



Pillar 3 Report 2022

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Regulatory framework

Basis of Presentation

Article 431 (1), (2) CRR, 433 CRR and 433a CRR

This Pillar 3 Report provides disclosures for the consolidated Deutsche Bank Group (the Group or the bank) 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 (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 Group adheres to the frequency of disclosure requirements as per 433 CRR and 433a CRR and as provided within these EBA Guidelines and includes 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 environmental, social, and governance (ESG) disclosures in accordance with 449a CRR as of December 31, 2022, whereby the Group does not provide comparative information. For those disclosures only required on a semi-annual basis, the comparative period is June 30, 2022. Disclosures required on a quarterly basis generally include comparative information for September 30, 2022.

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

Disclosure governance

Article 431 (3), 432 and 434CRR

The Group's Pillar 3 Report is in compliance with the legal and regulatory requirements described above and is prepared in accordance with the Group's internal policies, processes, systems and internal controls as defined by the Group's risk disclosure key operating document (KOD). In line with the Group's KOD, a dedicated process is followed if the Group omits certain disclosures due to the disclosures being immaterial, proprietary or confidential. If the Group classifies information as immaterial in the Pillar 3 Report, this is stated accordingly in the related disclosures. 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 the Group's assessment and verification it also believes 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, 2022.

This Pillar 3 Report is published on the bank's website at [db.com/ir/en/regulatory-reporting.htm](https://www.db.com/ir/en/regulatory-reporting.htm).

In addition, the bank's website includes 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 minimum requirement for own funds and eligible liabilities (MREL) and total loss absorbing capacity (TLAC), to the extent that these do not constitute private placements and are treated confidentially ([db.com/ir/en/capital-instruments.htm](https://www.db.com/ir/en/capital-instruments.htm)).

Article 435 (1)(e) CRR (EU OVA)

Deutsche Bank's Management Board confirms, for the purpose of Article 435 CRR, that the bank's risk management arrangements are adequate for its risk profile and strategy, and that the bank maintains appropriate resources to implement selected enhancements.

Basel 3 and CRR/CRD

The CRR/CRD lays the foundation for the calculation of the minimum regulatory requirements with respect to own funds and eligible liabilities, the liquidity coverage ratio and the net stable funding ratio.

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 minimum regulatory leverage ratio of 3 % is increased if certain Euro-based exposures facing Eurosystem central banks are excluded from the leverage exposure. This was the case based on Decision (EU) 2021/1074 of the European Central Bank until March 31, 2022. From January 1, 2023 an additional leverage ratio buffer requirement of 50 % of the applicable Global Systemic Important Institutions (G-SII) buffer rate will apply. It is currently expected that this additional requirement will increase the leverage ratio requirement by 0.75 %.

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, the Group will continue to refine 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, CRR/CRD measures may not be comparable with similarly labeled measures used by competitors, as their assumptions and estimates may differ from Deutsche Bank's.

MREL and TLAC

Banks in the European Union are required to meet at all times a minimum requirement for own funds and eligible liabilities 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, the CRR requires G-SIIs in Europe to have at least the maximum of 18% plus the combined buffer requirement of its RWA and 6.75% of its leverage exposure as total loss absorbing capacity.

Instruments which qualify for MREL and TLAC as own funds are Common Equity Tier 1, Additional Tier 1 and Tier 2 along with 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, MREL regulations allow the Single Resolution Board (SRB) to also set an additional subordination requirement within the MREL requirements (but separate from TLAC) which allows only subordinated liabilities and own funds to be counted.

MREL is determined by the competent resolution authorities for each supervised bank and its 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). Deutsche Bank AG received its current total MREL and current subordinated MREL requirement with immediate applicability in the second quarter of 2022.

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. The Group's 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.

Definition of Default

In the third quarter of 2021, the Group introduced the new definition of default, 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 the Group's IFRS 9 expected credit loss (ECL) model.

Key metrics

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

In the following table EU KM1, Deutsche Bank provides key regulatory metrics and ratios as well as related input components as defined by CRR and CRD. The key metrics 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	d	e
in € m. (unless stated otherwise)	Dec 31, 2022	Sep 30, 2022	Jun 30, 2022	Mar 31, 2022	Dec 31, 2021
Available own funds (amounts)					
1 Common Equity Tier 1 (CET 1) capital	48,097	49,202	47,932	46,687	46,506
2 Tier 1 capital	56,616	56,470	55,201	53,206	55,375
3 Total capital	66,146	66,706	65,246	63,093	62,732
Risk weighted exposure amounts					
4 Total risk-weighted exposure amount	360,003	369,210	369,970	364,431	351,629
Capital ratios (as percentage of risk-weighted exposure amount)					
5 Common Equity Tier 1 ratio (%)	13.4	13.3	13.0	12.8	13.2
6 Tier 1 ratio (%)	15.7	15.3	14.9	14.6	15.7
7 Total capital ratio (%)	18.4	18.1	17.6	17.3	17.8
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	2.5	2.5
of which:					
EU 7b to be made up of CET 1 capital (percentage points)	1.4	1.4	1.4	1.4	1.4
EU 7c to be made up of Tier 1 capital (percentage points)	1.9	1.9	1.9	1.9	1.9
EU 7d Total SREP own funds requirements (%)	10.5	10.5	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	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	0.0	0.0
9 Institution specific countercyclical capital buffer (%)	0.07	0.03	0.02	0.02	0.03
EU 9a Systemic risk buffer (%)	0.0	0.0	0.0	0.0	0.0
10 Global Systemically Important Institution buffer (%)	1.5	1.5	1.5	1.5	1.5
EU 10a Other Systemically Important Institution buffer (%)	2.0	2.0	2.0	2.0	2.0
11 Combined buffer requirement (%)	4.6	4.5	4.5	4.5	4.5
EU 11a Overall capital requirements (%)	15.1	15.0	15.0	15.0	15.0
12 CET 1 available after meeting the total SREP own funds requirements (%)	7.5	7.4	7.0	6.7	7.3
CET 1 available after meeting the total SREP own funds requirements	26,834	27,395	26,066	24,507	25,738
Leverage ratio^{1, 2}					
13 Leverage ratio total exposure measure	1,240,483	1,309,900	1,279,798	1,163,662	1,124,628
14 Leverage ratio (%)	4.6	4.3	4.3	4.6	4.9
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	0.0	0.0
of which: to be made up of CET 1 capital					
EU 14b (percentage points)	0.0	0.0	0.0	0.0	0.0
EU 14c Total SREP leverage ratio requirements (%)	3.0	3.0	3.0	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	0.0	0.0
EU 14e Overall leverage ratio requirements (%)	3.0	3.0	3.0	3.2	3.2
Liquidity Coverage Ratio					
15 Total high-quality liquid assets (HQLA) (Weighted value - average)	217,925	217,686	215,480	218,448	219,604
EU 16a Cash outflows - Total weighted value	220,132	217,308	214,162	211,611	212,302
EU 16b Cash inflows - Total weighted value	58,887	57,625	56,978	55,092	57,441
16 Total net cash outflows (adjusted value)	161,245	159,683	157,184	156,519	154,861
17 Liquidity coverage ratio (%)	135	136	137	140	142
Net Stable Funding Ratio					
18 Total available stable funding	605,783	606,353	598,440	607,170	602,317
19 Total required stable funding	506,698	521,760	513,910	501,030	497,510
20 NSFR ratio (%)	120	116	116	121	121

¹ Starting with the first quarter of 2022, the leverage ratio is presented as reported; the fully loaded definition has been discontinued in the first quarter 2022 due to immaterial difference; the comparative period December 31, 2021 continues to disclose the fully loaded numbers following EBA guidance and do not include the IFRS 9 transitional provision as per Article 473a of the CRR; the transitional impact amounted to € 15 million as of December 31, 2022, € 22 million as of September 30, 2022, € 23 million as of June 30, 2022, € 20 million as of March 31, 2022 and € 39 million as of December 31, 2021

² Since April 1, 2022 Deutsche Bank no longer excludes certain central bank exposures, based on Article 429a (1) (n) CRR and the ECB Decision 2021/1074 as this temporary exemption during the COVID-19 pandemic ended on March 31, 2022; not applying the temporary exclusion of certain central bank exposures, the leverage exposure was € 1,247 billion as of March 31, 2022 and € 1,223 billion as of December 31, 2021; the corresponding leverage ratios were 4.3% as of March, 31, 2022 and 4.5% as of December 31, 2021

Key metrics of own funds and eligible liabilities

Article 447 (h) CRR and Article 45i(3)(a,c) BRRD

The table below provides summary information about the Group's "Minimum requirement for own funds and eligible liabilities" and its "G-SII Requirement for own funds and eligible liabilities".

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

in € m. (unless stated otherwise)	Minimum requirement for own funds and eligible liabilities (MREL)		G-SII Requirement for own funds and eligible liabilities (TLAC)		d Jun 30, 2022	e Mar 31, 2022	f Dec 31, 2021	
	a Dec 31, 2022	Sep 30, 2022	b Dec 31, 2022	c Sep 30, 2022				
Own funds and eligible liabilities, ratios and components								
1	Own funds and eligible liabilities	123,674	127,873	115,907	118,585	114,690	110,007	109,094
EU 1a	Own funds and subordinated liabilities	115,907	118,585	–	–	–	–	–
2	Total risk exposure amount of the resolution group (TREA)	360,003	369,210	360,003	369,210	369,970	364,431	351,629
3	Own funds and eligible liabilities as percentage of TREA	34.35	34.63	32.20	32.12	31.00	30.19	31.03
of which:								
EU 3a	Own funds and subordinated liabilities	32.20	32.12	–	–	–	–	–
4	Total exposure measure of the resolution group (TEM)	1,240,483	1,309,900	1,240,483	1,309,900	1,279,798	1,163,662	1,124,667
5	Own funds and eligible liabilities as percentage of TEM	9.97	9.76	9.34	9.05	8.96	9.45	9.70
of which:								
EU 5a	Own funds and subordinated liabilities	9.34	9.05	–	–	–	–	–
6a	Does the subordination exemption in Article 72b(4) of the CRR apply? (5% exemption)	–	–	no	no	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	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	0	0
Minimum requirement for own funds and eligible liabilities (MREL)								
EU 7	MREL requirement expressed as percentage of the TREA	24.89	24.89	–	–	–	–	–
of which:								
EU 8	to be met with own funds or subordinated liabilities	20.28	20.28	–	–	–	–	–
EU 9	MREL requirement expressed as percentage of TEM	7.01	7.01	–	–	–	–	–
of which:								
EU 10	to be met with own funds or subordinated liabilities	7.01	7.01	–	–	–	–	–

As of December 31, 2022 the MREL ratio was 34.35% as percentage of Total Risk Exposure Amount (TREA) compared to a requirement of 29.46% of TREA including the 4.57% combined buffer requirement, equalling a surplus of € 17.6 billion above

the bank's MREL requirement. The subordinated MREL ratio was 32.20% as percentage of TREA compared to a requirement of 24.85% of TREA including the 4.57% combined buffer requirement. The subordinated MREL surplus is € 26.4 billion.

As of December 21, 2022 the TLAC ratio was 32.20% as percentage of TREA compared to a requirement of 22.57% including the 4.57% combined buffer requirement, resulting in a surplus of € 34.6 billion. TLAC as a percentage of TEM was 9.34% compared to a requirement of 6.75%, which corresponds to a surplus of € 32.2 billion.

Capital

Development and composition of Own Funds

Article 437 (a, d-f) CRR

The own funds capital ratios provided for Deutsche Bank Group are built upon the CRR regulations. Deutsche Bank's total regulatory capital as of December 31, 2022, amounted to € 66.1 billion compared to € 65.2 billion at the end of June 30, 2022. The Group's Tier 1 capital as of December 31, 2022, amounted to € 56.6 billion, consisting of a Common Equity Tier 1 (CET 1) capital of € 48.1 billion and Additional Tier 1 (AT1) capital of € 8.5 billion. The Tier 1 capital was € 1.4 billion higher than at the end of June 30, 2022, driven by increase in AT1 capital of € 1.3 billion and in CET 1 capital of € 0.2 billion.

The AT1 capital increase of € 1.3 billion was mainly due to the newly issued instrument with same notional amount in fourth quarter of 2022.

The CET 1 capital increase of € 0.2 billion was mainly the result of the positive net profit of € 3.2 billion for the second half of 2022 which includes a positive year end deferred tax valuation adjustment of € 1.4 billion. This was partially offset by regulatory deductions for future common share dividend and AT1 coupon payments of € 0.8 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). Additional increases include reduction in regulatory adjustments from prudential filters of € 0.2 billion (additional value adjustments). These positive impacts were partly offset by regulatory deductions from deferred tax assets (DTA) of € 1.4 billion mainly due to US DTAs with a positive year-end deferred tax asset valuation adjustment, negative effects from currency translation adjustments of € 0.4 billion net of foreign exchange counter-effects of capital deduction items, unrealized losses from financial instruments at fair value through other comprehensive income of € 0.5 billion (€ 0.3 billion driven mainly by rising EUR and USD interest rates and € 0.2 billion driven by fair value loss on cash flow hedges as USD rates increased).

EU CC1 – Composition of regulatory own funds

in € m.		Dec 31, 2022	Jun 30, 2022	Refe- rences ¹
		CRR/CRD	CRR/CRD	
Common Equity Tier 1 (CET 1) capital: instruments and reserves				
1	Capital instruments, related share premium accounts and other reserves	45,458	45,262	A
	of which: Instrument type 1 (ordinary shares) ²	45,458	45,262	A
	of which: Instrument type 2	0	0	
	of which: Instrument type 3	0	0	
2	Retained earnings	12,305	12,347	B
3	Accumulated other comprehensive income (loss), net of tax	(1,314)	78	C
3a	Funds for general banking risk	0	0	
	Amount of qualifying items referred to in Art. 484 (3) and the related share premium accounts subject to phase-out from CET 1	0	0	
4	Minority interests (amount allowed in consolidated CET 1)	1,002	1,010	
5a	Independently reviewed interim profits net of any foreseeable charge or dividend ³	4,183	1,838	B
6	Common Equity Tier 1 (CET 1) capital before regulatory adjustments	61,634	60,536	
Common Equity Tier 1 (CET 1) capital: regulatory adjustments				
7	Additional value adjustments (negative amount) ⁴	(2,026)	(2,212)	
8	Goodwill and other intangible assets (net of related tax liabilities) (negative amount)	(5,024)	(5,015)	D
	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)	(3,244)	(1,885)	E
10	Fair value reserves related to gains or losses on cash flow hedges of financial instruments that are not valued at fair value	790	372	
11	Negative amounts resulting from the calculation of expected loss amounts	(466)	(450)	
12	Any increase in equity that results from securitized assets (negative amount)	(0)	(0)	
13	Gains or losses on liabilities designated at fair value resulting from changes in own credit standing ⁵	(190)	(109)	
14	Defined benefit pension fund assets (net of related tax liabilities) (negative amount)	(1,149)	(1,341)	F
15	Direct, indirect and synthetic holdings by an institution of own CET 1 instruments (negative amount) ⁶	(0)	0	
16	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	
17	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	
18	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	
19	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	
20a	of which:			
20b	Qualifying holdings outside the financial sector (negative amount)	0	0	
20c	Securitization positions (negative amount)	0	0	
20d	Free deliveries (negative amount)	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)	0	0	E
22	Amount exceeding the 17.65 % threshold (negative amount)	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	
25	Deferred tax assets arising from temporary differences	0	0	E
25a	Losses for the current financial year (negative amount)	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	
27	Qualifying AT1 deductions that exceed the AT1 items of the institution (negative amount)	0	0	
27a	Other regulatory adjustments (including IFRS 9 transitional adjustments when relevant) ⁸	(2,225)	(1,964)	
28	Total regulatory adjustments to Common Equity Tier 1 (CET 1) capital	(13,536)	(12,604)	
29	Common Equity Tier 1 (CET 1) capital	48,097	47,932	
Additional Tier 1 (AT1) capital: instruments				
30	Capital instruments and the related share premium accounts	8,578	7,328	G
	of which:			
31	Classified as equity under applicable accounting standards	8,578	7,328	G
32	Classified as liabilities under applicable accounting standards	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	0	0	H
	of which:			
EU 33a	Amount of qualifying items referred to in Article 494a(1) subject to phase out from AT1	0	0	
EU 33b	Amount of qualifying items referred to in Article 494b(1) subject to phase out from AT1	0	0	

in € m.		Dec 31, 2022	Jun 30, 2022	References ¹
		CRR/CRD	CRR/CRD	
34	Qualifying Tier 1 capital included in consolidated AT1 capital issued by subsidiaries and held by third parties	0	0	
35	of which: instruments issued by subsidiaries subject to phase out	0	0	
36	Additional Tier 1 (AT1) capital before regulatory adjustments	8,578	7,328	
Additional Tier 1 (AT1) capital: regulatory adjustments				
37	Direct, indirect and synthetic holdings by an institution of own AT1 instruments (negative amount)	(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	
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	
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	
42	Qualifying T2 deductions that exceed the T2 items of the institution (negative amount)	0	0	
42a	of which: Other regulatory adjustments to AT1 capital	0	0	
43	Total regulatory adjustments to Additional Tier 1 (AT1) capital	(60)	(60)	
44	Additional Tier 1 (AT1) capital	8,518	7,268	
45	Tier 1 capital (T1 = CET 1 + AT1)	56,616	55,201	
Tier 2 (T2) capital: instruments and provisions				
46	Capital instruments and the related share premium accounts ⁹	9,580	10,091	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	30	30	I
	of which:			
EU 47a	Amount of qualifying items referred to in Article 494a (2) subject to phase out from T2	0	0	
EU 47b	Amount of qualifying items referred to in Article 494b (2) subject to phase out from T2	30	30	
48	Qualifying own funds instruments included in consolidated T2 capital issued by subsidiaries and held by third parties	1	4	I
49	of which: instruments issued by subsidiaries subject to phase out	0	0	
50	Credit risk adjustments	0	0	
51	Tier 2 (T2) capital before regulatory adjustments	9,611	10,125¹²	
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)	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	
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	
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	
56a	Qualifying eligible liabilities deductions that exceed the eligible liabilities items of the institution (negative amount)	0	0	
56b	Other regulatory adjustments to T2 capital	0	0	
57	Total regulatory adjustments to Tier 2 (T2) capital	(80)	(80)	
58	Tier 2 (T2) capital	9,531	10,045	
59	Total capital (TC = T1 + T2)	66,146	65,246¹²	
60	Total risk-weighted assets	360,003	369,970¹²	
Capital ratios and buffers				
61	Common Equity Tier 1 capital ratio (as a percentage of risk-weighted assets)	13.4	13.0	
62	Tier 1 capital ratio (as a percentage of risk-weighted assets)	15.7	14.9	
63	Total capital ratio (as a percentage of risk-weighted assets)	18.4	17.6	
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	10.5	10.4	
	of which:			
65	Capital conservation buffer requirement	2.5	2.5	
66	Countercyclical buffer requirement	0.07	0.02	
67	Systemic risk buffer requirement	0.0	0.0	
67a	Global Systemically Important Institution (G-SII) or Other Systemically Important Institution (O-SII) buffer	2.0	2.0	
67b	additional own funds requirements to address the risks other than the risk of excessive leverage	1.4	1.4	
68	Common Equity Tier 1 capital available to meet buffers (as a percentage of risk-weighted assets) ¹¹	7.5	7.0	

	Dec 31, 2022	Jun 30, 2022	Refer- ences ¹
in € m.	CRR/CRD	CRR/CRD	
Amounts below the thresholds for deduction (before risk weighting)			
72	3,509	2,893	
73	975	944	
75	4,273	4,747	
Applicable caps on the inclusion of provisions in Tier 2 capital			
76	0	0	
77	241	257	
78	0	0	
79	1,297	1,329	
Capital instruments subject to phase-out arrangements			
80	0	0	
81	0	0	
82	0	0	
83	0	0	
84	0	0	
85	0	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" and as presented in tables "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 of Article 26(3) of CRR, competent authorities shall evaluate whether issuances of Common Equity Tier 1 instruments meet the criteria set out in Article 28 or, where applicable, Article 29

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 € 2.0 billion (June 2022: € 2.2 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 € 0.01 billion (June 2022: € 0.1 billion)

⁵ Represents gains and losses on liabilities and derivative liabilities carried at fair value that are a result of changes in own credit of the Group according to Article 33 (1) (b) CRR

⁶ Excludes holdings that are already considered in the accounting base of Common Equity

⁷ Based on the Group's current interpretation no deduction amount expected

⁸ Includes capital deductions of 1.2 billion (June 2022: € 1.1 billion) based on ECB guidance on irrevocable payment commitments related to the Single Resolution Fund and the Deposit Guarantee Scheme, € 1.0 billion (June 2022: € 0.8 billion) based on ECB's supervisory recommendation for a prudential provisioning of non-performing exposures, € 7 million (June 2022: € 5 million) resulting from minimum value commitments as per Article 36 (1)(n) of the CRR and CET 1 decrease of € 15 million (June 2022: € 23 million) from IFRS 9 transitional provision as per Article 473a of the CRR

⁹ Amortization is taken into account

¹⁰ Includes CET1 Pillar 2 Requirement.

¹¹ Calculated as the CET1 Capital less the Group'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 Group to meet its additional Tier 1 and Tier 2 capital requirements.

