional Tier 1 equity instruments were completely de-recognized from economic capital supply from December 2021.
[4] Formerly reported as business risk. This category includes the model output for strategic risk and tax risk, as well as capital charges for risk related to IFRS deferred tax assets on temporary differences and software assets.

The economic capital supply decreased by € 2.7 billion and was primarily driven by the decision to completely de-recognize € 4.7 billion of additional tier 1 equity instruments from economic capital supply and the increase in capital deductions mainly from higher expected loss shortfall of € 0.5 billion, prudential filters (additional value adjustment) of € 0.4 billion and irrevocable payment commitment related to the Single Resolution Fund and the Deposit Guarantee Scheme of € 0.2 billion. These decreases were partly offset by our positive net income of € 2.4 billion, release of regulatory capital deductions of € 0.7 billion and other offsetting items.

The economic capital demand decreased by € 5.0 billion due to lower market risk, strategic risk and operational risk. The decrease in market risk of € 3.0 billion was mainly due to reductions in the interest rates exposure in the strategic liquidity reserve bond portfolio, as well as by changes in the calculation methodology for the equity investment portfolio. The decrease in strategic risk of € 2.8 billion primarily reflected the improvement in the earnings outlook supported by the execution of Deutsche Bank’s transformation. The decrease in operational risk of € 0.6 billion was largely driven by a lighter internal loss profile, in particular lower loss frequency feeding into our capital model. These reductions were partly offset by higher credit risk and lower diversification benefit. The economic capital demand for credit risk slightly increased by € 0.1 billion primarily driven by the qualified adoption of the results of the ECB’s Targeted Review of Internal Models (TRIM), which was partially offset by lower transfer and settlement risk. The inter-risk diversification benefit across credit, market, operational and strategic risk decreased by € 1.2 billion mainly reflecting changes in the underlying risk type profile.

The development of capital adequacy ratios under the normative perspective (CET 1 ratio, leverage ratio and MREL) and respective SREP requirements are described in this report in sections “Own funds”, “Overview of capital requirements” and “Leverage ratio”.

Overview of capital requirements (Article 438 (d) CRR)

The table below shows RWA broken down by risk types and model approaches compared to the previous quarter end. It also shows the corresponding own fund requirements, derived from the RWA by an 8 % capital ratio.

EU OV1 – Overview of RWA

		Dec 31, 2021		Sep 30, 2021	
		a	c1	b	c2
	in € m.	RWA	Minimum capital requirements	RWA	Minimum capital requirements
1	Credit risk (excluding CCR)	212,294	16,984	206,686	16,535
	of which:				
2	The standardized approach (SA)	19,056	1,524	20,393	1,631
3	The foundation IRB (FIRB) approach	2,071	166	1,849	148
4	Slotting approach	699	56	819	66
EU 4a	Equities under the simple riskweighted approach	13,539	1,083	10,652	852
5	The advanced IRB (AIRB) approach	176,929	14,154	172,974	13,838
6	Counterparty credit risk (CCR)	31,285	2,503	32,309	2,585
	of which:				
7	The standardized approach	2,217	177	2,400	192
8	Internal model method (IMM)	19,957	1,597	19,768	1,581
EU 8a	Risk exposure to a CCP	737	59	607	49
EU 8b	Credit Valuation Adjustment (CVA)	6,327	506	6,537	523
9	Other CCR	2,047	164	2,997	240
15	Settlement risk	60	5	17	1
16	Securitization exposures in the banking book (after the cap)	12,189	975	11,798	944
	of which:				
17	SEC-IRBA approach	7,124	570	7,043	563
18	SEC-ERBA (including IAA)	476	38	541	43
19	SEC-SA approach	4,079	326	4,013	321
EU 19a	1250% / deduction	509	41	201	16
20	Market risk	19,773	1,582	21,872	1,750
	of which:				
20	Standardized approach	3,071	246	3,164	253
21	IMA	16,702	1,336	18,708	1,497
EU 22a	Large exposures	0	0	0	0
23	Operational risk	61,718	4,937	64,613	5,169
	of which:				
EU 23a	Basic indicator approach	0	0	0	0
EU 23b	Standardized approach	0	0	0	0
EU 23c	Advanced measurement approach	61,718	4,937	64,613	5,169
24	Amounts below the thresholds for deduction (subject to 250% risk weight)	14,311	1,145	13,437	1,075
29	Total	**351,629**	**28,130**	350,733	28,059

Our RWA were € 351.6 billion as of December 31, 2021, compared to € 350.7 billion as of September 30, 2021. The increase of € 0.9 billion was primarily driven by credit risk (excluding CCR) and RWA for deferred tax assets ("DTA"; subject to 250% risk weight), which was partially offset by operational risk, market risk and counterparty credit risk (CCR) RWA. The increase in credit risk RWA (excluding CCR) by € 5.6 billion was mainly driven by parameter recalibrations, business growth within our core businesses and foreign exchange movements. Additionally € 0.9 billion is stemming from DTA RWA. The RWA increases were partly offset by decreased operational risk RWA by € 2.9 billion resulting from a lower internal loss frequency. The market risk RWA reduced by € 2.1 billion driven by IRC stemming from government bonds, partly offset by increases in the VaR and SVaR components predominantly driven by market data window changes. Additionally counterparty credit risk (CCR) RWA decreased by € 1.0 billion mainly due to SFTs calculated according to the financial collateral comprehensive method shown in "Other CCR".

The movements of RWA for the specific risk types are discussed further down in this report for credit risk in section "Development of credit risk RWA (Article 438 (h) CRR)", for counterparty credit risk in section "CCR exposures development (Article 438 (h) CRR)" and for market risk in section "Development of market risk RWA (Article 438 (h) CRR)".

Leverage ratio

We manage our balance sheet on a Group level and, where applicable, locally in each region. In the allocation of financial resources we favor business portfolios with the highest positive impact on our profitability and shareholder value. We monitor and analyze balance sheet developments and track certain market-observed balance sheet ratios. Based on this we trigger discussion and management action by the Group Risk Committee (GRC).

Leverage ratio according to CRR/CRD framework

The non-risk-based leverage ratio is intended to act as a supplementary measure to the risk-based capital requirements. Its objectives are to constrain the build-up of leverage in the banking sector, helping avoid destabilizing deleveraging processes which can damage the broader financial system and the economy, and to reinforce the risk-based requirements with a simple, non-risk based “backstop” measure.

A minimum leverage ratio requirement of 3 % was introduced effective starting with June 28, 2021. From January 1, 2023 an additional leverage ratio buffer requirement of 50 % of the applicable G-SII buffer rate will apply. It is currently expected that this additional requirement will equal 0.75 % for Deutsche Bank.

We calculate our leverage ratio exposure in accordance with Articles 429 to 429g of the CRR.

Our total leverage ratio exposure includes derivatives, securities financing transactions (SFTs), off-balance sheet exposure and other on-balance sheet exposure (excluding derivatives and SFTs).

The leverage exposure for derivatives is calculated by using a modified version of the standardized approach for counterparty credit risk (SA-CCR), comprising the current replacement cost plus a regulatory defined add-on for the potential future exposure. The effective notional amount of written credit derivatives, i.e., the notional reduced by any negative fair value changes that have been incorporated in Tier 1 capital is included in the leverage ratio exposure measure; the resulting exposure measure is further reduced by the effective notional amount of purchased credit derivative protection on the same reference name provided certain conditions are met.

The securities financing transaction (SFT) component includes the gross receivables for SFTs, which are netted with SFT payables if specific conditions are met. In addition to the gross exposure a regulatory add-on for the counterparty credit risk is included.

The off-balance sheet exposure component follows the credit risk conversion factors (CCF) of the standardized approach for credit risk (0 %, 20 %, 50 %, or 100 %), which depend on the risk category subject to a floor of 10 %.

The on-balance sheet exposures (excluding derivatives and SFTs) component reflects the accounting values of the assets (excluding derivatives, SFTs and regular-way purchases and sales awaiting settlement) as well as regulatory adjustments for asset amounts deducted in determining Tier 1 capital. The exposure value of regular-way purchases and sales awaiting settlement is determined as offset between those cash receivables and cash payables where the related regular-way sales and purchases are both settlement on a delivery-versus payment basis.

Certain Euro-based exposures facing Eurosystem central banks may be excluded from the leverage exposure subject to having obtained permission from the European Central Bank. Based on Decision (EU) 2020/1306 of the European Central Bank, the Group was allowed for the first time in the September 30, 2020 reporting to exclude these exposures from the leverage exposure. This exclusion did apply until June 27, 2021. Decision (EU) 2021/1074 of the European Central Bank extends the exemption of certain Euro-based exposures facing Eurosystem central banks until March 31, 2022.

Leverage ratio (Article 451 (1)(a-c),(2) and (3) CRR)

The following tables show the leverage ratio exposure and the leverage ratio. The first table EU LR1 delivers a reconciliation of accounting assets as per IFRS to the leverage ratio exposure. The leverage ratio common disclosure table EU LR2 presents the constituents of the leverage exposure, the leverage ratio on a fully-loaded and phase-in basis with the fully-loaded and phase-in Tier 1 Capital, respectively, in the numerator as well as the mean value for gross securities financing transaction (SFT) assets. For further details on Tier 1 capital please also refer to the “Regulatory capital composition, prudential filters and deduction items" section in chapter "Own funds" in this report. Table EU LR3 provides a further breakdown of the balance sheet exposures (excluding derivatives, SFTs and exempted exposures).

EU LR1 – LRSum: Summary reconciliation of accounting assets and leverage ratio exposures

	in € bn. (unless stated otherwise)	Dec 31, 2021	Jun 30, 2021 [1]
1	Total assets as per published financial statements	**1,324**	1,320
2	Adjustment for entities which are consolidated for accounting purposes but are outside the scope of prudential consolidation	1	1
3	(Adjustment for securitized exposures that meet the operational requirements for the recognition of risk transference)	0	0
4	(Adjustment for temporary exemption of exposures to central banks (if applicable))	(99)	(108)
5	(Adjustment for fiduciary assets recognized on the balance sheet pursuant to the applicable accounting framework but excluded from the total exposure measure in accordance with point (i) of Article 429a(1) CRR)	N/M	N/M
6	Adjustment for regular-way purchases and sales of financial assets subject to trade date accounting	(12)	(40)
7	Adjustment for eligible cash pooling transactions	17	11
8	Adjustment for derivative financial instruments	(165)	(133)
9	Adjustment for securities financing transactions (SFTs)	3	4
10	Adjustment for off-balance sheet items (ie conversion to credit equivalent amounts of off-balance sheet exposures)	115	112
11	(Adjustment for prudent valuation adjustments and specific and general provisions which have reduced Tier 1 capital)	(5)	(5)
EU-11a	(Adjustment for exposures excluded from the total exposure measure in accordance with point (c) of Article 429a(1) CRR)	N/M	N/M
EU-11b	(Adjustment for exposures excluded from the total exposure measure in accordance with point (j) of Article 429a(1) CRR)	N/M	N/M
12	Other adjustments	(55)	(52)
13	Total exposure measure	**1,125**	1,111

N/M – Not meaningful
[1] Values for June 30, 2021 have been updated.

EU LR2 – LRCom: Leverage ratio common disclosure

	in € bn. (unless stated otherwise)	Dec 31, 2021	Jun 30, 2021 [1]
	On-balance sheet exposures (excluding derivatives and SFTs)		
1	On-balance sheet items (excluding derivatives, SFTs, but including collateral)	842	823
2	Gross-up for derivatives collateral provided, where deducted from the balance sheet assets pursuant to the applicable accounting framework	1	1
3	(Deductions of receivables assets for cash variation margin provided in derivatives transactions)	(37)	(37)
4	(Adjustment for securities received under securities financing transactions that are recognized as an asset)	0	0
5	(General credit risk adjustments to on-balance sheet items)	(5)	(5)
6	(Asset amounts deducted in determining Tier 1 capital)	(9)	(9)
7	Total on-balance sheet exposures (excluding derivatives and SFTs)	**791**	774
	Derivative exposures		
8	Replacement cost associated with SA-CCR derivatives transactions (ie net of eligible cash variation margin)	46	45
EU-8a	Derogation for derivatives: replacement costs contribution under the simplified standardized approach	N/M	N/M
9	Add-on amounts for potential future exposure associated with SA-CCR derivatives transactions	82	87
EU-9a	Derogation for derivatives: Potential future exposure contribution under the simplified standardized approach	N/M	N/M
EU-9b	Exposure determined under Original Exposure Method	N/M	N/M
10	(Exempted CCP leg of client-cleared trade exposures) (SA-CCR)	(6)	(4)
EU-10a	(Exempted CCP leg of client-cleared trade exposures) (simplified standardised approach)	N/M	N/M
EU-10b	(Exempted CCP leg of client-cleared trade exposures) (Original exposure method)	N/M	N/M
11	Adjusted effective notional amount of written credit derivatives	460	402
12	(Adjusted effective notional offsets and add-on deductions for written credit derivatives)	(444)	(384)
13	Total derivatives exposures	**138**	146
	Securities financing transaction (SFT) exposures		
14	Gross SFT assets (with no recognition of netting), after adjustment for sales accounting transactions	194	187
15	(Netted amounts of cash payables and cash receivables of gross SFT assets)	(108)	(104)
16	Counterparty credit risk exposure for SFT assets	5	5
EU-16a	Derogation for SFTs: Counterparty credit risk exposure in accordance with Articles 429e(5) and 222 CRR	N/M	N/M
17	Agent transaction exposures	0	0
EU-17a	(Exempted CCP leg of client-cleared SFT exposure)	0	0
18	Total securities financing transaction exposures	**91**	89
	Other off-balance sheet exposures		
19	Off-balance sheet exposures at gross notional amount	327	317
20	(Adjustments for conversion to credit equivalent amounts)	(211)	(204)
21	(General provisions deducted in determining Tier 1 capital and specific provisions associated with off-balance sheet exposures)	(0)	(0)
22	Off-balance sheet exposures	**115**	112
	Excluded exposures		
EU-22a	(Exposures excluded from the total exposure measure in accordance with point (c) of Article 429a(1) CRR)	N/M	N/M
EU-22b	(Exposures exempted in accordance with point (j) of Article 429a(1) CRR (on and off balance sheet))	N/M	N/M
EU-22c	(Excluded exposures of public development banks (or units) - Public sector investments)	N/M	N/M
EU-22d	(Excluded exposures of public development banks (or units) - Promotional loans)	N/M	N/M
EU-22e	(Excluded passing-through promotional loan exposures by non-public development banks (or units))	N/M	N/M
EU-22f	(Excluded guaranteed parts of exposures arising from export credits)	(5)	(5)
EU-22g	(Excluded excess collateral deposited at triparty agents)	N/M	N/M
EU-22h	(Excluded CSD related services of CSD/institutions in accordance with point (o) of Article 429a(1) CRR)	N/M	N/M
EU-22i	(Excluded CSD related services of designated institutions in accordance with point (p) of Article 429a(1) CRR)	N/M	N/M
EU-22j	(Reduction of the exposure value of pre-financing or intermediate loans)	(5)	(5)
EU-22k	(Total exempted exposures)	**(10)**	(10)
	Capital and total exposure measure		
23	Tier 1 capital (fully loaded)	54.7	52.5
24	Total exposure measure	1,125	1,111
	Leverage ratio		
25	Leverage ratio (fully loaded, in %)	4.9%	4.7%
EU-25	Leverage ratio (excluding the impact of the exemption of public sector investments and promotional loans) (%)	4.9%	4.7%
25a	Leverage ratio (excluding the impact of any applicable temporary exemption of central bank reserves) (%)	4.5%	4.3%
26	Regulatory minimum leverage ratio requirement (%)	3.2%	3.2%
EU-26a	Additional own funds requirements to address the risk of excessive leverage (%)	0.0%	0.0%
EU-26b	of which: to be made up of CET1 capital	0.0%	0.0%
27	Leverage ratio buffer requirement (%)	0.0%	0.0%
EU-27a	Overall leverage ratio requirement (%)	3.2%	3.2%
	Choice on transitional arrangements and relevant exposures		

	in € bn. (unless stated otherwise)	Dec 31, 2021	Jun 30, 2021 [1]
EU-27b	Choice on transitional arrangements for the definition of the capital measure[2]	Fully phased in	Fully phased in
	Disclosure of mean values		
28	Mean of daily values of gross SFT assets, after adjustment for sale accounting transactions and netted of amounts of associated cash payables and cash receivable	120	90
29	Quarter-end value of gross SFT assets, after adjustment for sale accounting transactions and netted of amounts of associated cash payables and cash receivables	86	83
30	Total exposure measure (including the impact of any applicable temporary exemption of central bank reserves) incorporating mean values from row 28 of gross SFT assets (after adjustment for sale accounting transactions and netted of amounts of associated cash payables and cash receivables)	1,159	1,118
30a	Total exposure measure (excluding the impact of any applicable temporary exemption of central bank reserves) incorporating mean values from row 28 of gross SFT assets (after adjustment for sale accounting transactions and netted of amounts of associated cash payables and cash receivables)	1,258	1,226
31	Leverage ratio (including the impact of any applicable temporary exemption of central bank reserves) incorporating mean values from row 28 of gross SFT assets (after adjustment for sale accounting transactions and netted of amounts of associated cash payables and cash receivables)	4.7%	4.7%
31a	Leverage ratio (excluding the impact of any applicable temporary exemption of central bank reserves) incorporating mean values from row 28 of gross SFT assets (after adjustment for sale accounting transactions and netted of amounts of associated cash payables and cash receivables)	4.4%	4.3%
	Memorandum items		
	Tier 1 capital (according to transitional rules)	55.4	53.6
	Total exposure measure (according to transitional rules)	1,125	1,111
	Leverage ratio (according to transitional rules, in %)	4.9%	4.8%

N/M – Not meaningful
[1] Values for June 30, 2021 have been updated.
[2] The fully phased in numbers follow EBA guidance and do not include the IFRS 9 transitional provision as per Article 473a of the CRR. The transitional impact amounted to € 39 million as of December 31, 2021 and € 29 million as of June 30, 2021.

EU LR3 – LRSpl: Split-up of on balance sheet exposures (excluding derivatives, SFTs and exempted exposures)

	in € bn. (unless stated otherwise)	Dec 31, 2021	Jun 30, 2021 [1]
EU-1	Total on-balance sheet exposures (excluding derivatives, SFTs, and exempted exposures)	**791**	773
	of which:		
EU-2	Trading book exposures	106	117
EU-3	Banking book exposures	685	655
	of which:		
EU-4	Covered bonds	0	0
EU-5	Exposures treated as sovereigns	136	138
EU-6	Exposures to regional governments, MDB, international organizations and PSE, not treated as sovereigns	1	1
EU-7	Institutions	12	13
EU-8	Secured by mortgages of immovable properties	214	207
EU-9	Retail exposures	34	33
EU-10	Corporates	212	190
EU-11	Exposures in default	9	10
EU-12	Other exposures (e.g. equity, securitizations, and other non-credit obligation assets)	66	63

[1] Values for June 30, 2021 have been updated.

Process used to manage the risk of excessive leverage (Article 451 (1)(d) CRR) (EU LRA)

The Group Risk Committee (GRC) is mandated to oversee, control and monitor integrated planning of our risk profile and capital capacity. The Group Asset and Liability Committee (ALCO) actively manages leverage exposure capacity within the Risk Appetite Framework via a limit setting process

- to allocate group leverage exposure capacity to businesses,
- to support business achievement of strategic performance plans,
- to provide a firm basis for achieving the target leverage ratio,
- to incentivize businesses to make appropriate decisions on their portfolios, with consideration to asset maturity and encumbrance amongst others, and
- to maintain risk and leverage exposure discipline.

The governance framework ensures that the leverage exposure capacity is carefully decided to reach our external leverage ratio target set for year end 2022 and avoids an excessive leverage of the bank and its divisions. The resulting leverage exposure limits include all assets including those inflating our balance sheet through asset encumbrance. In the case of divisions exceeding their agreed limits, charges are imposed on the division for the excess amount. The limit excess charges are calculated in accordance with the Group-wide limit-setting framework for leverage.

Factors that had an impact on the leverage ratio in the second half of 2021 (Article 451 (1)(e) CRR) (EU LRA)

As of December 31, 2021, our fully loaded leverage ratio was 4.9 % compared to 4.7 % as of June 30, 2021. This takes into account a fully loaded Tier 1 capital of € 54.7 billion over an applicable exposure measure of € 1,125 billion as of December 31, 2021 (€ 52.5 billion and € 1,111 billion as of June 30, 2021, respectively).

In the second half of 2021, our leverage exposure increased by € 14 billion to € 1,125 billion, largely driven by the leverage exposure for the remaining asset items which increased by € 17 billion. This reflects the development of our balance sheet: loans were € 37 billion higher driven by loan growth on the balance sheet in our Core Bank. Cash and central bank/interbank balances increased by € 2 billion. These increases were partly offset by non-derivative trading assets which decreased by € 10 billion, mainly from de-leveraging in CRU as part of our transformation process, and Financial assets at fair value through OCI which decreased by € 8 billion driven by the repositioning of the liquidity reserve. Pending settlements decreased by € 2 billion on a net basis - despite being € 30 billion lower on a gross basis due to seasonally low year-end levels. Off-balance sheet leverage exposures increased by € 3 billion corresponding to higher notional amounts for irrevocable lending commitments. Furthermore, SFT-related items (securities purchased under resale agreements, securities borrowed and receivables from prime brokerage) increased by € 2 billion, in line with the development on the balance sheet. In addition, the leverage exposure related to derivatives decreased by € 9 billion.

The increase in leverage exposure in the second half of 2021 included a positive foreign exchange impact of € 21 billion, mainly due to the strengthening of the U.S. Dollar versus the Euro. The effects from foreign exchange rate movements are embedded in the movement of the leverage exposure items discussed in this section.

As of December 31, 2021, our leverage ratio according to transitional provisions was 4.9 % (4.8 % as of June 30, 2021), calculated as Tier 1 capital according to transitional rules of € 55.4 billion over an applicable exposure measure of € 1,125 billion (€ 53.6 billion and € 1,111 billion as of June 30, 2021, respectively).

We exclude certain central bank exposures in the amount of € 99 billion as of December 31, 2021, based on Article 429a (1) (n) CRR and the ECB Decision 2021/1074. As we make use of this exemption, Article 429a (7) CRR specifies that the applicable minimum leverage ratio must be increased to 3.2%. Note that until the first quarter of 2021 a similar exemption applied based on Article 500b CRR. Not applying the temporary exclusion of certain central bank exposures our leverage exposure was € 1,223 billion as of December 31, 2021, corresponding to a leverage ratio of 4.5 % on a fully loaded basis and on a phase-in basis.

Credit risk and credit risk mitigation

General qualitative information on credit risk (Article 435 (1)(a-d) CRR) (EU OVA & EU CRA)

Credit risk management strategies and processes (Article 435 (1)(a) CRR) (EU OVA & EU CRA)

Credit Risk arises from all transactions where actual, contingent or potential claims against any counterparty, borrower, obligor or issuer (which we refer to collectively as “counterparties”) exist, including those claims that we plan to distribute. These transactions are typically part of our non-trading lending activities (such as loans and contingent liabilities) as well as our direct trading activity with clients (such as OTC derivatives). These also include traded bonds and debt securities. Carrying values of equity investments are also disclosed in our Credit Risk section. We manage the respective positions within our market risk and credit risk frameworks.

Based on the Risk Type Taxonomy, Credit Risk is grouped into four material categories, namely default / migration risk, transaction / settlement risk (exposure risk), mitigation risk and credit concentration risk. This is complemented by a regular risk identification and materiality assessment.

- Default / migration risk as the main element of credit risk, is the risk that a counterparty defaults on its payment obligations or experiences material credit quality deterioration increasing the likelihood of a default.
- Transaction / settlement risk (exposure risk) is the risk that arises from any existing, contingent or potential future positive exposure.
- Mitigation risk is the risk of higher losses due to risk mitigation measures not performing as anticipated.
- Credit concentration risk is the risk of an adverse development in a specific single counterparty, country, industry or product / asset class leading to a disproportionate deterioration in the risk profile of Deutsche Bank's credit exposures to that counterparty, country, industry or product / asset class.

Credit Risk is measured by credit rating, regulatory and internal capital demand and key credit metrics mentioned below.

The credit rating is an essential part of the Bank’s underwriting and credit process and builds the basis for risk appetite determination on a counterparty and portfolio level, credit decision and transaction pricing as well the determination of regulatory capital demand for credit risk. Each counterparty must be rated and each rating has to be reviewed at least annually. Ongoing monitoring of counterparties helps keep ratings up-to-date. There must be no credit limit without a credit rating. For each credit rating the appropriate rating approach has to be applied and the derived credit rating has to be established in the relevant systems. Different rating approaches have been established to best reflect the specific characteristics of exposure classes, including central governments and central banks, institutions, corporates and retail.

Counterparties in our non-homogenous portfolios are rated by our independent Credit Risk Management function. Country risk ratings are provided by ERM Risk Research.

Our rating analysis is based on a combination of qualitative and quantitative factors. When rating a counterparty we apply in-house assessment methodologies, scorecards and our 21-grade rating scale for evaluating the credit-worthiness of our counterparties.

We measure risk-weighted assets to determine the regulatory capital demand for credit risk using “advanced”, “foundation” and “standard” approaches of which advanced and foundation are approved by our regulator.

The advanced Internal Ratings Based Approach (IRBA) is the most sophisticated approach available under the regulatory framework for credit risk and allows us to make use of our internal credit rating methodologies as well as internal estimates of specific further risk parameters. These methods and parameters represent long-used key components of the internal risk measurement and management process supporting the credit approval process, the economic capital and expected loss calculation and the internal monitoring and reporting of credit risk. The relevant parameters include the probability of default (PD), the loss given default (LGD) and the maturity (M) driving the regulatory risk-weight and the credit conversion factor (CCF) as part of the regulatory exposure at default (EAD) estimation. For the majority of derivative counterparty exposures as well as securities financing transactions (SFT), we make use of the internal model method (IMM) in accordance with CRR and SolvV to calculate EAD. For most of our internal rating systems more than seven years of historical information is available to assess these parameters. Our internal rating methodologies aim at point-in-time rather than a through-the-cycle rating, but in line with regulatory solvency requirements, they are calibrated based on long-term averages of observed default rates.

The foundation IRBA is an approach available under the regulatory framework for credit risk allowing institutions to make use of their internal rating methodologies while using pre-defined regulatory values for all other risk parameters. Parameters subject to internal estimates include the PD while the LGD and the CCF are defined in the regulatory framework. Foundation IRBA remains in place for some exposures stemming from ex-Postbank.

We apply the standardized approach to a subset of our credit risk exposures. The standardized approach measures credit risk either pursuant to fixed risk weights, which are predefined by the regulator, or through the application of external ratings. We assign certain credit exposures permanently to the standardized approach in accordance with Article 150 CRR. These are predominantly exposures to the Federal Republic of Germany and other German public sector entities as well as exposures to central governments of other European Member States that meet the required conditions. These exposures make up the majority of the exposures carried in the standardized approach and receive predominantly a risk weight of zero percent. For internal purposes, however, these exposures are subject to an internal credit assessment and fully integrated in the risk management and economic capital processes.

In addition to the above described regulatory capital demand, we determine the internal capital demand for credit risk via an economic capital model.

We calculate economic capital for the default risk, country risk and settlement risk as elements of credit risk. In line with our economic capital framework, economic capital for credit risk is set at a level to absorb with a probability of 99.9 % very severe aggregate unexpected losses within one year. Our economic capital for credit risk is derived from the loss distribution of a portfolio via Monte Carlo Simulation of correlated rating migrations. The loss distribution is modeled in two steps. First, individual credit exposures are specified based on parameters for the probability of default, exposure at default and loss given default. In a second step, the probability of joint defaults is modeled through the introduction of economic factors, which correspond to geographic regions and industries. The simulation of portfolio losses is then performed by an internally developed model, which takes rating migration and maturity effects into account. Effects due to wrong-way derivatives risk (i.e., the credit exposure of a derivative in the default case is higher than in non-default scenarios) are modeled by applying our own alpha factor when deriving the exposure at default for derivatives and securities financing transactions under the CRR. We allocate expected losses and economic capital derived from loss distributions down to transaction level to enable management on transaction, customer and business level.

Besides the credit rating, which is a key component we apply for managing our credit portfolio, including transaction approval and the setting of risk appetite, we establish credit limits for all credit exposures. Credit limits set forth maximum credit exposures we are willing to assume over specified periods. In determining the credit limit for a counterparty, we consider the counterparty's credit quality by reference to our internal credit rating. Credit limits and credit exposures are both measured on a gross and net basis where net is derived by deducting hedges and certain collateral from respective gross figures. For derivatives, we look at current market values and the potential future exposure over the relevant time horizon which is based upon our legal agreements with the counterparty. We also take into consideration the risk-return characteristics of individual transactions and portfolios. Risk-Return metrics explain the development of client revenues as well as capital consumption.

Credit risk management structure and organization (Article 435 (1)(b) CRR) (EU OVA & EU CRA)

We manage our credit risk using the following philosophy and principles:

- Credit Risk Management (CRM) forms part of the 2nd Line of Defense (2nd LoD) within DB Group's Three Lines of Defense model. Business as primary risk taker and owner forms the 1st Line of Defense (1st LoD) and Group Audit the 3rd Line of Defense (3rd LoD).
- Compliance is reporting to a different Management Board Member and hence the credit risk function is independent from the compliance function up to Management Board level.
- In each of our divisions, credit decision standards, processes and principles are consistently applied.
- A key principle of credit risk management is client credit due diligence. Our client selection is achieved in collaboration with our business division counterparts who stand as a first line of defense.
- We aim to prevent undue concentration and tail-risks (large unexpected losses) by maintaining a diversified credit portfolio. Client, industry, country and product-specific concentrations are assessed and managed against our risk appetite.
- We maintain underwriting standards aiming to avoid large undue credit risk on a counterparty and portfolio level. In this regard we extend unsecured cash positions and actively use hedging for risk mitigation purposes. Additionally, we strive to secure our derivative portfolio through collateral agreements and may additionally hedge concentration risks to further mitigate credit risks from underlying market movements.

- Every new credit facility and every extension of an existing credit facility (such as exposure limit increase) to any counterparty requires credit approval at the appropriate authority level in line with the minimum required credit authority calculation. We assign credit approval authorities to individuals according to their qualifications, experience and training, and we review these periodically.
- We manage all our credit exposures to each obligor across our consolidated Group on the basis of the "one obligor principle" (as required under CRR Article 4(1)(39)), under which all facilities to a group of borrowers which are linked to each other (for example by one entity holding a majority of the voting rights or capital of another) are consolidated under one group.
- We have established within Credit Risk Management – where appropriate – specialized teams for deriving internal client ratings, analyzing and approving transactions, monitoring the portfolio or covering workout clients. For transaction approval purposes, structured credit risk management teams are aligned to the respective lending business areas.
- Where required, we have established processes to manage credit exposures at a legal entity level.
- To meet the requirements of CRR Article 190, DB Group has allocated the various control requirements for the credit processes to 2nd LoD units that are best suited to perform such controls.

The model change process and the relevant governance bodies are described in the chapter "Role of the function in the credit risk model process, scope and main content of credit risk models (Article 452 (d-e) CRR) (EU CRE)".

Scope and nature of credit risk measurement and reporting systems (Article 435 (1)(c) CRR) (EU OVA & EU CRA)

Both credit and non-credit risk measurement systems support credit risk related management reporting and provide the basis for reporting on credit risk positions and utilization under established limits to relevant stakeholders on a regular and ad-hoc basis. Established units within the Credit Risk function assume responsibility for measurement, analysis and reporting of risk while promoting sufficient quality and integrity of credit risk-related data.

The main reports on credit risk that are used to provide stakeholders within and outside of Credit Risk Management (CRM) with information relating to the Group credit risk profile are the following:

The more standardized Credit Risk Portfolio Monthly Cockpit is CRM's consolidated Key Risk Report. It covers the institutional as well as retail & wealth portfolios of Credit Risk.

The more bespoke monthly Credit Risk Appetite & Portfolio Management Forum reporting has been established to monitor and promote discussion on qualitative and quantitative credit portfolio developments and the current macroeconomic environment including market trends and events. The material typically covers key credit risk themes, the credit portfolio risk profile, credit portfolio appetite, informs on potential counterparty and portfolio concentrations, provides information on the development of financial resources such as Credit Risk RWA and Credit Risk EC including stress testing, updates on credit portfolio risk mitigation across the banking and trading book positions and wrong way risk as well as the development and outlook of Credit Loss Provisions (CLP).

The Weekly Credit Risk Wrap, a summary that provides an update of latest credit risk developments over the week, including recent news, CLP and underwriting pipeline trends.

While the above reports are used at a Group level to monitor and review the credit risk profile of Deutsche Bank holistically, there are other, supplementing standard and ad-hoc management reports, including for sub- and focus portfolios, asset classes as well as legal entities, which are used to monitor and control the risk profile. Fully automated credit portfolio overview reports can be also utilized and show, for the selected portfolio scope, key credit risk metrics and various portfolio splits, such as top movers by product classification, tenor and country. In addition, Credit Risk feeds information into the Bank's cross risk reports as outlined earlier.

Policies for hedging and mitigating credit risk (Article 435 (1)(d) CRR) (EU OVA & EU CRA)

We have regulated the acceptance, valuation and management of risk mitigating and hedging instruments in a framework of approved global, local and product or business specific policies and procedures which determine the Bank´s standards and consider legal and regulatory requirements. Tasks, responsibilities and respective authorities are dedicated here while the processes are executed mainly decentralized or locally or in specific teams with delegated tasks.

Under the framework of the "Principles for Managing Credit Risk" as well as the "Policy for Managing Credit Risk" the Bank´s main respective policies for hedging and mitigating credit risk are:

- The Global Collateral Policy (for Banking Book Collateral)
- The Global Collateral Policy (for Derivatives and Securities Financing Transactions)

supplemented by divisional credit policies and process guides and a comprehensive regime of local, divisional and business specific collateral management and valuation procedures, directives and manuals. All these regulations are reviewed, updated and approved at least annually and distributed to the relevant staff as well as accessible on the Bank´s Policy Portal.

Definitions of past due and impairment (Article 442 (a) CRR) (EU CRB)

Exposures are considered to be past due if contractually agreed payments of principal and/or interest remain unpaid by the borrower, except if those are acquired through consolidation. The latter are considered to be past due if payments of principal and/or interest, which were expected at a certain payment date at the time of the initial consolidation of the loans, are unpaid by the borrower.

The Group has aligned its definition of "credit impaired" under IFRS 9 to the default definition as per Art. 178 of the Capital Requirements Regulation (CRR) for regulatory purposes. As a consequence, credit impaired financial assets (or Stage 3 financial assets) consist of two types of defaulted financial assets: firstly financial assets, where the Group expects an impairment loss and the amount is reflected in the allowance for credit losses and secondly financial assets, where the group does not expect an impairment loss (e.g., due to high quality collateral or sufficient expected future cash flows following thorough due diligence).

Credit risk adjustments (Article 442 (b) CRR) (EU CRB)

The determination of impairment losses and allowances is based on the expected credit loss model under IFRS 9, where allowances for loan losses are recorded upon initial recognition of the financial asset, based on expectations of potential credit losses at the time of initial recognition.

The impairment requirements of IFRS 9 apply to all credit exposures that are measured at amortized cost or fair value through other comprehensive income and to off balance sheet lending commitments, such as loan commitments and financial guarantees. For purposes of our impairment approach, we refer to these instruments as financial assets.

The Group determines its allowance for credit losses in accordance with IFRS 9 as follows:

– Stage 1 reflects financial instruments where it is assumed that credit risk has not increased significantly after initial recognition.

– Stage 2 contains all financial assets, that are not defaulted, but have experienced a significant increase in credit risk since initial recognition.

– Stage 3 consists of financial assets of clients which are defaulted in accordance with DB's policies on regulatory default, which are based on the Capital Requirements Regulation (CRR) under Art. 178. The Group defines these financial assets as impaired, non-performing and defaulted.

– Significant increase in Credit Risk is determined using quantitative and qualitative information based on the Group's historical experience, credit risk assessment and forward-looking information.

– Purchased or Originated Credit Impaired (POCI) financial assets are assets where at the time of initial recognition there is objective evidence of impairment.

The IFRS 9 impairment approach is an integral part of the Group's Credit Risk Management procedures. The estimation of Expected Credit Losses (ECL's) is either performed via the automated, parameter based ECL calculation using the Group's ECL model or determined by Credit Officers. In both cases, the calculation takes place for each financial asset individually. Similarly, the determination of the need to transfer between stages is made on an individual asset basis. The Group's ECL model is used to calculate the allowance for credit losses for all financial assets in Stage 1 and Stage 2, as well as for Stage 3 in the homogeneous portfolio (i.e. retail and small business loans with similar credit risk characteristics). For financial assets in our non-homogeneous portfolio in Stage 3 and for POCI assets, the allowance for credit losses is determined by Credit Officers.

The Group uses three main components to measure ECL. These are Probability of Default (PD), Loss Given Default (LGD) and Exposure at Default (EAD). The Group leverages existing parameters used for determination of capital demand under the Basel Internal Ratings Based Approach and internal risk management practices as much as possible to calculate ECL. These parameters are adjusted where necessary to comply with IFRS 9 requirements (e.g. use of point in time ratings and removal of downturn add-ons in the regulatory parameters). Incorporating forecasts of future economic conditions into the measurement of expected credit losses influences the allowance for credit losses in Stage 1 and 2. In order to calculate lifetime expected credit losses, the Group's calculation derives the corresponding lifetime PDs from migration matrices that reflect economic forecasts.

General quantitative information on credit risk

Residual maturity breakdown of credit exposure (Article 442 (g) CRR)

The table EU CR1-A has replaced the table EU CRB-E, as shown below, representing the net credit exposures by maturities and exposure classes. Here exposure refers to on-balance sheet items wherein the "net value of exposure" is calculated by deducting credit risk adjustments from the gross amount. The net exposure is split into 5 categories based on the residual contractual maturity. Below are the categories

- On Demand – where the counterparty has a choice of when the amount is repaid
- Bucketing – 0 to 1 year, 1 to 5 years and more than 5 years
- No stated maturity – where an exposure has no stated maturity for reasons other than the counterparty having the choice of the repayment date

The breakdown into the exposure classes follows those as defined for the IRBA (i.e., combining the advanced and foundation IRB) as well as for the standardized approach. In the IRB approach, the line item "Central governments and central banks" includes exposures to regional governments or local authorities, public sector entities, multilateral developments banks and international organizations. The exposure class "Other items" within the standardized approach includes all exposures not covered in the other categories

EU CR1-A – Maturity of exposures

							Dec 31, 2021
		a	b	c	d	e	f
		Net exposure value					
	in € m.	On demand	<= 1 year	> 1 year <= 5 years	> 5 years	No stated maturity	Total
1	Central governments and central banks	86,010	9,969	11,584	10,653	0	118,215
2	Institutions	5,498	4,048	2,497	1,329	0	13,372
3	Corporates	15,257	104,641	79,889	30,644	0	230,431
4	Retail	2,248	5,543	20,061	180,997	0	208,849
5	Equity	1,336	773	0	69	0	2,178
5a	Other non-credit obligation asset	2,688	4,814	800	2,450	0	10,751
6	Total IRB approach	113,037	129,787	114,831	226,141	0	583,797
7	Central governments or central banks	104,307	5,493	2,115	3,180	0	115,096
8	Regional governments or local authorities	43	1,995	999	532	0	3,569
9	Public sector entities	62	129	69	420	0	681
10	Multilateral development banks	0	73	46	344	0	463
11	International organizations	0	727	0	82	0	808
12	Institutions	216	26	1	2,430	0	2,673
13	Corporates	2,675	6,546	4,262	1,732	0	15,215
14	Retail	429	176	435	643	0	1,683
15	Secured by mortgages on immovable property	570	592	983	3,015	0	5,160
16	Exposures in default[1]	157	138	185	597	0	1,077
17	Items associated with particularly high risk	20	1	4	57	0	82
18	Covered bonds	0	0	0	0	0	0
19	Claims on institutions and corporates with a short-term credit assessment	0	0	0	0	0	0
20	Collective investments undertakings (CIU)	0	0	0	0	0	0
21	Equity exposures	0	0	0	0	0	0
22	Other items	0	2	0	0	0	2
23	Total standardized approach	108,321	15,760	8,915	12,435	0	145,431
24	Total	221,358	145,547	123,747	238,576	0	729,228

Jun 30, 2021

		a	b	c	d	e	f
		Net exposure value					
	in € m.	On demand	<= 1 year	> 1 year <= 5 years	> 5 years	No stated maturity	Total
1	Central governments and central banks	82,957	9,465	13,969	11,133	0	117,524
2	Institutions	6,466	4,102	2,716	1,442	0	14,725
3	Corporates	12,698	92,476	69,737	32,294	0	207,205
4	Retail	2,143	5,408	19,742	177,007	0	204,300
5	Equity	1,692	843	36	116	0	2,687
5a	Other non-credit obligation asset	2,814	5,862	664	2,420	0	11,761
6	Total IRB approach	108,769	118,155	106,863	224,413	0	558,201
7	Central governments or central banks	115,249	4,485	3,224	4,898	0	127,856
8	Regional governments or local authorities	18	1,628	1,563	732	0	3,940
9	Public sector entities	49	141	310	421	0	921
10	Multilateral development banks	0	28	167	471	0	666
11	International organizations	0	731	0	82	0	813
12	Institutions	0	34	0	1,734	0	1,768
13	Corporates	3,356	9,112	4,410	1,582	0	18,461
14	Retail	380	301	603	668	0	1,953
15	Secured by mortgages on immovable property	446	432	573	2,702	0	4,154
16	Exposures in default[1]	187	128	188	635	0	1,137
17	Items associated with particularly high risk	36	39	4	74	0	154
18	Covered bonds	0	0	0	0	0	0
19	Claims on institutions and corporates with a short-term credit assessment	0	0	0	0	0	0
20	Collective investments undertakings (CIU)	0	0	0	0	0	0
21	Equity exposures	0	0	0	0	0	0
22	Other items	0	7	0	0	0	7
23	Total standardized approach	119,534	16,939	10,855	13,365	0	160,693
24	Total	228,303	135,095	117,719	237,777	0	718,894

[1] In light of EBA guidance (Q&A 2017_3481) we present the defaulted exposure within the standardized approach as a total in row 16 but also show a breakdown of defaulted exposure and assign it to their respective exposure classes. In order to avoid double counting of exposures, the total exposure of the standardized approach as presented in row 23 does not take into account figures disclosed under row 16.

Quality of non-performing exposures by geography (Article 442 (c+e) CRR)

Table EU CQ4 provides asset quality information of the Group's Debt Instruments and Off Balance Sheet exposures excluding those Held for Trading broken down by significant countries. The first column in table EU CQ4 a represents the total Gross carrying /nominal amount and performing and non-performing exposures

We consider top 25 countries by exposure as being significant, representing more than 90 % of total exposure. The geographical distribution is based on the legal domicile of the counterparty or issuer.

The amounts shown are based on IFRS accounting values according to the regulatory scope of consolidation. The gross carrying amount reflects the exposure value including accumulated impairment, provisions and accumulated negative changes due to credit risk for non-performing exposures. An exposure is being classified as non-performing (defaulted) if it meets to the criteria an Article 47a (3) (Article 178) of the CRR. Debt instruments at Amortized Cost and Fair Value through OCI are subject to impairment.

EU CQ4 – Quality of non-performing exposures by geography

								Dec 31, 2021
		a	b	c	d	e	f	g
		Gross carrying/nominal amount						
			of which non-performing					
	in € m.			of which defaulted	of which subject to impairment	Accumulated impairment	Provisions on off-balance-sheet commitments and financial guarantees	Accumulated negative changes in fair value due to credit risk on non-performing exposures
1	**On-balance-sheet exposures²**	699,901	13,106	12,768	613,640	4,895	0	19
2	Australia	5,112	149	127	4,568	27	0	0
3	Belgium	2,471	12	12	2,430	2	0	0
4	Canada	2,844	0	0	2,006	2	0	0
5	Cayman Islands	21,254	179	179	9,566	13	0	0
6	China	5,895	46	46	5,810	3	0	0
7	France	20,295	82	82	6,995	22	0	0
8	Germany	251,564	3,986	3,949	248,168	2,234	0	0
9	Hong Kong	4,432	642	642	4,245	81	0	0
10	India	10,131	459	459	9,346	108	0	0
11	Ireland	10,118	846	724	6,485	126	0	0
12	Italy	26,615	1,552	1,546	25,877	1,063	0	0
13	Japan	7,645	142	142	3,865	19	0	0
14	Jersey	2,316	110	110	2,271	37	0	0
15	Luxembourg	16,005	87	87	14,653	21	0	1
16	Netherlands	17,539	265	265	16,968	110	0	13
17	Poland	4,007	95	92	3,930	51	0	1
18	Saudi Arabia	1,612	0	0	1,612	0	0	0
19	Singapore	6,445	98	98	6,325	16	0	0
20	Spain	19,000	1,136	1,123	18,458	366	0	0
21	Sweden	1,872	1	1	1,494	6	0	0
22	Switzerland	14,532	384	384	14,391	29	0	0
23	Turkey	5,556	39	39	4,678	8	0	0
24	U.S.	150,552	1,949	1,816	121,367	298	0	0
25	United Kingdom	30,526	124	123	20,180	56	0	0
26	Virgin Islands, British	7,519	70	70	7,476	33	0	0
27	Other countries¹	54,042	652	651	50,475	165	0	4
28	**Off-balance-sheet exposures**	282,745	2,713	2,700	0	0	449	0
29	Australia	2,706	44	44	0	0	1	0
30	Belgium	2,237	0	0	0	0	1	0
31	Canada	2,399	0	0	0	0	3	0
32	Cayman Islands	1,667	0	0	0	0	0	0
33	China	2,353	2	2	0	0	0	0
34	France	9,133	38	38	0	0	5	0
35	Germany	85,212	425	418	0	0	141	0
36	Hong Kong	2,014	58	58	0	0	4	0
37	India	4,197	16	16	0	0	2	0
38	Ireland	3,023	6	6	0	0	2	0
39	Italy	7,699	19	17	0	0	11	0
40	Japan	1,159	0	0	0	0	1	0
41	Jersey	1,121	10	10	0	0	1	0
42	Luxembourg	7,194	49	49	0	0	6	0
43	Netherlands	10,644	227	227	0	0	21	0
44	Poland	574	0	0	0	0	0	0
45	Saudi Arabia	1,923	141	141	0	0	26	0
46	Singapore	2,539	4	4	0	0	3	0
47	Spain	6,510	73	72	0	0	18	0
48	Sweden	1,931	0	0	0	0	1	0
49	Switzerland	9,233	56	56	0	0	3	0
50	Turkey	184	9	9	0	0	0	0
51	U.S.	90,469	1,368	1,368	0	0	163	0
52	United Kingdom	10,372	44	44	0	0	9	0
53	Virgin Islands, British	72	0	0	0	0	0	0
54	Other countries¹	16,184	124	121	0	0	29	0
55	Total	982,646	15,819	15,468	613,640	4,895	449	19

¹ The top 25 countries by exposure are listed in the table, representing more than 90 % of total exposure. Immaterial exposure to remaining countries is reflected in the 'other' category, with individual exposure of less than € 3 billion.
² The on-balance sheet exposure is a total of debt securities and loans & advances only.

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		a	b	c	d	e	f	g
		Gross carrying/nominal amount						
			of which non-performing					
	in € m.			of which defaulted	of which subject to impairment	Accumulated impairment	Provisions on off-balance-sheet commitments and financial guarantees	Accumulated negative changes in fair value due to credit risk on non-performing exposures
1	**On-balance-sheet exposures[2]**	700,903	13,084	12,804	619,912	4,882	0	17
2	Australia	4,176	149	149	3,569	23	0	0
3	Belgium	2,253	5	5	2,175	2	0	0
4	Canada	2,336	0	0	1,990	2	0	0
5	Cayman Islands	8,550	143	143	7,498	9	0	0
6	China	6,592	52	52	6,275	2	0	0
7	France	14,322	70	70	7,704	23	0	0
8	Germany	259,862	4,165	4,152	257,472	2,203	0	0
9	Hong Kong	4,288	258	258	4,160	121	0	0
10	India	10,428	293	291	9,676	98	0	0
11	Ireland	7,717	892	801	6,911	116	0	0
12	Italy	26,881	1,376	1,372	26,135	1,064	0	0
13	Japan	9,791	155	155	4,341	15	0	0
14	Jersey	2,480	86	86	1,623	18	0	0
15	Luxembourg	12,830	143	143	11,328	13	0	0
16	Netherlands	16,930	278	273	16,132	129	0	12
17	Poland	4,002	84	80	4,000	42	0	1
18	Saudi Arabia	1,609	1	1	1,609	0	0	0
19	Singapore	5,916	73	73	5,714	11	0	0
20	Spain	20,505	1,090	1,038	19,937	372	0	0
21	Sweden	1,576	1	1	1,286	6	0	0
22	Switzerland	7,740	356	356	7,470	36	0	0
23	Turkey	4,973	47	47	4,846	8	0	0
24	U.S.	159,032	2,095	2,078	120,584	312	0	0
25	United Kingdom	47,195	131	131	31,595	61	0	0
26	Virgin Islands, British	7,721	68	68	7,721	34	0	0
27	Other countries[1]	51,197	1,074	983	48,161	161	0	4
28	**Off-balance-sheet exposures**	278,819	2,279	2,279	0	0	405	0
29	Australia	2,790	29	29	0	0	1	0
30	Belgium	2,237	3	3	0	0	1	0
31	Canada	2,260	0	0	0	0	2	0
32	Cayman Islands	927	0	0	0	0	0	0
33	China	2,121	3	3	0	0	0	0
34	France	9,160	6	6	0	0	4	0
35	Germany	86,954	405	405	0	0	145	0
36	Hong Kong	1,407	53	53	0	0	6	0
37	India	3,502	8	8	0	0	2	0
38	Ireland	3,071	13	13	0	0	1	0
39	Italy	7,852	30	30	0	0	12	0
40	Japan	1,139	0	0	0	0	1	0
41	Jersey	969	27	27	0	0	1	0
42	Luxembourg	6,721	98	98	0	0	4	0
43	Netherlands	11,472	267	267	0	0	32	0
44	Poland	498	0	0	0	0	0	0
45	Saudi Arabia	1,759	135	135	0	0	0	0
46	Singapore	1,499	0	0	0	0	0	0
47	Spain	6,479	37	37	0	0	16	0
48	Sweden	1,795	0	0	0	0	1	0
49	Switzerland	7,708	5	5	0	0	3	0
50	Turkey	504	11	11	0	0	0	0
51	U.S.	90,193	1,047	1,047	0	0	138	0
52	United Kingdom	10,378	11	11	0	0	7	0
53	Virgin Islands, British	115	0	0	0	0	0	0
54	Other countries[1]	15,310	90	90	0	0	28	0
55	Total	979,722	15,363	15,082	619,912	4,882	405	17

[1] The top 25 countries by exposure are listed in the table, representing more than 90 % of total exposure. Immaterial exposure to remaining countries is reflected in the 'other' category, with individual exposure of less than € 3 billion.
[2] The on-balance sheet exposure is a total of debt securities and loans & advances only.

Credit quality of loans and advances to non-financial corporations by industry (Article 442 (c+e) CRR)

Table EU CQ5 provides asset quality information of the Group's Debt Instruments and Off Balance Sheet exposures to non-financial corporations broken down by industries except for those exposures classified as Held for Trading. The first column in table EU CQ5 a represents the total Gross carrying /nominal amount of performing and non-performing exposures.

The industry classification is based on NACE codes. NACE (Nomenclature des Activités Économiques dans la Communauté Européenne) is a European industry standard classification system for classifying business activities.

The amounts shown are based on IFRS accounting values according to the regulatory scope of consolidation. The gross carrying amount reflects the exposure value including accumulated impairment, provisions and accumulated negative changes due to credit risk for non-performing exposures. An exposure is being classified as non-performing (defaulted) according to the criteria an Article 47a (3) (Article 178) of the CRR.

EU CQ5 – Credit quality of loans and advances to non-financial corporations by industry

							Dec 31, 2021
		a	b	c	d	e	f
		Gross carrying amount					Accumulated negative changes in fair value due to credit risk on non-performing exposures
			of which non-performing				
	in € m.			of which defaulted	of which loans and advances subject to impairment	Accumulated impairment	
1	Agriculture, forestry and fishing	646	30	29	646	12	0
2	Mining and quarrying	2,958	63	63	2,958	17	0
3	Manufacturing	37,719	1,112	1,043	37,692	532	0
4	Electricity, gas, steam and air conditioning supply	4,728	117	117	4,683	45	0
5	Water supply	484	50	50	484	11	0
6	Construction	4,408	390	389	4,406	192	0
7	Wholesale and retail trade	22,728	785	782	22,695	436	0
8	Transport and storage	5,824	364	364	5,736	75	0
9	Accommodation and food service activities	2,273	140	140	2,273	70	0
10	Information and communication	7,513	172	172	7,433	112	0
11	Financial and insurance activities	32,064	1,107	1,107	41,177	180	0
12	Real estate activities	41,219	1,208	1,130	31,243	329	0
13	Professional, scientific and technical activities	9,164	235	230	9,164	104	0
14	Administrative and support service activities	10,786	511	511	10,715	193	0
15	Public administration and defense, compulsory social security	1,434	0	0	338	0	0
16	Education	218	5	5	218	3	0
17	Human health services and social work activities	4,023	106	105	3,998	28	0
18	Arts, entertainment and recreation	1,076	13	12	1,076	8	0
19	Other service activities	7,749	205	202	7,744	29	4
20	Total	197,015	6,613	6,450	194,680	2,375	4

	in € m.	a	b	c	d	e	f
							Jun 30, 2021
		Gross carrying amount					
			of which non-performing				
				of which defaulted	of which loans and advances subject to impairment	Accumulated impairment	Accumulated negative changes in fair value due to credit risk on non-performing exposures
1	Agriculture, forestry and fishing	700	29	29	700	13	0
2	Mining and quarrying	2,538	52	52	2,538	14	0
3	Manufacturing	30,050	1,119	1,119	30,045	556	0
4	Electricity, gas, steam and air conditioning supply	4,014	126	117	3,866	40	0
5	Water supply	492	51	51	492	11	0
6	Construction	4,523	426	423	4,520	186	0
7	Wholesale and retail trade	22,861	845	844	22,816	505	0
8	Transport and storage	5,769	429	373	5,692	90	0
9	Accommodation and food service activities	2,350	106	106	2,350	56	0
10	Information and communication	6,395	255	255	6,391	107	0
11	Financial and insurance activities	33,217	962	962	32,316	308	0
12	Real estate activities	39,997	1,207	1,102	39,972	216	0
13	Professional, scientific and technical activities	9,214	255	253	9,214	105	0
14	Administrative and support service activities	9,614	574	574	9,546	166	0
15	Public administration and defense, compulsory social security	588	0	0	311	0	0
16	Education	229	4	4	229	2	0
17	Human health services and social work activities	3,623	29	28	3,599	18	0
18	Arts, entertainment and recreation	897	13	13	897	10	0
19	Other service activities	9,797	191	186	9,793	27	4
20	Total	186,866	6,674	6,491	185,286	2,430	4

Performing and non-performing exposures and related provisions (Article 442 (c) CRR)

Table EU CR1 provides asset quality information of the Group's Debt Instruments and Off Balance Sheet exposures excluding those Held for Trading broken down by Supervisory Reporting counterparty classes.

The amounts shown are based on IFRS accounting values according to the regulatory scope of consolidation. The gross carrying amount reflects the exposure value including accumulated impairment, provisions and accumulated negative changes due to credit risk for non-performing exposures. An exposure is being classified as non-performing (defaulted) according to the criteria an Article 47a (3) (Article 178) of the CRR. Debt instruments at Amortized Cost and Fair Value through OCI are subject to impairment.

EU CR1 - Performing and non-performing exposures and related provisions

															Dec 31, 2021
	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
	Gross carrying amount/nominal amount						Accumulated impairment, accumulated negative changes in fair value due to credit risk and provisions								
	Performing exposures			Non-performing exposures			Performing exposures - accumulated impairment and provisions			Non-performing exposures - accumulated impairment, accumulated negative changes in fair value due to credit risk and provisions				Collaterals and financial guarantees received on	
in € m.	Total	of which: stage 1	of which: stage 2	Total	of which: stage 2	of which: stage 3	Total	of which: stage 1	of which: stage 2	Total	of which: stage 2	of which: stage 3	Accumulated partial write-off	performing exposures	non-performing exposures
Cash balances at central banks and other demand deposits	197,089	196,797	292	27	0	27	5	5	0	0	0	0	0	0	0
Loans and advances															
Central banks	6,012	2,376	44	0	0	0	0	0	0	0	0	0	0	5,439	0
General governments	14,299	11,509	1,918	49	0	49	13	2	11	5	0	5	0	3,617	40
Credit institutions	48,710	35,849	670	9	0	9	25	25	0	0	0	0	0	17,025	0
Other financial corporations	175,825	111,911	3,417	1,302	0	967	66	48	18	67	0	49	6	100,826	440
Non-financial corporations	190,402	168,843	19,297	6,613	24	5,847	350	154	195	2,030	1	1,926	126	91,332	2,685
of which: SMEs	28,516	24,321	4,182	1,410	8	1,335	66	19	46	555	0	554	18	19,550	467
Households	207,290	192,675	14,614	4,649	160	4,474	521	224	298	1,755	16	1,737	22	145,658	1,978
Total Loans and advances	642,538	523,163	39,958	12,621	184	11,345	975	453	522	3,858	17	3,718	153	363,897	5,144
Debt securities															
Central banks	672	672	0	0	0	0	0	0	0	0	0	0	0	0	0
General governments	30,539	28,643	73	0	0	0	8	7	0	0	0	0	0	0	0
Credit institutions	2,468	2,363	0	0	0	0	1	1	0	0	0	0	0	0	0
Other financial corporations	6,216	4,486	211	39	0	25	6	2	4	13	0	0	0	162	0
Non-financial corporations	4,363	1,224	3	446	0	378	10	10	0	45	0	45	0	37	62
Total Debt securities	44,258	37,387	288	485	0	403	24	19	4	58	0	45	0	200	62
Off-balance sheet exposures															
Central banks	32	27	5	72	0	72	0	0	0	0	0	0	0	11	5
General governments	2,778	2,282	496	10	0	10	2	1	2	0	0	0	0	168	6
Credit institutions	7,858	7,661	197	0	0	0	1	1	0	0	0	0	0	376	0
Other financial corporations	40,053	38,846	1,207	205	0	205	15	11	5	8	0	8	0	6,883	31
Non-financial corporations	198,183	186,837	11,346	2,346	6	2,329	165	85	80	202	0	202	0	19,914	405
Households	31,128	29,965	1,162	80	2	78	40	16	24	16	0	15	0	7,552	36
Total Off-balance sheet exposures	280,032	265,618	14,413	2,713	8	2,694	224	113	110	225	0	225	0	34,903	483
Total[1]	1,163,916	1,022,966	54,952	15,847	192	14,470	1,227	590	637	4,141	17	3,988	153	398,999	5,689

[1] Total including Cash balances at central banks and other demand deposits.

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	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
	Gross carrying amount/nominal amount						Accumulated impairment, accumulated negative changes in fair value due to credit risk and provisions								
	Performing exposures			Non-performing exposures			Performing exposures - accumulated impairment and provisions			Non-performing exposures - accumulated impairment, accumulated negative changes in fair value due to credit risk and provisions				Collaterals and financial guarantees received on	
in € m.	Total	of which: stage 1	of which: stage 2	Total	of which: stage 2	of which: stage 3	Total	of which: stage 1	of which: stage 2	Total	of which: stage 2	of which: stage 3	Accumulated partial write-off	performing exposures	non-performing exposures
Cash balances at central banks and other demand deposits	**204,111**	**203,960**	**151**	**30**	**0**	**29**	**2**	**2**	**0**	**1**	**0**	**1**	**0**	**0**	**0**
Loans and advances															
Central banks	2,703	2,200	0	0	0	0	0	0	0	0	0	0	0	2,406	0
General governments	19,638	17,964	419	213	0	203	4	4	1	5	0	5	0	3,920	186
Credit institutions	57,562	45,955	534	31	11	10	18	17	1	1	0	1	0	17,360	0
Other financial corporations	172,886	110,322	3,887	1,169	5	775	50	31	19	69	0	45	2	94,163	304
Non-financial corporations	180,192	158,564	20,109	6,674	171	5,661	366	140	225	2,068	0	1,959	84	89,417	2,456
of which: SMEs	27,918	23,893	4,022	1,266	5	1,193	73	21	52	559	0	557	9	19,049	318
Households	203,552	186,880	16,671	4,569	356	4,185	645	266	379	1,615	15	1,597	15	141,404	2,017
Total Loans and advances	**636,534**	**521,885**	**41,620**	**12,656**	**544**	**10,835**	**1,082**	**458**	**624**	**3,757**	**15**	**3,607**	**101**	**348,670**	**4,963**
Debt securities															
Central banks	782	782	0	0	0	0	0	0	0	0	0	0	0	0	0
General governments	36,712	34,436	1	0	0	0	4	4	0	0	0	0	0	0	0
Credit institutions	3,737	3,601	20	0	0	0	1	1	0	0	0	0	0	0	0
Other financial corporations	5,713	3,753	22	40	0	11	2	1	0	12	0	0	0	172	0
Non-financial corporations	4,340	887	122	388	0	363	9	8	1	33	0	33	0	71	63
Total Debt securities	**51,285**	**43,459**	**165**	**428**	**0**	**374**	**15**	**14**	**2**	**45**	**0**	**33**	**0**	**243**	**63**
Off-balance sheet exposures															
Central banks	25	20	4	0	0	0	0	0	0	0	0	0	0	16	0
General governments	2,975	2,926	49	25	16	9	1	1	0	0	0	0	0	121	7
Credit institutions	6,807	6,436	371	6	0	0	1	1	0	0	0	0	0	263	0
Other financial corporations	41,644	40,851	793	95	0	91	16	12	4	0	0	0	0	5,791	0
Non-financial corporations	193,242	180,796	12,424	2,096	3	2,096	158	76	82	162	0	162	0	19,677	440
Households	31,848	30,683	1,165	57	0	57	30	16	14	37	0	37	0	7,374	26
Total Off-balance sheet exposures	**276,540**	**261,713**	**14,805**	**2,279**	**19**	**2,253**	**206**	**105**	**101**	**199**	**0**	**199**	**0**	**33,242**	**473**
Total[1]	**1,168,470**	**1,031,017**	**56,741**	**15,392**	**563**	**13,491**	**1,305**	**578**	**727**	**4,001**	**15**	**3,839**	**101**	**382,156**	**5,499**

[1] Total including Cash balances at central banks and other demand deposits.

Credit quality of performing and non-performing exposures by past due days (Article 442 (c-d) CRR)

Table EU CQ3 provides asset quality information of the Group's Debt Instruments and Off Balance Sheet exposures excluding those Held for Trading against non-financial corporations by past due days broken down Supervisory Reporting counterparty classes.

The amounts shown are gross carrying amounts based on IFRS accounting values according to the regulatory scope of consolidation. The gross carrying amount reflects the exposure value including accumulated impairment, provisions and accumulated negative changes due to credit risk for non-performing exposures.

EU CQ3 – Credit quality of performing and non-performing exposures by past due days

												Dec 31, 2021
	a	b	c	d	e	f	g	h	i	j	k	l
	Performing exposures			Non-performing exposure								
in € m.	Total	Not past due or past due <= 30 days	Past due >30d and <=90d	Total	Unlikely to pay that are not past due or past due <= 90d	Past due >90d and <=180d	Past due >180d and <=1yr	Past due >1yr and <=2yrs	Past due >2 and <=5 yrs	Past due >5 and <=7yrs	Past due >7 years	of which defaulted
Cash balances at central banks and other demand deposits	197,089	197,089	0	27.4371	27.4371	0	0	0	0	0	0	27.4371
Loans and advances												
Central banks	6,012	6,012	0	0	0	0	0	0	0	0	0	0
General governments	14,299	14,299	0	49	47	0	0	0	1	0	1	49
Credit institutions	48,710	48,710	0	9	9	0	0	0	0	0	0	9
Other financial corporations	175,825	175,741	84	1,302	1,127	2	61	8	102	1	1	1,302
Non-financial corporations	190,402	190,264	138	6,613	4,814	239	362	246	440	166	345	6,450
of which:												
SME's	28,516	28,498	18	1,410	846	33	43	91	203	85	109	1,339
Households	207,290	206,930	360	4,649	2,374	312	503	467	646	113	235	4,474
Total Loans and advances	642,538	641,956	582	12,621	8,371	553	926	721	1,189	280	582	12,283
Debt securities												
Central banks	672	672	0	0	0	0	0	0	0	0	0	0
General governments	30,539	30,539	0	0	0	0	0	0	0	0	0	0
Credit institutions	2,468	2,468	0	0	0	0	0	0	0	0	0	0
Other financial corporations	6,216	6,216	0	39	39	0	0	0	0	0	0	39
Non-financial corporations	4,363	4,363	0	446	446	0	0	0	0	0	0	446
Total Debt securities	44,258	44,258	0	485	485	0	0	0	0	0	0	485
Off-balance sheet exposures												
Central banks	32	0	0	72	0	0	0	0	0	0	0	72
General governments	2,778	0	0	10	0	0	0	0	0	0	0	6
Credit institutions	7,858	0	0	0	0	0	0	0	0	0	0	0
Other financial corporations	40,053	0	0	205	0	0	0	0	0	0	0	205
Non-financial corporations	198,183	0	0	2,346	0	0	0	0	0	0	0	2,339
Households	31,128	0	0	80	0	0	0	0	0	0	0	78
Total Off-balance sheet exposures	280,032	0	0	2,713	0	0	0	0	0	0	0	2,700
Total[1]	1,163,916	883,303	582	15,847	8,883	553	926	721	1,189	280	582	15,495

[1] Total including Cash balances at central banks and other demand deposits.

												Jun 30, 2021
	a	b	c	d	e	f	g	h	i	j	k	l
	Performing exposures			Non-performing exposure								
in € m.	Total	Not past due or past due <= 30 days	Past due >30d and <=90d	Total	Unlikely to pay that are not past due or past due <= 90d	Past due >90d and <=180d	Past due >180d and <=1yr	Past due >1yr and <=2yrs	Past due >2 and <=5 yrs	Past due >5 and <=7yrs	Past due >7 years	of which defaulted
Cash balances at central banks and other demand deposits	204,111	204,111	0	29.5284	29.5284	0	0	0	0	0	0	29.5284
Loans and advances												
Central banks	2,703	2,703	0	0	0	0	0	0	0	0	0	0
General governments	19,638	19,638	0	213	212	0	0	0	0	0	1	213
Credit institutions	57,562	57,562	0	31	31	0	0	0	0	0	0	31
Other financial corporations	172,886	172,802	85	1,169	1,037	2	8	4	115	1	3	1,101
Non-financial corporations	180,192	180,032	160	6,674	4,919	384	183	361	329	155	343	6,491
of which:												
SME's	27,918	27,845	73	1,266	693	32	48	142	171	78	103	1,196
Households	203,552	203,169	382	4,569	2,384	388	435	485	540	107	229	4,539
Total Loans and advances	636,534	635,907	627	12,656	8,583	773	626	849	984	263	577	12,375
Debt securities												
Central banks	782	782	0	0	0	0	0	0	0	0	0	0
General governments	36,712	36,712	0	0	0	0	0	0	0	0	0	0
Credit institutions	3,737	3,737	0	0	0	0	0	0	0	0	0	0
Other financial corporations	5,713	5,713	0	40	40	0	0	0	0	0	0	40
Non-financial corporations	4,340	4,340	0	388	388	0	0	0	0	0	0	388
Total Debt securities	51,285	51,285	0	428	428	0	0	0	0	0	0	428
Off-balance sheet exposures												
Central banks	25	0	0	0	0	0	0	0	0	0	0	0
General governments	2,975	0	0	25	0	0	0	0	0	0	0	25
Credit institutions	6,807	0	0	6	0	0	0	0	0	0	0	6
Other financial corporations	41,644	0	0	95	0	0	0	0	0	0	0	95
Non-financial corporations	193,242	0	0	2,096	0	0	0	0	0	0	0	2,096
Households	31,848	0	0	57	0	0	0	0	0	0	0	57
Total Off-balance sheet exposures	276,540	0	0	2,279	0	0	0	0	0	0	0	2,279
Total[1]	1,168,470	891,303	627	15,392	9,041	773	626	849	984	263	577	15,112

[1] Total including Cash balances at central banks and other demand deposits.