¹² Includes € 30 million of instruments that qualify as Tier 2 instruments according to Article 494b (2) CRR

^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 € 5,525 million (June 2022: € 2,365 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 deduction for dividend and AT1 coupons of € (1,342) million (June 2022: € (527) million) 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 € 7,092 million (June 2022: € 7,154 million) plus goodwill from equity method investments of € 79 million (June 2022: € 81 million) as per regulatory balance sheet reduced by deferred tax liabilities on other intangibles of € 464 million (June 2022: € 516 million) and prudent software assets as per Art. 36 (1) (b) CRR of € 1,683 million (June 2022: € 1,704 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 € 1,301 million (June 2022: € 1,533 million) reduced by deferred tax liabilities on defined benefit pension fund assets of € 152 million (June 2022: € 192 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, 2022	Jun 30, 2022
Total shareholders' equity per accounting balance sheet	61,959	59,788
Deconsolidation/Consolidation of entities	29	265
of which:		
Additional paid-in capital	0	0
Retained earnings	29	265
Accumulated other comprehensive income (loss), net of tax	0	0
Total shareholders' equity per regulatory balance sheet	61,988	60,053
Minority Interests (amount allowed in consolidated CET 1)	1,002	1,010
AT1 coupon and shareholder dividend deduction ¹	(1,342)	(527)
Capital instruments not eligible under CET 1 as per CRR 28(1)	(14)	0
Common Equity Tier 1 (CET 1) capital before regulatory adjustments	61,634	60,536
Prudential filters	(1,427)	(1,948)
of which:		
Additional value adjustments	(2,026)	(2,212)
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	600	263
Regulatory adjustments	(12,110)	(10,655)
of which:		
Goodwill and other intangible assets (net of related tax liabilities) (negative amount)	(5,024)	(5,015)
Deferred tax assets that rely on future profitability	(3,244)	(1,885)
Negative amounts resulting from the calculation of expected loss amounts	(466)	(450)
Defined benefit pension fund assets (net of related tax liabilities) (negative amount)	(1,149)	(1,341)
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	(2,225)	(1,964)
Common Equity Tier 1 capital	48,097	47,932
Additional Tier 1 capital	8,518	7,268
Additional Tier 1 Notes (AT1 Notes)	8,518	7,268
Per balance sheet	8,578	7,328
Deconsolidation/Consolidation of entities	0	0
Regulatory adjustments to balance sheet position	(60)	(60)
Hybrid capital securities	0	0
Per balance sheet	0	521
Deconsolidation/Consolidation of entities	0	0
Regulatory adjustments to balance sheet position	0	(521)
Other regulatory adjustments	0	0
Deductions from Additional Tier 1 capital	0	0
Tier 1 capital	56,616	55,201
Tier 2 capital	9,531	10,045
Subordinated debt	9,531	10,045
Per balance sheet	11,381	11,658
Deconsolidation/Consolidation of entities	0	0
Regulatory adjustments to balance sheet position	(1,850)	(1,613)
of which:		
Amortization according to Art. 64 CRR	(2,016)	(1,664)
Other	167	51
Other regulatory adjustments	0	0
Deductions from Tier 2 capital	0	0
Total capital³	66,146	65,246

¹Full 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)

²Includes capital deductions of € 1.2 billion (June 2022: € 1.1 billion) based on ECB guidance on irrevocable payment commitments related to the Single Resolution Fund and the Deposit Guarantee Scheme, € 1.0 billion (June 2022: € 0.8 billion) based on ECB's supervisory recommendation for a prudential provisioning of non-performing exposures, € 7 million (June 2022: € 5 million) resulting from minimum value commitments as per Article 36 (1)(n) of the CRR and CET 1 decrease of € 15 million (June 2022: € 23 million) from IFRS 9 transitional provision as per Article 473a of the CRR

Development of Own Funds

in € m.	six months ended Dec 31, 2022	six months ended Jun 30, 2022
Common Equity Tier 1 (CET 1) capital - opening amount	47,932	46,506
Common shares, net effect	(2)	0
of which:		
New shares issued (+)	(2)	0
Shares retired (-)	0	0
Capital instruments not eligible under CET 1 as per CRR 28(1)	0	0
Additional paid-in capital	133	(213)
Retained earnings	3,117	2,828
of which:		
Actuarial gains (losses) rel. to defined benefit plans, net of tax and Currency Translation Adjustment (CTA)	193	360
Net income attributable to Deutsche Bank Shareholders	3,160	2,365
Common shares in treasury, net effect/(+) sales (-) purchase	65	(390)
Movements in accumulated other comprehensive income	(1,392)	522
of which:		
Foreign currency translation, net of tax	(863)	1,316
Unrealized gains and losses	(235)	(567)
Other	(294)	(227)
AT1 coupon and shareholder dividend deduction ¹	(815)	(527)
of which:		
Gross dividends (deduction)	(574)	(450)
Shares issued in lieu of dividends (add back)	0	0
Gross AT1 coupons (deduction)	(241)	(77)
Additional value adjustments	185	(400)
Goodwill and other intangible assets (net of related tax liabilities) (negative amount)	(9)	(118)
Deferred tax assets that rely on future profitability (excluding those arising from temporary differences)	(1,359)	(419)
Negative amounts resulting from the calculation of expected loss amounts	(16)	123
Removal of gains/losses resulting from changes in own credit standing in liabilities designated at fair value (net of tax)	(82)	(53)
Defined benefit pension fund assets (net of related tax liabilities) (negative amount)	192	(349)
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)	0	151
Other, including regulatory adjustments	148	271
Common Equity Tier 1 (CET 1) capital - closing amount	48,097	47,932
Additional Tier 1 (AT1) capital - opening amount	7,268	8,268²
New Additional Tier 1 eligible capital issues	1,222	725
Matured and called instruments	0	(1,750)
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	28	25
Additional Tier 1 (AT1) capital - closing amount	8,518	7,268
Tier 1 capital (T1 = CET 1 + AT1)	56,616	55,201
Tier 2 (T2) capital - opening amount	10,045	7,358
New Tier 2 eligible capital issues	0	2,652
Matured and called instruments	(1)	0
Amortization adjustments	(366)	(444)
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	(148)	479
Tier 2 (T2) capital - closing amount	9,531	10,045
Total regulatory capital (TC = T1 + T2)²	66,146	65,246

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 Excludes €600 million AT1 instruments from January 01, 2022 since they do not fulfil the definition in Art. 52 CRR

Scope of application of the regulatory framework

Name of 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”). 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 for regulatory purposes are subject to proportional consolidation.

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

Differences in the scopes of consolidation

Article 436 (b) CRR

The principles of consolidation for Deutsche Bank’s regulatory group are not identical to those applied for the Group’s financial statements. Nonetheless, the majority of the bank’s subsidiaries in the regulatory group are also fully consolidated in accordance with IFRS in the Group’s 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 the Group’s special purpose entities (SPEs) consolidated under IFRS do not meet the regulatory subsidiary definition pursuant to Article 4 (1) (16) CRR and are not consolidated in the regulatory group. However, the risks resulting from the bank’s 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 and 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 the Group 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 asset fair value through profit or loss

For detailed information and the table LI3, please refer to the Pillar 3 Report section “Outline of differences in scopes of consolidation”.

Derogations from prudential requirements for the parent company and subsidiaries

Article 436 (h) CRR (EU LIB)

As of December 31, 2022, 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 the bank may waive the application of provisions on own funds and eligible liabilities, capital requirements, large exposures, exposures to transferred credit risks, leverage, reporting requirements and disclosure by institutions as well as certain risk management requirements 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 same exemptions outlined above (so-called “subsidiary waiver”) pursuant to which the above mentioned subsidiaries 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 the subsidiary.

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 to Deutsche Bank AG Group.

The application of the aforementioned exemptions and the fulfillment of the respective requirements were notified to the BaFin and Deutsche Bundesbank. 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

The bank’s 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 the bank’s 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, and 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, 2022:

- The subsidiary is a global systemically important institution;
- 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;
- The subsidiary 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, the bank identified two subsidiaries as “large” for the Group and hence required to provide additional disclosure requirements:

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

The additional disclosures for the large subsidiaries 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.

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. Deutsche Bank is 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)

Deutsche Bank’s subsidiaries which were not included in its regulatory consolidation due to their immateriality did not have to comply with own regulatory minimum capital standards in 2022.

Reconciliation of regulatory own funds to the IFRS balance sheet

Article 436 (c, d) CRR

The table EU L11 below provides a comparison between the consolidated balance sheet for accounting and prudential purposes and also highlights how the amounts reported in the Group’s financial statements, once the regulatory scope of

consolidation is applied, are impacted by the different risk frameworks. The regulatory balance sheet is split further into sections subject to credit risk, counterparty credit risk, securitization positions in the regulatory banking book, market risk, and items not subject to capital requirements or relevant for deduction from capital. The market risk framework in column (f) includes the bank's trading book exposure, its 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 be 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, 2022							
	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	178,896	178,861	178,859	0	0	82,738	0	
Interbank balances (w/o central banks)	7,195	7,025	6,335	0	0	5,688	0	
Central bank funds sold and securities purchased under resale agreements	11,478	11,478	700	10,778	0	6,460	0	
Securities borrowed	0	0	0	0	0	0	0	
Financial assets at fair value through profit or loss								
Trading assets	92,867	91,538	6,329	138	369	89,423	0	
Positive market values from derivative financial instruments	299,686	299,834	45	299,643	30	299,617	0	
Non-trading financial assets mandatory at fair value through profit and loss	89,654	90,085	5,742	79,389	1,378	87,635	0	
Financial assets designated at fair value through profit or loss	168	168	168	0	0	94	0	
Total financial assets at fair value through profit or loss	482,376	481,626	12,284	379,170	1,777	476,770	0	
Financial assets at Fair Value through OCI								
Financial assets mandatory at fair value through OCI	31,675	31,536	29,370	2,156	10	24,585	0	
Equity Instruments designated at fair value through OCI	0	0	0	0	0	0	0	
Total financial assets at fair value through OCI	31,675	31,536	29,370	2,156	10	24,585	0	
Equity method investments	1,124	1,124	1,124	0	1	1,124	79	
of which: Goodwill	79	79	0	0	0	0	79	D
Loans at amortized cost	483,700	487,259	457,720	0	29,420	167,793	119	
Property and equipment	6,103	6,075	6,075	0	0	2,349	0	
Goodwill and other intangible assets	7,092	7,092	1,683	0	0	0	5,409	D
Other assets	118,293	118,263	39,489	51,455	3,997	47,444	18,331	
of which: Defined benefit pension fund assets	1,328	1,301	0	0	0	0	1,301	F
Assets for current tax	1,584	1,581	1,581	0	0	0	0	
Deferred tax assets	7,272	7,237	4,273	0	0	2,410	2,964	E
Total assets	1,336,788	1,339,157	739,493	443,559	35,205	817,360	26,902	
Liabilities and equity:								
Deposits	621,456	622,876	0	1,033	50	106,117	515,676	
Central bank funds purchased and securities sold under repurchase agreements	573	573	0	573	0	407	0	
Securities loaned	13	13	0	13	0	7	0	
Financial liabilities at fair value through profit or loss								
Trading liabilities	50,616	50,660	0	0	0	50,660	8	
Negative market values from derivative financial instruments	282,353	282,436	0	282,021	247	282,436	0	
Financial liabilities designated at fair value through profit or loss	54,634	54,367	0	51,904	0	53,279	(13)	
Investment contract liabilities	469	0	0	0	0	0	0	
Total financial liabilities at fair value through profit or loss	388,072	387,463	0	333,925	247	386,374	(5)	
Other short-term borrowings	5,122	5,058	0	0	0	2,150	2,907	
Other liabilities	113,714	112,313	0	62,851	0	38,784	7,041	
Provisions	2,449	2,427	0	0	0	864	1,564	
Liabilities for current tax	388	385	0	0	0	162	223	
Deferred tax liabilities	650	557	0	0	0	0	557	
Long-term debt	131,525	134,731	0	0	0	24,615	110,116	H.I
of which: Subordinated long-term debt ²	11,381	11,381	0	0	0	3,673	7,708	H.I
Trust preferred securities ²	500	500	0	0	0	0	500	
Obligation to purchase common shares	0	0	0	0	0	0	0	
Total liabilities	1,264,460	1,266,895	0	398,395	297	559,481	638,580	
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	40,513	40,513	0	0	0	0	40,513	A
Retained earnings	17,800	17,830	0	0	0	0	17,830	B
Common shares in treasury, at cost	(331)	(331)	0	0	0	0	(331)	A

Dec 31, 2022

	a	b	c	d	e	f		g	References ¹
	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	Carrying values of items:		Not subject to capital requirements or subject to deduction from capital	
Equity classified as obligation to purchase common shares	0	0	0	0	0	0	0	0	A
Accumulated other comprehensive income, net of tax	(1,314)	(1,314)	0	0	0	0	0	(1,314)	C
Total shareholders' equity	61,959	61,988	0	0	0	0	0	61,988	
Additional equity components	8,578	8,578	0	0	0	0	0	8,578	G
Noncontrolling interests	1,791	1,696	0	0	0	0	0	1,696	
Total equity	72,328	72,262	0	0	0	0	0	72,262	
Total liabilities and equity	1,336,788	1,339,157	0	398,395	297	559,481	710,842		

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, 2021

in € m.	a	b	c	d	e	f	g	References ¹
	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	
	Carrying values of items:							
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
Equity classified as obligation to purchase common shares	0	0	0	0	0	0	0	A

Dec 31, 2021								
in € m.	a	b	c	d	e	f	g	References ¹
	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	
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 "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, 2021 and December 31, 2022 are primarily driven by the following factors:

Cash, central bank and interbank balances decreased by € 13.3 billion, primarily as a result of partial prepayment of TLTRO. This prepayment resulted in a corresponding decrease in long term debt of € 13.0 billion and has been made in respect of the tranche maturing in June 2023 in line with the bank's communicated strategy to actively manage the maturity profile of its TLTRO participation. Trading assets and trading liabilities decreased by € 9.5 billion and by € 4.1 billion, respectively, primarily driven by debt securities, mainly due to managed reductions and decreased bond positions in Europe and U.S. rates business due to volatile market conditions. Loans at amortized cost increased by € 12.4 billion, primarily driven by higher origination across the financing businesses in the Investment Bank as well as continued growth in collateralized lending and mortgages in the Private Bank. Deposits increased by € 17.7 billion. Given the current macro environment, corporate clients are holding higher cash reserves in the Corporate Bank along with higher inflows in the Private Bank Germany and global emerging markets in the Investment Bank. Other assets increased by € 14.5 billion, mainly driven by growth in debt securities classified as hold to collect in line with the bank's strategic initiative to optimize return on excess liquidity. Other liabilities increased by € 15.9 billion mainly attributable to an increase in cash margin payables driven by increased client volume and trading activity. The overall movement of the balance sheet included an increase of € 20.8 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, 2022						
in € m.	a	b	c	d	e	Items subject to:
	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)	1,339,157	739,493	35,205	443,559	817,360	
2 Liabilities carrying value amount under the scope of prudential consolidation (as per template LI1)	1,266,896	0	297	398,395	559,481	
3 Total net amount under the scope of prudential consolidation	72,261	739,493	34,908	45,165	257,879 ⁵	
4 Off-balance-sheet amounts	313,445	289,273	15,252	7,800	0	
5,6 Differences in valuations (incl. impact from different netting rules) ¹	0	0	317	46,053	0	
7 Differences due to consideration of provisions ³	0	7,204	0	0	0	
8 Differences due to the use of credit risk mitigation techniques (CRMs)	0	(3,466)	0	0	0	
9 Differences due to credit conversion factors	0	(172,433)	0	0	0	
10 Differences due to Securitisation with risk transfer ²	0	(22,492)	20,496	0	23	
11 Other differences ⁴	0	21,279	(19)	6,347	0	
12 Exposure amounts considered for regulatory purposes	1,037,289	858,857	70,954	105,365	2,113⁶	

¹ Includes effects due to differences in exposure modelling applying the effective expected positive exposure 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 € 20.5 billion are FX mismatches amounting to € 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 € 256.7 billion are € 2.1 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, 2021 ⁷				
		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 L11)	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 L11)	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	289,756	266,321	15,198	7,300	0
5,6	Differences in valuations (incl. impact from different netting rules) ¹	0	0	87	61,631	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 Securitisation 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 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 € 19.6 billion are FX mismatches of € 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

⁷ Comparatives are aligned to current presentation

Reconciliation of regulatory own funds to IFRS balance sheet

Article 437 (a) CRR

The table below highlights the difference in the basis of consolidation for accounting and prudential reporting 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 reference 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, 2022			June 30, 2022		
		a	b		a	b	
in € m.	Carrying values as reported in published financial statements	Carrying values under scope of regulatory consolidation	References	Carrying values as reported in published financial statements	Carrying values under scope of regulatory consolidation	References	
Assets:							
	Cash and central bank balances	178,897	178,861		177,070	177,051	
	Interbank balances (w/o central banks)	7,195	7,025		7,902	7,596	
	Central bank funds sold and securities purchased under resale agreements	11,478	11,478		9,121	9,121	
	Securities borrowed	0	0		164	164	
	Financial assets at fair value through profit or loss						
	of which:						
	Trading assets	92,867	91,538		103,953	102,652	
	Positive market values from derivative financial instruments	299,686	299,834		322,978	323,172	
	Non-trading financial assets mandatory at fair value through profit and loss	89,654	90,085		88,723	89,326	
	Financial assets designated at fair value through profit or loss	168	168		96	96	
	Total financial assets at fair value through profit or loss	482,376	481,626		515,750	515,245	
	Financial assets at Fair Value through OCI						

	Dec 31, 2022			June 30, 2022		
	a	b	References	a	b	References
	Carrying values as reported in published financial statements	Carrying values under scope of regulatory consolidation		Carrying values as reported in published financial statements	Carrying values under scope of regulatory consolidation	
in € m.						
Financial assets mandatory at fair value through OCI	31,675	31,536		31,515	31,372	
Equity Instruments designated at fair value through OCI	0	0		0	0	
Total financial assets at fair value through OCI	31,675	31,536		31,515	31,372	
Financial assets available for sale	0	0		0	0	
Equity method investments	1,124	1,124		1,185	1,185	
of which: Goodwill	79	79	D	81	81	D
Loans at amortized cost	483,700	487,259		488,430	491,405	
Securities held to maturity	0	0		0	0	
Property and equipment	6,103	6,075		5,595	5,569	
Goodwill and other intangible assets	7,092	7,092	D	7,155	7,154	D
Other assets	118,293	118,263		135,110	135,045	
of which: Defined benefit pension fund assets	1,328	1,301	F	1,533	1,533	F
Assets for current tax	1,584	1,581		1,326	1,324	
Deferred tax assets	7,272	7,237	E	6,338	6,298	E
Total assets	1,336,788	1,339,157		1,386,660	1,388,528	
Liabilities and equity:						
Deposits	621,456	622,876		612,583	613,698	
Central bank funds purchased and securities sold under repurchase agreements	573	573		1,213	1,213	
Securities loaned	13	13		8	8	
Financial liabilities at fair value through profit or loss						
of which:						
Trading liabilities	50,616	50,660		58,970	59,027	
Negative market values from derivative financial instruments	282,353	282,436		303,475	303,660	
Financial liabilities designated at fair value through profit or loss	54,634	54,367		60,101	59,823	
Investment contract liabilities	469	0		494	0	
Total financial liabilities at fair value through profit or loss	388,072	387,463		423,040	422,510	
Other short-term borrowings	5,122	5,058		5,189	5,131	
Other liabilities	113,714	112,313		127,185	125,904	
Provisions	2,449	2,427		2,539	2,516	
Liabilities for current tax	388	385		690	676	
Deferred tax liabilities	650	557		882	796	
Long-term debt	131,525	134,731		143,924	146,497	
of which: Subordinated long-term debt ¹	11,381	11,381	H.I	11,658	11,658	H.I
Trust preferred securities ¹	500	500	H.I	521	521	H.I
Obligation to purchase common shares	0	0		0	0	
Total liabilities	1,264,460	1,266,895		1,317,775	1,319,470	
Common shares, no par value, nominal value of € 2.56	5,291	5,291	A	5,291	5,291	A
Additional paid-in capital	40,513	40,513	A	40,367	40,367	A
Retained earnings	17,800	17,830	B	14,448	14,713	B
Common shares in treasury, at cost	(331)	(331)	A	(396)	(396)	A
Equity classified as obligation to purchase common shares	0	0	A	0	0	A
Accumulated other comprehensive income, net of tax	(1,314)	(1,314)	C	78	78	C
Total shareholders' equity	61,959	61,988		59,788	60,053	
Additional equity components	8,578	8,578	G	7,328	7,328	G
Noncontrolling interests	1,791	1,696		1,769	1,677	
Total equity	72,328	72,262		68,885	69,058	
Total liabilities and equity	1,336,788	1,339,157		1,386,660	1,388,528	

¹ Eligible Additional Tier 1 and Tier 2 instruments are reflected in these balance sheet positions based on their IFRS carrying values.

Outline of differences in scopes of consolidation

Article 436 (b) CRR

As of year-end 2022, our regulatory group comprised 312 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, one payment institution, one investment firm, 191 financial institutions, 16 financial holding companies, ten asset management companies and 71 ancillary services undertakings. As of year-end 2021, our regulatory group comprised 328 entities (excluding the parent Deutsche Bank AG), of which one was consolidated on a pro-rata basis. The regulatory group comprised 22 credit institutions, two payment institution, one investment firm, 202 financial institutions, 17 financial holding companies, ten asset management companies and 74 ancillary services undertakings.

25 entities were exempted from regulatory consolidation pursuant to Section 31 (3) KWG in conjunction with Article 19 CRR as per year end 2022 (year end 2021: 33 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 participations in their equity included in the deduction treatment amounted to in total € 2.2 million as per year end 2022 (year end 2021: € 3 million).

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				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		Other Enterprise	
Alixville Invest, S.L.	Full consolidation				x		Other Enterprise	
Altersvorsorge Fonds Hamburg Alter Wall Dr. Juncker KG	Full consolidation				x		Other Enterprise	
Amber Investments S.à r.l., en liquidation volontaire	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	
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	
Cathay Advisory (Beijing) Co., Ltd.	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	
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	

a	b	c	d	e	f		g	h
					Method of prudential consolidation	Method of accounting consolidation		
Name of the entity	Method of accounting consolidation	Full consolidation	Proportional consolidation	Equity method	Neither consolidated nor deducted	Deducted	Description of the entity	
Crofton Invest, S.L.	Full consolidation				x		Other Enterprise	
Danube Properties S.à r.l., en faillite	Full consolidation				x		Other Enterprise	
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 DBE-8052 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-8057 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-8063 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-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-8085 Trust	Full consolidation					x	Ancillary Services Undertaking	
DB SPEARs/LIFERs, Series DBE-8086 Trust	Full consolidation					x	Ancillary Services Undertaking	
DB SPEARs/LIFERs, Series DBE-8087 Trust	Full consolidation					x	Ancillary Services Undertaking	
DB SPEARs/LIFERs, Series DBE-8088 Trust	Full consolidation					x	Ancillary Services Undertaking	
DB SPEARs/LIFERs, Series DBE-8090 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	
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		Other Enterprise	
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 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-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	

a	b	c	d	e	Method of prudential consolidation		h
					f	g	
Name of the entity	Method of accounting consolidation	Full consolidation	Proportional consolidation	Equity method	Neither consolidated nor deducted	Deducted	Description of the entity
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	Full consolidation				x		Other Enterprise
DWS Invest (IE) ICAV	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.l.	Full consolidation				x		Other Enterprise
Einkaufszentrum "HVD Dresden" S.à r.l. & Co. KG i.l.	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
Elm (Luxembourg) S.à r.l.	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		Other Enterprise
Fiduciaria Sant' Andrea S.r.l.	Full consolidation				x		Other Enterprise
Finanzberatungsgesellschaft mbH der Deutschen Bank	Full consolidation					x	Ancillary Services Undertaking
Fir (Luxembourg) S.à r.l.	Full consolidation				x		Other Enterprise
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		Other Enterprise
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		Other Enterprise
Global Opportunities Co-Investment Feeder, LLC	Full consolidation				x		Financial Institution
Global Opportunities Co-Investment, LLC	Full consolidation				x		Financial Institution
Greenheart (Luxembourg) S.à r.l.	Full consolidation				x		Other Enterprise
Groton Invest, S.L.	Full consolidation				x		Financial Institution
Grundstücksgesellschaft Frankfurt Bockenheimer Landstraße GbR	Full consolidation				x		Other Enterprise

a	b	c	d	e	Method of prudential consolidation		h
					f	g	
Name of the entity	Method of accounting consolidation	Full consolidation	Proportional consolidation	Equity method	Neither consolidated nor deducted	Deducted	Description of the entity
Grundstücksgesellschaft Kerpen-Sindorf Vogelrutherfeld GbR	Full consolidation				x		Other Enterprise
Grundstücksgesellschaft Wiesbaden Luisenstraße/Kirchgasse GbR	Full consolidation				x		Other Enterprise
Havbell Designated Activity Company	Full consolidation				x		Other Enterprise
Histria Inversiones Designated Activity Company	Full consolidation				x		Financial Institution
Iberia Inversiones Designated Activity Company (in liquidation)	Full consolidation				x		Other Enterprise
Iberia Inversiones II Designated Activity Company	Full consolidation				x		Other Enterprise
Immobilienfonds Büro-Center Erfurt am Flughafen Bindersleben I GbR	Full consolidation				x		Other Enterprise
Immobilienfonds Wohn- und Geschäftshaus Köln-Blumenberg V GbR	Full consolidation				x		Other Enterprise
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 III Initial GP Limited	Full consolidation					x	Financial Institution
Life Mortgage S.r.l.	Full consolidation				x		Other Enterprise
Lockwood Invest, S.L.	Full consolidation				x		Financial Institution
Lunashadow Limited	Full consolidation				x		Financial Institution
2755 LVB I LLC	Full consolidation					x	Other Enterprise
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		Other Enterprise
Oasis Securitisation S.r.l.	Full consolidation				x		Other Enterprise
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
OPPENHEIM PRIVATE EQUITY Verwaltungsgesellschaft mbH	Full consolidation					x	Financial Institution
Opus Niestandaryzowany Sekurytyzacyjny Fundusz Inwestycyjny Zamkniety	Full consolidation				x		Other Enterprise
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 III SLP Feeder GP, S.à r.l.	Full consolidation				x		Financial Institution
PEIF III SLP Feeder, SCSp	Full consolidation				x		Other Enterprise
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 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., en liquidation volontaire	Full consolidation				x		Other Enterprise
Radical Properties Unlimited Company	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		Other Enterprise
Romareda Holdings Designated Activity Company	Full consolidation				x		Financial Institution
RREEF China REIT Management Limited (in members' voluntary winding up)	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

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
SCB Al্পspitze UG (haftungsbeschränkt)	Full consolidation				x		Financial Institution
Seaconview Designated Activity Company	Full consolidation				x		Other Enterprise
Somkid Immobiliare S.r.l.	Full consolidation				x		Other Enterprise
SP Mortgage Trust	Full consolidation				x		Other Enterprise
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		Other Enterprise
Tagus - Sociedade de Titularização de Creditos, S.A.	Full consolidation				x		Other Enterprise
Tasman NZ Residential Mortgage Trust	Full consolidation				x		Other Enterprise
Tech Venture Growth Portfolio, F.C.R.	Full consolidation					x	Financial Institution
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
Treinvest 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
Wedverville Spain, S.L.	Full consolidation				x		Other Enterprise
Wendelstein 2017-1 UG (haftungsbeschränkt)	Full consolidation				x		Other Enterprise
5353 WHMR LLC	Full consolidation					x	Other Enterprise
Xtrackers (IE) Public Limited Company	Full consolidation				x		Other Enterprise
Xtrackers II	Full consolidation				x		Other Enterprise

IFRS 9 transitional arrangements on own funds and temporary treatment of unrealized gains and losses

Article 473a CRR and Article 468 CRR

As of June 30, 2020, Deutsche Bank applied the transitional arrangements in relation to IFRS 9 as provided in Article 473a CRR to all of the 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 was extended until 2024 and the phase-in percentages were 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. Deutsche Bank does make use of this simplification in the Group's application of transitional provisions.

The capital add-back as of December 31, 2022, is € 14.7 million which includes € 14.6 million from the static component solely stemming from the CRSA portfolio due to the increase in credit loss allowances for the CRSA portfolio at transition to IFRS 9.

There was no contribution from the IRBA portfolios, given the regulatory expected loss exceeded IFRS 9 credit loss allowances during the reporting dates.

There is no contribution from the dynamic component from both CRSA and IBRA portfolios which compares credit loss allowance levels between January 1, 2018, and January 1, 2020. This is due to a reduction in credit loss allowance levels in the aforementioned period for the CRSA portfolio and the regulatory expected loss exceeding the credit loss allowance levels for the IRBA portfolio.

There is a contribution of € 0.1 million from the dynamic component which compares the credit loss allowance levels since January 1, 2020, and the reporting date. This is due to an increase in provisions for the CRSA portfolio since January 1, 2020.

The impact of the € 14.7 million capital add-back as of December 31, 2022, on the 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. Therefore 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 disclosed due to immateriality.

Deutsche Bank did not elect 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](https://www.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 buffers

Article 440 CRR

Minimum capital requirements and additional capital buffers

Article 438 (b) CRR

The Pillar 1 CET 1 minimum capital requirement applicable to the Group is 4.50% of 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. Deutsche Bank complied with the minimum regulatory capital adequacy requirements in 2022.

In addition to these minimum capital requirements, the following combined capital buffer requirements were fully effective beginning 2022 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 2022 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. 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, 2022, the institution-specific countercyclical capital buffer was at 0.07%.

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 2022, no systemic risk buffer applied to Deutsche Bank.

Deutsche Bank continues to be designated as a global systemically important institution (G-SII) by the BaFin in agreement with the Deutsche Bundesbank, resulting in a G-SII buffer requirement of 1.50% CET 1 capital of RWA in 2022 based on the indicators as published in 2019. This assessment has been confirmed by the FSB in 2022. Further, BaFin has announced that the G-SII buffer requirement for Deutsche Bank will remain unchanged for the years 2023 and 2024. Deutsche Bank continues to publish the indicators on the bank's website.

Additionally, Deutsche Bank 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 2022 that has to be met on a consolidated level. Hence, for Deutsche Bank, the O-SII buffer amounts to 2.00% in 2022. BaFin has announced O-SII buffer requirement for Deutsche bank remain unchanged for the year 2023. 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 SREP, the ECB may impose capital requirements on individual banks which are more stringent than statutory requirements (so-called Pillar 2 requirement).

In February 2022, the ECB informed the Deutsche Bank of its decision effective 1 March 2022 that the bank's Pillar 2 requirement remains unchanged compared to 2021. This result in ECB's Pillar 2 requirement to 2.50% of RWA. As of December 31, 2022, Deutsche Bank needs to maintain on a consolidated basis a CET 1 ratio of at least 10.48%, a Tier 1 ratio of at least 12.45% and a Total Capital ratio of at least 15.07%. 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 0.07% 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.

On December 22, 2022, Deutsche Bank was informed by the ECB of its decision regarding prudential minimum capital requirements for 2023 that applied from January 1, 2023 onwards, following the results of the 2022 SREP. The decision set ECB's Pillar 2 requirement to 2.70% of RWA, effective as of January 1, 2023, of which at least 1.52% must be covered by CET 1 capital and 2.03% by Tier 1 capital.

In January 2022, the BaFin announced a countercyclical buffer of 0.75% for Germany effective February 1, 2023, which translates into approximately 30bps CET 1 capital requirement for Deutsche Bank Group given the current share of German credit exposures. Additionally, the BaFin announced a sectoral systemic risk buffer of 2% for German residential real estate exposures effective February 1, 2023, which translates into approximately 20bps CET 1 capital requirement for Deutsche Bank considering the bank's 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 2022 and 2023.

Overview total capital requirements and capital buffers

	2022	2023
Pillar 1		
Minimum CET 1 requirement	4.50 %	4.50 %
Combined buffer requirement	4.57 %	5.07 %
Capital Conservation Buffer	2.50 %	2.50 %
Countercyclical Buffer ¹	0.07 %	0.37 %
Systemic Risk Buffer ²	0.00 %	0.20 %
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 %	2.70 %
of which covered by CET 1 capital	1.41 %	1.52 %
of which covered by Tier 1 capital	1.88 %	2.03 %
of which covered by Tier 2 capital	0.63 %	0.68 %
Total CET 1 requirement from Pillar 1 and 2³	10.48 %	11.09 %
Total Tier 1 requirement from Pillar 1 and 2	12.45 %	13.10 %
Total capital requirement from Pillar 1 and 2	15.07 %	15.77 %

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 2023 has been calculated to be 0.37% based on known countercyclical buffer changes in 2023. The countercyclical buffer is subject to changes throughout the year depending on its constituents

² The systemic risk buffer has been calculated at 0.20% for the projected year 2023, 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 Deutsche Bank's 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 each country imposes a countercyclical capital buffer rate or the 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, 2022

in € m.	a	b	c		d	e	f	g	h	i	j	k	l	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 (%)	
Australia	93	5,104	183	0	2,207	7,586	170	15	27	212	2,648	1.01	0.00	
Austria	2	1,415	1	0	0	1,419	38	0	0	38	477	0.18	0.00	
Belgium	83	2,427	0	357	46	2,913	89	11	1	100	1,255	0.48	0.00	
Bermuda	21	1,241	0	0	366	1,628	58	0	13	70	878	0.33	0.00	
Brazil	11	1,399	0	199	0	1,609	82	11	0	94	1,172	0.45	0.00	
British Virgin Islands	1	5,345	0	0	0	5,346	82	0	0	82	1,025	0.39	0.00	
Bulgaria	0	21	0	0	0	21	1	0	0	1	9	0.00	1.00	
Canada	82	2,513	2	0	965	3,563	95	0	12	106	1,330	0.50	0.00	
Cayman Islands	280	8,762	0	15	29	9,086	350	0	11	362	4,520	1.72	0.00	
China	31	4,718	0	1,329	0	6,079	244	15	0	259	3,240	1.23	0.00	
Colombia	0	394	0	0	0	394	20	2	0	22	279	0.11	0.00	
Czech Republic	4	333	0	22	0	359	10	0	0	10	121	0.05	1.50	
Denmark	21	1,942	0	11	0	1,974	68	0	0	68	846	0.32	2.00	
Estonia	0	9	0	0	0	9	0	0	0	0	4	0.00	1.00	
France	144	9,128	256	0	557	10,085	265	26	7	297	3,717	1.41	0.00	
Germany	9,197	282,482	79	4,146	7,120	303,023	8,469	78	110	8,656	108,201	41.07	0.00	
Ghana	0	420	0	2	0	422	20	0	0	20	252	0.10	0.00	
Guernsey	7	1,274	0	27	0	1,308	20	0	0	20	251	0.10	0.00	
Hong Kong	15	3,847	0	281	0	4,142	121	2	0	122	1,530	0.58	1.00	
Iceland	0	166	0	5	0	172	3	0	0	3	42	0.02	2.00	
India	2,520	7,374	1	247	60	10,201	402	26	1	430	5,373	2.04	0.00	
Indonesia	14	1,196	0	167	0	1,378	50	6	0	56	705	0.27	0.00	
Ireland	248	6,625	129	266	3,915	11,182	170	27	111	308	3,845	1.46	0.00	
Israel	1	593	0	701	0	1,295	29	32	0	60	755	0.29	0.00	
Italy (incl. San Marino)	1,921	24,881	18	286	223	27,328	1,214	18	11	1,243	15,542	5.90	0.00	
Ivory Coast	0	546	0	57	0	603	27	0	0	27	338	0.13	0.00	
Japan	123	2,506	0	214	65	2,908	119	8	1	128	1,597	0.61	0.00	
Jersey	43	3,038	0	0	799	3,880	115	0	12	127	1,590	0.60	0.00	
Luxembourg	2,830	17,035	2	426	4,722	25,015	615	11	69	694	8,676	3.29	0.50	
Malaysia	22	596	0	410	0	1,028	23	10	0	33	413	0.16	0.00	
Mauritius	236	707	0	0	0	943	44	0	0	44	550	0.21	0.00	
Mexico	7	1,657	0	99	0	1,762	60	0	0	60	744	0.28	0.00	
Netherlands	694	12,311	98	568	315	13,986	430	12	10	453	5,658	2.15	0.00	
Nigeria	0	432	0	0	0	432	39	0	0	39	489	0.19	0.00	
Norway	20	707	0	210	0	936	31	3	0	34	425	0.16	2.00	
Poland	6	2,293	0	13	0	2,312	56	0	0	56	705	0.27	0.00	
Qatar	25	1,700	0	8	0	1,733	48	0	0	49	609	0.23	0.00	
Romania	18	103	0	9	0	131	4	0	0	4	50	0.02	0.50	
Russian Federation	4	476	0	4	0	484	27	0	0	27	337	0.13	0.00	

Dec 31, 2022

	a	b	c		d	e	f	g	h	i	j	k	l	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 (%)	
in € m.														
Saudi Arabia	13	2,123	0	0	0	2,136	26	0	0	26	323	0.12	0.00	
Singapore	155	6,739	0	376	0	7,271	201	2	0	203	2,537	0.96	0.00	
Slovakia	0	103	0	0	0	103	1	0	0	1	18	0.01	1.00	
South Africa	0	254	0	0	0	255	17	7	0	24	297	0.11	0.00	
South Korea	14	2,921	1	0	0	2,936	44	5	0	50	619	0.23	0.00	
Spain	307	20,917	39	1,040	30	22,332	736	16	0	752	9,405	3.57	0.00	
Sweden	6	2,177	0	102	0	2,285	88	0	0	88	1,095	0.42	1.00	
Switzerland	27	13,285	0	212	0	13,523	239	0	0	239	2,981	1.13	0.00	
Taiwan	6	945	0	141	0	1,092	22	1	0	23	284	0.11	0.00	
Thailand	0	1,124	0	361	0	1,486	42	21	0	62	780	0.30	0.00	
Turkey	8	1,080	0	0	0	1,088	81	2	0	83	1,036	0.39	0.00	
United Arab Emirates	27	2,328	0	9	0	2,364	31	0	0	31	387	0.15	0.00	
United Kingdom	437	18,897	8	1,348	1,910	22,601	720	24	41	785	9,809	3.72	1.00	
United States of America (incl. Puerto Rico)	1,634	124,382	967	1,206	43,972	172,161	3,095	128	557	3,779	47,242	17.93	0.00	
Uzbekistan	0	455	0	0	0	455	22	0	0	22	277	0.11	0.00	
Vietnam	1	764	0	14	0	779	50	0	0	51	631	0.24	0.00	
Other	511	10,963	329	781	3,651	16,234	348	39	54	440	5,504	2.09	0.00	
Total	21,871	627,170	2,113	15,668	70,954	737,777	19,468	558	1,047	21,074	263,426	100.00	0.07	

Jun 30, 2022

	a	b	c		d	e	f	g	h	i	j	k	l	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 (%)	
in € m.														
Australia	112	5,257	499	0	2,273	8,141	175	23	23	220	2,756	1.02	0.00	
Austria	2	1,780	0	127	0	1,909	39	2	0	41	507	0.19	0.00	
Bahrain	123	125	0	0	0	249	22	0	0	22	278	0.10	0.00	
Belgium	81	2,455	0	306	30	2,872	73	6	0	79	993	0.37	0.00	
Bermuda	25	1,138	0	0	374	1,537	59	1	20	80	1,001	0.37	0.00	
Brazil	28	1,276	1	329	0	1,635	83	40	0	123	1,535	0.57	0.00	
British Virgin Islands	41	6,397	0	4	0	6,442	57	0	0	57	718	0.26	0.00	
Bulgaria	0	29	0	1	0	30	1	0	0	1	10	0.00	0.50	
Canada	143	2,205	2	0	1,029	3,378	105	0	12	117	1,463	0.54	0.00	
Cayman Islands	283	8,058	0	25	29	8,395	312	1	13	327	4,081	1.50	0.00	
China	83	6,025	0	1,249	0	7,357	290	22	0	311	3,891	1.43	0.00	
Czech Republic	2	215	0	19	0	236	7	0	0	7	88	0.03	0.50	
Denmark	23	1,781	0	282	0	2,086	62	5	0	66	831	0.31	0.00	
France	193	9,200	214	675	615	10,897	270	14	7	291	3,640	1.34	0.00	
Germany	8,555	284,429	30	7,029	3,427	303,469	8,614	102	93	8,809	110,111	40.60	0.00	
Ghana	0	434	0	1	0	434	23	0	0	23	291	0.11	0.00	
Guernsey	30	813	0	0	0	843	20	0	0	20	254	0.09	0.00	
Hong Kong	57	4,199	0	295	0	4,551	127	3	0	130	1,629	0.60	1.00	
India	2,600	7,743	1	293	3,419	14,056	424	21	69	514	6,425	2.37	0.00	
Indonesia	20	1,134	0	118	0	1,273	43	2	0	46	570	0.21	0.00	
Ireland	314	6,720	88	138	3,299	10,559	183	12	103	299	3,734	1.38	0.00	
Israel	10	779	0	273	0	1,062	64	21	0	85	1,062	0.39	0.00	
Italy (incl. San Marino)	2,094	24,091	12	0	240	26,437	1,143	35	13	1,191	14,888	5.49	0.00	
Ivory Coast	0	474	0	36	0	511	27	0	0	27	339	0.12	0.00	
Japan	111	3,829	0	51	87	4,079	128	0	1	129	1,610	0.59	0.00	
Jersey	49	2,970	0	23	1,005	4,047	122	1	16	138	1,729	0.64	0.00	
Luxembourg	3,476	14,616	0	279	4,701	23,073	593	8	75	676	8,455	3.12	0.50	
Malaysia	22	742	0	343	0	1,107	26	2	0	28	350	0.13	0.00	
Mauritius	247	612	0	4	0	863	53	0	0	53	667	0.25	0.00	
Mexico	3	1,696	0	0	0	1,699	65	2	0	66	828	0.31	0.00	
Netherlands	736	13,501	114	1,755	626	16,732	466	44	27	537	6,708	2.47	0.00	
Nigeria	1	358	0	3	0	361	29	0	0	29	363	0.13	0.00	
Norway	19	744	0	297	0	1,060	25	5	0	30	373	0.14	1.50	
Poland	15	2,569	0	0	0	2,585	57	0	0	57	717	0.26	0.00	
Portugal	11	1,019	1	0	17	1,048	21	0	0	22	269	0.10	0.00	
Russian Federation	16	829	0	0	0	845	51	0	0	51	643	0.24	0.00	
Singapore	188	6,706	34	432	0	7,359	180	2	0	182	2,278	0.84	0.00	
Slovakia	0	118	0	0	0	118	2	0	0	2	20	0.01	1.00	
South Africa	0	314	0	1	0	316	26	3	0	29	361	0.13	0.00	
South Korea	14	4,469	1	668	0	5,152	52	13	0	66	822	0.30	0.00	

Jun 30, 2022

	a	b	c		d	e	f	g	h	i	j	k	l	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 (%)	
in € m.														
Spain	353	20,910	41	145	38	21,486	741	22	0	764	9,544	3.52	0.00	
Sweden	4	2,288	0	407	0	2,699	97	4	0	101	1,268	0.47	0.00	
Switzerland	26	13,178	0	700	0	13,905	209	5	0	214	2,676	0.99	0.00	
Taiwan	6	1,232	0	40	0	1,278	25	0	0	25	312	0.12	0.00	
Thailand	1	1,254	0	261	0	1,515	45	6	0	51	634	0.23	0.00	
Turkey	17	975	0	0	0	992	59	0	0	59	732	0.27	0.00	
United Arab Emirates	39	2,355	0	32	0	2,426	38	1	0	39	487	0.18	0.00	
United Kingdom	456	22,534	63	1,800	1,166	26,020	774	37	13	824	10,294	3.80	0.00	
United States of America (incl. Puerto Rico)	2,198	135,081	1,254	0	44,406	182,940	3,474	147	556	4,178	52,219	19.25	0.00	
Uzbekistan	0	384	0	0	0	384	21	0	0	21	261	0.10	0.00	
Vietnam	2	736	0	21	0	759	56	0	0	57	707	0.26	0.00	
Other	395	11,952	354	993	460	14,153	330	40	14	384	4,805	1.77	0.00	
Total	23,222	644,730	2,707	19,458	67,243	757,360	19,987	655	1,056	21,698	271,225	100.00	0.02	

Institution specific countercyclical capital buffer

Article 440 (b) CRR

The following table shows an overview of Deutsche Bank's countercyclical buffer rate and requirements.

EU CCyb2 – Institution-specific countercyclical capital buffer

	Dec 31, 2022	Jun 30, 2022
	a	a
1 Total risk exposure amount (in € m.)	360,003	369,970
2 Institution specific countercyclical buffer rate	0.07 %	0.02 %
3 Institution specific countercyclical buffer requirement (in € m.)	268	88

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 institution infrastructure for the services provided, as well as complexity and global (cross-jurisdictional) activity.

EBA issued revised guidelines on the specification of the indicators of global systemic importance and how they determine 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 regarding 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 regarding 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 year end 2022 G-SIB assessment, as published by the BCBS on January 27, 2023.

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 BaFin is responsible for this assessment as prescribed by the German Banking Act.

Deutsche Bank continues to be designated as a G-SII by the BaFin in agreement with the Deutsche Bundesbank, resulting in a G-SII buffer requirement of 1.50% CET 1 capital of RWA in 2022 based on the indicators as published in 2020. This assessment has been confirmed by the FSB in 2021 and 2022.

The disclosures as of December 31, 2022, and 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.

Comparative data of global systemic importance indicators as of December 31, 2021, includes updates in section 3 – Intra-Financial System Assets and section 4 – Intra-Financial System Liabilities. These changes result from the industry wide review process which runs post initial publication and throughout the second quarter of the year.

G-SIB Assessment Exercise reporting template

in € m. (unless stated otherwise)	G-SIB	Dec 31, 2022	Dec 31, 2021
General Bank Data			
Section 1 - General information			
a. General information provided by the relevant supervisory authority:			
(1) Country code	1001	DE	DE
(2) Bank name	1002	Deutsche Bank AG	Deutsche Bank AG
(3) Reporting date (yyyy-mm-dd)	1003	2022-12-31	2021-12-31
(4) Reporting currency	1004	EUR	EUR
(5) Euro conversion rate	1005	1	1
(6) Submission date (yyyy-mm-dd)	1006	2023-05-12	2022-04-08
b. General Information provided by the reporting institution:			
(1) Reporting unit	1007	1,000,000	1,000,000
(2) Accounting standard	1008	IFRS	IFRS
(3) Date of public disclosure (yyyy-mm-dd)	1009	2023-07-26	2021-12-31
(4) Language of public disclosure	1010	English	English
(5) Web address of public disclosure	1011	https://www.db.com/ir/en/regulatory-reporting.htm	https://www.db.com/ir/en/regulatory-reporting.htm
(6) LEI code	2015	7LTFWZYICNSX8D621K86	7LTFWZYICNSX8D621K86
Size Indicator			
Section 2 - Total exposures			
a. Derivatives			
(1) Counterparty exposure of derivatives contracts	1201	44,060	44,486
(2) Capped notional amount of credit derivatives	1018	15,540	15,573
(3) Potential future exposure of derivative contracts		70,496	77,670
b. Securities financing transactions (SFTs)			
(1) Adjusted gross value of SFTs	1014	90,468	86,103
(2) Counterparty exposure of SFTs	1015	5,735	4,509
c. Other assets			
d. Gross notional amount of off-balance sheet items	1019	896,388	888,486
(1) Items subject to a 0% credit conversion factor (CCF)	1022	85,645	56,998
(2) Items subject to a 20% CCF	1023	89,422	96,134
(3) Items subject to a 50% CCF	1024	185,539	165,759
(4) Items subject to a 100% CCF	1031	9,698	7,699
e. Regulatory adjustments			
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	1,251,604	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	722	816
(2) Potential future exposure of derivatives contracts for insurance subsidiaries	1205	0	0
(3) Investment value in consolidated entities	1208	27	28
h. Intragroup exposures with insurance subsidiaries reported in 2.g that are included in 2.f			
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	1,252,294	1,233,119
Interconnectedness Indicators			
Section 3 - Intra-Financial System Assets¹			
a. Funds deposited with or lent to other financial institutions			
(1) Certificates of deposit	2102	2	47
b. Unused portion of committed lines extended to other financial institutions			
	1217	25,851	20,969
c. Holdings of securities issued by other financial institutions			
(1) Secured debt securities	2103	939	706
(2) Senior unsecured debt securities	2104	12,899	14,117
(3) Subordinated debt securities	2105	382	714
(4) Commercial paper	2106	0	0
(5) Equity securities	2107	4,057	3,899
(6) Offsetting short positions in relation to the specific equity securities included in item 3.c.(5)	2108	28	62
d. Net positive current exposure of SFTs with other financial institutions	1219	9,382	9,441
e. OTC derivatives with other financial institutions that have a net positive fair value			
(1) Net positive fair value	2109	19,818	9,651
(2) Potential future exposure	2110	25,248	25,320
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	161,849	145,978