Changes in the stock of non-performing loans and advances (Article 442 (f) CRR)

Table EU CR2 provides information on the development of the Group's non-performing loans and advances in the second half of 2021.

EU CR2 – Changes in the stock of non-performing loans and advances

		Dec 31, 2021	Jun 30, 2021
		a	a
	in € m.	Gross carrying amount	Gross carrying amount
1	Initial stock of non-performing loans and advances	**12,656**	12,379
2	Inflows to non-performing portfolios	2,742	2,480
3	Outflows from non-performing portfolios	(2,777)	(2,203)
4	Outflows due to write-offs	(340)	(226)
5	Outflow due to other situations	(2,437)	(1,977)
6	Final stock of non-performing loans and advances	**12,621**	12,656

Minimum loss coverage for Non Performing Exposure

Minimum loss coverage for Non Performing Exposure under Pillar 1

CRR based minimum loss coverage for Non Performing exposures (NPE) requirements Regulation (EU) 2019/630 amending the CRR (Regulation (EU) No 575/2013) was published in the Official Journal of the EU on April 25, 2019. This regulation established a prudential treatment for NPEs arising from loans originated from April 26, 2019 onwards ("CRR - NPE Flow") and represents a Pillar 1 measure which is legally binding and applies to all banks established in the EU.

The CRR regulation on minimum loss coverage for non-performing exposure does not focus on NPEs arising from loans originated before April 26, 2019 ("CRR - NPE Stock").

In the second quarter of 2021, we saw first impacts on our CET 1 ratio from the CRR based minimum loss coverage regulation, as the regulation applies to newly originated assets after the application date (April 25, 2019) and foresee a two year grace period before the defined minimum loss coverage requirements applies. This grace period has now at the end of second quarter of 2021.

The following table provides an overview on Deutsche Bank's CRR NPE Flow as of December 31, 2021 and June 30, 2021.

CRR – NPE Flow

				Dec 31, 2021
	Time passed since exposures classified as non-performing			
in € m.	up to 2yrs	>2 and <=9yrs	>9yrs	Total
Non-Performing Exposure	2,556	280	0	2,836
Exposure value[1]	2,888	372	0	3,260
Total minimum coverage requirement	0	105	0	105
Total provisions and adjustments or deductions (uncapped)	784	192	0	975
Total provisions and adjustments or deductions (capped)	0	74	0	74
Applicable amount of insufficient coverage	0	31	0	31

[1] Exposure value in accordance with Article 47c CRR

				Jun 30, 2021
	Time passed since exposures classified as non-performing			
in € m.	up to 2yrs	>2 and <=9yrs	>9yrs	Total
Non-Performing Exposure	2,230	46	0	2,276
Exposure value[1]	3,090	130	0	3,221
Total minimum coverage requirement	0	43	0	43
Total provisions and adjustments or deductions (uncapped)	851	112	0	962
Total provisions and adjustments or deductions (capped)	0	41	0	41
Applicable amount of insufficient coverage	0	2	0	2

[1] Exposure value in accordance with Article 47c CRR

Minimum loss coverage for Non Performing Exposure under Pillar 2

Non Performing Exposures arising from clients defaulting after April 1, 2018

In March 2018 ECB published its “Addendum to the ECB Guidance to banks on non-performing loans: supervisory expectations for prudential provisioning of non-performing exposures”. The guidance focus on NPEs arising from clients defaulting after April 1, 2018 (“ECB – NPE Flow”). Like for the CRR based NPE regulation (CRR – NPE Flow) a time dependent minimum loss coverage is required. The ECB guidance represents a Pillar 2 measure and its application is subject to a supervisory dialog between the bank and the ECB in context of the annual SREP process.

The ECB based NPE guidance (“ECB – NPE Flow”) and the CRR based NPE regulation (CRR – NPE Flow) differ in the following three key aspects:

- Timing of application: Exposures defaulting after April 1, 2018 are in scope of the ECB based guidance (ECB – NPE Flow), but are only in scope of the CRR based NPE regulation (CRR – NPE Flow) if loans are originated after April 26, 2019.

- Treatment of loans in the Trading Book / Traded Assets: CRR based NPE regulation (CRR – NPE Flow) excludes all loans in the regulatory Trading Book whereas the ECB based NPE guidance (ECB – NPE Flow) excludes Traded Assets in accordance with the accounting classifications.

- Treatment of Forbearance Measuring CRR based NPE regulation (CRR – NPE Flow) considers a one year freeze period of minimum loss coverage for exposures where a forbearance measure has been granted. This freeze period for loans with forbearance measure does not exist under the ECB based NPE guidance (ECB – NPE Flow).

As long as the aforementioned differences exist, Deutsche Bank will report in the following table all NPE exposures under the ECB based NPE guidance (ECB – NPE Flow), which are not covered in the CRR based NPE regulation (CRR – NPE Flow).

The following table provides an overview on Deutsche Bank’s ECB NPE Flow as of December 31, 2021 and June 30, 2021, not covered under CRR based NPE regulation (CRR NPE Flow):

ECB – NPE Flow

				Dec 31, 2021
	Time passed since exposures classified as non-performing			
in € m.	up to 2yrs	>2 and <=9yrs	>9yrs	Total
Non-Performing Exposure	8,064	2,211[0]	0	10,276
Exposure value[1]	8,305	2,517[0]	0	10,822
Total minimum coverage requirement	0	961[0]	0	961
Total provisions and adjustments or deductions (uncapped)	1,660	1,086[0]	0	2,747
Total provisions and adjustments or deductions (capped)	0	672[0]	0	672
Applicable amount of insufficient coverage	0	289[0]	0	289

[1] Exposure value in accordance with Article 47c CRR

				Jun 30, 2021
	Time passed since exposures classified as non-performing			
in € m.	up to 2yrs	>2 and <=9yrs	>9yrs	Total
Non-Performing Exposure	8,080	1,345	0	9,425
Exposure value[1]	8,492	1,693	0	10,184
Total minimum coverage requirement	0	479	0	479
Total provisions and adjustments or deductions (uncapped)	2,126	863	0	2,988
Total provisions and adjustments or deductions (capped)	0	390	0	390
Applicable amount of insufficient coverage	0	89	0	89

[1] Exposure value in accordance with Article 47c CRR

Non Performing Exposures arising from clients defaulting before April 1, 2018

ECB announced in a press release on July 11, 2018 that legacy stock of NPEs would be addressed by discussing bank-specific supervisory expectations for the provisioning of NPEs.

In August 2019 ECB published its “Communication on supervisory coverage expectations for NPEs” where introducing a minimum loss coverage expectation for NPEs arising from clients defaulting before April 1, 2018 (ECB – NPE Stock).

In a first step, banks were allocated to three comparable groups on the basis of the bank’s net NPL ratios as of end-2017 and in a second step an assessment of capacity regarding the potential impact was carried out for each individual bank with a horizon of end-2026.

Deutsche Bank has been assigned to Group 1 which requires a full applicability of 100 % minimum loss coverage by year end 2024 for secured loans respectively by year end 2023 for unsecured loans.

The following table provides an overview on Deutsche Bank’s ECB - NPE Stock as December 31, 2021 and as of June 30, 2021.

ECB – NPE Stock

				Dec 31, 2021
	Time passed since exposures classified as non-performing			
in € m.	up to 2yrs	>2 and <=9yrs	>9yrs	Total
Non-Performing Exposure	0[0]	2,067	669	2,736
Exposure value[1]	0[0]	4,943	6,786	11,729
Total minimum coverage requirement	0[0]	3,350	5,418	8,769
Total provisions and adjustments or deductions (uncapped)	0[0]	3,555	6,539	10,094
Total provisions and adjustments or deductions (capped)	0[0]	3,031	5,309	8,340
Applicable amount of insufficient coverage	0[0]	319	109	428

[1] Exposure value in accordance with Article 47c CRR

				Jun 30, 2021
	Time passed since exposures classified as non-performing			
in € m.	up to 2yrs	>2 and <=9yrs	>9yrs	Total
Non-Performing Exposure	0	3,334	357	3,691
Exposure value[1]	0	6,569	6,530	13,099
Total minimum coverage requirement	0	3,886	4,563	8,449
Total provisions and adjustments or deductions (uncapped)	0	4,683	6,276	10,959
Total provisions and adjustments or deductions (capped)	0	3,546	4,448	7,994
Applicable amount of insufficient coverage	0	340	115	455

[1] Exposure value in accordance with Article 47c CRR

The shortfall between the minimum loss coverage requirements for non-performing exposure for ECB – NPE Flow and ECB - NPE Stock and the risk reserves recorded in line with IFRS 9 for defaulted (Stage 3) assets amounted to € 748 million as of December 31, 2021 versus € 546 million as of June 30, 2021 and was deducted from CET 1. This additional CET 1 charge can be considered as additional loss reserve and led to a € 384 million RWA relief in December 31, 2021 and € 437 million in June 30, 2021.

Reconciliation of Non Performing Exposure

The following table reconciles the Non Performing Exposure reported in template EU CR1 into the Minimum Loss coverage framework.

Reconciliation of Non Performing Exposure

		Dec 31, 2021
in € m.	Exposure	Provisions
Total Non-Performing Exposure and related provisions	15,847	4,141
of which:		
CRR – NPE Flow	2,836	678
ECB – NPE Flow	10,276	2,132
ECB – NPE Stock	2,736	1,331

[1] Treatment of loans in the Trading Book / Traded Assets: CRR based NPE regulation (CRR – NPE Flow) excludes all loans in the regulatory Trading Book whereas the ECB based NPE guidance (ECB – NPE Flow) excludes Traded Assets in accordance with the accounting classifications

		Jun 30, 2021
in € m.	Exposure	Provisions
Total Non-Performing Exposure and related provisions	15,392	4,001
of which:		
CRR – NPE Flow	2,276	516
ECB – NPE Flow	9,425	2,004
ECB – NPE Stock	3,691	1,480

[1] Treatment of loans in the Trading Book / Traded Assets: CRR based NPE regulation (CRR – NPE Flow) excludes all loans in the regulatory Trading Book whereas the ECB based NPE guidance (ECB – NPE Flow) excludes Traded Assets in accordance with the accounting classifications

Collateral obtained by taking possession and execution processes (Article 442 (c) CRR)

Table EU CQ7 provides information about the collateral that has been obtained at the reporting date. Collateral obtained by talking possession includes assets that were not pledged by the debtor as collateral, but obtained in exchange for the cancellation of debt.

The value at initial recognition reflects the gross carrying amount at the point in time of the initial recognition in the Group's balance sheet, while accumulated negative changes reflect the difference between the value at initial recognition and the carrying amount at the reporting date.

EU CQ7 – Collateral obtained by taking possession and execution processes

		Dec 31, 2021		Jun 30, 2021	
		a	b	a	b
		Collateral obtained by taking possession		Collateral obtained by taking possession	
	in € m.	Value at initial recognition	Accumulated negative changes	Value at initial recognition	Accumulated negative changes
1	Property, plant and equipment (PP&E)	**0**	**0**	0	0
2	Other than PP&E	**46**	**35**	46	36
3	Residential immovable property	39	30	41	32
4	Commercial immovable property	7	5	5	4
5	Movable property (auto, shipping, etc.)	0	0	0	0
6	Equity and debt instruments	0	0	0	0
7	Other	0	0	0	0
8	Total	**46**	**35**	46	36

Credit quality of forborne exposures (Article 442 (c) CRR)

Table EU CQ1 shows asset quality information for forborne exposures broken down by Supervisory Reporting counterparty classes.

The amounts shown are based on IFRS accounting values according to the regulatory scope of consolidation. The gross carrying amount reflects the exposure value including accumulated impairment, provisions and accumulated negative changes due to credit risk for non-performing exposures.

Exposures are being classified as forborne according to the criteria in Article 47b of the CRR. Of the total forborne exposures of € 17.7 billion included in the table below, € 8 billion is related to COVID-19 related forbearance measures, of which more than 94% is performing. An exposure is being classified as non-performing (defaulted) according to the criteria an Article 47a (3) (Article 178) of the CRR and it is being considered impaired if it is credit impaired according to IFRS 9 (impairment stage 3).

CQ1 – Credit quality of forborne exposures

Dec 31, 2021

	a	b	c	d	e	f	g	h
	Gross carrying amount of forborne exposures				Accumulated impairment, accumulated negative changes in fair value due to credit risk and provisions		Collateral received and financial guarantees received on forborne exposures	
in € m.	Performing forborne	Non-performing forborne	Non-performing forborne, of which defaulted	Non-performing forborne, of which impaired	on performing forborne exposures	on non-performing forborne exposures	Total	of which, non-performing exposures with forbearance measures
Cash balances at central banks and other demand deposits	0	0	0	0	0	0	0	0
Loans and advances	8,781	4,847	4,793	4,788	84	1,255	8,672	2,440
Central banks	0	0	0	0	0	0	0	0
General governments	129	24	24	24	0	2	143	22
Credit institutions	0	9	9	9	0	0	0	0
Other financial corporations	865	369	369	369	5	24	909	236
Non-financial corporations	6,463	2,869	2,833	2,828	52	844	5,956	1,296
Households	1,323	1,576	1,558	1,558	28	385	1,664	886
Debt securities	395	256	256	213	0	0	16	0
Loan commitments given	2,776	341	331	331	15	35	451	17
Total[1]	11,952	5,443	5,380	5,332	99	1,290	9,140	2,457

[1] Total including Cash balances at central banks and other demand deposits.

Jun 30, 2021

	a	b	c	d	e	f	g	h
	Gross carrying amount of forborne exposures				Accumulated impairment, accumulated negative changes in fair value due to credit risk and provisions		Collateral received and financial guarantees received on forborne exposures	
in € m.	Performing forborne	Non-performing forborne	Non-performing forborne, of which defaulted	Non-performing forborne, of which impaired	on performing forborne exposures	on non-performing forborne exposures	Total	of which, non-performing exposures with forbearance measures
Cash balances at central banks and other demand deposits	0	0	0	0	0	0	0	0
Loans and advances	9,466	4,473	4,420	4,387	120	1,065	7,303	1,766
Central banks	0	0	0	0	0	0	0	0
General governments	30	176	176	176	0	2	191	163
Credit institutions	0	10	10	10	0	1	0	0
Other financial corporations	1,258	77	77	49	13	8	879	25
Non-financial corporations	6,862	2,795	2,771	2,767	74	733	5,245	1,133
Households	1,316	1,415	1,386	1,386	34	321	988	445
Debt securities	503	205	205	205	0	0	14	0
Loan commitments given	2,728	325	322	322	15	34	481	82
Total	12,697	5,002	4,946	4,914	136	1,099	7,798	1,848

[1] Total including Cash balances at central banks and other demand deposits.

Exposures subject to measures applied in response to the COVID-19 pandemic

In 2020, the European Banking Association (EBA) issued a “Statement on the application of the prudential framework regarding Default, Forbearance and IFRS 9 in light of COVID-19 measures”, along with guidance on legislative and non-legislative moratoria. On December 2, 2020 after closely monitoring the developments of the COVID-19 pandemic and, in particular, the impact of the second COVID-19 wave and the related government restrictions taken in many EU countries, EBA reactivated its guidelines on legislative and non-legislative moratoria which applied until 31 March 2021.

The COVID-19 templates 1 and 2 provide an overview of active and expired loans and advances subject to EBA-compliant moratoria in the context of the COVID-19 pandemic as of December 31, 2021 and June 30, 2021.

EBA-compliant moratoria: The moratorium for SMEs and Corporates in Italy was originally scheduled to end on September 30, 2020, but has been further extended until December 2021. Also, the Spanish government extended the legislative Spanish moratoria for SMEs and Corporates until December 2021.

Non-legislative moratoria: A new non-legislative moratorium was launched in Italy to support consumer finance clients from January 2021 until the end of March 2021. The Italian moratoria deferred both principal and interest to households and financial intermediaries. Overall the majority of loans affected relate to the Private Bank, mainly consumer loans and mortgages.

COVID-19 template 1 provides details on loans and advances subject to EBA-compliant moratoria (legislative and non-legislative). The template provides a breakdown of the gross carrying amount and the related loss allowances by the status of the exposure (performing and non-performing). In addition, exposures for which a grace period of capital and interest payment was granted and exposures with forbearance measures are reported in the template. Performing exposures are ‘instruments with significant increase in credit risk since initial recognition but not credit-impaired (Stage 2)’; and Non-performing exposures are those that are ‘unlikely to pay that are not past-due or past-due less than or equal to 90 days’ are reported.

COVID-19 template 1: Information on loans and advances subject to legislative and non-legislative moratoria[1]

																Dec 31, 2021
		b	c	d	e	f	g	a	i	j	k	l	m	n	h	o
		Gross carrying amount							Accumulated impairment, accumulated negative changes in fair value due to credit risk							
		Performing			Non-performing				Performing			Non-performing				
	in € m.	Total	Of which: exposures with forbearance measures	Of which: Instruments with significant increase in credit risk since initial recognition but not credit-impaired (Stage 2)	Total	Of which: exposures with forbearance measures	Of which: Unlikely to pay that are not past-due or past-due <= 90 days	Total	Total	Of which: exposures with forbearance measures	Of which: Instruments with significant increase in credit risk since initial recognition but not credit-impaired (Stage 2)	Total	Of which: exposures with forbearance measures	Of which: Unlikely to pay that are not past-due or past-due <= 90 days	Total	Gross carrying amount Inflows to non-performing exposures
1	Loans and advances subject to moratorium	23	6	8	2	0	1	25	(0)	(0)	(0)	(0)	(0)	(0)	(1)	0
2	of which: Households	12	6	8	2	0	1	14	(0)	(0)	(0)	(0)	(0)	(0)	(0)	0
3	of which: Collateralized by residential immovable property	12	6	8	2	0	1	14	(0)	(0)	(0)	(0)	(0)	(0)	(0)	0
4	of which: Non-financial corporations	10	0	0	0	0	0	11	(0)	0	0	0	0	0	(0)	0
5	of which: Small and Medium-sized Enterprises	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	of which: Collateralized by commercial immovable property	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

[1] Template 1 includes only loans and advances subject to active legislative and non-legislative moratoria.

Jun 30, 2021

		b	c	d	e	f	g	a	i	j	k	l	m	n	h	o
		Gross carrying amount							Accumulated impairment, accumulated negative changes in fair value due to credit risk							
		Performing			Non-performing				Performing			Non-performing				
	in € m.	Total	Of which: exposures with forbearance measures	Of which: Instruments with significant increase in credit risk since initial recognition but not credit-impaired (Stage 2)	Total	Of which: exposures with forbearance measures	Of which: Unlikely to pay that are not past-due or past-due <= 90 days	Total	Total	Of which: exposures with forbearance measures	Of which: Instruments with significant increase in credit risk since initial recognition but not credit-impaired (Stage 2)	Total	Of which: exposures with forbearance measures	Of which: Unlikely to pay that are not past-due or past-due <= 90 days	Total	Gross carrying amount Inflows to non-performing exposures
1	Loans and advances subject to moratorium	706	236	413	11	2	10	718	(7)	(4)	(6)	(3)	(1)	(2)	(10)	3
2	of which: Households	101	18	43	5	0	5	107	(1)	0	(1)	(1)	0	(1)	(2)	1
3	of which: Collateralized by residential immovable property	91	17	40	5	0	5	97	(1)	0	(1)	(1)	0	(1)	(2)	1
4	of which: Non-financial corporations	578	217	364	6	2	5	583	(6)	(4)	(5)	(2)	(1)	(1)	(7)	2
5	of which: Small and Medium-sized Enterprises	504	209	348	3	1	2	507	(5)	(4)	(5)	(1)	(1)	(1)	(6)	1
6	of which: Collateralized by commercial immovable property	33	0	24	1	0	1	34	0	0	0	0	0	0	(1)	0

[1] Template 1 includes only loans and advances subject to active legislative and non-legislative moratoria (Dec 31,2020 comparatives exclude extensions of Italian moratoria).

The below COVID-19 template 2, provides details on EBA-compliant moratoria (legislative and non-legislative) for loans and advances that meet the requirements described in paragraph 10 of the EBA Guidelines on moratoria. The template provides information on the number of obligors and gross carrying amount of loans and advances subject to different statuses of EBA-compliant moratoria (requested/granted). In addition, the template contains a breakdown of those loans and advances that continue to be active moratoria by remaining period outstanding and the remaining gross carrying amount to be repaid of legislative moratoria as per the definition of the EBA Guidelines on moratoria.

During the first half of 2021, the number of clients and volumes under moratoria has significantly reduced due to repayments, from peak levels in the second quarter 2020. As of December 31, 2021, only below € 30 million of moratoria are still active. All others have expired already. More than 95 % of these clients who took advantage of moratoria have now resumed payments.

COVID-19 template 2: Breakdown of loans and advances subject to legislative and non-legislative moratoria by residual maturity of moratoria[1]

		Dec 31, 2021								
		a	b	c	d	e	f	g	h	i
		Number of obligors	Gross carrying amount[2]							
		(in 1,000s)				Residual maturity of moratoria				
	in € m. (unless stated otherweise)		Total	Of which: legislative moratoria	Of which: expired	<= 3 months	> 3 and <= 6 months	> 6 and <= 9 months	> 9 and <= 12 months	> 1 yr
1	Loans and advances for which moratorium was offered	86	7,714	–	–	–	–	–	–	–
2	Loans and advances subject to moratorium (granted)	84	7,368	6,304	7,343	9	14	1	1	1
3	of which: Households	–	5,055	4,268	5,041	8	3	1	1	1
4	of which: Collateralized by residential immovable property	–	4,148	3,618	4,134	8	3	1	1	1
5	of which: Non-financial corporations	–	2,283	2,016	2,272	0	10	–	–	–
6	of which: Small and Medium-sized Enterprises	–	1,069	896	1,069	–	–	–	–	–
7	of which: Collateralized by commercial immovable property	–	252	140	252	–	–	–	–	–

[2] Gross Carrying amount of remaining active moratoria.

		Jun 30, 2021								
		a	b	c	d	e	f	g	h	i
		Number of obligors	Gross carrying amount							
		(in 1,000s)				Residual maturity of moratoria				
	in € m. (unless stated otherweise)		Total	Of which: legislative moratoria	Of which: expired	<= 3 months	> 3 and <= 6 months	> 6 and <= 9 months	> 9 and <= 12 months	> 1 yr
1	Loans and advances for which moratorium was offered	96	9,231	–	–	–	–	–	–	–
2	Loans and advances subject to moratorium (granted)	93	8,120	6,975	7,403	239	450	26	3	–
3	of which: Households	–	5,469	4,619	5,362	46	49	8	3	–
4	of which: Collateralized by residential immovable property	–	4,362	3,830	4,266	40	45	8	3	–
5	of which: Non-financial corporations	–	2,542	2,275	1,959	166	400	17	–	–
6	of which: Small and Medium-sized Enterprises	–	1,167	1,008	661	108	385	14	–	–
7	of which: Collateralized by commercial immovable property	–	156	151	122	4	28	2	–	–

[1] Template 1 includes only loans and advances subject to not expired legislative and non-legislative moratoria (Dec 31,2020 comparatives exclude extensions of Italian moratoria).

COVID-19 template 3 provides details on newly originated loans and advances as referred to in paragraph 15 of EBA GL 2020 07 that are subject to public guarantee schemes that Member States introduced in response to the COVID-19 pandemic. In the case of refinancing of previous debt with a new loan or of repackaging of several debts into a new loan, the new loan recognized in the financial statements is reported in this template provided that it is covered by a public guarantee scheme related to the COVID-19 pandemic. The template provides a breakdown of the gross carrying amount, the forbearance measures and the amount of public guarantees related to loans and advances and the inflows to non-performing exposure.

The Group has originated approximately € 4.2 billion of loans under the public guarantee scheme until December 2021 and in most cases the terms of the new originated loans and advances are between two and five years. Approximately € 2.1 billion of loans were granted in Germany via programs sponsored by Kreditanstalt für Wiederaufbau (KfW), of which, € 0.3 billion were derecognized as the terms of the loan and guarantee met the criteria for derecognition under IFRS 9, and € 1.6 billion were originated in Spain and € 0.5 billion in Luxembourg. As of December 31, 2021, 99.4 % of the loans that were granted public guarantees continue to make regular repayments.

COVID-19 template 3: Information on newly originated loans and advances provided under newly applicable public guarantee schemes introduced in response to COVID-19 pandemic

					Dec 31, 2021
		a	b	c	d
		Gross carrying amount		Maximum amount of the guarantee that can be considered	Gross carrying amount
	in € m.	Total	of which: forborne	Public guarantees received	Inflows to non-performing exposures
1	Newly originated loans and advances subject to public guarantee schemes	3,952	132	3,416	28
2	of which: Households	38	–	–	0
3	of which: Collateralized by residential immovable property	0	–	–	0
4	of which: Non-financial corporations	3,901	132	3,371	27
5	of which: Small and Medium-sized Enterprises	2,220	–	–	0
6	of which: Collateralized by commercial immovable property	0	–	–	0

					Jun 30, 2021
		a	b	c	d
		Gross carrying amount		Maximum amount of the guarantee that can be considered	Gross carrying amount
	in € m.	Total	of which: forborne	Public guarantees received	Inflows to non-performing exposures
1	Newly originated loans and advances subject to public guarantee schemes	4,180	90	3,559	19
2	of which: Households	36	–	–	0
3	of which: Collateralized by residential immovable property	0	–	–	0
4	of which: Non-financial corporations	4,076	90	3,466	19
5	of which: Small and Medium-sized Enterprises	2,104	–	–	0
6	of which: Collateralized by commercial immovable property	0	–	–	0

General qualitative information on credit risk mitigation (Article 453 (a-e) CRR) (EU CRC)

Use of on- and off-balance sheet netting (Article 453 (a) CRR)

Netting is applicable to both exchange traded derivatives and OTC derivatives. Netting is also applied to securities financing transactions (e.g. repurchase, securities lending and margin lending transactions) as far as documentation, structure and nature of the risk mitigation allow netting with the underlying credit risk.

All exchange traded derivatives are cleared through central counterparties (CCPs), which interpose themselves between the trading entities by becoming the counterparty to each of the entities. Where legally required or where available and to the extent agreed with our counterparties, we also use CCP clearing for our OTC derivative transactions.

The Dodd-Frank Act and related Commodity Futures Trading Commission (CFTC) rules require CCP clearing in the United States for certain standardized OTC derivative transactions, including certain interest rate swaps and index credit default swaps, subject to limited exceptions when facing certain counterparties. The European Regulation (EU) No 648/2012 on OTC Derivatives, Central Counterparties and Trade Repositories (EMIR) and the Commission Delegated Regulations (EU) 2015/2205, (EU) 2015/592 and (EU) 2016/1178 based thereupon introduced mandatory CCP clearing in the EU for certain standardized OTC derivatives transactions. Mandatory CCP clearing in the EU began for certain interest rate derivatives on June 21, 2016 and for certain iTraxx-based credit derivatives and additional interest rate derivatives on February 9, 2017. Article 4 (2) of EMIR authorizes competent authorities to exempt intragroup transactions from mandatory CCP clearing, provided certain requirements, such as full consolidation of the intragroup transactions and the application of an appropriate centralized risk evaluation, measurement and control procedure are met. The Bank successfully applied for the clearing exemption for a number of its regulatory-consolidated subsidiaries with intragroup derivatives, including e.g., Deutsche Bank Securities Inc. and Deutsche Bank Luxembourg S.A. As of December 31, 2021, the Bank is allowed to make use of intragroup exemptions from the EMIR clearing obligation for 57 bilateral intragroup relationships. The extent of the exemptions differs as not all entities enter into relevant transaction types subject to the clearing obligation. Of the 57 intragroup relationships, 14 are relationships where both entities are established in the Union (EU) for which a full exemption has been granted, and 43 are relationships where one is established in a third country ("Third Country Relationship"). Third Country Relationships required repeat applications for each new asset class being subject to the clearing obligation; the process took place in the course of 2017. Such repeat applications, at the time, were filed for 39 of the Third Country Relationships, with a number of those entities having been liquidated in the meantime. Due to "Brexit", the status of some group entities has changed from an EU entity to a third country entity. There are two affected UK group entities, for which we have not applied for any EMIR clearing exemption for those entities.

The rules and regulations of CCPs typically provide for the bilateral set off of all amounts payable on the same day and in the same currency ("payment netting") thereby reducing our settlement risk. Depending on the business model applied by the CCP, this payment netting applies either to all of our derivatives cleared by the CCP or at least to those that form part of the same class of derivatives. Many CCPs' rules and regulations also provide for the termination, close-out and netting of all cleared transactions upon the CCP's default ("close-out netting"), which reduces our credit risk further. In our risk measurement and risk assessment processes we apply close-out netting only to the extent we believe that the relevant CCP's close-out netting provisions are legally valid and enforceable.

In order to reduce the credit risk resulting from OTC derivative transactions, where CCP clearing is not available, we regularly seek the execution of standard master agreements (such as master agreements for derivatives published by the International Swaps and Derivatives Association, Inc. (ISDA) or the German Master Agreement for Financial Derivative Transactions) with our counterparties. A master agreement allows for the close-out netting of rights and obligations arising under derivative transactions that have been entered into under such a master agreement upon the counterparty's default, resulting in a single net claim owed by or to the counterparty. For certain parts of the derivatives business (e.g., foreign exchange transactions), we also enter into master agreements under which payment netting applies with respect to transactions covered by such master agreements, reducing our settlement risk. In our risk measurement and risk assessment processes we apply close-out netting only to the extent we believe that the master agreement is legally valid and enforceable in all relevant jurisdictions.

We also enter into credit support annexes (CSAs) to master agreements in order to further reduce our derivatives-related credit risk. These annexes generally provide risk mitigation through periodic, usually daily, margining of the covered exposure. The CSAs also provide for the right to terminate the related derivative transactions upon the counterparty's failure to honor a margin call. As with netting, when we believe the annex is enforceable, we reflect this in our exposure measurement.

Certain CSAs to master agreements provide for rating-dependent triggers, where additional collateral must be pledged if a party's rating is downgraded. We also enter into master agreements that provide for an additional termination event upon a party's rating downgrade. These downgrade provisions in CSAs and master agreements usually apply to both parties but in some agreements may apply to us only. We analyze and monitor our potential contingent payment obligations resulting from a rating downgrade in our stress testing and liquidity coverage ratio approach for liquidity risk on an ongoing basis. For an assessment of the quantitative impact of a downgrading of our credit rating please refer to table "Stress Testing Results" in the section "Liquidity Risk".

The Dodd-Frank Act and CFTC rules thereunder, including CFTC rule § 23.504, as well as EMIR and Commission Delegated Regulation based thereon, namely Commission Delegated Regulation (EU) 2016/2251, introduced the mandatory use of master agreements and related CSAs, which must be executed prior to or contemporaneously with entering into an uncleared OTC derivative transaction. Certain documentation is also required by the U.S. margin rules adopted by U.S. prudential regulators. Under the U.S. prudential regulators' margin rules, we are required to post and collect initial margin for our derivatives exposures with other derivatives dealers, as well as with our counterparties that (a) are "financial end users," as that term is defined in the U.S. margin rules, and (b) have an average daily aggregate notional amount of uncleared swaps, uncleared security-based swaps, foreign exchange forwards and foreign exchange swaps exceeding U.S.$ 8 billion in June, July and August of the previous calendar year. The U.S. margin rules additionally require us to post and collect variation margin for our derivatives with other derivatives dealers and certain financial end user counterparties. These margin requirements are subject to a U.S.$ 50 million threshold for initial margin, but no threshold for variation margin, with a combined U.S.$ 500,000 minimum transfer amount. The U.S. margin requirements have been in effect for large banks since September

2016, with additional variation margin requirements having come into effect March 1, 2017 and additional initial margin requirements are being phased in from September 2017 through September 2022.

Under Commission Delegated Regulation (EU) 2016/2251, which implements the EMIR margin requirements, the CSA must provide for daily valuation and daily variation margining based on a zero threshold and a minimum transfer amount of not more than € 500,000. For large derivative exposures exceeding € 8 billion, initial margin has to be posted as well. The variation margin requirements under EMIR apply as of March 1, 2017; the initial margin requirements originally were subject to a staged phase-in until September 1, 2021. However, legislative changes have been published on February 17, 2021 that, among others, will extend deadlines into 2022. Under Article 31 of Commission Delegated Regulation (EU) 2016/2251, an EU party may decide to not exchange margin with counterparties in certain non-netting jurisdictions provided certain requirements are met. Pursuant to Article 11 (5) to (10) of EMIR, competent authorities are authorized to exempt intragroup transactions from the margining obligation, provided certain requirements are met. While some of those requirements are the same as for the EMIR clearing exemptions (see above), there are additional requirements such as the absence of any current or foreseen practical or legal impediment to the prompt transfer of funds or repayment of liabilities between intragroup counterparties. The Bank is making use of this exemption. The Bank has successfully applied for the collateral exemption for some of its regulatory-consolidated subsidiaries with intragroup derivatives, including, e.g., Deutsche Bank Securities Inc. and Deutsche Bank Luxembourg S.A. As of December 31, 2021, the Bank is allowed to use intragroup exemptions from the EMIR collateral obligation for a number of bilateral intragroup relationships which are published under https://www.db.com/legal-resources/european-market-infrastructure-regulation/intra-group-exemptions-margining. For third country subsidiaries, the intragroup exemption is currently limited until the earlier of 30 June 2022 and four months after the publication of an equivalence decision by the EU Commission under Article 13(2) EMIR, unless, in the case of an equivalence decision being applicable, a follow-up exemption application is made and granted. We have prepared for intragroup margining and will implement collateral exchange as and when the intragroup exemptions are formally withdrawn by the competent authority For some bilateral intragroup relationships, the EMIR margining exemption may be used based on Article 11 (5) of EMIR, i.e. without the need for any application, because both entities are established in the same EU Member State.

Collateral evaluation and management (Article 453 (b) CRR)

Our processes ensure onboarding of high-quality collateral we accept for risk mitigation purposes and their prudent valuation and management. This includes processes to generally ensure legally effective and enforceable documentation for realizable and measurable collateral assets which are evaluated within the on-boarding process by dedicated internal appraisers or teams with the respective qualification, skills and experience or adequate external valuers mandated in regulated processes. The applied valuations follow generally accepted valuation methods or models. Ongoing correctness of values is monitored by collateral type specific appropriate frequent and event-driven reviews considering relevant risk parameters. Revaluations are applied in cases of identified probable material deteriorations and future monitoring may be adjusted respectively. The assessment of the suitability of collateral for a specific transaction is part of the credit decision and must be undertaken in a conservative way, including collateral haircuts that are applied. We have collateral type specific haircuts in place which are regularly reviewed and approved. In this regard, we strive to avoid “wrong-way” risk characteristics where the counterparty’s risk is positively correlated with the risk of deterioration in the collateral value. For guarantee collateral, the process for the analysis of the guarantor’s creditworthiness is aligned to the credit assessment process for counterparties.

The valuation of collateral is considered under a liquidation scenario. Liquidation value is equal to the expected proceeds of collateral monetization / realization in a base case scenario, wherein a fair price is achieved through careful preparation and orderly liquidation of the collateral. Collateral can either move in value over time (dynamic value) or not (static value). The dynamic liquidation value generally includes a safety margin or haircut over realizable value to address liquidity and marketability aspects.

The Group assigns a liquidation value to eligible collateral, based on, among other things:

- the market value and / or lending value, notional amount or face value of a collateral as a starting point;
- the type of collateral; the currency mismatch, if any, between the secured exposure and the collateral; and a maturity mismatch, if any;
- the applicable legal environment or jurisdiction (onshore versus offshore collateral);
- the market liquidity and volatility in relation to agreed termination clauses;
- the correlation between the performance of the borrower and the value of the collateral, e.g., in the case of the pledge of a borrower’s own shares or securities (in this case generally full correlation leads to no liquidation value);
- the quality of physical collateral and potential for litigation or environmental risks; and
- a determined collateral type specific haircut (0 – 100 %) reflecting collection risks (i.e. price risks over the average liquidation period and processing/utilization/sales costs) as specified in the respective policies.

Collateral haircut settings are typically based on available historic internal and/or external recovery data (expert opinions may also be used, where appropriate). They also incorporate a forward-looking component in the form of collection and valuation forecast provided by experts within Risk Management. Considering the expected proceeds from the liquidation of the different collateral types, respective value fluctuations, market specific liquidation costs and time applied haircuts vary between 0 to 100 %. When data is not sufficiently available or inconclusive, more conservative haircuts than otherwise used must be applied. Haircut settings are reviewed at least annually.

Main types of collateral (Article 453 (c) CRR)

We regularly agree on collateral to be received from customers that are subject to credit risk or to be provided by third parties agreed by legally effective and enforceable contracts, documented by a written and reasoned legal opinion. Collateral is credit protection in the form of (funded) assigned or pledged assets or (unfunded) third-party obligations that serves to mitigate the inherent risk of credit loss in an exposure, by either substituting the counterparty default risk or improving recoveries in the event of a default. We generally take all types of valuable and eligible collateral for our respective businesses but may limit accepted collateral types for specific businesses or regions as customary in the respective market or driven by purpose of efficiency. While collateral can be an alternative source of repayment, it does not replace the necessity of high-quality underwriting standards and a thorough assessment of the debt service ability of the counterparty in line with CRR Article 194 (9).

We segregate collateral received into the following two types:

- Funded credit protection in forms of financial and other collateral, which enables us to recover all or part of the outstanding exposure by liquidating the collateral asset provided, in cases where the counterparty is unable or unwilling to fulfill its primary obligations. Cash collateral, securities (equity, bonds), collateral pledges or assignments of other claims or inventory, movable assets (i.e., plant, machinery, ships and aircraft) and real estate typically fall into this category. All financial collateral is regularly, mostly daily, revalued and measured against the respective credit exposure. The value of other collateral, including real estate, is monitored based upon established processes that includes regular reviews or revaluations by internal and/or external experts with appropriate qualification, skills and experience.
- Unfunded credit protection in forms of guarantee collateral, which complements the counterparty’s ability to fulfill its obligation under the legal contract and as such is provided by uncorrelated third parties. Letters of credit, insurance contracts, export credit insurance, guarantees, credit derivatives and risk participations typically fall into this category. Guarantees and strong letters of comfort provided by correlated group members of customers (generally the parent company) are also accepted and used for risk transfer in approved rating scorecards. Guarantee collateral with a non-investment grade rating of the guarantor is limited.

Main types of guarantor and credit derivative counterparties (Article 453 (d) CRR)

We accept different types of unfunded credit protection, which complements the counterparty’s ability to fulfill its obligation under the legal contract and as such is provided by uncorrelated third parties with checked creditworthiness. The process for the analysis of the guarantor’s creditworthiness is aligned to the credit assessment process for counterparties. Letters of credit, insurance contracts, export credit insurance, guarantees, credit derivatives and risk participations typically fall into this category. Main guarantor types are banks, export credit agencies and other public-sector undertakings and insurance companies whose obligations are mostly recognized via PD-substitution. Also, corporate clients play an important role in providing declarations of liability. Guarantees and strong letters of comfort provided by correlated group members of customers (generally the parent company) are accepted and used for risk transfer in approved rating scorecards. Guarantee collateral with a non-investment grade rating of the guarantor is limited.

Risk concentrations within credit risk mitigation (Article 453 (e) CRR)

Concentrations within credit risk mitigations taken may occur if a number of guarantors and credit derivative providers with similar economic characteristics are engaged in comparable activities with changes in economic or industry conditions affecting their ability to meet contractual obligations Concentration risk may also occur in collateral portfolios (e.g. multiple claims and receivables against third parties) which are considered conservatively within the valuation process and/or on-site inspections where applicable. We use a range of tools and metrics to monitor concentrations in our credit risk mitigating activities and initiate respective actions if deemed necessary.

General quantitative information on credit risk mitigation

Overview of credit risk mitigation techniques (Article 453 (f) CRR)

The table EU CR3 below shows a breakdown of unsecured and secured credit risk exposures and credit risk exposures secured by various credit risk mitigants for all loans and debt securities including the carrying amounts of the total population which are in default. Exposures unsecured (column a) represent the carrying amount of credit risk exposures (net of credit risk adjustments) that do not benefit from a credit risk mitigation technique, regardless of whether this technique is recognized in the CRR. Exposures secured (column b) represent the carrying amount of exposures that have at least one CRM mechanism (collateral, financial guarantees, credit derivatives) associated with them. Exposure secured by various credit risk mitigants (column c-e) are the carrying amount of exposures (net of credit risk adjustments) partly or totally secured by collateral, financial guarantees and credit derivatives, whereby only the secured portion of the overall exposure is presented. The allocation of the carrying amount of multisecured exposures to their different CRM mechanisms is made by order of priority, starting with the CRM mechanism expected to be called first in the event of a loss, and within the limits of the carrying amount primarily observed of the secured exposures. Moreover, no overcollateralization is considered.

EU CR3 – CRM techniques – Overview

						Dec 31, 2021
		a	b	c	d	e
	in € m.	Exposures unsecured: Carrying amount	Exposures secured: Carrying amount	Exposures secured by collateral	Exposures secured by financial guarantees	Exposures secured by credit derivatives
1	Total Loans and advances	483,236	369,040	334,321	34,719	0
2	Total Debt securities	44,480	262	262	0	0
3	Total exposures	527,716	369,302	334,583	34,719	0
4	of which: non-performing	7,900	5,206	4,555	651	0
5	of which: defaulted	7,562	5,206	4,555	651	0

						Jun 30, 2021
		a	b	c	d	e
	in € m.	Exposures unsecured: Carrying amount	Exposures secured: Carrying amount	Exposures secured by collateral	Exposures secured by financial guarantees	Exposures secured by credit derivatives
1	Total Loans and advances	499,697	353,633	321,757	31,877	0
2	Total Debt securities	51,406	306	306	0	0
3	Total exposures	551,104	353,940	322,063	31,877	0
4	of which: non-performing	8,058	5,026	4,354	672	0
5	of which: defaulted	7,777	5,026	4,354	672	0

The details in EU CR3 table for June 30, 2021, are adopted with the changes in the latest guidelines, to align the table with the supervisory reporting to competent authorities. Secured and unsecured total exposures decreased from € 905 billion in June 2021 to € 897 billion in December 2021, driven by decreases in unsecured loans and advances by € 16 billion and debt securities by € 7 billion, partly offset by a € 15 billion increase in secured loans and advances.

Credit risk and credit risk mitigation in the standardized approach

Qualitative information on the use of the standardized approach

We treat a subset of our credit risk exposures within the standardized approach. The standardized approach measures credit risk either pursuant to fixed risk weights, which are regulatory predefined or determined through the application of external ratings.

We assign certain credit exposures permanently to the standardized approach in accordance with Article 150 CRR. These are predominantly exposures to the Federal Republic of Germany and other German public sector entities as well as exposures to central governments of other European Member States that meet the required conditions. These exposures make up the majority of the exposures carried under the standardized approach and receive predominantly a risk weight of zero percent. For internal purposes, however, these exposures are subject to an internal credit assessment and fully integrated in the risk management and economic capital processes.

In line with Article 150 CRR and Section 10 SolvV, we assign further exposures permanently to the standardized approach. This population comprises several small-sized portfolios, which are considered to be immaterial on a stand-alone basis for inclusion in the IRBA.

External ratings in the standardized approach (Article 444 (a-b) CRR)

In order to calculate the regulatory capital requirements under the standardized approach, we use eligible external ratings from Standard & Poor's, Moody's, Fitch Ratings and in some cases from DBRS. Ratings are applied to all relevant exposure classes in the standardized approach. If more than one rating is available for a specific counterparty, the selection criteria as set out in Article 138 CRR are applied in order to determine the relevant risk weight for the capital calculation.

Usage of issue ratings (Article 444 (c) CRR)

Given the low volume of exposures covered under the standardized approach and the high percentage of (externally rated) central government exposures therein, we principally do not consider impacts from inferring issue ratings from issuer ratings.

Mapping of external rating to credit quality steps (Article 444 (d) CRR)

This information does not need to be disclosed separately as Deutsche Bank Group complies with the standard association published by EBA.

Quantitative information on the use of the standardized approach

Standardized approach exposure by risk weight before and after credit mitigation (Article 444 (e) CRR and Article 453 (g-i) CRR)

The table below shows our credit risk exposure before and post credit conversion factors and credit risk mitigation obtained in the form of eligible financial collateral, guarantees and credit derivatives based on the exposure at default values (EAD) in the standardized approach as well as related RWA and average risk weights broken down by regulatory exposure classes and a split in on- and off-balance sheet exposures.

EU CR4 – Standardized approach – credit risk exposure and credit risk mitigation (CRM) effects

							Dec 31, 2021
		a	b	c	d	e	f
	in € m. (unless stated otherwise)	Exposures before CCF and CRM		Exposures post-CCF and CRM		RWA and RWA density	
	Exposure classes	On-balance sheet amount	Off-balance sheet amount	On-balance sheet amount	Off-balance sheet amount	RWA	RWA density
1	Central governments or central banks	115,115	13	115,407	6	2	0%
2	Regional government or local authorities	3,569	5,391	3,576	1,457	19	0%
3	Public sector entities	682	41	726	10	39	5.29%
4	Multilateral development banks	463	0	463	0	0	0%
5	International organizations	808	0	808	0	0	0%
6	Institutions	2,749	284	2,749	58	175	6.22%
7	Corporates	13,489	2,979	9,997	638	10,290	96.75%
8	Retail	1,964	1,648	1,578	67	1,159	70.44%
9	Secured by mortgages on immovable property	4,329	0	4,138	0	1,559	37.68%
10	Exposures in default	1,020	7	984	0	1,271	129.09%
11	Exposures associated with particularly high risk	69	7	69	1	105	150.00%
12	Covered bonds	0	0	0	0	0	0%
13	Institutions and corporates with a short-term credit assessment	0	0	0	0	0	0%
14	Collective investments undertakings (CIU)	306	16,506	306	4,028	4,399	101.49%
15	Equity	0	0	0	0	0	0%
16	Other items	40	0	40	0	39	96.73%
17	Total	144,603	26,877	140,842	6,266	19,056	12.95%

							Jun 30, 2021
		a	b	c	d	e	f
	in € m. (unless stated otherwise)	Exposures before CCF and CRM		Exposures post-CCF and CRM		RWA and RWA density	
	Exposure classes	On-balance sheet amount	Off-balance sheet amount	On-balance sheet amount	Off-balance sheet amount	RWA	RWA density
1	Central governments or central banks	128,260	61	128,313	2	1	0%
2	Regional government or local authorities	3,940	5,415	3,943	1,446	12	0.21%
3	Public sector entities	920	58	968	20	23	2.35%
4	Multilateral development banks	666	0	666	0	0	0%
5	International organizations	816	0	816	0	0	0%
6	Institutions	1,846	282	1,845	71	53	2.75%
7	Corporates	13,137	3,389	9,616	702	10,127	98.15%
8	Retail	2,259	1,437	1,918	57	1,406	71.21%
9	Secured by mortgages on immovable property	3,387	0	3,275	0	1,212	37.02%
10	Exposures in default	1,066	88	1,058	43	1,534	139.33%
11	Items associated with particularly high risk	136	4	133	1	201	150.00%
12	Covered bonds	0	0	0	0	0	0%
13	Claims on institutions and corporates with a short-term credit assessment	0	0	0	0	0	0%
14	Collective investments undertakings (CIU)	442	15,286	442	4,282	5,362	113.48%
15	Equity exposures	0	0	0	0	0	0%
16	Other items	36	0	36	0	31	83.98%
17	Total	156,910	26,019	153,029	6,625	19,962	12.50%

Our RWA for credit risk (excluding CCR) in the standardized approach were at € 19.1 billion as of December 31, 2021, compared to € 20.0 billion as of June 30, 2021. The decrease of € 0.9 billion was primarily driven by further updates to the exposure class “collective investments undertakings (CIU)”, resulting from changes in relation to the CRR amendment. Furthermore, a marginal decrease, observed in the “retail” and “exposures in default” portfolios, was offset by “secured by mortgages on immovable property” as well as “corporate” portfolios across different business lines.

In the following tables the exposure at default values (EAD) per regulatory exposure class are assigned to their standardized risk weights. Deducted or unrated items are split out separately. The exposures are shown after the shift to the exposure class of the protection seller, if applicable.

EU CR5 – Standardized approach

	in € m.	Dec 31, 2021 Risk Weight					
	Exposure classes	0%	2%	4%	10%	20%	35%
1	Central governments or central banks	115,405	0	0	0	4	0
2	Regional governments or local authorities	3,588	0	0	0	34	0
3	Public sector entities	555	0	0	0	176	0
4	Multilateral development banks	463	0	0	0	0	0
5	International organizations	808	0	0	0	0	0
6	Institutions	2,329	50	0	0	327	0
7	Corporates	79	0	0	0	196	0
8	Retail exposures	0	0	0	0	0	187
9	Exposures secured by mortgages on immovable property	0	0	0	0	0	3,323
10	Exposures in default	0	0	0	0	0	0
11	Exposures associated with particularly high risk	0	0	0	0	0	0
12	Covered bonds	0	0	0	0	0	0
13	Exposures to institutions and corporates with a short-term credit assessment	0	0	0	0	0	0
14	Units or shares in collective investment undertakings (CIU)	67	0	0	0	13	0
15	Equity exposures	0	0	0	0	0	0
16	Other items	0	0	0	0	2	0
17	Total	123,294	50	0	0	751	3,510

	in € m.	Dec 31, 2021 Risk Weight					
	Exposure classes	50%	70%	75%	100%	150%	250%
1	Central governments or central banks	3	0	0	0	0	0
2	Regional governments or local authorities	0	0	0	12	0	0
3	Public sector entities	3	0	0	2	0	0
4	Multilateral development banks	0	0	0	0	0	0
5	International organizations	0	0	0	0	0	0
6	Institutions	52	0	0	44	2	0
7	Corporates	79	0	0	10,230	51	0
8	Retail	0	0	1,458	0	0	0
9	Secured by mortgages on immovable property	815	0	0	0	0	0
10	Exposures in default	0	0	0	372	612	0
11	Items associated with particularly high risk	0	0	0	0	70	0
12	Covered bonds	0	0	0	0	0	0
13	Claims on institutions and corporates with a short-term credit assessment	0	0	0	0	0	0
14	Collective investments undertakings (CIU)	17	0	0	737	2	0
15	Equity exposures	0	0	0	0	0	0
16	Other items	0	0	0	39	0	0
17	Total	969	0	1,458	11,437	738	0

	in € m.	Risk Weight			Dec 31, 2021	
	Exposure classes	370%	1250%	Others	Total	Of which: unrated
1	Central governments or central banks	0	0	0	115,413	115,413
2	Regional governments or local authorities	0	0	0	3,633	3,631
3	Public sector entities	0	0	0	736	696
4	Multilateral development banks	0	0	0	463	463
5	International organizations	0	0	0	808	808
6	Institutions	0	3	0	2,807	2,783
7	Corporates	0	1	0	10,635	10,449
8	Retail	0	0	0	1,645	1,645
9	Secured by mortgages on immovable property	0	0	0	4,138	4,122
10	Exposures in default	0	0	0	984	984
11	Items associated with particularly high risk	0	0	0	70	70
12	Covered bonds	0	0	0	0	0
13	Claims on institutions and corporates with a short-term credit assessment	0	0	0	0	0
14	Collective investments undertakings (CIU)	0	255	3,242	4,334	4,322
15	Equity exposures	0	0	0	0	0
16	Other items	0	0	0	41	41
17	Total	0	259	3,242	145,708	145,428

	in € m.	Jun 30, 2021					
		Risk Weight					
	Exposure classes	0%	2%	4%	10%	20%	35%
1	Central governments or central banks	128,313	0	0	0	0	0
2	Regional governments or local authorities	3,952	0	0	0	33	0
3	Public sector entities	874	0	0	0	114	0
4	Multilateral development banks	666	0	0	0	0	0
5	International organizations	816	0	0	0	0	0
6	Institutions	1,729	50	0	0	97	0
7	Corporates	17	0	0	0	79	0
8	Retail	0	0	0	0	0	187
9	Secured by mortgages on immovable property	0	0	0	0	0	2,726
10	Exposures in default	0	0	0	0	0	0
11	Items associated with particularly high risk	0	0	0	0	0	0
12	Covered bonds	0	0	0	0	0	0
13	Claims on institutions and corporates with a short-term credit assessment	0	0	0	0	0	0
14	Collective investments undertakings (CIU)	24	0	0	0	99	0
15	Equity exposures	0	0	0	0	0	0
16	Other items	0	0	0	0	7	0
17	Total	136,390	50	0	0	430	2,913

	in € m.	Jun 30, 2021					
		Risk Weight					
	Exposure classes	50%	70%	75%	100%	150%	250%
1	Central governments or central banks	2	0	0	0	0	0
2	Regional governments or local authorities	0	0	0	5	0	0
3	Public sector entities	1	0	0	0	0	0
4	Multilateral development banks	0	0	0	0	0	0
5	International organizations	0	0	0	0	0	0
6	Institutions	14	0	0	25	0	0
7	Corporates	41	0	0	10,159	21	0
8	Retail	0	0	1,788	0	0	0
9	Secured by mortgages on immovable property	549	0	0	0	0	0
10	Exposures in default	0	0	0	235	866	0
11	Items associated with particularly high risk	0	0	0	0	134	0
12	Covered bonds	0	0	0	0	0	0
13	Claims on institutions and corporates with a short-term credit assessment	0	0	0	0	0	0
14	Collective investments undertakings (CIU)	8	0	0	480	0	0
15	Equity exposures	0	0	0	0	0	0
16	Other items	0	0	0	29	0	0
17	Total	615	0	1,788	10,932	1,021	0

	in € m.	Jun 30, 2021				
		Risk Weight				
	Exposure classes	370%	1250%	Others	Total	Of which: unrated
1	Central governments or central banks	0	0	0	128,315	128,315
2	Regional governments or local authorities	0	0	0	3,990	3,989
3	Public sector entities	0	0	0	988	988
4	Multilateral development banks	0	0	0	666	666
5	International organizations	0	0	0	816	816
6	Institutions	0	0	0	1,916	1,906
7	Corporates	0	1	0	10,318	10,263
8	Retail	0	0	0	1,975	1,975
9	Secured by mortgages on immovable property	0	0	0	3,275	3,259
10	Exposures in default	0	0	0	1,101	1,101
11	Items associated with particularly high risk	0	0	0	134	134
12	Covered bonds	0	0	0	0	0
13	Claims on institutions and corporates with a short-term credit assessment	0	0	0	0	0
14	Collective investments undertakings (CIU)	56	251	3,807	4,725	4,712
15	Equity exposures	0	0	0	0	0
16	Other items	0	0	0	36	36
17	Total	56	252	3,807	158,254	158,161

Credit risk exposure and credit risk mitigation in the internal-rating-based approach

Qualitative information on the use of the IRB approach

Approval status for IRB approaches (Article 452 (a) CRR)

For the majority of our credit portfolios, we are applying the advanced IRBA to calculate the regulatory capital requirements according to the CRR/CRD 4 framework, based on respective approvals received from BaFin and ECB. The regulatory approvals obtained as a result of IRB audit processes for our regulatory credit exposures allow the usage of currently 64 internally developed rating systems for regulatory capital calculation purposes, 6 of these covering exposures in former Postbank. Thereof, 37 rating systems were authorized in December 2007. Overall they cover all of our material exposures in the IRB eligible exposure classes “Central governments and central banks”, “Institutions”, “Corporates”, and “Retail”.

As an IRB institution, we are required to treat specific equity positions and other non-credit obligation assets generally within the IRB. For these exposure types typically regulatory defined IRB risk weights are applied.

Our exposures reported under foundation IRB include parts of former Postbank’s corporate portfolios, which partially receive regulatory risk weights using the so-called ‘supervisory slotting criteria’ approach. Further details of the Foundation Approach are provided in the section “Foundation Internal Ratings Based Approach”.

At Group level, we assign a few portfolios to the standardized approach. Details of the standardized approach and the standardized approach exposures are discussed in the section “Credit risk and credit risk mitigation in the standardized approach” within this report.

We are in regular exchange with ECB on model enhancements, changes in the IRB model landscape and other model related changes that are monitored jointly with ECB based on a model map.

Scope of the use of IRB and SA approaches (Article 452 (b) CRR) (EU CRE)

The table EU CR6-A below shows exposures and percentages covered by the IRB and standardized approaches, also showing exposures subject to the permanent partial use and to a roll-out plan. It splits the exposures further down into the major regulatory exposure classes. Differences between the exposure value as defined in Art. 166 CRR and the total exposure value for exposures subject to the standardized approach and to the IRB approach following the leverage exposure approach are explained in the leverage section of this report.

EU CR6-A - Scope of the use of IRB and SA approaches

						Dec 31, 2021
	in € m. (unless stated otherwise)	Exposure value as defined in Article 166 CRR for exposures subject to IRB approach	Total exposure value for exposures subject to the Standardized approach and to the IRB approach	Percentage of total exposure value subject to the permanent partial use of the SA	Percentage of total exposure value subject to IRB Approach	Percentage of total exposure value subject to a roll-out plan
1	Central governments or central banks	263,205	247,476	52	48	0
	of which:					
1.1	Regional governments or local authorities	-	5,368	100	0	0
1.2	Public sector entities	-	723	100	0	0
2	Institutions	58,603	75,541	33	67	0
3	Corporates	525,366	454,557	9	86	6
	of which:					
3.1	Corporates - Specialised lending, excluding slotting approach	-	42,652	14	86	0
3.2	Corporates - Specialised lending under slotting approach	-	1,067	0	100	0
4	Retail	254,115	219,840	48	51	0
	of which:					
4.1	Retail – Secured by real estate SMEs	-	8,696	1	98	1
4.2	Retail – Secured by real estate non-SMEs	-	168,180	51	49	0
4.3	Retail – Qualifying revolving	-	2,231	65	35	0
4.4	Retail – Other SMEs	-	5,208	12	84	4
4.5	Retail – Other non-SMEs	-	29,837	42	58	0
5	Equity	27,526	8,772	9	91	0
6	Other non-credit obligation assets	9,923	9,662	5	95	0
7	Total	1,138,739	1,015,848	30	68	3

Relationship between the risk management function and the internal audit function (Article 452 (c)(i) CRR) (EU CRE)

Deutsche Bank's risk management framework consists of various components. Organizational structures follow the three Lines of Defense (3LoD) model with a clear definition of roles and responsibilities for all risk types:

– The 1st LoD refers to those roles in the bank whose activities generate risks and who own and are accountable for these risks. The 1st LoD manages these risks within the defined risk appetite, establishes an appropriate risk governance and risk culture, and adheres to the risk type frameworks defined by the 2nd LoD.
– The 2nd LoD refers to the roles in the bank who define the risk management framework for a specific risk type. The 2nd LoD independently assesses and challenges the implementation of the risk type framework and adherence to the risk appetite, and acts as an advisor to the 1st LoD on how to identify, assess and manage risks.
– The 3rd LoD is Group Audit, which is accountable for providing independent and objective assurance on the adequacy of the design, operating effectiveness and efficiency of the risk management system and systems of internal control.

Group Audit is an instrument of the Management Board (MB) and the Global Head of Group Audit reports administratively to the CEO. Group Audit supports the MB in identifying significant known and emerging weaknesses in the control framework, assessing whether risks, including the potential occurrences of fraud, are appropriately identified and managed. Group Audit is also responsible for assessing the effectiveness and efficiency of risk management, internal controls, governance processes and systems in a holistic and forward-looking manner. Group Audit is not responsible for the design, installation, procedures, or operations of the institution's internal control.

Rating system review (Article 452 (c)(ii) CRR) (EU CRE)

The 2nd LoD for model risk is Model Risk Management. The Model Risk Management function comprises the Credit Validation unit which performs different types of independent validations across the rating system's lifecycle in accordance with the standards set in the applicable Model Risk Management Policy.

Procedure of independence between reviewing function and development function (Article 452 (c)(iii) CRR) (EU CRE)

A high level of independence of the Model Risk Management function (including the Credit Validation unit) is ensured through organizational set-up independent from the Credit Risk Control Unit (comprising credit model owners and developers). The

Head of Model Risk Management reports into the Chief Risk Officer. The independent Credit Validation unit reports into the Head of Model Risk Management.

Procedure to ensure accountability of development and reviewing function (Article 452 (c)(iv) CRR) (EU CRE)

Model development function is accountable for reflecting IRB requirements in the design, development and documentation of IRB models. Furthermore, it is accountable to provide model users, model owners and control functions with accurate information on IRB models including relevant assumptions and limitations.

Credit Validation unit as part of Model Risk Management function is accountable for ongoing review of IRB models and assumptions taken in the development of these models.

Group Audit as 3rd LoD is accountable for providing independent and objective assurance on the adequacy of the design, operating effectiveness and efficiency of the risk management system and systems of internal control.

Role of the function in the credit risk model process, scope and main content of credit risk models (Article 452 (d-e) CRR) (EU CRE)

Model Change Process

New model development or changes to existing models are agreed between model developers within DB Group Strategic Analytics (GSA) and users of the models within CRM. Other departments of the bank are involved as required e.g., to support on the provision of data required for model development or on the implementation of models in production systems.

Changes to existing credit models and introduction of new models are approved by the Regulatory Credit Risk Model Committee (RCRMC) chaired by the Head of CRM before the models are used for credit decisions and capital calculation for the first time or before they are significantly changed. Separately, an approval by the Head of Model Risk Management is required. Where appropriate, less significant changes can be approved by a delegate or either function under a delegated authority – mainly to the Regulatory Credit Risk Model Forum (RCRMF). Proposals with high impact are recommended for approval to the Group Risk Committee. Regulatory notification or approval may also be required.

The model validation is performed independently of model development by Model Risk Management. The results of the regular validation processes as stipulated by internal policies are brought to the attention of the Regulatory Credit Risk Model Forum (RCRMF) and the RCRMC, even if the validation results do not lead to a change.

Credit Risk Model reporting

Aggregate model risk for credit risk is reported on a quarterly basis by Model Risk Management Governance in a dedicated credit risk section of the CRO Model Risk Profile report. The main scope of the credit risk section of this report is to inform on model usages in credit risk contributing to or towards a breach of the Group model risk appetite metrics, in total 11 quantitative metrics.

This includes information regarding the number of model usages that have high, medium or low model risk ratings with strong, medium or weak control environment (Metrics I-III); information on high risk model usages related to the model risk framework, like unapproved model use, timeliness of material validation findings remediation, gaps in Ongoing Performance Monitoring, completeness of annual review (Metrics IV, VII-X); and model risk information for model usages newly added to the Model Inventory based on model user/developer assessment of the key drivers of model risk considering factors such as complexity, model uncertainty, breadth of use and materiality as well as status on remediation progress on their way to initial validation (Metrics V-VII).

Differentiation in reporting is made by model usage class comprising Rating, LGD (Loss Given Default), EAD (Exposure at Default), CRP (Credit Risk Parameter), dbCDE (Credit Default Engine)- Credit Risk, GWST CR (Group Wide Stress Test – Credit Risk) and other models (i.e. business decision and P&L/BS model usages).

Significant model risk matters and model risk contribution to model risk appetite metrics are outlined by individual model usage. Details cover among others, key issue for contribution, status and the responsible issue owner and date when the issue was identified. The latter builds the basis for the assessment of application of internal consequences in case remediation exceeds the remediation timeline.

Beyond the reporting on model risk appetite metrics the CRO Model Risk Profile report contains further model risk validation findings information related to non-high risk rated credit risk models.

Furthermore, there is also a standing agenda item on Credit Risk Models in the Regulatory Credit Risk Model Committee (RCRMC) that covers model risk focus topics as well as the status and development and timely remediation of all internal validation findings across all Credit Risk models.

Internal rating-based approaches (Article 452 (f) CRR) (EU CRE)

Advanced Internal Ratings Based Approach

The advanced IRBA is the most sophisticated approach available under the regulatory framework for credit risk and allows us to make use of our internal rating methodologies as well as internal estimates of specific other risk parameters. These methods and parameters represent long-used key components of the internal risk measurement and management process supporting the credit approval process, the economic capital and expected loss calculation and the internal monitoring and reporting of credit risk. The relevant parameters include the probability of default (“PD”), the loss given default (“LGD”) and the maturity (“M”) driving the regulatory risk-weight and the credit conversion factor (“CCF”) as part of the regulatory exposure at default (“EAD”) estimation. For most of our internal rating systems more than seven years of historical information is available to assess these parameters. Our internal rating methodologies aim at point-in-time rather than a through-the-cycle rating.

The probability of default for customers is derived from our internal rating systems. We assign a probability of default to each relevant counterparty credit exposure as a function of a transparent and consistent 21-grade master rating scale for all of our exposure (excluding parts of former Postbank). The PD used for RWA calculation is subject to the regulatory PD floor of 3bp.

A prerequisite for the development of rating methodologies and the determination of risk parameters is a proper definition, identification and recording of the default event of a customer. We apply a default definition in accordance with the requirements of Article 178 CRR as confirmed by the BaFin and ECB as part of the IRBA approval process. In 2021, modifications to our definition of default reflecting EBA/RTS/2016/06 and EBA/GL/2016/07 were implemented after ECB approval.

The borrower ratings are derived on the grounds of internally developed rating models which specify consistent and distinct customer-relevant criteria and assign a rating grade based on a specific set of criteria as given for a certain customer. The set of criteria is generated from information sets relevant for the respective customer segments like general customer behavior, financial and external data. The methods in use range from statistical scoring models to expert-based models taking into account the relevant available quantitative and qualitative information. Expert-based models are usually applied for counterparts in the exposure classes “Central governments and central banks”, “Institutions” and “Corporates” with the exception of certain “Corporates” segments for which sufficient data is available for statistical scoring models. For the latter as well as for the retail segment statistical scoring or hybrid models combining both approaches are commonly used. Quantitative rating methodologies are developed based on applicable statistical modeling techniques, such as logistic regression. In line with Article 174 CRR, these models are complemented by human judgment and oversight to review model-based assignments and are intended to ensure that the models are used appropriately. When we assign our internal risk ratings, it allows us to compare them with external risk ratings assigned to our counterparties by the major international rating agencies, where possible, as our internal rating scale has been designed to principally correspond to the external rating scales from rating agencies.

Ratings for central governments and central banks take into account economic, political and sociodemographic indicators, e.g. the political dynamics in a country. The model incorporates relevant aspects covered in the fields of empirical country risk analysis and early warning crisis models to arrive at an overall risk evaluation.

The majority of ratings for “Corporates” and “Institutions” combine quantitative analysis of financial information with qualitative assessments of, inter alia, industry trends, market position and management experience. Financial analysis has a specific focus on cash flow generation and the counterparty’s capability to service its debts, also in comparison to peers. We supplement the analysis of financials by an internal forecast of the counterparty’s financial profile where deemed to be necessary. For purchased corporate receivables the corporate rating approach is applied. We note that the exposure classes “Central governments”, “Institutions” and “Corporates” hold customer segments which often only have few observed occurrences of defaults, so-called “low default portfolios”. For low-default portfolios, a larger amount of expert judgment enters the rating and related PD assignment than for other segments. Such ratings are subject to rigorous reviews by our Asset Quality Review team.

Ratings for SME clients are based on automated sub-ratings for e.g. financial aspects and conduct on their bank account. Specialized lending is managed by specific credit risk management teams, e.g. for real estate, ship finance or leveraged transactions. Following the individual characteristic of the underlying credit transactions we have developed bespoke scorecards where appropriate to derive credit ratings.

In our retail business, creditworthiness checks and counterparty ratings are generally derived by utilizing an automated decision engine. The decision engine incorporates quantitative aspects (i.e., financial figures), behavioral aspects, credit bureau information (such as SCHUFA in Germany) and general customer data. These input factors are used by the decision engine to determine the creditworthiness of the borrower and, after consideration of collateral, the expected loss. The established rating procedures in our retail business are based on multivariate statistical methods.

They are used to support our individual credit decisions for the retail portfolio as well as to continuously monitor it in an automated fashion. In case elevated risks are identified as part to this monitoring process or new regulatory requirements apply, credit ratings are reviewed on an individual basis for these affected counterparties

Although different rating methodologies are applied to the various customer segments in order to properly reflect customer-specific characteristics, they all adhere to the same risk management principles. Credit process policies provide guidance on the classification of customers into the various rating systems.