in € m. (unless stated otherwise)	G-SIB	Dec 31, 2022	Dec 31, 2021
Section 4 - Intra-Financial System Liabilities²			
a. Funds deposited by or borrowed from other financial institutions			
(1) Deposits due to depository institutions	2111	32,359	41,912
(2) Deposits due to non-depository financial institutions	2112	39,607	45,832
(3) Loans obtained from other financial institutions	2113	1,149	0
b. Unused portion of committed lines obtained from other financial institutions	1223	0	0
c. Net negative current exposure of SFTs with other financial institutions	1224	23,496	22,319
d. OTC derivatives with other financial institutions that have a net negative fair value			
(1) Net negative fair value	2114	13,868	10,266
(2) Potential future exposure	2115	26,064	24,848
e. Intra-financial system liabilities indicator, including insurance subsidiaries (sum of items 4.a.(1) through 4.d.(2))	1221	136,542	147,131
Section 5 - Securities Outstanding			
a. Secured debt securities	2116	16,389	14,210
b. Senior unsecured debt securities	2117	70,369	73,250
c. Subordinated debt securities	2118	11,635	9,131
d. Commercial paper	2119	1,899	1,840
e. Certificates of deposit	2120	3,258	1,630
f. Common equity	2121	21,581	22,768
g. Preferred shares and any other forms of subordinated funding not captured in item 5.c.	2122	8,578	8,305
h. Securities outstanding indicator, including the securities issued by insurance subsidiaries (sum of items 5.a through 5.g)	1226	133,710	131,134
Substitutability/Financial Institution Infrastructure Indicators			
Section 6 - Payments made in the reporting year (excluding intragroup payments)			
a. Australian dollars (AUD)	1061	147,535	168,758
b. Canadian dollars (CAD)	1063	386,113	451,231
c. Swiss francs (CHF)	1064	215,658	228,821
d. Chinese yuan (CNY)	1065	1,495,170	1,290,539
e. Euros (EUR)	1066	38,446,370	38,128,653
f. British pounds (GBP)	1067	3,076,143	2,834,186
g. Hong Kong dollars (HKD)	1068	184,676	178,484
h. Indian rupee (INR)	1069	542,123	501,085
i. Japanese yen (JPY)	1070	670,825	647,871
j. New Zealand dollars (NZD)	1109	9,969	14,887
k. Swedish krona (SEK)	1071	56,698	158,505
l. United States dollars (USD)	1072	84,576,123	68,603,001
m. Payments activity indicator (sum of items 6.a through 6.l)	1073	129,807,405	113,206,021
Section 7 - Assets Under Custody			
a. Assets under custody indicator	1074	3,020,137	3,351,771
Section 8 - Underwritten Transactions in Debt and Equity Markets			
a. Equity underwriting activity	1075	4,032	21,465
b. Debt underwriting activity	1076	191,277	254,847
c. Underwriting activity indicator (sum of items 8.a and 8.b)	1077	195,310	276,312
Section 9 - Trading Volume			
a. Trading volume of securities issued by other public sector entities, excluding intragroup transactions	2123	2,431,722	4,816,561
b. Trading volume of other fixed income securities, excluding intragroup transactions	2124	490,146	666,214
c. Trading volume fixed income sub-indicator (sum of items 9.a and 9.b)	2125	2,921,868	5,482,775
d. Trading volume of listed equities, excluding intragroup transactions	2126	281,741	2,334,119
e. Trading volume of all other securities, excluding intragroup transactions	2127	325	235
f. Trading volume equities and other securities sub-indicator (sum of items 9.d and 9.e)	2128	282,066	2,334,354
Complexity indicators			
Section 10 - Notional Amount of Over-the-Counter (OTC) Derivatives			
a. OTC derivatives cleared through a central counterparty	2129	28,551,825	26,914,990
b. OTC derivatives settled bilaterally	1905	13,093,657	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	41,645,482	38,738,298

in € m. (unless stated otherwise)	G-SIB	Dec 31, 2022	Dec 31, 2021
Section 11 - Trading and Available-for-Sale Securities			
a. Held-for-trading securities (HFT)	1081	106,515	121,445
b. Available-for-sale securities (AFS)	1082	25,312	23,225
c. Trading and AFS securities that meet the definition of Level 1 assets	1083	89,820	98,815
d. Trading and AFS securities that meet the definition of Level 2 assets, with haircuts	1084	11,989	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	30,018	34,279
Section 12 - Level 3 Assets			
a. Level 3 assets indicator, including insurance subsidiaries	1229	26,218	24,875
Cross-Jurisdictional Activity Indicators			
Section 13 - Cross-Jurisdictional Claims			
a. Total foreign claims on an ultimate risk basis	1087	651,519	636,644
b. Foreign derivative claims on an ultimate risk basis	1146	285,471	268,880
c. Cross-jurisdictional claims indicator (sum of items 13.a and 13.b)	2130	936,990	905,524
Section 14 - Cross-Jurisdictional Liabilities			
a. Foreign liabilities on an immediate risk basis, excluding derivatives and including local liabilities in local currency	2131	451,603	482,049
b. Foreign derivative liabilities on an immediate risk basis	1149	265,621	256,734
c. Cross-jurisdictional liabilities indicator (sum of items 14.a and 14.b)	1148	717,225	738,783
Memorandum Items			
Section 21 - Cross-Jurisdictional Activity Items			
e. Total foreign claims on an ultimate risk basis (considering SRM as a single jurisdiction)	1280	458,005	459,948
f. Foreign derivatives claims on an ultimate risk basis (considering SRM as a single jurisdiction)	1281	225,762	210,439
g. Foreign liabilities on an immediate risk basis, including derivatives (considering SRM as a single jurisdiction)	1282	559,790	582,154

¹ Section 3 - Intra-Financial System Assets reflecting updates of GSIB-IDs 2104 and 1215 for year end 2022 data resulting from the 2023 regulatory review process and GSIB-IDs 1216, 1217, 2104, 2107, 1219, 2109, 2110 and 1215 for year end 2021 data resulting from the 2022 review process.

² Section 4 - Intra-Financial System Liabilities reflecting updates of GSIB-ID 1224, 2113, 2114, 2115 and 1221 for the comparative period resulting from the 2022 review process.

Composition 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's own funds and eligible liabilities, its main features, its ranking in the creditor hierarchy and its maturities.

As of December 31, 2022 the Group's available own funds and eligible liabilities amounted to € 123.7 billion, consisting of € 66.1 billion own funds, € 49.8 billion subordinated liabilities and € 7.8 billion non-subordinated liabilities. The Group's regulatory CET1 capital included in the own funds contains € 15 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 6.28% of the Group's 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, 2022, 36.57% 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, 2022, Deutsche Bank has excess of CET 1 capital of 7.45% of TREA after meeting the resolution group's requirements. This is well above the institution specific combined buffer requirement of 4.57% 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, 2022		
		a	b	c
		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
in € m.				
Own funds and eligible liabilities and adjustments				
1	Common Equity Tier 1 capital (CET1)	48,097	48,097	–
2	Additional Tier 1 capital (AT1)	8,518	8,518	–
6	Tier 2 capital (T2)	9,531	9,531	–
11	Own funds for the purpose of Articles 92a CRR and 45 BRRD	66,146	66,146	–
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)	30,411	30,411	–
EU 12a	Eligible liabilities instruments issued by other entities within the resolution group that are subordinated to excluded liabilities (not grandfathered)	0	0	–
EU 12b	Eligible liabilities instruments that are subordinated to excluded liabilities, issued prior to 27 June 2019 (subordinated grandfathered)	17,451	17,451	–
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	1,898	1,898	–
13	Eligible liabilities that are not subordinated to excluded liabilities (not grandfathered pre cap)	5,152	–	5,152
EU 13a	Eligible liabilities that are not subordinated to excluded liabilities issued prior to 27 June 2019 (pre-cap)	2,615	–	2,615
14	Amount of non subordinated instruments eligible, where applicable after application of Article 72b (3) CRR	–	–	–
17	Eligible liabilities items before adjustments	57,527	49,760	–
EU 17a	of which: subordinated	49,760	49,760	–
Own funds and eligible liabilities: Adjustments to non-regulatory capital elements				
18	Own funds and eligible liabilities items before adjustments	123,674	115,907	–
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	123,674	115,907	–
EU 22a	of which: Own funds and subordinated	115,907	–	–
Risk-weighted exposure amount and leverage exposure measure of the resolution group				
23	Total risk exposure amount	360,003	360,003	–
24	Total exposure measure	1,240,483	1,240,483	–
Ratio of own funds and eligible liabilities				
25	Own funds and eligible liabilities (as a percentage of total risk exposure amount)	34.35	32.20	–
EU 25a	of which: Own funds and subordinated	32.20	–	–
26	Own funds and eligible liabilities (as a percentage of total exposure measure)	9.97	9.34	–
EU 26a	of which: Own funds and subordinated	9.34	–	–
27	CET1 (as a percentage of TREA) available after meeting the resolution group's requirements	–	7.45	–
28	Institution-specific combined buffer requirement	–	4.57	–
29	of which: Capital conservation buffer requirement	–	2.50	–
30	Countercyclical buffer requirement	–	0.07	–
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	–	507,408	–

		Jun 30, 2022		
		a	b	c
		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
in € m.				
Own funds and eligible liabilities and adjustments				
1	Common Equity Tier 1 capital (CET1)	47,932	47,932	-
2	Additional Tier 1 capital (AT1)	7,268	7,268	-
6	Tier 2 capital (T2)	10,045	10,045	-
11	Own funds for the purpose of Articles 92a CRR and 45 BRRD	65,246	65,246	-
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)	29,385	29,385	-
EU 12a	Eligible liabilities instruments issued by other entities within the resolution group that are subordinated to excluded liabilities (not grandfathered)	0	0	-
EU 12b	Eligible liabilities instruments that are subordinated to excluded liabilities, issued prior to 27 June 2019 (subordinated grandfathered)	18,479	18,479	-
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	1,580	1,580	-
13	Eligible liabilities that are not subordinated to excluded liabilities (not grandfathered pre cap)	5,595	-	5,595
EU 13a	Eligible liabilities that are not subordinated to excluded liabilities issued prior to 27 June 2019 (pre-cap)	3,957	-	3,957
14	Amount of non subordinated instruments eligible, where applicable after application of Article 72b (3) CRR	-	-	-
17	Eligible liabilities items before adjustments	58,996	49,444	9,552
EU 17a	of which: subordinated	49,444	49,444	-
Own funds and eligible liabilities: Adjustments to non-regulatory capital elements				
18	Own funds and eligible liabilities items before adjustments	124,242	114,690	9,552
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	124,242	114,690	9,552
EU 22a	of which: Own funds and subordinated	114,690	-	-
Risk-weighted exposure amount and leverage exposure measure of the resolution group				
23	Total risk exposure amount	369,970	369,970	-
24	Total exposure measure	1,279,798	1,279,798	-
Ratio of own funds and eligible liabilities				
25	Own funds and eligible liabilities (as a percentage of total risk exposure amount)	33.58	31.00	-
EU 25a	of which: Own funds and subordinated	31.00	-	-
26	Own funds and eligible liabilities (as a percentage of total exposure measure)	9.71	8.96	-
EU 26a	of which: Own funds and subordinated	8.96	-	-
27	CET1 (as a percentage of TREA) available after meeting the resolution group's requirements	7.05	7.05	-
28	Institution-specific combined buffer requirement	-	4.52	-
29	of which: 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	-
EU 32a	Memorandum items Total amount of excluded liabilities referred to in Article 72a(2) CRR	-	535,643	-

Main features of eligible liabilities instruments

A description of the main features of the Group's 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 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's eligible liabilities instruments do not include any eligible liability according to CRR Article 72b (3) or (4).

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	
4	Claims subordinated by virtue of a contractual subordination clause not specifying the pertinent rank (other than Additional Tier 1 or Tier 2 instruments)	Section 39 (2) of the Insolvency Code
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's own funds and eligible liabilities fall into these insolvency ranks as per below table EU TLAC3a based on German insolvency law. Liabilities fulfilling the MREL eligibility criteria as per CRR Art 72 are shown in the section "subset of liabilities and own funds less excluded liabilities that are own funds and liabilities potentially eligible for meeting MREL" and are issued out of the resolution entity Deutsche Bank AG.

EU TLAC3a – Creditor ranking

	Dec 31, 2022									
in € m.	1	2	3	4	5	6	7	8	9	Total
Description of insolvency rank	R1	R2	R3	R11	R12	R13	R14	R16	R17	
Liabilities and own funds	48,097	8,519	11,429	50,778	418,937	96,134	207,746	227,443	5,700	1,074,784
of which:										
Excluded liabilities	0	0	0	0	66,519	0	207,746	227,443	5,700	507,408
Liabilities and own funds less excluded liabilities	48,097	8,519	11,429	50,778	352,418	96,134	0	0	0	567,376
Subset of Liabilities and own funds less excluded liabilities that are own funds and liabilities potentially eligible for meeting TLAC/MREL	48,097	8,519	11,429	47,862	7,767	0	0	0	0	123,674
of which:										
Residual maturity ≥ 1 year < 2 years	0	0	99	5,436	1,461	0	0	0	0	0
Residual maturity ≥ 2 year < 5 years	0	0	3,660	21,428	4,135	0	0	0	0	0
Residual maturity ≥ 5 years < 10 years	0	0	6,505	13,850	1,244	0	0	0	0	0
Residual maturity ≥ 10 years, but excluding perpetual securities	0	0	1,156	7,142	926	0	0	0	0	0
Perpetual securities	48,097	8,519	0	0	0	0	0	0	0	56,616

	Jun 30, 2022									
in € m.	1	2	3	4	5	6	7	8	9	Total
Description of insolvency rank	R1	R2	R3	R11	R12	R13	R14	R16	R17	
Liabilities and own funds	47,932	7,268	11,625	53,540	382,326	97,128	204,747	268,878	20,993	1,094,439
of which:										
Excluded liabilities	0	0	0	0	41,026	0	204,747	268,878	20,993	535,643
Liabilities and own funds less excluded liabilities	47,932	7,268	11,625	53,540	341,300	97,128	0	0	0	558,795
Subset of Liabilities and own funds less excluded liabilities that are own funds and liabilities potentially eligible for meeting TLAC/MREL	47,932	7,268	11,625	47,864	9,552	0	0	0	0	124,242
of which:										
Residual maturity ≥ 1 year < 2 years	0	0	1,602	3,297	4,888	0	0	0	0	9,787
Residual maturity ≥ 2 year < 5 years	0	0	2,216	22,367	2,947	0	0	0	0	27,530
Residual maturity ≥ 5 years < 10 years	0	0	5,656	14,845	1,030	0	0	0	0	21,531
Residual maturity ≥ 10 years, but excluding perpetual securities	0	0	2,152	7,355	687	0	0	0	0	10,194
Perpetual securities	47,932	7,268	0	0	0	0	0	0	0	55,201

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 capitalisation 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 risk types (e.g. credit, market, operational) 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 materialise 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 behaviour 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 the derivative counterparty exposures as well as securities financing transactions (SFT), internal model method (IMM) is used in accordance with the CRR
- Market risks are measured by internally developed risk metrics (as approved by the 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 securitisations 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 the 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; the 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 the 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; capital supply is defined 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 the business planning processes via risk strategy and plan, and promotes the appropriate alignment of risk, capital and performance targets; compliance of the plan with risk appetite and capacity is also tested under stressed market conditions; risk metrics that are sensitive to the material risks to which Deutsche Bank is exposed, and which function as indicators of financial health are assigned; in addition to that, risk and recovery management governance are linked 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 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 the 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 the Group's strategy, business and regulatory environment and stakeholders' requirements

- Capital planning: Deutsche Bank's capital management steers the bank's capital stack and capital demand in the short, middle and long term, specifically via the strategic and capital plan, the rolling forecast, and the downside and countermeasures analysis process; the 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 behaviour 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 finalised 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 Group Risk Committee (GRC) and Asset and Liability Committee (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 Deutsche 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; the 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; 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

Deutsche Bank calculates economic capital for counterparty risk, transfer risk and settlement risk as elements of credit risk. In line with the bank's 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.

The Group's 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, where loss-given-default is stochastic. 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 the own alpha factor when deriving the exposure at default for derivatives and securities financing transactions under the Basel 3 Internal Models Method (IMM). The bank allocates expected losses and economic capital derived from loss distributions down to transaction level to enable management on transaction, customer and business level.

Deutsche Bank's 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. 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 (the model uses 41 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 $(K + 1) \times (K + 1)$ 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 $\alpha = 99.9\%$. 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 largely consistent with the best-estimate components of the parameters used for regulatory reporting, with the exception of those for derivatives exposure.

Market risk economic capital model

Economic capital for market risk measures the amount of capital needed to absorb very severe, unexpected losses arising from 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)

Deutsche Bank's 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.

The Group continuously assesses and refines its 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 its 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, and bond equivalent market value, i.e. default exposure at 0 % recovery. In order to capture diversification and concentration effects the bank performs 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 the Group's trading units, in the 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 its economic capital demands 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 % confidence level.

Strategic risk economic capital model

The strategic risk category captures the economic capital arising from earnings volatility risk (which also includes potential losses from software assets), tax redetermination risk, and a capital charge for the risk related to deferred tax assets on temporary differences.

The earnings volatility risk economic capital model, formerly referred as strategic risk 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 the 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. Potential cost increases related to software assets are also modelled. The resulting earnings distribution for the Group is used to derive the economic capital amount, which is held to protect against potential operating losses covering twelve months with a confidence level of 99.9%, in line with the general economic capital definition.

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 charge to account for the risk of deferred tax assets on temporary differences mirrors regulatory treatment and is incorporated through an economic capital placeholder.

Risk type diversification

The economic capital model for risk type diversification and aggregation is a key component of Deutsche Bank's economic capital framework. The purpose of the risk type diversification and aggregation model is to reflect the diversification effects across all risk types, resulting in the diversified economic capital at group level. The risk type diversification and aggregation 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)

The 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.

The bank assesses capital adequacy from an economic perspective as the ratio of economic capital supply divided by 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 239% as of December 31, 2022, compared with 206% as of December 31, 2021. The improvement in the ratio was due to a decrease in economic capital demand and an increase in economic capital supply.

Total economic capital supply and demand

in € m.

(unless stated otherwise)

	Dec 31, 2022	Dec 31, 2021
Components of economic capital supply		
Shareholders' equity	61,959	58,027
Noncontrolling interests ¹	897	858
AT1 coupons deduction	(319)	(298)
Gain on sale of securitizations, cash flow hedges	790	42
Fair value gains on own debt and debt valuation adjustments, subject to own credit risk	(190)	(56)
Additional valuation adjustments	(2,026)	(1,812)
Intangible assets	(3,677)	(3,583)
IFRS deferred tax assets excl. temporary differences	(3,937)	(1,653)
Expected loss shortfall	(466)	(573)
Defined benefit pension fund assets	(1,176)	(991)
Other adjustments	(1,864)	(1,492)
Economic capital supply	49,989	48,470
Components of economic capital demand		
Credit risk	11,802	11,725
Market risk	6,355	7,920
Operational risk	4,668	4,937
Strategic risk	1,854	3,173
Diversification benefit	(3,778)	(4,213)
Total economic capital demand	20,900	23,542
Economic capital adequacy ratio	239 %	206 %

¹ Includes noncontrolling interest up to the economic capital requirement for each subsidiary.

The economic capital supply increased by € 1.5 billion compared to year-end 2021 mainly driven by higher shareholders' equity of € 3.9 billion. The increase in shareholders' equity was due to net income of € 5.5 billion, which was partly offset by higher unrealized losses of € 1.3 billion and share buybacks of € 0.3 billion. This positive impact was partly offset by higher capital deduction of € 2.3 billion related to a valuation adjustment for IFRS deferred tax assets excl. temporary differences.

The economic capital demand decreased by € 2.6 billion due to lower market risk, strategic risk, and operational risk. The decrease in market risk of € 1.6 billion was mainly due to lower credit and wholesale loan inventory in the Investment Bank and reduced credit exposure in the Group's defined benefit pension plan assets, lower equity risk arising from the share-based compensation plans and a decrease in rates exposure from Treasury funding activities. The decrease in strategic risk of € 1.3 billion reflected the implementation of a model enhancement for software assets, lower deferred tax assets on temporary differences and a decrease in tax re-determination risk. The decrease in operational risk of € 0.3 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 higher counterparty and settlement risk, which was partially offset by lower transfer risk. The inter-risk diversification benefit across credit, market, operational and strategic risk decreased by € 0.4 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 RWA and 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 minimum capital requirements, which is derived by multiplying the respective RWA by an 8% capital ratio.

EU OV1 – Overview of RWA

		Dec 31, 2022		Sep 30, 2022	
		a	c1	b	c2
in € m.		RWA	Minimum capital requirements	RWA	Minimum capital requirements
1	Credit risk (excluding CCR)	219,190	17,535	225,911	18,073
	of which:				
2	The standardized approach (SA)	17,956	1,436	20,057	1,605
3	The foundation IRB (FIRB) approach	1,159	93	1,428	114
4	Slotting approach	601	48	626	50
EU 4a	Equities under the simple riskweighted approach	9,074	726	9,967	797
5	The advanced IRB (AIRB) approach	190,400	15,232	193,832	15,507
6	Counterparty credit risk (CCR)	29,997	2,400	33,103	2,648
	of which:				
7	The standardized approach	2,216	177	2,743	219
8	Internal model method (IMM)	19,251	1,540	22,614	1,809
EU 8a	Risk exposure to a CCP	975	78	827	66
EU 8b	Credit Valuation Adjustment (CVA)	6,184	495	5,586	447
9	Other CCR	1,370	110	1,333	107
15	Settlement risk	124	10	110	9
16	Securitization exposures in the banking book (after the cap)	13,092	1,047	13,519	1,082
	of which:				
17	SEC-IRBA approach	7,136	571	7,127	570
18	SEC-ERBA (including IAA)	678	54	677	54
19	SEC-SA approach	5,015	401	5,383	431
EU 19a	1250% / deduction	263	21	332	27
20	Market risk	26,131	2,090	24,667	1,973
	of which:				
20	Standardized approach	2,857	229	3,337	267
21	IMA	23,274	1,862	21,330	1,706
EU 22a	Large exposures	0	0	0	0
23	Operational risk	58,349	4,668	58,467	4,677
	of which:				
EU 23a	Basic indicator approach	0	0	0	0
EU 23b	Standardized approach	0	0	0	0
EU 23c	Advanced measurement approach	58,349	4,668	58,467	4,677
	Amounts below the thresholds for deduction (subject to 250% risk weight)	13,120	1,050	13,433	1,075
29	Total	360,003	28,800	369,210	29,537

As of December 31, 2022, RWA was € 360.0 billion compared to € 369.2 billion as of September 30, 2022. The decrease of € 9.2 billion was primarily driven by the RWA for credit risk (excluding counterparty credit risk), RWA for counterparty credit risk and RWA for securitization exposures in the banking book (after cap), which was partially offset by increased RWA for market risk.

The decrease in credit risk RWA (excluding counterparty credit risk) by € 6.7 billion was mainly driven by the decrease of € 3.4 billion in the advanced IRB approach which is mainly stemming from foreign exchange movements and improved counterparty ratings, partly offset by the introduction of new EBA guidelines and growing client demand in Deutsche Bank's core businesses. Additionally, the RWA under standardized approach decreased by € 2.1 billion mainly due to decreases in the exposure classes corporates and collective investment undertakings. Furthermore, RWA for equities under simple risk weighted approach decreased by € 1.3 billion due to lower exposures in other equities. The decrease of € 3.1 billion for counterparty credit risk RWA was mainly driven by the decreases of € 3.4 billion for the internal model method and € 0.5 billion for the standardized approach due to a reduction in trading activities as part of balance sheet management and foreign exchange movements. These decreases were partly offset by the increase of € 0.6 billion for credit valuation adjustment primarily driven by business activities and additionally from processing of underlying trades. The RWA for securitization exposures in the banking book (after the cap) decreased by € 0.4 billion mainly driven by lower RWA for the securitization under the standardized approach.

The aforementioned decreases were partly offset by an increase of € 1.5 billion for market risk RWA primarily driven by the SVaR component due to changes in rates and foreign exchange exposures across Investment Bank which led to a change in the market data window to the Lehman crisis period, following the regular stress period selection review.

The movements of RWA for credit, credit valuation adjustment, market and operational risk are discussed below in sections "Development of credit risk RWA", "CCR exposures development", "CCR CVA capital charge", "Development of market risk RWA" and "Operational risk measurement".

Leverage ratio

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. This additional requirement will equal 0.75% for Deutsche Bank.

The calculation of the leverage ratio exposure is in accordance with Articles 429 to 429g of the CRR.

The 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 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.

Deutsche Bank manages its balance sheet on a Group level and, where applicable, locally in each region. In the allocation of financial resources the Group favors business portfolios with the highest positive impact on its profitability and shareholder value. The Group monitors and analyzes balance sheet developments and tracks certain market observed balance sheet ratios. Based on this, the Group triggers discussions and management action by the Group Risk Committee.