Drivers for differences between PD and actual default rates are described in the section on Article 452 (h).

We apply internally estimated LGD factors as part of the advanced IRBA capital requirement calculation as approved by the BaFin and ECB. LGD is defined as the likely loss intensity in case of a counterparty default. It provides an estimation of the exposure that cannot be recovered in a default event and therefore captures the severity of a loss. Conceptually, LGD estimates are independent of a customer's probability of default. The LGD models ensure that the main drivers for losses (i.e., different levels and quality of collateralization and customer or product types or seniority of facility) are reflected in specific LGD factors. In our LGD models, except for the former Postbank portfolios, we assign collateral type specific LGD parameters to the collateralized exposure (collateral value after application of haircuts). Moreover, the LGD for uncollateralized exposure cannot be below the LGD assigned to collateralized exposure and regulatory floors (e.g.10 % for residential mortgage loans) are applied. For the former Postbank portfolios, individually modeled LGD parameters are in use. In our Retail, SME and parts of the Corporates segments where sufficient loss data is available, LGD parameters are derived from statistical models based on empirical realized LGDs. In other portfolios, LGD settings incorporate further available information in addition to empirical LGDs, in particular for low-default portfolios.

LGD estimates used for regulatory purposes are estimated to be appropriate for an economic downturn. Statistical LGD models incorporate a downturn component where required. For other LGD settings the appropriateness of the LGD for an economic downturn is evaluated based on qualitative considerations.

As part of the application of the advanced IRBA we apply specific CCFs in order to calculate an EAD value. Conceptually the EAD is defined as the expected amount of the credit exposure to a counterparty at the time of its default. For advanced IRBA calculation purposes we apply the general principles as defined in Article 166 CRR to determine the EAD of a transaction. In instances, however, where a transaction involves an unused limit, a percentage share of this unused limit is added to the outstanding amount in order to appropriately reflect the expected outstanding amount in case of a counterparty default. This reflects the assumption that for commitments the utilization at the time of default might be higher than the current utilization. When a transaction involves an additional contingent component (i.e., guarantees) a further percentage share (usage factor) is applied as part of the CCF model in order to estimate the amount of guarantees drawn in case of default. Where allowed under the advanced IRBA, the CCFs are internally estimated. The calibrations of such parameters are based on statistical experience as well as internal historical data and consider customer and product type specifics. As part of the approval process, the BaFin and ECB assessed our CCF models and stated their appropriateness for use in the process of regulatory capital requirement calculations.

The EAD for our derivatives and securities financing transactions ("SFT") portfolios are primarily calculated based on the IMM approach as described in the section "Counterparty credit risk".

Foundation Internal Ratings Based Approach

The foundation IRBA is an approach available under the regulatory framework for credit risk allowing institutions to make use of their internal rating methodologies while using pre-defined regulatory values for all other risk parameters. Parameters subject to internal estimates include the probability of default ("PD") while the loss given default ("LGD") and the credit conversion factor ("CCF") are defined in the regulatory framework.

A probability of default is assigned to each relevant counterparty credit exposure as a function of a transparent and consistent rating master scale. The borrower ratings assigned are derived on the grounds of internally developed rating models which specify consistent and distinct customer-relevant criteria and assign a rating grade based on a specific set of criteria as given for a certain customer following the approaches as outlined for our Advanced IRBA rating systems. Currently the former Postbank rating systems Factoring and Special Rating are reported under the foundation IRBA. For the latter, regulatory risk weights are applied using the so-called 'supervisory slotting criteria' approach as defined by Article 153 CRR.

For the foundation IRBA we apply the same default definition as for Advanced IRBA in accordance with the requirements of Article 178 CRR as confirmed by the BaFin and ECB as part of its IRBA approval process.

Assignment to regulatory exposure classes

The advanced and foundation IRBA requires differentiating a bank's credit portfolio into various regulatory defined exposure classes. We identify the relevant regulatory exposure class for each exposure by taking into account factors like customer-specific characteristics, the rating system used as well as certain materiality thresholds which are regulatory defined.

We use the simple risk-weight approach according to Article 155 (2) CRR for our investments in equity positions. It distinguishes between exposure in equities which are non-exchange traded but sufficiently diversified, exchange-traded and other non-exchange-traded and then uses the regulatory-defined risk weights of 190 %, 290 % or 370 %, respectively. We also include exposures attracting a risk weight of 250 % according to Article 48 (4) for significant investments in the CET 1 instruments of financial sector entities which are subject to the threshold exemptions as outlined in Article 48 CRR. Exposures which are assigned to the exposure class "other non-credit obligation assets" receive an IRBA risk weight of 0 % in case of cash positions and a risk weight of 100 % for all other cases.

For collective investment undertakings ("CIU") we apply a "look through"-approach, where applicable, and derive the risk weighs based on the underlying positions. In case a look-through approach cannot be applied the fall-back position is to use a risk weight of 1,250%.

Quantitative information on the use of the IRB approach

Foundation IRB exposure (Article 452 (g) (i-v) CRR)

The following series of tables details the Group's foundation IRB exposure distributed on our internal rating scale, separately for all relevant regulatory exposure classes. They exclude the counterparty credit risk position from derivatives and securities financing transactions which are presented separately in the section "Counterparty credit risk" in this report.

The tables show the EAD gross as well as the off-balance sheet exposure. All undrawn commitment exposure values shown below are assigned to the exposure class of their original counterparty and not to the exposure class of the protection seller.

In addition they provide the EAD net after CRM, where exposures covered by guarantees or credit derivatives are assigned to the protection seller. As a consequence the EAD net can be higher than the original balance sheet exposure.

The EAD net is presented in conjunction with exposures-weighted average PD, RWA and the average risk weight (RW). In addition it provides the average LGD and average maturity, which is regulatory pre-defined in the foundation IRB. Further details in the tables are number of obligors, expected loss and provisions.

EU CR6 – FIRB approach – Credit risk exposures by exposure class and PD range

												Dec 31, 2021
in € m.	a	b	c	d	e	f	g	h	i	j	k	l
(unless stated otherwise) Exposure class/ PD scale	On-balance sheet exposures	Off-balance-sheet exposures pre-CCF	Exposure weighted average CCF (in %)	Exposure post CCF and post CRM	Exposure weighted average PD (%)	Number of obligors (in 1,000s)	Exposure weighted average LGD (%)	Exposure weighted average maturity (in years)	Risk weighted exposure amount after supporting factors	Density of risk weighted exposure amount (in %)	Expected Loss amount	Value adjustments and Provisions
Central governments and central banks												
0.00 to <0.15	0	0	0	58	0.00	0.0	45.00	2.5	0	0.01	0	–
0.00 to <0.10	0	0	0	58	0.00	0.0	45.00	2.5	0	0.00	0	–
0.10 to <0.15	0	0	0	0	0.15	0.0	42.69	2.5	0	37.64	0	–
0.15 to <0.25	0	0	0	0	0.23	0.0	42.69	2.5	0	47.61	0	–
0.25 to <0.50	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
0.50 to <0.75	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
0.75 to <2.50	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
0.75 to <1.75	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
1.75 to <2.5	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
2.50 to <10.00	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
2.50 to <5	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
5 to <10	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
10.00 to <100.00	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
10 to <20	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
20 to <30	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
30.00 to <100.00	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
100.00 (Default)	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
Sub-total	0	0	0	58	0.00	0.0	45.00	2.5	0	0.09	0	–
Institutions												
0.00 to <0.15	2	10	0	2	0.04	0.0	39.85	2.5	0	14.40	0	–
0.00 to <0.10	2	10	0	2	0.04	0.0	40.50	2.5	0	14.39	0	–
0.10 to <0.15	0	0	0	0	0.15	0.0	12.33	2.5	0	14.82	0	–
0.15 to <0.25	0	2	0	0	0.25	0.0	13.05	2.5	0	15.63	0	–
0.25 to <0.50	0	1	0	0	0.38	0.0	42.69	2.5	0	61.54	0	–
0.50 to <0.75	0	0	0	0	0.69	0.0	42.69	2.5	0	80.49	0	–
0.75 to <2.50	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
0.75 to <1.75	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
1.75 to <2.5	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
2.50 to <10.00	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
2.50 to <5	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
5 to <10	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
10.00 to <100.00	1	0	0	1	20.00	0.0	45.00	2.5	2	286.62	0	–
10 to <20	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
20 to <30	1	0	0	1	20.00	0.0	45.00	2.5	2	286.62	0	–
30.00 to <100.00	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
100.00 (Default)	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
Sub-total	3	13	0	3	5.00	0.1	41.10	2.5	3	82.40	0	–
Corporates												

in € m. (unless stated otherwise)												Dec 31, 2021
	a	b	c	d	e	f	g	h	i	j	k	l
Exposure class/ PD scale	On-balance sheet exposures	Off-balance-sheet exposures pre-CCF	Exposure weighted average CCF (in %)	Exposure post CCF and post CRM	Exposure weighted average PD (%)	Number of obligors (in 1,000s)	Exposure weighted average LGD (%)	Exposure weighted average maturity (in years)	Risk weighted exposure amount after supporting factors	Density of risk weighted exposure amount (in %)	Expected Loss amount	Value adjustments and Provisions
0.00 to <0.15	2,025	2,393	4.79	2,546	0.10	1.5	19.32	2.5	356	13.99	1	2
0.00 to <0.10	1,068	1,183	3.36	1,598	0.07	0.9	19.12	2.5	189	11.80	0	0
0.10 to <0.15	957	1,210	6.18	948	0.16	0.6	19.66	2.5	168	17.69	0	2
0.15 to <0.25	1,119	1,188	3.57	1,065	0.25	2.5	28.54	2.5	357	33.55	1	0
0.25 to <0.50	800	944	2.62	706	0.41	3.3	36.79	2.5	387	54.80	1	0
0.50 to <0.75	622	668	3.62	528	0.72	2.2	27.35	2.5	278	52.60	1	1
0.75 to <2.50	553	528	8.68	546	1.58	0.9	30.14	2.5	422	77.26	3	1
0.75 to <1.75	366	409	8.33	365	1.30	0.8	29.29	2.5	259	70.94	1	0
1.75 to <2.5	187	119	9.90	181	2.15	0.1	31.85	2.5	163	89.96	1	0
2.50 to <10.00	221	166	3.27	191	5.83	0.2	20.63	2.5	141	73.93	3	2
2.50 to <5	142	128	0.43	113	4.08	0.1	18.12	2.5	71	62.63	1	0
5 to <10	78	38	12.77	78	8.38	0.1	24.27	2.5	70	90.38	2	1
10.00 to <100.00	109	139	6.18	74	21.34	1.2	35.78	2.5	128	171.31	5	2
10 to <20	17	12	2.34	15	14.06	0.0	34.97	2.5	28	179.12	1	0
20 to <30	78	83	9.95	45	20.08	1.2	43.03	2.5	90	199.09	4	1
30.00 to <100.00	14	43	0	14	33.95	0.0	12.33	2.5	9	69.01	1	0
100.00 (Default)	89	2	0.32	88	100.00	0.1	44.84	2.5	0	0.00	40	57
Sub-total	**5,536**	**6,028**	**4.40**	**5,744**	**2.36**	**12.0**	**25.59**	**2.5**	**2,069**	**36.01**	**54**	**64**
of which:												
SMEs												
0.00 to <0.15	23	12	33.21	41	0.12	0.0	36.80	2.5	8	20.59	0	–
0.00 to <0.10	1	1	0	15	0.04	0.0	25.19	2.5	1	8.12	0	–
0.10 to <0.15	22	11	36.22	26	0.17	0.0	43.47	2.5	7	27.75	0	–
0.15 to <0.25	12	14	0	10	0.24	0.1	30.74	2.5	2	23.08	0	–
0.25 to <0.50	12	26	0	9	0.39	0.1	33.61	2.5	3	32.28	0	–
0.50 to <0.75	16	26	0	11	0.70	0.1	36.00	2.5	5	44.78	0	–
0.75 to <2.50	16	31	13.23	16	1.77	0.1	23.57	2.5	7	44.06	0	0
0.75 to <1.75	10	16	0	7	1.27	0.1	16.64	2.5	2	28.13	0	–
1.75 to <2.5	5	15	27.76	10	2.13	0.0	28.53	2.5	5	55.47	0	0
2.50 to <10.00	38	26	7.42	37	6.52	0.0	28.67	2.5	31	84.21	1	1
2.50 to <5	14	17	0	14	3.92	0.0	12.33	2.5	5	34.28	0	–
5 to <10	24	8	22.33	22	8.19	0.0	39.10	2.5	26	116.09	1	1
10.00 to <100.00	41	8	0.26	24	20.96	0.1	42.59	2.5	37	157.75	2	0
10 to <20	0	0	0	0	14.29	0.0	12.33	2.5	0	43.05	0	–
20 to <30	40	6	0.35	22	20.00	0.1	44.81	2.5	36	165.77	2	0
30.00 to <100.00	2	2	0	2	34.15	0.0	12.33	2.5	1	48.44	0	–
100.00 (Default)	5	0	1.27	5	100.00	0.0	45.00	2.5	0	0.00	2	1
Sub-total	**162**	**143**	**7.07**	**153**	**8.51**	**0.7**	**33.96**	**2.5**	**94**	**61.25**	**5**	**2**
Other												
0.00 to <0.15	2,002	2,381	4.64	2,505	0.10	1.5	19.03	2.5	348	13.89	1	2

Dec 31, 2021

in € m. (unless stated otherwise)	a	b	c	d	e	f	g	h	i	j	k	l
Exposure class/ PD scale	On-balance sheet exposures	Off-balance-sheet exposures pre-CCF	Exposure weighted average CCF (in %)	Exposure post CCF and post CRM	Exposure weighted average PD (%)	Number of obligors (in 1,000s)	Exposure weighted average LGD (%)	Exposure weighted average maturity (in years)	Risk weighted exposure amount after supporting factors	Density of risk weighted exposure amount (in %)	Expected Loss amount	Value adjustments and Provisions
0.00 to <0.10	1,067	1,182	3.36	1,583	0.07	0.9	19.06	2.5	187	11.84	0	0
0.10 to <0.15	935	1,199	5.90	922	0.16	0.6	18.99	2.5	161	17.40	0	2
0.15 to <0.25	1,107	1,173	3.61	1,055	0.25	2.4	28.52	2.5	355	33.65	1	0
0.25 to <0.50	788	918	2.69	696	0.41	3.1	36.83	2.5	384	55.11	1	0
0.50 to <0.75	607	642	3.77	517	0.72	2.1	27.17	2.5	273	52.76	1	1
0.75 to <2.50	537	497	8.40	530	1.57	0.9	30.34	2.5	415	78.29	3	1
0.75 to <1.75	356	393	8.68	358	1.30	0.7	29.53	2.5	257	71.76	1	0
1.75 to <2.5	182	104	7.36	172	2.15	0.1	32.03	2.5	158	91.88	1	0
2.50 to <10.00	183	140	2.52	154	5.66	0.1	18.72	2.5	110	71.49	2	1
2.50 to <5	128	111	0.50	99	4.10	0.1	18.96	2.5	66	66.72	1	0
5 to <10	55	30	10.05	55	8.45	0.0	18.28	2.5	44	79.99	1	1
10.00 to <100.00	68	131	6.53	51	21.52	1.1	32.63	2.5	90	177.58	3	1
10 to <20	17	12	2.35	15	14.06	0.0	34.98	2.5	28	179.18	1	0
20 to <30	39	78	10.65	24	20.15	1.1	41.37	2.5	54	230.13	2	1
30.00 to <100.00	12	41	0	12	33.92	0.0	12.33	2.5	9	71.77	0	0
100.00 (Default)	83	2	0.20	82	100.00	0.1	44.83	2.5	0	0.00	38	56
Sub-total	5,374	5,885	4.34	5,591	2.19	11.3	25.36	2.5	1,975	35.32	49	62
All exposure classes												
Total	5,540	6,042	4.40	5,806	2.33	12.0	25.79	2.5	2,071	35.68	54	64

Jun 30, 2021

in € m. (unless stated otherwise)	a	b	c	d	e	f	g	h	i	j	k	l
Exposure class/ PD scale	On-balance sheet exposures	Off-balance-sheet exposures pre-CCF	Exposure weighted average CCF (in %)	Exposure post CCF and post CRM	Exposure weighted average PD (%)	Number of obligors (in 1,000s)	Exposure weighted average LGD (%)	Exposure weighted average maturity (in years)	Risk weighted exposure amount after supporting factors	Density of risk weighted exposure amount (in %)	Expected Loss amount	Value adjustments and Provisions
Central governments and central banks												
0.00 to <0.15	0	0	0	42	0.00	0.0	45.00	5.7	0	0.00	0	–
0.00 to <0.10	0	0	0	42	0.00	0.0	45.00	5.7	0	0.00	0	–
0.10 to <0.15	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
0.15 to <0.25	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
0.25 to <0.50	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
0.50 to <0.75	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
0.75 to <2.50	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
0.75 to <1.75	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
1.75 to <2.5	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
2.50 to <10.00	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
2.50 to <5	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
5 to <10	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
10.00 to <100.00	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
10 to <20	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
20 to <30	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
30.00 to <100.00	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
100.00 (Default)	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
Sub-total	0	0	0	42	0.00	0.0	45.00	5.7	0	0.00	0	–
Institutions												
0.00 to <0.15	1	10	0	1	0.03	0.0	93.19	1.0	0	31.86	0	–
0.00 to <0.10	1	10	0	1	0.03	0.0	93.19	1.0	0	31.86	0	–
0.10 to <0.15	0	0	0	0	0.14	0.0	12.33	1.0	0	14.06	0	–
0.15 to <0.25	0	3	0	0	0.23	0.0	15.72	1.0	0	21.56	0	–
0.25 to <0.50	0	1	0	0	0.38	0.0	42.69	1.0	0	61.52	0	–
0.50 to <0.75	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
0.75 to <2.50	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
0.75 to <1.75	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
1.75 to <2.5	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
2.50 to <10.00	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
2.50 to <5	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
5 to <10	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
10.00 to <100.00	1	0	0	1	20.00	0.0	45.00	0.0	3	286.56	0	–
10 to <20	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
20 to <30	1	0	0	1	20.00	0.0	45.00	0.0	3	286.56	0	–
30.00 to <100.00	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
100.00 (Default)	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
Sub-total	3	14	0	2	9.07	0.1	70.27	0.6	4	147.47	0	–
Corporates												
0.00 to <0.15	1,914	3,241	4.36	2,423	0.11	1.4	22.19	1.5	404	16.68	1	0
0.00 to <0.10	544	1,198	3.32	1,081	0.06	0.7	19.55	1.3	109	10.11	0	0

Jun 30, 2021

in € m. (unless stated otherwise)	a	b	c	d	e	f	g	h	i	j	k	l
Exposure class/ PD scale	On-balance sheet exposures	Off-balance-sheet exposures pre-CCF	Exposure weighted average CCF (in %)	Exposure post CCF and post CRM	Exposure weighted average PD (%)	Number of obligors (in 1,000s)	Exposure weighted average LGD (%)	Exposure weighted average maturity (in years)	Risk weighted exposure amount after supporting factors	Density of risk weighted exposure amount (in %)	Expected Loss amount	Value adjustments and Provisions
0.10 to <0.15	1,370	2,044	4.98	1,342	0.15	0.7	24.34	1.8	295	21.98	1	0
0.15 to <0.25	883	1,431	2.75	854	0.25	2.1	28.82	1.7	291	34.05	1	0
0.25 to <0.50	813	1,427	1.85	720	0.42	3.1	29.19	1.4	314	43.58	1	0
0.50 to <0.75	600	1,027	2.07	523	0.73	2.2	29.98	1.5	301	57.57	1	0
0.75 to <2.50	556	612	5.84	528	1.41	0.9	33.62	2.0	438	82.97	3	1
0.75 to <1.75	167	312	0	138	1.18	0.7	20.96	1.0	73	52.82	0	0
1.75 to <2.5	389	300	11.93	390	1.49	0.2	38.09	2.3	365	93.63	2	1
2.50 to <10.00	169	515	0.74	142	4.72	0.2	23.55	1.5	117	82.56	2	1
2.50 to <5	134	378	1.01	110	3.65	0.2	22.39	1.4	78	71.13	1	1
5 to <10	35	137	0.02	32	8.42	0.1	27.52	1.6	39	121.75	1	1
10.00 to <100.00	102	1,191	0.35	79	22.46	0.6	26.89	1.7	114	144.60	4	3
10 to <20	23	23	0.01	20	13.55	0.0	25.96	1.6	27	132.41	1	1
20 to <30	60	1,098	0.38	39	21.15	0.6	34.68	2.0	72	187.14	3	2
30.00 to <100.00	19	70	0	19	34.51	0.0	12.33	1.0	14	72.59	1	0
100.00 (Default)	109	56	0.00	108	100.00	0.1	44.99	1.2	0	0.00	49	63
Sub-total	5,147	9,499	2.87	5,377	2.82	10.7	26.63	1.6	1,979	36.80	61	70
of which:												
SMEs												
0.00 to <0.15	21	31	9.91	37	0.10	0.0	36.72	3.3	7	18.64	0	0
0.00 to <0.10	0	1	0	14	0.04	0.0	24.34	1.0	1	7.61	0	–
0.10 to <0.15	20	31	10.08	23	0.14	0.0	44.02	4.6	6	25.15	0	0
0.15 to <0.25	11	46	4.06	11	0.25	0.1	38.68	1.7	4	33.01	0	–
0.25 to <0.50	10	40	0	8	0.39	0.1	34.03	1.0	3	34.21	0	–
0.50 to <0.75	17	41	3.13	14	0.73	0.1	35.12	1.9	6	46.95	0	0
0.75 to <2.50	12	20	0	9	1.42	0.1	16.97	1.0	3	28.00	0	–
0.75 to <1.75	6	4	0	5	1.19	0.0	19.95	1.0	2	31.33	0	–
1.75 to <2.5	6	16	0	4	1.70	0.0	13.40	1.0	1	24.01	0	–
2.50 to <10.00	14	41	0	11	3.59	0.0	12.33	1.0	4	30.99	0	0
2.50 to <5	12	35	0	11	3.53	0.0	12.33	1.0	4	30.93	0	–
5 to <10	2	7	0	0	8.13	0.0	12.33	1.0	0	35.99	0	–
10.00 to <100.00	5	7	20.90	5	21.54	0.0	34.32	1.0	7	131.48	0	0
10 to <20	0	0	0	0	14.29	0.0	12.33	1.0	0	43.37	0	–
20 to <30	5	6	22.99	5	21.06	0.0	35.34	1.0	7	135.34	0	0
30.00 to <100.00	0	0	0	0	34.08	0.0	12.33	1.0	0	48.63	0	–
100.00 (Default)	8	4	0.07	8	100.00	0.0	44.84	2.0	0	0.00	3	3
Sub-total	98	230	3.30	104	9.32	0.5	32.59	2.1	33	31.87	4	3
Other												
0.00 to <0.15	1,893	3,210	4.31	2,386	0.11	1.4	21.97	1.5	397	16.65	1	0
0.00 to <0.10	544	1,197	3.32	1,067	0.06	0.7	19.49	1.3	108	10.14	0	0
0.10 to <0.15	1,349	2,013	4.90	1,319	0.15	0.7	23.99	1.8	289	21.93	1	0

												Jun 30, 2021
in € m.	a	b	c	d	e	f	g	h	i	j	k	l
(unless stated otherwise) Exposure class/ PD scale	On-balance sheet exposures	Off-balance-sheet exposures pre-CCF	Exposure weighted average CCF (in %)	Exposure post CCF and post CRM	Exposure weighted average PD (%)	Number of obligors (in 1,000s)	Exposure weighted average LGD (%)	Exposure weighted average maturity (in years)	Risk weighted exposure amount after supporting factors	Density of risk weighted exposure amount (in %)	Expected Loss amount	Value adjustments and Provisions
0.15 to <0.25	872	1,385	2.71	843	0.25	2.0	28.69	1.7	287	34.07	1	0
0.25 to <0.50	803	1,386	1.90	712	0.42	2.9	29.13	1.4	311	43.69	1	0
0.50 to <0.75	583	986	2.03	510	0.73	2.1	29.84	1.5	295	57.86	1	0
0.75 to <2.50	544	592	6.04	519	1.41	0.9	33.91	2.0	435	83.92	3	1
0.75 to <1.75	161	308	0	133	1.18	0.7	21.00	1.0	71	53.61	0	0
1.75 to <2.5	383	283	12.61	386	1.49	0.2	38.35	2.3	364	94.37	2	1
2.50 to <10.00	155	473	0.81	130	4.82	0.2	24.54	1.5	113	87.10	2	1
2.50 to <5	122	344	1.11	98	3.66	0.1	23.55	1.5	75	75.76	1	1
5 to <10	33	130	0.02	32	8.42	0.0	27.59	1.6	39	122.13	1	1
10.00 to <100.00	97	1,184	0.24	73	22.53	0.6	26.34	1.7	107	145.57	4	3
10 to <20	23	22	0.01	20	13.55	0.0	25.98	1.6	27	132.52	1	1
20 to <30	55	1,092	0.26	34	21.16	0.6	34.58	2.1	65	195.16	2	2
30.00 to <100.00	19	70	0	19	34.51	0.0	12.33	1.0	14	72.86	1	0
100.00 (Default)	101	52	0	100	100.00	0.1	45.00	1.1	0	0.00	45	60
Sub-total	5,049	9,269	2.86	5,273	2.69	10.2	26.51	1.6	1,946	36.90	57	66
All exposure classes												
Total	5,149	9,513	2.86	5,422	2.80	10.8	26.79	1.6	1,982	36.57	61	70

Advanced IRB exposure (Article 452 (g) (i-v) CRR)

The following series of tables details the Group’s advanced IRB exposure distributed on our internal rating scale, separately for all relevant regulatory exposure classes. They exclude the counterparty credit risk position from derivatives and securities financing transactions which are presented separately in the section “Counterparty credit risk” later in this report.

The tables show the EAD gross as well as the off-balance sheet exposure with their corresponding exposure-weighted credit conversion factors. All undrawn commitment exposure values shown below are assigned to the exposure class of their original counterparty and not to the exposure class of the protection seller.

In addition they provide the EAD net after CRM and CCF, where exposures covered by guarantees or credit derivatives are assigned to the protection seller. As a consequence the EAD net can be higher than the original balance sheet exposure.

The EAD net is presented in conjunction with exposures-weighted average PD, LGD, maturity as well as the RWA and the average risk weight (RW). The effect of double default, as far as applicable to exposures outside of former Postbank, is considered in the average RW. It implies that for a guaranteed exposure a loss only occurs if the primary obligor and the guarantor fail to meet their obligations at the same time. The tables provide the defaulted exposure separately, where we apply a LGD conception already incorporating potential unexpected losses in the loss rate estimate as required by Article 181 (1) (h) CRR.

Further details in the tables are number of obligors, expected loss and provisions.

EU CR6 – AIRB approach – Credit risk exposures by exposure class and PD range

												Dec 31, 2021
in € m. (unless stated otherwise)	a	b	c	d	e	f	g	h	i	j	k	l
Exposure class/ PD scale	On-balance sheet exposures	Off-balance-sheet exposures pre-CCF	Exposure weighted average CCF (in %)	Exposure post CCF and post CRM	Exposure weighted average PD (%)	Number of obligors (in 1,000s)	Exposure weighted average LGD (%)	Exposure weighted average maturity (in years)	Risk weighted exposure amount after supporting factors	Density of risk weighted exposure amount (in %)	Expected Loss amount	Value adjustments and Provisions
Central governments and central banks[1]												
0.00 to <0.15	107,855	81	54.44	121,984	0.00	0.1	50.41	1.1	669	0.55	1	0
0.00 to <0.10	107,489	81	54.45	121,619	0.00	0.1	50.41	1.1	616	0.51	1	0
0.10 to <0.15	366	0	12.77	366	0.14	0.0	50.00	2.5	53	14.50	0	0
0.15 to <0.25	1,369	0	82.14	1,701	0.23	0.0	50.00	1.7	803	47.23	2	0
0.25 to <0.50	2,147	0	99.99	2,230	0.39	0.0	49.88	2.2	1,527	68.47	4	0
0.50 to <0.75	493	67	21.22	495	0.64	0.0	49.87	1.1	354	71.67	2	0
0.75 to <2.50	5,353	172	41.02	5,049	1.74	0.0	97.78	4.8	12,279	243.19	1	0
0.75 to <1.75	266	104	35.80	168	1.07	0.0	47.15	0.7	131	77.55	1	0
1.75 to <2.5	5,086	67	49.09	4,881	1.76	0.0	99.52	5.0	12,149	248.91	0	0
2.50 to <10.00	2,425	481	35.93	514	5.29	0.0	48.04	3.0	645	125.52	8	15
2.50 to <5	2,126	430	35.37	399	4.52	0.0	48.30	3.6	446	111.80	4	14
5 to <10	299	50	40.76	116	7.95	0.0	47.15	0.8	200	172.87	4	2
10.00 to <100.00	432	144	35.01	29	13.01	0.0	50.00	1.7	69	235.95	2	1
10 to <20	432	144	35.01	29	13.01	0.0	50.00	1.7	69	235.95	2	1
20 to <30	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
30.00 to <100.00	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
100.00 (Default)	46	108	96.27	62	100.00	0.0	21.28	0.3	15	24.16	2	4
Sub-total	**120,119**	**1,052**	**43.32**	**132,063**	**0.15**	**0.2**	**52.18**	**1.3**	**16,361**	**12.39**	**23**	**21**
Institutions												
0.00 to <0.15	8,316	4,856	44.86	12,852	0.05	0.9	51.60	1.2	1,461	11.37	2	1
0.00 to <0.10	8,089	4,102	44.93	12,240	0.05	0.8	52.61	1.2	1,333	10.89	2	1
0.10 to <0.15	227	754	44.47	612	0.15	0.1	31.41	1.2	127	20.82	0	0
0.15 to <0.25	701	153	42.44	921	0.24	0.1	48.32	2.2	506	54.92	1	0
0.25 to <0.50	451	491	57.85	656	0.43	0.1	35.32	0.5	331	50.50	1	0
0.50 to <0.75	1,090	260	55.59	1,177	0.69	0.1	38.47	1.0	802	68.14	3	1
0.75 to <2.50	838	220	74.28	899	1.26	0.1	16.08	2.7	364	40.56	2	1
0.75 to <1.75	739	168	73.91	774	1.16	0.0	15.98	3.0	311	40.17	2	0
1.75 to <2.5	100	52	75.47	125	1.89	0.0	16.64	0.8	54	42.96	0	0
2.50 to <10.00	1,552	216	56.11	1,461	3.35	0.0	11.32	2.2	589	40.33	7	3
2.50 to <5	1,517	167	63.68	1,457	3.34	0.0	11.27	2.2	585	40.14	7	2
5 to <10	35	49	30.28	4	8.65	0.0	25.32	1.5	4	102.49	0	0
10.00 to <100.00	37	143	37.75	84	13.85	0.0	19.03	2.7	86	102.47	2	1
10 to <20	37	143	37.75	84	13.85	0.0	19.02	2.7	86	102.46	2	1
20 to <30	0	0	0	0	20.00	0.0	99.99	1.0	0	525.16	0	0
30.00 to <100.00	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
100.00 (Default)	1,754	0	0	1,754	100.00	0.0	1.12	4.9	242	13.77	1	1
Sub-total	**14,740**	**6,339**	**47.49**	**19,804**	**9.32**	**1.2**	**40.94**	**1.7**	**4,381**	**22.12**	**21**	**7**
Corporates												

Dec 31, 2021

in € m. (unless stated otherwise) Exposure class/ PD scale	a On-balance sheet exposures	b Off-balance-sheet exposures pre-CCF	c Exposure weighted average CCF (in %)	d Exposure post CCF and post CRM	e Exposure weighted average PD (%)	f Number of obligors (in 1,000s)	g Exposure weighted average LGD (%)	h Exposure weighted average maturity (in years)	i Risk weighted exposure amount after supporting factors	j Density of risk weighted exposure amount (in %)	k Expected Loss amount	l Value adjustments and Provisions
0.00 to <0.15	85,039	113,635	31.29	122,564	0.08	20.1	32.88	2.1	21,473	17.52	33	15
0.00 to <0.10	65,211	85,494	31.87	94,884	0.06	15.6	32.84	2.1	14,628	15.42	19	9
0.10 to <0.15	19,828	28,141	29.52	27,680	0.15	4.6	33.02	2.1	6,845	24.73	14	7
0.15 to <0.25	20,854	17,514	31.28	25,219	0.24	5.2	31.01	2.2	7,657	30.36	18	7
0.25 to <0.50	19,727	14,667	28.56	22,649	0.40	5.0	27.98	2.3	8,448	37.30	26	11
0.50 to <0.75	16,922	9,984	30.34	18,568	0.67	4.4	25.69	2.3	7,888	42.48	32	17
0.75 to <2.50	33,696	18,595	34.02	35,266	1.49	6.1	27.38	2.4	19,852	56.29	133	71
0.75 to <1.75	14,333	9,770	33.81	15,708	1.11	3.6	24.96	2.3	7,960	50.67	44	23
1.75 to <2.5	19,363	8,825	34.25	19,558	1.80	2.5	29.33	2.6	11,892	60.80	89	48
2.50 to <10.00	28,937	28,660	30.23	33,737	5.62	3.6	22.51	2.8	27,390	81.19	395	240
2.50 to <5	18,183	17,102	30.38	20,239	4.00	2.6	26.04	3.0	17,570	86.81	206	128
5 to <10	10,753	11,558	29.99	13,498	8.05	1.0	17.22	2.6	9,820	72.75	189	111
10.00 to <100.00	4,731	2,780	41.85	4,707	21.22	0.9	18.81	2.3	3,948	83.88	156	85
10 to <20	3,281	1,651	41.32	3,176	13.41	0.3	18.62	2.3	2,550	80.26	74	45
20 to <30	885	1,010	43.05	1,021	22.53	0.4	21.09	2.0	1,068	104.64	46	32
30.00 to <100.00	565	119	38.81	510	67.20	0.1	15.48	3.1	330	64.80	35	8
100.00 (Default)	14,283	2,493	30.29	14,135	98.72	3.6	30.52	2.9	3,572	25.27	4,122	4,260
Sub-total	224,188	208,327	31.28	276,845	6.41	48.9	29.50	2.3	100,227	36.20	4,915	4,706
of which:												
SMEs												
0.00 to <0.15	4,575	3,475	33.47	5,596	0.10	6.0	30.80	3.1	791	14.13	2	2
0.00 to <0.10	3,034	2,356	31.32	3,736	0.07	4.3	29.03	3.1	384	10.29	1	1
0.10 to <0.15	1,541	1,119	38.00	1,860	0.16	1.7	34.35	3.1	406	21.84	1	0
0.15 to <0.25	2,225	1,182	34.77	2,367	0.25	2.1	34.36	3.0	634	26.77	2	1
0.25 to <0.50	1,806	1,665	34.76	2,175	0.42	2.0	35.04	3.0	792	36.43	3	2
0.50 to <0.75	2,123	872	36.16	2,089	0.70	1.7	36.90	2.9	1,030	49.32	5	2
0.75 to <2.50	3,527	1,163	38.19	3,222	1.62	2.4	31.74	3.2	1,820	56.50	16	13
0.75 to <1.75	1,361	528	38.62	1,220	1.20	1.4	36.12	2.4	649	53.19	5	4
1.75 to <2.5	2,167	634	37.84	2,002	1.87	1.0	29.07	3.7	1,171	58.52	11	9
2.50 to <10.00	1,772	754	34.97	1,605	5.38	1.1	33.60	2.6	1,306	81.35	28	18
2.50 to <5	1,205	539	30.75	1,030	3.75	0.9	35.53	2.9	789	76.62	13	11
5 to <10	566	215	45.56	575	8.30	0.3	30.13	2.0	516	89.83	15	7
10.00 to <100.00	509	114	34.61	405	19.41	0.4	42.01	2.0	620	153.28	33	21
10 to <20	250	76	31.11	233	13.81	0.1	39.61	1.6	306	131.36	13	6
20 to <30	166	31	36.55	89	21.74	0.2	52.62	1.4	173	195.05	10	13
30.00 to <100.00	94	7	63.25	83	32.65	0.0	37.43	3.9	141	170.25	10	2
100.00 (Default)	1,685	134	38.11	1,682	100.00	1.1	63.41	1.9	440	26.13	1,048	1,127
Sub-total	18,222	9,359	34.90	19,141	10.11	16.7	35.88	2.9	7,433	38.83	1,138	1,186

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in € m. (unless stated otherwise)	a	b	c	d	e	f	g	h	i	j	k	l
Exposure class/ PD scale	On-balance sheet exposures	Off-balance-sheet exposures pre-CCF	Exposure weighted average CCF (in %)	Exposure post CCF and post CRM	Exposure weighted average PD (%)	Number of obligors (in 1,000s)	Exposure weighted average LGD (%)	Exposure weighted average maturity (in years)	Risk weighted exposure amount after supporting factors	Density of risk weighted exposure amount (in %)	Expected Loss amount	Value adjustments and Provisions
Specialized Lending												
0.00 to <0.15	8,745	268	48.54	8,743	0.10	0.2	6.50	3.0	379	4.34	0	2
0.00 to <0.10	5,991	236	44.52	6,010	0.08	0.1	7.18	2.7	222	3.70	0	0
0.10 to <0.15	2,754	32	77.93	2,733	0.14	0.1	5.00	3.6	157	5.73	0	2
0.15 to <0.25	3,099	103	17.97	3,028	0.23	0.1	7.59	2.8	253	8.34	1	0
0.25 to <0.50	3,353	122	36.04	3,321	0.39	0.1	10.08	3.0	530	15.95	1	1
0.50 to <0.75	3,648	120	66.78	3,747	0.66	0.1	10.91	2.8	822	21.95	3	3
0.75 to <2.50	6,291	823	54.22	6,236	1.42	0.3	13.37	2.8	1,757	28.18	10	7
0.75 to <1.75	3,273	399	56.56	3,290	1.10	0.2	17.19	2.5	990	30.07	6	3
1.75 to <2.5	3,017	424	51.74	2,946	1.79	0.1	9.11	3.1	768	26.06	5	4
2.50 to <10.00	11,808	1,395	23.92	11,814	6.35	0.3	7.68	2.5	3,267	27.66	55	34
2.50 to <5	5,146	560	27.15	4,986	4.17	0.2	8.56	2.4	1,328	26.64	17	12
5 to <10	6,662	835	21.75	6,828	7.94	0.2	7.03	2.5	1,939	28.40	38	21
10.00 to <100.00	1,485	321	35.42	1,589	16.25	0.1	8.91	2.8	686	43.18	23	10
10 to <20	1,174	249	33.25	1,247	13.00	0.0	8.86	2.9	526	42.21	14	6
20 to <30	252	72	42.89	283	22.01	0.0	10.15	2.2	157	55.55	6	4
30.00 to <100.00	59	0	0	59	57.63	0.0	3.92	4.1	2	4.16	2	0
100.00 (Default)	2,989	80	27.87	2,933	100.00	0.2	31.70	3.1	535	18.25	889	812
Sub-total	41,418	3,233	36.78	41,411	9.86	1.3	10.52	2.8	8,230	19.87	983	869
Other												
0.00 to <0.15	71,719	109,892	31.17	108,225	0.08	14.0	35.12	2.0	20,303	18.76	31	11
0.00 to <0.10	56,186	82,902	31.85	85,138	0.06	11.2	34.82	2.0	14,021	16.47	18	7
0.10 to <0.15	15,533	26,990	29.11	23,087	0.15	2.8	36.23	1.9	6,282	27.21	13	4
0.15 to <0.25	15,530	16,228	31.11	19,824	0.24	3.0	34.19	2.0	6,770	34.15	15	6
0.25 to <0.50	14,568	12,880	27.69	17,153	0.41	2.9	30.55	2.1	7,126	41.54	22	9
0.50 to <0.75	11,151	8,991	29.29	12,732	0.67	2.6	28.20	2.1	6,035	47.40	24	12
0.75 to <2.50	23,878	16,609	32.73	25,808	1.50	3.4	30.22	2.3	16,274	63.06	107	52
0.75 to <1.75	9,699	8,843	32.49	11,198	1.10	2.0	26.02	2.3	6,321	56.45	34	16
1.75 to <2.5	14,179	7,767	33.00	14,611	1.80	1.4	33.44	2.3	9,953	68.12	73	35
2.50 to <10.00	15,357	26,512	30.42	20,318	5.22	2.1	30.26	3.0	22,817	112.30	312	188
2.50 to <5	11,832	16,003	30.48	14,222	3.96	1.5	31.48	3.2	15,452	108.65	176	105
5 to <10	3,524	10,509	30.33	6,096	8.16	0.6	27.43	2.7	7,364	120.81	136	83
10.00 to <100.00	2,736	2,345	43.08	2,714	24.39	0.5	21.15	2.1	2,642	97.35	100	54
10 to <20	1,857	1,326	43.43	1,696	13.66	0.2	22.90	1.9	1,717	101.22	47	33
20 to <30	467	907	43.29	649	22.87	0.2	21.57	2.1	738	113.70	30	14
30.00 to <100.00	412	112	37.23	368	76.52	0.1	12.37	2.8	187	50.69	23	6
100.00 (Default)	9,608	2,278	29.92	9,519	98.09	2.4	24.34	3.1	2,597	27.28	2,184	2,321
Sub-total	164,548	195,735	31.01	216,293	5.43	30.9	32.57	2.2	84,564	39.10	2,795	2,652

												Dec 31, 2021
in € m.	a	b	c	d	e	f	g	h	i	j	k	l
(unless stated otherwise) Exposure class/ PD scale	On-balance sheet exposures	Off-balance-sheet exposures pre-CCF	Exposure weighted average CCF (in %)	Exposure post CCF and post CRM	Exposure weighted average PD (%)	Number of obligors (in 1,000s)	Exposure weighted average LGD (%)	Exposure weighted average maturity (in years)	Risk weighted exposure amount after supporting factors	Density of risk weighted exposure amount (in %)	Expected Loss amount	Value adjustments and Provisions
Retail												
0.00 to <0.15	31,239	18,057	54.95	41,528	0.11	3,515.7	25.17	14.1	2,023	4.87	12	9
0.00 to <0.10	15,911	14,868	53.49	24,129	0.08	2,776.9	28.36	11.5	919	3.81	6	4
0.10 to <0.15	15,327	3,189	61.76	17,399	0.15	738.8	20.75	17.8	1,104	6.35	6	4
0.15 to <0.25	27,307	4,037	60.12	29,793	0.25	829.9	20.12	21.2	2,776	9.32	15	13
0.25 to <0.50	38,853	4,711	64.09	41,763	0.41	796.8	20.64	23.5	5,996	14.36	36	29
0.50 to <0.75	44,078	4,654	74.13	47,291	0.73	837.8	22.40	23.1	10,931	23.12	78	60
0.75 to <2.50	46,038	4,039	68.87	48,289	0.69	1,445.1	27.89	18.7	20,482	42.41	214	135
0.75 to <1.75	29,152	2,711	71.91	30,829	1.27	758.7	25.74	20.0	11,229	36.42	100	63
1.75 to <2.5	16,886	1,328	62.67	17,460	2.06	686.4	31.67	16.3	9,253	52.99	113	71
2.50 to <10.00	18,333	1,137	59.14	18,608	4.95	827.9	33.13	16.0	12,812	68.85	301	254
2.50 to <5	13,748	887	55.89	13,924	3.92	645.6	33.80	15.1	9,052	65.01	184	151
5 to <10	4,585	250	70.66	4,684	8.02	182.2	31.13	18.6	3,760	80.28	117	103
10.00 to <100.00	3,499	166	73.32	3,499	21.26	196.9	30.54	18.1	3,695	105.60	219	171
10 to <20	2,023	94	73.78	2,027	13.98	81.5	29.85	18.1	2,105	103.80	85	69
20 to <30	698	43	75.01	707	22.66	78.7	32.91	16.4	869	122.95	52	40
30.00 to <100.00	778	29	69.28	765	39.25	36.8	30.19	19.5	721	94.32	82	62
100.00 (Default)	3,870	107	67.61	3,886	100.00	211.2	46.09	9.4	1,177	30.29	1,789	1,871
Sub-total	213,217	36,908	60.87	234,657	2.78	8,661.4	24.78	19.6	59,891	25.52	2,664	2,543
of which:												
Secured by real estate property SMEs												
0.00 to <0.15	1,402	190	58.07	1,505	0.12	8.0	13.65	14.4	49	3.27	0	0
0.00 to <0.10	500	91	57.85	551	0.08	3.2	12.88	13.9	13	2.37	0	0
0.10 to <0.15	902	99	58.28	954	0.14	4.8	14.09	14.7	36	3.79	0	0
0.15 to <0.25	1,647	117	59.33	1,711	0.23	7.4	14.55	15.7	96	5.63	1	0
0.25 to <0.50	1,696	106	55.70	1,744	0.40	7.5	14.65	15.7	146	8.35	1	0
0.50 to <0.75	1,391	84	57.29	1,427	0.66	6.3	14.43	15.5	171	11.95	1	1
0.75 to <2.50	1,681	84	56.58	1,690	1.41	7.0	14.92	15.6	351	20.76	4	3
0.75 to <1.75	982	50	58.67	997	1.11	4.3	14.81	15.7	176	17.70	2	1
1.75 to <2.5	700	34	53.46	693	1.85	2.7	15.07	15.5	174	25.15	2	2
2.50 to <10.00	648	27	50.57	649	4.35	2.6	14.96	15.2	255	39.27	4	5
2.50 to <5	551	25	50.61	553	3.69	2.2	14.85	15.4	201	36.29	3	4
5 to <10	97	2	49.91	96	8.17	0.4	15.56	13.6	54	56.48	1	1
10.00 to <100.00	106	1	48.86	78	20.26	0.4	12.01	13.3	45	57.07	2	2
10 to <20	69	1	49.75	43	13.58	0.2	11.53	13.6	22	52.31	1	1
20 to <30	18	0	60.87	17	22.95	0.1	12.03	13.6	11	64.26	0	0
30.00 to <100.00	20	0	40.79	18	33.34	0.1	13.13	12.2	11	61.44	1	1
100.00 (Default)	93	0	51.10	91	100.00	0.4	27.80	9.9	34	37.16	25	33
Sub-total	8,664	608	57.25	8,895	2.04	39.6	14.61	15.3	1,146	12.88	38	44

												Dec 31, 2021
in € m.	a	b	c	d	e	f	g	h	i	j	k	l
(unless stated otherwise) Exposure class/ PD scale	On-balance sheet exposures	Off-balance-sheet exposures pre-CCF	Exposure weighted average CCF (in %)	Exposure post CCF and post CRM	Exposure weighted average PD (%)	Number of obligors (in 1,000s)	Exposure weighted average LGD (%)	Exposure weighted average maturity (in years)	Risk weighted exposure amount after supporting factors	Density of risk weighted exposure amount (in %)	Expected Loss amount	Value adjustments and Provisions
Secured by real estate property non-SMEs												
0.00 to <0.15	26,506	792	60.06	26,980	0.12	255.0	14.46	20.1	1,171	4.34	5	6
0.00 to <0.10	13,341	347	58.66	13,544	0.09	146.0	13.51	19.1	430	3.17	2	3
0.10 to <0.15	13,164	445	61.15	13,436	0.15	108.9	15.41	21.1	741	5.52	3	3
0.15 to <0.25	23,349	1,027	72.80	24,089	0.25	174.9	16.25	24.0	1,981	8.22	10	10
0.25 to <0.50	34,216	1,901	82.45	35,768	0.41	229.2	17.94	25.5	4,705	13.15	27	24
0.50 to <0.75	38,987	2,616	88.95	41,299	0.73	252.9	19.93	24.9	8,967	21.71	61	49
0.75 to <2.50	33,652	2,071	88.01	35,443	0.35	207.9	21.28	22.9	13,235	37.34	117	68
0.75 to <1.75	23,364	1,519	89.17	24,703	1.28	144.2	21.23	23.1	8,267	33.47	68	39
1.75 to <2.5	10,288	552	84.82	10,740	2.10	63.7	21.38	22.3	4,967	46.25	49	29
2.50 to <10.00	8,891	315	82.11	9,119	4.98	61.2	18.58	25.7	5,883	64.52	86	84
2.50 to <5	6,545	246	79.47	6,714	3.92	45.4	18.31	24.3	3,815	56.81	49	52
5 to <10	2,346	70	91.41	2,405	7.95	15.8	19.31	29.5	2,069	86.03	37	32
10.00 to <100.00	2,086	52	92.95	2,118	21.56	14.0	19.94	25.7	2,400	113.31	92	55
10 to <20	1,205	36	93.06	1,235	13.95	8.0	20.15	25.5	1,367	110.71	35	22
20 to <30	397	6	92.46	399	22.72	2.8	19.31	24.9	474	118.89	17	11
30.00 to <100.00	483	9	92.88	484	40.02	3.3	19.92	27.0	558	115.34	40	22
100.00 (Default)	1,331	27	97.25	1,351	100.00	12.0	21.80	21.3	638	47.20	297	281
Sub-total	169,017	8,800	82.65	176,167	1.66	1,207.1	18.40	23.8	38,979	22.13	694	578
Qualifying Revolving												
0.00 to <0.15	50	11,189	68.47	7,711	0.08	2,492.9	55.57	0.0	251	3.25	4	1
0.00 to <0.10	22	9,575	68.53	6,583	0.07	2,075.2	55.85	0.0	188	2.86	3	0
0.10 to <0.15	28	1,613	68.16	1,128	0.16	417.7	53.96	0.0	62	5.53	1	0
0.15 to <0.25	58	1,331	66.18	939	0.25	382.2	53.59	0.0	74	7.89	1	0
0.25 to <0.50	90	804	63.44	600	0.42	281.6	52.69	0.0	70	11.59	1	1
0.50 to <0.75	116	550	61.63	455	0.74	241.3	52.71	0.0	83	18.14	2	1
0.75 to <2.50	201	469	61.86	490	1.62	282.6	52.15	0.0	159	32.33	4	2
0.75 to <1.75	107	299	61.62	292	1.28	164.6	52.08	0.0	79	27.23	2	1
1.75 to <2.5	93	170	62.26	199	2.13	118.0	52.26	0.0	79	39.81	2	1
2.50 to <10.00	165	208	63.59	297	5.36	167.5	53.81	0.0	228	76.75	9	5
2.50 to <5	110	143	63.63	201	4.07	119.9	52.70	0.0	126	62.89	4	3
5 to <10	55	65	63.50	96	8.07	47.6	56.13	0.0	102	105.70	4	3
10.00 to <100.00	56	38	65.32	80	21.48	40.0	55.40	0.0	128	158.92	10	6
10 to <20	27	26	65.72	44	14.05	22.1	56.32	0.0	64	144.42	3	2
20 to <30	13	8	64.96	19	22.45	9.1	54.85	0.0	32	170.77	2	1
30.00 to <100.00	16	3	62.95	18	39.04	8.8	53.66	0.0	32	182.59	4	2
100.00 (Default)	261	17	67.36	272	100.00	58.6	71.69	(0.0)	87	31.85	190	210
Sub-total	997	14,604	67.44	10,846	3.02	3,946.6	55.32	0.0	1,078	9.94	221	226

												Dec 31, 2021
in € m.	a	b	c	d	e	f	g	h	i	j	k	l
(unless stated otherwise) Exposure class/ PD scale	On-balance sheet exposures	Off-balance-sheet exposures pre-CCF	Exposure weighted average CCF (in %)	Exposure post CCF and post CRM	Exposure weighted average PD (%)	Number of obligors (in 1,000s)	Exposure weighted average LGD (%)	Exposure weighted average maturity (in years)	Risk weighted exposure amount after supporting factors	Density of risk weighted exposure amount (in %)	Expected Loss amount	Value adjustments and Provisions
Other retail SMEs												
0.00 to <0.15	725	2,638	23.45	1,420	0.11	37.3	44.66	2.9	141	9.93	1	0
0.00 to <0.10	396	2,153	17.29	843	0.09	22.8	45.70	2.3	75	8.92	0	0
0.10 to <0.15	329	485	50.82	577	0.14	14.5	43.14	3.7	66	11.40	0	0
0.15 to <0.25	520	815	35.78	807	0.24	23.9	44.42	3.4	136	16.90	1	0
0.25 to <0.50	586	965	28.93	756	0.40	25.8	46.56	3.1	187	24.76	1	1
0.50 to <0.75	570	597	36.54	581	0.67	17.2	50.99	3.4	204	35.13	2	1
0.75 to <2.50	1,117	723	43.45	972	1.44	18.4	55.62	3.2	490	50.35	7	3
0.75 to <1.75	588	433	41.56	522	1.11	11.1	55.52	2.8	243	46.60	3	1
1.75 to <2.5	529	289	46.27	451	1.82	7.3	55.74	3.7	246	54.70	4	2
2.50 to <10.00	724	262	40.57	485	4.48	11.3	57.80	2.9	315	64.86	12	7
2.50 to <5	592	222	41.73	402	3.73	8.7	57.99	2.9	257	63.91	8	5
5 to <10	133	40	34.10	83	8.14	2.5	56.86	2.9	58	69.45	4	2
10.00 to <100.00	146	38	58.87	83	19.79	2.9	56.76	2.4	76	91.83	9	5
10 to <20	73	13	34.37	34	13.46	1.3	58.29	2.9	28	81.60	2	2
20 to <30	37	20	81.00	34	21.01	1.0	51.57	1.5	31	91.03	4	1
30.00 to <100.00	36	5	32.83	15	31.40	0.7	64.88	3.1	18	116.73	3	2
100.00 (Default)	294	22	41.12	260	100.00	3.4	58.03	2.1	60	23.23	150	215
Sub-total	4,683	6,060	30.68	5,365	6.01	140.1	49.59	3.1	1,610	30.01	183	232
Other retail non-SMEs												
0.00 to <0.15	2,556	3,248	32.53	3,911	0.10	722.5	36.50	4.5	411	10.51	2	2
0.00 to <0.10	1,653	2,702	28.26	2,606	0.08	529.7	33.76	3.0	213	8.16	1	1
0.10 to <0.15	904	546	53.68	1,305	0.15	192.9	41.95	7.5	198	15.20	1	1
0.15 to <0.25	1,733	747	58.57	2,247	0.25	241.5	43.17	11.1	488	21.71	2	2
0.25 to <0.50	2,265	935	64.55	2,895	0.42	252.9	44.15	13.3	888	30.69	5	4
0.50 to <0.75	3,014	808	64.19	3,529	0.72	320.2	45.90	11.2	1,508	42.72	12	8
0.75 to <2.50	9,387	693	44.44	9,693	1.68	929.3	50.29	6.4	6,248	64.46	82	58
0.75 to <1.75	4,110	410	49.17	4,316	1.24	434.5	48.72	7.0	2,462	57.06	26	21
1.75 to <2.5	5,277	283	37.61	5,378	2.03	494.8	51.56	5.9	3,785	70.39	56	38
2.50 to <10.00	7,904	325	49.67	8,058	4.97	585.3	48.80	6.5	6,131	76.09	191	153
2.50 to <5	5,950	251	41.49	6,053	3.94	469.4	50.47	6.2	4,653	76.87	120	88
5 to <10	1,954	74	77.52	2,004	8.08	115.9	43.78	7.3	1,478	73.74	71	64
10.00 to <100.00	1,106	39	69.33	1,139	20.85	139.5	47.86	6.6	1,046	91.85	107	103
10 to <20	649	19	74.66	672	14.07	50.0	45.66	6.8	624	92.86	43	42
20 to <30	233	8	57.66	238	22.80	65.7	52.84	5.8	321	134.76	29	26
30.00 to <100.00	224	11	69.08	230	38.63	23.8	49.10	6.7	102	44.43	35	35
100.00 (Default)	1,892	41	62.76	1,911	100.00	136.8	58.86	3.3	358	18.74	1,128	1,133
Sub-total	29,857	6,836	45.91	33,384	8.27	3,328.0	47.25	7.4	17,078	51.16	1,529	1,462
All exposure classes												
Total	572,264	252,626	36.06	663,369	3.97	8,711.7	32.69	8.2	180,861	27.26	7,622	7,276

[1] Since June 30, 2021 Deferred tax assets are included in the exposure class Central governments and central banks.

Jun 30, 2021

in € m. (unless stated otherwise)	a	b	c	d	e	f	g	h	i	j	k	l
Exposure class/ PD scale	On-balance sheet exposures	Off-balance-sheet exposures pre-CCF	Exposure weighted average CCF (in %)	Exposure post CCF and post CRM	Exposure weighted average PD (%)	Number of obligors (in 1,000s)	Exposure weighted average LGD (%)	Exposure weighted average maturity (in years)	Risk weighted exposure amount after supporting factors	Density of risk weighted exposure amount (in %)	Expected Loss amount	Value adjustments and Provisions
Central governments and central banks												
0.00 to <0.15	105,579	100	45.33	119,746	0.00	0.1	50.39	1.2	631	0.53	1	0
0.00 to <0.10	105,289	99	45.33	119,455	0.00	0.1	50.39	1.2	562	0.47	1	0
0.10 to <0.15	290	0	42.78	290	0.14	0.0	50.00	0.6	69	23.72	0	0
0.15 to <0.25	1,397	0	0	1,720	0.23	0.0	50.00	1.7	803	46.69	2	0
0.25 to <0.50	2,835	0	100.00	2,915	0.39	0.0	50.00	2.0	1,924	66.02	6	0
0.50 to <0.75	437	2	100.00	378	0.64	0.0	50.00	1.4	284	75.16	1	0
0.75 to <2.50	4,945	305	35.28	4,686	1.74	0.0	98.32	4.9	11,461	244.57	1	0
0.75 to <1.75	217	252	35.33	102	1.07	0.0	47.10	0.8	79	76.63	1	0
1.75 to <2.5	4,728	53	35.06	4,584	1.76	0.0	99.47	5.0	11,382	248.32	0	0
2.50 to <10.00	2,210	453	36.52	520	5.78	0.0	47.66	3.0	570	109.63	9	4
2.50 to <5	1,983	431	36.05	358	4.81	0.0	47.54	3.9	176	49.16	2	3
5 to <10	227	22	45.54	162	7.95	0.0	47.93	0.8	394	243.55	6	1
10.00 to <100.00	375	176	35.00	7	13.00	0.0	50.00	4.1	17	248.35	0	0
10 to <20	375	176	35.00	7	13.00	0.0	50.00	4.1	17	248.35	0	0
20 to <30	0	0	0	0	0.00	0	0.00	0.0	0	0.00	0	–
30.00 to <100.00	0	0	0	0	0.00	0	0.00	0.0	0	0.00	0	–
100.00 (Default)	220	25	35.00	36	100.00	0.0	11.48	1.8	54	148.72	4	4
Sub-total	117,999	1,061	36.85	130,008	0.13	0.2	52.08	1.4	15,745	12.11	23	9
Institutions												
0.00 to <0.15	9,402	3,850	41.03	13,486	0.06	0.5	49.61	1.2	1,786	13.24	10	1
0.00 to <0.10	8,552	3,195	41.71	12,350	0.05	0.4	50.54	1.2	1,525	12.35	8	1
0.10 to <0.15	850	655	37.69	1,136	0.14	0.1	39.50	1.1	261	23.00	1	0
0.15 to <0.25	601	53	19.84	708	0.23	0.1	45.65	2.9	356	50.32	1	0
0.25 to <0.50	648	398	54.45	840	0.39	0.1	38.00	0.8	577	68.64	3	0
0.50 to <0.75	1,166	219	65.64	1,289	0.64	0.1	21.79	1.2	739	57.30	7	0
0.75 to <2.50	957	237	52.44	947	1.23	0.1	13.56	2.7	413	43.62	4	1
0.75 to <1.75	753	110	70.78	752	1.07	0.0	11.89	3.2	271	36.02	2	0
1.75 to <2.5	205	127	36.54	194	1.83	0.0	20.03	0.9	142	73.04	2	0
2.50 to <10.00	1,356	337	63.46	1,393	3.29	0.0	9.04	2.0	608	43.65	9	2
2.50 to <5	1,246	238	74.81	1,345	3.13	0.0	8.95	1.9	559	41.54	8	1
5 to <10	110	99	36.03	47	7.95	0.0	11.64	3.3	49	103.84	1	0
10.00 to <100.00	48	120	40.78	87	13.00	0.0	20.39	3.2	106	122.21	2	1
10 to <20	45	120	40.78	87	13.00	0.0	20.38	3.2	106	122.12	2	1
20 to <30	3	0	17.00	0	20.96	0.0	60.54	0.5	0	312.74	0	0
30.00 to <100.00	0	0	0	0	0.00	0	0.00	0.0	0	0.00	0	–
100.00 (Default)	2,131	6	59.81	2,135	100.00	0.0	2.68	4.4	289	13.56	35	1
Sub-total	16,309	5,220	44.85	20,883	10.65	0.8	38.03	1.7	4,874	23.34	71	5

Jun 30, 2021

in € m. (unless stated otherwise) Exposure class/ PD scale	a On-balance sheet exposures	b Off-balance-sheet exposures pre-CCF	c Exposure weighted average CCF (in %)	d Exposure post CCF and post CRM	e Exposure weighted average PD (%)	f Number of obligors (in 1,000s)	g Exposure weighted average LGD (%)	h Exposure weighted average maturity (in years)	i Risk weighted exposure amount after supporting factors	j Density of risk weighted exposure amount (in %)	k Expected Loss amount	l Value adjustments and Provisions
Corporates												
0.00 to <0.15	69,609	102,829	30.83	100,981	0.09	21.3	31.35	2.1	17,724	17.55	29	14
0.00 to <0.10	50,775	74,018	31.68	74,770	0.06	16.1	30.76	2.1	11,025	14.74	15	8
0.10 to <0.15	18,834	28,811	28.62	26,211	0.15	5.2	33.03	2.3	6,699	25.56	14	6
0.15 to <0.25	18,416	16,393	31.42	23,044	0.24	5.4	28.73	2.3	6,704	29.09	16	8
0.25 to <0.50	18,637	15,735	30.85	22,292	0.40	5.5	28.06	2.1	8,031	36.03	25	12
0.50 to <0.75	16,729	12,596	32.45	19,657	0.66	5.0	24.14	2.3	8,182	41.63	35	17
0.75 to <2.50	32,099	18,327	35.54	33,830	1.47	6.4	24.34	2.4	18,986	56.12	124	64
0.75 to <1.75	14,505	8,713	41.32	15,534	1.11	3.6	22.79	2.2	7,506	48.32	42	22
1.75 to <2.5	17,594	9,614	30.30	18,296	1.78	2.8	25.65	2.5	11,480	62.75	82	41
2.50 to <10.00	25,986	33,804	29.34	32,413	5.60	3.9	19.30	2.7	27,268	84.13	434	202
2.50 to <5	16,094	20,184	29.87	19,387	4.00	2.9	22.08	2.8	16,612	85.69	217	102
5 to <10	9,892	13,621	28.55	13,026	7.97	1.0	15.15	2.5	10,655	81.80	216	100
10.00 to <100.00	5,881	3,957	39.21	5,777	16.76	1.0	15.97	2.4	5,155	89.24	177	106
10 to <20	3,943	2,306	39.97	4,245	13.17	0.4	14.51	2.3	3,259	76.77	87	56
20 to <30	1,054	1,368	39.40	943	22.33	0.4	21.52	2.3	1,305	138.28	53	32
30.00 to <100.00	884	283	32.11	588	33.71	0.2	17.60	2.6	592	100.56	38	18
100.00 (Default)	13,393	2,140	34.38	13,375	100.00	1.6	32.27	2.7	3,459	25.86	4,188	4,246
Sub-total	200,751	205,780	31.35	251,368	6.77	50.1	27.45	2.3	95,509	38.00	5,029	4,669

of which: SMEs	a	b	c	d	e	f	g	h	i	j	k	l
0.00 to <0.15	5,002	4,252	34.02	6,261	0.10	6.9	30.47	3.1	906	14.48	2	2
0.00 to <0.10	3,163	2,422	34.26	3,910	0.07	4.8	28.67	3.1	405	10.37	1	1
0.10 to <0.15	1,839	1,830	33.71	2,351	0.15	2.0	33.47	3.0	501	21.31	1	1
0.15 to <0.25	1,871	1,366	38.30	2,074	0.26	2.4	35.48	3.1	583	28.11	2	2
0.25 to <0.50	1,823	1,123	36.87	1,935	0.43	2.4	35.32	3.1	723	37.33	3	3
0.50 to <0.75	1,944	1,069	33.74	1,894	0.72	2.1	41.05	2.8	1,013	53.48	6	3
0.75 to <2.50	2,287	1,284	36.44	2,072	1.59	2.6	37.51	2.6	1,257	60.65	12	9
0.75 to <1.75	1,080	475	36.12	886	1.20	1.4	41.02	3.0	544	61.44	4	4
1.75 to <2.5	1,207	809	36.63	1,187	1.89	1.2	34.89	2.3	713	60.06	8	5
2.50 to <10.00	1,993	1,079	34.97	1,944	4.86	1.4	31.63	2.8	1,561	80.32	29	19
2.50 to <5	1,518	918	31.92	1,496	3.82	1.1	34.05	3.1	1,239	82.82	20	13
5 to <10	475	161	52.31	448	8.36	0.3	23.57	1.9	323	71.96	10	6
10.00 to <100.00	515	94	46.13	294	18.46	0.5	29.20	3.4	341	116.00	18	12
10 to <20	222	53	29.30	197	13.69	0.1	23.10	3.4	179	90.65	7	4
20 to <30	220	35	69.95	53	23.04	0.3	42.83	2.8	90	169.93	5	4
30.00 to <100.00	73	6	55.81	44	34.43	0.0	40.14	3.7	72	164.97	6	4
100.00 (Default)	586	99	36.20	582	100.00	0.3	43.61	2.9	250	42.96	245	279
Sub-total	16,021	10,367	35.39	17,057	4.68	18.6	34.22	3.0	6,634	38.89	317	329

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in € m. (unless stated otherwise) Exposure class/ PD scale	a On-balance sheet exposures	b Off-balance-sheet exposures pre-CCF	c Exposure weighted average CCF (in %)	d Exposure post CCF and post CRM	e Exposure weighted average PD (%)	f Number of obligors (in 1,000s)	g Exposure weighted average LGD (%)	h Exposure weighted average maturity (in years)	i Risk weighted exposure amount after supporting factors	j Density of risk weighted exposure amount (in %)	k Expected Loss amount	l Value adjustments and Provisions
Specialized Lending												
0.00 to <0.15	6,772	256	47.12	6,862	0.10	0.1	4.77	3.1	251	3.65	0	1
0.00 to <0.10	4,320	242	48.14	4,432	0.08	0.1	5.13	2.7	137	3.09	0	1
0.10 to <0.15	2,452	13	28.71	2,429	0.14	0.1	4.11	3.8	113	4.67	0	0
0.15 to <0.25	3,190	565	31.76	3,320	0.23	0.1	5.81	3.2	232	6.99	0	1
0.25 to <0.50	2,999	123	40.89	2,972	0.39	0.1	8.14	2.8	370	12.46	1	1
0.50 to <0.75	3,325	233	78.99	3,460	0.66	0.1	10.42	2.9	706	20.40	2	2
0.75 to <2.50	5,191	649	55.26	5,235	1.47	0.2	13.05	2.8	1,681	32.12	10	8
0.75 to <1.75	2,463	465	56.35	2,620	1.11	0.1	15.06	2.7	940	35.86	4	3
1.75 to <2.5	2,728	184	52.50	2,614	1.82	0.1	11.05	2.9	742	28.37	5	5
2.50 to <10.00	11,355	1,319	23.99	11,377	6.30	0.4	6.80	2.2	2,758	24.24	48	32
2.50 to <5	4,972	625	26.29	4,842	4.09	0.2	7.22	2.3	1,093	22.58	14	14
5 to <10	6,383	694	21.91	6,535	7.94	0.1	6.49	2.1	1,664	25.47	34	18
10.00 to <100.00	2,195	171	30.05	2,221	14.78	0.1	8.34	2.4	918	41.33	29	21
10 to <20	1,875	88	21.49	1,869	12.99	0.1	7.04	2.4	619	33.10	17	8
20 to <30	231	83	39.18	263	22.00	0.0	19.20	2.4	286	108.57	11	13
30.00 to <100.00	89	0	0	89	31.00	0.0	3.31	3.0	13	15.17	1	0
100.00 (Default)	3,213	67	32.64	3,153	100.00	0.2	40.14	2.3	552	17.50	1,241	1,127
Sub-total	38,239	3,383	37.91	38,599	11.20	1.3	10.44	2.7	7,468	19.35	1,332	1,194
Other												
0.00 to <0.15	57,836	98,321	30.65	87,858	0.08	14.3	33.49	2.0	16,567	18.86	27	10
0.00 to <0.10	43,292	71,353	31.54	66,427	0.06	11.2	32.59	2.0	10,482	15.78	14	5
0.10 to <0.15	14,543	26,967	28.28	21,431	0.15	3.1	36.26	2.0	6,085	28.39	12	5
0.15 to <0.25	13,356	14,461	30.76	17,650	0.24	2.9	32.25	2.0	5,889	33.37	13	5
0.25 to <0.50	13,816	14,489	30.30	17,384	0.40	3.0	30.66	1.9	6,938	39.91	21	8
0.50 to <0.75	11,459	11,294	31.37	14,303	0.66	2.7	25.22	2.0	6,464	45.19	27	12
0.75 to <2.50	24,622	16,394	34.69	26,523	1.47	3.6	25.53	2.3	16,048	60.51	102	46
0.75 to <1.75	10,962	7,772	40.74	12,028	1.10	2.1	23.13	2.1	6,022	50.07	34	16
1.75 to <2.5	13,660	8,622	29.23	14,495	1.77	1.5	27.53	2.4	10,026	69.17	69	31
2.50 to <10.00	12,638	31,406	29.37	19,092	5.25	2.2	25.49	3.0	22,949	120.20	357	151
2.50 to <5	9,604	18,640	29.89	13,049	3.99	1.6	26.22	3.0	14,280	109.44	184	75
5 to <10	3,034	12,765	28.61	6,043	7.99	0.6	23.90	2.9	8,668	143.44	173	76
10.00 to <100.00	3,171	3,692	39.46	3,261	17.95	0.5	19.98	2.2	3,896	119.46	130	72
10 to <20	1,846	2,164	40.98	2,179	13.28	0.2	20.14	2.2	2,461	112.98	63	43
20 to <30	602	1,250	38.55	627	22.41	0.1	20.68	2.2	929	148.08	36	16
30.00 to <100.00	723	277	31.62	456	34.17	0.1	18.22	2.4	506	111.02	31	13
100.00 (Default)	9,594	1,974	34.35	9,640	100.00	1.1	29.01	2.9	2,657	27.56	2,702	2,840
Sub-total	146,491	192,031	31.01	195,711	6.08	30.3	30.22	2.2	81,408	41.60	3,380	3,145