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 reported in the IFRS financial statements to the leverage ratio exposure. The leverage ratio common disclosure table EU LR2 presents the components of the leverage exposure, the Tier 1 Capital and the leverage ratio 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 “Capital” 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

		a	a
	in € bn. (unless stated otherwise)	Dec 31, 2022	Jun 30, 2022
1	Total assets as per published financial statements	1,337	1,387
2	Adjustment for entities which are consolidated for accounting purposes but are outside the scope of prudential consolidation	2	2
3	(Adjustment for securitised 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))	0	0
5	(Adjustment for fiduciary assets recognised 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)	(20)
7	Adjustment for eligible cash pooling transactions	16	18
8	Adjustment for derivative financial instruments	(171)	(176)
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)	129	127
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	(58)	(56)
13	Total exposure measure	1,240	1,280

N/M – Not meaningful

EU LR2 – LRCom: Leverage ratio common disclosure

	a	b
in € bn. (unless stated otherwise)	Dec 31, 2022	Jun 30, 2022
On-balance sheet exposures (excluding derivatives and SFTs)		
1 On-balance sheet items (excluding derivatives, SFTs, but including collateral)	945	977
2 Gross-up for derivatives collateral provided, where deducted from the balance sheet assets pursuant to the applicable accounting framework	0	0
3 (Deductions of receivables assets for cash variation margin provided in derivatives transactions)	(33)	(40)
4 (Adjustment for securities received under securities financing transactions that are recognised 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)	(11)	(10)
7 Total on-balance sheet exposures (excluding derivatives and SFTs)	896	922
Derivative exposures		
8 Replacement cost associated with SA-CCR derivatives transactions (ie net of eligible cash variation margin)	56	53
EU-8a Derogation for derivatives: replacement costs contribution under the simplified standardised approach	N/M	N/M
9 Add-on amounts for potential future exposure associated with SA-CCR derivatives transactions	77	80
EU-9a Derogation for derivatives: Potential future exposure contribution under the simplified standardised 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)	(18)	(7)
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	716	580
12 (Adjusted effective notional offsets and add-on deductions for written credit derivatives)	(700)	(559)
13 Total derivatives exposures	130	148
Securities financing transaction (SFT) exposures		
14 Gross SFT assets (with no recognition of netting), after adjustment for sales accounting transactions	229	228
15 (Netted amounts of cash payables and cash receivables of gross SFT assets)	(139)	(139)
16 Counterparty credit risk exposure for SFT assets	6	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	96	94
Other off-balance sheet exposures		
19 Off-balance sheet exposures at gross notional amount	370	371
20 (Adjustments for conversion to credit equivalent amounts)	(241)	(245)
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	128	126
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	56.6	55.2
24 Total exposure measure	1,240	1,280
Leverage ratio		
25 Leverage ratio (in %)	4.6%	4.3%
EU-25 Leverage ratio (excluding the impact of the exemption of public sector investments and promotional loans) (%)	4.6%	4.3%
25a Leverage ratio (excluding the impact of any applicable temporary exemption of central bank reserves) (%)	4.6%	4.3%
26 Regulatory minimum leverage ratio requirement (%)	3.0%	3.0%
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 (%)	3.0%	3.0%

		a	b
in € bn. (unless stated otherwise)		Dec 31, 2022	Jun 30, 2022
Choice on transitional arrangements and relevant exposures			
EU-27b	Choice on transitional arrangements for the definition of the capital measure	Transitional	Transitional
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	119	135
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	90	89
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)	1,269	1,326
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)	1,269	1,326
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)	4.5%	4.2%
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)	4.5%	4.2%

N/M – Not meaningful

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

		a	a
in € bn. (unless stated otherwise)		Dec 31, 2022	Jun 30, 2022
EU-1	Total on-balance sheet exposures (excluding derivatives, SFTs, and exempted exposures)	896	921
of which:			
EU-2	Trading book exposures	100	116
EU-3	Banking book exposures	796	806
of which:			
EU-4	Covered bonds	0	0
EU-5	Exposures treated as sovereigns	229	230
EU-6	Exposures to regional governments, MDB, international organizations and PSE, not treated as sovereigns	1	1
EU-7	Institutions	11	12
EU-8	Secured by mortgages of immovable properties	218	220
EU-9	Retail exposures	33	35
EU-10	Corporates	222	227
EU-11	Exposures in default	10	10
EU-12	Other exposures (e.g. equity, securitizations, and other non-credit obligation assets)	72	72

Process used to manage the risk of excessive leverage

Article 451 (1)(d) CRR and EU LRA

The Group Risk Committee is mandated to oversee, control and monitor integrated planning of the Group's 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
- Support business achievement of strategic performance plans
- Provide a firm basis for achieving the target leverage ratio
- Incentivize businesses to make appropriate decisions on its portfolios, with consideration to asset maturity and encumbrance amongst others
- Maintain risk and leverage exposure discipline

The governance framework ensures that the leverage exposure capacity is carefully decided to reach the Group's external leverage ratio target and avoids an excessive leverage of the bank and its divisions. The resulting leverage exposure limits include all assets including those inflating the Group's balance sheet through asset encumbrance. In the case of divisions exceeding its 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 2022

Article 451 (1)(e) CRR and EU LRA

As of December 31, 2022, the leverage ratio was 4.6% compared to 4.3% as of June 30, 2022. This takes into account a Tier 1 capital of € 56.6 billion over an applicable exposure measure of € 1,240 billion as of December 31, 2022 (€ 55.2 billion and € 1,280 billion as of June 30, 2022, respectively).

In the second half of 2022 the leverage exposure decreased by € 39 billion to € 1,240 billion, largely driven by the leverage exposure for the asset items not related to derivatives and SFTs which decreased by € 25 billion. This mainly reflects the development of the balance sheet: non-derivative trading assets decreased by € 11 billion and loans decreased by € 9 billion. Pending settlements were € 1 billion lower on a net basis despite being € 9 billion lower on a gross basis due to seasonally low year-end levels. The remaining asset items decreased by € 5 billion, largely related pending securities transactions past settlement date. These decreases were partly offset by cash and central bank/interbank balances which increased by € 1 billion. In addition, the leverage exposure related to derivatives decreased by € 18 billion. Off-balance sheet leverage exposures increased by € 2 billion corresponding to an updated treatment for certain guarantees. 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. The € 1 billion reduction in Asset amounts deducted in determining Tier 1 capital mainly reflects higher capital deductions for deferred tax assets.

The increase in leverage exposure in the second half 2022 included a negative foreign exchange impact of € 15 billion, mainly due to the weakening 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.

Risk management objectives and policies

Enterprise Risk

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 the Group worldwide.

Accountability of senior management is ensured through transparency of its 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

Deutsche Bank's 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 the bank's planned and actual risk taking with its risk appetite as expressed by the Management Board, while being in line with the Group's available capital and liquidity.

Deutsche Bank's 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 the bank's 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

The Group promotes 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 the risk appetite of the bank. The bank expects employees to exhibit behaviors that support a strong risk culture in line with the bank's Code of Conduct. To promote this, Deutsche Bank's policies require that risks taken (including against risk appetite) must be taken into account during the bank's performance assessment and compensation processes. This expectation continues to be reinforced through communications campaigns and mandatory training courses for all DB employees. In addition, 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

Deutsche Bank's operations throughout the world are regulated and supervised by relevant authorities in each of the jurisdictions in which the bank conducts business. Such regulation focuses on licensing, capital adequacy, liquidity, risk concentration, conduct of business as well as organizational and reporting requirements. 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 Deutsche Bank's primary supervisors to monitor the bank's compliance with the German Banking Act and other applicable laws and regulations.

Several layers of management provide cohesive risk governance:

Deutsche Bank's Supervisory Board is informed regularly on the 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; 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 Regulatory Oversight Committee, among other responsibilities, monitors the Management Board's measures that promote the company's compliance with legal requirements, authorities' regulations and the company's own policies; it also reviews the Bank's codes of conduct and ethics as well as its policy framework, and, upon request, supports the Risk Committee in monitoring and analyzing the Bank's legal and reputational risks; the Management Board informs the Committee about contacts with Regulators with a significant relevance for the business activity
- The Audit Committee, among other matters, monitors the effectiveness of the risk management system, particularly the internal control system and the internal audit system; it also monitors the Management Board's remediation of deficiencies identified

The Management Board established the Group Risk Committee as the central forum for review and decision on material risk and capital-related topics. The Group Risk Committee has various duties and dedicated authority, including approval of new or changed material 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 Group Risk Committee 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 Group Risk Committee also supports the Management Board during Group-wide risk and capital planning processes.

The Group Risk Committee has delegated some of its duties to sub-committees as follows:

- The Non-Financial Risk Committee 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 is responsible for the oversight, governance and coordination of reputational risk management and provides for a look-back and a lessons learnt process; matters are referred to the Group Reputational Risk Committee in exceptional circumstances – this may be the case if a matter is declined by the Regional Reputational Risk Committee and appealed by the business division, or if the Regional Reputational Risk Committee cannot reach a two-thirds majority decision; it provides guidance on Group-wide reputational risk matters, including communication of sensitive topics, to the appropriate levels of Deutsche Bank Group; the Regional Reputational Risk Committees which are sub-committees of the Group Reputational Risk Committee, 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 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 Enterprise Risk Committee 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; it oversees the climate and environmental risk framework
- 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 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 Financial Resource Management Council 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 Financial Resource Management Council 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 overseeing the 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.

Deutsche Bank's 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 Chief Risk Office function. Risk management and control duties in the Chief Risk Office 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 and their business units
- 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
- Develop and implement risk and capital management infrastructures and systems that are appropriate for each division.

Chief Risk Officers for each business division as well as each region challenge and influence the divisional and regional strategies, risk awareness and ownership as well as their adherence to risk appetite.

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).

The Risk Committee of the Supervisory Board held 6 meetings in 2022.

The Group Risk Committee held 44 meetings in 2022.

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 function establishes strategies and processes to manage most 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.

Enterprise Risk Management is also responsible for defining a bank-wide framework for risk management, 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 Enterprise Risk Management 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 Deutsche Bank's 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 the bank's 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.

Deutsche Bank's 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 the bank's risk profile and financial position. The stress testing framework comprises regular, sensitivity-based and scenario-based approaches addressing different severities and regional hotspots. The Group includes all material risk types in its 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 the regulators at group or legal entity level. The results of the stress tests also inform the bank's recovery planning. The bank's 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), 2(e) CRR (EU OVA)

Deutsche Bank's 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. The Group's 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, material asset classes, 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 and the Group Risk Committee, 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 report is a Cross-Risk report, provides a comprehensive view of Deutsche Bank's risk profile and is used to inform the Enterprise Risk Committee, the Group Risk Committee as well as the Management Board and subsequently the Risk Committee of the Supervisory Board; the Risk and Capital Profile 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 is a weekly briefing covering high-level topical issues across key risk areas and is submitted every Friday to the Members of the Enterprise Risk Committee, the Group Risk Committee and the Management Board and subsequently to the Members of the Risk Committee of the Supervisory Board; the Weekly Risk Report 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 the bank's stress loss appetite; in addition, there are topical scenarios which are reported to

and discussed in the Enterprise Risk Committee and escalated to the Group Risk Committee 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.

Concise risk statement approved by the board

Article 435 (1)(f) CRR (EU OVA & EU LIQA)

Deutsche Bank's 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.

The Group's business model inherently involves taking risks. Risk types as reflected in the 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 the bank's planned and actual risk taking with the risk appetite as expressed by the Management Board, while being in line with the bank's available capital and liquidity. Deutsche Bank's 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 the business planning processes via the bank's 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 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 business divisions as measured by economic capital calculated for credit, market, operational and strategic risk.

Risk profile of Deutsche Bank's business divisions as measured by economic capital

								Dec 31, 2022	
in € m. (unless stated otherwise)	Corporate Bank	Investment Bank	Private Bank	Asset Management	Capital Release Unit	Corporate & Other	Total	Total	Total
								(in %)	(in %)
Credit risk	2,760	4,259	2,344	53	194	2,192	11,802		56
Market risk	343	1,177	662	180	108	3,886	6,355		30
Operational risk	424	1,852	611	273	1,507	0	4,668		22
Strategic risk	0	0	0	0	0	1,854	1,854		9
Diversification benefit ¹	(440)	(1,308)	(543)	(162)	(758)	(567)	(3,778)		(18)
Total EC	3,088	5,980	3,073	344	1,051	7,365	20,900		100
Total EC in %	15	29	15	2	5	35	100		N/M

N/M – Not meaningful

¹ Diversification benefit across credit, market, operational and strategic risk

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. Investment Bank's risk profile is dominated by its financing and trading activities, which give rise to all major risk types. Credit risk in the 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. 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 risks, which arise from guaranteed 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, equity compensation risk

and interest rate risk from Treasury, credit risk from Treasury's investments, as well as strategic risk from tax redetermination risk, software assets-related risks and a capital charge related 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

in € bn.	Dec 31, 2022			Dec 31, 2021		
	Funding Gap ¹	Gap Closure ²	Net Liquidity Position	Funding Gap ¹	Gap Closure ²	Net Liquidity Position
Systemic market risk	120	234	114	100	215	115
1 notch downgrade (DB specific)	90	234	145	78	215	137
Severe downgrade (DB specific)	154	251	97	152	235	84
Combined ^{3, 4}	205	254	48	195	239	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

⁴ December 2021 sNLP has been updated from € 47.6 billion to € 43.3 billion due to a model change for a product variant in the Investment bank portfolio; this primarily impacts the EUR sNLP which was restated from €21 billion to €18 billion

As part of the stress testing and scenario analysis the business portfolios are categorized under various liquidity risk drivers and appropriate models are defined for each of the liquidity risk drivers 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 reduced further in 2022. Group Treasury raises funding primarily from long-term debt issuance, participation in central bank money market operations 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.

Credit risk and credit risk mitigation

General qualitative information on credit risk

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 Deutsche Bank refers to collectively as “counterparties”) exist, including those claims that Deutsche Bank plans to distribute; these transactions are typically part of the bank’s non-trading lending activities (such as loans and contingent liabilities) as well as the bank’s 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 the bank’s Credit Risk section. Deutsche Bank manages the respective positions within the bank’s 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 leading to a disproportionate deterioration in the risk profile of Deutsche Bank’s credit exposures to that counterparty, country, industry or product

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

The credit rating is an essential part of the bank’s underwriting and credit process and provides – amongst others – a cornerstone 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 to keep ratings up-to-date. A credit rating is a prerequisite for any credit limit established/ approved. 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 specific product types, central governments and central banks, institutions, corporates and retail.

Counterparties in the bank’s non-homogenous portfolios are rated by Deutsche Bank’s independent Credit Risk Management function. Country risk ratings are provided by Enterprise Risk Management Risk Research.

Deutsche Bank’s rating analysis is based on a combination of qualitative and quantitative factors. When rating a counterparty Deutsche Bank applies in-house assessment methodologies, scorecards and the bank’s 21-grade rating scale for evaluating the creditworthiness of the bank’s counterparties.

Deutsche Bank measures 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 the bank’s regulator.

The advanced Internal Ratings Based Approach (IRBA) is the most sophisticated approach available under the regulatory framework for credit risk and allows Deutsche Bank to make use of the bank’s 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), Deutsche Bank makes use of the internal model method (IMM) in accordance with the CRR in order to calculate EAD. For most of the bank’s internal rating systems more than seven years of historical information is available to assess these parameters. Deutsche Bank’s 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.

Deutsche Bank applies the standardized approach to a subset of the bank's 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. Deutsche Bank assigns 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, Deutsche Bank determines the internal capital demand for credit risk via an economic capital model.

Deutsche Bank calculates economic capital for the default risk, country risk and settlement risk as elements of credit risk. In line with the bank's 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. Deutsche Bank's 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 the bank's own alpha factor when deriving the exposure at default for derivatives and securities financing transactions under the CRR. Deutsche Bank allocates 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 Deutsche Bank applies for managing the bank's credit portfolio, including transaction approval and the setting of risk appetite, Deutsche Bank establishes credit limits for all credit exposures. Credit limits set forth maximum credit exposures Deutsche Bank is willing to assume over specified periods. In determining the credit limit for a counterparty, Deutsche Bank considers the counterparty's credit quality by reference to its 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, Deutsche Bank looks at current market values and the potential future exposure over the relevant time horizon which is based upon the bank's legal agreements with the counterparty. Deutsche Bank also takes 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

Deutsche Bank manages its credit risk using the following philosophy and principles:

- Credit Risk Management forms part of the 2nd LoD within DB Group's Three Lines of Defense model. Business as primary risk taker and owner forms the 1st LoD and Group Audit the 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 the bank's divisions, credit decision standards, processes and principles are consistently applied
- A key principle of credit risk management is client credit due diligence; Deutsche Bank's client selection is achieved in collaboration with the bank's business division counterparts who stand as a first line of defense
- Deutsche Bank aims 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 the bank's risk appetite
- Deutsche Bank maintains underwriting standards aiming to avoid large undue credit risk on a counterparty and portfolio level; in this regard Deutsche Bank extends also unsecured cash positions and actively use hedging for risk mitigation purposes; additionally, Deutsche Bank strives to secure its 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 within an established credit authority grid. Deutsche Bank assigns credit approval authorities to individuals according to their qualifications and experience, and Deutsche Bank reviews these periodically
- Deutsche Bank manages all its credit exposures to each obligor across the bank's consolidated Group on the basis of the "one obligor principle" (as required under Article 4(1)(39) CRR and related regulatory guidance), 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
 - Deutsche Bank has established within Credit Risk Management – where appropriate – specialized teams for deriving internal client ratings, analyzing and approving transactions, monitoring the specific portfolios or covering workout clients; for transaction approval purposes, structured credit risk management teams are aligned to the respective lending business areas to ascertain adequate product expertise
 - Where required, Deutsche Bank has established processes to manage credit exposures at a legal entity level
 - To meet the requirements of Article 190 CRR, 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".

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 Enterprise Risk Management and the credit risk unit 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 with information relating to the group credit risk profile are the following:

- The Key Risk Report focused on credit risk is the Credit Risk Appetite & Portfolio Management Report, issued monthly; this Key Risk Report holistically covers credit risk across Deutsche Bank Group; it 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 economic capital 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)

Deutsche Bank has 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.

Article 431 (5) CRR

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

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 for regulatory purposes. As a consequence, credit impaired financial assets (or Stage 3 financial assets) consist of two types of defaulted financial assets: financial assets where the Group expects an impairment loss and the amount is reflected in the allowance for credit losses and 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 the Group's impairment approach, the bank refers 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 the bank's 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 PD, LGD and 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

Table EU CR1-A provides the net credit exposures by maturities and exposure classes. The exposure amount includes on-balance sheet items, whereby the net exposure value is calculated by deducting credit risk adjustments from its gross carrying amount. The net exposure is split into the below 5 categories based on the residual contractual maturity of the instrument.

- On Demand – where the counterparty has a choice of when the amount is repaid
- Bucketing remaining maturity – 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 development 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, 2022					
		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	78,918	12,451	13,494	14,168	0	119,032
2	Institutions	6,241	2,778	2,783	1,186	0	12,988
3	Corporates	16,493	99,838	96,127	33,452	0	245,909
4	Retail	2,187	5,522	19,651	179,846	0	207,206
5	Equity	1,361	719	3	47	0	2,130
5a	Other non-credit obligation asset	3,305	2,714	752	4,789	0	11,561
6	Total IRB approach	108,505	124,022	132,810	233,488	0	598,826
7	Central governments or central banks	88,572	13,083	3,447	6,692	0	111,794
8	Regional governments or local authorities	125	1,675	324	327	0	2,450
9	Public sector entities	43	26	226	201	0	496
10	Multilateral development banks	0	0	406	209	0	615
11	International organizations	0	851	0	64	0	915
12	Institutions	25	18	0	3,173	0	3,216
13	Corporates	3,102	6,571	3,823	987	0	14,483
14	Retail	492	167	425	630	0	1,714
15	Secured by mortgages on immovable property	540	531	770	3,102	0	4,943
16	Exposures in default ¹	151	141	215	306	0	813
17	Items associated with particularly high risk	2	1	2	33	0	39
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	1	0	0	0	1
23	Total standardized approach	92,903	22,923	9,423	15,417	0	140,667
24	Total	201,408	146,945	142,234	248,905	0	739,493

		Jun 30, 2022					
		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	79,965	13,930	10,377	15,547	0	119,819
2	Institutions	6,183	4,406	1,586	1,233	0	13,408
3	Corporates	17,950	105,664	90,546	33,960	0	248,120
4	Retail	2,228	6,005	19,776	183,769	0	211,778
5	Equity	1,283	953	3	85	0	2,324
5a	Other non-credit obligation asset	3,970	2,703	720	4,282	0	11,675
6	Total IRB approach	111,578	133,661	123,010	238,876	0	607,124
7	Central governments or central banks	95,027	3,357	4,842	7,301	0	110,527
8	Regional governments or local authorities	27	2,225	334	347	0	2,933
9	Public sector entities	85	26	231	258	0	600
10	Multilateral development banks	0	48	426	218	0	692
11	International organizations	0	850	0	70	0	920
12	Institutions	147	24	1	2,666	0	2,838
13	Corporates	2,182	3,340	3,871	1,409	0	10,802
14	Retail	444	188	445	671	0	1,748
15	Secured by mortgages on immovable property						
		571	495	769	3,231	0	5,066
16	Exposures in default ¹	137	145	196	349	0	827
17	Items associated with particularly high risk	14	3	4	54	0	75
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	98,498	10,563	10,922	16,224	0	136,207
24	Total	210,076	144,223	133,932	255,100	0	743,332

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

The following 6 tables (EU CQ4, EU CQ5, EU CR1, EU CQ3, EU CR2 and EUCQ1) provide information on performing and non-performing exposures.

Relevant exposures are debt instruments (debt securities, loans, advances, demand deposits) as well as off-balance sheet exposures (loan commitments given, financial guarantees given and any other commitments) excluding those exposures held for trading.

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

An exposure is being classified as non-performing if it meets the non-performing criteria in Article 47a of the CRR and an exposure is classified as defaulted if it meets the definition of default as per Article 178 of the CRR. Exposures subject to impairment under IFRS 9 include debt instruments at amortized cost and fair value through OCI as well as off-balance sheet exposures.

Article 442 (c+e) CRR

Table EU CQ4 provides information about performing and non-performing exposures broken down by significant countries. For each reporting period Deutsche Bank considers the top 25 countries by exposure to be significant, as it represents more than 90% of the Group's total exposure. Immaterial exposures, with individual exposures being below € 4 billion, are included in "Other countries". The geographical distribution is based on the legal domicile of the counterparty or issuer.

EU CQ4 – Quality of non-performing exposures by geography

								Dec 31, 2022
		a	b	c	d	e	f	g
		Gross carrying/nominal amount						Accumulated negative changes in fair value due to credit risk on non- performing exposures
		of which non-performing					Provisions on off-balance- sheet commitments and financial guarantees	
in € m.				of which defaulted	of which subject to impairment	Accumulated impairment		
1	On-balance-sheet exposures¹	733,046	12,760	12,543	645,664	5,096	0	18
2	Australia	6,090	33	33	5,135	42	0	0
3	Austria	2,751	2	2	1,769	2	0	0
4	Belgium	2,130	16	16	2,099	5	0	0
5	Canada	6,766	0	0	2,267	8	0	0
6	Cayman Islands	29,072	149	149	11,161	15	0	0
7	China	4,768	48	48	4,463	15	0	0
8	France	14,660	156	156	6,940	27	0	0
9	Germany	262,076	3,895	3,745	259,036	2,202	0	0
10	Hong Kong	3,524	526	526	3,459	164	0	0
11	India	9,078	439	438	8,590	113	0	0
12	Ireland	9,123	595	539	7,106	124	0	0
13	Italy	35,745	1,111	1,110	35,257	821	0	0
14	Japan	10,051	108	108	3,630	10	0	0
15	Jersey	2,830	87	87	2,789	71	0	0
16	Luxembourg	17,927	73	73	17,254	33	0	0
17	Netherlands	11,846	174	174	11,376	49	0	13
18	Poland	5,248	69	65	5,098	29	0	1
19	Singapore	6,495	87	87	6,263	14	0	0
20	Spain	20,837	1,016	1,009	20,780	392	0	0
21	Sweden	1,770	59	59	1,130	6	0	0
22	Switzerland	8,250	440	440	8,035	39	0	0
23	Turkey	6,037	140	139	4,154	9	0	0
24	U.S.	158,239	1,412	1,412	134,765	418	0	0
25	United Kingdom	30,667	83	83	21,335	48	0	0
26	Virgin Islands, British	5,685	276	276	5,685	37	0	0
27	Other countries	61,382	1,766	1,766	56,089	405	0	4
28	Off-balance-sheet exposures	313,878	2,837	2,833	0	0	560	0
29	Australia	3,030	27	27	0	0	2	0
30	Austria	1,273	0	0	0	0	1	0
31	Belgium	2,272	13	13	0	0	1	0
32	Canada	2,319	0	0	0	0	4	0
33	Cayman Islands	2,542	12	12	0	0	0	0
34	China	1,972	0	0	0	0	0	0
35	France	9,438	18	18	0	0	4	0
36	Germany	94,501	445	442	0	0	140	0
37	Hong Kong	1,534	7	7	0	0	5	0
38	India	4,325	11	11	0	0	3	0
39	Ireland	3,621	1	1	0	0	3	0
40	Italy	8,901	19	19	0	0	19	0
41	Japan	1,200	43	43	0	0	1	0
42	Jersey	1,331	7	7	0	0	1	0
43	Luxembourg	7,901	84	84	0	0	4	0
44	Netherlands	10,744	181	181	0	0	34	0
45	Poland	976	4	4	0	0	0	0
46	Singapore	2,476	8	8	0	0	2	0
47	Spain	7,225	43	43	0	0	19	0
48	Sweden	2,243	5	5	0	0	1	0
49	Switzerland	10,772	3	3	0	0	6	0
50	Turkey	333	0	0	0	0	3	0
51	U.S.	102,592	1,235	1,235	0	0	212	0
52	United Kingdom	11,909	25	25	0	0	12	0
53	Virgin Islands, British	384	0	0	0	0	0	0
54	Other countries	18,064	644	644	0	0	83	0
55	Total	1,046,924	15,597	15,375	645,664	5,096	560	18

¹ The on-balance sheet exposure includes only debt securities and loans & advances

		Jun 30, 2022						
		a	b	c	d	e	f	g
		Gross carrying/nominal amount					Provisions on off-balance-sheet commitments and financial guarantees	Accumulated negative changes in fair value due to credit risk on non-performing exposures
		of which non-performing			of which subject to impairment	Accumulated impairment		
in € m.				of which defaulted	of which subject to impairment	Accumulated impairment		
1	On-balance-sheet exposures¹	751,064	12,802	12,781	664,687	5,057	0	18
2	Australia	5,646	118	118	5,208	36	0	0
3	Austria	2,451	2	2	1,516	6	0	0
4	Belgium	2,581	24	19	2,547	2	0	0
5	Canada	4,234	0	0	2,806	8	0	0
6	Cayman Islands	26,578	194	194	11,949	11	0	0
7	China	5,678	57	57	5,614	13	0	0
8	France	13,974	72	72	7,371	21	0	0
9	Germany	261,791	3,947	3,945	258,708	2,188	0	0
10	Hong Kong	3,909	547	547	3,835	110	0	0
11	India	11,310	459	459	10,571	115	0	0
12	Ireland	10,138	822	822	6,958	111	0	0
13	Italy	36,077	1,438	1,438	35,457	1,047	0	0
14	Japan	12,504	102	102	3,896	9	0	0
15	Jersey	3,316	55	55	3,280	37	0	0
16	Luxembourg	17,205	54	54	15,689	31	0	0
17	Netherlands	12,459	244	240	12,022	88	0	13
18	Poland	6,067	89	89	5,875	45	0	1
19	Singapore	6,579	96	96	6,449	17	0	0
20	Spain	21,393	1,065	1,060	21,348	387	0	0
21	Sweden	2,014	51	51	1,606	3	0	0
22	Switzerland	7,908	429	429	7,680	36	0	0
23	Turkey	6,669	139	139	4,753	13	0	0
24	U.S.	167,076	1,732	1,731	137,371	338	0	0
25	United Kingdom	36,268	74	74	27,897	62	0	0
26	Virgin Islands, British	6,455	106	106	6,455	25	0	0
27	Other countries	60,783	886	883	57,824 ²	297 ²	0	4
28	Off-balance-sheet exposures	312,025 ²	2,719	2,715	0	0	473	0
29	Australia	3,458	27	27	0	0	2	0
30	Austria	1,551	1	1	0	0	1	0
31	Belgium	2,665	20	20	0	0	5	0
32	Canada	2,619	0	0	0	0	3	0
33	Cayman Islands	1,691	12	12	0	0	0	0
34	China	2,469	0	0	0	0	0	0
35	France	8,961	1	1	0	0	4	0
36	Germany	95,557 ²	360	359	0	0	120	0
37	Hong Kong	1,542	58	58	0	0	4	0
38	India	4,079	10	10	0	0	3	0
39	Ireland	3,065	61	61	0	0	16	0
40	Italy	8,340	17	15	0	0	14	0
41	Japan	1,174	0	0	0	0	1	0
42	Jersey	875	7	7	0	0	1	0
43	Luxembourg	7,638 ²	103	103	0	0	6	0
44	Netherlands	11,643	248	248	0	0	35	0
45	Poland	628	0	0	0	0	0	0
46	Singapore	3,279	5	5	0	0	2	0
47	Spain	6,691	75	74	0	0	22	0
48	Sweden	2,095	5	5	0	0	1	0
49	Switzerland	10,635	3	3	0	0	5	0
50	Turkey	337	4	4	0	0	2	0
51	U.S.	102,699 ²	1,421	1,421	0	0	152	0
52	United Kingdom	10,596	29	29	0	0	11	0
53	Virgin Islands, British	386	0	0	0	0	0	0
54	Other countries	17,350 ²	252 ²	252 ²	0	0	60 ²	0
55	Total	1,063,088²	15,521	15,496	664,687	5,057	473	18

¹ The on-balance sheet exposure includes only debt securities and loans & advances

² Prior year's comparatives aligned to presentation in the current year

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

Article 442 (c+e) CRR

Table EU CQ5 provides information about performing and non-performing exposures to non-financial corporations broken down by industry. 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.

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

							Dec 31, 2022
	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	524	23	23	524	10	0
2	Mining and quarrying	2,440	70	70	2,400	32	0
3	Manufacturing	32,682	1,278	1,278	32,674	624	0
4	Electricity, gas, steam and air conditioning supply	6,878	51	51	6,803	42	0
5	Water supply	582	39	39	582	8	0
6	Construction	4,263	281	280	4,263	116	0
7	Wholesale and retail trade	22,916	764	763	22,877	437	0
8	Transport and storage	6,066	224	224	6,043	52	0
9	Accommodation and food service activities	1,968	117	117	1,968	66	0
10	Information and communication	8,033	143	143	7,970	121	0
11	Financial and insurance activities	39,160	969	969	38,869	535	0
12	Real estate activities	48,207	1,043	1,043	48,100	236	0
13	Professional, scientific and technical activities	9,533	186	186	9,529	87	0
14	Administrative and support service activities	8,842	536	467	8,651	143	0
15	Public administration and defense, compulsory social security	4,751	42	42	261	0	0
16	Education	249	4	4	249	3	0
17	Human health services and social work activities	4,502	83	83	4,502	26	0
18	Arts, entertainment and recreation	1,189	29	29	1,189	10	0
19	Other service activities	6,475	232	228	6,463	121	4
20	Total	209,260	6,114	6,039	203,918	2,668	4

							Jun 30, 2022
		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			of which loans and advances subject to impairment	Accumulated impairment	
			of which defaulted				
in € m.							
1	Agriculture, forestry and fishing	540	29	29	540	10	0
2	Mining and quarrying	2,851	40	40	2,812	25	0
3	Manufacturing	34,501	1,322	1,322	34,493	609	0
4	Electricity, gas, steam and air conditioning supply	5,021	168	168	5,021	68	0
5	Water supply	548	49	49	548	9	0
6	Construction	4,738	381	380	4,735	203	0
7	Wholesale and retail trade	24,760	824	824	24,736	457	0
8	Transport and storage	6,519	267	265	6,493	91	0
9	Accommodation and food service activities	2,127	136	136	2,127	71	0
10	Information and communication	8,521	144	144	8,518	109	0
11	Financial and insurance activities	36,967	1,101	1,101	36,129	384	0
12	Real estate activities	45,734	940	940	45,615	191	0
13	Professional, scientific and technical activities	9,458	197	192	9,458	105	0
14	Administrative and support service activities	9,101	418	418	9,031	119	0
15	Public administration and defense, compulsory social security	1,720	0	0	342	0	0
16	Education	271	5	5	271	3	0
17	Human health services and social work activities	4,460	95	95	4,435	28	0
18	Arts, entertainment and recreation	1,134	31	30	1,134	8	0
19	Other service activities	9,876	237	233	9,861	118	4
20	Total	208,847	6,383	6,370	206,301	2,610	4

¹ Comparatives aligned to current presentation

Performing and non-performing exposures and related provisions

Article 442 (c) CRR

Table EU CR1 provides information about performing and non-performing exposures broken down by Supervisory Reporting counterparty classes.

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

Dec 31, 2022

in € m.	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		
	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	non-performing exposures	non-performing exposures
Cash balances at central banks and other demand deposits	183,516	182,630	885	159	0	159	5	3	2	0	0	0	0	149	0
Loans and advances															
Central banks	6,850	2,769	0	0	0	0	0	0	0	0	0	0	0	5,482	0
General governments	15,794	14,088	418	862	0	862	5	5	0	8	0	8	0	3,503	797
Credit institutions	44,893	32,721	833	44	0	36	54	53	1	1	0	1	0	15,952	0
Other financial corporations	183,778	119,281	4,123	1,290	0	1,068	71	56	15	127	0	112	1	108,925	295
Non-financial corporations	203,146	174,994	22,969	6,114	19	5,370	490	229	261	2,181	1	2,064	98	110,511	2,321
of which: SMEs	31,153	25,244	5,884	1,512	1	1,363	88	27	60	600	0	597	15	21,940	576
Households	210,392	194,394	15,998	4,042	161	3,875	593	245	349	1,445	16	1,427	15	152,055	1,640
Total Loans and advances	664,853	538,246	44,340	12,352	180	11,212	1,214	588	626	3,761	17	3,612	113	396,427	5,052
Debt securities															
Central banks	1,479	1,479	0	0	0	0	0	0	0	0	0	0	0	0	0
General governments	41,124	39,694	98	19	0	19	16	14	1	10	0	10	0	100	0
Credit institutions	1,784	1,773	0	0	0	0	0	0	0	0	0	0	0	0	0
Other financial corporations	6,344	4,839	190	39	0	26	4	1	4	13	0	0	0	256	0
Non-financial corporations	4,701	2,362	122	350	0	326	19	13	6	76	0	76	0	1,839	193
Total Debt securities	55,433	50,147	411	408	0	370	40	28	11	99	0	86	0	2,195	193
Off-balance sheet exposures															
Central banks	62	61	1	0	0	0	0	0	0	0	0	0	0	12	0
General governments	6,676	6,591	85	328	0	328	3	2	0	2	0	2	0	131	2
Credit institutions	7,325	7,290	35	0	0	0	2	2	0	0	0	0	0	473	0
Other financial corporations	48,489	47,520	968	147	0	146	17	14	2	21	0	21	0	12,466	13
Non-financial corporations	217,146	201,268	15,878	2,304	4	2,292	200	117	83	270	0	270	0	20,984	519
Households	31,343	30,267	1,076	58	0	58	29	18	11	17	0	17	0	9,146	17
Total Off-balance sheet exposures	311,041	292,998	18,044	2,837	4	2,825	250	153	97	310	0	310	0	43,213	551
Total¹	1,214,843	1,064,021	63,680	15,755	184	14,565	1,509	773	736	4,170	17	4,007	113	441,985	5,797

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

Jun 30, 2022

in € m.	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		
	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	182,554	181,763	791	81	0	81	14	9	5	0	0	0	0	112	0
Loans and advances															
Central banks	6,646	2,762	47	0	0	0	0	0	0	0	0	0	0	5,571	0
General governments	19,409	15,743	1,683	98	0	98	11	5	6	5	0	5	0	4,929	91
Credit institutions	50,753	37,337	1,278	33	0	33	35	34	2	0	0	0	0	15,328	0
Other financial corporations	191,843	128,570	3,749	1,323	8	1,027	81	65	15	67	0	47	2	105,957	382
Non-financial corporations	202,463	177,684	22,391	6,383	19	5,617	477	218	259	2,137	1	2,027	115	100,353	2,488
of which: SMEs	30,462	24,987	5,447	1,391	8	1,219	79	22	57	573	0	567	3	21,160	527
Households	210,448	193,940	16,508	4,476	162	4,309	552	212	341	1,563	17	1,545	14	149,299	1,960
Total Loans and advances	681,562	556,035	45,657	12,314	189	11,084	1,156	533	623	3,773	17	3,624	131	381,437	4,921
Debt securities															
Central banks	835	835	0	0	0	0	0	0	0	0	0	0	0	0	0
General governments	43,160	41,114	98	19	0	19	23	23	1	9	0	9	0	0	0
Credit institutions	2,022	2,010	0	0	0	0	0	0	0	0	0	0	0	0	0
Other financial corporations	6,103	4,654	227	26	0	0	14	8	6	13	0	0	0	163	0
Non-financial corporations	4,579	1,519	68	443	0	366	22	21	1	65	0	65	0	37	260
Total Debt securities	56,700	50,132	392	488	0	386	59	52	7	87	0	74	0	200	260
Off-balance sheet exposures															
Central banks	122	120	2	0	0	0	1	1	0	0	0	0	0	17	0
General governments	2,942	2,586	356	2	0	2	2	1	1	0	0	0	0	139	0
Credit institutions	7,856	7,795	61	1	0	1	4	4	0	0	0	0	0	680	0
Other financial corporations	44,304	43,005	1,299	245	0	244	20	16	4	21	0	21	0	9,391	0
Non-financial corporations	212,677	198,063	14,613	2,376	0	2,351	209	127	83	179	0	179	0	21,796	447
Households	33,604	32,341	1,263	96	2	94	25	8	17	10	0	10	0	9,140	25
Total Off-balance sheet exposures	301,505	283,910	17,595	2,719	3	2,692	262	157	105	211	0	211	0	41,164	472
Total¹	1,222,321	1,071,840	64,435	15,602	191	14,242	1,491	751	740	4,071	17	3,910	131	422,913	5,653

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

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

Article 442 (c-d) CRR

Table EU CQ3 provides information about performing and non-performing exposures by days past due broken down by Supervisory Reporting counterparty classes.

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

	Dec 31, 2022											
	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	183,516	182,796	720	159	159	0	0	0	0	0	0	159
Loans and advances												
Central banks	6,850	6,850	0	0	0	0	0	0	0	0	0	0
General governments	15,794	15,794	0	862	862	0	0	0	0	0	0	862
Credit institutions	44,893	44,893	0	44	44	0	0	0	0	0	0	44
Other financial corporations	183,778	183,628	151	1,290	1,204	4	1	1	8	71	1	1,290
Non-financial corporations	203,146	202,829	316	6,114	4,324	342	237	393	453	85	281	6,039
of which:												
SME's	31,153	31,102	51	1,512	873	54	114	120	182	53	117	1,511
Households	210,392	209,691	701	4,042	2,088	280	425	497	554	74	123	3,900
Total Loans and advances	664,853	663,685	1,168	12,352	8,521	627	663	891	1,016	231	404	12,135
Debt securities												
Central banks	1,479	1,479	0	0	0	0	0	0	0	0	0	0
General governments	41,124	41,124	0	19	19	0	0	0	0	0	0	19
Credit institutions	1,784	1,784	0	0	0	0	0	0	0	0	0	0
Other financial corporations	6,344	6,344	0	39	39	0	0	0	0	0	0	39
Non-financial corporations	4,701	4,701	0	350	163	0	186	0	0	0	0	350
Total Debt securities	55,433	55,433	0	408	221	0	186	0	0	0	0	408
Off-balance sheet exposures												
Central banks	62	0	0	0	0	0	0	0	0	0	0	0
General governments	6,676	0	0	328	0	0	0	0	0	0	0	328
Credit institutions	7,325	0	0	0	0	0	0	0	0	0	0	0
Other financial corporations	48,489	0	0	147	0	0	0	0	0	0	0	147
Non-financial corporations	217,146	0	0	2,304	0	0	0	0	0	0	0	2,299
Households	31,343	0	0	58	0	0	0	0	0	0	0	58
Total Off-balance sheet exposures	311,041	0	0	2,837	0	0	0	0	0	0	0	2,833
Total¹	1,214,843	901,914	1,887	15,755	8,901	627	850	891	1,016	231	404	15,534

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

Jun 30, 2022

	Performing exposures											Non-performing exposure	
	a	b	c	d	e	f	g	h	i	j	k	l	
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	182,554	182,026	528	81	81	0	0	0	0	0	0	81	
Loans and advances													
Central banks	6,646	6,646	0	0	0	0	0	0	0	0	0	0	
General governments	19,409	19,409	0	98	97	0	0	0	1	0	0	98	
Credit institutions	50,753	50,753	0	33	33	0	0	0	0	0	0	33	
Other financial corporations	191,843	191,700	143	1,323	1,216	3	3	8	93	0	1	1,316	
Non-financial corporations	202,463	202,250	213	6,383	4,348	399	256	360	509	159	353	6,370	
of which:													
SME's	30,462	30,434	28	1,391	781	41	48	117	200	86	118	1,383	
Households	210,448	209,998	450	4,476	2,326	311	440	535	550	113	201	4,476	
Total Loans and advances	681,562	680,756	805	12,314	8,020	713	699	902	1,152	272	555	12,293	
Debt securities													
Central banks	835	835	0	0	0	0	0	0	0	0	0	0	
General governments	43,160	43,160	0	19	19	0	0	0	0	0	0	19	
Credit institutions	2,022	2,022	0	0	0	0	0	0	0	0	0	0	
Other financial corporations	6,103	6,103	0	26	26	0	0	0	0	0	0	26	
Non-financial corporations	4,579	4,538	41	443	250	193	0	0	0	0	0	443	
Total Debt securities	56,700	56,658	41	488	295	193	0	0	0	0	0	488	
Off-balance sheet exposures													
Central banks	122	0	0	0	0	0	0	0	0	0	0	0	
General governments	2,942	0	0	2	0	0	0	0	0	0	0	2	
Credit institutions	7,856	0	0	1	0	0	0	0	0	0	0	1	
Other financial corporations	44,304	0	0	245	0	0	0	0	0	0	0	245	
Non-financial corporations	212,677	0	0	2,376	0	0	0	0	0	0	0	2,371	
Households	33,604	0	0	96	0	0	0	0	0	0	0	96	
Total Off-balance sheet exposures	301,505	0	0	2,719	0	0	0	0	0	0	0	2,715	
Total¹	1,222,321	919,441	1,374	15,602	8,396	906	699	902	1,152	272	555	15,576	

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

Development of non-performing loans and advances

Article 442 (f) CRR

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

		Dec 31, 2022	Jun 30, 2022
		a	a
		Gross carrying amount	Gross carrying amount
in € m.			
1	Initial stock of non-performing loans and advances	12,314	12,621
2	Inflows to non-performing portfolios	3,557	2,629
3	Outflows from non-performing portfolios	(3,518)	(2,937)
4	Outflows due to write-offs	(601)	(442) ²
5	Outflow due to other situations ¹	(2,918)	(2,495) ²
6	Final stock of non-performing loans and advances	12,352	12,314

¹ Inflows and outflows include restructurings and modifications.

² Comparatives aligned to current presentation

Credit quality of forborne exposures

Article 442 (c) CRR

Exposures are being classified as forborne according to the criteria in Article 47b of the CRR. Of the total forborne exposures of € 13 billion included in the table below, € 3.2 billion is related to COVID-19 related forbearance measures, of which more than 88% is performing.

EU CQ1 – Credit quality of forborne exposures

		Dec 31, 2022								
		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		
		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	
in € m.										
Cash balances at central banks and other demand deposits		0	0	0	0	0	0	0	0	0
Loans and advances		6,681	4,432	4,337	4,244	75	1,205	6,642	1,943	
Central banks		0	0	0	0	0	0	0	0	
General governments		105	0	0	0	0	0	100	0	
Credit institutions		0	8	8	8	0	0	0	0	
Other financial corporations		200	440	440	440	1	30	376	189	
Non-financial corporations		4,716	2,796	2,716	2,623	46	836	4,413	1,162	
Households		1,660	1,188	1,174	1,174	28	339	1,753	591	
Debt securities		16	186	186	186	0	0	202	186	
Loan commitments given		1,316	365	361	361	9	55	338	74	
Total¹		8,013	4,983	4,885	4,792	84	1,261	7,182	2,203	

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

								Jun 30, 2022							
								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		
								Performing forborne	Non- performing forborne	Non- performing forborne, of which defaulted	Non- performing forborne, of which impaired	on performing forborne exposures	on non-per- forming forborne exposures	Total	of which, non- performing exposures with forbearance measures
in € m.															
Cash balances at central banks and other demand deposits															
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Loans and advances															
	8,009	4,672	4,652	4,525	75	1,151	8,031	2,351							
Central banks	0	0	0	0	0	0	0	0							
General governments	139	2	2	2	0	1	132	0							
Credit institutions	0	9	9	9	0	0	0	0							
Other financial corporations	669	337	337	337	3	16	703	204							
Non-financial corporations	5,823	2,784	2,781	2,654	47	774	5,412	1,240							
Households	1,378	1,539	1,523	1,523	26	359	1,784	907							
Debt securities	96	240	240	193	0	0	193	193							
Loan commitments given	1,785	247	247	247	14	24	159	20							
Total	9,890	5,158	5,139	4,965	89	1,175	8,382	2,564							

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

Minimum loss coverage for non-performing exposure

Minimum loss coverage for non-performing exposure under Pillar 1

On April 25, 2019 the European Commission published the amendment on Regulation (EU) 2019/630 on minimum loss coverage on non-performing exposure. This regulation established a prudential treatment for NPEs arising from loans originated from April 26, 2019 onwards ("CRR – new NPE's originated after April 26, 2019") 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").

The following table provides an overview on Deutsche Bank's CRR – new NPE's originated after April 26, 2019 as of December 31, 2022 and June 30, 2022.

CRR – new NPE's originated after April 26, 2019

				Dec 31, 2022			
				Time passed since exposures classified as non- performing			Total
				up to 2yrs	>2 and <=9yrs	>9yrs	Total
in € m.							
Non-Performing Exposure				3,994	1,353	0	5,347
Exposure value ¹				5,027	1,627	0	6,654
Total minimum coverage requirement				0	533	0	533
Total provisions and adjustments or deductions (uncapped)				1,169	505	0	1,674
Total provisions and adjustments or deductions (capped)				0	311	0	311
Applicable amount of insufficient coverage				0	222	0	222

¹ Exposure value in accordance with Article 47c CRR

				Jun 30, 2022			
				Time passed since exposures classified as non- performing			Total
				up to 2yrs	>2 and <=9yrs	>9yrs	Total
in € m.							
Non-Performing Exposure				2,925	733	0	3,658
Exposure value ¹				3,344	882	0	4,225
Total minimum coverage requirement				0	243	0	243
Total provisions and adjustments or deductions (uncapped)				934	270	0	1,204
Total provisions and adjustments or deductions (capped)				0	168	0	168
Applicable amount of insufficient coverage				0	74	0	74

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 – new NPE’s after April 1, 2018”). Like for the CRR – new NPE’s originated after April 26, 2019 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 – new NPE’s after April 1, 2018 and the CRR – new NPE’s originated after April 26, 2019 differ in the following three key aspects:

- Timing of application: Exposures defaulting after April 1, 2018 are in scope of the ECB – new NPE’s after April 1, 2018, but are only in scope of the CRR – new NPE’s originated after April 26, 2019, if loans are originated after April 26, 2019.
- Treatment of loans in the trading book / traded assets: the CRR – new NPE’s originated after April 26, 2019 excludes all loans in the regulatory trading book whereas the ECB – new NPE’s after April 1, 2018 excludes traded assets in accordance with the accounting classifications.
- Treatment of Forbearance Measuring: the CRR – new NPE’s originated after April 26, 2019 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 – new NPE’s after April 1, 2018.