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in € m. (unless stated otherwise)	a	b	c	d	e	f	g	h	i	j	k	l
Exposure class/ PD scale	On-balance sheet exposures	Off-balance-sheet exposures pre-CCF	Exposure weighted average CCF (in %)	Exposure post CCF and post CRM	Exposure weighted average PD (%)	Number of obligors (in 1,000s)	Exposure weighted average LGD (%)	Exposure weighted average maturity (in years)	Risk weighted exposure amount after supporting factors	Density of risk weighted exposure amount (in %)	Expected Loss amount	Value adjustments and Provisions
Retail												
0.00 to <0.15	33,231	18,830	57.83	44,584	0.11	3,297.1	25.11	15.0	2,059	4.62	12	12
0.00 to <0.10	17,045	15,397	55.95	26,028	0.08	2,592.1	28.72	12.2	947	3.64	6	5
0.10 to <0.15	16,185	3,434	66.28	18,557	0.15	705.0	20.04	18.9	1,112	5.99	6	7
0.15 to <0.25	30,074	4,587	64.60	33,156	0.24	817.7	19.60	22.0	2,924	8.82	15	26
0.25 to <0.50	40,485	4,717	63.86	43,404	0.40	795.7	19.69	23.3	5,725	13.19	34	52
0.50 to <0.75	40,375	3,976	68.55	42,918	0.69	802.6	20.81	22.6	8,788	20.48	62	80
0.75 to <2.50	39,538	3,676	69.09	41,687	0.48	1,429.3	25.72	17.3	15,350	36.82	164	164
0.75 to <1.75	23,988	2,215	66.47	25,298	1.19	730.9	23.69	18.6	7,884	31.17	71	73
1.75 to <2.5	15,550	1,462	73.07	16,389	1.97	698.4	28.86	15.4	7,466	45.55	93	91
2.50 to <10.00	18,192	1,499	79.05	19,034	4.61	793.8	30.51	16.1	11,926	62.65	266	276
2.50 to <5	14,400	1,206	77.59	15,057	3.81	644.9	30.63	15.4	8,863	58.86	175	184
5 to <10	3,792	293	85.04	3,977	7.67	148.9	30.06	18.8	3,063	77.02	91	92
10.00 to <100.00	3,383	152	74.07	3,387	20.77	163.3	31.96	15.9	3,689	108.93	223	203
10 to <20	1,327	84	74.17	1,345	13.43	67.5	30.36	16.2	1,280	95.17	55	52
20 to <30	1,438	45	80.32	1,440	20.99	62.1	34.30	14.6	1,709	118.62	103	94
30.00 to <100.00	619	23	61.60	601	36.64	33.7	29.91	18.3	700	116.48	65	57
100.00 (Default)	3,887	46	63.45	3,888	100.00	168.2	48.46	9.5	1,069	27.49	1,895	2,139
Sub-total	209,165	37,483	62.58	232,058	2.70	8,267.8	23.56	19.4	51,529	22.21	2,670	2,952
of which:												
Secured by real estate property SMEs												
0.00 to <0.15	1,522	168	59.23	1,616	0.12	7.5	12.39	14.9	48	2.96	0	0
0.00 to <0.10	498	66	59.71	537	0.08	2.7	11.93	14.6	11	2.14	0	0
0.10 to <0.15	1,024	102	58.92	1,079	0.14	4.7	12.63	15.1	36	3.37	0	0
0.15 to <0.25	1,604	128	56.46	1,666	0.23	7.7	12.10	15.5	78	4.70	0	0
0.25 to <0.50	1,707	106	53.37	1,758	0.39	8.0	12.90	15.6	128	7.25	1	1
0.50 to <0.75	1,328	79	51.93	1,343	0.65	6.3	12.47	16.2	134	9.94	1	1
0.75 to <2.50	1,492	69	53.99	1,492	1.37	7.2	12.77	16.2	251	16.82	3	3
0.75 to <1.75	881	45	52.07	892	1.09	4.5	12.64	16.2	127	14.27	1	1
1.75 to <2.5	610	24	57.71	600	1.80	2.7	12.96	16.1	124	20.62	1	2
2.50 to <10.00	556	28	48.04	556	4.36	2.6	13.18	15.6	183	32.90	3	5
2.50 to <5	458	23	47.87	459	3.57	2.2	13.32	15.8	141	30.63	2	3
5 to <10	98	5	48.86	97	8.08	0.5	12.55	15.1	42	43.64	1	1
10.00 to <100.00	82	3	51.63	76	19.79	0.5	12.11	13.7	41	54.43	2	2
10 to <20	43	1	58.95	40	13.29	0.2	12.30	14.1	22	54.04	1	1
20 to <30	20	1	46.72	17	22.12	0.1	11.91	12.6	9	54.23	0	0
30.00 to <100.00	20	1	46.11	18	31.80	0.1	11.88	14.1	10	55.48	1	1
100.00 (Default)	86	0	59.93	85	100.00	0.3	36.66	10.2	26	30.47	32	42
Sub-total	8,377	582	55.36	8,593	1.94	40.1	12.81	15.6	888	10.34	42	54

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in € m. (unless stated otherwise) Exposure class/ PD scale	a On-balance sheet exposures	b Off-balance-sheet exposures pre-CCF	c Exposure weighted average CCF (in %)	d Exposure post CCF and post CRM	e Exposure weighted average PD (%)	f Number of obligors (in 1,000s)	g Exposure weighted average LGD (%)	h Exposure weighted average maturity (in years)	i Risk weighted exposure amount after supporting factors	j Density of risk weighted exposure amount (in %)	k Expected Loss amount	l Value adjustments and Provisions
Secured by real estate property non-SMEs												
0.00 to <0.15	28,627	1,184	74.31	29,503	0.12	268.3	13.84	21.1	1,212	4.11	5	9
0.00 to <0.10	14,580	510	72.59	14,949	0.08	157.5	12.68	20.0	437	2.92	2	3
0.10 to <0.15	14,047	673	75.62	14,554	0.15	110.7	15.03	22.2	774	5.32	3	6
0.15 to <0.25	26,317	1,416	79.88	27,441	0.24	191.5	16.30	24.5	2,185	7.96	11	23
0.25 to <0.50	35,871	1,922	79.04	37,380	0.40	245.8	17.22	25.3	4,536	12.14	25	45
0.50 to <0.75	35,316	2,014	80.76	36,931	0.69	237.9	17.89	24.5	6,908	18.71	46	63
0.75 to <2.50	27,583	2,118	83.75	29,323	0.02	197.2	16.61	21.7	8,218	28.03	71	66
0.75 to <1.75	18,325	1,215	81.39	19,298	1.20	125.1	17.05	22.1	4,941	25.61	39	38
1.75 to <2.5	9,257	903	86.92	10,025	1.98	72.2	15.75	21.0	3,277	32.69	31	28
2.50 to <10.00	9,764	958	92.72	10,628	4.65	79.8	15.12	23.7	5,393	50.74	76	89
2.50 to <5	7,657	749	91.64	8,327	3.82	63.1	14.73	22.6	3,732	44.82	47	58
5 to <10	2,106	209	96.60	2,301	7.66	16.6	16.54	27.7	1,661	72.18	29	31
10.00 to <100.00	1,821	82	94.08	1,880	21.07	13.8	17.21	24.0	1,887	100.35	68	54
10 to <20	743	50	93.17	783	13.41	5.9	16.33	23.6	698	89.10	17	16
20 to <30	703	27	97.11	726	21.06	5.0	18.61	23.4	816	112.53	28	20
30.00 to <100.00	375	5	86.13	371	37.24	2.9	16.34	26.0	372	100.28	23	18
100.00 (Default)	1,476	18	92.18	1,487	100.00	13.7	19.22	21.6	629	42.29	291	326
Sub-total	166,775	9,712	81.47	174,574	1.65	1,248.0	16.43	23.6	30,968	17.74	592	675
Qualifying Revolving												
0.00 to <0.15	66	11,479	72.53	8,392	0.08	2,550.9	60.02	0.0	307	3.66	4	1
0.00 to <0.10	45	9,817	72.56	7,169	0.06	2,115.8	60.38	0.0	231	3.23	3	1
0.10 to <0.15	22	1,662	72.29	1,223	0.15	435.1	57.92	0.0	76	6.22	1	0
0.15 to <0.25	53	1,381	70.57	1,028	0.24	401.3	57.92	0.0	91	8.88	1	1
0.25 to <0.50	91	832	66.71	646	0.40	288.9	56.24	0.0	83	12.78	1	1
0.50 to <0.75	120	548	63.40	468	0.69	245.1	56.50	0.0	94	19.99	2	1
0.75 to <2.50	206	440	63.55	486	1.53	281.6	55.74	0.0	173	35.67	4	4
0.75 to <1.75	110	280	63.14	287	1.20	166.2	55.44	0.0	86	29.83	2	2
1.75 to <2.5	96	161	64.27	199	2.00	115.5	56.18	0.0	88	44.09	2	2
2.50 to <10.00	147	153	64.75	246	4.75	154.8	56.86	0.0	196	79.66	7	6
2.50 to <5	105	124	65.09	186	3.84	118.6	55.93	0.0	127	68.30	4	3
5 to <10	42	29	63.33	60	7.57	36.3	59.75	0.0	69	114.85	3	2
10.00 to <100.00	38	16	67.27	49	20.17	32.9	56.40	0.0	82	169.25	5	4
10 to <20	19	9	65.06	25	13.19	17.1	57.62	0.0	38	151.39	2	1
20 to <30	9	5	70.83	13	21.42	9.1	57.02	0.0	24	186.64	2	1
30.00 to <100.00	10	1	67.47	11	34.92	6.7	52.80	0.0	20	189.54	2	1
100.00 (Default)	85	2	68.02	86	100.00	40.9	63.86	0.0	33	37.76	53	65
Sub-total	807	14,850	71.33	11,399	1.14	3,996.4	59.23	0.0	1,059	9.29	78	82

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in € m. (unless stated otherwise) Exposure class/ PD scale	a On-balance sheet exposures	b Off-balance-sheet exposures pre-CCF	c Exposure weighted average CCF (in %)	d Exposure post CCF and post CRM	e Exposure weighted average PD (%)	f Number of obligors (in 1,000s)	g Exposure weighted average LGD (%)	h Exposure weighted average maturity (in years)	i Risk weighted exposure amount after supporting factors	j Density of risk weighted exposure amount (in %)	k Expected Loss amount	l Value adjustments and Provisions
Other retail SMEs												
0.00 to <0.15	564	2,709	19.88	1,262	0.11	37.8	41.87	2.5	121	9.59	1	0
0.00 to <0.10	295	2,200	13.82	719	0.09	20.7	43.11	1.9	64	8.88	0	0
0.10 to <0.15	269	509	46.06	543	0.14	17.1	40.23	3.2	57	10.54	0	0
0.15 to <0.25	488	903	33.38	817	0.23	29.9	42.15	3.1	131	16.05	1	0
0.25 to <0.50	643	1,000	27.92	828	0.39	32.9	44.62	2.7	194	23.45	1	1
0.50 to <0.75	666	621	32.41	708	0.66	22.2	49.96	2.9	242	34.21	2	1
0.75 to <2.50	1,033	516	38.42	901	1.35	21.9	53.05	3.2	430	47.78	6	3
0.75 to <1.75	602	342	36.03	576	1.10	13.5	52.80	3.2	259	44.92	3	2
1.75 to <2.5	431	173	43.15	324	1.80	8.4	53.49	3.2	171	52.87	3	2
2.50 to <10.00	582	176	41.57	362	4.49	12.0	53.29	3.2	221	61.07	8	7
2.50 to <5	475	151	41.59	297	3.68	9.3	53.65	2.9	178	60.04	6	5
5 to <10	107	25	41.46	65	8.17	2.8	51.63	4.7	43	65.77	3	2
10.00 to <100.00	143	24	38.12	66	21.53	3.8	56.29	3.2	65	97.85	8	5
10 to <20	67	13	32.39	30	13.46	1.6	54.47	3.1	24	80.11	2	2
20 to <30	39	6	48.91	16	22.78	1.0	57.77	3.0	17	105.47	2	1
30.00 to <100.00	37	5	40.04	20	32.94	1.2	57.90	3.4	24	119.08	3	2
100.00 (Default)	260	10	39.83	246	100.00	3.2	58.45	2.1	56	22.89	144	209
Sub-total	**4,380**	**5,958**	**26.93**	**5,191**	**5.78**	**163.8**	**47.16**	**2.8**	**1,461**	**28.15**	**171**	**227**
Other retail non-SMEs												
0.00 to <0.15	2,451	3,291	31.82	3,811	0.10	432.7	35.28	5.1	371	9.73	2	1
0.00 to <0.10	1,627	2,803	27.68	2,653	0.07	295.3	33.06	3.6	203	7.64	1	1
0.10 to <0.15	824	488	55.59	1,158	0.15	137.4	40.39	8.7	168	14.54	1	1
0.15 to <0.25	1,611	759	63.75	2,203	0.24	187.3	40.19	12.2	438	19.88	2	2
0.25 to <0.50	2,173	857	70.30	2,792	0.40	220.2	41.17	13.8	784	28.09	5	5
0.50 to <0.75	2,943	713	71.38	3,467	0.69	291.1	44.32	11.6	1,410	40.67	11	14
0.75 to <2.50	9,225	533	47.08	9,486	1.62	921.2	51.81	6.1	6,278	66.18	80	87
0.75 to <1.75	4,070	332	48.05	4,245	1.19	421.6	50.11	6.5	2,471	58.22	25	31
1.75 to <2.5	5,156	201	45.48	5,241	1.97	499.6	53.19	5.7	3,806	72.63	55	57
2.50 to <10.00	7,144	184	60.28	7,242	4.57	544.6	52.40	6.2	5,933	81.93	173	169
2.50 to <5	5,704	158	59.52	5,789	3.80	451.7	52.90	6.1	4,685	80.94	116	114
5 to <10	1,439	26	64.84	1,453	7.63	92.8	50.44	6.3	1,248	85.85	56	55
10.00 to <100.00	1,298	28	52.64	1,316	20.38	112.3	52.03	5.6	1,614	122.64	140	138
10 to <20	455	11	46.78	466	13.49	42.7	52.48	5.6	498	106.89	33	32
20 to <30	667	5	46.65	669	20.83	46.9	50.89	5.7	842	125.86	72	71
30.00 to <100.00	176	11	61.17	181	36.41	22.7	55.09	5.7	274	151.23	36	35
100.00 (Default)	1,979	16	44.84	1,983	100.00	110.0	69.00	1.7	325	16.38	1,375	1,496
Sub-total	**28,825**	**6,381**	**47.43**	**32,301**	**8.61**	**2,819.5**	**48.54**	**7.4**	**17,153**	**53.10**	**1,788**	**1,913**
All exposure classes												
Total	544,224	249,544	36.35	634,318	4.05	8,318.9	31.42	8.3	167,657	26.43	7,794	7,635

[1] Since June 30, 2021 Deferred tax assets are included in the exposure class Central governments and central banks.

Total IRB exposure covered by credit derivatives (Article 453 (j) CRR)

The table below presents our IRB exposure – split into F-IRB and A-IRB – which is covered by credit derivatives. It shows the RWA by the relevant exposures classes prior and after the usage of CRM techniques in the form of credit derivatives where the exposure is then assigned to the exposure class of the protection seller. As a consequence the RWA after credit risk mitigation in a specific exposure class can be higher than before its recognition.

EU CR7 – IRB approach – Effect on the RWAs of credit derivatives used as CRM techniques

		Dec 31, 2021		Jun 30, 2021	
		a	b	a	b
	in € m.	pre-credit derivatives RWA	Actual RWA	pre-credit derivatives RWA	Actual RWA
1	Exposures under FIRB				
2	Central governments and central banks	0	0	0	0
3	Institutions	3	3	4	4
3a	Corporates of which:	2,766	2,768	3,001	3,001
4	SMEs	94	94	33	33
5	Specialized lending	699	699	1,022	1,022
	Others	1,973	1,975	1,946	1,946
6a	Sub-total FIRB	**2,769**	**2,770**	3,004	3,004
7	Exposures under AIRB				
8	Central governments and central banks	16,361	16,361	15,634	15,745
9	Institutions	4,339	4,381	4,836	4,874
9a	Corporates of which:	101,209	100,227	96,498	95,507
10	SMEs	7,433	7,433	6,634	6,634
11	Specialized lending	8,239	8,230	7,468	7,468
	Others	85,537	84,564	82,396	81,405
12a	Retail of which:	59,891	59,891	51,529	51,529
13	Secured by real estate property SMEs	1,146	1,146	888	888
14	Secured by real estate property non-SMEs	38,979	38,979	30,968	30,968
15	Qualifying revolving	1,078	1,078	1,059	1,059
16	Other retail SMEs	1,610	1,610	1,461	1,461
17	Other retail non-SMEs	17,078	17,078	17,153	17,153
19a	Sub-total AIRB	**181,801**	**180,861**	168,497	167,655
20	Total	**184,569**	**183,631**	171,501	170,659

Our RWA for exposure under the IRBA which is covered by credit derivatives is at € 183.6 billion as of December 31, 2021 in comparison to € 170.7 billion as of the prior period. The increase of € 13.0 billion is predominantly driven by increases in RWA within our AIRB for the exposure classes “Retail - Secured by real estate property non-SMEs”, “Corporates” and “Central governments and central banks”. These increases were partly offset by reductions in the exposure classes “Institutions” under the AIRB and “Corporates” under the FIRB. The RWA for Corporate exposures mainly benefitted from the application of credit derivatives.

Total IRB exposure covered by the use of CRM techniques (Article 453 (g) CRR)

The below two tables present for our FIRB and AIRB exposure the extent of the use of CRM techniques broken down by exposure classes. With the starting point of showing the total unsecured and secured exposure the secured portion of the exposure is split into various funded and unfunded credit risk migration techniques. They also show the credit risk substitution effect in case of usage of CRM techniques in the form of credit derivatives where the exposure is then assigned to the exposure class of the protection seller. As a consequence the RWA after credit risk mitigation in a specific exposure class can be higher than before its recognition.

EU CR7-A – Foundation IRB approach – Extent of the use of CRM techniques

Dec 31, 2021

	a	b	c	d	e	f	g	h	i	j	k	l	m	n
		Credit risk mitigation techniques											Credit risk Mitigation methods in the calculation of RWEAs	
		Funded credit protection (FCP)									Unfunded credit protection (UFCP)			
			Part of exposures covered by Other eligible collaterals (%)				Part of exposures covered by Other funded credit protection (%)							
in € m. (unless stated otherwise)	Total exposures	Part of exposures covered by Financial Collaterals (%)	Total	of which: Part of exposures covered by Immovable property Collaterals (%)	of which: Part of exposures covered by Receivables (%)	of which: Part of exposures covered by Other physical collateral (%)	Total	of which: Part of exposures covered by Cash on deposit (%)	of which: Part of exposures covered by Life insurance policies (%)	of which: Part of exposures covered by Instruments held by a third party (%)	Part of exposures covered by Guarantees (%)	Part of exposures covered by Credit Derivatives (%)	RWA without substitution effects (reduction effects only)	RWA with substitution effects (both reduction and sustitution effects)
Central governments and central banks	58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0
Institutions	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3	3
Corporates	6,743	0.00	10.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2,768	2,768
of which:														
SME	153	0.00	0.04	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94	94
Specialized lending	998	0.00	66.59	66.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	699	699
Other	5,591	0.00	0.16	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1,975	1,975
Total	6,804	0.00	9.91	9.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2,770	2,770

Jun 30, 2021

	a	b	c	d	e	f	g	h	i	j	k	l	m	n
		Credit risk mitigation techniques											Credit risk Mitigation methods in the calculation of RWEAs	
		Funded credit protection (FCP)									Unfunded credit protection (UFCP)			
			Part of exposures covered by Other eligible collaterals (%)				Part of exposures covered by Other funded credit protection (%)							
in € m. (unless stated otherwise)	Total exposures	Part of exposures covered by Financial Collaterals (%)	Total	of which: Part of exposures covered by Immovable property Collaterals (%)	of which: Part of exposures covered by Receivables (%)	of which: Part of exposures covered by Other physical collateral (%)	Total	of which: Part of exposures covered by Cash on deposit (%)	of which: Part of exposures covered by Life insurance policies (%)	of which: Part of exposures covered by Instruments held by a third party (%)	Part of exposures covered by Guarantees (%)	Part of exposures covered by Credit Derivatives (%)	RWA without substitution effects (reduction effects only)	RWA with substitution effects (both reduction and sustitution effects)
Central governments and central banks	42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0
Institutions	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4	4
Corporates	6,759	0.00	13.45	13.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3,001	3,001
of which:														
SME	104	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33	33
Specialized lending	1,382	0.00	65.78	65.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1,022	1,022
Other	5,273	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1,946	1,946
Total	6,804	0.00	13.36	13.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3,004	3,004

EU CR7-A – Advanced IRB approach – Extent of the use of CRM techniques

Dec 31, 2021

	a	b	c	d	e	f	g	h	i	j	k	l	m	n
		Credit risk mitigation techniques											Credit risk Mitigation methods in the calculation of RWEAs	
		Funded credit protection (FCP)									Unfunded credit protection (UFCP)			
			Part of exposures covered by Other eligible collaterals (%)				Part of exposures covered by Other funded credit protection (%)							
in € m. (unless stated otherwise)	Total exposures	Part of exposures covered by Financial Collaterals (%)	Total	of which: Part of exposures covered by Immovable property Collaterals (%)	of which: Part of exposures covered by Receivables (%)	of which: Part of exposures covered by Other physical collateral (%)	Total	of which: Part of exposures covered by Cash on deposit (%)	of which: Part of exposures covered by Life insurance policies (%)	of which: Part of exposures covered by Instruments held by a third party (%)	Part of exposures covered by Guarantees (%)	Part of exposures covered by Credit Derivatives (%)	RWA without substitution effects (reduction effects only)	RWA with substitution effects (both reduction and sustitution effects)
Central governments and central banks	132,063	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	16,730	16,361
Institutions	19,804	5.01	2.57	2.24	0.00	0.33	0.36	0.39	0.00	0.00	0.00	0.00	4,109	4,381
Corporates	276,898	15.68	19.01	17.43	0.32	1.26	1.31	0.85	0.46	0.00	0.00	0.00	101,294	100,227
of which:														
SME	19,141	4.73	25.86	23.72	0.14	2.00	1.21	0.29	0.92	0.00	0.00	0.00	7,520	7,433
Specialized lending	41,405	0.89	63.78	60.08	0.00	3.71	0.11	0.11	0.00	0.00	0.00	0.00	8,481	8,230
Other	216,351	19.48	9.83	8.71	0.39	0.73	1.55	1.04	0.51	0.00	0.00	0.00	85,293	84,564
Retail	234,657	2.89	54.12	53.92	0.19	0.01	0.47	0.01	0.46	0.00	0.00	0.00	59,644	59,891
of which:														
Secured by real estate property SMEs	8,895	2.52	73.77	73.28	0.47	0.02	2.71	0.01	2.70	0.00	0.00	0.00	1,177	1,146
Secured by real estate property non-SMEs	176,167	2.47	68.30	68.10	0.19	0.00	0.43	0.01	0.42	0.00	0.00	0.00	39,029	38,979
Qualifying revolving	10,846	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1,078	1,078
Other retail SMEs	5,365	4.26	1.33	0.11	0.85	0.37	1.05	0.02	1.03	0.00	0.00	0.00	1,433	1,610
Other retail non-SMEs	33,384	5.95	0.12	0.07	0.04	0.01	0.15	0.01	0.14	0.00	0.00	0.00	16,927	17,078
Total	663,422	7.72	27.15	26.41	0.20	0.54	0.73	0.37	0.36	0.00	0.00	0.00	181,777	180,861

Jun 30, 2021

	a	b	c	d	e	f	g	h	i	j	k	l	m	n
	Credit risk mitigation techniques												Credit risk Mitigation methods in the calculation of RWEAs	
		Funded credit protection (FCP)									Unfunded credit protection (UFCP)			
			Part of exposures covered by Other eligible collaterals (%)				Part of exposures covered by Other funded credit protection (%)							
in € m. (unless stated otherwise)	Total exposures	Part of exposures covered by Financial Collaterals (%)	Total	of which: Part of exposures covered by Immovable property Collaterals (%)	of which: Part of exposures covered by Receivables (%)	of which: Part of exposures covered by Other physical collateral (%)	Total	of which: Part of exposures covered by Cash on deposit (%)	of which: Part of exposures covered by Life insurance policies (%)	of which: Part of exposures covered by Instruments held by a third party (%)	Part of exposures covered by Guarantees (%)	Part of exposures covered by Credit Derivatives (%)	RWA without substitution effects (reduction effects only)	RWA with substitution effects (both reduction and sustitution effects)
Central governments and central banks	130,008	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	16,180	15,745
Institutions	20,883	4.30	2.54	2.16	0.00	0.38	0.37	0.37	0.00	0.00	0.00	0.00	4,561	4,874
Corporates	251,368	16.05	20.66	18.95	0.32	1.38	1.37	0.87	0.50	0.00	0.00	0.00	96,468	95,507
of which:														
SME	17,057	5.89	26.80	24.39	0.33	2.08	1.14	0.30	0.84	0.00	0.00	0.00	6,813	6,634
Specialized lending	38,599	1.10	67.35	63.50	0.00	3.85	0.15	0.15	0.00	0.00	0.00	0.00	7,699	7,468
Other	195,711	19.88	10.91	9.69	0.39	0.84	1.63	1.06	0.57	0.00	0.00	0.00	81,957	81,405
Retail	232,058	2.91	53.91	53.72	0.18	0.01	0.50	0.01	0.49	0.00	0.00	0.00	51,265	51,529
of which:														
Secured by real estate property SMEs	8,593	1.68	73.10	72.56	0.52	0.02	3.00	0.01	2.98	0.00	0.00	0.00	913	888
Secured by real estate property non-SMEs	174,574	2.55	68.03	67.83	0.20	0.00	0.46	0.01	0.45	0.00	0.00	0.00	31,008	30,968
Qualifying revolving	11,399	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1,059	1,059
Other retail SMEs	5,191	4.40	0.58	0.10	0.13	0.36	1.12	0.02	1.10	0.00	0.00	0.00	1,273	1,461
Other retail non-SMEs	32,301	5.96	0.11	0.07	0.03	0.00	0.16	0.01	0.15	0.00	0.00	0.00	17,013	17,153
Total	634,318	7.57	27.99	27.23	0.19	0.56	0.74	0.36	0.38	0.00	0.00	0.00	168,474	167,655

Development of credit risk RWA (Article 438 (h) CRR)

The following table provides an analysis of key drivers for RWA movements observed for credit risk, excluding counterparty credit risk, to the extent covered in IRB approaches in the current and previous reporting period.

EU CR8 – RWA flow statement of credit risk exposures under the IRB approach

		Three months ended Dec 31, 2021	Three months ended Sep 30, 2021
		a	a
	in € m.	RWA	RWA
1	Risk weighted exposure amount as at the end of the previous reporting period	**175,642**	167,777
2	Asset size	996	444
3	Asset quality	1,809	(1,770)
4	Model updates	(136)	16
5	Methodology and policy	116	7,883
6	Acquisitions and disposals	0	0
7	Foreign exchange movements	1,273	1,292
8	Other	0	0
9	Risk weighted exposure amount as at the end of the reporting period	**179,700**	175,642

Organic changes in our portfolio size and composition are considered in the category “asset size”. The category “asset quality” represents the effects from portfolio rating migrations, loss given default, model parameter recalibrations as well as collateral coverage and netting activities. “Model updates” include model refinements and further roll out of advanced internal models. RWA movements resulting from externally, regulatory-driven changes, e.g. applying new regulations, are considered in the “methodology and policy” section. “Acquisition and disposals” show significant exposure movements which can be clearly assigned to acquisition or disposal related activities. Changes that cannot be attributed to the above categories are reflected in the category “other”.

The increase in RWA for credit risk exposures under the IRB approach of 2.3 % or € 4.1 billion since September 30, 2021 is primarily observed across all categories, except for reduction in category “model updates” due to re-rating of portfolios with new models. The category “asset quality” reflects a RWA increase stemming from parameter recalibrations partly offset by improved counterparty ratings. The rise in the category “asset size” reflects growth within the core businesses in comparison to the prior quarter. The category “methodology and policy” reflects a marginal increase resulting from changes in relation to the introduction of the EBA Guideline on definition of default. Further increase is stemming from FX related credit risk RWA movements.

Model validation results (Article 452 (h) CRR)

Foundation IRBA – Model validation results

Only for one portfolio at DB Private Bank the foundation IRBA approach is still applied. Respective parameter was validated as appropriate.

The below table EU CR9 aims at providing backtesting information for probabilities of default (“PD”) in comparing the PD used in the foundation IRB capital calculations with the effective obligors’ default rates presented on a five year average by regulatory exposure classes. The conceptual design as well as the structural limitations to be considered are described in the introduction of the advanced IRB backtesting table further down below in this report.

EU CR9 IRB backtesting of PD per exposure class for Foundation IRBA

						Dec 31, 2021
a/b	c	d	e	f	g	h
	Number of obligors at the end of previous year					
Exposure class/ PD Range	Total	Of which number of obligors which defaulted in the year	Observed average default rate (%)	Exposures weighted average PD (%)	Average PD (%)	Average historical annual default rate (%)
Central governments and central banks						
0.00 to <0.15	0	0	0.00%	0.00%	0.00%	0.00%
0.00 to <0.10	0	0	0.00%	0.00%	0.00%	0.00%
0.10 to <0.15	0	0	0.00%	0.00%	0.00%	0.00%
0.15 to <0.25	0	0	0.00%	0.00%	0.00%	0.00%
0.25 to <0.50	0	0	0.00%	0.00%	0.00%	0.00%
0.50 to <0.75	0	0	0.00%	0.00%	0.00%	0.00%
0.75 to <2.50	0	0	0.00%	0.00%	0.00%	0.00%
0.75 to <1.75	0	0	0.00%	0.00%	0.00%	0.00%
1.75 to <2.5	0	0	0.00%	0.00%	0.00%	0.00%
2.50 to <10.00	0	0	0.00%	0.00%	0.00%	0.00%
2.5 to <5	0	0	0.00%	0.00%	0.00%	0.00%
5 to <10	0	0	0.00%	0.00%	0.00%	0.00%
10.00 to <100.00	0	0	0.00%	0.00%	0.00%	0.00%
10 to <20	0	0	0.00%	0.00%	0.00%	0.00%
20 to <30	0	0	0.00%	0.00%	0.00%	0.00%
30.00 to <100.00	0	0	0.00%	0.00%	0.00%	0.00%
100.00 (Default)	0	0	N/M	0.00%	0.00%	N/M
Sub-total	0	0	0.00%	0.00%	0.00%	0.00%
Institutions						
0.00 to <0.15	9	0	0.00%	0.04%	0.06%	0.00%
0.00 to <0.10	7	0	0.00%	0.04%	0.06%	0.00%
0.10 to <0.15	2	0	0.00%	0.15%	0.11%	0.00%
0.15 to <0.25	3	0	0.00%	0.25%	0.23%	0.00%
0.25 to <0.50	4	0	0.00%	0.38%	0.40%	0.00%
0.50 to <0.75	0	0	0.00%	0.00%	0.00%	0.00%
0.75 to <2.50	0	0	0.00%	0.00%	0.00%	0.00%
0.75 to <1.75	0	0	0.00%	0.00%	0.00%	0.00%
1.75 to <2.5	0	0	0.00%	0.00%	0.00%	0.00%
2.50 to <10.00	0	0	0.00%	0.00%	0.00%	0.00%
2.5 to <5	0	0	0.00%	0.00%	0.00%	0.00%
5 to <10	0	0	0.00%	0.00%	0.00%	0.00%
10.00 to <100.00	13	0	0.00%	20.00%	20.00%	0.00%
10 to <20	0	0	0.00%	0.00%	0.00%	0.00%
20 to <30	13	0	0.00%	20.00%	20.00%	0.00%
30.00 to <100.00	0	0	0.00%	0.00%	0.00%	0.00%
100.00 (Default)	0	0	N/M	0.00%	0.00%	N/M
Sub-total	29	0	0.00%	5.00%	9.06%	0.00%
Corporates						
0.00 to <0.15	1,013	0	0.00%	0.10%	0.10%	0.07%
0.00 to <0.10	454	0	0.00%	0.07%	0.07%	0.07%
0.10 to <0.15	559	0	0.00%	0.16%	0.13%	0.04%
0.15 to <0.25	2,197	0	0.00%	0.25%	0.21%	0.21%
0.25 to <0.50	2,688	2	0.07%	0.41%	0.38%	0.16%
0.50 to <0.75	1,795	0	0.00%	0.72%	0.68%	0.12%
0.75 to <2.50	1,064	5	0.47%	1.58%	1.33%	0.79%
0.75 to <1.75	900	5	0.56%	1.30%	1.18%	0.64%
1.75 to <2.5	164	0	0.00%	2.15%	1.97%	1.47%
2.50 to <10.00	318	11	3.46%	5.83%	5.10%	3.57%
2.5 to <5	202	8	3.96%	4.08%	3.86%	3.71%
5 to <10	116	3	2.59%	8.37%	7.52%	3.47%
10.00 to <100.00	271	2	0.74%	21.34%	19.87%	1.22%
10 to <20	25	2	8.00%	14.06%	14.40%	4.10%
20 to <30	236	0	0.00%	20.08%	20.12%	0.54%
30.00 to <100.00	10	0	0.00%	33.95%	35.46%	11.11%
100.00 (Default)	175	23	N/M	100.00%	100.00%	N/M
Sub-total	9,521	43	0.45%	**2.36%**	3.02%	0.29%

						Dec 31, 2021
a/b	c	d	e	f	g	h
	Number of obligors at the end of previous year					
Exposure class/ PD Range	Total	Of which number of obligors which defaulted in the year	Observed average default rate (%)	Exposures weighted average PD (%)	Average PD (%)	Average historical annual default rate (%)
of which:						
SMEs						
0.00 to <0.15	32	0	0.00%	0.12%	0.11%	0.00%
0.00 to <0.10	5	0	0.00%	0.04%	0.06%	0.00%
0.10 to <0.15	27	0	0.00%	0.17%	0.13%	0.00%
0.15 to <0.25	61	0	0.00%	0.24%	0.19%	0.00%
0.25 to <0.50	140	1	0.71%	0.39%	0.36%	0.14%
0.50 to <0.75	75	0	0.00%	0.70%	0.66%	1.19%
0.75 to <2.50	113	1	0.88%	1.77%	1.35%	3.36%
0.75 to <1.75	94	1	1.06%	1.27%	1.17%	3.36%
1.75 to <2.5	19	0	0.00%	2.13%	2.09%	3.75%
2.50 to <10.00	36	6	16.67%	6.52%	5.31%	14.05%
2.5 to <5	24	5	20.83%	3.92%	4.10%	19.17%
5 to <10	12	1	8.33%	8.19%	8.13%	8.33%
10.00 to <100.00	26	1	3.85%	20.96%	19.94%	1.88%
10 to <20	3	1	33.33%	14.29%	15.14%	11.67%
20 to <30	22	0	0.00%	20.00%	20.26%	0.00%
30.00 to <100.00	1	0	0.00%	34.15%	33.60%	0.00%
100.00 (Default)	12	3	N/M	100.00%	100.00%	N/M
Sub-total	495	12	2.42%	8.51%	4.40%	1.95%
Specialized lending						
0.00 to <0.15	0	0	0.00%	0.00%	0.00%	0.00%
0.00 to <0.10	0	0	0.00%	0.00%	0.00%	0.00%
0.10 to <0.15	0	0	0.00%	0.00%	0.00%	0.00%
0.15 to <0.25	0	0	0.00%	0.00%	0.00%	0.00%
0.25 to <0.50	0	0	0.00%	0.00%	0.00%	0.00%
0.50 to <0.75	0	0	0.00%	0.00%	0.00%	0.00%
0.75 to <2.50	0	0	0.00%	0.00%	0.00%	0.00%
0.75 to <1.75	0	0	0.00%	0.00%	0.00%	0.00%
1.75 to <2.5	0	0	0.00%	0.00%	0.00%	0.00%
2.50 to <10.00	0	0	0.00%	0.00%	0.00%	0.00%
2.5 to <5	0	0	0.00%	0.00%	0.00%	0.00%
5 to <10	0	0	0.00%	0.00%	0.00%	0.00%
10.00 to <100.00	0	0	0.00%	0.00%	0.00%	0.00%
10 to <20	0	0	0.00%	0.00%	0.00%	0.00%
20 to <30	0	0	0.00%	0.00%	0.00%	0.00%
30.00 to <100.00	0	0	0.00%	0.00%	0.00%	0.00%
100.00 (Default)	0	0	N/M	0.00%	0.00%	N/M
Sub-total	0	0	0.00%	0.00%	0.00%	0.00%
Other						
0.00 to <0.15	982	0	0.00%	0.10%	0.10%	0.07%
0.00 to <0.10	450	0	0.00%	0.07%	0.07%	0.07%
0.10 to <0.15	532	0	0.00%	0.16%	0.13%	0.04%
0.15 to <0.25	2,136	0	0.00%	0.25%	0.21%	0.22%
0.25 to <0.50	2,548	1	0.04%	0.41%	0.38%	0.16%
0.50 to <0.75	1,720	0	0.00%	0.72%	0.68%	0.09%
0.75 to <2.50	951	4	0.42%	1.57%	1.32%	0.64%
0.75 to <1.75	806	4	0.50%	1.30%	1.18%	0.52%
1.75 to <2.5	145	0	0.00%	2.15%	1.95%	1.17%
2.50 to <10.00	282	5	1.77%	5.66%	5.07%	2.26%
2.5 to <5	178	3	1.69%	4.10%	3.82%	1.30%
5 to <10	104	2	1.92%	8.45%	7.46%	2.67%
10.00 to <100.00	245	1	0.41%	21.52%	19.86%	1.09%
10 to <20	22	1	4.55%	14.06%	14.30%	2.58%
20 to <30	214	0	0.00%	20.15%	20.10%	0.61%
30.00 to <100.00	9	0	0.00%	33.92%	35.67%	11.11%
100.00 (Default)	163	20	N/M	100.00%	100.00%	N/M
Sub-total	9,027	31	0.34%	2.19%	2.94%	0.25%
Total	9,550	43	0.45%	2.33%	3.03%	0.29%

Advanced IRBA – Model validation results

The validation reviews conducted in 2021 for advanced IRBA rating systems triggered recalibrations as shown in the table below. None of the triggered recalibrations individually nor the impact of all recalibrations in the aggregate impacted or indicated to impact our regulatory capital requirements in a progressive way.

Validation results for risk parameters used in our advanced IRBA

						2021
		PD		LGD		EAD
	Count	EAD in %	Count	EAD in %	Count	EAD in %
Appropriate	78	87.5	105	76.5	67	92.0
Overly conservative	5	3.6	26	19.6	18	7.8
Progressive	29	8.9	24	3.9	4	0.1
Total	112	100.0	155	100.0	89	100.0
Of which already recalibrated and introduced in 2021						
Overly conservative	0	0.0	0	0.0	0	0.0
Progressive	0	0.0	0	0.0	0	0.0
Total	0	0.0	0	0.0	0	0.0

						2020
		PD		LGD		EAD
	Count	EAD in %	Count	EAD in %	Count	EAD in %
Appropriate	82	84.7	110	86.2	70	90.9
Overly conservative	8	10.6	22	10.5	14	8.4
Progressive	20	4.8	23	3.3	5	0.8
Total	110	100.0	155	100.0	89	100.0
Of which already recalibrated and introduced in 2020						
Overly conservative	0	0.0	0	0.0	0	0.0
Progressive	0	0.0	0	0.0	0	0.0
Total	0	0.0	0	0.0	0	0.0

Individual risk parameter settings are classified as appropriate if no recalibration was triggered by the validation and thus the application of the current parameter setting is continued since still sufficiently conservative. A parameter classifies as overly conservative or progressive if the validation triggers a recalibration analysis leading to a potential downward or upward change of the current setting, respectively. The breakdown for PD, LGD and EAD is presented by number of parameters as well as by the relative EAD attached to the respective parameter as of December 31, 2021 and December 31, 2020.

The validations during 2021 largely confirmed our parameter settings. Validations classified one LGD parameter with high materiality (contributing 5.5 % of EAD) as overly conservative. All other negatively validated parameters are only applied to smaller portfolios with according lower materiality. Overall, for the majority of risk parameters where a recalibration was triggered during 2021 validation, the implementation of amended parameters is already ongoing. The go-live of recalibrated parameters is aligned with the EBA IRBA Repair Programme and the according credit model overhauls to reflect new regulatory requirements with a planned completion of corresponding implementation in 2022.

The below table EU CR9 aims at providing backtesting information for probabilities of default ("PD"). It compares the PD used in the advanced IRB capital calculations with the effective obligors' default rates presented on a five year average by regulatory exposure classes. It has to be noted that the below table reflects credit risk as well as counterparty credit risk information simultaneously in line with our internal rating model validation practice where ratings are validated on a counterparty level across all exposure types. Moreover, some limitations have to be considered when comparing the below backtesting results with the above presented PD model validation results: Whilst in line with our internal procedures model validation is conducted on the level of the rating model and the model validation results provided above reflect this practice, for the below presentation by regulatory exposure classes the underlying ratings models have been assigned subsequently to the relevant regulatory exposure class. This different way of aggregation applied for the below backtesting information may result in some bias for the below backtesting results in contrast to the above model validation results.

EU CR9 IRB backtesting of PD per exposure class for Advanced IRBA

						Dec 31, 2021
a/b	c	d	e	f	g	h
	Number of obligors at the end of previous year					
Exposure class/ PD Range	Total	Of which number of obligors which defaulted in the year	Observed average default rate (%)	Exposures weighted average PD (%)	Average PD (%)	Average historical annual default rate (%)
Central governments and central banks						
0.00 to <0.15	141	0	0.00%	0.00%	0.04%	0.00%
0.00 to <0.10	130	0	0.00%	0.00%	0.03%	0.00%
0.10 to <0.15	11	0	0.00%	0.14%	0.14%	0.00%
0.15 to <0.25	24	0	0.00%	0.23%	0.22%	0.00%
0.25 to <0.50	6	0	0.00%	0.39%	0.39%	0.00%
0.50 to <0.75	23	0	0.00%	0.64%	0.64%	0.00%
0.75 to <2.50	26	0	0.00%	1.74%	1.54%	0.00%
0.75 to <1.75	9	0	0.00%	1.07%	1.08%	0.00%
1.75 to <2.5	17	0	0.00%	1.76%	1.78%	0.00%
2.50 to <10.00	24	2	8.33%	5.29%	5.31%	3.57%
2.5 to <5	16	2	12.50%	4.52%	3.99%	3.83%
5 to <10	8	0	0.00%	7.95%	7.95%	3.33%
10.00 to <100.00	6	1	16.67%	13.01%	14.50%	11.90%
10 to <20	5	1	20.00%	13.01%	13.00%	4.00%
20 to <30	1	0	0.00%	0.00%	22.00%	0.00%
30.00 to <100.00	0	0	0.00%	0.00%	0.00%	100.00%
100.00 (Default)	9	0	N/M	100.00%	100.00%	N/M
Sub-total	259	3	1.16%	0.15%	4.56%	0.67%
Institutions						
0.00 to <0.15	581	1	0.17%	0.05%	0.07%	0.03%
0.00 to <0.10	491	0	0.00%	0.05%	0.06%	0.00%
0.10 to <0.15	90	1	1.11%	0.15%	0.14%	0.22%
0.15 to <0.25	116	2	1.72%	0.24%	0.23%	0.34%
0.25 to <0.50	83	0	0.00%	0.43%	0.38%	0.16%
0.50 to <0.75	67	0	0.00%	0.69%	0.64%	0.00%
0.75 to <2.50	78	0	0.00%	1.26%	1.37%	0.31%
0.75 to <1.75	44	0	0.00%	1.16%	1.07%	0.00%
1.75 to <2.5	34	0	0.00%	1.89%	1.79%	0.71%
2.50 to <10.00	46	0	0.00%	3.35%	4.35%	0.88%
2.5 to <5	36	0	0.00%	3.34%	3.36%	1.20%
5 to <10	10	0	0.00%	8.65%	7.88%	0.00%
10.00 to <100.00	18	0	0.00%	13.85%	13.82%	3.15%
10 to <20	17	0	0.00%	13.85%	13.37%	0.00%
20 to <30	1	0	0.00%	20.00%	22.00%	5.00%
30.00 to <100.00	0	0	0.00%	0.00%	0.00%	4.55%
100.00 (Default)	8	0	N/M	100.00%	100.00%	N/M
Sub-total	997	3	0.30%	9.32%	1.50%	0.23%
Corporates						
0.00 to <0.15	23,664	15	0.06%	0.08%	0.07%	0.03%
0.00 to <0.10	18,130	7	0.04%	0.06%	0.05%	0.02%
0.10 to <0.15	5,534	8	0.14%	0.15%	0.14%	0.07%
0.15 to <0.25	5,753	7	0.12%	0.24%	0.22%	0.11%
0.25 to <0.50	6,578	12	0.18%	0.40%	0.38%	0.20%
0.50 to <0.75	5,339	15	0.28%	0.67%	0.64%	0.38%
0.75 to <2.50	7,583	61	0.80%	1.49%	1.37%	1.01%
0.75 to <1.75	5,275	33	0.63%	1.11%	1.13%	0.80%
1.75 to <2.5	2,308	28	1.21%	1.80%	1.80%	1.34%
2.50 to <10.00	4,278	91	2.13%	5.62%	5.09%	2.49%
2.5 to <5	3,111	54	1.74%	4.00%	3.49%	2.15%
5 to <10	1,167	37	3.17%	8.05%	6.78%	3.77%
10.00 to <100.00	827	62	7.50%	21.22%	18.59%	8.76%
10 to <20	444	35	7.88%	13.41%	12.55%	8.05%
20 to <30	201	10	4.98%	22.53%	18.84%	7.68%
30.00 to <100.00	182	17	9.34%	67.20%	29.84%	11.71%
100.00 (Default)	1,748	34	N/M	100.00%	100.00%	0.00%
Sub-total	55,770	297	0.53%	6.41%	4.21%	0.53%

						Dec 31, 2021
a/b	c	d	e	f	g	h
	Number of obligors at the end of previous year					
Exposure class/ PD Range	Total	Of which number of obligors which defaulted in the year	Observed average default rate (%)	Exposures weighted average PD (%)	Average PD (%)	Average historical annual default rate (%)
of which:						
SMEs						
0.00 to <0.15	5,900	3	0.05%	0.10%	0.09%	0.03%
0.00 to <0.10	3,533	1	0.03%	0.07%	0.06%	0.02%
0.10 to <0.15	2,367	2	0.08%	0.16%	0.13%	0.06%
0.15 to <0.25	2,371	1	0.04%	0.25%	0.22%	0.10%
0.25 to <0.50	3,077	7	0.23%	0.42%	0.37%	0.21%
0.50 to <0.75	2,362	5	0.21%	0.70%	0.64%	0.40%
0.75 to <2.50	3,465	30	0.87%	1.62%	1.34%	1.14%
0.75 to <1.75	2,803	21	0.75%	1.20%	1.22%	0.88%
1.75 to <2.5	662	9	1.36%	1.87%	1.88%	1.54%
2.50 to <10.00	1,805	42	2.33%	5.38%	4.44%	3.01%
2.5 to <5	1,355	26	1.92%	3.75%	3.51%	2.60%
5 to <10	450	16	3.56%	8.30%	7.24%	4.82%
10.00 to <100.00	317	30	9.46%	19.41%	20.86%	9.73%
10 to <20	150	11	7.33%	13.81%	13.60%	8.18%
20 to <30	95	5	5.26%	21.74%	22.74%	7.81%
30.00 to <100.00	72	14	19.44%	32.65%	33.74%	15.78%
100.00 (Default)	303	10	N/M	100.00%	100.00%	N/M
Sub-total	19,600	128	0.65%	10.11%	2.72%	0.67%
Specialized lending						
0.00 to <0.15	94	0	0.00%	0.10%	0.10%	0.00%
0.00 to <0.10	50	0	0.00%	0.08%	0.07%	0.00%
0.10 to <0.15	44	0	0.00%	0.14%	0.13%	0.00%
0.15 to <0.25	114	0	0.00%	0.23%	0.21%	0.00%
0.25 to <0.50	106	1	0.94%	0.39%	0.38%	0.19%
0.50 to <0.75	101	0	0.00%	0.66%	0.66%	0.49%
0.75 to <2.50	198	3	1.52%	1.42%	1.41%	1.01%
0.75 to <1.75	112	1	0.89%	1.10%	1.11%	0.77%
1.75 to <2.5	86	2	2.33%	1.79%	1.81%	1.23%
2.50 to <10.00	406	10	2.46%	6.35%	5.10%	2.07%
2.5 to <5	271	5	1.85%	4.17%	3.70%	1.55%
5 to <10	135	5	3.70%	7.94%	7.91%	3.29%
10.00 to <100.00	88	5	5.68%	16.25%	16.27%	6.83%
10 to <20	61	4	6.56%	13.00%	13.00%	7.16%
20 to <30	22	1	4.55%	22.01%	22.00%	5.48%
30.00 to <100.00	5	0	0.00%	57.63%	31.00%	9.25%
100.00 (Default)	184	1	N/M	100.00%	100.00%	N/M
Sub-total	1,291	20	1.55%	9.86%	17.29%	2.27%
Other						
0.00 to <0.15	17,729	12	0.07%	0.08%	0.06%	0.03%
0.00 to <0.10	14,588	6	0.04%	0.06%	0.05%	0.02%
0.10 to <0.15	3,141	6	0.19%	0.15%	0.14%	0.08%
0.15 to <0.25	3,289	6	0.18%	0.24%	0.22%	0.12%
0.25 to <0.50	3,413	4	0.12%	0.41%	0.38%	0.18%
0.50 to <0.75	2,889	10	0.35%	0.67%	0.64%	0.36%
0.75 to <2.50	3,929	28	0.71%	1.50%	1.36%	0.94%
0.75 to <1.75	2,364	11	0.47%	1.10%	1.08%	0.74%
1.75 to <2.5	1,565	17	1.09%	1.80%	1.79%	1.24%
2.50 to <10.00	2,077	39	1.88%	5.22%	4.88%	2.20%
2.5 to <5	1,494	23	1.54%	3.96%	3.75%	1.90%
5 to <10	583	16	2.74%	8.16%	7.75%	3.35%
10.00 to <100.00	423	27	6.38%	24.39%	19.43%	8.68%
10 to <20	234	20	8.55%	13.66%	13.21%	8.18%
20 to <30	84	4	4.76%	22.87%	22.35%	8.97%
30.00 to <100.00	105	3	2.86%	76.52%	31.95%	9.36%
100.00 (Default)	1,263	23	N/M	98.09%	100.00%	N/M
Sub-total	35,012	149	0.43%	5.43%	4.43%	0.41%

						Dec 31, 2021
a/b	c	d	e	f	g	h
	Number of obligors at the end of previous year					
Exposure class/ PD Range	Total	Of which number of obligors which defaulted in the year	Observed average default rate (%)	Exposures weighted average PD (%)	Average PD (%)	Average historical annual default rate (%)
Retail						
0.00 to <0.15	2,487,631	1,881	0.08%	0.11%	0.07%	0.03%
0.00 to <0.10	2,057,021	1,361	0.07%	0.08%	0.06%	0.02%
0.10 to <0.15	430,610	520	0.12%	0.15%	0.12%	0.06%
0.15 to <0.25	1,034,721	1,967	0.19%	0.25%	0.19%	0.09%
0.25 to <0.50	983,798	3,302	0.34%	0.41%	0.36%	0.21%
0.50 to <0.75	708,769	3,988	0.56%	0.73%	0.68%	0.36%
0.75 to <2.50	1,356,137	15,596	1.15%	0.69%	1.53%	0.84%
0.75 to <1.75	701,876	6,468	0.92%	1.27%	1.17%	0.64%
1.75 to <2.5	654,261	9,128	1.40%	2.06%	1.95%	1.08%
2.50 to <10.00	767,093	30,237	3.94%	4.95%	4.54%	2.93%
2.5 to <5	501,507	14,594	2.91%	3.92%	3.42%	2.44%
5 to <10	265,586	15,643	5.89%	8.02%	6.64%	4.28%
10.00 to <100.00	162,372	45,105	27.78%	21.26%	20.75%	18.67%
10 to <20	71,802	10,960	15.26%	13.98%	14.15%	12.08%
20 to <30	56,192	18,335	32.63%	22.66%	21.93%	17.96%
30.00 to <100.00	34,378	15,810	45.99%	39.25%	35.24%	35.76%
100.00 (Default)	152,211	9,241	N/M	100.00%	100.00%	0.00%
Sub-total	7,652,732	111,317	1.45%	2.78%	3.25%	1.06%
of which:						
Secured by real estate property - SME						
0.00 to <0.15	6,624	6	0.09%	0.12%	0.12%	0.05%
0.00 to <0.10	2,620	2	0.08%	0.08%	0.08%	0.07%
0.10 to <0.15	4,004	4	0.10%	0.14%	0.14%	0.04%
0.15 to <0.25	7,532	11	0.15%	0.23%	0.22%	0.09%
0.25 to <0.50	8,781	8	0.09%	0.40%	0.38%	0.11%
0.50 to <0.75	6,372	13	0.20%	0.66%	0.64%	0.17%
0.75 to <2.50	7,599	34	0.45%	1.41%	1.34%	0.46%
0.75 to <1.75	4,808	12	0.25%	1.11%	1.09%	0.38%
1.75 to <2.5	2,791	22	0.79%	1.85%	1.79%	0.59%
2.50 to <10.00	3,020	67	2.22%	4.35%	4.39%	1.89%
2.5 to <5	2,383	38	1.59%	3.69%	3.57%	1.45%
5 to <10	637	29	4.55%	8.17%	7.48%	3.83%
10.00 to <100.00	554	106	19.13%	20.26%	20.03%	14.96%
10 to <20	280	30	10.71%	13.58%	13.21%	6.86%
20 to <30	124	21	16.94%	22.95%	22.26%	13.33%
30.00 to <100.00	150	55	36.67%	33.34%	31.44%	32.71%
100.00 (Default)	312	18	N/M	100.00%	100.00%	N/M
Sub-total	40,794	263	0.64%	2.04%	1.86%	0.65%
Secured by real estate property - Non-SME						
0.00 to <0.15	174,979	190	0.11%	0.12%	0.08%	0.07%
0.00 to <0.10	127,798	96	0.08%	0.09%	0.07%	0.04%
0.10 to <0.15	47,181	94	0.20%	0.15%	0.12%	0.10%
0.15 to <0.25	211,986	499	0.24%	0.25%	0.20%	0.11%
0.25 to <0.50	319,428	830	0.26%	0.41%	0.37%	0.17%
0.50 to <0.75	229,169	872	0.38%	0.73%	0.69%	0.25%
0.75 to <2.50	205,347	1,594	0.78%	0.35%	1.47%	0.47%
0.75 to <1.75	132,035	745	0.56%	1.28%	1.18%	0.37%
1.75 to <2.5	73,312	849	1.16%	2.10%	1.98%	0.63%
2.50 to <10.00	80,361	2,384	2.97%	4.98%	4.58%	1.55%
2.5 to <5	55,809	1,287	2.31%	3.92%	3.57%	1.27%
5 to <10	24,552	1,097	4.47%	7.95%	6.89%	2.28%
10.00 to <100.00	14,981	2,784	18.58%	21.56%	21.52%	12.64%
10 to <20	6,144	566	9.21%	13.95%	13.72%	8.37%
20 to <30	5,453	952	17.46%	22.72%	21.38%	12.80%
30.00 to <100.00	3,384	1,266	37.41%	40.02%	37.33%	28.23%
100.00 (Default)	14,069	1,316	N/M	100.00%	100.00%	N/M
Sub-total	1,250,320	10,469	0.84%	1.66%	2.18%	0.59%
Qualifying revolving						
0.00 to <0.15	2,086,169	1,582	0.08%	0.08%	0.07%	0.02%

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a/b	c	d	e	f	g	h
	Number of obligors at the end of previous year					
Exposure class/ PD Range	Total	Of which number of obligors which defaulted in the year	Observed average default rate (%)	Exposures weighted average PD (%)	Average PD (%)	Average historical annual default rate (%)
0.00 to <0.10	1,777,059	1,199	0.07%	0.07%	0.06%	0.02%
0.10 to <0.15	309,110	383	0.12%	0.16%	0.11%	0.04%
0.15 to <0.25	686,899	1,243	0.18%	0.25%	0.18%	0.06%
0.25 to <0.50	426,601	1,651	0.39%	0.42%	0.35%	0.15%
0.50 to <0.75	262,185	2,098	0.80%	0.74%	0.68%	0.28%
0.75 to <2.50	313,191	5,694	1.82%	1.62%	1.46%	0.70%
0.75 to <1.75	188,322	2,797	1.49%	1.28%	1.17%	0.55%
1.75 to <2.5	124,869	2,897	2.32%	2.13%	1.97%	0.92%
2.50 to <10.00	184,235	10,379	5.63%	5.36%	4.76%	2.53%
2.5 to <5	111,835	4,751	4.25%	4.07%	3.48%	2.13%
5 to <10	72,400	5,628	7.77%	8.07%	6.77%	3.43%
10.00 to <100.00	42,803	11,654	27.23%	21.48%	19.09%	12.08%
10 to <20	25,152	5,276	20.98%	14.05%	14.00%	7.65%
20 to <30	9,168	2,117	23.09%	22.45%	22.22%	11.36%
30.00 to <100.00	8,483	4,261	50.23%	39.04%	34.87%	24.86%
100.00 (Default)	37,093	2,483	N/M	100.00%	100.00%	N/M
Sub-total	4,039,176	36,784	0.91%	3.02%	1.60%	0.39%
Other - SME						
0.00 to <0.15	33,048	12	0.04%	0.11%	0.11%	0.04%
0.00 to <0.10	11,685	7	0.06%	0.09%	0.08%	0.03%
0.10 to <0.15	21,363	5	0.02%	0.14%	0.13%	0.04%
0.15 to <0.25	34,576	37	0.11%	0.24%	0.22%	0.07%
0.25 to <0.50	35,507	49	0.14%	0.40%	0.38%	0.12%
0.50 to <0.75	22,728	69	0.30%	0.67%	0.67%	0.28%
0.75 to <2.50	24,892	191	0.77%	1.44%	1.41%	0.82%
0.75 to <1.75	15,818	95	0.60%	1.11%	1.15%	0.64%
1.75 to <2.5	9,074	96	1.06%	1.82%	1.86%	1.09%
2.50 to <10.00	13,820	384	2.78%	4.48%	4.87%	2.61%
2.5 to <5	8,556	191	2.23%	3.73%	3.51%	2.22%
5 to <10	5,264	193	3.67%	8.14%	7.07%	3.71%
10.00 to <100.00	4,576	946	20.67%	19.79%	22.27%	16.18%
10 to <20	1,956	190	9.71%	13.46%	13.58%	7.70%
20 to <30	1,115	196	17.58%	21.01%	22.68%	14.46%
30.00 to <100.00	1,505	560	37.21%	31.40%	34.41%	32.63%
100.00 (Default)	3,288	114	N/M	100.00%	100.00%	N/M
Sub-total	172,435	1,802	1.05%	6.01%	3.32%	0.82%
Other - Non-SME						
0.00 to <0.15	333,264	200	0.06%	0.10%	0.08%	0.05%
0.00 to <0.10	263,144	126	0.05%	0.08%	0.07%	0.03%
0.10 to <0.15	70,120	74	0.11%	0.15%	0.13%	0.09%
0.15 to <0.25	179,934	325	0.18%	0.25%	0.19%	0.17%
0.25 to <0.50	353,560	1,207	0.34%	0.42%	0.36%	0.32%
0.50 to <0.75	281,612	1,515	0.54%	0.72%	0.69%	0.51%
0.75 to <2.50	939,232	10,213	1.09%	1.68%	1.58%	1.00%
0.75 to <1.75	446,472	3,934	0.88%	1.24%	1.17%	0.77%
1.75 to <2.5	492,760	6,279	1.27%	2.03%	1.95%	1.23%
2.50 to <10.00	555,084	21,008	3.78%	4.97%	4.46%	3.40%
2.5 to <5	365,710	10,171	2.78%	3.94%	3.38%	2.80%
5 to <10	189,374	10,837	5.72%	8.08%	6.54%	5.46%
10.00 to <100.00	118,431	36,726	31.01%	2.08%	21.19%	22.31%
10 to <20	49,880	8,196	16.43%	14.07%	14.31%	15.11%
20 to <30	43,165	16,101	37.30%	22.80%	21.92%	20.45%
30.00 to <100.00	25,386	12,429	48.96%	38.63%	35.16%	41.90%
100.00 (Default)	105,233	5,846	N/M	100.00%	100.00%	N/M
Sub-total	2,866,350	77,040	2.69%	8.27%	6.06%	2.03%
Total	7,707,796	111,612	1.45%	3.97%	3.26%	1%

The vast majority of our exposures facing non-sovereign counterparties (institutions, corporates and retail) is calculated based on the IRB (above 90 % coverage within internal models). The total number of obligors with short-term contracts at the disclosure date for foundation and advanced approach is 7.8 million with the majority of customers in the exposure class “retail - qualifying revolving and other retail non-SMEs”.

Specialized lending and equity exposures in the banking book (Article 438 (e) CRR)

The table below summarizes our foundation approach exposure for specialized lending under the slotting approach where we treat a former Postbank portfolio assigned to the category “income-producing real estate and high volatility commercial real estate”. The Group does not treat any further exposures under the slotting approach. Consequently, we do not disclose tables for “Project finance”, “Object finance” and “Commodities finance”. For the calculation of minimum capital requirements regulatory risk weights are applied where potential risk mitigating factors are already considered in the assignment of a risk weight to a specific structure. The table presents the on- and off-balance-sheet exposures, the EAD and RWA as well as the associated expected losses.

EU CR10.02 – Specialized lending: Income-producing real estate and high volatility commercial real estate (Slotting approach)

in € m.
(unless stated otherwise)

		Dec 31, 2021					
Regulatory categories	Remaining maturity	On-balance sheet amount	Off-balance sheet amount	Risk weight	Exposure amount	RWA	Expected losses
Category 1	Less than 2.5 years	97	99	50 %	172	86	0
	Equal to or more than 2.5 years	833	13	70 %	843	590	3
Category 2	Less than 2.5 years	20	0	70 %	20	14	0
	Equal to or more than 2.5 years	28	0	90 %	28	25	0
Category 3	Less than 2.5 years	4	0	115 %	4	4	0
	Equal to or more than 2.5 years	0	0	115 %	0	0	0
Category 4	Less than 2.5 years	1	26	250 %	20	51	2
	Equal to or more than 2.5 years	1	2	250 %	2	5	0
Category 5	Less than 2.5 years	0	0	–	0	0	0
	Equal to or more than 2.5 years	15	0	–	15	0	10
Total	Less than 2.5 years	122	125	–	216	155	2
	Equal to or more than 2.5 years	877	15	–	888	620	14

in € m.
(unless stated otherwise)

		Jun 30, 2021					
Regulatory categories	Remaining maturity	On-balance sheet amount	Off-balance sheet amount	Risk weight	Exposure amount	RWA	Expected losses
Category 1	Less than 2.5 years	77	31	50 %	100	50	0
	Equal to or more than 2.5 years	1,090	101	70 %	1,165	816	5
Category 2	Less than 2.5 years	59	18	70 %	72	51	0
	Equal to or more than 2.5 years	82	2	90 %	83	75	1
Category 3	Less than 2.5 years	5	0	115 %	5	6	0
	Equal to or more than 2.5 years	25	0	115 %	25	29	1
Category 4	Less than 2.5 years	1	26	250 %	21	51	2
	Equal to or more than 2.5 years	15	2	250 %	17	42	1
Category 5	Less than 2.5 years	0	0	–	0	0	0
	Equal to or more than 2.5 years	26	0	–	26	0	14
Total	Less than 2.5 years	142	75	–	198	158	2
	Equal to or more than 2.5 years	1,239	106	–	1,317	962	21

Our RWA for specialized lending under the slotting approach stands at € 0.6 billion as of December 31, 2021 in comparison to € 1.0 billion for the prior period. The decrease of € 0.4 billion is predominantly driven by a reduction exposures in category 1 with a remaining maturity “Equal to or more than 2.5 years”.

As part of our advanced IRBA we use supervisory defined risk weights according to the simple risk weight approach for our equity positions. The table below presents the on- and off-balance-sheet exposures, the EAD, RWA and capital requirements for the categories of equity exposures as set out in Article 155 (2) CRR. For all of these positions no credit risk mitigation techniques have been applied.

EU CR10.05 – Equity exposures under the simple risk-weighted approach

in € m.
(unless stated otherwise)

Categories	On-balance sheet amount	Off-balance sheet amount	Risk weight	Exposure amount	RWA	Capital requirements
						Dec 31, 2021
Private equity exposures sufficiently diversified	594	0	190 %	594	1,129	5
Exchange-traded equity exposures	606	1,716	290 %	2,323	6,736	14
All other equity exposures	1,506	28	370 %	1,533	5,674	37
Total	2,707	1,744	–	4,450	13,539	55

in € m.
(unless stated otherwise)

Categories	On-balance sheet amount	Off-balance sheet amount	Risk weight	Exposure amount	RWA	Capital requirements
						Jun 30, 2021
Private equity exposures sufficiently diversified	905	0	190 %	905	1,719	7
Exchange-traded equity exposures	307	1,091	290 %	1,398	4,053	11
All other equity exposures	1,342	26	370 %	1,368	5,062	33
Total	2,553	1,117	–	3,670	10,834	51

Our RWA for equity exposures under the simple risk-weighted approach were at € 13.5 billion as of December 31, 2021 in comparison to € 10.8 billion for the prior period. The increase of € 2.7 billion is predominantly driven by exchange-traded equity exposures.

Counterparty credit risk (CCR)

Internal capital and credit limits for counterparty credit risk exposures (Article 439 (a) CRR) (EU CCRA)

Counterparty credit exposure (CCR) arises from our business activities in derivatives and securities financing transactions (SFT), it is the risk that the counterparty to a transaction may default before completing the satisfactory settlement of the transaction. We calculate the exposure to CCR using the internal model method (IMM) and the new standardized approach for counterparty credit risk (SA-CCR) for derivatives and the financial collateral comprehensive method for SFT respectively.

As the replacement values of derivatives portfolios fluctuate with movements in market rates and with changes in the transactions in the portfolios, we estimate the potential future replacement costs of the portfolios over their lifetimes or, in case of collateralized portfolios, over appropriate unwind periods. We measure the potential future exposure against a limit set for the counterparty for this type of transactions.

Limits for CCR exposures are established on the basis of the principles for assigning credit limits as described in the sections "General qualitative information on credit risk (Article 435 (1)(a d) CRR) (EU OVA & EU CRA)" and “General qualitative information on credit risk mitigation (Article 453 (a-e) CRR) (EU CRC)”. For the purpose of limit setting, CCR exposures are also considered in the context of the overall credit exposure to the obligor and the group of borrowers under the one obligor principle.

We supplement the potential future exposure analysis with stress tests to estimate the immediate impact of extreme market events on our exposures (such as event risk in our Emerging Markets portfolio).

For the majority of derivative counterparty exposures as well as for SFT (excluding former Postbank, now part of DB AG, exposures), we make use of the internal model method in accordance with Article 283 et seq. CRR. In this respect SFT encompass repurchase transactions, securities or commodities lending and borrowing as well as margin lending transactions (including prime brokerage). By applying this approach, we build our EAD calculations on a Monte Carlo simulation of the transactions’ future market values. Within this simulation process, interest and foreign exchange rates, credit spreads, equity and commodity prices are modeled by stochastic processes and each derivative and securities financing transaction is revalued at each point of a pre-defined time grid. As a result of this process, a distribution of future market values for each transaction at each time grid point is generated. From these distributions, by considering the appropriate netting and collateral agreements, we derive the exposure measures potential future exposure (PFE), average expected exposure (AEE), expected positive exposure (EPE) and effective expected positive exposure (EEPE).

The potential future exposure measure which we use is generally given by a time profile of simulated positive market values of each counterparty’s derivatives portfolio, for which netting and collateralization are considered. For limit monitoring we employ the 95th quantile of the resulting distribution of market values, internally referred to as potential future exposure. The average exposure profiles generated by the same calculation process are used to derive the so-called average expected exposure measure, which we use to reflect expected future replacement costs within our credit risk economic capital, and the expected positive exposure measure driving our regulatory capital requirements. While AEE and EPE are generally calculated with respect to a time horizon of one year, the PFE is measured over the entire lifetime of a transaction or netting set for uncollateralized portfolios and over an appropriate unwind period for collateralized portfolios, respectively. We also employ the aforementioned calculation process to derive stressed exposure results for input into our credit portfolio stress testing.

The PFE profile of each counterparty is compared daily to the PFE limit profile set by the respective credit officer. PFE limits are an integral part of the overall counterparty credit exposure management in line with other limit types. Breaches of PFE limits at any one profile time point are highlighted for action within our credit risk management process. The EPE is an input to the Pillar 1 capital requirement (Risk Weighted Assets), whereas AEE feeds as a loan equivalent into the Group’s credit portfolio model (Economic Capital, applied under Pillar 2) where it is combined with all other credit exposure to a counterparty.

Collateral and credit reserves for counterparty credit risk (Article 439 (b) CRR) (EU CCRA)

In order to reduce the credit risk resulting from OTC derivative transactions, where CCP clearing is not available, we regularly seek the execution of standard master agreements (such as master agreements for derivatives published by the International

Swaps and Derivatives Association, Inc. (ISDA) or the German Master Agreement for Financial Derivative Transactions) with our counterparties. A master agreement allows for the close-out netting of rights and obligations arising under derivative transactions that have been entered into under such a master agreement upon the counterparty's default, resulting in a single net claim owed by or to the counterparty. For certain parts of the derivatives business (e.g., foreign exchange transactions), we also enter into master agreements under which payment netting applies with respect to transactions covered by such master agreements, reducing our settlement risk. In our risk measurement and risk assessment processes we apply close-out netting only to the extent we believe that the master agreement is legally valid and enforceable in all relevant jurisdictions.

ISDA Master Agreements are generally accompanied by credit support annexes (CSAs) to master agreements in order to further reduce our derivatives-related credit risk. These annexes generally provide risk mitigation through periodic, usually daily, margining of the covered exposure. The CSAs also provide for the right to terminate the related derivative transactions upon the counterparty's failure to honor a margin call. As with netting, when we believe the annex is enforceable, we reflect this in our exposure measurement.

We also establish counterparty Credit Valuation Adjustments (CVA) for OTC derivative transactions to cover expected credit losses. The adjustment amount is determined by assessing the potential credit exposure to a given counterparty and taking into account any collateral held, the effect of any relevant netting arrangements, expected loss given default and the credit risk, based on available market information, including CDS spreads.

Management of wrong-way risk exposures (Article 439 (c) CRR) (EU CCRA)

Wrong-way risk occurs when exposure to a counterparty is adversely correlated with the credit quality of that counterparty. In compliance with Article 291(2) and (4) CRR we have a monthly process to monitor several layers of wrong-way risk (specific wrong-way risk, general explicit wrong-way risk at country/industry/region levels and general implicit wrong-way risk, whereby relevant exposures arising from transactions subject to wrong-way risk are automatically selected and presented for comment to the responsible credit officer). A wrong-way risk report is then sent to Credit Risk senior management on a monthly basis. In addition, we utilized our established process for calibrating our own alpha factor (as defined in Article 284 (9) CRR) to estimate the overall wrong-way risk in our derivatives and securities financing transactions portfolio. The Private Bank Germany's derivative counterparty risk is immaterial to the Group and collateral held is typically in the form of cash.

Collateral in the event of a rating downgrade (Article 439 (d) CRR) (EU CCRA)

Certain CSAs to master agreements provide for rating-dependent triggers, where additional collateral must be pledged if a party's rating is downgraded. We also enter into master agreements that provide for an additional termination event upon a party's rating downgrade. These downgrade provisions in CSAs and master agreements usually apply to both parties but in some agreements may apply to us only. We analyze and monitor our potential contingent payment obligations resulting from a rating downgrade in our stress testing and liquidity coverage ratio approach for liquidity risk on an ongoing basis.

The following table presents the amount needed to meet collateral requirements from contractual obligations in the event of a one- or two-notch downgrade by rating agencies for all currencies.

Contractual Obligations

	Dec 31, 2021		Dec 31, 2020	
in €	One-notch downgrade	Two-notch downgrade	One-notch downgrade	Two-notch downgrade
Contractual derivatives funding or margin requirements	205	294	354	439
Other contractual funding or margin requirements	0	0	0	0

Estimate of alpha factor (Article 439 (k) CRR)

Under the internal model method (IMM) approach the exposure at default (EAD) is calculated as the product of the expected
ers
correlations between parties, concentration risk and to account for the level of volatility/correlation that might coincide with a downturn. Deutsche Bank received regulatory approval to use its own calibrated alpha factor, however, for its regulatory capital

calculation the regulatory minimum level has to be applied. In 2020, the regulatory floor has been increased from 1.2 to 1.25. For the small population of transactions for which a simulation cannot be computed or is subject to regulatory restrictions (such as for those with risk factors not approved by the supervisory authorities or for specific wrong-way risk), the EAD used is derived from the new Standardized Approach for Counterparty Credit Risk (SA-CCR) according to Article 274 CRR.

CCR exposures by model approach and development (Article 439 (f, g, k) CRR)

The following table shows the methods used for calculating the regulatory requirements for CCR exposure including the main parameters for each method. Exposures relevant for credit valuation adjustment (CVA) charges and exposures cleared through a central counterparty (CCP) are presented separately in table EU CCR2 and EU CCR8, respectively. Deutsche Bank does not make use of the original exposure method for derivatives nor the financial collateral simple method for SFTs. The Group also uses the new standardized approach for counterparty credit risk (SA-CCR) to calculate the exposure at default for derivatives and SFTs. This approach still consists of a replacement cost and a potential future exposure but also considers a multiplier, differentiate between margined and non-margined trades and recognizes netting and hedging benefits as well as collateralization. Under the internal model method (IMM) only the effective expected positive exposure (EEPE) and the exposure at default are presented. For the calculation of our CCR RWA we always consider the higher of the stressed EEPE and the unstressed EEPE. Given the nature of the internal model the simulation process of future market values across all asset classes also includes the impact from regulatory netting and collateralization.

EU CCR1 – Analysis of CCR exposure by approach

									Dec 31, 2021
		a	b	c	d	e	f	g	h
	in € m. (unless stated otherwise)	Replacement cost (RC)	Potential future exposure (PFE)	EEPE	Alpha used for computing regulatory exposure value	Exposure value pre-CRM	Exposure value post-CRM	Exposure value	RWA
EU1	EU - Original Exposure Method (for derivatives)	0	0	–	1.4	0	0	0	0
EU2	EU - Simplified SA-CCR (for derivatives)	0	0	–	1.4	0	0	0	0
1	SA-CCR (for derivatives)	1,764	2,870	–	1.4	10,483	6,550	6,550	2,217
2	IMM (for derivatives and SFTs)	–	–	56,239	1.25	497,704	70,567	70,299	19,957
	of which:								
2a	Securities financing transactions netting sets	–	–	21,310	–	392,742	26,638	26,638	2,010
2b	Derivatives and long settlement transactions netting sets	–	–	34,929	–	104,962	43,930	43,661	17,947
2c	from Contractual cross-product netting sets	–	–	0	–	0	0	0	0
3	Financial collateral simple method (for SFTs)	–	–	–	–	0	0	0	0
4	Financial collateral comprehensive method (for SFTs)	–	–	–	–	84,247	23,659	19,820	2,047
5	VaR for SFTs	–	–	–	–	0	0	0	0
6	Total	–	–	–	–	592,434	100,776	96,669	24,221

									Jun 30, 2021
		a	b	c	d	e	f	g	h
	in € m. (unless stated otherwise)	Replacement cost (RC)	Potential future exposure (PFE)	EEPE	Alpha used for computing regulatory exposure value	Exposure value pre-CRM	Exposure value post-CRM	Exposure value	RWA
EU1	EU - Original Exposure Method (for derivatives)	0	0	–	1.4	0	0	0	0
EU2	EU - Simplified SA-CCR (for derivatives)	0	0	–	1.4	0	0	0	0
1	SA-CCR (for derivatives)	2,240[1]	3,417[1]	–	1.4	12,113	8,295	8,295	3,168
2	IMM (for derivatives and SFTs)	–	–	61,056	1.25	551,017	76,605	76,320	20,651
	of which:								
2a	Securities financing transactions netting sets	–	–	30,145	–	453,251	37,681	37,681	2,670
2b	Derivatives and long settlement transactions netting sets	–	–	30,911	–	97,766	38,924	38,639	17,981
2c	from Contractual cross-product netting sets	–	–	0	–	0	0	0	0
3	Financial collateral simple method (for SFTs)	–	–	–	–	0	0	0	0
4	Financial collateral comprehensive method (for SFTs)	–	–	–	–	31,408	17,557	17,557	1,821
5	VaR for SFTs	–	–	–	–	0	0	0	0
6	Total	–	–	–	–	594,537	102,458	102,173	25,640

[1] Replacement cost (RC) and Potential future exposure (PFE) under SA-CCR for June 30, 2021 have been updated.

The size of our on- and off-balance-sheet derivative business is at € 681.6 billion as of December 31, 2021, which makes around 50 % of our total assets.

Our CRR RWA stands at € 24.2 billion as of December 31, 2021 reflecting a decrease of € 1.4 billion from June 30, 2021. The decrease is predominantly driven by reduced RWA under SA-CCR for derivatives and IMM for securities financing transactions.

CCR exposures development (Article 438 (h) CRR)

The following table provides an analysis of key drivers for RWA movements observed for counterparty credit risk (CCR) exposures calculated under the internal model method (IMM) in the current and previous reporting period.

EU CCR7 – RWA flow statement of counterparty credit risk exposures under the internal model method

		Three months ended Dec 31, 2021	Three months ended Sep 30, 2021
		a	a
	in € m.	RWA	RWA
1	Counterparty credit risk RWA under the IMM opening balance	**19,894**	20,758
2	Asset size	177	(1,241)
3	Credit quality of counterparties	(155)	63
4	Model updates (IMM only)	0	125
5	Methodology and policy (IMM only)	0	0
6	Acquisitions and disposals	0	0
7	Foreign exchange movements	255	188
8	Other	0	0
9	Counterparty credit risk RWA under the IMM closing balance	**20,171**	19,894

Organic changes in our portfolio size and composition are considered in the category “asset size”. The category “credit quality of counterparties” represents the effects from portfolio rating migrations, loss given default, model parameter recalibrations as well as collateral coverage and netting activities. “Model updates (IMM only)” include model refinements and further roll out of our advanced internal models. RWA movements resulting from externally, regulatory-driven changes, e.g. applying new regulations, are considered in the “methodology and policy (IMM only)” section. “Acquisition and disposals” shows significant exposure movements which can be clearly assigned to acquisition or disposal related activities. Changes that cannot be attributed to the above categories are reflected in the category “other”.

The RWA for counterparty credit risk exposures under the IMM increased by 1.4 % or € 0.3 billion since September 30, 2021. The increase in category "Asset size" reflects current market volatility, partly offset by reduced IMM exposure and termination of trades within the Capital Release Unit. Moreover, increases result from FX related counterparty credit risk RWA movements. This is partly offset by the decrease in the category "Credit quality of counterparties" which reflects improvements of counterparty ratings.

CCR CVA capital charge (Article 439 (h) CRR)

The table below EU CCR2 provides a breakdown of the credit valuation adjustment (CVA) RWA into advanced and standardized approaches. Furthermore the incremental contributions from the VaR and stressed VaR components are highlighted. We calculate the majority of the CVA based on our own internal model as approved by the competent supervisory authority, which is consistent with the movement in the advanced method, driving the reported CVA RWA of € 6.2 billion (98 %), whilst the standardized method covers only € 124 million (2 %) of the total CVA RWA. The stressed VaR component is the main driver of advanced CVA RWA, which results from the stressed period volatilities considered. The overall increase was primarily driven by changes in the risk profile of the portfolio inclusive of risk mitigating hedges, complemented by enhancements in the risk representation affecting the CVA RWA calculation.

EU CCR2 – CVA capital charge

		Dec 31, 2021		Jun 30, 2021	
		a	b	a	b
	in € m.	Exposure value	RWA	Exposure value	RWA
1	Total portfolios subject to the Advanced Method	56,373	6,204	60,042	5,864
2	(i) VaR component (including the 3× multiplier)	0	696	0	678
3	(ii) Stressed VaR component (including the 3× multiplier)	0	5,508	0	5,185
4	Transactions subject to the Standardised method	504	124	636	168
EU4	Transactions subject to the Alternative approach (Based on the Original Exposure Method)	0	0	0	0
5	Total transactions subject to own funds requirements for CVA risk	**56,877**	**6,327**	60,678	6,031

CCR exposures to central counterparties (Article 439 (i) CRR)

The table below presents an overview of our exposures and capital requirements to central counterparties arising from transactions, margins and contributions to default funds. As of December 31, 2021 we mainly report exposures to qualifying central counterparties (QCCP) as defined in Article 4 (88) CRR.

EU CCR8 – Exposures to CCPs

		Dec 31, 2021		Jun 30, 2021	
		a	b	a	b
	in € m.	Exposure value	RWA	Exposure value	RWA
1	Exposures to QCCPs (total)	-	737	-	596
2	Exposures for trades at QCCPs (excluding initial margin and default fund contributions)	12,357	247	4,841	97
	of which:				
3	(i) OTC derivatives	1,723	34	2,362	47
4	(ii) Exchange-traded derivatives	1,653	33	1,178	24
5	(iii) Securities financing transactions	8,981	180	1,300	26
6	(iv) Netting sets where cross-product netting has been approved	0	0	0	0
7	Segregated initial margin	5,220	-	3,978	-
8	Non-segregated initial margin	2,021	40	2,188	44
9	Pre-funded default fund contributions	1,615	449	1,633	455
10	Unfunded default fund contributions	0	0	0	0
11	Exposures to non-QCCPs (total)	-	0	-	0
12	Exposures for trades at non-QCCPs (excluding initial margin and default fund contributions)	0	0	17	0
	of which:				
13	(i) OTC derivatives	0	0	0	0
14	(ii) Exchange-traded derivatives	0	0	0	0
15	(iii) Securities financing transactions	0	0	17	0
16	(iv) Netting sets where cross-product netting has been approved	0	0	0	0
17	Segregated initial margin	0	-	0	-
18	Non-segregated initial margin	0	0	0	0
19	Prefunded default fund contributions	0	0	0	0
20	Unfunded default fund contributions	0	0	0	0

CCR exposures in the standardized approach (Article 444 (e) CRR)

The following table provides the counterparty credit risk exposures in the standardized approach broken down by risk weights and regulatory exposure classes. This table excludes risk weighted exposure amounts derived from own funds requirements for CVA risk but includes exposures cleared through a CCP.

EU CCR3 – Standardized approach – CCR exposures by regulatory portfolio and risk

								Dec 31, 2021
	in € m.							Risk Weight
	Exposure classes	0%	2%	4%	10%	20%	50%	70%
1	Central governments or central banks	6,504	0	0	0	0	0	0
2	Regional governments or local authorities	1,578	0	0	0	21	0	0
3	Public sector entities	442	0	0	0	0	0	0
4	Multilateral development banks	395	0	0	0	0	0	0
5	International organizations	0	0	0	0	0	0	0
6	Institutions	21	10,509	1	0	51	9	0
7	Corporates	99	0	0	0	25	1	0
8	Retail	0	0	0	0	0	0	0
9	Institutions and corporates with a short-term credit assessment	0	0	0	0	0	0	0
10	Other items	0	0	0	0	0	0	0
11	Total	9,039	10,509	1	0	97	10	0

						Dec 31, 2021
	in € m.				Risk Weight	
	Exposure classes	75%	100%	150%	Others	Total
1	Central governments or central banks	0	0	0	0	6,504
2	Regional governments or local authorities	0	0	0	0	1,598
3	Public sector entities	0	0	0	0	442
4	Multilateral development banks	0	0	0	0	395
5	International organizations	0	0	0	0	0
6	Institutions	0	78	0	0	10,670
7	Corporates	0	1,079	0	0	1,203
8	Retail	4	0	0	0	4
9	Institutions and corporates with a short-term credit assessment	0	0	0	0	0
10	Other items	0	0	3	0	3
11	Total	4	1,157	3	0	20,820

								Jun 30, 2021
	in € m.							Risk Weight
	Exposure classes	0%	2%	4%	10%	20%	50%	70%
1	Central governments or central banks	3,974	0	0	0	0	0	0
2	Regional governments or local authorities	1,589	0	0	0	0	0	0
3	Public sector entities	271	0	0	0	0	0	0
4	Multilateral development banks	605	0	0	0	0	0	0
5	International organizations	0	0	0	0	0	0	0
6	Institutions	5	7,078	2	0	46	10	0
7	Corporates	55	17	0	0	93	0	0
8	Retail	0	0	0	0	0	0	0
9	Institutions and corporates with a short-term credit assessment	0	0	0	0	0	0	0
10	Other items	0	0	0	0	0	0	0
11	Total	6,499	7,095	2	0	139	11	0

						Jun 30, 2021
	in € m.				Risk Weight	
	Exposure classes	75%	100%	150%	Others	Total
1	Central governments or central banks	0	0	0	0	3,974
2	Regional governments or local authorities	0	0	0	0	1,589
3	Public sector entities	0	0	0	0	271
4	Multilateral development banks	0	0	0	0	605
5	International organizations	0	0	0	0	0
6	Institutions	0	0	0	0	7,141
7	Corporates	0	1,160	0	0	1,326
8	Retail	2	0	0	0	2
9	Institutions and corporates with a short-term credit assessment	0	0	0	0	0
10	Other items	0	0	8	0	8
11	Total	2	1,160	8	0	14,916

CCR exposures within the foundation IRBA (Article 452 (g) CRR)

In the following tables we show our foundation IRBA counterparty credit risk exposures, i.e. derivatives and securities financing transactions, distributed on our internal rating scale for exposure classes central governments and central banks, institutions as well as corporates with their relevant subcategories. CVA charges or exposures cleared through a CCP are excluded.

We show the EAD after CRM ("EAD net"), where exposures covered by guarantees or credit derivatives are assigned to the protection seller. As a consequence the EAD net can be higher than the original balance sheet exposure.

The EAD net is presented in conjunction with exposures-weighted average PD, RWAs, the average risk weight (RW) and the number of obligors. In addition it provides the average LGD and average maturity, which is regulatory pre-defined in the foundation IRB. The tables provide the defaulted exposure separately.

EU CCR4 – FIRB approach – CCR exposures by portfolio and PD scale

in € m. (unless stated otherwise)							Dec 31, 2021
	a	b	c	d	e	f	g
Exposure class/ PD scale	Exposure value	Average PD (in %)	Number of obligors (in 1,000)	Average LGD (in %)	Average maturity (in years)	RWA	Density of risk weighted exposure amounts
Central governments and central banks							
0.00 to <0.15	0	0	0	0	0	0	0
0.15 to <0.25	0	0	0	0	0	0	0
0.25 to <0.50	0	0	0	0	0	0	0
0.50 to <0.75	0	0	0	0	0	0	0
0.75 to <2.50	0	0	0	0	0	0	0
2.50 to <10.00	0	0	0	0	0	0	0
10.00 to <100.00	0	0	0	0	0	0	0
100.00 (Default)	0	0	0	0	0	0	0
Sub-total	0	0	0	0	0	0	0
Institutions							
0.00 to <0.15	0	0	0	0	0	0	0
0.15 to <0.25	0	0	0	0	0	0	0
0.25 to <0.50	0	0	0	0	0	0	0
0.50 to <0.75	0	0.77	0.0	45.00	2.5	0	88.81
0.75 to <2.50	0	0	0	0	0	0	0
2.50 to <10.00	0	0	0	0	0	0	0
10.00 to <100.00	0	0	0	0	0	0	0
100.00 (Default)	0	0	0	0	0	0	0
Sub-total	0	0.77	0.0	45.00	2.5	0	88.81
Corporates							
0.00 to <0.15	26	0.13	0.1	45.00	2.5	9	35.73
0.15 to <0.25	96	0.26	0.1	45.00	2.5	50	52.55
0.25 to <0.50	16	0.43	0.0	45.00	2.5	11	66.78
0.50 to <0.75	40	0.77	0.0	45.00	2.5	35	87.95
0.75 to <2.50	112	2.05	0.1	45.00	2.5	88	78.30
2.50 to <10.00	1	7.53	0.0	45.00	2.5	3	178.09
10.00 to <100.00	2	14.39	0.0	45.00	2.5	3	167.61
100.00 (Default)	6	100.00	0.0	45.00	2.5	0	0
Sub-total	299	2.97	0.3	45.00	2.5	199	66.62
of which:							
SMEs							
0.00 to <0.15	2	0.16	0.0	45.00	2.5	1	27.28
0.15 to <0.25	4	0.25	0.0	45.00	2.5	1	35.70
0.25 to <0.50	1	0.43	0.0	45.00	2.5	1	46.20
0.50 to <0.75	1	0.77	0.0	45.00	2.5	1	58.29
0.75 to <2.50	2	2.07	0.0	45.00	2.5	2	79.54
2.50 to <10.00	0	6.64	0.0	45.00	2.5	0	121.17
10.00 to <100.00	2	14.41	0.0	45.00	2.5	2	152.56
100.00 (Default)	0	0	0	0	0	0	0
Sub-total	12	2.48	0.1	45.00	2.5	8	60.96
Specialized Lending							
0.00 to <0.15	0	0	0	0	0	0	0
0.15 to <0.25	0	0	0	0	0	0	0
0.25 to <0.50	0	0	0	0	0	0	0
0.50 to <0.75	0	0	0	0	0	0	0
0.75 to <2.50	102	2.06	0.0	45.00	2.5	76	74.88
2.50 to <10.00	0	0	0	0	0	0	0
10.00 to <100.00	0	0	0	0	0	0	0
100.00 (Default)	4	100.00	0.0	45.00	2.5	0	0
Sub-total	105	5.50	0.0	45.00	2.5	76	72.25
Other							
0.00 to <0.15	24	0.13	0.0	45.00	2.5	9	36.50
0.15 to <0.25	92	0.26	0.0	45.00	2.5	49	53.26
0.25 to <0.50	15	0.43	0.0	45.00	2.5	10	68.50
0.50 to <0.75	39	0.77	0.0	45.00	2.5	35	88.81
0.75 to <2.50	8	2.00	0.0	45.00	2.5	10	120.88
2.50 to <10.00	1	7.63	0.0	45.00	2.5	2	184.39
10.00 to <100.00	0	14.29	0.0	45.00	2.5	1	231.41
100.00 (Default)	2	100.00	0.0	45.00	2.5	0	0
Sub-total	182	1.54	0.2	45.00	2.5	116	63.74
Total	299	2.97	0.3	45.00	2.5	199	66.62

in € m. (unless stated otherwise)							Jun 30, 2021
	a	b	c	d	e	f	g
Exposure class/ PD scale	Exposure value	Average PD (in %)	Number of obligors (in 1,000)	Average LGD (in %)	Average maturity (in years)	RWA	Density of risk weighted exposure amounts
Central governments and central banks							
0.00 to <0.15	0	0	0	0	0	0	0
0.15 to <0.25	0	0	0	0	0	0	0
0.25 to <0.50	0	0	0	0	0	0	0
0.50 to <0.75	0	0	0	0	0	0	0
0.75 to <2.50	0	0	0	0	0	0	0
2.50 to <10.00	0	0	0	0	0	0	0
10.00 to <100.00	0	0	0	0	0	0	0
100.00 (Default)	0	0	0	0	0	0	0
Sub-total	0	0	0	0	0	0	0
Institutions							
0.00 to <0.15	0	0	0	0	0	0	0
0.15 to <0.25	0	0	0	0	0	0	0
0.25 to <0.50	0	0.43	0.0	45.00	5.0	0	68.48
0.50 to <0.75	0	0	0	0	0	0	0
0.75 to <2.50	0	0	0	0	0	0	0
2.50 to <10.00	0	0	0	0	0	0	0
10.00 to <100.00	0	0	0	0	0	0	0
100.00 (Default)	0	0	0	0	0	0	0
Sub-total	0	0.43	0.0	45.00	5.0	0	68.48
Corporates							
0.00 to <0.15	50	0.13	0.1	45.00	3.2	18	35.17
0.15 to <0.25	112	0.26	0.1	45.00	4.8	59	52.46
0.25 to <0.50	7	0.43	0.0	45.00	2.9	4	60.61
0.50 to <0.75	30	0.77	0.0	45.00	4.3	26	87.28
0.75 to <2.50	149	1.97	0.1	45.00	4.2	119	79.62
2.50 to <10.00	5	5.83	0.0	45.00	3.0	7	136.18
10.00 to <100.00	1	18.34	0.0	45.00	1.8	1	199.48
100.00 (Default)	8	100.00	0.0	45.00	3.9	0	0
Sub-total[1]	363	3.34	0.4	45.00	4.2	234	64.56
of which:							
SMEs							
0.00 to <0.15	6	0.15	0.0	45.00	3.2	2	26.11
0.15 to <0.25	5	0.25	0.0	45.00	3.7	2	34.27
0.25 to <0.50	3	0.43	0.0	45.00	3.1	1	46.92
0.50 to <0.75	2	0.77	0.0	45.00	1.6	1	59.60
0.75 to <2.50	3	1.38	0.0	45.00	1.8	2	75.72
2.50 to <10.00	3	5.48	0.0	45.00	2.0	3	104.85
10.00 to <100.00	0	20.89	0.0	45.00	1.0	1	159.78
100.00 (Default)	1	100.00	0.0	45.00	4.6	0	0
Sub-total	22	6.96	0.1	45.00	2.9	11	49.71
Specialized Lending							
0.00 to <0.15	0	0	0	0	0	0	0
0.15 to <0.25	0	0	0	0	0	0	0
0.25 to <0.50	0	0	0	0	0	0	0
0.50 to <0.75	0	0	0	0	0	0	0
0.75 to <2.50	129	2.06	0.1	45.00	4.5	97	75.58
2.50 to <10.00	0	0	0	0	0	0	0
10.00 to <100.00	0	0	0	0	0	0	0
100.00 (Default)	4	100.00	0.0	45.00	5.0	0	0
Sub-total[1]	133	5.17	0.1	45.00	4.5	97	73.17
Other							
0.00 to <0.15	45	0.13	0.1	45.00	3.2	16	36.35
0.15 to <0.25	107	0.26	0.0	45.00	4.8	57	53.26
0.25 to <0.50	5	0.43	0.0	45.00	2.8	3	68.48
0.50 to <0.75	28	0.77	0.0	45.00	4.5	25	88.80
0.75 to <2.50	18	1.42	0.0	45.00	2.6	19	109.83
2.50 to <10.00	3	6.21	0.0	45.00	4.1	4	169.27
10.00 to <100.00	0	15.91	0.0	45.00	2.5	1	237.38
100.00 (Default)	3	100.00	0.0	45.00	1.9	0	0
Sub-total	208	1.79	0.2	45.00	4.2	126	60.61
Total	363	3.34	0.4	45.00	4.2	234	64.57

CCR exposures within the advanced IRBA (Article 452 (g) CRR)

In the following tables we show our advanced IRBA counterparty credit risk exposures, i.e. derivatives and securities financing transactions, distributed on our internal rating scale for exposure classes central governments and central banks, institutions as well as corporates and retail with their relevant subcategories. CVA charges or exposures cleared through a CCP are excluded.

We show the EAD after CRM and CCF (“EAD net”), where exposures covered by guarantees or credit derivatives are assigned to the protection seller. As a consequence the EAD net can be higher than the original balance sheet exposure.

The EAD net is presented in conjunction with exposure-weighted average PD, LGD, and maturity as well as the RWA, the average risk weight (RW) and the number of obligors. The effect of double default, as far as applicable to exposures outside of Postbank, is considered in the average RW. It implies that for a guaranteed exposure a loss only occurs if the primary obligor and the guarantor fail to meet their obligations at the same time. The tables provide the defaulted exposure separately, where we apply a LGD model already incorporating potential unexpected losses in the loss rate estimate as required by Article 181 (1)(h) CRR.

EU CCR4 – AIRB approach – CCR exposures by portfolio and PD scale

in € m. (unless stated otherwise)							Dec 31, 2021
	a	b	c	d	e	f	g
Exposure class/ PD scale	Exposure value	Average PD (in %)	Number of obligors (in 1,000)	Average LGD (in %)	Average maturity (in years)	RWA	Density of risk weighted exposure amounts
Central governments and central banks							
0.00 to <0.15	7,007	0.02	0.1	41.71	0.7	233	3.33
0.15 to <0.25	73	0.23	0.0	27.25	4.9	33	45.24
0.25 to <0.50	396	0.39	0.0	49.92	1.0	218	55.02
0.50 to <0.75	13	0.64	0.0	39.27	3.1	10	73.35
0.75 to <2.50	171	1.38	0.0	41.05	3.8	187	109.05
2.50 to <10.00	785	2.94	0.0	22.32	2.8	542	69.00
10.00 to <100.00	0	0	0	0	0	0	0
100.00 (Default)	0	0	0	0	0	0	0
Sub-total	8,445	0.34	0.1	40.15	1.0	1,222	14.47
Institutions							
0.00 to <0.15	18,479	0.06	0.8	38.94	1.0	2,684	14.52
0.15 to <0.25	692	0.25	0.0	36.35	1.8	346	50.02
0.25 to <0.50	344	0.41	0.0	49.54	2.8	315	91.50
0.50 to <0.75	1,108	0.67	0.0	20.30	1.3	463	41.74
0.75 to <2.50	961	1.43	0.0	20.34	0.6	414	43.04
2.50 to <10.00	512	3.29	0.0	8.56	0.5	166	32.38
10.00 to <100.00	25	14.74	0.0	45.00	1.5	59	238.75
100.00 (Default)	0	0	0	0	0	0	0
Sub-total	22,121	0.28	0.9	36.10	1.0	4,446	20.10
Corporates							
0.00 to <0.15	42,934	0.05	8.0	36.39	1.3	5,539	12.90
0.15 to <0.25	3,140	0.24	1.1	47.04	2.3	1,798	57.26
0.25 to <0.50	2,494	0.40	0.7	50.27	1.8	1,802	72.25
0.50 to <0.75	2,621	0.66	0.9	51.00	2.5	2,398	91.48
0.75 to <2.50	8,127	1.60	1.1	20.75	1.6	4,053	49.87
2.50 to <10.00	1,272	4.26	0.5	39.00	2.8	1,378	108.29
10.00 to <100.00	65	21.16	0.1	42.85	1.9	137	209.57
100.00 (Default)	118	100.00	0.1	17.45	3.9	115	97.47
Sub-total	60,771	0.61	12.4	36.09	1.5	17,220	28.34
of which:							
SMEs							
0.00 to <0.15	2,283	0.04	0.6	32.94	1.4	193	8.45
0.15 to <0.25	98	0.24	0.1	47.78	2.4	46	46.41
0.25 to <0.50	147	0.40	0.1	75.65	1.9	111	75.91
0.50 to <0.75	408	0.65	0.2	63.12	2.5	442	108.35
0.75 to <2.50	247	1.23	0.3	51.23	2.2	233	94.62
2.50 to <10.00	84	4.22	0.1	41.49	3.7	82	98.44
10.00 to <100.00	4	17.13	0.0	41.97	4.7	7	177.53
100.00 (Default)	5	100.00	0.0	51.89	3.3	3	72.18
Sub-total	3,274	0.50	1.4	40.69	1.7	1,117	34.12
Specialized Lending							
0.00 to <0.15	97	0.08	0.0	34.36	4.2	26	27.02
0.15 to <0.25	48	0.23	0.0	54.96	3.8	35	72.57
0.25 to <0.50	24	0.39	0.0	45.03	3.4	18	73.10
0.50 to <0.75	57	0.64	0.0	48.61	3.2	57	98.86
0.75 to <2.50	98	1.59	0.0	33.61	4.2	92	93.49
2.50 to <10.00	282	3.03	0.0	17.17	4.8	177	62.87
10.00 to <100.00	4	20.03	0.0	52.91	2.3	13	289.54
100.00 (Default)	34	100.00	0.0	24.28	4.7	20	60.39
Sub-total	645	7.06	0.1	29.52	4.3	437	67.87
Other							
0.00 to <0.15	40,554	0.05	7.3	36.58	1.3	5,320	13.12
0.15 to <0.25	2,994	0.24	0.9	46.89	2.3	1,718	57.37
0.25 to <0.50	2,323	0.40	0.6	48.72	1.7	1,673	72.01
0.50 to <0.75	2,156	0.66	0.7	48.77	2.4	1,900	88.10
0.75 to <2.50	7,782	1.61	0.8	19.62	1.5	3,728	47.90
2.50 to <10.00	907	4.65	0.4	45.55	2.1	1,118	123.30
10.00 to <100.00	57	21.50	0.0	42.13	1.7	118	205.42
100.00 (Default)	79	100.00	0.0	12.41	3.5	91	114.91
Sub-total	56,852	0.54	10.8	35.90	1.4	15,665	27.55

in € m. (unless stated otherwise)							Dec 31, 2021
	a	b	c	d	e	f	g
Exposure class/ PD scale	Exposure value	Average PD (in %)	Number of obligors (in 1,000)	Average LGD (in %)	Average maturity (in years)	RWA	Density of risk weighted exposure amounts
Retail							
0.00 to <0.15	7	0.08	0.2	56.48	2.7	1	11.73
0.15 to <0.25	3	0.23	0.0	60.95	2.0	1	28.13
0.25 to <0.50	6	0.39	0.1	62.14	3.7	2	37.12
0.50 to <0.75	4	0.64	0.1	73.57	2.3	2	60.62
0.75 to <2.50	16	1.39	0.2	77.06	2.2	13	82.51
2.50 to <10.00	4	4.68	0.1	73.40	2.7	4	97.66
10.00 to <100.00	1	26.95	0.0	81.19	0.8	1	170.72
100.00 (Default)	0	100.00	0.0	6.11	1.0	0	76.34
Sub-total	41	1.66	0.6	69.28	2.5	24	60.08
of which:							
Secured by real estate property SMEs							
0.00 to <0.15	0	0	0	0	0	0	0
0.15 to <0.25	0	0	0	0	0	0	0
0.25 to <0.50	0	0	0	0	0	0	0
0.50 to <0.75	0	0	0	0	0	0	0
0.75 to <2.50	0	0	0	0	0	0	0
2.50 to <10.00	0	0	0	0	0	0	0
10.00 to <100.00	0	0	0	0	0	0	0
100.00 (Default)	0	0	0	0	0	0	0
Sub-total	0	0	0	0	0	0	0
Secured by real estate property non-SMEs							
0.00 to <0.15	0	0	0	0	0	0	0
0.15 to <0.25	0	0	0	0	0	0	0
0.25 to <0.50	0	0	0	0	0	0	0
0.50 to <0.75	0	0	0	0	0	0	0
0.75 to <2.50	0	0	0	0	0	0	0
2.50 to <10.00	0	0	0	0	0	0	0
10.00 to <100.00	0	0	0	0	0	0	0
100.00 (Default)	0	0	0	0	0	0	0
Sub-total	0	0	0	0	0	0	0
Qualifying Revolving							
0.00 to <0.15	0	0	0	0	0	0	0
0.15 to <0.25	0	0	0	0	0	0	0
0.25 to <0.50	0	0	0	0	0	0	0
0.50 to <0.75	0	0	0	0	0	0	0
0.75 to <2.50	0	0	0	0	0	0	0
2.50 to <10.00	0	0	0	0	0	0	0
10.00 to <100.00	0	0	0	0	0	0	0
100.00 (Default)	0	0	0	0	0	0	0
Sub-total	0	0	0	0	0	0	0
Other retail SMEs							
0.00 to <0.15	1	0.08	0.0	62.01	1.2	0	10.76
0.15 to <0.25	0	0.23	0.0	67.10	1.3	0	24.16
0.25 to <0.50	2	0.40	0.0	70.55	3.3	1	35.72
0.50 to <0.75	1	0.65	0.0	73.88	1.5	0	49.20
0.75 to <2.50	7	1.33	0.1	76.36	2.2	5	68.64
2.50 to <10.00	2	4.97	0.0	74.70	1.8	2	88.18
10.00 to <100.00	0	27.55	0.0	80.41	0.7	1	159.13
100.00 (Default)	0	100.00	0.0	6.11	1.0	0	76.34
Sub-total	14	2.62	0.2	74.34	2.1	9	65.53
Other retail non-SMEs							
0.00 to <0.15	7	0.08	0.2	56.07	2.8	1	11.80
0.15 to <0.25	3	0.23	0.0	60.25	2.1	1	28.59
0.25 to <0.50	4	0.39	0.0	57.42	3.9	1	37.90
0.50 to <0.75	3	0.64	0.0	73.47	2.6	2	64.08
0.75 to <2.50	8	1.45	0.1	77.70	2.2	8	95.04
2.50 to <10.00	2	4.30	0.0	71.70	4.0	2	110.08

							Dec 31, 2021
in € m. (unless stated otherwise)	a	b	c	d	e	f	g
Exposure class/ PD scale	Exposure value	Average PD (in %)	Number of obligors (in 1,000)	Average LGD (in %)	Average maturity (in years)	RWA	Density of risk weighted exposure amounts
10.00 to <100.00	0	25.96	0.0	82.50	1.0	0	190.07
100.00 (Default)	0	0	0	0	0	0	0
Sub-total	27	1.15	0.5	66.60	2.7	15	57.19
Total (all exposure classes)	91,378	0.51	14.0	36.48	1.3	22,912	25.07

in € m. (unless stated otherwise)							Jun 30, 2021
	a	b	c	d	e	f	g
Exposure class/ PD scale	Exposure value	Average PD (in %)	Number of obligors (in 1,000)	Average LGD (in %)	Average maturity (in years)	RWA	Average RW (in %)
Central governments and central banks							
0.00 to <0.15	9,352	0.02	0.1	43.84	0.7	289	3.09
0.15 to <0.25	151	0.23	0.0	43.28	2.5	76	50.00
0.25 to <0.50	372	0.39	0.0	49.58	1.1	206	55.28
0.50 to <0.75	26	0.64	0.0	43.74	2.2	19	71.87
0.75 to <2.50	165	1.40	0.0	40.42	4.1	184	111.65
2.50 to <10.00	750	2.92	0.0	22.20	3.3	537	71.69
10.00 to <100.00	0	0	0	0	0	0	0
100.00 (Default)	0	0	0	0	0	0	0
Sub-total	10,816	0.26	0.1	42.48	1.0	1,311	12.12
Institutions							
0.00 to <0.15	17,371	0.05	0.4	33.41	0.8	2,351	13.53
0.15 to <0.25	698	0.23	0.0	35.05	1.4	335	48.06
0.25 to <0.50	255	0.39	0.0	48.37	3.2	234	91.95
0.50 to <0.75	700	0.64	0.0	41.68	1.8	541	77.28
0.75 to <2.50	902	1.58	0.0	16.18	0.6	442	48.93
2.50 to <10.00	907	2.94	0.0	4.98	0.3	166	18.28
10.00 to <100.00	11	13.42	0.0	45.00	3.5	27	250.08
100.00 (Default)	13	100.00	0.0	5.45	1.2	8	59.11
Sub-total	20,857	0.34	0.6	31.93	0.9	4,103	19.67
Corporates							
0.00 to <0.15	46,712	0.04	8.4	34.89	1.3	5,794	12.40
0.15 to <0.25	2,689	0.24	1.1	47.45	2.5	1,693	62.97
0.25 to <0.50	2,713	0.40	0.9	47.35	2.2	1,969	72.57
0.50 to <0.75	2,551	0.65	0.9	48.21	2.1	2,216	86.87
0.75 to <2.50	6,457	1.58	1.1	21.84	1.7	3,615	55.99
2.50 to <10.00	2,110	3.81	0.5	33.56	3.2	2,415	114.45
10.00 to <100.00	323	19.12	0.1	50.02	1.7	958	296.28
100.00 (Default)	111	100.00	0.1	17.34	2.6	99	89.43
Sub-total	63,665	0.64	13.0	35.16	1.5	18,760	29.47
of which:							
SMEs							
0.00 to <0.15	1,968	0.05	0.3	35.60	2.0	259	13.16
0.15 to <0.25	134	0.24	0.1	45.82	2.2	56	41.71
0.25 to <0.50	124	0.44	0.1	55.70	2.2	74	59.65
0.50 to <0.75	173	0.66	0.1	61.20	1.6	139	79.86
0.75 to <2.50	110	1.58	0.2	50.28	2.9	109	99.45
2.50 to <10.00	122	4.96	0.1	32.64	2.6	124	101.27
10.00 to <100.00	8	24.73	0.0	45.37	4.6	15	187.83
100.00 (Default)	3	100.00	0.0	78.95	1.8	2	53.27
Sub-total	2,643	0.60	1.0	39.30	2.1	777	29.39
Specialized Lending							
0.00 to <0.15	126	0.10	0.0	45.65	4.3	56	43.98
0.15 to <0.25	26	0.23	0.0	59.69	2.8	17	64.58
0.25 to <0.50	83	0.39	0.0	48.58	4.1	74	88.84
0.50 to <0.75	88	0.64	0.0	41.32	3.5	71	80.79
0.75 to <2.50	66	1.46	0.0	49.18	4.1	94	142.08
2.50 to <10.00	324	3.06	0.0	18.86	4.8	223	68.90
10.00 to <100.00	27	14.90	0.0	11.48	1.3	16	59.65
100.00 (Default)	32	100.00	0.0	22.91	4.9	15	45.82
Sub-total	773	6.21	0.1	32.88	4.3	566	73.19
Other							
0.00 to <0.15	44,617	0.04	8.0	34.82	1.2	5,480	12.28
0.15 to <0.25	2,529	0.24	0.9	47.41	2.5	1,620	64.08
0.25 to <0.50	2,506	0.40	0.8	46.89	2.1	1,821	72.67
0.50 to <0.75	2,289	0.65	0.7	47.50	2.1	2,006	87.64
0.75 to <2.50	6,281	1.59	0.9	21.05	1.7	3,412	54.32
2.50 to <10.00	1,664	3.87	0.4	36.50	2.9	2,068	124.29
10.00 to <100.00	288	19.37	0.1	53.78	1.6	927	321.56
100.00 (Default)	76	100.00	0.0	12.30	1.7	83	109.44
Sub-total	60,249	0.57	11.8	35.01	1.4	17,417	28.91
Retail							
0.00 to <0.15	12	0.07	0.2	54.12	2.8	1	10.64

							Jun 30, 2021
in € m. (unless stated otherwise)	a	b	c	d	e	f	g
Exposure class/ PD scale	Exposure value	Average PD (in %)	Number of obligors (in 1,000)	Average LGD (in %)	Average maturity (in years)	RWA	Average RW (in %)
0.15 to <0.25	5	0.23	0.1	66.77	1.0	1	28.93
0.25 to <0.50	7	0.39	0.1	74.29	3.6	3	42.46
0.50 to <0.75	10	0.64	0.1	76.20	2.1	6	60.78
0.75 to <2.50	14	1.36	0.1	73.03	2.9	11	80.56
2.50 to <10.00	4	4.14	0.0	73.50	3.7	4	99.81
10.00 to <100.00	0	60.32	0.0	67.95	1.7	0	35.47
100.00 (Default)	0	100.00	0.0	5.00	4.3	0	17.52
Sub-total	51	1.10	0.6	68.87	2.7	27	52.12
of which:							
Secured by real estate property SMEs							
0.00 to <0.15	0	0	0	0	0	0	0
0.15 to <0.25	0	0	0	0	0	0	0
0.25 to <0.50	0	0	0	0	0	0	0
0.50 to <0.75	0	0	0	0	0	0	0
0.75 to <2.50	0	0	0	0	0	0	0
2.50 to <10.00	0	0	0	0	0	0	0
10.00 to <100.00	0	0	0	0	0	0	0
100.00 (Default)	0	0	0	0	0	0	0
Sub-total	0	0	0	0	0	0	0
Secured by real estate property non-SMEs							
0.00 to <0.15	0	0	0	0	0	0	0
0.15 to <0.25	0	0	0	0	0	0	0
0.25 to <0.50	0	0	0	0	0	0	0
0.50 to <0.75	0	0	0	0	0	0	0
0.75 to <2.50	0	0	0	0	0	0	0
2.50 to <10.00	0	0	0	0	0	0	0
10.00 to <100.00	0	0	0	0	0	0	0
100.00 (Default)	0	0	0	0	0	0	0
Sub-total	0	0	0	0	0	0	0
Qualifying Revolving							
0.00 to <0.15	0	0	0	0	0	0	0
0.15 to <0.25	0	0	0	0	0	0	0
0.25 to <0.50	0	0	0	0	0	0	0
0.50 to <0.75	0	0	0	0	0	0	0
0.75 to <2.50	0	0	0	0	0	0	0
2.50 to <10.00	0	0	0	0	0	0	0
10.00 to <100.00	0	0	0	0	0	0	0
100.00 (Default)	0	0	0	0	0	0	0
Sub-total	0	0	0	0	0	0	0
Other retail SMEs							
0.00 to <0.15	1	0.09	0.0	63.66	2.9	0	11.52
0.15 to <0.25	1	0.23	0.0	80.23	1.2	0	28.85
0.25 to <0.50	4	0.39	0.0	79.23	1.6	1	39.87
0.50 to <0.75	3	0.64	0.0	78.37	1.8	2	52.14
0.75 to <2.50	4	1.55	0.1	69.89	3.2	3	66.11
2.50 to <10.00	2	5.00	0.0	79.90	1.0	1	94.78
10.00 to <100.00	0	13.65	0.0	50.84	2.6	0	77.21
100.00 (Default)	0	100.00	0.0	5.00	4.3	0	17.52
Sub-total	16	1.45	0.2	74.97	2.1	8	51.44
Other retail non-SMEs							
0.00 to <0.15	10	0.07	0.2	52.74	2.8	1	10.52
0.15 to <0.25	4	0.23	0.0	61.40	0.9	1	28.96
0.25 to <0.50	3	0.39	0.0	68.78	5.8	1	45.36
0.50 to <0.75	6	0.64	0.1	75.04	2.2	4	65.42
0.75 to <2.50	10	1.28	0.1	74.36	2.7	9	86.67
2.50 to <10.00	2	3.52	0.0	68.89	5.7	2	103.45
10.00 to <100.00	0	100.00	0.0	82.50	0.9	0	0
100.00 (Default)	0	0	0	0	0	0	0
Sub-total	35	0.95	0.5	66.16	2.9	19	52.42
Total (all exposure classes)	95,390	0.53	14.3	35.30	1.3	24,200	25.37

CCR exposures after credit risk mitigation (Article 439 (e) CRR)

The following table presents information on our counterparty credit risk (CCR) exposure and the composition of collateral used in both derivatives transactions and securities financing transactions (SFT).

Table EU CCR5 discloses a breakdown of all types of collateral posted or received to support or reduce CCR exposures related to derivatives and SFT. For SFT, collateral refers to both legs of the transaction as collateral received and collateral posted.

EU CCR5 – Composition of collateral for exposures to CCR

								Dec 31, 2021
	a	b	c	d	e	f	g	h
	Collateral used in derivative transactions				Collateral used in SFTs			
	Fair value of collateral received		Fair value of posted collateral		Fair value of collateral received		Fair value of posted collateral	
in € m.	Segregated	Unsegregated	Segregated	Unsegregated	Segregated	Unsegregated	Segregated	Unsegregated
Cash – domestic currency	1	36,828	0	29,533	2,108	54,346	0	69,195
Cash – other currencies	587	32,587	5	22,196	14,769	143,807	0	177,959
Domestic sovereign debt	128	180	0	2,318	13	2,617	0	805
Other Sovereign debt	0	0	0	0	6	4,186	8	3,596
Government agency debt	0	0	0	0	0	0	0	0
Corporate bonds	1,179	15,132	0	7,374	405	212,772	6,590	207,954
Equity securities	1	3,374	0	0	232	57,636	19,048	30,834
Other collateral	5,086	1,240	5,258	2,834	6	5,804	0	3,440
Total	6,982	89,341	5,264	64,255	17,539	481,168	25,646	493,783

								Jun 30, 2021
	a	b	c	d	e	f	g	h
	Collateral used in derivative transactions				Collateral used in SFTs			
	Fair value of collateral received		Fair value of posted collateral		Fair value of collateral received		Fair value of posted collateral	
in € m.	Segregated	Unsegregated	Segregated	Unsegregated	Segregated	Unsegregated	Segregated	Unsegregated
Cash – domestic currency	1	37,228	0	32,763	2,044	60,766	0	71,431
Cash – other currencies	1,150	34,816	2	27,954	16,766	129,971	0	166,772
Domestic sovereign debt	133	98	0	2,261	1	987	0	994
Other Sovereign debt	0	0	0	0	0	2,619	1	4,483
Government agency debt	0	0	0	0	0	0	0	0
Corporate bonds	1,037	16,314	0	10,913	274	193,753	5,421	188,699
Equity securities	18	3,862	0	0	222	114,365	19,422	69,296
Other collateral	3,716	1,123	4,018	2,544	0	7,846	0	5,249
Total	6,054	93,441	4,020	76,436	19,308	510,307	24,844	506,925

Credit derivatives exposures (Article 439 (j) CRR)

The table below discloses the exposure of the credit derivative transactions split to protection bought and sold as well as a split into product types.

EU CCR6 – Credit derivatives exposures

	Dec 31, 2021		Jun 30, 2021 [1]	
	a	b	a	b
in € m.	Protection bought	Protection sold	Protection bought	Protection sold
Notionals				
Single-name credit default swaps	3,875	483	3,652	407
Index credit default swaps	0	2	0	0
Total return swaps	0	55	0	167
Credit options	0	0	0	0
Other credit derivatives	529,950	491,109	481,598	447,026
Total notionals	**533,825**	**491,648**	485,250	447,600
Fair values				
Positive fair value (asset)	1,945	14,449	1,536	15,770
Negative fair value (liability)	(15,780)	(1,247)	(15,957)	(848)

[1] Values for June 30, 2021 have been updated.

Exposure to securitization positions (Article 449 CRR)

Objectives in relation to securitization activity (Article 449 (a) CRR) (EU SECA)

We engage in various business activities that use securitization structures. The main purposes are to provide investor clients with access to risk and returns related to specific portfolios of assets, to provide borrowing clients with access to funding and to manage our own credit risk exposure. In order to achieve our business objectives, we act as originator, sponsor and investor on the securitization markets.

Article 4(1)(61) CRR defines which types of transactions and positions must be classified as securitization transactions and securitization positions for regulatory reporting.

Securitization transactions are basically defined as transactions in which the credit risk of a securitized portfolio is divided into at least two securitization tranches and where the payments to the holders of the tranches depend on the performance of the securitized portfolio. The different tranches are in a subordinate relationship that determines the order and the amount of payments or losses assigned to the holders of the tranches (waterfall). Loss allocations to a junior tranche will not already lead to a termination of the entire securitization transaction, i.e., senior tranches survive loss allocations to subordinate tranches.

Securitization positions can be acquired in various forms including investments in securitization tranches, derivative transactions for hedging interest rate and currency risks included in the waterfall, liquidity facilities, credit enhancements, unfunded credit protection or collateral for securitization tranches.

In the banking book, we act as originator, sponsor and investor. As an originator we use securitizations primarily as a strategy to reduce credit risk, mainly through the Strategic Corporate Lending ("SCL"). SCL uses, among other means, synthetic securitizations to manage the credit risk of loans and lending-related commitments of the Institutional Corporate Credit portfolio (primarily unsecured, investment grade corporates), Leveraged Debt Capital Markets portfolio (primarily secured, non-investment grade corporates) and the Corporate Bank ("CB") Cash Lending MidCap portfolio, primarily domiciled in Germany and the Netherlands. In addition the CB, through the Global Transaction Banking division, also manage some of their risk on trade finance exposures separately through synthetic securitizations. For all of the above portfolios, the credit risk is predominantly transferred to counterparties through synthetic securitizations, which may be in form of STS, principally through the issuance of Credit Linked Notes providing first loss protection.

Additionally, on a limited basis we have entered into securitization transactions as part of an active liquidity risk management strategy. These transactions do not transfer credit risk and are therefore not included in the quantitative part of this section.

Within our existing role as sponsor, we continue to establish and manage securitization schemes in which special purpose entities purchase exposures from third-party entities on behalf of investors. In these transactions, we have substantial influence on the selection of the purchased exposures and ultimate composition of the securitized portfolios.

Furthermore, we act as an investor in third party securitizations through the purchase of tranches from third party-issued securitizations including STS transactions (as part of the Treasury SLR program), or by providing liquidity, credit support or other form of financing. Additionally, we assist third party securitizations by providing derivatives related to securitization structures. These include currency, interest rate and credit derivatives.

Primary recourse for securitization exposures lies with the underlying assets. The related risk is mitigated by credit enhancement typically in the form of overcollateralization, subordination, reserve accounts, excess interest, or other support arrangements. Additional protection features include performance triggers, financial covenants and events of default stipulated in the legal documentation which, when breached, provide for the acceleration of repayment, rights of foreclosure and/or other remediation.

The initial due diligence for new banking book exposures usually includes any or all of the following, depending on the specifics of the transaction: (a) the review of the relevant documents including term sheets, servicer reports or other historical performance data, third-party assessment reports such as rating agency analysis (if externally rated), etc., (b) modeling of base and downside scenarios through asset-class specific cash-flow models, (c) servicer reviews to assess the robustness of the servicer's processes and financial strength. The result of this due diligence is summarized in a credit and rating review which requires approval by an appropriate level of credit authority, depending on the size of exposure and internal rating assigned.

Compliance with the regulatory requirements for risk retention, due diligence and monitoring according to the applicable regulatory requirements is part of our credit review process and the relevant data is gathered for reporting purposes with the support of the IT systems used for the credit review process and the process for financial reporting

Ongoing regular performance reviews include checks of the periodic servicer reports against any performance triggers/covenants in the loan documentation, as well as the overall performance trend in the context of economic, geographic, sector and servicer developments. Monitoring of the re-securitization subset takes into consideration the performance of the securitized tranches' underlying assets, to the extent available.

For lending-related commitments an internal rating review is required at least annually. Significant negative or positive changes in asset performance can trigger an earlier review date. Full credit reviews are also required annually, or, for highly rated exposures, every other year. Furthermore, there is a separate, usually quarterly, watch list process for exposures identified to be at a higher risk of loss, which requires a separate assessment of asset and servicer performance. It includes a review of the exposure strategy and identifies next steps to be taken to mitigate loss potential. There is no difference in approach for re-securitization transactions.

Evaluation of structural integrity is another important component of risk management for securitization, focusing on the structural protection of a securitization as defined in the legal documentation (i.e., perfection of security interest, segregation of payment flows, and rights to audit). The evaluation for each securitization is performed by a dedicated team who engages third-party auditors, determines audit scopes, and reviews the results of such external audits. The results of these risk reviews and assessments complement the credit and rating review process performed by Credit Risk Management.

In the trading book, we act as originator, sponsor and investor. In the role of investor, our main objective is to serve as a market maker in the secondary market. The market making function consists of providing liquidity for our customers and providing two way markets (buy and sell) to generate flow trading revenues. In the role of originator, we finance loans to be securitized, predominantly in the commercial real estate business. Trading book activities where we have the role of a sponsor (excluding activities derived from multi-seller originator transactions) as described above are minimal.

Our Market Risk Management Governance Framework applies to all securitization positions held within the trading book. The Risk Governance Framework applied to securitization includes policies and procedures with respect to new product approvals, new transaction approvals, risk models and measurements, as well as inventory management systems and trade entry. All securitization positions held within the trading book are captured, reported and limited within the Risk Governance Framework at the global, regional and product levels. Any changes in credit and market risks are also reported.

The limit structure includes value-at-risk and product specific thresholds. Asset class market value limits are based on seniority/rating and liquidity, where lower rated positions or positions in less liquid asset class are given a lower trading threshold. The limit monitoring system captures exposures and flags any threshold breaches. Market Risk Management approval is required for any trades over the limit or threshold.

The Market Risk Management Governance Framework also captures issuer (credit) risk for securitization positions in the trading book. MRM's process manages concentration risks and sets thresholds at the position level. The limit structure is based on asset class and rating where less liquid positions and those with lower ratings are assigned lower trading thresholds. When the limit monitoring system captures positions that exceed their respective market value thresholds on a global basis, MRM approval is required. Further due diligence is performed on positions that require trade approval; this includes analyzing the credit performance of the security and evaluating risks of the trade. In addition collateral level stress testing and performance monitoring is incorporated into the risk management process. The process covers both securitizations and re-securitizations.

Compliance with the CRR rules, as applicable requires that pre-trade due diligence is performed on all relevant positions. It is the responsibility of the respective trading desk to perform the pre-trade due diligence and then record the appropriate data records at trade execution to indicate whether relevant due diligence items have been performed. The pre-trade due diligence items include confirmations of deal structural features, performance monitoring of the underlying portfolio, and any related retention disclosures.

Product Control group within Finance then reviews trade inputs for errors or flag changes, distributes regulatory control reports and serves as the subject matter escalation contact. Upon validation of flag changes or trading desk errors, the Product Control group within Finance will then communicate and action the changes accordingly. Further pre-trade due diligence is performed by Market Risk Management for CRR, as applicable for relevant positions exceeding predefined limits (process as described above).

Assets originated or acquired with the intent to securitize follow the general approach for the assignment to the regulatory banking or trading book. Further details are described in chapter "Trading book allocation and prudent valuation (Article 455 (c) CRR) (EU MRB)", section "Allocation of positions to the regulatory trading book" in this report.

Nature of other risks in securitized assets (Article 449 (b) CRR) (EU SECA)

Overall, the securitization positions are exposed to the performance of diverse asset classes, including primarily corporate senior secured loans or unsecured debt, consumer debt such as auto loans or student loans, as well as residential or commercial first and second lien mortgages. We are active across the entire capital structure with an emphasis on the more senior tranches. The subset of re-securitization is predominantly backed by securitizations with corporate obligations in the underlying pools. However, the subset of re-securitization is not part of an active investment strategy anymore and is only representing a very marginal part of the overall securitization portfolio.

Our securitization desks trade assets across all capital structures, from senior bonds with large subordination to first loss subordinate tranches, across both securitizations and re-securitizations. Securitization positions consist mostly of residential mortgage backed securities ("RMBS") and commercial mortgage backed securities ("CMBS") backed by first and second lien loans, collateralized loan obligations ("CLOs") backed by corporate senior secured loans and unsecured debt and consumer ABS backed by secured and unsecured credit.

Similar to other fixed income and credit assets, securitized trading volume is linked to global growth and geopolitical events which affect liquidity and can lead to lower trading volumes, as observed during the crisis. Current and proposed changes to regulation and uncertainty over final implementation may lead to increased volatility and decreased liquidity/trading volumes across securitized products. Other potential risks that exist in securitized assets are prepayment, default, loss severity and servicer performance. Note that trading book assets are marked-to-market and the previous mentioned risks are reflected in the position's price.Securitization activities have an impact on our liquidity activity. For example, we enter into securitization transactions as part of an active liquidity risk management strategy. However, we also face risk of potential drawdown under the revolving commitments provided under certain securitization facilities. This liquidity risk is monitored by our Treasury department and is included in our liquidity planning and regular stress testing.

RWA calculation approaches for securitization positions (Article 449 (c) CRR) (EU SECA)

The approach for the calculation of the regulatory capital requirements for banking book and trading book securitization positions is prescribed by the CRR.

Regulation (EU) 2021/558 and Regulation (EU) 2021/557 introduced targeted amendments to the securitization framework for securitizations of non-performing exposures and extended the framework of simple, transparent and standardized securitizations to synthetic securitizations. These changes applied for the first time in our June 30, 2021 reporting.

The securitization framework determines the regulatory capital requirements for the credit risk of banking book securitizations pursuant to Articles 242 to 270e CRR, and distinguishes between the Securitization Internal Ratings-Based Approach (SEC-IRBA), the Securitization Standardized Approach (SEC-SA) and the Securitization External Ratings-Based Approach (SEC-ERBA). These rules also provide a specific framework for Simple, Transparent and Standardized (STS) securitizations. STS securitizations are defined in Regulation (EU) 2017/2402 and are subject to a beneficial capital treatment in the CRR.

The SEC-IRBA is applied for securitization positions, where at least 95 % of the securitized portfolio is in scope of an IRBA rating model and where sufficient information in relation to the securitized portfolio is available to calculate the risk-weighted exposure amounts under the IRB approach. Note that the ECB may preclude the application of the SEC-IRBA on a case-by-case basis as per Article 258 CRR. Currently, there are no securitization positions for which the ECB has precluded the application of the SEC-IRBA.

In general, the SEC-SA must be applied to all re-securitizations and for all securitizations for which the SEC-IRBA must not be applied, but the information required to apply the SEC-SA is available. Note, however, that instead of the SEC-SA, the SEC-ERBA must be applied for securitization positions with at least one eligible external rating or where a rating might be inferred:

– where the application of the SEC-SA would result in a risk weight higher than 25 %, or
– where – for positions not qualifying as positions in an STS securitization – the application of the SEC-ERBA would result in a risk weight higher than 75 %, or
– for securitization transactions backed by pools of auto loans, auto leases and equipment leases.

Where the SEC-SA may not be used, the SEC-ERBA must be applied for securitization positions with at least one eligible external rating or where an external rating can be inferred. External ratings must satisfy certain eligibility criteria for being used in the risk weight calculation. If more than one eligible rating is available for a specific securitization position, the relevant external rating is determined as the second best eligible rating in accordance with the provisions set forth in Article 270d CRR.

We do not make use of the option provided for in Article 254 (3) CRR to consistently apply the SEC-ERBA instead of the SEC-SA for all securitization positions for which an eligible external rating is available or for positions for which such a rating can be inferred.

In addition to the above approaches to determine capital requirements, Article 267 CRR specifies a risk weight cap for senior securitization positions based on the average risk weight of the securitized portfolio. Article 268 CRR provides a maximum capital requirement for all securitization positions of a specific securitization transaction based on the capital requirement applicable to the securitized portfolio.

Based on Article 254 (5) CRR, an Internal Assessment Approach may be applied for unrated positions in ABCP programs. As we ceased the use of ABCP programs in 2015, there are no securitizations positions subject to the Internal Assessment Approach as of December 31, 2021.

As of yearend 2021, the whole portfolio has been assessed based on the new securitization framework, due to the decommissioning of the grandfathered securitization framework already by beginning of 2020. Approved rating agencies include Standard & Poor’s, Moody’s, Fitch Ratings, DBRS Morningstar and Kroll.

Approximately 65 % or € 41.6 billion of the total banking book securitization exposure was subject to SEC-IRBA. This approach is predominantly used to assess positions backed by corporate loans, auto-related receivables and commercial and residential real estate loans. The risk weight of securitization positions subject to the SEC-IRBA is determined based on a formula, which takes as input the capital requirement of the securitized portfolio and the seniority of the securitization position in the waterfall, amongst others. When applying the SEC-IRBA, we estimate the risk parameters PD and LGD for the assets included in the securitized portfolio, by using internally developed rating systems approved for such assets. The rating systems are based on historical default and loss information from comparable assets. The risk parameters PD and LGD are derived on risk pool level.

As of December 31, 2021 the SEC-ERBA was applied to approximately 2 % or € 1.2 billion of securitization exposure. The great majority of securitization positions with an eligible external or inferred external credit assessment were securitization positions held as investor backed by residential mortgages. The remaining 33 % or € 21.5 billion of exposure volume of the portfolio was classified under SEC-SA. This approach was used for positions backed by corporate loans, real estate loans and diverse ABS positions such as backed by aircraft leasing, credit card loans and consumer loans. In total € 0.2 million of securitization exposures were treated by getting directly a risk weight of 1,250 % assigned as none of the other approaches qualified.

Calculation of regulatory capital requirements for trading book securitizations

Overall, the regulatory capital requirements for the market risk of trading book securitizations consist of a general and specific market risk component. The capital requirement for the general market risk of trading book securitization positions is determined as the sum of (i) the value-at-risk based capital requirement for market risk and (ii) the stressed value-at-risk based capital requirement for market risk. The capital requirement for specific market risk is principally calculated based on the market risk standardized approach (MRSA) pursuant to Article 337 CRR.

As described above, the capital requirement for specific market risk is calculated based on the market risk standardized approach (MRSA). For this, the MRSA risk weight for trading book securitization positions is calculated by using the same methodologies, which apply to banking book securitization positions. The MRSA based capital requirement for specific risk is determined as the sum of the capital requirements for all net long and all net short securitization positions. The securitization positions included in the MRSA calculations for specific risk are additionally included in the value-at-risk and stressed value-at-risk calculations for general risk.

Trading book securitizations subject to MRSA treatment include various asset classes differentiated by the respective underlying collateral types:

- Residential mortgage backed securities (RMBS);
- Commercial mortgage backed securities (CMBS);
- Collateralized loan obligations (CLO);
- Collateralized debt obligations (CDO); and
- Asset backed securities (incl. credit cards, auto loans and leases, student loans, equipment loans and leases, dealer floorplan loans, etc.).

They also include synthetic credit derivatives and commonly-traded indices based on the above listed instruments.

Please refer to section “Characteristics of the market risk models (Article 455 (a)(i) CRR) (EU MRB)” of this Pillar 3 report for general information on our market risk quantification approaches.

Principally all the same methods for assessing the own funds requirements for securitizations in the trading book are available, which are also used in the non-trading book. As of December 31, 2021 the SEC-IRBA was used for a minority of exposure of around € 0.2 billion or 8 % of exposure values. The predominantly used method for assessing risk-weighted assets in the trading book was the SEC-ERBA which covered € 1.7 billion or 70 % of the exposure. To a lesser extent the SEC-SA was used, namely for 19 % or € 457 million of the exposure. Close to € 69 million or 3 % of the total exposure values were assigned directly a risk-weight of 1,250 % as no other approach qualified.