As long as the aforementioned differences exist, Deutsche Bank will report in the following table all NPE exposures under the ECB – new NPE’s after April 1, 2018, which are not covered in the CRR – new NPE’s originated after April 26, 2019.

The following table provides an overview on Deutsche Bank’s ECB – new NPE’s after April 1, 2018 as of December 31, 2022 and June 30, 2022, not reflected within the CRR – new NPE’s originated after April 26, 2019:

ECB – new NPE’s after April 1, 2018

in € m.	Dec 31, 2022			
	Time passed since exposures classified as non-performing			Total
	up to 2yrs	>2 and <=9yrs	>9yrs	
Non-Performing Exposure	4,700	3,602	0	8,302
Exposure value ¹	5,106	3,835	0	8,941
Total minimum coverage requirement	0	1,472	0	1,472
Total provisions and adjustments or deductions (uncapped)	1,473	1,618	0	3,092
Total provisions and adjustments or deductions (capped)	0	962	0	962
Applicable amount of insufficient coverage	0	510	0	510

¹ Exposure value in accordance with Article 47c CRR

in € m.	Jun 30, 2022			
	Time passed since exposures classified as non-performing			Total
	up to 2yrs	>2 and <=9yrs	>9yrs	
Non-Performing Exposure	5,796	3,546	0	9,342
Exposure value ¹	5,864	3,779	0	9,643
Total minimum coverage requirement	0	1,451	0	1,451
Total provisions and adjustments or deductions (uncapped)	1,244	1,434	0	2,678
Total provisions and adjustments or deductions (capped)	0	994	0	994
Applicable amount of insufficient coverage	0	457	0	457

¹ Exposure value in accordance with Article 47c CRR

Non-performing exposures arising from clients defaulting before April 1, 2018

ECB announced 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, the ECB published its “Communication on supervisory coverage expectations for NPEs” 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 at the end of 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 100% minimum loss coverage by year end 2024 for secured loans and by year end 2023 for unsecured loans.

The following table provides an overview on Deutsche Bank's ECB - NPE Stock as of December 31, 2022 and June 30, 2022.

ECB – NPE Stock

in € m.	Dec 31, 2022			
	Time passed since exposures classified as non-performing			Total
	up to 2yrs	>2 and <=9yrs	>9yrs	
Non-Performing Exposure	0	1,438	491	1,929
Exposure value ¹	0	3,413	6,418	9,832
Total minimum coverage requirement	0	2,521	5,768	8,289
Total provisions and adjustments or deductions (uncapped)	0	2,478	6,291	8,769
Total provisions and adjustments or deductions (capped)	0	2,284	5,690	7,974
Applicable amount of insufficient coverage	0	238	78	316

¹ Exposure value in accordance with Article 47c CRR

in € m.	Jun 30, 2022			
	Time passed since exposures classified as non-performing			Total
	up to 2yrs	>2 and <=9yrs	>9yrs	
Non-Performing Exposure	0	1,993	531	2,523
Exposure value ¹	0	4,154	6,658	10,812
Total minimum coverage requirement	0	2,717	5,316	8,034
Total provisions and adjustments or deductions (uncapped)	0	2,933	6,468	9,401
Total provisions and adjustments or deductions (capped)	0	2,476	5,236	7,712
Applicable amount of insufficient coverage	0	241	80	322

¹ Exposure value in accordance with Article 47c CRR

The shortfall between the minimum loss coverage requirements for non-performing exposure for the ECB – new NPE's after April 1, 2018 and the ECB - NPE Stock and the risk reserves recorded in line with IFRS 9 for defaulted (Stage 3) assets amounted to € 1.048 million as of June 30, 2022 versus € 853 million as of June 30, 2022 and was deducted from CET 1. This additional CET 1 charge can be considered as additional loss reserve and led to a € 933 million RWA relief in December 31, 2022 and € 420 million in June 30, 2022.

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

in € m.	Dec 31, 2022	
	Exposure	Provisions
Total Non-Performing Exposure and related provisions	15,578	4,123
of which:		
CRR – new NPE's originated after April 26, 2019 ¹	5,347	1,035
ECB – new NPE's after April 1, 2018 ¹	8,302	2,266
ECB – NPE Stock	1,929	821

¹ Treatment of loans in the Trading Book / Traded Assets: the CRR – new NPE's originated after April 26, 2019 exclude all loans in the regulatory Trading Book whereas the ECB – new NPE's after April 1, 2018 exclude Traded Assets in accordance with the accounting classifications

in € m.	Jun 30, 2022	
	Exposure	Provisions
Total Non-Performing Exposure and related provisions	15,602	4,071
of which:		
CRR – new NPE's originated after April 26, 2019 ¹	3,658	860
ECB – new NPE's after April 1, 2018 ¹	9,421	2,074
ECB – NPE Stock	2,523	1,137

¹ Treatment of loans in the Trading Book / Traded Assets: the CRR – new NPE's originated after April 26, 2019 exclude all loans in the regulatory Trading Book whereas the ECB – new NPE's after April 1, 2018 exclude Traded Assets in accordance with the accounting classifications

Collateral obtained by taking possession

Article 442 (c) CRR

Table EU CQ7 provides information about the collateral that has been obtained at the reporting date. Collateral obtained by taking 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, 2022		Jun 30, 2022	
		a	b	a	b
		Collateral obtained by taking possession		Collateral obtained by taking possession	
		Value at initial recognition	Accumulated negative changes	Value at initial recognition	Accumulated negative changes
in € m.					
1	Property, plant and equipment (PP&E)	0	0	0	0
2	Other than PP&E	43	31	44	33
3	Residential immovable property	33	25	38	28
4	Commercial immovable property	10	7	6	5
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	43	31	44	33

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

In 2020, 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 March 31, 2021.

COVID-19 template 1 provides details on the small amount of loans and advances that continue to be subject to EBA-compliant moratoria (legislative and non-legislative).

COVID-19 template 1: Information on loans and advances subject to legislative and non-legislative moratoria¹

															Dec 31, 2022	
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															a	
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															d	
															c	
															b	
	Gross carrying amount							Accumulated impairment, accumulated negative changes in fair value due to credit risk								
	Performing			Non-performing				Performing			Non-performing					
		Of which: Instruments with significant increase in credit risk since initial recognition but not credit- impaired (Stage 2)			Of which: exposures with forbearance measures		Of which: Unlikely to pay that are not past-due or past-due <= 90 days			Of which: Instruments with significant increase in credit risk since initial recognition but not credit- impaired (Stage 2)		Of which: exposures with forbearance measures		Of which: Unlikely to pay that are not past-due or past-due <= 90 days		Gross carrying amount Inflows to non- performing exposures
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		
1																
Loans and advances subject to moratorium	4	3	4	1	0	0	5	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	0
2																
of which: Households	4	3	4	1	0	0	5	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	0
3																
of which: Collateraliz- ed by residential immovable property	4	3	4	1	0	0	4	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	0
4																
of which: Non-financial corporations	0	0	0	0	0	0	0	0	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	0
6																
of which: Collateraliz- ed by commercial immovable property	0	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, 2022

in € m.	Gross carrying amount														Gross carrying amount Inflows to non-performing exposures
	Performing							Non-performing							
	Accumulated impairment, accumulated negative changes in fair value due to credit risk														
	Performing							Non-performing							
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		
1	Loans and advances subject to moratorium	4	3	3	2	0	1	5	(0)	(0)	(0)	(0)	(0)	(0)	0
2	of which: Households	3	3	3	2	0	1	5	(0)	(0)	(0)	(0)	(0)	(0)	0
3	of which: Collateralized by residential immovable property	3	3	3	2	0	1	5	(0)	(0)	(0)	(0)	(0)	(0)	0
4	of which: Non-financial corporations	0	0	0	0	0	0	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
6	of which: Collateralized by commercial immovable property	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 (Dec 31,2020 comparatives exclude extensions of Italian moratoria).

The below COVID-19 template 2, provides details on loans and advances that met the requirements for EBA-compliant moratoria (legislative and non-legislative). As can be seen in the table, almost all of the moratoria have expired and as of December 31, 2022, only € 4.5 million of moratoria are still active. 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

		Dec 31, 2022									
		a	b	c	d	e	f	g	h	i	
		Number of obligors (in 1,000s)	Gross carrying amount							Residual maturity of moratoria	
in € m. (unless stated otherwise)			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	66	6,202	–	–	–	–	–	–	–	
2	Loans and advances subject to moratorium (granted)	66	5,978	5,201	5,973	1	1	1	1	1	
3	of which: Households	–	4,328	3,693	4,323	1	1	1	1	1	
4	of which: Collateralized by residential immovable property	–	3,722	3,249	3,718	1	1	1	1	1	
5	of which: Non-financial corporations	–	1,629	1,491	1,629	0	–	–	–	–	
6	of which: Small and Medium-sized Enterprises	–	708	655	708	0	–	–	–	–	
7	of which: Collateralized by commercial immovable property	–	199	155	199	–	–	–	–	–	

		Jun 30, 2022									
		a	b	c	d	e	f	g	h	i	
		Number of obligors (in 1,000s)	Gross carrying amount							Residual maturity of moratoria	
in € m. (unless stated otherwise)			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	76	7,027	–	–	–	–	–	–	–	
2	Loans and advances subject to moratorium (granted)	74	6,681	5,731	6,676	2	1	1	1	1	
3	of which: Households	–	4,650	3,943	4,644	2	1	1	1	1	
4	of which: Collateralized by residential immovable property	–	3,916	3,411	3,911	1	1	1	1	1	
5	of which: Non-financial corporations	–	2,005	1,769	2,005	–	0	–	–	–	
6	of which: Small and Medium-sized Enterprises	–	923	763	923	–	0	–	–	–	
7	of which: Collateralized by commercial immovable property	–	236	131	236	–	0	–	–	–	

COVID-19 template 3 provides details on outstanding 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 € 3.4 billion of loans under the public guarantee scheme until December 2022 and in most cases the terms of the new originated loans and advances are between two and five years. Approximately € 1.7 billion of loans were granted in Germany via programs sponsored by Kreditanstalt für Wiederaufbau (KfW), of which, € 0.2 billion were derecognized as the terms of the loan and guarantee met the criteria for derecognition under IFRS 9, and € 1.7 billion were originated in Spain. As of December 31, 2022, 94% 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 (excluding derecognized loans)

		Dec 31, 2022			
		a	b	c	d
		Gross carrying amount		Maximum amount of the guarantee that can be considered	Gross carrying amount
in € m.		Total	of which: forbore	Public guarantees received	Inflows to non-performing exposures
1	Newly originated loans and advances subject to public guarantee schemes	3,165	159	2,618	65
2	of which: Households	34	–	–	0
3	of which: Collateralized by residential immovable property	0	–	–	0
4	of which: Non-financial corporations	3,120	159	2,578	64
5	of which: Small and Medium-sized Enterprises	2,083	–	–	29
6	of which: Collateralized by commercial immovable property	0	–	–	0

		Jun 30, 2022			
		a	b	c	d
		Gross carrying amount		Maximum amount of the guarantee that can be considered	Gross carrying amount
in € m.		Total	of which: forbore	Public guarantees received	Inflows to non-performing exposures
1	Newly originated loans and advances subject to public guarantee schemes	4,011	169	3,426	17
2	of which: Households	37	–	–	0
3	of which: Collateralized by residential immovable property	0	–	–	0
4	of which: Non-financial corporations	3,964	169	3,385	17
5	of which: Small and Medium-sized Enterprises	2,332	–	–	11
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 in accordance with applicable law and the bank's Financial Contracts Netting and Collateral Policy and Procedures – Legal (collectively "Netting Policies"). While cross-product netting between derivatives and securities financing transactions may be used in certain cases, the bank does not make use of cross-product netting for regulatory purposes.

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 the bank's counterparties, Deutsche Bank also uses CCP clearing for its 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, 2022, the bank is allowed to make use of intragroup exemptions from the EMIR clearing obligation for 58 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 58 intragroup relationships, 14 are relationships where both entities are established in the EU for which a full exemption has been granted, and 44 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. Due to "Brexit", the status of some group entities has changed from an EU entity to a third country entity, but there has not been an impact for the bank in respect of clearing exemptions.

The rules and regulations of CCPs typically allow for the bilateral set off of all amounts payable on the same day and in the same currency ("payment netting") thereby reducing the bank's settlement risk. Depending on the business model applied by the CCP, this payment netting applies either to all of the bank's 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 the bank's credit risk further. In its risk measurement and risk assessment processes Deutsche Bank applies close-out netting only to the extent Deutsche Bank believes that the relevant CCP's close-out netting provisions are legally valid and enforceable and enforceable and have been approved in accordance with the bank's Netting Policies.

In order to reduce the credit risk resulting from OTC derivative transactions, where CCP clearing is not available, Deutsche Bank regularly seeks 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 the bank's 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. Payment netting may be agreed from time to time with the bank's counterparties for multiple transactions having the same payment dates (e.g., foreign exchange transactions) pursuant to the terms of master agreement which can reduce the bank's settlement risk. In the bank's risk measurement and risk assessment processes Deutsche Bank applies close-out netting only to the extent Deutsche Bank has concluded that the master agreement is legally valid and enforceable in all relevant jurisdictions and the recognition of close-out netting has been approved in accordance with the bank's Netting Policies.

Deutsche Bank also enters into credit support annexes (CSAs) to master agreements in order to further reduce the bank's 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 Deutsche Bank believes the annex is enforceable, Deutsche Bank reflects this in its 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. Deutsche Bank also enters 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 Deutsche Bank only. Deutsche Bank analyzes and monitors its potential contingent payment obligations resulting from a rating downgrade in its 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 the bank's 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, Deutsche Bank is required to post and collect initial margin for its derivatives exposures with other derivatives dealers, as well as with the bank's 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 Deutsche Bank to post and collect variation margin for its 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 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 published on February 17, 2021 extended 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, 2022, 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 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. For third country subsidiaries, the intragroup exemption was originally limited until the earlier of June 30, 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. On October 25, 2022, the European Commission has adopted a Commission Delegated Regulation relating to the extension of the exemption end date until June 30, 2025. While the application requirement may be abolished with EMIR 3.0" (see European Commission proposal COM (2022) 697 final), Deutsche Bank continues to have processes in place ensuring readiness for intragroup margining should the need arise.

Collateral evaluation and management

Article 453 (b) CRR

Deutsche Bank's processes ensure onboarding of high-quality collateral the bank accepts 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. Deutsche Bank has collateral type specific haircuts in place which are regularly reviewed and approved. In this regard, Deutsche Bank strives 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. The 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

Deutsche Bank regularly agrees 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. Deutsche Bank generally takes all types of valuable and eligible collateral for its 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 Article 194 (9) CRR.

Deutsche Bank distinguishes between following two types of collateral received:

- Funded credit protection in forms of financial and other collateral, which enables Deutsche Bank 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 include 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

Deutsche Bank accepts 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. Deutsche Bank uses a range of tools and metrics to monitor concentrations in its 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 credit risk mitigation 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 multi-secured exposures to their different credit risk mitigation mechanisms is made by order of priority, starting with the credit risk mitigation 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 – Credit Risk Mitigation techniques – Overview

						Dec 31, 2022				
						a	b	c	d	e
						Exposures unsecured: Carrying amount	Exposures secured: Carrying amount	Exposures secured by collateral	Exposures secured by financial guarantees	Exposures secured by credit derivatives
in € m.										
1	Total Loans and advances					454,419	401,480	361,390	40,090	0
2	Total Debt securities					53,314	2,389	2,221	168	0
3	Total exposures					507,732	403,868	363,610	40,258	0
4	of which: non-performing					3,654	5,246	3,801	1,444	0
5	of which: defaulted					3,437	5,251	3,814	1,437	0

						Jun 30, 2022				
						a	b	c	d	e
						Exposures unsecured: Carrying amount	Exposures secured: Carrying amount	Exposures secured by collateral	Exposures secured by financial guarantees	Exposures secured by credit derivatives
in € m.										
1	Total Loans and advances					485,210	386,358	348,849	37,509	0
2	Total Debt securities					56,581	460	460	0	0
3	Total exposures					541,791	386,818	349,309	37,509	0
4	of which: non-performing					3,762	5,181	4,515	665	0
5	of which: defaulted					3,740	5,070	4,450	619	0

Secured and unsecured total exposures decreased from € 929 billion in June 2022 to € 912 billion in December 2022, driven by decreases in unsecured loans and advances by € 31 billion as well as unsecured debt securities by € 3 billion which is partially offset by increase in secured loans and advances by € 15 billion and debt securities by € 2 billion.

Credit risk and credit risk mitigation in the standardized approach

Qualitative information on the use of the standardized approach

Deutsche Bank treats a subset of the 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.

Certain credit exposures are permanently assigned 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, Deutsche Bank assigns 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 and usage of issue rating

Article 444 (a-d) CRR and EU CRD

In order to calculate the regulatory capital requirements under the standardized approach, Deutsche Bank uses 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.

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

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 the 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 EAD in the standardized approach as well as related RWA and average risk weights broken down by regulatory exposure classes and a split into on- and off-balance sheet exposures.

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

							Dec 31, 2022			
in € m. (unless stated otherwise)										
Exposure classes	a		b		c		d	e		f
	Exposures before CCF and CRM		Exposures post-CCF and CRM		RWA and RWA density					
	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	111,853	45	111,879	1	8	0.01%				
2 Regional government or local authorities	2,439	5,347	2,438	4,045	10	0.15%				
3 Public sector entities	512	29	550	10	22	3.96%				
4 Multilateral development banks	644	0	644	0	0	0%				
5 International organizations	915	0	915	0	0	0%				
6 Institutions	3,430	303	3,457	137	149	4.15%				
7 Corporates	13,418	2,281	10,541	620	10,047	90.03%				
8 Retail	2,040	1,536	1,638	76	1,212	70.74%				
9 Secured by mortgages on immovable property	3,974	0	3,792	0	1,392	36.70%				
10 Exposures in default	910	37	870	9	1,097	124.86%				
11 Exposures associated with particularly high risk	36	17	36	1	56	150.00%				
12 Covered bonds	0	0	0	0	0	0%				
Institutions and corporates with a short-term credit assessment	0	0	0	0	0	0%				
14 Collective investments undertakings (CIU)	399	9,457	399	2,900	3,947	119.65%				
15 Equity	0	0	0	0	0	0%				
16 Other items	16	0	16	0	15	94.78%				
17 Total	140,586	19,052	137,176	7,799	17,956	12.39%				

							Jun 30, 2022			
in € m. (unless stated otherwise)										
Exposure classes	a		b		c		d	e		f
	Exposures before CCF and CRM		Exposures post-CCF and CRM		RWA and RWA density					
	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	110,812	47	110,849	1	2	0%				
2 Regional government or local authorities	2,936	5,452	2,934	4,055	6	0.08%				
3 Public sector entities	603	42	644	10	30	4.54%				
4 Multilateral development banks	714	0	714	0	0	0%				
5 International organizations	919	0	919	0	0	0%				
6 Institutions	2,968	284	2,991	57	226	7.42%				
7 Corporates	13,673	3,472	10,415	807	10,946	97.54%				
8 Retail	2,057	1,583	1,652	66	1,216	70.76%				
9 Secured by mortgages on immovable property	4,287	0	4,104	0	1,513	36.87%				
10 Exposures in default	872	25	836	8	1,069	126.68%				
11 Items associated with particularly high risk	62	17	62	1	94	150.00%				
12 Covered bonds	0	0	0	0	0	0%				
Claims on institutions and corporates with a short-term credit assessment	0	0	0	0	0	0%				
14 Collective investments undertakings (CIU)	356	10,863	356	2,949	4,135	125.11%				
15 Equity exposures	0	0	0	0	0	0%				
16 Other items	30	0	30	0	24	81.10%				
17 Total	140,290	21,785	136,507	7,955	19,261	13.33%				

The RWA for credit risk (excluding CCR) in the standardized approach were at € 18.0 billion as of December 31, 2022, compared to € 19.3 billion as of June 30, 2022. The decrease of € 1.3 billion was primarily driven by improved risk weights in the exposure class “corporates”. Furthermore, lower risk weights also had a beneficial effect in the exposure classes “institution” and “collective investments undertakings (CIU)”, whereas the decrease in exposure class “secured by mortgages on immovable property” was driven by lower exposures.

In the following tables the 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, 2022
							Risk Weight
Exposure classes		a	b	c	d	e	f
	Exposure classes	0%	2%	4%	10%	20%	35%
1	Central governments or central banks	111,868	0	0	0	3	0
2	Regional governments or local authorities	6,436	0	0	0	46	0
3	Public sector entities	485	0	0	0	50	0
4	Multilateral development banks	645	0	0	0	0	0
5	International organizations	915	0	0	0	0	0
6	Institutions	3,188	125	0	0	140	0
7	Corporates	208	0	0	0	1,080	0
8	Retail exposures	0	0	0	0	0	183
9	Exposures secured by mortgages on immovable property	0	0	0	0	0	3,274
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)	1,985	0	0	0	87	0
15	Equity exposures	0	0	0	0	0	0
16	Other items	0	0	0	0	1	0
17	Total	125,730	125	0	0	1,407	3,456

in € m.							Dec 31, 2022
							Risk Weight
Exposure classes		g	h	i	j	k	l
	Exposure classes	50%	70%	75%	100%	150%	250%
1	Central governments or central banks	4	0	0	5	0	0
2	Regional governments or local authorities	0	0	0	0	0	0
3	Public sector entities	24	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	44	0	0	97	0	0
7	Corporates	72	0	0	9,757	36	0
8	Retail	0	0	1,531	0	0	0
9	Secured by mortgages on immovable property	519	0	0	0	0	0
10	Exposures in default	0	0	0	442	437	0
11	Items associated with particularly high risk	0	0	0	0	37	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)	40	0	0	945	3	0
15	Equity exposures	0	0	0	0	0	0
16	Other items	0	0	0	15	0	0
17	Total	704	0	1,531	11,260	513	0

in € m.						Dec 31, 2022
						Risk Weight
Exposure classes		m	n	o	p	q
	Exposure classes	370%	1250%	Others	Total	Of which: unrated
1	Central governments or central banks	0	0	0	111,881	111,880
2	Regional governments or local authorities	0	0	0	6,483	6,483
3	Public sector entities	0	0	0	560	536
4	Multilateral development banks	0	0	0	645	645
5	International organizations	0	0	0	915	915
6	Institutions	0	0	0	3,594	3,560
7	Corporates	0	7	0	11,160	11,064
8	Retail	0	0	0	1,714	1,714
9	Secured by mortgages on immovable property	0	0	0	3,792	3,792
10	Exposures in default	0	0	0	879	879
11	Items associated with particularly high risk	0	0	0	37	37
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	229	12	3,299	3,268
15	Equity exposures	0	0	0	0	0
16	Other items	0	0	0	16	16
17	Total	0	236	12	144,975	144,789

		Jun 30, 2022					
in € m.		Risk Weight					
		a	b	c	d	e	f
Exposure classes		0%	2%	4%	10%	20%	35%
1	Central governments or central banks	110,844	0	0	0	3	0
2	Regional governments or local authorities	6,962	0	0	0	27	0
3	Public sector entities	526	0	0	0	114	0
4	Multilateral development banks	715	0	0	0	0	0
5	International organizations	919	0	0	0	0	0
6	Institutions	2,560	50	0	0	225	0
7	Corporates	0	0	0	0	273	0
8	Retail	0	0	0	0	0	182
9	Secured by mortgages on immovable property	0	0	0	0	0	3,498
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)	1,657	0	0	0	380	0
15	Equity exposures	0	0	0	0	0	0
16	Other items	0	0	0	0	7	0
17	Total	124,182	50	0	0	1,030	3,680

		Jun 30, 2022					
in € m.		Risk Weight					
		g	h	i	j	k	l
Exposure classes		50%	70%	75%	100%	150%	250%
1	Central governments or central banks	4	0	0	0	0	0
2	Regional governments or local authorities	0	0	0	0	0	0
3	Public sector entities	14	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	66	0	0	147	0	0
7	Corporates	74	0	0	10,777	96	0
8	Retail	0	0	1,536	0	0	0
9	Secured by mortgages on immovable property	606	0	0	0	0	0
10	Exposures in default	0	0	0	393	450	0
11	Items associated with particularly high risk	0	0	0	0	63	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)	19	0	0	980	3	0
15	Equity exposures	0	0	0	0	0	0
16	Other items	0	0	0	23	0	0
17	Total	784	0	1,536	12,321	612	0

		Jun 30, 2022				
in € m.		Risk Weight				
		m	n	o	p	q
Exposure classes		370%	1250%	Others	Total	Of which: unrated
1	Central governments or central banks	0	0	0	110,850	110,850
2	Regional governments or local authorities	0	0	0	6,989	6,989
3	Public sector entities	0	0	0	654	642
4	Multilateral development banks	0	0	0	715	715
5	International organizations	0	0	0	919	919
6	Institutions	0	0	0	3,048	3,027
7	Corporates	0	2	0	11,222	11,155
8	Retail	0	0	0	1,718	1,718
9	Secured by mortgages on immovable property	0	0	0	4,104	4,086
10	Exposures in default	0	0	0	844	844
11	Items associated with particularly high risk	0	0	0	63	63
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	231	34	3,305	3,302
15	Equity exposures	0	0	0	0	0
16	Other items	0	0	0	30	30
17	Total	0	233	34	144,461	144,338

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 the Group's credit portfolios, the bank applies 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 the Group's 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. Overall, they cover all of the bank's material exposures in the IRB eligible exposure classes "Central governments and central banks", "Institutions", "Corporates", and "Retail".