SSPE-related activities (Article 449 (d+f) CRR) (EU SECA)

Where we act as originator and use a securitization special purpose entity (SSPE) for transferring securitized assets we occasionally retain exposure to the SSPEs. In 2021 the portion of retained exposures to SSPEs was less than 1 % of all retained positions where we are originator. The types of exposure to the SSPEs are either liquidity facilities or derivatives, and in that case foremost interest rate swaps.

We occasionally use securitization SSPEs to securitize third-party exposures in which we act as a sponsor. In certain cases we also retain some of the securitized exposure. The majority (> 99 %) of our € 2.0 billion sponsor positions attracted a risk weight below or equal to 20 % in 2021. Most of these positions (> 75 %) were secured by mortgages on residential properties. We also retain occasionally exposures to SSPEs where we act as sponsor. In 2021 the exposure types of such positions were liquidity facilities or derivative positions and their combined volume was less than 10 % of the overall retained positions in the sponsor business.

We generally do not provide securitization related services to SSPEs which are out of our regulatory scope of consolidation and for which we claim risk transfer or where we act as sponsor.

For the purpose of regulatory reporting there are no SSPEs which are in our regulatory scope of consolidation.

When we act as originator or sponsor of a securitization transaction, we sell securitization tranches (or arrange for such sale through mandated market making institutions) solely on an “execution only” basis and only to sophisticated operative corporate clients that rely on their own risk assessment. In the ordinary course of business, we do not offer such tranches to operative corporate clients to which, at the same time, we offer investment advisory services.

Our business division Asset Management (“AM”) provides asset management services to undertakings for collective investments, including mutual funds and alternative investment funds, and private individuals offering access to traditional and alternative investments across all major asset classes, including securitization positions. Approximately 4 % of those positions consisted in 2021 of tranches in securitization transactions where Deutsche Bank acted as originator or sponsor.

Financial support to securitization vehicles (Article 449 (e) CRR)

We have not provided any implicit support to our securitization vehicles. In consequence, for 2021 there was no need to report any positions according to article 250 3. CRR

Accounting policies for securitizations (Article 449 (g) CRR) (EU SECA)

The most relevant accounting policies for the securitization programs originated by the Group, and where it hold assets purchased with the intent to securitize, are “Principles of consolidation”, “Financial assets”, “Financial liabilities” and “Derecognition of financial assets and liabilities” below.

For measurement and quantification of both our banking and trading book securitizations, please refer to section “Banking and trading book securitization exposures (Article 449 (j) CRR)” further below in this report.

Principles of consolidation

The Group's subsidiaries are those entities which it directly or indirectly controls. Control over an entity is evidenced by the Group's ability to exercise its power in order to affect any variable returns that the Group is exposed to through its involvement with the entity.

The Group sponsors the formation of structured entities and interacts with structured entities sponsored by third parties for a variety of reasons, including allowing clients to hold investments in separate legal entities, allowing clients to invest jointly in alternative assets, for asset securitization transactions, and for buying or selling credit protection.

When assessing whether to consolidate an entity, the Group evaluates a range of control factors, namely:

- the purpose and design of the entity
- the relevant activities and how these are determined
- whether the Group's rights result in the ability to direct the relevant activities
- whether the Group has exposure or rights to variable returns
- whether the Group has the ability to use its power to affect the amount of its returns

Where voting rights are relevant, the Group is deemed to have control where it holds, directly or indirectly, more than half of the voting rights over an entity unless there is evidence that another investor has the practical ability to unilaterally direct the relevant activities.

Potential voting rights that are deemed to be substantive are also considered when assessing control.

Likewise, the Group also assesses existence of control where it does not control the majority of the voting power but has the practical ability to unilaterally direct the relevant activities. This may arise in circumstances where the size and dispersion of holdings of the shareholders give the Group the power to direct the activities of the investee.

The Group reassesses the consolidation status at least at every quarterly reporting date. Therefore, any changes in the structure leading to a change in one or more of the control factors, require reassessment when they occur. This includes changes in decision making rights, changes in contractual arrangements, changes in the financing, ownership or capital structure as well as changes following a trigger event which was anticipated in the original documentation.

All intercompany transactions, balances and unrealized gains on transactions between Group companies are eliminated on consolidation.

Consistent accounting policies are applied throughout the Group for the purposes of consolidation. Issuances of a subsidiary's stock to third parties are treated as non-controlling interests. Profit or loss attributable to non-controlling interests are reported separately in the Consolidated Statement of Income and Consolidated Statement of Comprehensive Income.

At the date that control of a subsidiary is lost, the Group: a) derecognizes the assets (including attributable goodwill) and liabilities of the subsidiary at their carrying amounts, b) derecognizes the carrying amount of any non-controlling interests in the former subsidiary, c) recognizes the fair value of the consideration received and any distribution of the shares of the subsidiary, d) recognizes any investment retained in the former subsidiary at its fair value and e) recognizes any resulting difference of the above items as a gain or loss in the income statement. Any amounts recognized in prior periods in other comprehensive income in relation to that subsidiary would be reclassified to the Consolidated Statement of Income or transferred directly to retained earnings if required by other IFRSs.

Financial assets

The Group classifies financial assets in line with the classification and measurement requirements of IFRS 9, where financial assets are classified based on both the business model used for managing the financial assets and the contractual cash flow characteristics of the financial asset (known as Solely Payments of Principal and Interest or "SPPI"). There are three business models available:

- Hold to Collect - Financial assets held with the objective to collect contractual cash flows. They are subsequently measured at amortized cost and are recorded in multiple lines on the Group's consolidated balance sheet.
- Hold to Collect and Sell - Financial assets held with the objective of both collecting contractual cash flows and selling financial assets. They are recorded as Financial assets at Fair Value through Other Comprehensive Income on the Group's consolidated balance sheet.
- Other - Financial assets that do not meet the criteria of either "Hold to Collect" or "Hold to Collect and Sell". They are recorded as Financial Assets at Fair Value through Profit or Loss on the Group's consolidated balance sheet.

The assessment of business model requires judgment based on facts and circumstances upon initial recognition. As part of this assessment, the Group considers quantitative factors (e.g., the expected frequency and volume of sales) and qualitative factors such as how the performance of the business model and the financial assets held within that business model are evaluated and reported to the Group's key management personnel. In addition to taking into consideration the risks that affect the performance of the business model and the financial assets held within that business model, in particular, the way in which those market and credit risks are managed; and how managers of the business are compensated (e.g., whether the compensation is based on the fair value of the assets managed or on the contractual cash flows collected). This assessment results in an asset being classified in either a Hold to Collect, Hold to Collect and Sell or Other business model.

If the Group holds a financial asset either in a Hold to Collect or a Hold to Collect and Sell business model, then an assessment at initial recognition to determine whether the contractual cash flows of the financial asset are Solely Payments of Principal and Interest on the principal amount outstanding at initial recognition is required to determine the business model classification. Contractual cash flows, that are SPPI on the principal amount outstanding, are consistent with a basic lending arrangement. Interest in a basic lending arrangement is consideration for the time value of money and the credit risk associated with the principal amount outstanding during a particular period of time. It can also include consideration for other basic lending risks (e.g., liquidity risk) and costs (e.g., administrative costs) associated with holding the financial asset for a particular period of time; and a profit margin that is consistent with a basic lending arrangement.

Financial assets at fair value through profit or loss

Financial assets are classified at fair value through profit or loss if they are held in the Other business model because they are either held for trading or because they do not meet the criteria for Hold to Collect or Hold to Collect and Sell. In addition, it includes financial assets that meet the criteria for Hold to Collect or Hold to Collect and Sell business model, but the financial asset fails SPPI or where the Group designated the financial assets under the fair value option.

Financial assets classified as Financial assets at fair value through profit or loss are measured at fair value with realized and unrealized gains and losses included in Net gains (losses) on financial assets/liabilities at fair value through profit or loss. Interest on interest earning assets such as trading loans and debt securities and dividends on equity instruments are presented in Interest and Similar Income.

Financial assets classified at fair value through profit or loss are recognized or derecognized on trade date. Trade date is the date on which the Group commits to purchase or sell the asset.

Trading assets – Financial assets are classified as held for trading if they have been originated, acquired or incurred principally for the purpose of selling or repurchasing them in the near term, or they form part of a portfolio of identified financial instruments that are managed together and for which there is evidence of a recent actual pattern of short-term profit-taking. Trading assets include debt and equity securities, derivatives held for trading purposes, and trading loans. This also includes loan commitments that are allocated to the Other business model and that are presented as derivatives held for trading.

Non-trading financial assets mandatory at fair value through profit and loss –The Group assigns any non-trading financial asset that does not fall into the Hold to Collect nor Hold to Collect and Sell business models into the Other business model and classifies them as Non-Trading Financial Assets mandatory at Fair Value through Profit and Loss. This includes predominately reverse repurchase agreements which are managed on a fair value basis. Additionally, any financial asset that falls into the Hold to Collect or Hold to Collect and Sell business models for which the contractual cash flow characteristics are not SPPI is classified by the Group as Non-Trading Financial Assets Mandatory at Fair Value through Profit and Loss.

Financial assets designated at fair value through profit or loss – Certain financial assets that would otherwise be measured subsequently at amortized cost or at fair value through other comprehensive income, may be designated at Fair Value through Profit or Loss if the designation eliminates or significantly reduces a measurement or recognition inconsistency. The use of the fair value option under IFRS 9 is limited. The Group allows the fair value option to be designated only for those financial instruments for which a reliable estimate of fair value can be obtained.

Financial assets at fair value through other comprehensive income

A financial asset shall be classified and measured at Fair Value through Other Comprehensive Income ("FVOCI"), if the financial asset is held in a Hold to Collect and Sell business model and the contractual cash flows are SPPI, unless designated under the fair value option.

Under FVOCI, a financial asset is measured at its fair value with any changes being recognized in Other Comprehensive Income ("OCI") and is assessed for impairment under the IFRS 9 expected credit loss model where provisions are recorded through profit or loss are recognized based on expectations of potential credit losses. The foreign currency translation effect for FVOCI assets is recognized in profit or loss, as is the interest component by using the effective interest method. The amortization of premiums and accretion of discounts are recorded in net interest income. Realized gains and losses are reported in net gains (losses) on financial assets at FVOCI. Generally, the weighted-average cost method is used to determine the cost of FVOCI financial assets.

Financial assets classified as FVOCI are recognized or derecognized on trade date. Trade date is the date on which the Group commits to purchase or sell the asset.

It is possible to designate non-trading equity instruments as FVOCI. However, this category is expected to have limited usage by the Group and has not been used to date.

Financial assets at amortized cost

A financial asset is classified and subsequently measured at amortized cost if the financial asset is held in a Hold to Collect business model and the contractual cash flows are SPPI.

Under this measurement category, the financial asset is measured at fair value at initial recognition. Subsequently the carrying amount is reduced for principal payments, plus or minus the cumulative amortization using the effective interest method. The financial asset is assessed for impairment under the IFRS 9 expected credit loss model where provisions are recognized based on expectations of potential credit losses. Financial assets measured at amortized cost are recognized on a settlement date basis.

Financial Assets at amortized cost include predominately Loans at amortized cost, Central bank funds sold and securities purchased under resale agreements, Securities borrowed and certain receivables presented in Other Assets.

Financial liabilities

Under IFRS 9 financial liabilities are measured at amortized cost using the effective interest method, except for financial liabilities at fair value through profit or loss.

Financial liabilities at fair value through profit or loss

Financial liabilities at fair value through profit or loss include Trading Liabilities, Financial Liabilities Designated at Fair Value through Profit or Loss and Non-Participating Investment Contracts (“Investment Contracts”). Under IFRS 9 they are carried at fair value with realized and unrealized gains and losses included in net gains (losses) on financial assets and liabilities at fair value through profit or loss. For financial liabilities designated at fair value through profit and loss the fair value movements attributable to the Group’s own credit component for fair value movements is recognized in Other Comprehensive Income.

Financial liabilities classified at fair value through profit or loss are recognized or derecognized on trade date. Trade date is the date on which the Group commits to issue or repurchase the financial liability.

Interest on interest paying liabilities are presented in interest expense for financial instruments at fair value through profit or loss.

Trading liabilities - Financial liabilities that arise from debt issued are classified as held for trading if they have been originated or incurred principally for the purpose of repurchasing them in the near term. Trading liabilities consist primarily of derivative liabilities (including certain loan commitments) and short positions. This also includes loan commitments where the resulting loan upon funding is allocated to the other business model such that the undrawn loan commitment is classified as derivatives held for trading.

Financial liabilities designated at fair value through profit or loss - Certain financial liabilities that do not meet the definition of trading liabilities are designated at fair value through profit or loss using the fair value option. To be designated at fair value through profit or loss, financial liabilities must meet one of the following criteria: (1) the designation eliminates or significantly reduces a measurement or recognition inconsistency; (2) a group of financial liabilities is managed and its performance is evaluated on a fair value basis in accordance with a documented risk management or investment strategy; or (3) the instrument contains one or more embedded derivatives unless: (a) the embedded derivative does not significantly modify the cash flows that otherwise would be required by the contract; or (b) it is clear with little or no analysis that separation is prohibited. In addition, the Group allows the fair value option to be designated only for those financial instruments for which a reliable estimate of fair value can be obtained. Financial liabilities which are designated at fair value through profit or loss, under the fair value option, include repurchase agreements, loan commitments and structured note liabilities.

Investment contracts - All of the Group’s investment contracts are unit-linked contracts that match specific assets held by the Group. The contracts oblige the Group to use these assets to settle investment contract liabilities. They do not contain significant insurance risk or discretionary participation features. The contract liabilities are determined using current unit prices multiplied by the number of units attributed to the contract holders as of the balance sheet date. As this amount represents fair value, the liabilities have been classified as financial liabilities at fair value through profit or loss. Deposits collected under investment contracts are accounted for as an adjustment to the investment contract liabilities. Investment income attributable to investment contracts is included in the consolidated statement of Income. Investment contract claims reflect the excess of amounts paid over the account balance released. Investment contract policyholders are charged fees for policy administration, investment management, surrenders or other contract services.

Embedded derivatives

Some hybrid financial liability contracts contain both a derivative and a non-derivative component. In such cases, the derivative component is termed an embedded derivative, with the non-derivative component representing the host financial liability contract. If the economic characteristics and risks of embedded derivatives are not closely related to those of the host financial liability contract and the hybrid financial liability contract itself is not carried at fair value through profit or loss, the embedded derivative is bifurcated and reported at fair value, with gains and losses recognized in net gains (losses) on financial assets/liabilities at fair value through profit or loss. The host financial liability contract will continue to be accounted for in accordance with the appropriate accounting standard. The carrying amount of an embedded derivative is reported in the same Consolidated balance sheet line item as the host financial liability contract. Certain hybrid financial liability instruments have been designated at fair value through profit or loss using the fair value option.

Financial liabilities at amortized cost

Financial liabilities measured at amortized cost include long-term and short-term debt issued which are initially measured at fair value, which is the consideration received, net of transaction costs incurred. Repurchases of issued debt in the market are treated as extinguishments and any related gain or loss is recorded in the Consolidated Statement of Income. A subsequent sale of own bonds in the market is treated as a reissuance of debt. Financial liabilities measured at amortized cost are recognized on a settlement date basis.

Derecognition of financial assets and liabilities

Financial asset derecognition

A financial asset is considered for derecognition when the contractual rights to the cash flows from the financial asset expire, or the Group has either transferred the contractual right to receive the cash flows from that asset, or has assumed an obligation to pay those cash flows to one or more recipients, subject to certain criteria.

The Group derecognizes a transferred financial asset if it transfers substantially all the risks and rewards of ownership.

The Group enters into transactions in which it transfers previously recognized financial assets but retains substantially all the associated risks and rewards of those assets; for example, a sale to a third party in which the Group enters into a concurrent total return swap with the same counterparty. These types of transactions are accounted for as secured financing transactions.

In transactions in which substantially all the risks and rewards of ownership of a financial asset are neither retained nor transferred, the Group derecognizes the transferred asset if control over that asset is not retained, i.e., if the transferee has the practical ability to sell the transferred asset. The rights and obligations retained in the transfer are recognized separately as assets and liabilities, as appropriate. If control over the asset is retained, the Group continues to recognize the asset to the extent of its continuing involvement, which is determined by the extent to which it remains exposed to changes in the value of the transferred asset.

The derecognition criteria are also applied to the transfer of part of an asset, rather than the asset as a whole, or to a group of similar financial assets in their entirety, when applicable. If transferring a part of an asset, such part must be a specifically identified cash flow, a fully proportionate share of the asset, or a fully proportionate share of a specifically-identified cash flow.

If an existing financial asset is replaced by another asset from the same counterparty on substantially different terms, or if the terms of the financial asset are substantially modified (due to forbearance measures or otherwise), the existing financial asset is derecognized and a new asset is recognized. Any difference between the respective carrying amounts is recognized in the Consolidated Statement of Income.

Securitization

The Group securitizes various consumer and commercial financial assets, which is achieved via the transfer of these assets to a structured entity, which issues securities to investors to finance the acquisition of the assets. Financial assets awaiting securitization are classified and measured as appropriate under the policies in the “Financial Assets” and “Financial Liabilities” sections. If the structured entity is not consolidated then the transferred assets may qualify for derecognition in full or in part, under the policy on derecognition of financial assets. Synthetic securitization structures typically involve derivative financial instruments. Those transfers that do not qualify for derecognition may be reported as secured financing or result in the recognition of continuing involvement liabilities. The investors and the securitization vehicles generally have no recourse to the Group's other assets in cases where the issuers of the financial assets fail to perform under the original terms of those assets.

Interests in the securitized financial assets may be retained in the form of senior or subordinated tranches, interest only strips or other residual interests (collectively referred to as "retained interests"). Provided the Group's retained interests do not result in consolidation of a structured entity, nor in continued recognition of the transferred assets, these interests are typically recorded in financial assets at fair value through profit or loss and carried at fair value. Consistent with the valuation of similar financial instruments, the fair value of retained tranches or the financial assets is initially and subsequently determined using market price quotations where available or internal pricing models that utilize variables such as yield curves, prepayment speeds, default rates, loss severity, interest rate volatilities and spreads. The assumptions used for pricing are based on observable transactions in similar securities and are verified by external pricing sources, where available. Where observable transactions in similar securities and other external pricing sources are not available, management judgment must be used to determine fair value. The Group may also periodically hold interests in securitized financial assets and record them at amortized cost.

In situations where the Group has a present obligation (either legal or constructive) to provide financial support to an unconsolidated securitization entity a provision will be created if the obligation can be reliably measured and it is probable that there will be an outflow of economic resources required to settle it.

When an asset is derecognized a gain or loss equal to the difference between the consideration received and the carrying amount of the transferred asset is recorded. When a part of an asset is derecognized, gains or losses on securitization depend in part on the carrying amount of the transferred financial assets, allocated between the financial assets derecognized and the retained interests based on their relative fair values at the date of the transfer.

Derecognition of financial liabilities

A financial liability is derecognized when the obligation under the liability is discharged or cancelled or expires. If an existing financial liability is replaced by another from the same lender on substantially different terms, or the terms of the existing liability are substantially modified, such an exchange or modification is treated as a derecognition of the original liability and the recognition of a new liability, and the difference in the respective carrying amounts is recognized in the Consolidated Statement of Income.

External rating agencies used for securitizations (Article 449 (h) CRR) (EU SECA)

According to Article 270 (d) CRR the Group has nominated the following list of External Credit Assessment Institutes (ECAIs), whose ratings are used in determining risk weights in line with Articles 263 and 264 CRR:

– DBRS Morningstar
– Fitch Ratings
– Kroll Bond Rating Agency
– Moody's Investors Service
– Standard & Poor's Ratings Services

All the rating information received from above listed ECAIs is used indiscriminately for all securitization positions to which they apply, and there is no preference of ECAI per exposure type imposed by us.

Internal Assessment Approach (Article 449 (i) CRR) (EU SECA)

As the Group ceased to use ABCP programs in 2015, there are no securitizations positions subject to the Internal Assessment Approach as of December 31, 2021. For a description of the RWA calculation approaches used for securitization positions please refer to the section "RWA calculation approaches for securitization positions (Article 449 (c) CRR) (EU SECA)" in this Pillar 3 report.

Banking and trading book securitization exposures (Article 449 (j) CRR)

The amounts reported in the following two tables provide details of our securitization exposures separately for the regulatory non-trading and trading book. The details of our trading book securitization positions subject to the market risk standardized approach (MRSA) are included in this chapter.

The table EU SEC1 details the total non-trading book securitization exposure split by exposure type that we have securitized in our capacity as either originator or sponsor and finally positions which have been purchased through investment activities as investor. Each table provides a break-down by traditional and synthetic as well as simple transparent and standardized (STS) and non-STS securitization transactions. The originator and sponsor columns (a-k) also contain retained positions, even where we do not achieve significant risk transfer (SRT) and show the current retention of our contribution to the originated or sponsored amount. The amounts reported are the securitized principal notional amounts where no SRT is achieved else the aggregated regulatory exposure values (EAD) are shown. As the Group ceased the use of ABCP programs in 2015, there are no securitizations positions subject to the Internal Assessment Approach as of December 31, 2021.

The table EU SEC2 provides the total purchased or retained securitization exposure held in our regulatory trading book separately for originator, sponsor and investor activities split by exposure type of the securitized assets and also further broken down into traditional and synthetic transactions as well as STS and non-STS securitizations. The amounts reported are the aggregated regulatory exposure values (EAD).

EU SEC1 – Securitization exposures in the non-trading book

															Dec 31, 2021
	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
	Institution acts as originator							Institution acts as sponsor				Institution acts as investor			
	Traditional				Synthetic			Traditional		Synthetic		Traditional		Synthetic	
in € m.	STS	of which: SRT	Non-STS	of which: SRT	Total	of which: SRT	Subtotal	STS	Non-STS		Subtotal	STS	Non-STS		Subtotal
Total exposures	4,282	0	114	114	19,560	19,560	23,956	0	2,030	0	2,030	1,199	41,431	0	42,630
Retail	4,282	0	43	43	0	0	4,325	0	1,605	0	1,605	961	11,267	0	12,228
of which:															
Residential Mortgage	0	0	43	43	0	0	43	0	1,569	0	1,569	858	5,755	0	6,613
Credit Card	0	0	0	0	0	0	0	0	0	0	0	0	467	0	467
Other retail exposures	4,282	0	0	0	0	0	4,282	0	36	0	36	103	5,044	0	5,147
Re-securitization	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wholesale	0	0	71	71	19,560	19,560	19,631	0	425	0	425	238	30,165	0	30,402
of which:															
Loans to corporates	0	0	18	18	19,560	19,560	19,578	0	327	0	327	11	22,945	0	22,956
Commercial Mortgage	0	0	53	53	0	0	53	0	72	0	72	0	351	0	351
Lease and receivables	0	0	0	0	0	0	0	0	26	0	26	143	3,245	0	3,387
Other wholesale	0	0	0	0	0	0	0	0	0	0	0	84	3,624	0	3,708
Re-securitization	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

															Jun 30, 2021
	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
	Institution acts as originator							Institution acts as sponsor				Institution acts as investor			
	Traditional				Synthetic			Traditional				Traditional		Synthetic	
in € m.	STS	of which: SRT	Non-STS	of which: SRT	Total	of which: SRT	Subtotal	STS	Non-STS	Synthetic	Subtotal	STS	Non-STS		Subtotal
Total exposures	0	0	111	111	19,411	19,411	19,522	0	2,551	0	2,551	1,412	38,716	0	40,128
Retail	0	0	45	45	0	0	45	0	1,625	0	1,625	1,102	11,366	0	12,468
of which:															
Residential Mortgage	0	0	45	45	0	0	45	0	1,606	0	1,606	973	4,970	0	5,943
Credit Card	0	0	0	0	0	0	0	0	0	0	0	0	477	0	477
Other retail exposures	0	0	0	0	0	0	0	0	18	0	18	129	5,919	0	6,047
Re-securitization	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wholesale	0	0	66	66	19,411	19,411	19,477	0	927	0	927	309	27,350	0	27,660
of which:															
Loans to corporates	0	0	18	18	19,411	19,411	19,429	0	423	0	423	0	18,609	0	18,609
Commercial Mortgage	0	0	46	46	0	0	46	0	177	0	177	0	284	0	284
Lease and receivables	0	0	0	0	0	0	0	0	0	0	0	129	3,963	0	4,091
Other wholesale	0	0	1	1	0	0	1	0	327	0	327	181	4,494	0	4,675
Re-securitization	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

EU SEC2 – Securitization exposures in the trading book

												Dec 31, 2021
	a	b	c	d	e	f	g	h	i	j	k	l
			Institution acts as originator				Institution acts as sponsor				Institution acts as investor	
	Traditional		Synthetic		Traditional		Synthetic		Traditional		Synthetic	
in € m.	STS	Non-STS		Subtotal	STS	Non-STS		Subtotal	STS	Non-STS		Subtotal
Total exposures	0	466	0	466	0	3	0	3	2	1,943	22	1,967
Retail	0	0	0	0	0	3	0	3	0	683	0	683
of which:												
Residential Mortgage	0	0	0	0	0	3	0	3	0	572	0	572
Credit Card	0	0	0	0	0	0	0	0	0	8	0	8
Other retail exposures	0	0	0	0	0	0	0	0	0	103	0	103
Re-securitization	0	0	0	0	0	0	0	0	0	0	0	0
Wholesale	0	466	0	466	0	0	0	0	2	1,261	22	1,284
of which:												
Loans to corporates	0	0	0	0	0	0	0	0	0	392	22	414
Commercial Mortgage	0	466	0	466	0	0	0	0	0	735	0	735
Lease and receivables	0	0	0	0	0	0	0	0	2	18	0	20
Other wholesale	0	0	0	0	0	0	0	0	0	116	0	116
Re-securitization	0	0	0	0	0	0	0	0	0	0	0	0

...

												Jun 30, 2021
	a	b	c	d	e	f	g	h	i	j	k	l
			Institution acts as originator				Institution acts as sponsor				Institution acts as investor	
	Traditional				Traditional				Traditional			
in € m.	STS	Non-STS	Synthetic	Subtotal	STS	Non-STS	Synthetic	Subtotal	STS	Non-STS	Synthetic	Subtotal
Total exposures	0	280	0	280	0	15	0	15	2	1,977	9	1,988
Retail	0	0	0	0	0	15	0	15	2	571	0	573
of which:												
Residential Mortgage	0	0	0	0	0	15	0	15	2	445	0	447
Credit Card	0	0	0	0	0	0	0	0	0	50	0	50
Other retail exposures	0	0	0	0	0	0	0	0	0	76	0	76
Re-securitization	0	0	0	0	0	0	0	0	0	0	0	0
Wholesale	0	280	0	280	0	0	0	0	0	1,405	9	1,414
of which:												
Loans to corporates	0	0	0	0	0	0	0	0	0	569	9	578
Commercial Mortgage	0	280	0	280	0	0	0	0	0	677	0	677
Lease and receivables	0	0	0	0	0	0	0	0	0	23	0	23
Other wholesale	0	0	0	0	0	0	0	0	0	136	0	136
Re-securitization	0	0	0	0	0	0	0	0	0	0	0	0

Overall, the aggregate exposure volume generated by the securitization business was at about € 71.1 billion as of December 31, 2021, which was an increase of € 6.6 billion compared to June 30, 2021. A large majority of the exposure resided in the non-trading book (€ 68.6 billion, see table EU SEC1), whereas the trading book portion represented only a minor contribution of € 2.4 billion aggregate exposure value (see table EU SEC2). That was an increase of € 6.4 billion in the non-trading book driven by originator positions and an increase of € 0.2 billion in the trading book, compared to June 30, 2021.

As of December 31, 2021, in the non-trading book there were two dominant contributions, which together cover € 62.2 billion of the total € 68.6 billion aggregate exposure volume of that book. One dominant part consisted of the traditional securitizations with a volume of € 42.6 billion, where the Group acts as investor by purchasing securitization investments. The other dominant part was composed of the synthetic securitization transactions with a volume of € 19.6 billion, where the Group acts as originator. From a securitized asset perspective, the dominant asset types were loans to corporates and mortgages (commercial mortgages and residential mortgages). In the non-trading book the loans to corporates underlied € 42.9 billion of exposure volume, or 62 % of the overall exposure volume in the non-trading book, and in the trading book they covered € 0.4 billion, representing 17 % of the total exposure volume of that book. The mortgages represented the dominant part in the trading book with € 1.8 billion out of € 2.4 billion, whereas the mortgages in the non-trading book with a contribution of € 8.7 billion represented the less dominant part in that book. Together, the securitized asset types “Loans to corporates” and “Mortgage”, underlied around € 53.8 billion of € 71.1 billion overall securitization position exposure, which represented 76 % of that volume.

Of the overall volume of securitization business of € 71.1 billion only a minority of € 5.5 billion was classified as simple, transparent and standardized (STS). This represented 7.7 % of the overall exposure volume in securitizations. Comparing this to June 30, 2021, where the portion of STS was 2.2 % this means that this portion has more than tripled in the meantime. However, the increase of € 4.1 billion was mainly related to additional activity in self-securitization, where no risk transfer was achieved, nor is currently targeted.

Securitization exposures in the non-trading book and associated regulatory capital requirements - institution acting as originator or as sponsor (Article 449 (k)(i) CRR)

The table EU SEC3 presents the retained or purchased non-trading book securitizations, where the Group acts as originator or sponsor.

Firstly, we provide the exposure values broken down by risk-weight bands (columns a-e). Additionally we present the exposure values, risk weighted exposure amounts and capital requirements separately for each regulatory RWA calculation approach (columns f-q). All just mentioned values are horizontally broken down by traditional and synthetic transactions, securitization and re-securitization, as well as by retail or wholesale and a specific column for STS for traditional transactions.

For the meaning of the names used in the following sections for the regulatory calculation approaches of the securitization framework (SEC-IRBA, SEC-SA and SEC-ERBA), please see the short description below.

- SEC-IRBA (Articles 259 and 260 CRR): Approach to be used in case the securitized assets would be treated under the IRBA approach if not securitized and reside on the Group’s books. At least 95 % of the exposure value of the securitized assets need to be treated under the IRBA approaches in order to apply this approach. There are a number of additional requirements in order to apply this approach (see Article 258 CRR).
- SEC-SA (Articles 261 and 262 CRR): In case SEC-IRBA is not applicable, the SEC-SA is generally to be applied. For this the capital requirement ratio under the SA approach (KSA) for the pool of securitized assets needs to be calculated as if they were not securitized and as if they were on the Group’s book. In addition the delinquent asset ratio on the pool level needs to be determined.
- SEC-ERBA (Articles 263 and 264 CRR): This can be applied, if an eligible external or inferred rating is available. The risk weight is determined by a lookup table from the rating letter and the maturity of the position. In case the SEC-ERBA is available there are certain rules to determine when the SEC-ERBA is to be used instead of the SEC-SA (for details see Article 254 CRR).
- 1,250 %: In all other cases, a risk weight of 1,250 % is applied.

EU SEC3 – Securitization exposures in the non-trading book and associated regulatory capital requirements - institution acting as originator or as sponsor

Dec 31, 2021

	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q
		Exposure values (by RW bands/deductions)				Exposure values (by regulatory approach)				RWA (by regulatory approach)				Capital charge after cap			
in € m.		>20% to 50% RW	>50% to 100% RW	>100% to <1250% RW	1250% RW/ deductions	SEC-IRBA	SEC-ERBA(including IAA)	SEC-SA	1250% / deductions	SEC-IRBA	SEC-ERBA(including IAA)	SEC-SA	1250% / deductions	SEC-IRBA	SEC-ERBA(including IAA)	SEC-SA	1250% / deductions
Total exposures	18,650	2,961	2	64	26	21,433	70	174	26	3,455	163	56	327	291	7	3	25
Traditional transactions	2,064	18	2	59	0	1,899	70	174	0	294	163	56	6	21	7	3	0
Securitization	2,064	18	2	59	0	1,899	70	174	0	294	163	56	2	21	7	3	0
Retail underlying	1,597	18	2	30	0	1,595	42	10	0	248	113	4	2	17	3	0	0
of which:																	
STS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wholesale	467	0	0	28	0	304	28	164	0	46	50	52	0	4	4	3	0
of which:																	
STS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-securitization	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0
Synthetic transactions	16,586	2,943	0	5	26	19,534	0	0	26	3,162	0	0	320	270	0	0	24
Securitization	16,586	2,943	0	5	26	19,534	0	0	26	3,162	0	0	320	270	0	0	24
Retail underlying	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wholesale	16,586	2,943	0	5	26	19,534	0	0	26	3,162	0	0	320	270	0	0	24
Re-securitization	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Jun 30, 2021

	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q
		Exposure values (by RW bands/deductions)				Exposure values (by regulatory approach)				RWA (by regulatory approach)				Capital charge after cap			
in € m.		>20% to 50% RW	>50% to 100% RW	>100% to <1250% RW	1250% RW/ deductions	SEC-IRBA	SEC-ERBA(including IAA)	SEC-SA	1250% / deductions	SEC-IRBA	SEC-ERBA(including IAA)	SEC-SA	1250% / deductions	SEC-IRBA	SEC-ERBA(including IAA)	SEC-SA	1250% / deductions
Total exposures	21,977	10	12	71	3	21,666	71	332	3	3,408	173	134	42	278	7	5	3
Traditional transactions	2,578	10	12	59	3	2,255	71	332	3	350	173	134	42	24	7	5	3
Securitization	2,578	10	12	59	3	2,255	71	332	3	350	173	134	41	24	7	5	3
Retail underlying	1,614	10	12	34	0	1,613	44	12	0	254	126	86	2	17	3	1	0
of which:																	
STS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wholesale	964	0	0	25	3	642	27	321	3	96	48	48	40	8	4	4	3
of which:																	
STS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-securitization	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Synthetic transactions	19,399	0	0	12	0	19,411	0	0	0	3,058	0	0	0	254	0	0	0
Securitization	19,399	0	0	12	0	19,411	0	0	0	3,058	0	0	0	254	0	0	0
Retail underlying	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wholesale	19,399	0	0	12	0	19,411	0	0	0	3,058	0	0	0	254	0	0	0
Re-securitization	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

The overall exposure volume of the securitization exposures in the non-trading book was € 64.3 billion by December 31, 2021, of which € 21.7 billion were represented by positions for which the Group acts as originator or sponsor, which was a minor decrease of € 0.4 billion compared to June 30, 2021. The securitization exposure for these two roles were concentrated in the lowest risk-weight band, with risk-weights equal to or lower than 20 %. These positions were treated to a great portion by the SEC-IRBA method of the securitization framework of CRR. This reflects first and foremost the way the own synthetic securitizations, which covered €19.6 billion or 90 % of the € 21.7 billion of exposure volume, are structured, namely such that the senior tranche which attracts a minimal risk-weight is kept, while subordinated tranches are transferred to third parties. In consequence, the RWA before capping and the capital requirements were also concentrated under the method of SEC-IRBA. On the other hand, the overall capital requirements for originators and sponsors amount increased by € 33 million from € 293 million as of June 30, 2021 to € 326 million by December 31, 2021, of which € 291 million or circa 89 % were treated under SEC-IRBA. That development has its cause in two factors, both resulting from changes in the synthetic securitization portfolio. First, around € 2.9 billion of exposure moved above the 20 % threshold shifting that volume visibly from the risk-weight bucket of below or equal to 20 % to the bucket between 20 % and 50 %. This resulted in an increase of capital requirements of around € 13 million. And secondly a new synthetic transaction went live, which is structured differently, namely such that the mezzanine part of the waterfall is transferred to a third party and the first loss part is kept which increased the exposure volume in the 1,250 % column by € 22 million and therefore resulted in a corresponding increase of the same amount in the capital requirements.

Securitization exposures in the non-trading book and associated regulatory capital requirements - institution acting as investor (Article 449 (k)(ii) CRR)

The table EU SEC4 presents the purchased non-trading book securitizations, where the Group acts as investor, i.e. wherever the Group is not acting as originator or sponsor.

Firstly we provide the exposure values broken down by risk-weight bands (columns a-e). Additionally we present the exposure values, risk weighted exposure amounts and capital requirements for securitization positions provided separately for each regulatory RWA calculation approach (columns f-q). All just mentioned values are vertically broken down by traditional and synthetic transactions, securitization and re-securitization, as well as by retail or wholesale and a specific column for STS for traditional transactions.

EU SEC4 – Securitization exposures in the non-trading book and associated regulatory capital requirements - institution acting as investor

Dec 31, 2021

	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q
		Exposure values (by RW bands/deductions)				Exposure values (by regulatory approach)				RWA (by regulatory approach)				Capital charge after cap			
in € m.		>20% to 50% RW	>50% to 100% RW	>100% to <1250% RW	1250% RW/ deductions	SEC-IRBA	SEC-ERBA(including IAA)	SEC-SA	1250% / deductions	SEC-IRBA	SEC-ERBA(including IAA)	SEC-SA	1250% / deductions	SEC-IRBA	SEC-ERBA(including IAA)	SEC-SA	1250% / deductions
Total exposures	38,859	2,333	1,148	274	16	20,114	1,133	21,367	16	3,822	502	6,061	197	279	31	323	16
Traditional transactions	38,859	2,333	1,148	274	16	20,114	1,133	21,367	16	3,822	502	6,061	197	279	31	323	16
Securitization	38,859	2,333	1,148	274	16	20,114	1,133	21,367	16	3,822	502	6,061	196	279	31	323	16
Retail underlying	9,649	1,578	773	228	0	7,514	844	3,870	0	1,674	463	3,178	1	113	28	92	0
of which:																	
STS	922	39	0	0	0	0	400	561	0	0	40	68	0	0	3	5	0
Wholesale	29,210	755	375	47	16	12,600	290	17,497	16	2,148	39	2,884	195	166	3	231	16
of which:																	
STS	238	0	0	0	0	0	238	0	0	0	24	0	0	0	2	0	0
Re-securitization	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Synthetic transactions	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Securitization	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Retail underlying	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wholesale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-securitization	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Jun 30, 2021

	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q
		Exposure values (by RW bands/deductions)				Exposure values (by regulatory approach)				RWA (by regulatory approach)				Capital charge after cap			
in € m.		>20% to 50% RW	>50% to 100% RW	>100% to <1250% RW	1250% RW/ deductions	SEC-IRBA	SEC-ERBA(including IAA)	SEC-SA	1250% / deductions	SEC-IRBA	SEC-ERBA(including IAA)	SEC-SA	1250% / deductions	SEC-IRBA	SEC-ERBA(including IAA)	SEC-SA	1250% / deductions
Total exposures	36,052	2,608	1,129	318	20	19,124	1,342	19,642	20	3,950	504	6,142	253	282	34	298	20
Traditional transactions	36,052	2,608	1,129	318	20	19,124	1,342	19,642	20	3,950	504	6,142	253	282	34	298	20
Securitization	36,052	2,608	1,129	318	20	19,124	1,342	19,642	20	3,950	504	6,142	253	282	34	298	20
Retail underlying	9,685	1,713	814	276	5	8,009	840	3,641	5	1,948	432	3,545	59	125	30	90	5
of which:																	
STS	1,055	47	0	0	0	0	175	928	0	0	17	103	0	0	1	8	0
Wholesale	26,367	895	315	42	16	11,115	502	16,001	16	2,002	73	2,597	194	157	4	208	16
of which:																	
STS	309	0	0	0	0	0	291	18	0	0	30	2	0	0	1	0	0
Re-securitization	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Synthetic transactions	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Securitization	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Retail underlying	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wholesale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-securitization	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

The overall exposure volume of the securitization exposures in the non-trading book was € 64.3 billion by December 31, 2021, for which € 42.6 billion the Group acts as investor, which was an increase of 2.5 billion compared with June 30, 2021. With € 38.9 billion, or 91% of the exposure volume, the majority of the exposure volume of the investor portfolio was concentrated in the lowest risk-weight bucket, with risk-weights below or equal to 20%. A minor portion of € 2.3 billion or 5% is allocated to the second lowest risk-weight bucket of risk-weights greater than 20% and lower than or equal to 50%. The methods applied to the investor portfolio were to almost identical extent the SEC-IRBA and the SEC-SA. The SEC-SA was applied to an exposure volume of € 21.4 billion or 50% and the SEC-IRBA was applied to € 20.1 billion or 47% of the full investor exposure amount. A minority portion of € 1.1 billion was covered by the SEC-ERBA. The least beneficial approach resulting in 1250% risk-weight had to be applied only to € 16 million exposure volume of this portfolio. In consequence for capital requirements after cap, also the two look-through approaches, SEC-IRBA and SEC-SA, covered almost 93% of the investor portfolio capital requirement, which amounted to € 602 million. The SEC-SA covered € 323 million or 50% and the SEC-IRBA covered € 279 million or 43% of the overall capital requirements of 649 million, which was an increase of 15 million compared with June 30, 2021 with an amount of 634 million.

Compared to June 30, 2021 there was an increase of € 2.1 billion in the overall exposure volume of the non-trading book, across all three roles, which was mainly driven by investor positions. That movement was mainly resulting from an increase of € 2.5 billion in the investor activities, only partly balanced by a decrease of € 0.5 billion in the sponsor business, which was due to amortization of current pools or outplacing to market. In consequence the overall capital requirements of the non-trading book increased slightly by 5% from € 927 million as of June 30, 2021, to € 975 million by December 31, 2021.

Exposures securitized by the institution - Exposures in default and specific credit risk adjustments (Article 449 (l) CRR)

The table EU SEC5 presents the outstanding nominal amounts where the Group acts as originator or sponsor along with exposures which have been classified as defaulted according to Article 178 CRR and its relating specific credit risk adjustments in accordance with Article 110 CRR. The amounts are broken down by the exposure type of the securitized exposures. The outstanding nominal amounts shown correspond to the share of the Group's contribution to the securitized assets.

EU SEC5 - Article 449 (l) CRR - Exposures securitized by the institution - Exposures in default and specific credit risk adjustments

	Dec 31, 2021		
	a	b	c
	Exposures securitized by the institution - Institution acts as originator or sponsor		
	Total outstanding nominal amount		Total amount of specific credit risk adjustments made during the period
in € m.	Total	of which exposures in default	
Total exposures	122,741	3,884	73
Retail (total)	36,672	1,773	0
Residential mortgage	32,115	1,741	0
Credit card	0	0	0
Other retail exposures	4,525	32	0
Re-securitization	32	0	0
Wholesale (total)	86,070	2,111	73
Loans to corporates	22,648	73	73
Commercial mortgage	63,301	2,038	0
Lease and receivables	28	0	0
Other wholesale	91	0	0
Re-securitization	1	0	0

...

	June 30, 2020		
	a	b	c
	Exposures securitized by the institution - Institution acts as originator or as sponsor		
	Total outstanding nominal amount		Total amount of specific credit risk adjustments made during the period
in € m.	Total	of which exposures in default	
Total exposures	112,596	3,727	84
Retail (total)	33,657	1,722	0
Residential mortgage	33,459	1,722	0
Credit card	0	0	0
Other retail exposures	198	0	0
Re-securitization	0	0	0
Wholesale (total)	78,939	2,005	84
Loans to corporates	22,809	99	84
Commercial mortgage	55,079	1,906	0
Lease and receivables	0	0	0
Other wholesale	955	0	0
Re-securitization	96	0	0

...

The total outstanding nominal amount of securitized assets by the Group in the roles of originator or sponsor by December 31, 2021 was € 122.7 billion, which was an increase of € 10.2 billion compared with € 112.6 billion by June 30, 2021, which was mainly driven by the increase of € 8.2 billion on the asset type commercial mortgage from € 55.1 billion by June 30, 2021 to € 63.3 billion as of December 31, 2021. The outstanding nominal amount where the Group acts as originator contributed the majority of € 118.4 billion or 96 % of the total outstanding nominal amount. The outstanding nominal amount where the Group acts as sponsor was represented by € 4.3 billion or 4 % of the total outstanding amount. Breaking down the total outstanding nominal amount of securitized assets into asset types, first there are the mortgages contributing € 95.4 billion or 78 % of the total outstanding amount. These can be broken down into the commercial mortgages representing € 63.3 billion of outstanding amount and the residential mortgages contributing € 32.1 billion of outstanding nominal amount. The second essential part was comprised of the loans to corporates, which contributed € 22.6 billion of outstanding nominal amount or 18 % of the total outstanding nominal amount.

Securitized assets flagged as defaulted by December 31, 2021 added up to a total of € 3.9 billion, which were split into € 2.0 billion for commercial mortgages, € 1.7 billion for residential mortgages and € 0.1 billion for loans to corporates. This reflected a minor increase of € 0.2 billion compared with June 30, 2021. In relative terms the defaulted asset ratios were 3.2 % for commercial mortgages, 5.4 % for residential mortgages and 0.3 % for loans to corporates.

Market risk

Risk management objectives and policies

Market risk management strategies and processes (Article 435 (1)(a) CRR) (EU OVA & EU MRA)

The vast majority of our businesses are subject to market risk, defined as the potential for change in the market value of our trading and invested positions. Risk can arise from changes in interest rates, credit spreads, foreign exchange rates, equity prices, commodity prices and other relevant parameters, such as market volatility and market implied default probabilities. The market risk can affect accounting, economic and regulatory views of our exposure.

Market Risk Management is part of our independent Risk function and sits within the Market and Valuations Risk Management group. One of the primary objectives of Market Risk Management is to ensure that our business units' risk exposure is within the approved risk appetite commensurate with its defined strategy. To achieve this objective, Market Risk Management works closely together with risk takers ("the business units") and other control and support groups.

Market Risk Management governance is designed and established to promote oversight of all market risks, effective decision making and timely escalation to senior management. Market Risk Management defines and implements a framework to systematically identify, assess, monitor and report our market risk. Market risk managers identify market risks through active portfolio analysis and engagement with the business units.

Market risk management structure and organization (Article 435 (1)(b) CRR) (EU OVA & EU MRA)

Market Risk framework

Market Risk Management is part of our independent Risk function and sits within the Market and Valuations Risk Management group. One of the primary objectives of Market Risk Management is to ensure that our business units' risk exposure is within the approved risk appetite commensurate with its defined strategy. To achieve this objective, Market Risk Management works closely together with risk takers ("the business units") and other control and support groups.

We distinguish between three substantially different types of market risk:

- Trading market risk arises primarily through the market-making and client facilitation activities of the Investment Bank and Corporate Bank divisions. This involves taking positions in debt, equity, foreign exchange, other securities and commodities as well as in equivalent derivatives.
- Traded default risk arising from defaults and rating migrations relating to trading instruments.
- Nontrading market risk arises from market movements, primarily outside the activities of our trading units, in our banking book and from off-balance sheet items. This includes interest rate risk, credit spread risk, investment risk and foreign exchange risk as well as market risk arising from our pension schemes, guaranteed funds and equity compensation. Nontrading market risk also includes risk from the modeling of client deposits as well as savings and loan products.

Market Risk measurement

We aim to accurately measure all types of market risks by a comprehensive set of risk metrics embedding accounting, economic and regulatory considerations.

We measure market risks by several internally developed key risk metrics and regulatory defined market risk approaches.

Trading Market Risk

Our primary mechanism to manage trading market risk is the application of our risk appetite framework of which the limit framework is a key component. Our Management Board, supported by Market Risk Management, sets group-wide value-at-risk, economic capital and portfolio stress testing limits for market risk in the trading book. Market Risk Management allocates this overall appetite to our Corporate Divisions and their individual business units based on established and agreed business plans. We also have business aligned heads within Market Risk Management who establish business unit limits, by allocating the limit down to individual portfolios, geographical regions and types of market risks.

Value-at-risk, economic capital and portfolio stress testing limits are used for managing all types of market risk at an overall portfolio level. As an additional and important complementary tool for managing certain portfolios or risk types, Market Risk Management performs risk analysis and business specific stress testing. Limits are also set on sensitivity and concentration/liquidity, exposure, business-level stress testing and event risk scenarios, taking into consideration business plans and the risk versus return assessment.

Business units are responsible for adhering to the limits against which exposures are monitored and reported. The market risk limits set by Market Risk Management are monitored on a daily, weekly and monthly basis, dependent on the risk management tool being used.

Nontrading Market Risk

Nontrading market risk arises primarily from activities outside of our trading units, in our banking book, and from certain off-balance sheet items, embedding considerations of different accounting treatment of transactions. Significant market risk factors the Group is exposed to and are overseen by risk management groups in that area are:

- Interest rate risk (including risk from embedded optionality and changes in behavioral patterns for certain product types), credit spread risk, foreign exchange risk, equity risk (including investments in public and private equity as well as real estate, infrastructure and fund assets).
- Market risks from off-balance sheet items, such as pension schemes and guarantees, as well as structural foreign exchange risk and equity compensation risk.

As for trading market risks our risk appetite and limit framework is also applied to manage our exposure to nontrading market risk. On group level those are captured by the management board set limits for market risk economic capital capturing exposures to all market risks across asset classes as well as earnings and economic value based limits for interest rate risk in the banking books. Those limits are cascaded down by market risk management to the divisional or portfolio level. The limit framework for nontrading market risk exposure is further complemented by a set of business specific stress tests, value-at-risk and sensitivity limits monitored on a daily or monthly basis dependent on the risk measure being used.

Scope and nature of market risk measurement and reporting systems (Article 435 (1)(c) CRR) (EU OVA & EU MRA)

The scope and nature of our market risk measurement and reporting systems are described in the section “Scope and nature of risk measurement and reporting systems (Article 435 (1)(c) CRR) (EU OVA)” of this document.

Policies for hedging and mitigating market risk (Article 435 (1)(d) CRR) (EU OVA & EU MRA)

The approach to hedging and managing market risk is governed by policies explicitly designed to ensure that all hedging activities are risk reducing, not proprietary in nature and are documented prior to trade execution. Hedging activities are reviewed by the relevant business control forum. Further description of the hedging approach for specific areas in the banking book are outlined below.

Nontrading Market Risk

Nontrading market risk arises primarily from activities outside of our trading units, in our banking book, and from certain off-balance sheet items, embedding considerations of different accounting treatment of transactions. Significant market risk factors the Group is exposed to and are overseen by risk management groups in that area are:

- Interest rate risk (including risk from embedded optionality and changes in behavioral patterns for certain product types), credit spread risk, foreign exchange risk, equity risk (including investments in public and private equity as well as real estate, infrastructure and fund assets).
- Market risks from off-balance sheet items, such as pension schemes and guarantees, as well as structural foreign exchange risk and equity compensation risk.

As for trading market risks our risk appetite and limit framework is also applied to manage our exposure to nontrading market risk. On group level those are captured by the management board set limits for market risk economic capital capturing exposures to all market risks across asset classes as well as earnings and economic value based limits for interest rate risk in the banking books. Those limits are cascaded down by market risk management to the business divisional or portfolio level. The limit framework for nontrading market risk exposure is further complemented by a set of business specific stress tests, value-at-risk and sensitivity limits monitored on a daily or monthly basis dependent on the risk measure being used.

Interest Rate Risk in the Banking Book

Interest rate risk in the banking book (IRRBB) is the current or prospective risk, to both the Group's capital and earnings, arising from movements in interest rates, which affect the Group's banking book exposures. This includes gap risk, which arises from the term structure of banking book instruments, basis risk, which describes the impact of relative changes in interest rates for financial instruments that are priced using different interest rate curves, as well as option risk, which arises from option derivative positions or from optional elements embedded in financial instruments.

The Group manages its IRRBB exposures using economic value as well as earnings based measures. Our Group Treasury function is mandated to manage the interest rate risk centrally, with Market Risk Management acting as an independent oversight function.

Economic value based measures look at the change in economic value of banking book assets, liabilities and off-balance sheet exposures resulting from interest rate movements, independent of the accounting treatment. Thereby the Group

ok economic value

under the six standard scenarios defined by the European Banking Authority (EBA) in addition to internal stress scenarios for risk steering purposes.

Earnings-based measures look at the expected change in Net Interest Income (NII) resulting from interest rate movements

reduction in NII under the six standard scenarios defined by the European Banking Authority (EBA) in addition to internal stress scenarios for risk steering purposes, compared to a market implied curve scenario, over a period of 12 months.

The Group employs mitigation techniques to hedge the interest rate risk arising from nontrading positions within given limits. The interest rate risk arising from nontrading asset and liability positions is managed through Treasury Markets & Investments. The residual interest rate risk positions are hedged with Deutsche Bank's trading books within the IB division. The treatment of interest rate risk in our trading portfolios and the application of the value-at-risk model is discussed in the "Trading Market Risk" section of this document.

The Model Risk Management function performs independent validation of models used for IRRBB measurement, as per all market risk models, in line with Deutsche Bank's group-wide risk governance framework.

The calculation of VaR and sensitivities of interest rate risk is performed daily, whereas the measurement and reporting of economic value interest rate and earnings risk is performed on a monthly basis. The Group generally uses the same metrics in its internal management systems as it applies for the disclosure in this report. This is applicable to both the methodology as well as the modelling assumptions used when calculating the metrics.

Deutsche Bank's key modelling assumptions are applied to the positions in our Private Bank and Corporate Bank divisions. Those positions are subject to risk of changes in our client's behavior with regard to their deposits as well as loan products.

The Group manages the interest rate risk exposure of its Non-Maturity Deposits (NMDs) through a replicating portfolio approach to determine the average repricing maturity of the portfolio. For the purpose of constructing the replicating portfolio, the portfolio of NMDs is clustered by dimensions such as business unit, currency, product and geographical location. The main dimensions influencing the repricing maturity are elasticity of deposit rates to market interest rates, volatility of deposit balances and observable client behavior. For the reporting period the average repricing maturity assigned across all such replicating portfolios is 2.14 years and Deutsche Bank uses 15 years as the longest repricing maturity.

In the loan and some of the term deposit products Deutsche Bank considers early prepayment/withdrawal behavior of its customers. The parameters are based on historical observations, statistical analyses and expert assessments.

Furthermore, the Group generally calculates IRRBB related metrics in contractual currencies and aggregates the resulting metrics for reporting purposes. When calculating economic value based metrics the commercial margin is excluded for material parts of the balance sheet.

Credit Spread Risk in the Banking Book

Deutsche Bank is exposed to credit spread risk of bonds held in the banking book, mainly as part of the Treasury Liquidity Reserves portfolio. The credit spread risk in the banking book is managed by the businesses, with Market Risk Management acting as an independent oversight function ensuring that the exposure is within the approved risk appetite. This risk category is closely associated with interest rate risk in the banking book as changes in the perceived credit quality of individual instruments may result in fluctuations in spreads relative to underlying interest rates. The calculation of credit spread sensitivities and value-at-risk for credit spread exposure is in general performed on a daily basis, the measurement and reporting of economic capital and stress tests are performed on a monthly basis.

Foreign exchange risk

Foreign exchange risk arises from our nontrading asset and liability positions that are denominated in currencies other than the functional currency of the respective entity. The majority of this foreign exchange risk is transferred through internal hedges to trading books within the Investment Bank division and is therefore reflected and managed via the value-at-risk figures in the trading books. The remaining foreign exchange risks that have not been transferred are mitigated through match funding the investment in the same currency, so that only residual risk remains in the portfolios. Small exceptions to the above approach follow the general Market Risk Management monitoring and reporting process, as outlined for the trading portfolio.

The bulk of nontrading foreign exchange risk is related to unhedged structural foreign exchange exposure, mainly in our U.S., U.K. and China entities. Structural foreign exchange exposure arises from local capital (including retained earnings) held in the Group's consolidated subsidiaries and branches and from investments accounted for at equity. Change in foreign exchange rates of the underlying functional currencies are booked as Currency Translation Adjustments (CTA).

The primary objective for managing our structural foreign exchange exposure is to stabilize consolidated capital ratios from the effects of fluctuations in exchange rates. Therefore, the exposure remains unhedged or partially hedged for a number of currencies with considerable amounts of risk-weighted assets denominated in that currency in order to avoid volatility in the capital ratio for the specific entity and the Group as a whole.

Equity and investment risk

Nontrading equity risk arises predominantly from our non-consolidated investment holdings in the banking book and from our equity compensation plans.

Our non-consolidated equity investment holdings in the banking book are categorized into strategic and alternative investment assets. Strategic investments typically relate to acquisitions made to support our business franchise and are undertaken with a medium to long-term investment horizon. Alternative assets are comprised of principal investments and other non-strategic investment assets. Principal investments are direct investments in private equity, real estate, venture capital, hedge or mutual funds whereas assets recovered in the workout of distressed positions or other legacy investment assets in private equity and real estate are of a non-strategic nature.

Investment proposals for strategic investments as well as monitoring of progress and performance against committed targets are evaluated by the Group Investment Committee. Depending on size, strategic investments may require approval from the Group Investment Committee, the Management Board or the Supervisory Board.

CRM Principal Investments is responsible for the risk-related governance and monitoring of our alternative asset activities. The review of new or increased principal investment commitments is the task of the Principal Investment Commitment Approval Group (PICAG), established by the Enterprise Risk Committee (ERC) as a risk management forum for alternative asset investments. The PICAG approves investments under its authority or recommends decisions above its authority to the Management Board for approval. The Management Board also sets investment limits for business divisions and various portfolios of risk upon recommendation by the ERC.

The equity investment holdings are included in regular group wide stress tests and the monthly market risk economic capital calculations.

Pension risk

The Group is exposed to market risks from defined benefit pension schemes for past and current employees. Market risks in pension plans materialize due to a potential decline in the market value of plan assets or an increase in the present value of the pension liability of each of the pension plans. Market Risk Management is responsible for a regular measurement, monitoring, reporting and control of market risks of the asset and liability side of the defined benefit pension plans. Thereby, market risks in pension plans include but are not restricted to interest rate risk, inflation risk, credit spread risk, equity risk, and longevity risk.

Other risks in the Banking Book

Market risks in our Asset Management business division primarily result from principal guaranteed funds or accounts, but also from co-investments in our funds.

Own funds requirements for market risk under the standardized approach

Market Risk Standardized Approach (Article 445 CRR)

As of December 31, 2021, the securitization positions, for which the specific interest rate risk is calculated using the market risk standardized approach, generated capital requirements of € 221 million corresponding to risk weighted-assets of € 2.76 billion. As of June 30, 2021 these positions generated capital requirements of € 214 million corresponding to risk weighted-assets of € 2.7 billion.

The capital requirement for Collective Investment Undertakings under the market risk standardized approach was € 11 million corresponding to risk weighted-assets of € 138 million as of December 31, 2021, compared with € 16 million and € 204 million, respectively, as of June 30, 2021.

EU MR1 – Market risk under the standardized approach

		Dec 31, 2021	Jun 30, 2021
		a	a
	in € m.	RWA	RWA
	Outright products		
1	Interest rate risk (general and specific)[1]	84	62
2	Equity risk (general and specific)[2]	64	101
3	Foreign exchange risk[3]	158	195
4	Commodity risk	0	0
	Options		
5	Simplified approach	0	0
6	Delta-plus method	0	0
7	Scenario approach	0	0
8	Securitization (specific risk)[4]	2,765	2,675
9	Total	**3,071**	3,034

[1] Interest Rate risk RWA of € 84 million includes € 51 million from collective investment undertakings and € 33 million related to placeholders for interest rates exposures
[2] Equity risk RWA of € 64 million is from collective investment undertakings
[3] Foreign Exchange risk RWA includes € 23 million from collective investment undertakings and € 135 million related to placeholders for foreign exchange exposures
[4] Securitization (specific risk) RWA includes € 14 million charge from nth-to-default exposures

Qualitative information on the internal model approach

Characteristics of the market risk models (Article 455 (a)(i) CRR) (EU MRB)

Market risk measurement

Market Risk Management aims to accurately measure all types of market risks by a comprehensive set of risk metrics reflecting economic and regulatory requirements.

In accordance with economic and regulatory requirements, we measure market and related risks using several key risk metrics:

Internally developed market risk models
– Value-at-risk (“VaR”) and stressed value-at-risk (“SVaR”), including CVA VaR and SVaR
– Incremental risk charge

Market risk standardized approaches
– Market Risk Standardized Approach (“MRSA”), applied to investment funds with no look through, MRSA-eligible securitizations and positions subject to longevity risk

Stress testing measures
– Portfolio stress testing
– Business-level stress testing
– Event risk scenarios

Economic capital measures
– Market risk economic capital, including traded default risk

Other model derived and market observable metrics

- Sensitivities
- Market value/notional (concentration risk)
- Loss given default

These measures are viewed as complementary to each other and in aggregate define the market risk framework, by which all businesses can be measured and monitored.

Internally developed market risk models

Value-at-Risk (VaR) at Deutsche Bank Group

VaR is a quantitative measure of the potential loss (in value) of Fair Value positions due to market movements that should not be exceeded in a defined period of time and with a defined confidence level.

Our value-at-risk for the trading businesses is based on our own internal model. In October 1998, the German Banking Supervisory Authority (now the BaFin) approved our internal model for calculating the regulatory market risk capital for our general and specific market risks based on a sensitivity based Monte Carlo approach. In October 2020, the ECB approved a significant change to our VaR model, now a Historical Simulation approach predominantly utilizing full revaluation, although some portfolios remain on a sensitivity based approach. The new approach is used for both Risk Management and Capital Requirements.

The new approach provides more accurate modelling of our risks, enhances our analysis capabilities and provides a more effective tool for risk management. Aside from enabling a more accurate view of market risk, the implementation of Historical Simulation VaR has brought about an even closer alignment of our market risk systems and models to our end of day pricing.

Risk management VaR is calibrated to a 99 % confidence level and a one day holding period. This means we estimate there is a 1 in 100 chance that a mark-to-market loss from our trading positions will be at least as large as the reported VaR. For regulatory capital purposes, our VaR model is calibrated to a 99 % confidence interval and a ten day holding period.

The calculation employs a Historical Simulation technique that uses one year of historical market data as input and observed correlations between the risk factors during this one year period.

Our VaR model is designed to take into account a comprehensive set of risk factors across all asset classes. Key risk factors are swap/government curves, index and issuer-specific credit curves, single equity and index prices, foreign exchange rates, commodity prices as well as their implied volatilities. To help ensure completeness in the risk coverage, second order risk factors, e.g. money market basis, implied dividends, option-adjusted spreads and precious metals lease rates are also considered in the VaR calculation. The list of risk factors included in the VaR model is reviewed regularly and enhanced as part of ongoing model performance reviews.

The model incorporates both linear and, especially for derivatives, nonlinear impacts predominantly through a full revaluation approach but it also utilizes a sensitivity-based approach for certain portfolios. The full revaluation approach uses the historical changes to risk factors as input to pricing functions. The sensitivity based approach uses sensitivities to underlying risk factors in combination with historical changes to those risk factors.

For each business unit a separate VaR is calculated for each risk type, e.g. interest rate risk, credit spread risk, equity risk, foreign exchange risk and commodity risk. “Diversification effect” reflects the fact that the total VaR on a given day will be lower than the sum of the VaR relating to the individual risk types. Simply adding the VaR figures of the individual risk types to arrive at an aggregate VaR would imply the assumption that the losses in all risk types occur simultaneously.

The VaR enables us to apply a consistent measure across our fair value exposures. It allows a comparison of risk in different businesses, and also provides a means of aggregating and netting positions within a portfolio to reflect correlations and offsets between different asset classes. Furthermore, it facilitates comparisons of our market risk both over time and against our daily trading results.

When using VaR results a number of considerations should be taken into account. These include:

- The use of historical market data may not be a good indicator of potential future events, particularly those that are extreme in nature. This “backward-looking” limitation can cause VaR to understate future potential losses (as in 2008), but can also cause it to be overstated immediately following a period of significant stress (as in post COVID-19).
- The one day holding period does not fully capture the market risk arising during periods of illiquidity, when positions cannot be closed out or hedged within one day.
- VaR does not indicate the potential loss beyond the 99th quantile.
- Intra-day risk is not reflected in the end of day VaR calculation.

– There may be risks in the trading or banking book that are partially or not captured by the VaR model.

Our process of systematically capturing and evaluating risks currently not captured in our VaR model has been further developed and improved. An assessment is made to determine the level of materiality of these risks and material risks are prioritized for inclusion in our internal model. Risks not in VaR are monitored and assessed on a regular basis through our Risk Not In VaR (RNIV) framework. This framework has also undergone a significant overhaul in 2020.

We are committed to the ongoing development of our internal risk models, and we allocate substantial resources to reviewing, validating and improving them.

Stressed Value-at-Risk (SVaR)

Stressed Value-at-Risk (SVaR) calculates a stressed value-at-risk measure based on a one year period of significant market stress. We calculate a stressed value-at-risk measure using a 99 % confidence level. Stressed VaR is calculated with a holding period of ten days. Our SVaR calculation utilizes the same systems, trade information and processes as those used for the calculation of value-at-risk. The only difference is that historical market data and observed correlations from a period of significant financial stress (i.e., characterized by high volatilities) is used as an input for the Historical Simulation.

The stress period selection process for the stressed value-at-risk calculation is based on the comparison of VaR calculated using historical time windows compared to the current SVaR. If a historical window produces a VaR which is higher than the current SVaR, it is further investigated and the SVaR window can then subsequently be updated accordingly. This process runs on a quarterly basis.

During 2021, the stress period selection process for DB Group was conducted as outlined above. As a result, the SVaR window used at various periods in 2021 included the Financial credit crisis of 2008/09, the European sovereign crisis of 2011/12 and the more recent COVID-19 stress period of 2020.

CVA Value-at-Risk/ Stressed Value-at-Risk

The advanced approach CVA risk capital charge is determined by applying the VaR model. First, the exposure profiles are determined based on the internal model method (IMM) or the mark-to-market method. The next step consists in determining the synthetic CVA position based on the exposure profile and other risk parameters such as credit spreads. Based on this information the credit spread sensitivity is then calculated. Eligible CVA hedges are also incorporated and the CVA risk capital charge is determined based on the internal market risk models VaR and Stressed VaR using a 99 % confidence level and a 10-day holding period.

Incremental risk charge (Article 455 (a)(ii) CRR) (EU MRB)

Incremental risk charge (“IRC”)

The incremental risk charge is based on our own internal model and is intended to complement the value-at-risk modeling framework. We use a Monte Carlo Simulation for calculating incremental risk charge as the 99.9 % quantile of the portfolio loss distribution for allocating contributory incremental risk charge to individual positions. The assessment is performed over a one year capital horizon under a constant position approach which corresponds to applying a 12 months liquidity horizon to all instruments. The model captures the default and migration risk in an accurate and consistent quantitative approach for all portfolios. Important parameters for the incremental risk charge calculation are exposures, recovery rates, maturity, ratings with corresponding default and migration probabilities and parameters specifying issuer correlations.

We calculate the incremental risk charge on a weekly basis. For regulatory reporting purposes, the charge is determined as the higher of the most recent 12 week average of incremental risk charge and the most recent incremental risk charge.

The contributory incremental risk charge of individual positions, which is calculated by expected shortfall allocation, provides the basis for identifying risk concentrations in the portfolio.

Default and rating migration probabilities are defined by rating migration matrices which are calibrated on historical external rating data. Taking into account the trade-off between granularity of matrices and their stability we apply a global corporate matrix and a sovereign matrix comprising the seven main rating non-default states and one default state. Accordingly, issue or issuer ratings from the rating agencies Moody’s, S&P and Fitch are assigned to each position.

To quantify a loss due to rating migration, a revaluation of a position is performed under the new rating. The probability of joint rating downgrades and defaults is determined by the migration and rating correlations of the incremental risk charge model. These correlations are specified through systematic factors that represent geographical regions and industries and are calibrated on historical rating migration and equity time series. The simulation is based on the assumption of a constant position approach where differences in maturities of long and short positions are taken into account. As the default state is absorbing, defaulted positions do not generate any further losses from rating migrations. The price risk of defaulted debt is modeled by stochastic recoveries.

Direct validation of the incremental risk charge through back-testing methods is not possible. The charge is subject to validation principles such as the evaluation of conceptual soundness, ongoing monitoring and process and outcome analysis. Model validation relies more on indirect methods including stress tests and sensitivity analyses. Relevant parameters are included in the annual validation cycle established in the current regulatory framework.

Market risk stress testing (Article 455 (a)(iii) CRR) (EU MRB)

Stress testing is a key risk management technique, which evaluates the potential effects of extreme market events and extreme movements in individual risk factors. It is one of the core quantitative tools used to assess the market risk of Deutsche Bank's positions and complements VaR and Economic Capital. Market Risk Management performs several types of stress testing to capture a variety of risks: Portfolio Stress Testing, Individual Specific Stress Tests, Event Risk Scenarios, and also contributes to Group-Wide Stress Testing. These are set at varying severities ranging from mild for earning stability purposes to extreme for capital adequacy assessment.

Portfolio Stress Testing measures the profit and loss impact of potential market events based on a broad range of historical or hypothetical macro-economic scenarios considered to be severe and plausible. It is used to manage systemic tail risk and informs on earnings stability and capital resilience.

For Individual Specific Stress Tests, Market Risk Managers identify relevant idiosyncratic risk factors and develop stress scenarios relating either to macro-economic or business-specific developments. Event Risk Scenario measures the impact of historically observable events or hypothetical situations on trading positions for specific emerging market countries and regions.

In addition, Market Risk Management participates in the Group-Wide Stress Test process, where macro-economic scenarios are defined by ERM Risk Research and each risk department translates that same scenario to the relevant shocks required to apply to their portfolio. This includes credit, market, operational and liquidity risks.

Methodology for backtesting and model validation (Article 455 (a)(iv) CRR) (EU MRB)

Regulatory backtesting of trading market risk

We continually analyze potential weaknesses of our value-at-risk model using statistical techniques, such as backtesting, and also rely on risk management experience.

Backtesting is a procedure used to assess the predictive accuracy of the value-at-risk calculations involving the comparison of hypothetical daily profits and losses under the buy-and-hold assumption ('daily buy-and hold income') to the daily value-at-risk. Under this assumption we estimate the P&L impact that would have resulted on a portfolio for a trading day valued with current market prices and parameters assuming it had been left untouched for that day and compare it with the estimates from the value-at-risk model from the preceding day. Our calculation of hypothetical daily profits and losses (buy & hold income) excludes gains and losses from intraday trading, fees and commissions, carry (including net interest margins), reserves and other miscellaneous revenues. An outlier is a hypothetical buy-and-hold trading loss that exceeds our value-at-risk from the preceding day. On average, we would expect a 99 % confidence level to give rise to two to three outliers representing 1 % of approximately 260 trading days in any one year. We analyze and document underlying reasons for outliers and classify them either as due to market movements, risks not included in our value-at-risk model, model or process shortcomings. We use the results for further enhancement of our value-at-risk methodology. Formal communications explaining the reasons behind any outlier on Group level are provided to the BaFin and the ECB.

In addition to the standard backtesting analysis at the value-at-risk quantile, the value-at-risk model performance is further verified by analyzing the distributional fit across the whole of the distribution (full distribution backtesting). Regular backtesting is also undertaken on hypothetical portfolios to test value-at-risk performance of particular products and their hedges.

There are various Backtesting forums, with participation from Market Risk Management, Market Risk Analysis and Control, Model Validation, and Finance, that regularly review backtesting results as a whole and of individual businesses. They analyze performance fluctuations and assess the predictive power of our value-at-risk model, which allows us to improve and adjust the risk estimation process accordingly.

A model validation team reviews all quantitative aspects of our Value-at-Risk model on a regular basis. The review covers, but is not limited to, model assumptions, calibration approaches for risk parameters, and model performance.

Regulatory approval for market risk models (Article 455 (b) CRR) (EU MRB)

Our value-at-risk for the trading businesses is based on our own internal model. In October 1998, the German Banking Supervisory Authority (now the BaFin) approved our internal model for calculating the regulatory market risk capital for our general and specific market risks based on a sensitivity based Monte Carlo approach. In October 2020, the ECB approved a significant change to our VaR model, now a Historical Simulation approach predominantly utilizing full revaluation, although some portfolios remain on a sensitivity based approach. This model is now used for regulatory capital calculations for VaR and SVaR (including CVA VaR and SVaR).

We also have approval to use our internally-developed models described above in the calculation of regulatory capital for the Incremental Risk Charge.

Trading book allocation and prudent valuation (Article 455 (c) CRR) (EU MRB)

Allocation of positions to the regulatory trading book

For regulatory purposes all our positions must be assigned to either the trading book or the banking book. This classification of a position impacts its regulatory treatment, in particular the calculation of the regulatory capital charges for the position. We define the criteria for the allocation of positions to either the trading book or banking book in internal policy documents, which are based on the respective requirements applicable to the Group contained in Articles 102 to 106 of the CRR.

A central function in Finance is responsible for the policy guidance and is the center of competence with regard to questions concerning its application. The Finance functions for the individual business areas are responsible for the classification of positions in line with the policy requirements.

We include positions in the trading book that are financial instruments or commodities which are held with trading intent or which are held for the purpose of hedging other trading book positions.

Positions included in the trading book must be free of any restrictive covenants regarding their transferability or able to be hedged.

Moreover, positions assigned to the trading book must be revalued daily and changes in the value of those positions must be reported in the profit and loss account. Further information on the valuation methodology that we use is provided below.

As part of the ongoing procedures to confirm that the inclusion of positions in the trading book continues to be in line with the above referenced internal policy guidance, the Finance functions for our trading businesses carry out a global review of the classification of positions on a quarterly basis. The results of the review are documented and presented to the respective Divisional Control Forums with representatives from Finance and Legal.

Re-allocations of positions between the trading book and the banking book may only be carried out in line with the internal policy guidance. They must be documented and are subject to approval by the heads of the Finance functions for the respective business areas.

Prudent valuation

The Group has an established valuation control framework which governs internal control standards, methodologies, and procedures over the valuation process.

Prices Quoted in Active Markets – The fair value of instruments that are quoted in active markets are determined using the quoted prices where they represent prices at which regularly and recently occurring transactions take place.

Valuation Techniques – The Group uses valuation techniques to establish the fair value of instruments where prices, quoted in active markets, are not available. Valuation techniques used for financial instruments include modelling techniques, the use of indicative quotes for proxy instruments, quotes from recent and less regular transactions and broker quotes.

For some financial instruments a rate or other parameter, rather than a price, is quoted. Where this is the case then the market rate or parameter is used as an input to a valuation model to determine fair value. For some instruments, modelling techniques follow industry standard models, for example, discounted cash flow analysis and standard option pricing models. These models are dependent upon estimated future cash flows, discount factors and volatility levels. For more complex or unique instruments, more sophisticated modelling techniques are required, and may rely upon assumptions or more complex parameters such as correlations, prepayment speeds, default rates and loss severity.

Frequently, valuation models require multiple parameter inputs. Where possible, parameter inputs are based on observable data or are derived from the prices of relevant instruments traded in active markets. Where observable data is not available for parameter inputs, then other market information is considered. For example, indicative broker quotes and consensus pricing information are used to support parameter inputs where they are available. Where no observable information is available to support parameter inputs then they are based on other relevant sources of information such as prices for similar transactions, historic data, economic fundamentals, and research information, with appropriate adjustment to reflect the terms of the actual instrument being valued and current market conditions.

Valuation Adjustments – Valuation adjustments are an integral part of the valuation process. In making appropriate valuation adjustments, the Group follows methodologies that consider factors such as bid-offer spreads, counterparty/own credit and funding risk. Bid-offer spread valuation adjustments are required to adjust mid-market valuations to the appropriate bid or offer valuation. The bid or offer valuation is the best representation of the fair value for an instrument, and therefore its fair value. The carrying value of a long position is adjusted from mid to bid, and the carrying value of a short position is adjusted from mid to offer. Bid-offer valuation adjustments are determined from bid-offer prices observed in relevant trading activity and in quotes from other broker-dealers or other knowledgeable counterparties. Where the quoted price for the instrument is already a bid-offer price then no additional bid-offer valuation adjustment is necessary. Where the fair value of financial instruments is derived from a modelling technique, then the parameter inputs into that model are normally at a mid-market level. Such instruments are generally managed on a portfolio basis and, when specified criteria are met, valuation adjustments are taken to reflect the cost of closing out the net exposure the Bank has to individual market or counterparty risks. These adjustments are determined from bid-offer prices observed in relevant trading activity and quotes from other broker-dealers.

Where complex valuation models are used, or where less-liquid positions are being valued, then bid-offer levels for those positions may not be available directly from the market, and therefore for the close-out cost of these positions, models and parameters must be estimated. When these adjustments are designed, the Group closely examines the valuation risks associated with the model as well as the positions themselves, and the resulting adjustments are closely monitored on an ongoing basis.

Counterparty Credit Valuation Adjustments (CVAs) are required to cover expected credit losses to the extent that the valuation technique does not already include an expected credit loss factor relating to the non-performance risk of the counterparty. The CVA amount is applied to all relevant over-the-counter (OTC) derivatives, and is determined by assessing the potential credit exposure to a given counterparty and taking into account any collateral held, the effect of any relevant netting arrangements, expected loss given default and the probability of default, based on available market information, including Credit Default Swap (CDS) spreads. Where counterparty CDS spreads are not available, relevant proxies are used.

The fair value of the Group’s financial liabilities at fair value through profit or loss (i.e., OTC derivative liabilities and issued note liabilities designated at fair value through profit or loss) incorporates valuation adjustments to measure the change in the Group’s own credit risk (i.e. Debt Valuation Adjustments (DVA) for Derivatives and Own Credit Adjustment (OCA) for structured notes). For derivative liabilities the Group considers its own creditworthiness by assessing all counterparties’ expected future exposure to the Group, taking into account any collateral posted by the Group, the effect of relevant netting arrangements, the probability of default of the Group, based on the Group’s market CDS level and the expected loss given default, taking into account the seniority of derivative claims under resolution (statutory subordination). Issued note liabilities are discounted utilizing the spread at which similar instruments would be issued or bought back at the measurement date as this reflects the value from the perspective of a market participant who holds the identical item as an asset. This spread is further parameterized into a market level of funding component and an idiosyncratic own credit component. Under IFRS 9 the change in the own credit component is reported under Other Comprehensive Income (OCI).

When determining CVA and DVA, additional adjustments are made where appropriate to achieve fair value, due to the expected loss estimate of a particular arrangement, or where the credit risk being assessed differs in nature to that described by the available CDS instrument.

Funding Valuation Adjustments (FVA) are required to incorporate the market implied funding costs into the fair value of derivative positions. The FVA reflects a discounting spread applied to uncollateralized and partially collateralized derivatives and is determined by assessing the market-implied funding costs on both assets and liabilities.

Where there is uncertainty in the assumptions used within a modelling technique, an additional adjustment is taken to calibrate the model price to the expected market price of the financial instrument. Typically, such transactions have bid-offer levels which are less observable, and these adjustments aim to estimate the bid-offer by computing the liquidity-premium associated with the transaction. Where a financial instrument is of sufficient complexity that the cost of closing it out would be higher than the cost of closing out its component risks, then an additional adjustment is taken to reflect this.

Valuation Control – The Group has an independent specialized valuation control group within the Risk function which governs and develops the valuation control framework and manages the valuation control processes. The mandate of this specialist function includes the performance of the independent valuation control process for all businesses, the continued development of valuation control methodologies and techniques, as well as devising and governing the formal valuation control policy framework. Special attention of this independent valuation control group is directed to areas where management judgment forms part of the valuation process.

Results of the valuation control process are collected and analyzed as part of a standard monthly reporting cycle. Variances of differences outside of preset and approved tolerance levels are escalated both within the Finance function and with Senior Business Management for review, resolution and, if required, adjustment.

For instruments where fair value is determined from valuation models, the assumptions and techniques used within the models are independently validated by an independent specialist model validation group that is part of the Group's Risk Management function.

Quotes for transactions and parameter inputs are obtained from a number of third party sources including exchanges, pricing service providers, firm broker quotes and consensus pricing services. Price sources are examined and assessed to determine the quality of fair value information they represent, with greater emphasis given to those possessing greater valuation certainty and relevance. The results are compared against actual transactions in the market to ensure the model valuations are calibrated to market prices.

Price and parameter inputs to models, assumptions and valuation adjustments are verified against independent sources. Where they cannot be verified to independent sources due to lack of observable information, the estimate of fair value is subject to procedures to assess its reasonableness. Such procedures include performing revaluation using independently generated models (including where existing models are independently recalibrated), assessing the valuations against appropriate proxy instruments and other benchmarks, and performing extrapolation techniques. Assessment is made as to whether the valuation techniques produce fair value estimates that are reflective of market levels by calibrating the results of the valuation models against market transactions where possible.

Regulatory prudent valuation of assets carried at fair value

Pursuant to Article 34 CRR institutions shall apply the prudent valuation requirements of Article 105 CRR to all assets measured at fair value and shall deduct from CET 1 capital the amount of any additional value adjustments necessary.

We determined the amount of the additional value adjustments based on the methodology defined in the Commission Delegated Regulation (EU) 2016/101.

As of December 31, 2021 the amount of the additional value adjustments was € 1.8 billion. The December 31, 2020 amount was € 1.4 billion. The increase was predominantly due to the diversification benefit factor reverting back to normal levels after the amendment via Commission Delegated Regulation (EU) 2020/866 that provided temporary relief to account for the extreme market volatility due to the COVID-19 pandemic.

As of December 31, 2021 the reduction of the expected loss from subtracting the additional value adjustments was € 117 million, which partly mitigated the negative impact of the additional value adjustments on our CET 1 capital

Own funds requirements for market risk under the IMA

Regulatory capital requirements for market risk (Article 455 (e) CRR)

The table below presents all internal model-related components relevant for the capital requirement calculation for market risk.

EU MR2-A – Market Risk under the internal models approach (IMA)

		Dec 31, 2021		Jun 30, 2021	
		a	b	a	b
	in € m.	RWA	Capital requirements	RWA	Capital requirements
1	VaR (higher of values a and b)	3,538	283	4,066	325
a)	Previous day's VaR (Article 365(1) (VaRt-1))	–	73	–	66
b)	Multiplication factor (mc) x average of previous 60 working days (VaRavg)	–	283	–	325
2	SVaR (higher of values a and b)	9,360	749	10,034	803
a)	Latest SVaR (sVaRt-1)	–	189	–	285
b)	Multiplication factor (ms) x average of previous 60 working days (sVaRavg)	–	749	–	803
3	Incremental risk charge -IRC (higher of values a and b)	3,657	293	4,913	393
a)	Most recent IRC value	–	253	–	393
b)	12 weeks average IRC measure	–	293	–	371
4	Comprehensive Risk Measure – CRM (higher of values a, b and c)	–	–	–	–
a)	Most recent risk measure of comprehensive risk measure	–	–	–	–
b)	12 weeks average of comprehensive risk measure	–	–	–	–
c)	Comprehensive risk measure Floor	–	–	–	–
5	Other	147	12	0	0
6	Total	**16,702**	**1,336**	19,012	1,521

As of December 31, 2021 the Internal Models Approach (IMA) components for market risk totaled € 16.7 billion, which was a decrease of € 2.3 billion since June 30, 2021. The changes in value-at-risk and stressed value-at-risk components were driven by reduction in capital multiplier from 4.5 to 4 based on closure of audit findings from Joint Supervisory Team (JST) on Historical Simulation VaR. The decrease in Incremental risk charge is driven by reduction in bond inventory across Investment Bank.

Development of market risk RWA (Article 438 (h) CRR)

The following table EU MR2-B provides an analysis of key drivers for movements observed for market risk RWA covered by internal models (i.e. value-at-risk, stressed value-at-risk, incremental risk charge and comprehensive risk measure) in the current and previous reporting period. It also shows the corresponding movements in capital requirements, derived from RWA with an 8 % capital ratio.

EU MR2-B – RWA flow statements of market risk exposures under the IMA

		Three months ended Dec 31, 2021						
		a	b	c	d	e	f	g
	in € m.	VaR	SVaR	IRC	Compre-hensive risk measure	Other	Total RWA	Total capital requirements
1	Market Risk RWA opening balance[1]	3,063	8,681	6,948	–	0	18,692	1,495
1a	Regulatory adjustment[2]	(2,272)	(5,751)	0	–	0	(8,023)	(642)
1b	RWA at the previous quarter-end (end of the day)[3]	791	2,930	6,948	–	0	10,668	853
2	Movement in risk levels	(113)	(628)	(3,291)	–	147	(3,885)	(311)
3	Model updates/changes	0	0	0	–	0	0	0
4	Methodology and policy	0	63	0	–	0	63	5
5	Acquisitions and disposals	0	0	0	–	0	0	0
6	Foreign exchange movements	0	0	0	–	0	0	0
6a	Market data changes and recalibrations	235	0	0	–	0	235	19
7	Other	0	0	0	–	0	0	0
8a	RWA at the end of the reporting period (end of the day)[3]	913	2,364	3,657	–	147	7,081	566
8b	Regulatory adjustment[2]	2,625	6,996	0	–	0	9,621	770
8	Market Risk RWA closing balance[1]	3,538	9,360	3,657	–	147	16,702	1,336

[1] Represents RWA at previous and current reporting period quarter end.
[2] Indicates the difference between RWA and RWA (end of day) at the beginning and end of period.
[3] For a given component (e.g. VaR) it refers to the RWA that would be computed if the previous or current quarter end snapshot figure of the component determines the quarter end RWA, as opposed to a 60-day average for regulatory purposes.
[4] Other includes the RNIV Capitalization from specific risk.

in € m.		a VaR	b SVaR	c IRC	d Compre-hensive risk measure	e Other	f Total RWA	g Total capital requirements
							Three months ended Sep 30, 2021	
1	Market Risk RWA opening balance[1]	4,066	10,034	4,913	–	0	19,013	1,521
1a	Regulatory adjustment[2]	(3,240)	(6,472)	0	–	0	(9,712)	(777)
1b	RWA at the previous quarter-end (end of the day)[3]	826	3,561	4,913	–	0	9,301	744
2	Movement in risk levels	(36)	(632)	2,051	–	0	1,383	111
3	Model updates/changes	0	0	0	–	0	0	0
4	Methodology and policy	0	0	0	–	0	0	0
5	Acquisitions and disposals	0	0	0	–	0	0	0
6	Foreign exchange movements	0	0	0	–	0	0	0
6a	Market data changes and recalibrations	0	0	0	–	0	0	0
7	Other	0	0	0	–	0	0	0
8a	RWA at the end of the reporting period (end of the day)[3]	791	2,930	6,964	–	0	10,685	855
8b	Regulatory adjustment[2]	2,272	5,751	0	–	0	8,023	642
8	Market Risk RWA closing balance[1]	3,063	8,681	6,964	–	0	18,708	1,497

1 Represents RWA at previous and current reporting period quarter end.
2 Indicates the difference between RWA and RWA (end of day) at the beginning and end of period.
3 For a given component (e.g. VaR) it refers to the RWA that would be computed if the previous or current quarter end snapshot figure of the component determines the quarter end RWA, as opposed to a 60-day average for regulatory purposes.
4 Numbers for Total RWA and Total capital requirements for row 8 have been updated.

The market risk RWA movements due to position changes are represented in line “Movement in risk levels”. Changes to our market risk RWA internal models, such as methodology enhancements or risk scope extensions, are included in the category of “Model updates/changes”. In the “Methodology and policy” category we reflect regulatory driven changes to our market risk RWA models and calculations. Significant acquisitions and disposals would be assigned to the line item “Acquisition and disposals”. The impacts of “Foreign exchange movements” are not calculated for IMA (Internal Models Approach) components. Changes in market data levels, volatilities, correlations, liquidity and ratings are included under the “Market data changes and recalibrations” category.

As of December 31, 2021, the IMA components for market risk totaled € 16.7 billion, which was a decrease of € 2 billion since September 30, 2021. The decrease in Incremental Risk Charge is due to reduction in sovereign Japan exposure which changed the charge from spot to a 12 week average. This is partially offset by an increase in average value-at-risk and stressed value-at-risk components which were predominantly impacted by market data window changes

Other quantitative information for market risk under the internal models approach

Overview of Value-at-Risk Metrics (Article 455 (d) CRR)

The following table, EU MR3, displays the maximum, minimum, average and the ending for the reporting period values resulting from the different types of models. This table is based on the spot values of the metrics as opposed to the regulatory defined calculation (e.g. not considering any comparisons between spot and average values used in the actual RWA calculations). The VaR and SVaR are both based on ten day holding periods.

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EU MR3 – IMA values for trading portfolios[1]

in € m.	Dec 31, 2021 a	Jun 30, 2021 a
VaR (10 day 99 %)		
1 Maximum value	89.2	296.4
2 Average value	65.8	113.5
3 Minimum value	48.9	53.3
4 Period end	77.3	72.8
SVaR (10 day 99 %)		
5 Maximum value	318.4	284.9
6 Average value	183.5	147.8
7 Minimum value	85.9	52.3
8 Period end	191.3	263.7
IRC (99.9 %)		
9 Maximum value	555.9	604.1
10 Average value	352.1	428.3
11 Minimum value	226.6	296.9
12 Period end	253.3	393.0
Comprehensive risk capital charge (99.9 %)		
13 Maximum value	–	–
14 Average value	–	–
15 Minimum value	–	–
16 Period end	–	–

[1] Amounts show the maximum, average and minimum for the preceding six month period.

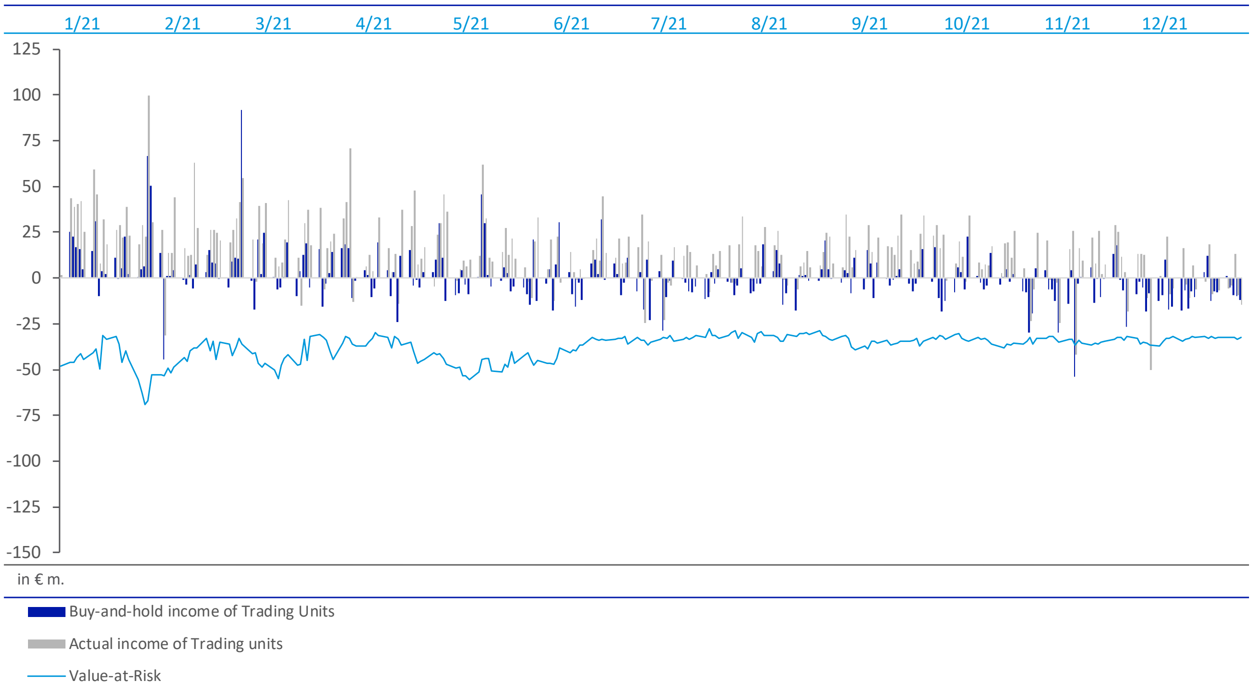
Weighted average liquidity horizons in market risk models (Article 455 (f) CRR) (EU MRB)

For information on the weighted average liquidity/capital horizons for the incremental risk charge please refer to section “Incremental risk charge (Article 455 (a)(ii) CRR) (EU MRB)” in this report.

Comparison of end-of-day VaR measures with one-day changes in portfolio's value (Article 455 (g) CRR)

The following graph shows the trading units daily buy-and-hold and actual income in comparison to the value-at-risk (1 day holding period) as of the close of the previous business day for the trading days of the reporting period. The value-at-risk is presented in negative amounts to visually compare the estimated potential loss of our trading positions with the buy and hold income.

EU MR4 – Comparison of VaR estimates with gains and losses



In 2021, we observed 1 global outlier under the Historical Simulation model, where our loss on a buy-and-hold basis exceeded the value-at-risk of our Trading Books. The outlier was driven by the significant market stress experienced on China real estate exposures. Also, there were two Actual Backtesting outliers during 2021, which compares the VaR to Total Income less Fees & Commissions. One of the Actual Backtesting outliers was driven by market stress on China real estate exposures while the second outlier was due to loss in Investment Bank from an event risk which is outside the scope of value-at-risk.

Note that the outlier reported in previous quarter for June 30, 2021 has been withdrawn due to technical reasons and approved by ECB.

Operational risk

Risk management objectives and policies

Operational risk management strategies and processes (Article 435 (1)(a) CRR) (EU OVA & EU ORA)

Deutsche Bank applies the European Banking Authority’s Single Rulebook definition of operational risk: “Operational risk means the risk of losses stemming from inadequate or failed internal processes, people and systems or from external events. Operational risk includes legal risks but excludes business and reputational risk and is embedded in all banking products and activities.” Operational risk forms a subset of the bank’s non-financial risks (NFR).

Deutsche Bank’s operational risk appetite sets out the amount of operational risk we are willing to accept as a consequence of doing business. We take on operational risks consciously, both strategically as well as in day-to-day business. While the bank may have no appetite for certain types of operational risk events (such as violations of laws or regulations and misconduct), in other cases a certain amount of operational risk must be accepted if the bank is to achieve its business objectives. In case a residual risk is assessed to be outside our risk appetite, risk reducing actions must be undertaken, including remediating the risks, insuring risks or ceasing business.

The Operational risk management framework (ORMF) is a set of interrelated tools and processes that are used to identify, assess, measure, monitor and mitigate the bank’s operational risks. Its components have been designed to operate together to provide a comprehensive, risk-based approach to managing the bank’s most material operational risks. ORMF components include the Group’s approach to setting and adhering to operational risk appetite, the operational risk type and control taxonomies, the minimum standards for operational risk management processes including the respective tools, and the bank’s operational risk capital model.

The ORMF provides the overarching set of standards, tools and processes that apply to the management of all operational sub-risk types. It is complemented by the operational risk type frameworks, risk management and control standards and tools set up by the respective RTCs for the operational sub-risk types they control. These operational sub-risk types are controlled by various infrastructure functions and include the following:

The Compliance department performs an independent 2nd level control function that protects the bank’s license to operate by promoting and enforcing compliance with the law and driving a culture of compliance and ethical conduct in the bank. The Compliance department assists the business divisions and works with other infrastructure functions and regulators to establish and maintain a risk-based approach to the management of the bank’s compliance risks in accordance with the bank’s risk appetite and to help the bank detect, mitigate and prevent breaches of laws and regulations. The Compliance department performs the following principal activities: the identification, assessment, mitigation, monitoring and reporting on compliance risk; performs second level controls and testing; assists Regulatory Affairs with regulatory engagement and management and acts as a trusted advisor. The results of these assessments and controls are regularly reported to the Management Board and Supervisory Board.

- Financial crime risks are managed by our Anti-Financial Crime (AFC) function via maintenance and development of a dedicated program. The AFC program is based on regulatory and supervisory requirements. AFC has defined roles and responsibilities and established dedicated functions for the identification and management of financial crime risks resulting from money laundering, terrorism financing, non-compliance with sanctions and embargoes, the facilitation of tax evasion as well as other criminal activities including fraud, bribery and corruption and other crimes. AFC updates its strategy for financial crime prevention via regular development of internal policies processes and controls, institution-specific risk assessment and staff training.

- The Legal Department (including Group Governance and Group Data Privacy) is an independent infrastructure function mandated to provide legal advice to the Management Board, the Supervisory Board (to the extent it does not give rise to conflict of interest), business divisions and infrastructure functions, and to support the Management Board in setting up and guarding the Group’s governance and control frameworks in respect of the bank’s legal, internal corporate governance and data privacy risks. This includes in particular, but is not limited to:
  - Advising the Management Board and Supervisory Board on legal aspects of their activities
  - Providing legal advice to all Deutsche Bank units to facilitate adherence to legal and regulatory requirements in relation to their activities respectively, including to support their interactions with regulatory authorities
  - Engaging and managing external lawyers used by Deutsche Bank Group

  - Managing Deutsche Bank Group's litigation and contentious regulatory matters, (including contentious HR matters), and managing Deutsche Bank Group's response to external regulatory enforcement investigations
  - Advising on legal aspects of internal investigations
  - Setting the global governance framework for Deutsche Bank Group, facilitating its cross-unit application and assessing its implementation
  - Developing and safeguarding efficient corporate governance structures suitable to support efficient decision-making, to align risk and accountability based on clear and consistent roles and responsibilities
  - Maintaining Deutsche Bank Group's framework for policies, procedures and framework documents and acting as guardian for Group policies and procedures as well as framework documents
  - Advising on data privacy laws, rules and regulation and maintaining DB Group´s data privacy risk and control framework
  - Ensuring appropriate quality assurance in relation to all of the above

- NFRM Product Governance oversees the New Product Approval (NPA) and Systematic Product Review (SPR) cross-risk processes forming a control framework designed to manage the risks associated with the implementation of new products and services, changes in products and services during their lifecycles and, the process by which they are systematically reviewed. Applicable bank-wide, the cross-risk processes cover different stages of the product lifecycle with NPA focusing on pre-implementation and SPR on post-implementation. Pre-implementation, the primary objective of the NPA process is to ensure proper assessment of all risks, both financial and non-financial, in NPA relevant products and services, as well as related processes and infrastructure. Post-implementation, the SPR process focuses on the periodic review of all products to determine if they are to remain live or need to be modified or withdrawn.

- NFRM is the RTC for a number of operational resilience risks. Its mandate includes second line oversight of controls over transaction processing activities, as well as infrastructure risks to prevent technology or process disruption, maintain the confidentiality, integrity and availability of data, records and information security, and ensure business divisions and infrastructure functions have robust plans in place to recover critical business processes and functions in the event of disruption including technical or building outage, or the effects of cyber-attack or natural disaster as well as any physical security or safety risk. NFRM RTC also manages the risks arising from the bank's internal and external vendor engagements via the provision of a comprehensive third party risk management framework

Operational risk management structure and organization (Article 435 (1)(b) CRR) (EU OVA & EU ORA)

While the day-to-day management of operational risk is the primary responsibility of our business divisions and infrastructure functions, where these risks are generated, Non-Financial Risk Management (NFRM) oversees the Group-wide management of operational risks, identifies and reports risk concentrations, and promotes a consistent application of the ORMF across the bank. NFRM is part of the Group risk function, the Chief Risk Office, which is headed by the Chief Risk Officer.

The Chief Risk Officer appoints the Head of NFRM, who is accountable for the design, oversight and maintenance of an effective, efficient and regulatory compliant ORMF, including the operational risk capital model. The Head of NFRM monitors and challenges the ORMF's Group wide implementation and monitors overall risk levels against the bank's operational risk appetite.

The Non-Financial Risk Committee (NFRC), which is chaired by the Chief Risk Officer, is responsible for the oversight, governance and coordination of the management of operational risk in the Group on behalf of the Management Board, by establishing a cross-risk perspective of the key operational risks of the Group. Its decision-making authorities include the review, advice and management of all operational risk issues that may impact the risk profile of our business divisions and infrastructure functions. Several sub-fora with attendees from both the 1st and 2nd LoDs support the NFRC to effectively fulfil its mandate. In addition to the Group level NFRC, business divisions have established 1st LoD NFR fora for the oversight and management of operational risks on various levels of the organization.

The governance of our operational risks follows the bank's Three Lines of Defence (3LoD) approach to managing all of its financial and non-financial risks. The ORMF establishes the operational risk governance standards including the core 1st and 2nd LoD roles and their responsibilities, to ensure effective risk management and appropriate independent challenge.

Operational risk requirements for the first line of defence (1st LoD): Risk owners as the 1st LoD have full accountability for their operational risks and manage these against a defined risk specific appetite.

Operational risk owners are those roles in the bank whose activities generate - or who are exposed to - operational risks. As heads of business divisions and infrastructure functions, they must determine the appropriate organizational structure to identify their operational risk profile, actively manage these risks within their organization, take business decisions on the mitigation or acceptance of operational risks to ensure they remain within risk appetite, and establish and maintain 1st LoD controls.

Operational risk requirements for the second line of defence (2nd LoD): Risk Type Controllers (RTCs) act as the 2nd LoD control functions for all sub-risk types under the overarching risk type “operational risk”.

RTCs establish the framework and define Group level risk appetite statements for the specific operational risk type they oversee. RTCs define the minimum risk management and control standards and independently monitor and challenge risk owners’ implementation of these standards in their day-to-day processes, as well as their risk-taking and risk management activities. RTCs provide independent operational risk oversight and prepare aggregated risk type profile reporting. RTCs monitor the risk type’s profile against risk appetite and have a right to veto risk decisions leading to foreseeable risk appetite breaches. As risk type experts, RTCs define the risk type and its taxonomy and support and facilitate the implementation of the risk type framework in the 1st LoD. To maintain their independence, RTC roles are located only in infrastructure functions.

Operational risk requirements for NFRM as the RTC for the overarching risk type operational risk: As the RTC / risk control function for operational risk, NFRM establishes and maintains the overarching ORMF and determines the appropriate level of capital to underpin the Group’s operational risk.

As the 2nd LoD risk control function, NFRM defines the bank’s approach to operational risk appetite and monitors its adherence, breaches and consequences. NFRM is the independent reviewer and challenger of the 1st LoD’s risk and control assessments and risk management activities relating to the holistic operational risk profile of a unit (while RTCs monitor and challenge activities related to their specific risk types). NFRM provides the oversight of risk and control mitigation plans to return the bank’s operational risk to its risk appetite, where required. It also establishes and regularly reports the bank’s operational risk profile and operational top risks, i.e. the bank’s material operational risks which are outside of risk appetite.

As the subject matter expert for operational risk, NFRM provides independent risk views to facilitate forward-looking management of operational risks, actively engages with risk owners (1st LoD) and facilitates the implementation of risk management and control standards across the bank.

NFRM is accountable for the design, implementation and maintenance of the approach to determine the adequate level of capital required for operational risk, for recommendation to the Management Board. This includes the calculation and allocation of operational risk capital demand and expected loss under the Advanced Measurement Approach (AMA).

Scope and nature of operational risk measurement and reporting systems (Article 435 (1)(c) CRR) (EU OVA & EU ORA)

In order to manage the broad range of sub-risk types underlying operational risk, the ORMF provides a set of tools and processes that apply to all operational risk types across the bank. These enable us to determine our operational risk profile in relation to our risk appetite for operational risk, to systematically identify operational risk themes and concentrations, and to define risk mitigating measures and priorities.

In 2021, we continued to mature the management of operational risks by further integrating and simplifying our risk management processes, by enhancing the bank’s central controls inventory, and by strengthening our control activities conducted by both 1st LoD and 2nd LoD functions at various levels across the bank.

Loss data collection: We collect, categorize and analyze data on internal and relevant external operational risk events (with a
-
across analyses, which are performed in the 1st LoD in close collaboration between business partners, risk control and other infrastructure functions. Lessons learned reviews analyze the reasons for significant operational risk events, identify their root causes, and document appropriate remediation actions to reduce the likelihood of their reoccurrence. Read across reviews take the conclusions of the lessons learned process and seek to analyze whether similar risks and control weaknesses identified in a lessons learned review exist in other areas of the bank, even if they have not yet resulted in problems. This allows preventative actions to be undertaken. In 2021, we continued work on a multiyear initiative to implement a performant and modular event management platform. During phase 1 we continue to work on optimizing the user experience and convenience of the platform.

Scenario analysis: We complement existing risk insights through the use of exploratory scenario analysis. The source of our scenario storylines and trigger for their completion builds on internal losses, Emerging Risk reviews, Top Risk concentrations, and the review of external peer OR Loss Events. We thereby systematically utilize information from actual and potential future loss events to identify thematic susceptibilities and actively seek to reduce the likelihood of similar incidents, for example through deep dive analyses or risk profile reviews and Control Assurance planning. In 2021, we enhanced our approach, tightened roles and responsibilities, and through integrating the process more directly into day-to-day risk management activities. Scenario analysis continues to play an important role in assessing longer term potential impacts of COVID-19, Conduct, and ESG risk themes.

Risk & Control Assessment: The Risk & Control Assessment process (RCA) comprises of a series of bottom-up assessments of the risks generated by business divisions and infrastructure functions (1st LoDs), the effectiveness of the controls in place to manage them, and the remediation actions required to bring the risks outside of risk appetite back into risk appetite. This enables both the 1st and 2nd LoDs to have a clear view of the bank's material operational risks. In 2021, we focused on embedding the dynamic, trigger based approach to the RCA to review our risk profile on a real time basis through NFR governance meetings. We continued to mature in the area of controls by refining the bank's central control inventory and increasing control assurance activities conducted across both 1st LoD and 2nd LoD functions at various levels of the bank. The outcome provided greater transparency to Risk Owners on the control environment the bank relies upon to mitigate its operational risks.

Top Risks: We regularly report and perform analyses on our top risks to establish that they are appropriately mitigated. As all risks, top risks are rated in terms of both the likelihood that they could occur and the impact on the bank should they do so, and through this assessment they are identified to be particularly material for the bank. The reporting provides a forward-looking perspective on the impact of planned remediation and control enhancements. It also contains emerging risks and themes that have the potential to evolve as top risks in the future. Top risk reduction programs comprise the most significant risk reduction activities that are key to bringing our operational top risk themes back within risk appetite. In 2021, we enhanced our ability to identify deficiency and gap control themes. The criteria for Risk Acceptance have been tightened along with those for other lifecycle events. These measures will continue to focus attention on sustainable remediation across the organisation and improved control environment outcomes.

Transformation Risk Assessment: To appropriately identify and manage risks from material change initiatives within the bank, a Transformation Risk Assessment (TRA) process is in place to assess the impact of transformations on the bank's risk profile and control environment. This process considers impacts to both financial and non-financial risk types and is applicable to initiatives including regulatory initiatives, technology migrations, risk remediation projects, strategy changes, organizational changes, and real estate moves within the bank. In 2021, the Operational Resilience dimension was formalized by mandating that Operational Resilience impacts due to potential changes to process, control or underlying resource base from the initiative are taken into account during the transformation risk assessment.

NFR appetite metrics: NFR appetite is the amount of non-financial risk the bank is willing to accept as a consequence of doing business. The NFR appetite framework provides a common approach to measure and monitor the level of risk appetite across the firm. NFR appetite metrics are used to monitor the operational risk profile against the bank's defined risk appetite, and to alert the organization to impending problems in a timely fashion. In 2021, to further inform the quality of risk appetite metrics used to assess NFR appetite and capital processes, a metric quality assessment has been introduced.

Findings and issue management: The findings and issue management process allows the bank to mitigate the risks associated with known control weaknesses and deficiencies, and enables management to make risk-based decisions over the need for further remediation or risk acceptance. Outputs from the findings management process must be able to demonstrate to internal and external stakeholders that the bank is actively identifying its control weaknesses, and taking steps to manage associated risks within acceptable levels of risk appetite. In 2021, we enhanced our ability to identify deficiency and gap control themes. The criteria for Risk Acceptance have been tightened along with those for other lifecycle events. These measures will continue to focus attention on sustainable remediation across the organization and improved control environment outcomes.

Policies for hedging and mitigating operational risk (Article 435 (1)(d) CRR) (EU OVA & EU ORA)

The hedging of operational risk is described under "Article 454 CRR - Use of the Advanced Measurement Approaches to operational risk".

Operational risk measurement (Article 446 CRR)

We calculate and measure the regulatory and economic capital requirements for operational risk using the Advanced Measurement Approach (AMA) methodology. Our AMA capital calculation is based upon the loss distribution approach. Gross losses from historical internal and external loss data (Operational Riskdata eXchange Association consortium data) and external scenarios from a public database (IBM OpData) complemented by internal scenario data are used to estimate the risk profile (i.e., a loss frequency and a loss severity distribution). Our loss distribution approach model includes conservatism by recognizing losses on events that arise over multiple years as single events in our historical loss profile.

Within the loss distribution approach model, the frequency and severity distributions are combined in a Monte Carlo simulation to generate potential losses over a one year time horizon. Finally, the risk mitigating benefits of insurance are applied to each loss generated in the Monte Carlo simulation. Correlation and diversification benefits are applied to the net losses in a manner compatible with regulatory requirements to arrive at a net loss distribution at Group level, covering expected and unexpected losses. Capital is then allocated to each of the business divisions after considering qualitative adjustments and expected loss.

The regulatory and economic capital requirements for operational risk are derived from the 99.9 % percentile; see the section "Economic Capital Adequacy" for details. Both regulatory and economic capital requirements are calculated for a time horizon of one year.

The regulatory and economic capital demand calculations are performed on a quarterly basis. NFRM establishes and maintains the approach for capital demand quantification and ensures that appropriate development, validation and change governance processes are in place, whereby the validation is performed by an independent validation function and in line with the Group's model risk management process.

Drivers for operational risk capital development

In 2021, our total operational risk losses increased by € 172 million (43 %) year-on-year, predominantly driven by losses and provisions arising from civil litigation and regulatory enforcement. Such losses still make up 89 % of operational risk losses, accounting for the majority of operational risk regulatory and economic capital demand and are more heavily reliant on our long-term loss history. Refer to section "Current Individual Proceedings", Note 29 "Provisions", for a description of our current legal and regulatory proceedings and a summary of the consolidated financial statements. The operational risk losses from civil litigation and regulatory enforcement increased by € 225 million (44 %) while our non-legal operational risk losses decreased by € 53 million (46 %) compared to 2020 primarily as a result of COVID-19 related expenses not having been repeated in 2021.

In view of the relevance of legal risks within our operational risk profile, we dedicate specific attention to the management and measurement of our open civil litigation and regulatory enforcement matters where the bank relies both on information from internal as well as external data sources to consider developments in legal matters that affect the bank specifically but also the banking industry as a whole. Reflecting the multi-year nature of legal proceedings the measurement of these risks furthermore takes into account changing levels of certainty by capturing the risks at various stages throughout the lifecycle of a legal matter.

Conceptually, the bank measures operational risk including legal risk by determining the maximum loss that will not be exceeded with a given probability. This maximum loss amount includes a component that due to the IFRS criteria is reflected in our financial statements and a component that is expressed as regulatory or economic capital demand beyond the amount reflected as provisions within our financial statements.

The legal losses which the bank expects with a likelihood of more than 50 % are already reflected in our IFRS group financial statements. These losses include net changes in provisions for existing and new cases in a specific period where the loss is deemed probable and is reliably measurable in accordance with IAS 37.

Uncertain legal losses which are not reflected in our financial statements as provisions because they do not meet the recognition criteria under IAS 37 are expressed as "regulatory or economic capital demand".

To quantify the litigation losses in the AMA model the bank takes into account historical losses, provisions, contingent liabilities and legal forecasts. Legal forecasts are generally comprised of ranges of potential losses from legal matters that are not deemed probable but are reasonably possible. Reasonably possible losses may result from ongoing and new legal matters which are reviewed at least quarterly by the attorneys handling the legal matters.

We include the legal forecasts in the "Relevant Loss Data" used in our AMA model. The projection range of the legal forecasts is not restricted to the one year capital time horizon but goes beyond and conservatively assumes early settlement of the underlying losses in the reporting period - thus considering the multi-year nature of legal matters.

Our AMA model validation and quality control concept

We independently validate all our AMA model components including but not limited to AMA core model, scenarios, risk & control assessments, expected loss and relevant loss data individually. The results of the validations are summarized in validation reports and identified issues are followed up for resolution. For example, the validation activities in the past years detected areas of improvement required in our AMA model regarding the selection of NFR appetite metrics and the use of legal forecasts, which are now included in our AMA model. Quality controls are performed for the AMA components requiring data input provided by business divisions and result in capital impact. The AMA components and documentation are challenged and compared across business divisions to help us maintain consistency and adequacy for our capital metrics.

Our operational risk management stress testing concept

We conduct stress testing on a regular basis to complement our AMA methodology, to analyze the impact of extreme stress scenarios on our capital and the profit-and-loss account. It also contains reputational impacts. In 2021, NFRM took part in the regulatory EBA stress test exercise and all firm-wide stress test scenarios and assessed and contributed the impact of operational risk to the various stress levels of the scenarios. The impact of operational risk on Group-wide stress test scenarios has been moderate and remained in the expected range in regards to capital, which is due to the fact that our AMA model already applies a conservative multi-year view on loss sizes (including legal forecasts) even in non-stress mode.

Operational risk exposure (Article 446 CRR)

Operational risk– own funds requirements

We calculate and measure the regulatory and economic capital requirements for operational risk using the Advanced Measurement Approach (AMA) methodology for the entire Group. No combined use of different approaches is in place. The relevant indicator for non-AMA approaches is shown in the table below for information purposes only. This size indicator is not relevant for the calculation of the own funds requirements (EC/RC) or risk exposure amount (RWA) as these are calculated using the AMA in place for the whole DB group.

EU OR1 - Operational risk own funds requirements and risk-weighted exposure amounts

Dec 31, 2021

	in € m.	a	b	c	d	e
				Relevant indicator	Own funds requirements secured by financial guarantees	Risk exposure amount secured by credit derivatives
	Banking activities	2019	2020	2021		
1	Banking activities subject to Basic Indicator Approach (BIA)	0	0	0	0	0
2	Banking activities subject to Standardized (TSA) / Alternative Standardized (ASA) Approaches	0	0	0	0	0
3	Subject to TSA:	0	0	0	-	-
4	Subject to ASA:	0	0	0	-	-
5	Banking activities subject to Advanced Measurement Approaches AMA	22,788	23,271	25,072	4,937	61,718

Operational risk – risk profile

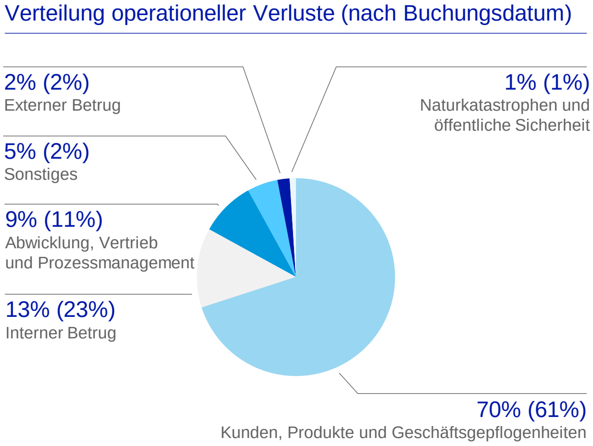
Operational risk losses by event type (profit and loss view)

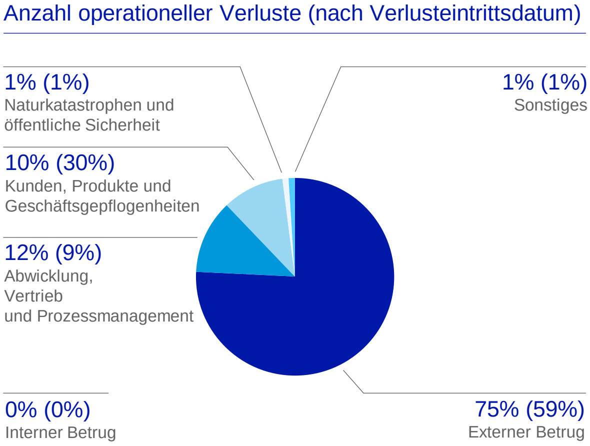
in € m.	2021	2020[1]
Clients, Products and Business Practices	402	232
Internal Fraud	72	44
Execution, Delivery and Process Management	52	55
Others	28	8
External Fraud	12	16
Natural Disasters and Public Safety	7	47
Group	**573**	401

[1] 2020 loss figures revised from prior year presentation due to subsequent capture of losses and reclassification.

As of December 31, 2021, operational losses increased by € 172 million (43 %) year on year, predominantly driven by increases in “Clients, Products and Business Practices”. Whilst the main contributors were provisions arising from civil litigation and regulatory enforcement, a key driver stems from court decisions in relation to applicability of specific terms in standard contracts for customers, which also has a wider impact on the industry. Losses related to "Internal Fraud" also increased by € 28 million (64 %) year on year. COVID-19 related expenses were not repeated in 2021, which explains the decrease in expenses for "Natural Disasters and Public Safety". Losses in the remaining event types remained stable year-on-year.

Operational losses by event type occurred in the period 2021 (2016 - 2020)[1]





[1] Percentages in brackets correspond to loss frequency respectively to loss amount for losses occurred in 2016-2020 period. Frequency and amounts can change subsequently.

“Distribution of Operational Losses” (above left) summarizes the proportion of operational risk loss postings by event type using the P&L value in 2021, against the average for the comparative five-year period 2016-2020 (in brackets). The event type “Clients, Products and Business Practices” dominates operational losses with a share of 70 % and is comprised mainly of outflows related to litigation, investigations and enforcement actions (as mentioned above).

“Frequency of Operational Losses” (above right) summarizes the proportion of operational risk events by event type (based on a count of events where losses were first recognized in 2021), against the average for the comparative five-year period 2016-2020 (in brackets). The highest event type frequency, “External Fraud”, made up 75 % of all observed loss events. Although this event type contributed significantly to the frequency distribution of event losses in 2021, it made a negligible contribution to financial value of total loss events in 2021.

Whilst we seek to ensure the comprehensive capture of all operational risk loss events with a P&L impact of € 10,000 or greater, the totals shown in this section may be underestimated due to delayed detection and recording of loss events.

Use of the Advanced Measurement Approaches to operational risk (Article 454 CRR)

Description of the use of insurance and other risk transfer mechanisms for the purpose of mitigation of this risk

The definition of our insurance strategy and supporting insurance policy and guidelines is the responsibility of our specialized unit Corporate Insurance/Deukona (“CI/D”). CI/D is responsible for our global corporate insurance policy which is approved by our Management Board.

CI/D is responsible for acquiring insurance coverage and for negotiating contract terms and premiums. CI/D also has a role in the allocation of insurance premiums to the businesses. CI/D specialists assist in devising the method for reflecting insurance in the capital calculations and in arriving at parameters to reflect the regulatory requirements. They validate the settings of insurance parameters used in the AMA model and provide respective updates. CI/D is actively involved in industry efforts to reflect the effect of insurance in the results of the capital calculations.

We buy insurance in order to protect ourselves against unexpected and substantial unforeseeable losses. The identification, definition of magnitude and estimation procedures used are based on the recognized insurance principles and methods. The maximum limit per insured risk takes into account the reliability of the insurer and a cost/benefit ratio, especially in cases in which the insurance market tries to reduce coverage by restricted/limited policy wordings and specific exclusions.

We maintain two insurance companies. However, insurance contracts provided are only considered in the modeling/calculation of insurance-related reductions of operational risk capital requirements where the risk is re-insured in the external insurance market.

The regulatory capital figure includes a deduction for insurance coverage amounting to € 60 million as of December 31, 2021 compared with € 72 million as of December 31, 2020. Currently, no other risk transfer techniques beyond insurance are recognized in the AMA model.

CI/D selects insurance partners in strict compliance with the regulatory requirements specified in the CRR and based on recommendations of the respective subject matter experts on the recognition of insurance in advanced measurement approaches. The insurance portfolio, as well as CI/D activities, is audited by Group Audit on a risk-based approach.

Exposure to interest rate risk in the banking book (Article 448 CRR)

Qualitative information on interest rate risk in the banking book (Article 448 (1)(c-g) CRR) (EU IRRBBA)

Interest rate risk in the banking book (IRRBB) is the current or prospective risk, to both the Group's capital and earnings, arising from movements in interest rates, which affect the Group's non-trading book exposures. This includes gap risk, which arises from the term structure of banking book instruments, basis risk, which describes the impact of relative changes in interest rates for financial instruments that are priced using different interest rate curves, as well as option risk, which arises from option derivative positions or from optional elements embedded in financial instruments.

The Group manages its IRRBB exposures using economic value as well as earnings based measures. Our Group Treasury function is mandated to manage the interest rate risk centrally, with Market Risk Management acting as 2nd Line of Defense ("2nd LoD") independently assessing and challenging the implementation of the framework and adherence to the risk appetite. Group Audit in its role as the 3rd Line of Defense ("3rd LoD") is accountable for providing independent and objective assurance on the adequacy of the design, operating effectiveness and efficiency of the risk management system and systems of internal control. The Group Asset & Liability Committee ("ALCo") oversees and steers the Group's structural interest risk position with particular focus on banking book risks and the management of the net interest income. The ALCo monitors the sensitivity of financial resources and associated metrics to key market parameters such as interest rate curves and oversees adherence to divisional/business financial resource limits..

Economic value based measures look at the change in economic value of banking book assets, liabilities and off-balance sheet exposures resulting from interest rate movements, independent of the accounting treatment. Thereby the Group

under the six standard scenarios defined by the European Banking Authority (EBA) in addition to internal stress scenarios for risk steering purposes. For the reporting of internal stress scenarios & risk appetite the Group applies a few different modelling

changes to EVE without applying weight factor for positive changes. Furthermore, the Group is using behavioral model assumptions about the interest rate duration of own equity capital as well as non-maturity deposits from financial institutions.

Earnings-based measures look at the expected change in Net Interest Income (NII) resulting from interest rate movements

reduction in NII under the six standard scenarios defined by the European Banking Authority (EBA) in addition to internal stress scenarios for risk steering purposes, compared to a market implied curve scenario, over a period of 12 months.

The Group employs mitigation techniques to hedge the interest rate risk arising from nontrading positions within given limits. The interest rate risk arising from nontrading asset and liability positions is managed through Treasury Markets & Investments. The residual interest rate risk positions are hedged with Deutsche Bank's trading books within the IB division. Thereby the Group uses derivatives and applies different hedge accounting techniques such as fair value hedge accounting or cash flow hedge accounting. For fair value hedges, the Group uses interest rate swaps and options contracts to manage the fair value movements of fixed rate financial instruments due to changes in benchmark interest. For hedges in the context of the Cash Flow Hedge accounting, we do use interest rate swaps to manage the exposure to cash flow variability of our variable rate instruments as a result of changes in benchmark interest rates.

The Group assesses and measures hedge effectiveness of a hedging relationship based on the change in the fair value or cash flows of the derivative hedging instrument relative to the change in the fair value or cash flows of the hedged item attributable to the hedged risk.

The "Model Risk Management" function performs independent validation of models used for IRRBB measurement, as per all market risk models, in line with Deutsche Bank's group-wide risk governance framework.

The calculation of VaR and sensitivities of interest rate risk is performed daily, whereas the measurement and reporting of economic value interest rate and earnings risk is performed on a monthly basis. The Group generally uses the same metrics in its internal management systems as it applies for the disclosure in this report.

Deutsche Bank's key modelling assumptions are applied to the positions in our PB and CB divisions. Those positions are subject to risk of changes in our client's behavior with regard to their deposits as well as loan products.

The Group manages the interest rate risk exposure of its Non-Maturity Deposits (NMDs) through a replicating portfolio approach to determine the average repricing maturity of the portfolio. For the purpose of constructing the replicating portfolio, the portfolio of NMDs is clustered by dimensions such as business unit, currency, product and geographical location. The main dimensions influencing the repricing maturity are elasticity of deposit rates to market interest rates, volatility of deposit balances and observable client behavior. For the reporting period the average repricing maturity assigned across all such replicating portfolios is 2.17 years and Deutsche Bank uses 15 years as the longest repricing maturity.

In the loan and some of the term deposit products Deutsche Bank considers early prepayment/withdrawal behavior of its customers. The parameters are based on historical observations, statistical analyses and expert assessments.

Furthermore, the Group generally calculates IRRBB related metrics in contractual currencies and aggregates the resulting metrics for reporting purposes. When calculating economic value based metrics the commercial margin is excluded for material parts of the balance sheet.

Changes in the economic value of equity and net interest income (Article 448 (a-b,d) CRR)

The following table shows the impact on the Group's net interest income in the non-trading book as well as the change of the economic value for the banking book positions from interest rate changes under the six standard scenarios defined by the European Banking Authority (EBA).

EU IRRBB1 - Changes in the economic value of equity and net interest income under six supervisory shock scenarios

	Changes of the economic value of equity		Changes of the net interest income[1]	
in € b.	Dec 31, 2021	June 30, 2021	Dec 31, 2021	June 30, 2021
Parallel up	(3.5)	(4.2)	1.4	2.5
Parallel down	0.1	0.6	(0.9)	(0.9)
Steepener	(0.0)	(0.5)	(0.7)	(0.8)
Flattener	(1.3)	(0.5)	1.1	2.2
Short rate up	(1.7)	(1.3)	1.7	2.9
Short rate down	0.4	0.5	(0.9)	(0.9)
Maximum	**(3.5)**	(4.2)	**(0.9)**	(0.9)

[1] Changes of the net interest income (NII) reflects the difference between projected NII in the respective scenario with shifted rates vs. market implied rates. Sensitivities are based on a static balance sheet at constant exchange rates, excluding trading positions and DWS. Figures do not include Mark to Market (MtM) / Other Comprehensive Income (OCI) effects on centrally managed positions not eligible for hedge accounting.

The maximum Economic Value of Equity (EVE) loss was € (3.5) billion as of December 2021, compared to € (4.2) billion as of June 2021.

The decrease in maximum EVE loss in the parallel up scenario was mainly driven by behavioral interest rate model enhancements for Non-Maturity Deposits in Private Bank and Corporate Bank businesses. An additional contributing factor was a reduction in interest rate risk duration of assets of the German pension plans.

The maximum one-year loss in net interest income (NII) remained stable at € (0.9) billion as of December 2021, compared to € (0.9) billion as of June 2021.

Liquidity risk

Risk management objectives and policies

Liquidity risk management strategies and processes (Article 435 (1)(a) CRR) (EU OVA & EU LIQA)

The bank's liquidity risk management principles are documented in the globally applicable "Liquidity Risk Management Policy" (LRMP) and adheres to the 8 key risk management practices (Risk governance, Risk Organisation (3 LoD), Risk Culture, Risk Appetite and strategy, Risk Identification and assessment, Mitigation and controls, Risk measurement and reporting, Stress planning and execution). The individual roles and responsibilities within the Liquidity Risk Management Framework have been laid out and documented in the Global Responsibility Matrix which was designed to provide clarity and transparency across all involved stakeholders.

Liquidity risk management structure and organization (Article 435 (1)(b) CRR) (EU OVA & EU LIQA)

The Management Board defines the liquidity and funding risk strategy for the Bank as well as the risk appetite, based on recommendations made by the Group Asset and Liability Committee (ALCO) and Group Risk Committee (GRC). The Management Board reviews and approves the risk appetite at least annually. The risk appetite is applied to the Group and Key Liquidity Entities (KLE) e.g. DB AG to monitor and control liquidity risk as well as the Bank's long-term funding and issuance plan. The liquidity managing functions are organized in alignment with the three lines of defence structure set forth in the "Risk Management Policy – Deutsche Bank Group". Lines of Business and Treasury comprise the first line of defence ("1LoD") – responsible for executing the steps needed to manage the Bank's liquidity position. Risk comprises the second line of defence ("2LoD") – responsible for providing independent risk oversight, challenge, and validation of activities conducted by the 1LoD including establishing the Risk Appetite and Group level control standards. Group Audit comprises the third line of defence ("3LoD") – responsible for overseeing the activities of both the 1LoD and 2LoD.

Scope and nature of liquidity risk measurement and reporting system (Article 435 (1)(c) CRR) (EU OVA & EU LIQA)

Liquidity & Treasury Reporting & Analysis (LTRA) has overall accountability for the accurate and timely production of both external regulatory liquidity reporting and internal management reporting of liquidity risk for DB Group. In addition, LTRA is responsible for the development of management information systems (MIS) and related analysis necessary for supporting the liquidity risk framework and its governance for Treasury and LRM.

Policies for hedging and mitigating liquidity risk (Article 435 (1)(d) CRR) (EU OVA & EU LIQA)

The bank's liquidity risk management principles are documented in the globally applicable "Liquidity Risk Management Policy" (LRMP) . All additional policies and procedures (both global and local) issued by the liquidity risk management functions further define the requirements specific to liquidity risk practices, They are subordinate to this Policy and subject to the standards it sets forth.

Approach to centralized group liquidity management and individual legal entity liquidity management

The Bank ensures at the level of each liquidity relevant entity that all local liquidity metrics are managed in compliance with the defined risk appetite. Local liquidity surpluses are pooled in DB AG Frankfurt Branch and local liquidity shortfalls can be met through support from DB AG Frankfurt Branch. Transfers of liquidity capacity between entities are subject to the approval framework outlined in the "Intercompany Funding Policy" involving the Group's liquidity steering function as well as the local liquidity managers.

An outline of the bank's contingency funding plans

Deutsche Bank's Group Contingency Funding Plan (CFP) outlines how the bank would respond to an actual or anticipated liquidity stress event. It includes a decisive set of actions that can be taken to raise cash and recover the bank's key liquidity metrics in times of liquidity stress. The CFP includes a clear governance structure and well-defined liquidity risk indicators to ensure timely and effective decision-making, communication, and coordination during a liquidity stress event. Deutsche Bank has established the Financial Resource Management Council (FRMC) which is responsible for oversight of capital and liquidity across contingency, recovery, and resolution scenarios in a crisis situation.

Liquidity stress testing and scenario analysis

Global internal liquidity stress testing and scenario analysis is used for measuring liquidity risk and evaluating the Group's short-term liquidity position within the liquidity framework. This complements the daily operational cash management process. The long-term liquidity strategy based on contractual and behavioral modelled cash flow information is represented by a long-term metric known as the Funding Matrix (refer to Funding Risk Management below).

The global liquidity stress testing process is managed by Treasury in accordance with the Management Board approved risk appetite. Treasury is responsible for the design of the overall methodology, the choice of liquidity risk drivers and the determination of appropriate assumptions (parameters) to translate input data into stress testing output. LRM is responsible for the definition of the stress scenarios. Under the principles laid out by Model Risk Management, LRM performs the independent validation of liquidity risk models and non-model estimates. LTRA is responsible for implementing these methodologies and performing the stress test calculation in conjunction with Treasury, LRM and IT.

Stress testing and scenario analysis are used to evaluate the impact of sudden and severe stress events on the Group's liquidity position. Deutsche Bank has selected four scenarios to calculate the Group's stressed Net Liquidity Position ("sNLP"). These scenarios are designed to capture potential outcomes which may be experienced by Deutsche Bank during periods of idiosyncratic and/or market-wide stress and are designed to be both plausible and sufficiently severe as to materially impact the Group's liquidity position. The most severe scenario assesses the potential consequences of a combined market-wide and idiosyncratic stress event, including downgrades of our credit rating. Under each of the scenarios the impact of a liquidity stress event over different time horizons and across multiple liquidity risk drivers, covering all business lines, product areas and balance sheet is considered. The output from scenario analysis feeds the Group Wide Stress Test, which considers the impact of scenarios on all risk stripes.

In addition, potential funding requirements from contingent liquidity risks which might arise under stress, including drawdowns on credit facilities, increased collateral requirements under derivative agreements, and outflows from deposits with a contractual rating linked trigger are included in the analysis. Subsequently Countermeasures, which are the actions the Group would take to counterbalance the outflows incurred during a stress event, are taken into consideration. Those countermeasures include utilizing the Bank's Liquidity Reserve and generating liquidity from other unencumbered, marketable assets without causing any material impact on the Bank's business model.

Stress testing is conducted at a global level and for defined Key Liquidity Entities covering an eight-week stress horizon which is considered the most critical time span during a liquidity crisis and, where, on a Group level, liquidity is actively steered and assessed. In addition to the consolidated currency stress test, stress tests for material currencies (EUR, USD and GBP) are performed. Ad-hoc analysis may be conducted to reflect the impact of potential downside events that could affect the Bank such as the COVID-19 pandemic. Relevant stress assumptions are applied to reflect liquidity flows from risk drivers and on-balance sheet and off-balance sheet products. The suite of stress testing scenarios and assumptions are reviewed on a regular basis and are updated when enhancements are made to stress testing methodologies.

Complementing daily liquidity stress testing, the Bank also conducts regular Group Wide Stress Testing (GWST) run by Enterprise Risk Management (ERM) analyzing liquidity risks in conjunction with the other defined risk types and evaluating their impact and interplay to both capital and liquidity positions.

Qualitative information on LCR (Article 451a CRR) (EU LIQB)

The Liquidity Coverage Ratio (LCR)

The LCR is intended to promote the short-term resilience of a bank's liquidity risk profile over a 30 day stress scenario. The ratio is defined as the amount of High Quality Liquid Assets ("HQLA") that could be used to raise liquidity, measured against the total volume of net cash outflows, arising from both contractual and modelled exposures, in a stressed scenario.

This requirement has been implemented into European law, via the Commission Delegated Regulation (EU) 2015/61, adopted in October 2014. Compliance with the LCR was required in the EU from October 1, 2015.

Our average LCR of 142 % (twelve months average) has been calculated in accordance with the Commission Delegated Regulation (EU) 2015/61 and the EBA Guidelines on LCR disclosure to complement the disclosure of liquidity risk management under Article 435 CRR.

The Group's Liquidity Coverage Ratio (LCR) was 133 % as of December 31, 2021, or € 52 billion of excess over the regulatory minimum of 100 %. This compares to 145 %, or € 66 billion of excess liquidity at December 31, 2020. The decrease in surplus was primarily driven by higher outflows for commitments and an increase in German lending activity which was broadly offset by additional participation in the ECB's TLTRO as well as an increases in deposits.

Concentration of funding and liquidity sources

Diversification of our funding profile in terms of investor types, regions and products is an important element of our liquidity risk management framework. Our most stable funding sources for which the Bank has introduced a minimum risk appetite stem from capital markets issuances and equity, as well as from retail, and transaction banking clients. Other customer deposits and secured funding and short positions are additional sources of funding. Unsecured wholesale funding represents unsecured wholesale liabilities sourced primarily by our Treasury Pool Management team. Given the relatively short-term nature of these liabilities, they are predominantly used to fund liquid trading assets.

To promote the additional diversification of our refinancing activities, we hold a license to issue mortgage Pfandbriefe. We continue to run a program for the purpose of issuing Covered Bonds under Spanish law (Cedulas) and participate in the TLTRO III program. Additionally, we expanded in 2020 our potential investor base by introducing our Sustainable Finance Framework and issued a Green Bond in June 2020.

Unsecured wholesale funding comprises a range of institutional products, such as Certificate of Deposits (CDs), Commercial Papers (CPs) as well as Money Market deposits.

To avoid any unwanted reliance on these short-term funding sources, and to promote a sound funding profile which complies with the defined risk appetite, we have implemented limits (across tenors) on these funding sources which are derived from our daily stress testing analysis. In addition, we limit the total volume of unsecured wholesale funding to manage the reliance on this funding source as part of the overall funding diversification.

Composition of HQLA

The average HQLA of 220 billion has been calculated in accordance with the Commission Delegated Regulation (EU) 2015/61 and the EBA Guidelines on LCR disclosure to complement the disclosure of liquidity risk management under Article 435 CRR.

The HQLA as of December 31, 2021 of 207 billion is primarily held in Level 1 cash and central bank reserves (81 %) and Level 1 high quality securities (17 %). This compares to 213 billion as of December 31, 2020 primarily held in Level 1 cash and central bank reserves (67 %) and Level 1 high quality securities (30 %).

Derivative exposures and potential collateral calls

The majority of outflows related to derivative exposures and other collateral requirements shown in item 11 are in relation to derivative contractual cash outflows that are offset by derivative cash inflows shown in item 19 Other cash inflows.

Other significant outflows relate to the impact of an adverse market scenario on derivatives based on the 24 month historical look back approach and the potential posting of additional collateral as a result of a 3 notch downgrade of DB's credit rating (as per regulatory requirements).

Currency mismatch in the LCR

The LCR is calculated for EUR, USD and GBP which have been identified as significant currencies (having liabilities > 5 % of total group liabilities excluding regulatory capital and off balance sheet liabilities) in accordance with the Commission Delegated Regulation (EU) 2015/61. No explicit LCR risk appetite is set for the significant currencies. However, limits have been defined over the respective significant currency stressed Net Liquidity Position (sNLP). This allows the internal monitoring and management of risks stemming from currency mismatches that may arise from liquidity inflows and outflows over the short-term horizon.

Other items in the LCR calculation that are not captured in the LCR disclosure template but that the institution considers relevant for its liquidity profile

The Pillar 3 disclosure obligations require Banks to disclose the 12 months rolling averages each quarter. We do not consider anything else relevant for disclosure.

Quantitative information on LCR (Article 451a CRR)

EU LIQ1 – LCR disclosure template

	in € b.	Total unweighted value (average)				Total weighted value (average)			
	Quarter ending on	Dec 31, 2021	Sep 30, 2021	Jun 30, 2021	Mar 31, 2021	Dec 31, 2021	Sep 30, 2021	Jun 30, 2021	Mar 31, 2021
	Number of data points used in the calculation of averages	12	12	12	12	12	12	12	12
	High-quality liquid assets								
1	Total high-quality liquid assets (HQLA)	–	–	–	–	220	220	222	214
	Cash-outflows								
2	Retail deposits and deposits from small business costumers	280	281	279	274	16	17	17	17
	of which:								
3	Stable deposits	120	116	114	112	6	6	6	6
4	Less stable deposits	77	81	82	80	10	11	11	11
5	Unsecured wholesale funding	228	222	216	215	98	95	91	91
	of which:								
6	Operational deposits (all counterparties) and deposits in network of cooperative banks	83	82	83	83	20	20	21	21
7	Non-operational deposits (all counterparties)	144	137	132	130	76	73	69	68
8	Unsecured debt	2	2	2	2	2	2	2	2
9	Secured wholesale funding	–	–	–	–	17	19	19	18
10	Additional requirements	203	200	200	198	68	69	73	75
	of which:								
11	Outflows related to derivative exposures and other collateral requirements	27	28	32	35	23	25	30	34
12	Outflows related to loss of funding on debt products	0	0	0	0	0	0	0	0
13	Credit and liquidity facilities	176	172	168	162	45	44	43	40
14	Other contractual funding obligations	56	51	47	45	7	7	6	6
15	Other contingent funding obligations	173	142	127	113	5	5	6	6
16	Total cash outflows	–	–	–	–	212	212	213	213
	Cash - inflows								
17	Secured lending (e.g. reverse repos)	280	265	251	240	17	17	18	17
18	Inflows from fully performing exposures	47	44	42	41	33	31	30	30
19	Other cash inflows	11	13	18	22	11	13	18	22
EU 19a	Difference between total weighted inflows and total weighted outflows arising from transactions in third countries where there are transfer restrictions or which are denominated in non-convertible currencies	–	–	–	–	3	3	4	5
EU 19b	Excess inflows from a related specialized credit institution	–	–	–	–	0	0	0	0
20	Total cash inflows	337	322	310	303	57	59	62	64
	of which:								
EU 20a	Fully exempt inflows	0	0	0	0	0	0	0	0
EU 20b	Inflows subject to 90 % cap	0	0	0	0	0	0	0	0
EU 20c	Inflows subject to 75 % cap	305	290	281	277	57	59	62	64
	Total adjusted value								
21	Liquidity buffer	–	–	–	–	220	220	222	214
22	Total net cash outflows	–	–	–	–	155	154	151	149
23	Liquidity coverage ratio (%)	–	–	–	–	142	143	147	144

The Net Stable Funding Ratio (NSFR):

The NSFR requires banks to maintain a stable funding profile in relation to their on- and off-balance sheet activities. The ratio is defined as the amount of Available Stable Funding (the portion of capital and liabilities expected to be a stable source of funding), relative to the amount of Required Stable Funding (a function of the liquidity characteristics of various assets held).

The Capital Requirements Regulation II ("CRR2"), the regulation which defines and implements the NSFR for the EU, was finalized in June 2019 and is effective from June 28, 2021.

The NSFR as of December 31, 2021 calculated in accordance with the CRR2 stands at 121 %, or € 105 billion of excess over regulatory minimum of 100 %.

EU LIQ2 – Net stable funding ratio template

						Dec 31, 2021
		a	b	c	d	e
		Unweighted value by residual maturity				
	in € b.	No maturity	< 6 months	6 months to < 1 year		Weighted value
	Available stable funding (ASF) Items					
1	Capital items and instruments	67	0	0	9	76
2	Own funds	67	0	0	7	74
3	Other capital instruments	–	0	0	2	2
4	Retail deposits	–	248	22	2	255
5	Stable deposits	–	175	20	2	187
6	Less stable deposits	–	74	1	0	68
7	Wholesale funding:	–	359	24	144	268
8	Operational deposits	–	83	0	0	42
9	Other wholesale funding	–	275	24	144	226
10	Interdependent liabilities	–	0	0	0	0
11	Other liabilities:	11	118	3	2	4
12	NSFR derivative liabilities	11	–	–	–	–
13	All other liabilities and capital instruments not included in the above categories	–	118	3	2	4
14	Total available stable funding (ASF)	–	–	–	–	602
	Required stable funding (RSF) Items					
15	Total high-quality liquid assets (HQLA)	–	–	–	–	20
EU 15a	Assets encumbered for more than 12m in cover pool	–	0	0	24	21
16	Deposits held at other financial institutions for operational purposes	–	0	0	0	0
17	Performing loans and securitires:	–	182	28	386	382
18	Performing securities financing transactions with financial customers collateralized by Level 1 HQLA subject to 0% haircut	–	50	1	5	6
19	Performing securities financing transaction with financial customers collataralized by other assets and loans and advances to financial institutions	–	28	7	52	58
20	Performing loans to non-financial corporate clients, loans to retail and small business customers, and loans to sovereigns, and PSEs,	–	70	14	123	148
	of which:					
21	With a risk weight of less than or equal to 35% under the Basel II Standardized Approach for credit risk	–	10	1	6	10
22	Performing residential mortgages,	–	1	1	130	95
	of which:					
23	With a risk weight of less than or equal to 35% under the Basel II Standardized Approach for credit risk	–	1	1	104	73
24	Other loans and securities that are not default and do not qualify as HQLA, including exchange-traded equities and trade finance on-balance sheet products	–	33	5	76	75
25	Interdependent assets	–	0	0	0	0
26	Other assets:	0	131	1	21	60
27	Physical traded commodities	–	–	–	0	0
28	Assets posted as initial margin for derivative contracts and contributions to default funds of CCPs	–			7	6
29	NSFR derivative assets	–			15	15
30	NSFR derivative liabilities before deduction of variation margin posted	–			56	3
31	All other assets not included in the above categories	–	53	1	21	36
32	Off-balance sheet items		59	29	143	14
33	Total required stable funding (RSF)	–	–	–	–	498
34	Net Stable Funding Ratio (in percent)	–	–	–	–	121

						Sep 30, 2021
		a	b	c	d	e
		Unweighted value by residual maturity				
	in € b.	No maturity	< 6 months	6 months to < 1 year		Weighted value
	Available stable funding (ASF) Items					
1	Capital items and instruments	65	0	0	10	75
2	Own funds	65	0	0	7	72
3	Other capital instruments	–	0	0	2	2
4	Retail deposits	–	247	21	2	253
5	Stable deposits	–	173	20	2	185
6	Less stable deposits	–	74	1	0	68
7	Wholesale funding:	–	363	19	142	261
8	Operational deposits	–	81	0	0	40
9	Other wholesale funding	–	282	19	142	221
10	Interdependent liabilities	–	0	0	0	0
11	Other liabilities:	14	150	3	2	4
12	NSFR derivative liabilities	14	–	–	–	–
13	All other liabilities and capital instruments not included in the above categories	–	150	3	2	4
14	Total available stable funding (ASF)	–	–	–	–	593
	Required stable funding (RSF) Items					
15	Total high-quality liquid assets (HQLA)	–	–	–	–	21
EU 15a	Assets encumbered for more than 12m in cover pool	–	0	0	25	21
16	Deposits held at other financial institutions for operational purposes	–	0	0	0	0
17	Performing loans and securitires:	–	173	29	372	367
18	Performing securities financing transactions with financial customers collateralized by Level 1 HQLA subject to 0% haircut	–	46	1	7	8
19	Performing securities financing transaction with financial customers collataralized by other assets and loans and advances to financial institutions	–	33	6	45	51
20	Performing loans to non-financial corporate clients, loans to retail and small business customers, and loans to sovereigns, and PSEs,	–	60	15	117	139
	of which:					
21	With a risk weight of less than or equal to 35% under the Basel II Standardized Approach for credit risk	–	2	1	4	4
22	Performing residential mortgages,	–	1	1	127	94
	of which:					
23	With a risk weight of less than or equal to 35% under the Basel II Standardized Approach for credit risk	–	1	1	89	61
24	Other loans and securities that are not default and do not qualify as HQLA, including exchange-traded equities and trade finance on-balance sheet products	–	32	5	76	75
25	Interdependent assets	–	0	0	0	0
26	Other assets:	0	153	2	22	61
27	Physical traded commodities	–	–	–	1	1
28	Assets posted as initial margin for derivative contracts and contributions to default funds of CCPs	–			7	6
29	NSFR derivative assets	–			14	14
30	NSFR derivative liabilities before deduction of variation margin posted	–			56	3
31	All other assets not included in the above categories	–	76	2	21	37
32	Off-balance sheet items		60	27	142	14
33	Total required stable funding (RSF)	–	–	–	–	483
34	Net Stable Funding Ratio (in percent)	–	–	–	–	123

						Jun 30, 2021
		a	b	c	d	e
		Unweighted value by residual maturity				
	in € b.	No maturity	< 6 months	6 months to < 1 year		Weighted value
	Available stable funding (ASF) Items					
1	Capital items and instruments	64	0	0	10	74
2	Own funds	64	0	0	8	72
3	Other capital instruments	–	0	0	2	2
4	Retail deposits	–	250	22	2	256
5	Stable deposits	–	173	20	2	186
6	Less stable deposits	–	76	2	0	71
7	Wholesale funding:	–	351	22	140	260
8	Operational deposits	–	80	0	0	40
9	Other wholesale funding	–	271	22	140	220
10	Interdependent liabilities	–	0	0	0	0
11	Other liabilities:	8	160	2	0	1
12	NSFR derivative liabilities	8	–	–	–	–
13	All other liabilities and capital instruments not included in the above categories	–	160	2	0	1
14	Total available stable funding (ASF)	–	–	–	–	591
	Required stable funding (RSF) Items					
15	Total high-quality liquid assets (HQLA)	–	–	–	–	25
EU 15a	Assets encumbered for more than 12m in cover pool	–	0	0	26	22
16	Deposits held at other financial institutions for operational purposes	–	0	0	0	0
17	Performing loans and securitires:	–	179	31	352	357
18	Performing securities financing transactions with financial customers collateralized by Level 1 HQLA subject to 0% haircut	–	48	1	6	7
19	Performing securities financing transaction with financial customers collataralized by other assets and loans and advances to financial institutions	–	35	5	43	49
20	Performing loans to non-financial corporate clients, loans to retail and small business customers, and loans to sovereigns, and PSEs,	–	62	18	137	154
	of which:					
21	With a risk weight of less than or equal to 35% under the Basel II Standardized Approach for credit risk	–	27	7	35	40
22	Performing residential mortgages,	–	2	2	92	74
	of which:					
23	With a risk weight of less than or equal to 35% under the Basel II Standardized Approach for credit risk	–	2	2	31	22
24	Other loans and securities that are not default and do not qualify as HQLA, including exchange-traded equities and trade finance on-balance sheet products	–	31	5	74	73
25	Interdependent assets	–	0	0	0	0
26	Other assets:	0	161	1	22	67
27	Physical traded commodities	–	–	–	1	1
28	Assets posted as initial margin for derivative contracts and contributions to default funds of CCPs	–			6	5
29	NSFR derivative assets	–			21	21
30	NSFR derivative liabilities before deduction of variation margin posted	–			52	3
31	All other assets not included in the above categories	–	82	1	21	37
32	Off-balance sheet items		49	34	142	12
33	Total required stable funding (RSF)	–	–	–	–	484
34	Net Stable Funding Ratio (in percent)	–	–	–	–	122

Unencumbered assets (Article 443 CRR)

Qualitative information on unencumbered assets (EU AE4)

On March 3, 2017 the EBA published the final guidelines on the disclosure of encumbered and unencumbered assets as mandated by Article 443 CRR.

In accordance to the guideline the data uses the median of the last four quarterly data points. Therefore, the sum of sub-components does not necessarily add up.

Encumbered assets primarily comprise those on- and off-balance sheet assets that are pledged as collateral against secured funding, collateral swaps, and other collateralized obligations. Additionally, in line with the EBA technical standards on regulatory asset encumbrance reporting, we consider default funds and initial margins as encumbered, as well as other assets pledged which cannot be freely withdrawn such as mandatory minimum reserves at central banks. We also include derivative margin receivable assets as encumbered under these EBA guidelines.

Quantitative information on unencumbered assets

The below tables set out a breakdown of on- and off-balance sheet items, broken down between encumbered and unencumbered. Any securities borrowed or purchased under resale agreements are shown based on the fair value of collateral received. Following the European Commission's disclosure guidance for asset encumbrance we have introduced the asset quality indicator concept "high-quality liquid assets" (HQLA) as defined under the Delegated Act on Liquidity Coverage Ratio for the first time on June 30, 2019.

For December 2021, € 212 billion of the Group's on-balance sheet assets were encumbered. These assets primarily relate to firm financing of trading inventory and other securities, funding (i.e. Pfandbriefe and covered bonds) secured against loan collateral and cash collateral for derivative margin requirements.

For December 2021, the Group had received securities as collateral with a fair value of € 260 billion, of which € 223 billion were sold or on pledged. These pledges typically relate to trades to facilitate client activity, including prime brokerage, collateral posted in respect of Exchange Traded Funds and derivative margin requirements.

'Own debt securities issued other than covered bonds and asset backed securities' refers to those own bond holdings that are not derecognized from the balance sheet by a non-IFRS institution. This is not applicable for Deutsche Bank Group.

EU AE1 – Encumbered and unencumbered assets

									Dec, 31 2021
		010	030	040	050	060	080	090	100
		Encumbered assets				Unencumbered assets			
		Carrying amount		Fair value		Carrying amount		Fair value	
	in € bn.		of which notionally eligible EHQLA and HQLA		of which notionally eligible EHQLA and HQLA		of which EHQLA and HQLA		of which EHQLA and HQLA
030	Equity instruments	6.5	4.3	–	–	6.8	1.1	–	–
040	Debt securities	69.8	53.2	69.8	53.2	69.5	46.0	69.5	46.0
	of which:								
050	Covered bonds	0.9	1.0	0.9	1.0	1.2	1.1	1.2	1.1
060	Securitisations	2.3	1.4	2.3	1.4	2.5	1.3	2.5	1.3
070	Issued by general governments	53.8	47.5	53.8	47.5	44.8	38.9	44.8	38.9
080	Issued by financial corporations	9.3	2.5	9.3	2.5	13.9	6.7	13.9	6.7
090	Issued by non-financial corporations	5.2	1.7	5.2	1.7	9.9	0.6	9.9	0.6
120	Other assets	142.6	12.9	–	–	1,067.7	178.5	–	–
010	Total	216.5	70.4	–	–	1,103.4	223.8	–	–

									Dec, 31 2020
		010	030	040	050	060	080	090	100
		Encumbered assets				Unencumbered assets			
		Carrying amount		Fair value		Carrying amount		Fair value	
	in € bn.		of which notionally eligible EHQLA and HQLA		of which notionally eligible EHQLA and HQLA		of which EHQLA and HQLA		of which EHQLA and HQLA
030	Equity instruments	6.5	3.6	–	–	6.7	1.2	–	–
040	Debt securities	61.5	52.8	61.5	52.8	95.2	67.4	95.2	67.4
	of which:								
050	Covered bonds	2.0	0.7	2.0	0.7	4.2	4.6	4.2	4.6
060	Asset-backed securities	2.4	1.1	2.4	1.1	5.1	1.3	5.1	1.3
070	Issued by general governments	51.2	47.8	51.2	47.8	62.7	59.7	62.7	59.7
080	Issued by financial corporations	7.5	2.4	7.5	2.4	21.0	6.0	21.0	6.0
090	Issued by non-financial corporations	2.8	1.1	2.8	1.1	11.2	0.5	11.2	0.5
120	Other assets	156.5	12.5	–	–	1,110.9	143.1	–	–
010	Total	227.5	69.3	–	–	1,169.6	209.8	–	–

EU AE2 – Collateral received

		Dec 31, 2021			
		010	030	040	060
				Unencumbered	
		Fair value of encumbered collateral received or own debt securities issued		Fair value of collateral received or own debt securities issued available for encumbrance	
	in € bn.		of which notionally eligible EHQLA and HQLA		of which EHQLA and HQLA
140	Loans on demand	0	0	0	0
150	Equity instruments	40.2	23.8	1.8	0.6
160	Debt securities	212.8	186.5	29.9	20.7
	of which:				
170	Covered bonds	3.5	3.4	0.6	0.3
180	Asset-backed securities	7.1	3.3	2.6	0.0
190	Issued by general governments	179.6	174.4	25.6	20.0
200	Issued by financial corporations	21.0	6.9	4.4	0.6
210	Issued by non-financial corporations	10.7	2.1	0.8	0.1
220	Loans and advances other than loans on demand	0	0	2.4	0
230	Other collateral received	0	0	0	0
130	Total collateral received	236.0	200.6	34.4	21.1
240	Own debt securities issued other than own covered bonds or asset-backed securities	0	0	0	0
241	Own covered bonds and asset-backed securities issued and not yet pledged	–	–	3.0	0.2
250	Total Assets, collateral received and own debt securities issued	452.5	269.7	–	–

		Dec 31, 2020			
		010	030	040	060
				Unencumbered	
		Fair value of encumbered collateral received or own debt securities issued		Fair value of collateral received or own debt securities issued available for encumbrance	
	in € bn.		of which notionally eligible EHQLA and HQLA		of which EHQLA and HQLA
140	Loans on demand	0	0	0	0
150	Equity instruments	35.4	19.6	2.0	1.7
160	Debt securities	173.8	152.1	32.2	18.2
	of which:				
170	Covered bonds	3.3	3.3	0.9	0.5
180	Asset-backed securities	3.0	1.4	3.8	0.1
190	Issued by general governments	152.9	146.6	23.9	17.3
200	Issued by financial corporations	14.5	4.4	6.4	0.9
210	Issued by non-financial corporations	7.7	1.3	2.1	0.1
220	Loans and advances other than loans on demand	0	0	2.2	0
230	Other collateral received	0	0	0	0
130	Total collateral received	205.1	171.7	36.0	19.9
240	Own debt securities issued other than own covered bonds or asset-backed securities	0	0	0	0
241	Own covered bonds and asset-backed securities issued and not yet pledged	–	–	3.0	1.0
250	Total Assets, collateral received and own debt securities issued	432.7	243.4	–	–

The below table shows selected amounts for encumbered on- and off-balance sheet assets against the corresponding liabilities that have given rise to the encumbrance. These include assets pledged for derivatives margin, collateral required for repurchase agreements, and assets needed for the Group's covered bond issuance portfolio and the ECB's Targeted Longer Term Refinancing Operation.

EU AE3 – Sources of encumbrance

		Dec 31, 2021		Dec 31, 2020	
		010	030	010	030
	in € bn.	Matching liabilities, contingent liabilities or securities lent	Assets, collateral received and own debt securities issued other than covered bonds and ABSs encumbered	Matching liabilities, contingent liabilities or securities lent	Assets, collateral received and own debt securities issued other than covered bonds and ABSs encumbered
010	Carrying amount of selected financial liabilities	329.5	356.0	298.3	322.0

Reputational Risk

Within our risk management process, reputational risk is defined as the risk of possible damage to Deutsche Bank’s brand and reputation, and the associated risk to earnings, capital or liquidity arising from any association, action or inaction which could be perceived by stakeholders to be inappropriate, unethical or inconsistent with the DB’s values and beliefs.

Risk management objectives and policies

Reputational Risk Management strategies and processes (Article 435 (1)(a) CRR) (EU OVA)

Deutsche Bank seeks to ensure that reputational risk is as low as reasonably practicable. Reputational risk cannot be precluded as it can be driven by unforeseeable changes in perception of our practices by our various stakeholders (e.g. public, clients, shareholders and regulators). Deutsche Bank strives to promote sustainable standards that will enhance profitability and minimize reputational risk.

The Reputational Risk Framework (the Framework) is in place to manage the process through which active decisions are taken on matters which may pose a reputational risk, before the event, and in doing so to prevent damage to Deutsche Bank’s reputation wherever possible. The Framework provides consistent standards for the identification, assessment and management of reputational risk issues. Reputational impacts which may arise as a consequence of a failure from another risk type, control or process are addressed separately via the associated risk type framework and are therefore not addressed in this section. The reputational risk could arise from multiple sources including, but not limited to, potential issues with the profile of the counterparty, the business purpose / economic substance of the transaction or product, high risk industries, environmental and social considerations, and the nature of the transaction or product or its structure and terms.

The modelling and quantitative measurement of reputational risk internal capital is implicitly covered in our economic capital framework primarily within strategic risk.

Reputational Risk Management structure and organization (Article 435 (1)(b) CRR) (EU OVA)

The Framework is applicable across all Business Divisions and Regions. DWS-specific matters are reviewed by a DWS-dedicated reputational risk committee and escalated to the DWS Executive Board where required.

Whilst every employee has a responsibility to protect our reputation, the primary responsibility for the identification, assessment, management, monitoring and, if necessary, referring or reporting of reputational risk matters lies with Deutsche Bank’s Business Divisions as the primary risk owners. Each Business Division has an established process through which matters, which are deemed to be a moderate or greater reputational risk are assessed, the Unit Reputational Risk Assessment Process (Unit RRAP).

The Unit RRAP is required to refer any material reputational risk matters to the respective Regional Reputational Risk Committee (RRRC). The Framework also sets out a number of matters which are considered inherently higher risk from a reputational risk perspective and are therefore mandatory referrals to the RRRCs. The RRRCs, which are 2nd LoD Committees, are responsible for ensuring the oversight, governance and coordination of the management of reputational risk in the respective region of Deutsche Bank. The RRRCs meet, as a minimum, on a quarterly basis with ad hoc meetings as required. The Group Reputational Risk Committee (GRRC) is responsible for ensuring the oversight, governance and coordination of the management of reputational risk at Deutsche Bank on behalf of the Group Risk Committee and the Management Board. Additionally, the GRRC reviews cases with a Group wide impact and in exceptional circumstances, those that could not be resolved at a regional level.

Scope and nature of reputational risk measurement and reporting systems (Article 435 (1)(c) CRR) (EU OVA)

Our Reputational Risk Team provides monthly updates on reputational risk topics to the RRRC chairs and secretaries of the Unit RRAPs, as well as quarterly updates to the GRRC and RRRCs. The Risk and Capital Profile report includes updates on reputational risk, which is distributed on a monthly basis to the Management Board and on a quarterly basis to the Supervisory Board. This includes details such as the number of reputational risk issues assessed by the various committees and their decisions.

Policies for hedging and mitigating reputational risk (Article 435 (1)(d) CRR) (EU OVA)

The Reputational Risk Framework is governed by the Reputational Risk Policy and Procedure. The Framework has a group wide scope and is globally applicable. Regional and divisional reputational risk procedures have been implemented where deemed appropriate. Specific guidance on reputational risk issues is provided in the Reputational Risk Guidance Statements published monthly internally. SME input is required for specific reputational risk drivers such as defence, gaming, and environmental issues.

Model risk

Model Risk Management strategies and processes (Article 435 (1)(a) CRR) (EU OVA)

Model risk is one of the bank's Level 1 risks, and is overseen by the Chief Risk Officer through the setting of a quantitative and qualitative risk appetite statement, and managed through:

- Model risk policies and procedures, and supporting Key Operating Documents (KODs) aligned to risk appetite, regulatory requirements, and industry best practice, with clear roles and responsibilities for stakeholders;
- Inventorisation of all models, supporting ongoing model risk framework components including risk assessments and attestations;
- Key controls for all models from development through to decommissioning, including validation, approval, deployment and monitoring:
  - Independent Validations, and subsequent 2LoD approvals, verify that models have been appropriately designed and implemented for their intended scope and purpose, and that respective controls are in place to assure that they continue to perform as expected during their use;
  - The controls identify models' limitations and weaknesses, resulting in findings and compensating controls, these may be conditions for use, such as adjustments or overlays; and
- Model risk governance, including senior forums for monitoring and escalation of model risk related topics, as well as monthly updates to the Management Board on the model risk appetite metrics, and periodic model risk updates to the Supervisory Board.

Model Risk Management structure and organization (Article 435 (1)(b) CRR) (EU OVA)

Model Risk is managed in alignment with the three lines of defence structure set forth in the Risk Management Policy – Deutsche Bank Group. The 1LoD refers to roles in DB that own and manage model risk directly (such as, Owners/Developers/Senior Model Users/Implementers/etc.), including those in Infrastructure functions.

The 2LoD function covering model risk is Model Risk Management (MoRM). The Head of MoRM sits in the bank's Risk Division and reports up into the Chief Risk Officer.

Group Audit comprises the third line of defence ("3LoD") – responsible for overseeing the activities of both the 1LoD and 2LoD.

MoRM, as 2LoD, fulfils all the responsibilities of a risk type control function, including:

- Defining and regularly updating the model risk framework by setting minimum risk management and/or control standards to support the bank's compliance with all applicable material rules and regulations;
- Independently assessing the 1LoD implementation of, and adherence to, the framework and reporting an overall assessment of the bank's risk profile;
- Acting as an advisor to the 1LoD on how to identify, assess and manage risks and implement the framework; and
- Monitoring 1LoD adherence to the defined Risk Appetite, including escalating confirmed breaches and recommending matters for potential consequence management, whether at a divisional or an individual-level in line with the Model Risk Consequence Management Framework.

MoRM is also responsible for the approval of the use of models within the Bank. This includes initial and ongoing model validation. 2LoD functions outside of Model Risk Management are required to have a sufficient level of independence and expertise, and to apply MoRM standards and templates.

Scope and nature of model risk measurement and reporting systems (Article 435 (1)(c) CRR) (EU OVA)

Model Risk governance and monitoring is facilitated through a combination of 1LoD/2LoD individuals supported by Model Risk Councils and forums and a small number of senior approval committees escalating into the DB AG Supervisory Board – Risk Committee, to support management of model risk not just for individual models but also in the aggregate.

Model Inventories owned by MoRM are the repository of the models used across the firm and provide the basis for the reporting of model risk.

Model Risk Management provides (at least) quarterly updates on model risk topics to four divisional/regional Model Risk Councils, escalating into the Group Model Risk Council, as well as providing updates to certain DB AG Branches (London and New York), the Group Risk Committee and stand-alone model risk sections in the Risk and Capital Profile. The Risk and Capital Profile is distributed monthly to the Management Board and quarterly to the Supervisory Board.

Model Risk Profiles are produced by MoRM, to enable the monitoring, reporting and governance of model risk. Model Risk Profiles include:

- Current and emerging model risks and adherence to risk limits and risk concentrations;
- Key information to effectively monitor model risk and identify potential areas of concern, such as: Risk Appetite Metric results, remediation and mitigating actions and target dates, and residual model risk;
- Individual metrics showing risk appetite results for that reporting period—including remediation plans, compensating controls and ‘paths to green/amber’;
- Status of remediation of material problems; appropriate and timely responses to identified problems, with current and forward-looking perspectives;
- Reporting on overdue validation findings and the individuals responsible; and a
- Model Risk Consequence Management Framework report.

Policies for hedging and mitigating model risk (Article 435 (1)(d) CRR) (EU OVA)

Model Risk is hedged and mitigated at a model level, through appropriate actions independently verified as proportionate. These may be built into the model by the 1LoD, as part of development, or subsequently identified as part of the initial validation process or subsequent monitoring processes.

As part of independent validation, the 2LoD may identify the need for temporary or permanent mitigants prior to permitting the use of a model. These mitigants may take the form of adjustments to the model output, the allocation of a reserve/buffer, limitations or restrictions on the use of a model, additional monitoring and/or restrictions or amendments to model inputs and/or parameters.

These mitigants, are tracked and monitored as part of periodic model reviews. Reassessments may also be triggered by significant changes to the model or its materiality, or potentially through the resolution of related weaknesses in the model.

Remuneration policy (Article 450 CRR)

Article 450 CRR and related requirements such as table EU REMA and templates EU REM1-5 are addressed by the following section from the Employee Compensation Report from within our Annual Report 2021.

Compensation of the employees

The content of the 2021 Employee Compensation Report is based on the qualitative and quantitative remuneration disclosure requirements outlined in Article 450 No. 1 (a) to (j) Capital Requirements Regulation (CRR) in conjunction with Section 16 of the Remuneration Ordinance for Institutions (*Institutsvergütungsverordnung* – InstVV).

This Compensation Report takes a group-wide view and covers all consolidated entities of the Deutsche Bank Group. In accordance with regulatory requirements, equivalent reports for 2021 are prepared for the following Significant Institutions within Deutsche Bank Group: BHW Bausparkasse AG, Germany; Deutsche Bank Luxembourg S.A., Luxembourg; Deutsche Bank S.p.A., Italy; Deutsche Bank Mutui S.p.A., Italy; Deutsche Bank S.A.E., Spain.

Regulatory Environment

Ensuring compliance with regulatory requirements is an overarching consideration in our Group Compensation Strategy. We strive to be at the forefront of implementing regulatory requirements with respect to compensation and will continue to work closely with our prudential supervisor, the European Central Bank (ECB), to be in compliance with all existing and new requirements.

As an EU-headquartered institution, Deutsche Bank is subject to the Capital Requirements Regulation / Directive (CRR / CRD) globally, as transposed into German national law in the German Banking Act and InstVV. We have already comprehensively adopted the rules in its current version, InstVV 4.0 effective September 25, 2021, for all of Deutsche Bank subsidiaries and branches world-wide to the extent required in accordance with Section 27 InstVV. As a Significant Institution within the meaning of InstVV, Deutsche Bank identifies all employees whose work is deemed to have a material impact on the overall risk profile (Material Risk Takers or MRTs) in accordance with the updated criteria stipulated in the German Baking Act and in the Commission Delegated Regulation 2021/923. MRTs are, as in the past years, identified at a Group level and at the level of Significant Institutions. Moreover, as per the requirements which came into force in 2021 and in accordance with the German Banking Act, Deutsche Bank also identifies MRTs for all CRR institutions at a solo level.

Taking into account more specific sectorial legislation and in accordance with InstVV, some of Deutsche Bank's subsidiaries (in particular within the DWS Group) fall under the local transpositions of the Alternative Investments Fund Managers Directive (AIFMD) or the Undertakings for Collective Investments in Transferable Securities Directive (UCITS). We also identify MRTs in these subsidiaries. Identified employees are subject to the remuneration provisions outlined in the Guidelines on sound remuneration policies under AIFMD/UCITS published by the European Securities and Markets Authority (ESMA).

Deutsche Bank takes into account the regulations targeted at employees who engage directly or indirectly with the bank's clients, for instance as per the local transpositions of the Markets in Financial Instruments Directive II – MiFID II. Accordingly, we have implemented specific provisions for employees deemed to be Relevant Persons to ensure that they act in the best interest of our clients.

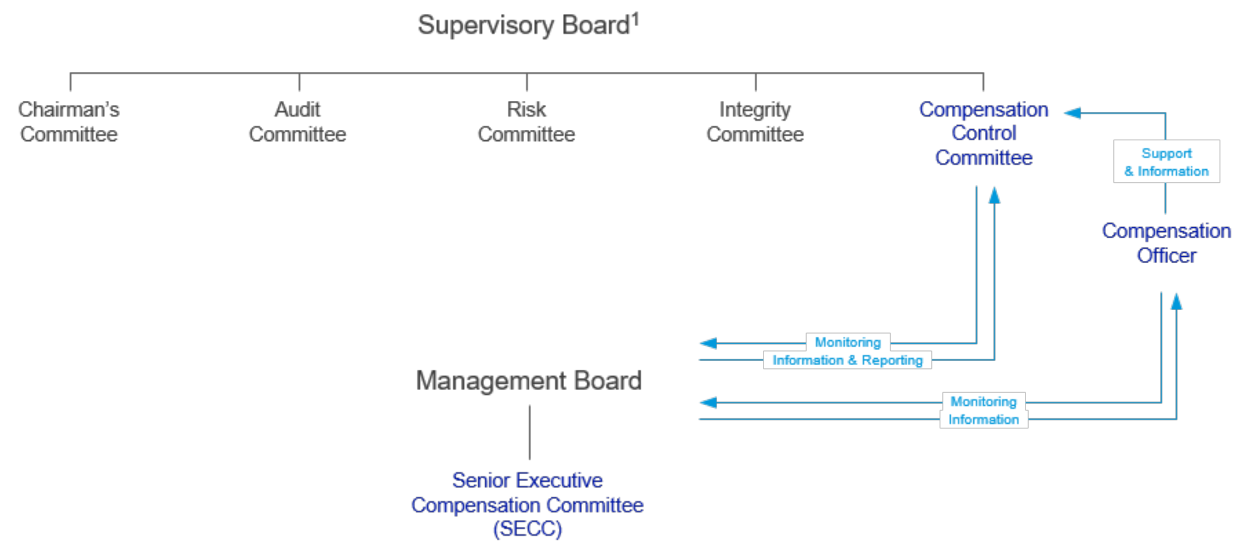
Where applicable, Deutsche Bank is also subject to specific rules and regulations implemented by local regulators. Many of these requirements are aligned with the InstVV. However, where variations are apparent, proactive and open discussions with regulators have enabled us to follow the local regulations whilst ensuring that any impacted employees or locations remain within the bank's overall Group Compensation Framework. This includes, for example, the compensation structures applied to Covered Employees in the United States under the requirements of the Federal Reserve Board. In any case, we apply the InstVV requirements as minimum standards globally.

Compensation Governance

Deutsche Bank has a robust governance structure enabling it to operate within the clear parameters of its Compensation Strategy and Policy. In accordance with the German two-tier board structure, the Supervisory Board governs the compensation of the Management Board members while the Management Board oversees compensation matters for all other employees in the Group. Both the Supervisory Board and the Management Board are supported by specific committees and functions, in particular the Compensation Control Committee (CCC), the Compensation Officer, and the Senior Executive Compensation Committee (SECC).

In line with their responsibilities, the bank's control functions are involved in the design and application of the bank's remuneration systems, in the identification of MRTs and in determining the total amount of VC. This includes assessing the impact of employees' behavior and the business-related risks, performance criteria, granting of remuneration and severances as well as ex-post risk adjustments.

Reward Governance structure



[1] Does not comprise a complete list of Supervisory Board Committees.

Compensation Control Committee (CCC)

The Supervisory Board has set up the CCC to support in establishing and monitoring the structure of the compensation system for the Management Board Members of Deutsche Bank AG. Furthermore, the CCC monitors the appropriateness of the compensation systems for the employees of Deutsche Bank Group, as established by the Management Board and the SECC. The CCC reviews whether the total amount of variable compensation is affordable and set in accordance with the risk, capital and liquidity situation as well as in alignment with the business and risk strategies. Furthermore, the CCC supports the Supervisory Board in monitoring the MRT identification process.

The CCC consists of the Chairperson of the Supervisory Board and five further Supervisory Board Members, three of which are employee representatives. The Committee held six meetings in the calendar year 2021. The members of the Risk Committee attended two meetings as guests. Further details can be found in the Report of the Supervisory Board within the Annual Report.

Compensation Officer

The Management Board, in cooperation with the CCC, has appointed a Group Compensation Officer to support the Supervisory Boards of Deutsche Bank AG and of the bank's Significant Institutions in Germany in performing their compensation related duties. The Compensation Officer is involved in the conceptual review, development, monitoring and application of the employees' compensation systems, the MRT identification and remuneration disclosures on an ongoing basis. The Compensation Officer performs all relevant monitoring obligations independently, provides an assessment on the appropriateness of the design and practices of the compensation systems for employees at least annually and regularly supports and advises the CCC.

Senior Executive Compensation Committee (SECC)

The SECC is a delegated committee established by the Management Board which has the mandate to develop sustainable compensation principles, to prepare recommendations on Total Compensation levels and to ensure appropriate compensation governance and oversight. The SECC establishes the Compensation and Benefits Strategy and Policy. Moreover, using quantitative and qualitative factors, the SECC assesses Group and divisional performance as a basis for compensation decisions and makes recommendations to the Management Board regarding the total amount of annual variable compensation and its allocation across business divisions and infrastructure functions.

In order to maintain its independence, only representatives from infrastructure and control functions who are not aligned to any of the business divisions are members of the SECC. In 2021, the SECC's membership comprised of the Global Head of Human Resources and the Chief Financial Officer as Co-Chairpersons, as well as the Chief Risk Officer (the latter two are Management Board Members), the Global Head of Compliance, the Global Head of Performance & Reward as well as an additional representative from both Finance and Risk as voting members. The Compensation Officer, the Deputy Compensation Officer and an additional representative from Finance participated as non-voting members. The SECC generally meets on a monthly basis but with more frequent meetings during the compensation process. It held 16 meetings in total with regard to the compensation process for the performance year 2021.

Compensation Strategy

Deutsche Bank recognizes that its compensation framework plays a vital role in supporting its strategic objectives. It enables us to attract and retain the individuals required to achieve our bank's objectives. The Compensation and Benefits Strategy is aligned to Deutsche Bank's business strategy, risk strategy, and to its corporate values and beliefs as outlined below.

Five key objectives of our compensation practices

– To support the delivery of the bank's client-focused, global bank strategy by attracting and retaining talent across its full range of diverse business models and country locations
– To support the long-term, sustainable performance and development of the bank and a corresponding risk strategy
– To promote and support long-term performance based on cost discipline and efficiency
– To ensure that the bank's compensation practices are safe, by way of risk-adjusting performance outcomes, preventing inappropriate risk taking, ensuring sustained compatibility with capital and liquidity planning, and complying with regulation
– To apply and promote the bank's corporate values of integrity, sustainable performance, client centricity, innovation, discipline and partnership

Core remuneration principles

– Align compensation to shareholder interests and sustained bank-wide profitability, taking account of risk, including environmental, social and governance (ESG) risk
– Apply a gender-neutral, simple and transparent compensation design
– Maximize sustainable performance, both at the employee and the bank-wide level
– Attract and retain the best talent
– Calibrate compensation to reflect different divisions and levels of responsibility
– Ensure compliance with regulatory requirements

Group Compensation Framework

Our compensation framework, generally applicable globally across all regions and business lines, emphasizes an appropriate balance between Fixed Pay (FP) and Variable Compensation (VC) – together forming Total Compensation (TC). It aligns incentives for sustainable performance at all levels of Deutsche Bank whilst ensuring the transparency of compensation decisions and their impact on shareholders and employees. The underlying principles of our compensation framework are applied to all employees equally, irrespective of differences in seniority, tenure, gender or ethnicity.

Pursuant to CRD and the requirements subsequently adopted in the German Banking Act, Deutsche Bank is subject to a ratio of 1:1 with regard to fixed-to-variable remuneration components, which was increased to 1:2 with shareholder approval on May 22, 2014 with an approval rate of 95.27 %, based on valid votes by 27.68 % of the share capital represented at the Annual General Meeting. Nonetheless, the bank has determined that employees in specific infrastructure functions should continue to be subject to a ratio of at least 1:1 while Control Functions as defined by InstVV are subject to a ratio of 2:1.

The bank has assigned a Reference Total Compensation (RTC) to eligible employees that describes a reference value for their role. This value provides our employees orientation on their FP and VC. Actual individual TC can be at, above or below the Reference Total Compensation, depending on VC decisions.

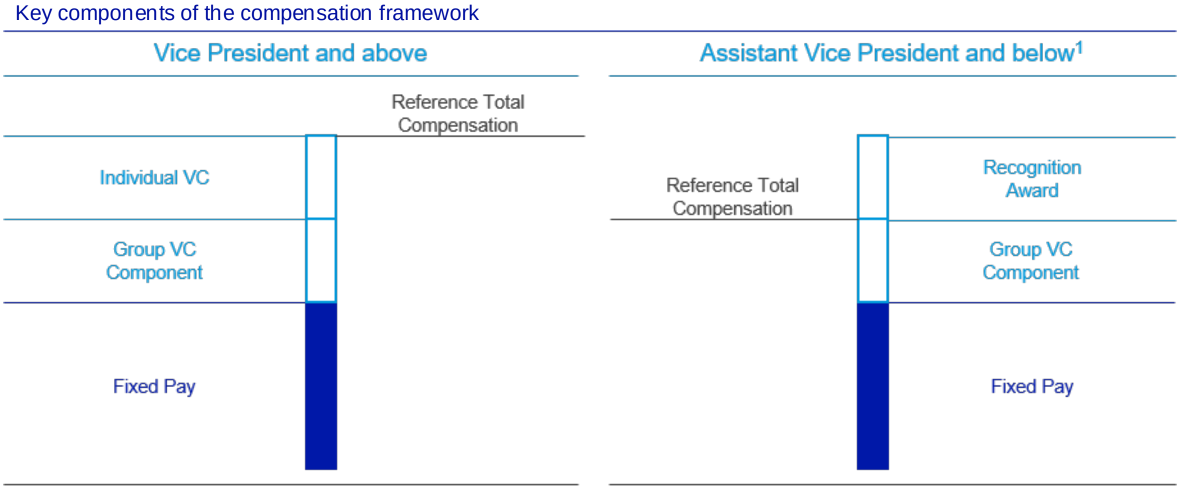
Fixed Pay is used to compensate employees for their skills, experience and competencies, commensurate with the requirements, size and scope of their role. The appropriate level of FP is determined with reference to the prevailing market rates for each role, internal comparisons and applicable regulatory requirements. FP plays a key role in permitting us to meet our strategic objectives by attracting and retaining the right talent. For the majority of our employees, FP is the primary compensation component.

Variable Compensation reflects affordability and performance at Group, divisional, and individual level. It allows us to differentiate individual performance and to drive behavior through appropriate incentives that can positively influence culture. It also allows for flexibility in the cost base. VC generally consists of two elements – the Group VC Component and the Individual VC Component.

The Group VC Component is based on one of the overarching goals of the compensation framework – to ensure an explicit link between VC and the performance of the Group. To assess our annual achievements in reaching our strategic targets, the four Key Performance Indicators (KPIs) utilized as the basis for determining the 2021 Group VC Component were: Common Equity Tier 1 (CET 1) Capital Ratio, Leverage Ratio, Adjusted Costs, and Post-Tax Return on Tangible Equity (RoTE). These four KPIs represent the bank's capital, leverage, profitability, and cost targets.

The Individual VC Component is delivered either in the form of Individual VC, generally applicable for employees at the level of Vice President (VP) and above, or as Recognition Award, generally applicable for employees at the level of Assistant Vice President (AVP) and below. In case of negative performance contributions or misconduct, an employee's VC can be reduced accordingly and can go down to zero. VC is granted and paid out subject to Group affordability. Under our compensation framework, there continues to be no guarantee of VC in an existing employment relationship. Such arrangements are utilized only on a very limited basis for new hires in the first year of employment and are subject to the bank's standard deferral requirements.

Key components of the compensation framework



[1] Some Assistant Vice Presidents and below in select entities and divisions are eligible for Individual VC in lieu of the Recognition Award.

Individual VC takes into consideration a number of financial and non-financial factors, including the applicable divisional performance, the employee's individual performance, conduct, and adherence to values and beliefs, as well as additional factors such as the bank's strategic decisions and retention considerations.

Recognition Awards provide the opportunity to acknowledge and reward outstanding contributions made by the employees of lower seniority levels in a timely and transparent manner. Generally, the overall size of the Recognition Award budget is directly linked to a set percentage of FP for the eligible population and it is currently paid out twice a year, based on a review of nominations and contributions in a process managed at the divisional level.

In the context of InstVV, severance payments are considered variable compensation. The bank's severance framework ensures full alignment with the respective InstVV requirements.

Employee benefits complement Total Compensation and are considered FP from a regulatory perspective, as they have no direct link to performance or discretion. They are granted in accordance with applicable local market practices and requirements. Pension expenses represent the main element of the bank's benefits portfolio globally.

Employee Groups with specific Compensation Structures

For some areas of our bank, compensation structures apply that deviate, within regulatory boundaries, in some aspects from the Group Compensation Framework outlined above.

Postbank units

While generally executive staff of former Postbank follow the remuneration structure of Deutsche Bank, the compensation for any other staff in Postbank units is based on specific frameworks agreed with trade unions or with the respective workers' councils. Where no collective agreements exist, compensation is subject to individual contracts. In general, non-executive and tariff staff in Postbank units receive VC, but the structure and portion of VC can differ between legal entities.

DWS

The vast majority of DWS asset management entities and employees fall under AIFMD or UCITS, while a limited number of employees remain in scope of bank's Group Compensation Framework and InstVV. DWS has established its own compensation governance, policy, and structures, as well as Risk Taker identification process in line with AIFMD/UCITS requirements. These structures and processes are aligned with InstVV where required, but tailored towards the Asset Management business. Pursuant to the ESMA Guidelines, DWS's compensation strategy is designed to ensure an appropriate ratio between fixed and variable compensation.

Generally, DWS applies remuneration rules that are equivalent to the Deutsche Bank Group approach, but use DWS Group-related parameters, where possible. Notable deviations from the Group Compensation Framework include the use of share-based instruments linked to DWS shares and fund-linked instruments. These serve to improve the alignment of employee compensation with DWS' shareholders' and investors' interests.

Control Functions

In line with InstVV, the bank has defined control functions that are subject to specific regulatory requirements. These control functions comprise Risk, Compliance, Anti-Financial Crime, Group Audit, parts of Human Resources, and the Compensation Officer and his Deputy. To prevent conflicts of interest, the parameters used to determine the Individual VC Component of these control functions do not follow the same parameters being used for the business they oversee. Based on their risk profile, these functions are subject to a fixed-to-variable pay ratio of 2:1.

In addition, for some corporate functions that perform internal control roles (including Legal, Group Finance, Group Tax, Regulation, and other parts of Human Resources), the bank has determined a fixed-to-variable pay ratio of 1:1.

Tariff staff

Within Deutsche Bank Group there are 15,667 tariff employees in Germany (based on full-time equivalent). Tariff staff are either subject to a collective agreement (*Tarifvertrag für das private Bankgewerbe und die öffentlichen Banken*), as negotiated between trade unions and employer associations, or subject to agreements as negotiated with the respective trade unions directly. The remuneration of tariff staff is included in the quantitative disclosures in this report.

Determination of performance-based Variable Compensation

In 2021, we continued to put a strong focus on our governance related to compensation decision-making processes. A robust set of rule-based principles for compensation decisions with close links to the performance of both business and individual were applied.

The total amount of VC for any given performance year is initially determined at Group level, taking into account the bank's profitability, solvency, and liquidity position and then allocated to divisions and infrastructure functions based on their performance in support of achieving the bank's strategic objectives.

In a first step, Deutsche Bank assesses the bank's profitability, solvency and liquidity position in line with its Risk Appetite Framework, including a holistic review against the bank's multi-year strategic plan to determine what the bank "can" award in line with regulatory requirements (i.e. Group affordability). In the next step, the bank assesses divisional risk-adjusted performance, i.e. what the bank "should" award in order to provide an appropriate compensation for contributions to the bank's success.

When assessing divisional performance, a range of considerations are referenced. Performance is assessed in the context of financial and – based on Balanced Scorecards – non-financial targets. The financial targets for front-office divisions are subject to appropriate risk-adjustment, in particular by referencing the degree of future potential risks to which Deutsche Bank may be exposed, and the amount of capital required to absorb severe unexpected losses arising from these risks. For the infrastructure functions, the financial performance assessment is mainly based on the achievement of cost targets. While the allocation of VC to infrastructure functions, and in particular to control functions, depends on the overall performance of Deutsche Bank, it is not dependent on the performance of the division(s) that these functions oversee.

At the level of the individual employee, we have established Variable Compensation Guiding Principles, which detail the factors and metrics that have to be taken into account when making Individual VC decisions. Our managers must fully appreciate the risk-taking activities of individuals to ensure that VC allocations are balanced and risk-taking is not inappropriately incentivized. The factors and metrics to be considered include, but are not limited to, (i) business delivery ("What"), i.e. quantitative and qualitative financial, risk-adjusted and non-financial performance metrics, and (ii) behavior ("How"), i.e. culture, conduct and control considerations such as qualitative inputs from control functions or disciplinary sanctions. Generally, performance is assessed based on a one year period. However, for Management Board members of Significant Institutions, the performance across three years is taken into account.

Variable Compensation Structure

Our compensation structures are designed to provide a mechanism that promotes and supports long-term performance of our employees and our bank. Whilst a portion of VC is paid upfront, these structures require that an appropriate portion is deferred to ensure alignment to the sustainable performance of the Group. For both parts of VC, we use Deutsche Bank shares as instruments and as an effective way to align compensation with Deutsche Bank's sustainable performance and the interests of shareholders.

We continue to go beyond regulatory requirements with the scope as well as the amount of VC that is deferred and our minimum deferral periods for certain employee groups. The deferral rate and period are determined based on the risk categorization of the employee, the division and the business unit. Where applicable, we start to defer parts of variable compensation for MRTs where VC is set at or above € 50,000 or where VC exceeds 1/3 of TC. For non-MRTs, deferrals start at higher levels of VC. MRTs are on average subject to deferral rates in excess of the minimum 40 % (60 % for Senior Management) as required by InstVV. For MRTs in Material Business Units (MBU) we apply a deferral rate of at least 50 %. The VC threshold for MRTs requiring at least 60 % deferral is set at € 500,000.

Furthermore, Directors and Managing Directors in Corporate Bank (CB), Investment Bank (IB) or Capital Release Unit (CRU) are subject to a VC deferral rate of 100 % with respect to any VC in excess of € 500,000. Moreover, if Fixed Pay for these employees exceeds an amount of € 500,000, the full VC is deferred.

As detailed in the table below, deferral periods range from three to five years, dependent on employee groups. For MRTs the minimum deferral period was increased from three years to four years in compliance with InstVV 4.0 requirement, applicable as of 2021.

Overview on 2021 Award Types (excluding DWS Group)

Award Type	Description	Beneficiaries	Deferral Period	Retention Period	Proportion
Upfront: Cash VC	Upfront cash portion	All eligible employees	N/A	N/A	MRTs with VC € 50,000 or where VC exceeds 1/3 of TC: 50 % of upfront VC Non-MRTs with 2021 TC 500,000: 100 % of upfront VC
Upfront: Equity Upfront Award (EUA)	Upfront equity portion (linked to Deutsche Bank's share price over the retention period)	All MRTs with VC € 50,000 or where VC exceeds 1/3 of TC All employees with 2021 TC > € 500,000	N/A	Twelve months	50 % of upfront VC
Deferred: Restricted Incentive Award (RIA)	Deferred cash portion	All employees with deferred VC	Equal tranche vesting: MRTs: 4 years Sen. Mgmt.[1]: 5 years Other: 3 years	N/A	50 % of deferred VC
Deferred: Restricted Equity Award (REA)	Deferred equity portion (linked to Deutsche Bank's share price over the vesting and retention period)	All employees with deferred VC	Equal tranche vesting: MRTs: 4 years Sen. Mgmt.[1]: 5 years Other: 3 years	Twelve months for MRTs	50 % of deferred VC

N/A – Not applicable
[1] For the purpose of Performance Year 2021 annual awards, Senior Management is defined as DB AG MB-1 positions; voting members of Business Division Top Executive Committees; MB members of Significant Institutions; respective MB-1 positions with managerial responsibility. For the specific deferral rules for the Management Board of DB AG refer to the Compensation Report for the Management Board.

Our employees are not allowed to sell, pledge, transfer or assign a deferred award or any rights in respect to the award. They may not enter into any transaction having an economic effect of hedging any variable compensation, for example offsetting the risk of price movement with respect to the equity-based award. Our Human Resources and Compliance functions, overseen by the Compensation Officer, work together to monitor employee trading activity and to ensure that all our employees comply with this requirement.

Ex-post Risk Adjustment of Variable Compensation

In line with regulatory requirements relating to ex-post risk adjustment of variable compensation, we believe that a long-term view on conduct and performance of our employees is a key element of deferred VC. As a result, all deferred awards are subject to performance conditions and forfeiture provisions as detailed below.

Overview on Deutsche Bank Group performance conditions and forfeiture provisions of Variable Compensation granted for Performance Year 2021

Provision	Description	Forfeiture
Solvency and Liquidity	If at the quarter end preceding vesting and release, any one of the following falls below a defined Risk Appetite threshold: CET1 Capital Ratio; Leverage Ratio; Economic Capital Adequacy Ratio; Liquidity Coverage Ratio; Liquidity Reserves	Between 10% and 100% of the next tranche of deferred award due for delivery / of the Equity Upfront Award, depending on the Risk Appetite threshold and the extent the Group / Divisional PBT condition(s) is/ are met
Group PBT	If for the financial year end preceding the vesting date adjusted Group PBT is negative[1]	Between 10% and 100% of the next tranche of deferred award due for delivery, depending on the extent Solvency and Liquidity condition is met and whether Divisional PBT condition is met (if applicable)
Divisional PBT	If for the financial year end preceding the vesting date adjusted Divisional PBT is negative[1]	Between 10% and 100% of the next tranche of deferred award due for delivery, depending on the extent Solvency and Liquidity condition is met and whether Group PBT condition is met
Forfeiture Provisions[2]	– In the event of an internal policy or procedure breach, breach of any applicable laws or regulations, or a Control Failure – If any award was based on performance measures or assumptions that are later deemed to be materially inaccurate – Where a Significant Adverse Event occurs, and the Participant is considered sufficiently proximate – If forfeiture is required to comply with prevailing regulatory requirements	Up to 100 % of undelivered awards
Clawback	In the event an InstVV MRT participated in conduct that resulted in significant loss or regulatory sanction/supervisory measures; or failed to comply with relevant external or internal rules regarding appropriate standards of conduct	100 % of award which has been delivered, before the second anniversary of the last vesting date for the award

[1] Considering clearly defined and governed adjustments for relevant Profit and Loss items (e.g., business restructurings; impairments of goodwill or intangibles).
[2] Other provisions may apply as outlined in the respective plan rules.

Compensation Decisions for 2021

Year-end considerations and decisions for 2021

All compensation decisions are made within the boundaries of regulatory requirements. These requirements form the overarching and limiting principle of determining compensation in Deutsche Bank. In particular, management must ensure that compensation decisions are not detrimental to maintaining a sound capital base and liquidity resources of the bank.

Due to the continued focus on our strategy and the dedication of our employees, 2021 was a very successful year for Deutsche Bank: All our businesses performed well – especially when taking into account the continuing COVID-19 pandemic and the bank's ongoing transformation – and almost all of the anticipated transformation costs have now been recognized. As a result, we are considerably more profitable with a pre-tax profit of € 3.4 billion and a net profit of € 2.5 billion. We have also made further progress and remain fully disciplined on costs. This allows us to build firm foundations for sustainable profitability, and sets the path to the final stage of our announced transformation.

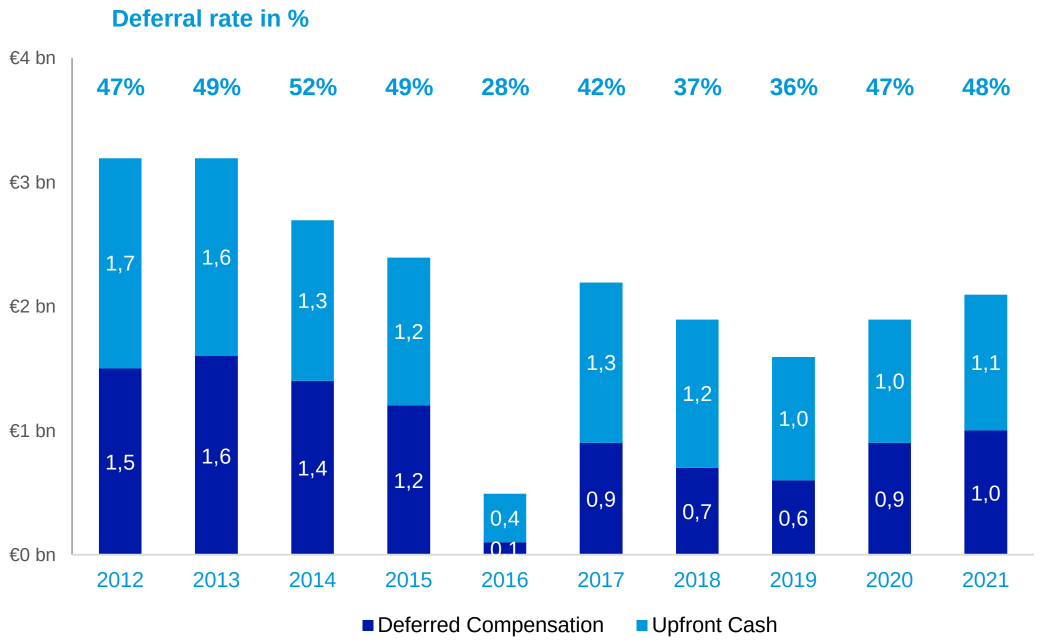
Although 2021 was a very positive year for Deutsche Bank, we once more applied a prudent and forward-looking approach when deciding on the 2021 variable compensation and deferral structures, without losing sight of the need to remunerate our employees fairly. These decisions are taken according to performance and in line with market conditions, and of course within the boundaries of affordability. Again, when determining the amount of year-end performance-based VC, we have exercised more moderation than the results at the Group and divisional level would have required. As in previous years, the SECC has been constantly monitoring and reviewing the impact of potential VC awards not only with regard to our capital and liquidity base but also taking into account our ambitious cost targets.

In the context of the above considerations, the Management Board confirmed that the bank is in a position to award variable compensation, including a year-end performance-based VC pool of € 2.099 billion for 2021. The VC for the Management Board of Deutsche Bank AG was determined by our Supervisory Board in a separate process. It is, however, included in the tables and charts below.

As part of the overall 2021 VC awards granted in March 2022, the Group VC Component was awarded to all eligible employees in line with the assessment of the four defined KPIs, as outlined in the chapter Group Compensation Framework. The Management Board determined a payout rate of 77.5 % for the Group VC Component in 2021 (2020: 72.5 %).

The increase of 2021 VC awards compared to 2020 is driven by a combination of factors. Deutsche Bank's improved performance plays a part, with the composition of the staff population including the addition of key senior roles essential for the effective execution of our strategy and certain FX effects also impacting the relative size of the VC awards.

Reported year-end performance-based Variable Compensation and deferral rates year over year – all employees



Due to rounding, numbers presented may not add up precisely to the totals.

Deutsche Bank continues to apply deferral structures that go beyond the regulatory minimum, resulting in an overall deferral rate (all employees including non-MRT population) of 48 % in 2021. For the MRT population only, the deferral rate amounts to 92 %.

Material Risk Taker Compensation Disclosure

On a global basis, 1,263 employees were identified as MRTs according to InstVV for financial year 2021, compared to 2,298 employees for 2020. This decrease is attributable to the reduced number of quantitative (remuneration driven) MRTs as a result of the newly applicable remuneration thresholds following regulatory changes in 2021. The number of 2021 Group MRTs amounts to 1,005 individuals. Moreover, 181 individuals were identified by Significant Institutions and 129 individuals were identified by Other CRR Institutions. The remuneration elements for all Group MRTs (contrary to 2020 where both Group MRTs and MRTs identified by Significant Institutions, which are also reported by the respective entities, were included) are detailed in the tables below in accordance with Section 16 InstVV and Article 450 CRR.

Remuneration for 2021 - Material Risk Takers (REM 1)

	in € m. (unless stated otherwise)[1]	Supervisory Board[2]	Management Board[3]	Senior Management[4]	Other Material Risk Takers	Group Total
						2021
Fixed Pay	Number of MRTs[5]	22	11	118	807	958
	Total Fixed Pay	7	35	134	529	704
	of which: cash-based	5	27	128	503	664
	of which: shares or equivalent ownership interests	2	0	0	0	2
	of which: share-linked instruments or equivalent non-cash instruments	0	0	0	0	0
	of which: other instruments	0	0	0	0	0
	of which: other forms	0	8	6	26	39
Variable Pay	Number of MRTs[5]	0	11	114	803	928
	Total Variable Pay[6]	0	44	130	526	699
	of which: cash-based	0	23	62	266	351
	of which: deferred	0	21	50	221	292
	of which: shares or equivalent ownership interests	0	21	56	254	330
	of which: deferred	0	21	47	219	287
	of which: share-linked instruments or equivalent non-cash instruments	0	0	11	7	18
	of which: deferred	0	0	9	5	14
	of which: other instruments	0	0	1	0	1
	of which: deferred	0	0	1	0	1
	of which: other forms	0	0	0	0	0
	of which: deferred	0	0	0	0	0
	Total Pay	7	79	263	1,055	1,404

1 The table may contain marginal rounding differences.
2 Supervisory Board includes the Deutsche Bank AG Supervisory Board Members.
3 Management Board includes the Management Board Members of Deutsche Bank AG.
4 Senior Management is defined as DB AG MB-1 positions and voting members of Business Division Top Executive Committees.
5 Beneficiaries only (HC reported for Supervisory Board and Management Board, FTE reported for the remaining part). Therefore the totals do not add up to the 1,005 individuals identified as Group MRTs.
6 Variable Pay includes Deutsche Bank´s Year-end performance-based VC for 2021, Other VC and severance payments. It also includes fringe benefits awarded to Management Board Members of Deutsche Bank AG which are to be classified as variable remuneration. The table does not include new hire replacement awards for lost entitlements from previous employers (buyouts).

Guaranteed variable remuneration and severance payments - Material Risk Takers (REM 2)

in € m. (unless stated otherwise)[1]	Supervisory Board[2]	Management Board[3]	Senior Management[4]	Other Material Risk Takers	Group Total
					2021
Guaranteed variable remuneration awards					
Number of MRTs[5]	0	0	1	3	4
Total amount	0	0	0	3	3
of which: paid during financial year, not taken into account in bonus cap	0	0	0	0	0
Severance payments awarded in previous periods, paid out during financial year					
Number of MRTs[5]	0	0	0	0	0
Total amount	0	0	0	0	0
Severance payments awarded during financial year					
Number of MRTs[5]	0	1	6	28	35
Total amount[6]	0	3	4	8	16
of which: paid during financial year	0	2	3	8	13
of which: deferred	0	2	2	0	3
of which: paid during financial year, not taken into account in bonus cap	0	3	4	8	16

1 The table may contain marginal rounding differences.
2 Supervisory Board includes the Deutsche Bank AG Supervisory Board Members.
3 Management Board includes the Management Board Members of Deutsche Bank AG.
4 Senior Management is defined as DB AG MB-1 positions and voting members of Business Division Top Executive Committees.
5 Beneficiaries only (HC reported for all categories).
6 Severance payments are generally not taken into account for the bonus cap. The highest single severance payment made in 2021 amounts to € 3,462,111.

Deferred remuneration - Material Risk Takers (REM 3)

in € m. (unless stated otherwise)[1]	2021 Total amount of deferred remuneration awarded for previous performance periods	Of which due to vest in the financial year	Of which vesting in subsequent financial years	Amount of performance adjustment made in the financial year to deferred remuneration that was due to vest in the financial year	Amount of performance adjustment made in the financial year to deferred remuneration that was due to vest in future performance years	Total amount of adjustment during the financial year due to ex post implicit adjustments[5]	Total amount of deferred remuneration awarded before the financial year actually paid out in the financial year[6]	Total of amount of deferred remuneration awarded for previous performance period that has vested but is subject to retention periods
Supervisory Board[2]	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Cash-based	0	0	0	0	0	0	0	0
Shares or equivalent ownership interests	0	0	0	0	0	0	0	0
Share-linked instruments or equivalent non-cash instruments	0	0	0	0	0	0	0	0
Other instruments	0	0	0	0	0	0	0	0
Other forms	0	0	0	0	0	0	0	0
Management Board[3]	**62**	**5**	**57**	**0**	**0**	**6**	**5**	**1**
Cash-based	25	4	22	0	0	0	4	0
Shares or equivalent ownership interests	37	1	36	0	0	6	1	1
Share-linked instruments or equivalent non-cash instruments	0	0	0	0	0	0	0	0
Other instruments	0	0	0	0	0	0	0	0
Other forms	0	0	0	0	0	0	0	0
Senior management[4]	**336**	**58**	**278**	**0**	**0**	**30**	**58**	**15**
Cash-based	172	38	134	0	0	0	38	0
Shares or equivalent ownership interests	150	19	131	0	0	29	19	15
Share-linked instruments or equivalent non-cash instruments	12	1	11	0	0	0	1	1
Other instruments	1	0	1	0	0	0	0	0
Other forms	0	0	0	0	0	0	0	0
Other Material Risk Takers	**1,319**	**292**	**1,027**	**1**	**2**	**111**	**289**	**67**
Cash-based	712	175	537	0	1	0	173	0
Shares or equivalent ownership interests	599	117	482	0	1	110	115	67
Share-linked instruments or equivalent non-cash instruments	7	1	6	0	0	0	1	1
Other instruments	1	0	0	0	0	0	0	0
Other forms	0	0	0	0	0	0	0	0
Total amount	**1,717**	**355**	**1,362**	**1**	**2**	**147**	**352**	**84**

[1] The table may contain marginal rounding differences.
[2] Supervisory Board includes the Deutsche Bank AG Supervisory Board Members.
[3] Management Board includes the Management Board Members of Deutsche Bank AG.
[4] Senior Management is defined as DB AG MB-1 positions and voting members of Business Division Top Executive Committees.
[5] Changes of value of deferred remuneration due to the changes of prices of instruments.
[6] Defined as remuneration awarded before the financial year which vested in the financial year (including where subject to a retention period).

Remuneration of high earners – Material Risk Takers (REM 4)

in €	2021 Number of individuals[1]
Total Pay[2]	
1,000,000 to 1,499,999	234
1,500,000 to 1,999,999	115
2,000,000 to 2,499,999	56
2,500,000 to 2,999,999	33
3,000,000 to 3,499,999	19
3,500,000 to 3,999,999	19
4.000,000 to 4,499,999	9
4,500,000 to 4,999,999	4
5,000,000 to 5,999,999	10
6,000,000 to 6,999,999	6
7,000,000 to 7,999,999	8
8,000,000 to 8,999,999	3
9,000,000 to 9,999,999	3
10,000,000 to 10,999,999	1
Total	**520**

[1] Comprises MRTs only (including 2021 leavers).

[2] Includes all components of FP and VC (including severances). Buyouts are not included.

In total, 520 MRTs received a Total Pay of € 1 million or more for 2021 (in comparison to 614 MRTs in 2020). This decrease is mainly attributable to a reduced number of retention and severance payments awarded.

Compensation Awards 2021 – Material Risk Takers (REM 5)

	Management Body Remuneration			Business Areas							
in € m. (unless stated otherwise)[1]	Supervisory Board[2]	Management Board[2]	Total Management Body	IB[2]	CB[2]	PB[2]	AM[2]	CRU[2]	Corporate functions[2]	Independent internal control functions[2]	Total
Total number of Material Risk Takers[3]											**958**
of which: Management Body	22	11	33	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
of which: Senior Management[4]	N/A	N/A	N/A	20	18	7	5	5	55	8	118
of which: Other Material Risk Takers	N/A	N/A	N/A	465	73	76	15	20	117	41	807
Total Pay of Material Risk Takers	**7**	**79**	**86**	**861**	**87**	**98**	**41**	**25**	**169**	**36**	**1,404**
of which: variable pay[5]	-	44	44	462	41	44	27	9	64	9	699
of which: fixed pay	7	35	42	399	46	54	15	16	105	27	704

[1] The table may contain marginal rounding differences.
[2] Supervisory Board includes the Deutsche Bank AG Supervisory Board Members, Management Board includes the Management Board Members of Deutsche Bank AG. IB = Investment Bank; CB = Corporate Bank; PB = Private Bank; AM = Asset Management; CRU = Capital Release Unit. Control Functions include Chief Risk Office, Group Audit, Compliance and Anti-Financial Crime. Corporate Functions include any Infrastructure function which is neither captured as a Control Function nor part of any division.
[3] HC reported for Supervisory Board and Management Board, FTE reported for the remaining part. Therefore the totals do not add up to the 1.005 individuals identified as Group MRTs.
[4] Senior Management is defined as DB AG MB-1 positions and voting members of Business Division Top Executive Committees.
[5] Variable Pay includes Deutsche Bank´s Year-end performance-based VC for 2021, Other VC and severance payments. It also includes fringe benefits awarded to Management Board Members of Deutsche Bank AG which are to be classified as variable remuneration. The table does not include new hire replacement awards for lost entitlements from previous employers (buyouts).

List of tables