As an IRB institution, Deutsche Bank is 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.

The Group's 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, the bank assigns 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.

The bank is 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, 2022				
		a	b	c	d	e
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	122,735	230,975	51	49	0
	of which:					
1.1	Regional governments or local authorities	-	3,026	100	0	0
1.2	Public sector entities	-	518	100	0	0
2	Institutions	17,684	14,446	2	98	0
3	Corporates	324,214	379,249	4	96	0
	of which:					
3.1	Corporates - Specialised lending, excluding slotting approach	-	48,468	0	100	0
3.2	Corporates - Specialised lending under slotting approach	-	900	0	100	0
4	Retail	231,389	216,257	3	97	0
	of which:					
4.1	Retail – Secured by real estate SMEs	-	8,431	0	100	0
4.2	Retail – Secured by real estate non-SMEs	-	166,522	0	100	0
4.3	Retail – Qualifying revolving	-	2,161	0	100	0
4.4	Retail – Other SMEs	-	4,778	0	100	0
4.5	Retail – Other non-SMEs	-	28,790	0	100	0
5	Equity	4,116	3,082	0	100	0
6	Other non-credit obligation assets	10,586	10,852	0	100	0
7	Total	710,724	854,861	16	84	0

		Dec 31, 2021 ¹				
		a	b	c	d	e
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	120,575	236,287	52	48	0
	of which:					
1.1	Regional governments or local authorities	-	5,158	100	0	0
1.2	Public sector entities	-	672	100	0	0
2	Institutions	17,754	15,028	3	97	0
3	Corporates	296,173	331,164	5	95	0
	of which:					
3.1	Corporates - Specialised lending, excluding slotting approach	-	41,608	0	100	0
3.2	Corporates - Specialised lending under slotting approach	-	961	0	100	0
4	Retail	235,685	219,740	3	97	0
	of which:					
4.1	Retail – Secured by real estate SMEs	-	8,696	0	100	0
4.2	Retail – Secured by real estate non-SMEs	-	168,180	0	100	0
4.3	Retail – Qualifying revolving	-	2,231	0	100	0
4.4	Retail – Other SMEs	-	5,187	0	100	0
4.5	Retail – Other non-SMEs	-	29,767	0	100	0
5	Equity	5,329	4,178	0	100	0
6	Other non-credit obligation assets	9,905	10,214	0	100	0
7	Total	685,420	816,612	17.8	82.2	0

¹ Comparatives aligned to current presentation

Relationship between the risk management function and the internal audit function

Article 452 (c)(i) CRR (EU CRE)

As discussed in the Enterprise Risk Management section “Risk Management structure and organization”, Deutsche Bank’s risk management framework consists of various components and the organizational structures follow the 3LoD model with a clear definition of roles and responsibilities for all risk types.

Group Audit is a part of the 3LoD and an instrument of the Management Board 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 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 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 function under a delegated authority – mainly to the Regulatory Credit Risk Model Forum. 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 and the Regulatory Credit Risk Model Committee, 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 eleven 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, EAD, credit risk parameter, DB credit default engine - credit risk, group wide stress test – credit risk) and other models (i.e. business decision and income statement and balance sheet 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 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 Deutsche Bank's 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, the loss-given-default and the maturity driving the regulatory risk-weight and the credit conversion factor as part of the regulatory exposure at default estimation. For most of Deutsche Bank's internal rating systems more than seven years of historical information is available to assess these parameters. Deutsche Bank's internal rating methodologies aim at point-in-time rather than a through-the-cycle rating.

The probability of default for customers is derived from Deutsche Bank's internal rating systems. A probability of default is assigned to each relevant counterparty credit exposure as a function of a transparent and consistent 21-grade master rating scale for all of Deutsche Bank's exposure (excluding parts of former Postbank). The probability of default used for RWA calculation is subject to the regulatory probability of default floor of 3 basis points.

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. A default definition is applied 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 Deutsche Bank's 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 Deutsche Bank assigns internal risk ratings, it allows the comparison with external risk ratings assigned to Deutsche Bank’s counterparties by the major international rating agencies, where possible, as Deutsche Bank’s 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. Deutsche Bank supplements 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. 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 probability of default assignment than for other segments. Such ratings are subject to rigorous reviews by Deutsche Bank’s 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 Deutsche Bank have developed bespoke scorecards where appropriate to derive credit ratings.

In Deutsche Bank’s 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 Deutsche Bank’s retail business are based on multivariate statistical methods.

They are used to support Deutsche Bank’s 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 probability of default and actual default rates are described in the section on Article 452 (h).

Deutsche Bank applies internally estimated loss-given-default factors as part of the advanced IRBA capital requirement calculation as approved by the ECB. Loss-given-default 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, loss-given-default estimates are independent of a customer’s probability of default. The loss-given-default 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 loss-given-default factors. In Deutsche Bank’s loss-given-default models, except for the former Postbank portfolios, collateral type specific loss-given-default parameters are assigned to the collateralized exposure (collateral value after application of haircuts). Moreover, the loss-given-default for uncollateralized exposure cannot be below the loss-given-default assigned to collateralized exposure and regulatory floors (e.g. 10 % for residential mortgage loans) are applied. For the former Postbank portfolios, individually modeled loss-given-default parameters are in use. In Deutsche Bank’s Retail, SME and parts of the Corporates segments where sufficient loss data is available, loss-given-default parameters are derived from statistical models based on empirical realized loss-given-default. In other portfolios, loss-given-default settings incorporate further available information in addition to empirical loss-given-default, in particular for low-default portfolios.

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

As part of the application of the advanced IRBA specific credit conversion factors are applied in order to calculate an exposure at default value. Conceptually the exposure at default is defined as the expected amount of the credit exposure to a counterparty at the time of its default. For advanced IRBA calculation purposes general principles as defined in Article 166 CRR are applied to determine the exposure at default 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 credit conversion factor model in order to estimate the amount of guarantees drawn in case of default. Where allowed under the advanced IRBA, the credit conversion factors 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 Deutsche Bank's credit conversion factor models and stated their appropriateness for use in the process of regulatory capital requirement calculations.

The exposure at default for Deutsche Bank's derivatives and securities financing transactions ("SFT") portfolios are primarily calculated based on the IMM approach as described in the section "Counterparty credit risk" of this report.

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 while the loss-given-default and the credit conversion factor 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 Deutsche Bank's 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 the same default definition is applied 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. The relevant regulatory exposure class for each exposure is identified by taking into account factors like customer-specific characteristics, the rating system used as well as certain materiality thresholds which are regulatory defined.

The simple risk-weight approach according to Article 155 (2) CRR is used for Deutsche Bank's 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. This includes 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 a "look through"-approach is applied, where applicable, and the risk weights are derived 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 Deutsche Bank's foundation internal rating based (IRB) exposures distributed on its internal rating scale for all relevant regulatory exposure classes. The tables 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 on-balance sheet 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 the borrower and not to the exposure class of the counterparty providing Deutsche Bank credit protection.

In addition, the tables provide the exposure post credit risk mitigation (CRM) and credit conversion factor (CCF), where exposures covered by guarantees or credit derivatives are assigned to the protection seller. The exposure post CCF & CRM is presented in conjunction with exposures-weighted average PD, LGD, maturity as well as the RWA and the average risk weight. The tables provide the defaulted exposure separately. Further details in the tables are number of obligors, regulatory expected loss and provisions comprising specific risk adjustments.

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

												Dec 31, 2022
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	23	0.00	0.0	45.00	2.5	0	0	0	–
0.00 to <0.10	0	0	0	23	0.00	0.0	45.00	2.5	0	0.00	0	–
0.10 to <0.15	0	0	0	0	0	0.0	0	0	0	0	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	23	0.00	0.0	44.98	2.5	0	0.32	0	–
Institutions												
0.00 to <0.15	4	12	0	3	0.05	0.0	39.39	2.5	1	18.71	0	–
0.00 to <0.10	4	12	0	3	0.05	0.0	39.37	2.5	1	18.64	0	–
0.10 to <0.15	0	0	0	0	0.11	0.0	42.69	2.5	0	31.53	0	–
0.15 to <0.25	1	3	0	0	0.15	0.0	12.39	2.5	0	11.69	0	–
0.25 to <0.50	0	0	0	0	0.38	0.0	42.69	2.5	0	61.54	0	–
0.50 to <0.75	0	1	0	0	0.64	0.0	24.33	2.5	0	43.09	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	3	3	0	3	20.00	0.0	45.00	2.5	9	285.79	0	–
10 to <20	0	0	0	0	0.00	0.0	0.00	0.0	0	0.00	0	–
20 to <30	3	3	0	3	20.00	0.0	45.00	2.5	9	285.79	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	8	19	0	6	9.97	0.1	41.61	2.5	10	151.86	0	–

Dec 31, 2022

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
Corporates												
0.00 to <0.15	1,429	1,496	0	1,980	0.07	1.1	14.65	2.5	164	8.29	0	0
0.00 to <0.10	1,391	1,409	0	1,950	0.06	0.7	14.40	2.5	157	8.07	0	0
0.10 to <0.15	38	87	0	30	0.11	0.4	31.23	2.5	7	22.78	0	–
0.15 to <0.25	1,048	1,268	0	870	0.17	2.6	17.73	2.5	151	17.37	0	0
0.25 to <0.50	1,508	2,068	0	1,345	0.31	3.3	17.07	2.5	318	23.64	1	0
0.50 to <0.75	582	653	0.03	484	0.66	2.0	21.53	2.5	194	40.14	1	0
0.75 to <2.50	483	572	0	400	1.30	1.1	16.27	2.5	151	37.72	1	0
0.75 to <1.75	388	414	0	327	1.15	0.9	16.52	2.5	122	37.45	1	0
1.75 to <2.5	95	159	0	73	1.94	0.2	15.13	2.5	28	38.94	0	0
2.50 to <10.00	149	166	0	135	4.68	0.2	17.59	2.5	79	58.60	1	0
2.50 to <5	110	96	0	97	3.56	0.1	18.05	2.5	55	56.97	1	0
5 to <10	39	70	0	38	7.48	0.1	16.42	2.5	24	62.70	0	0
10.00 to <100.00	96	82	1.92	62	23.71	2.1	28.49	2.5	91	148.14	5	1
10 to <20	8	9	0	6	13.83	0.0	12.55	2.5	4	69.05	0	–
20 to <30	72	65	2.41	41	20.85	2.1	29.69	2.5	60	148.13	3	1
30.00 to <100.00	17	7	0	15	35.68	0.0	31.92	2.5	27	181.53	2	0
100.00 (Default)	8	2	0.49	7	100.00	4.8	122.57	2.5	0	0.00	3	1
Sub-total	5,303	6,307	0.03	5,283	0.83	17.1	16.91	2.5	1,149	21.75	12	3
of which:												
SMEs												
0.00 to <0.15	3	11	0	19	0.05	0.1	23.34	2.5	1	7.76	0	–
0.00 to <0.10	1	6	0	17	0.04	0.0	23.48	2.5	1	7.48	0	–
0.10 to <0.15	2	5	0	2	0.11	0.0	22.13	2.5	0	10.29	0	–
0.15 to <0.25	6	15	0	4	0.21	0.1	42.33	2.5	1	30.80	0	–
0.25 to <0.50	14	33	0	10	0.35	0.2	29.85	2.5	3	27.73	0	–
0.50 to <0.75	27	22	0	26	0.72	0.1	22.01	2.5	8	30.72	0	–
0.75 to <2.50	22	30	0	18	1.59	0.1	17.33	2.5	6	32.88	0	–
0.75 to <1.75	12	14	0	10	1.27	0.1	21.44	2.5	3	35.48	0	–
1.75 to <2.5	9	16	0	9	1.94	0.0	12.73	2.5	3	29.97	0	–
2.50 to <10.00	29	23	0	25	5.00	0.0	12.49	2.5	8	30.25	0	0
2.50 to <5	18	15	0	14	3.35	0.0	12.60	2.5	4	27.65	0	0
5 to <10	11	8	0	11	7.03	0.0	12.36	2.5	4	33.44	0	–
10.00 to <100.00	18	9	0	14	20.03	0.1	26.49	2.5	15	107.49	1	0
10 to <20	4	3	0	4	14.18	0.0	12.33	2.5	3	72.34	0	–
20 to <30	11	5	0	8	20.15	0.1	37.53	2.5	10	135.40	1	0
30.00 to <100.00	3	1	0	2	35.81	0.0	12.33	2.5	1	69.71	0	0
100.00 (Default)	1	0	0	1	100.00	0.0	39.24	2.5	0	0.00	0	0
Sub-total	119	143	0	116	4.74	0.7	21.54	2.5	41	35.63	2	1

Dec 31, 2022

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
Other												
0.00 to <0.15	1,426	1,486	0	1,961	0.07	1.0	14.57	2.5	163	8.29	0	0
0.00 to <0.10	1,391	1,404	0	1,933	0.06	0.6	14.32	2.5	156	8.07	0	0
0.10 to <0.15	36	82	0	28	0.11	0.3	31.84	2.5	7	23.62	0	-
0.15 to <0.25	1,042	1,253	0	866	0.17	2.5	17.61	2.5	150	17.30	0	0
0.25 to <0.50	1,493	2,035	0	1,336	0.31	3.1	16.98	2.5	315	23.61	1	0
0.50 to <0.75	555	631	0.03	458	0.66	1.9	21.50	2.5	186	40.67	1	0
0.75 to <2.50	462	542	0	382	1.29	1.0	16.22	2.5	145	37.95	1	0
0.75 to <1.75	376	400	0	317	1.15	0.9	16.37	2.5	119	37.51	1	0
1.75 to <2.5	86	142	0	64	1.94	0.1	15.45	2.5	26	40.13	0	0
2.50 to <10.00	120	143	0	111	4.61	0.1	18.74	2.5	72	64.97	1	0
2.50 to <5	92	80	0	83	3.60	0.1	18.95	2.5	52	61.80	1	0
5 to <10	28	62	0	27	7.67	0.0	18.08	2.5	20	74.68	0	0
10.00 to <100.00	78	73	2.15	48	24.74	2.1	29.05	2.5	77	159.57	4	1
10 to <20	3	7	0	2	13.04	0.0	13.06	2.5	1	61.48	0	-
20 to <30	61	60	2.62	33	21.01	2.1	27.88	2.5	50	151.06	2	1
30.00 to <100.00	14	6	0	13	35.66	0.0	34.22	2.5	26	194.68	2	0
100.00 (Default)	7	1	0.61	6	100.00	4.8	136.06	2.5	0	0.00	2	1
Sub-total	5,184	6,164	0.03	5,167	0.74	16.4	16.81	2.5	1,108	21.43	10	2
All exposure classes												
Total	5,311	6,326	0.03	5,313	0.83	17.2	17.07	2.5	1,159	21.81	12	3

Jun 30, 2022

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	50	0.00	0.0	45.00	2.5	0	0.00	0	--
0.00 to <0.10	0	0	0	50	0.00	0.0	45.00	2.5	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	1	0	0	0.23	0.0	42.69	2.50	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	1	0	50	0.00	0.0	45.00	2.5	0	0.1000	0	--
Institutions												
0.00 to <0.15	3	13	0	3	0.05	0.0	19.71	2.5	0	8.57	0	--
0.00 to <0.10	3	12	0	3	0.04	0.0	20.20	2.5	0	8.21	0	--
0.10 to <0.15	0	1	0	0	0.15	0.0	12.33	2.5	0	13.96	0	--
0.15 to <0.25	0	2	0	0	0.25	0.0	12.33	2.5	0	14.46	0	--
0.25 to <0.50	0	0	0	0	0.38	0.0	42.69	2.5	0	61.54	0	--
0.50 to <0.75	0	0	0	0	0.00	0	0.00	0.0	0	0.00	0	--
0.75 to <2.50	0	0	75.00	0	2.06	0.00	12.33	2.50	0	33.62	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	75.00	0	2.06	0.00	12.33	2.50	0	33.62	0	--
2.50 to <10.00	0	0	0	0	0.00	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	0.00	0.0	0	0.00	0	--
10.00 to <100.00	1	0	0	1	20.00	0.0	44.99	2.50	2	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	44.99	2.50	2	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	4	15	0.03	4	4.37	0.1	25.49	2.5	3	69.85	0	--

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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
Corporates												
0.00 to <0.15	2,237	2,290	2.08	2,640	0.10	1.8	18.48	2.5	348	13.19	1	2
0.00 to <0.10	1,571	1,600	1.24	1,999	0.08	1.1	17.16	2.5	213	10.64	0	0
0.10 to <0.15	666	689	4.04	641	0.16	0.7	22.61	2.5	135	21.12	0	2
0.15 to <0.25	1,005	1,105	1.51	943	0.26	2.7	28.53	2.5	324	34.40	1	0
0.25 to <0.50	1,009	1,113	4.68	943	0.43	3.5	32.97	2.5	475	50.40	1	0
0.50 to <0.75	564	623	2.32	497	0.74	2.2	32.10	2.5	307	61.74	1	0
0.75 to <2.50	505	449	9.74	470	1.60	1.0	29.84	2.5	351	74.65	2	1
0.75 to <1.75	301	322	13.33	283	1.29	0.8	30.96	2.5	207	72.97	1	1
1.75 to <2.5	204	127	0.64	186	2.07	0.2	28.16	2.5	144	77.20	1	0
2.50 to <10.00	178	166	0.01	167	5.44	0.2	20.73	2.5	127	75.73	2	0
2.50 to <5	120	121	0	113	4.09	0.1	18.46	2.5	69	61.16	1	0
5 to <10	58	44	0.03	54	8.24	0.1	25.45	2.5	58	106.02	1	0
10.00 to <100.00	154	96	9.26	128	21.45	1.0	35.77	2.5	234	183.07	9	5
10 to <20	26	7	52.46	30	15.70	0.0	42.00	2.5	55	185.44	2	1
20 to <30	112	76	7.04	82	21.09	1.0	38.06	2.5	168	203.97	7	4
30.00 to <100.00	16	13	0	16	34.05	0.0	12.33	2.5	11	70.44	1	0
100.00 (Default)	96	2	0.15	95	100.00	0.9	42.51	2.5	0	0.00	41	67
Sub-total	5,748	5,844	3.14	5,882	2.58	13.4	25.30	2.5	2,166	36.82	58	75
of which:												
SMEs												
0.00 to <0.15	8	20	13.86	25	0.07	0.1	33.71	2.5	3	14.08	0	–
0.00 to <0.10	7	12	22.49	24	0.07	0.1	33.52	2.5	3	13.73	0	–
0.10 to <0.15	1	8	0	1	0.16	0.1	39.24	2.5	0	24.40	0	–
0.15 to <0.25	12	20	0	11	0.24	0.1	30.43	2.5	3	23.64	0	–
0.25 to <0.50	15	26	0	12	0.39	0.2	40.87	2.5	5	40.49	0	–
0.50 to <0.75	16	24	0	13	0.70	0.1	34.18	2.5	6	42.98	0	–
0.75 to <2.50	19	34	17.65	22	1.60	0.1	25.45	2.5	10	43.70	0	0
0.75 to <1.75	9	19	30.66	12	1.29	0.1	35.93	2.5	7	58.47	0	0
1.75 to <2.5	10	14	0	10	1.97	0.0	13.21	2.5	3	26.46	0	–
2.50 to <10.00	21	26	0	19	5.36	0.0	12.69	2.5	7	36.26	0	–
2.50 to <5	13	18	0	13	4.12	0.0	12.84	2.5	5	37.26	0	–
5 to <10	8	7	0	6	8.19	0.0	12.33	2.5	2	33.96	0	–
10.00 to <100.00	37	11	25.94	29	18.88	0.1	40.53	2.5	44	153.20	2	1
10 to <20	14	3	75.00	16	16.86	0.0	45.00	2.5	29	176.99	1	1
20 to <30	22	6	6.93	11	20.58	0.1	36.30	2.5	14	127.05	1	0
30.00 to <100.00	1	1	0	1	34.11	0.0	12.33	2.5	0	48.57	0	–
100.00 (Default)	1	0	0	1	100.00	0.0	45.00	2.5	0	0.00	0	1
Sub-total	130	159	7.22	130	5.99	0.8	31.32	2.5	77	58.94	3	2

Jun 30, 2022

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
Other												
0.00 to <0.15	2,228	2,270	1.98	2,616	0.10	1.7	18.34	2.5	345	13.18	1	2
0.00 to <0.10	1,564	1,588	1.07	1,975	0.08	1.1	16.96	2.5	209	10.61	0	0
0.10 to <0.15	664	682	4.09	640	0.16	0.7	22.59	2.5	135	21.11	0	2
0.15 to <0.25	993	1,085	1.54	933	0.26	2.6	28.51	2.5	322	34.53	1	0
0.25 to <0.50	994	1,087	4.79	931	0.43	3.3	32.87	2.5	470	50.53	1	0
0.50 to <0.75	549	599	2.41	484	0.74	2.1	32.04	2.5	301	62.24	1	0
0.75 to <2.50	485	416	9.10	448	1.60	0.9	30.06	2.5	341	76.17	2	1
0.75 to <1.75	292	303	12.22	271	1.29	0.8	30.74	2.5	200	73.60	1	1
1.75 to <2.5	194	113	0.72	176	2.08	0.1	29.02	2.5	141	80.11	1	0
2.50 to <10.00	157	140	0.01	148	5.45	0.1	21.74	2.5	120	80.70	2	0
2.50 to <5	107	103	0	100	4.09	0.1	19.19	2.5	64	64.27	1	0
5 to <10	50	37	0.03	49	8.25	0.0	26.98	2.5	56	114.42	1	0
10.00 to <100.00	117	85	7.16	99	22.20	0.9	34.39	2.5	190	191.74	7	4
10 to <20	12	4	33.30	13	14.25	0.0	38.23	2.5	26	196.07	1	0
20 to <30	90	69	7.05	71	21.17	0.9	38.34	2.5	154	216.29	6	3
30.00 to <100.00	15	12	0	15	34.05	0.0	12.33	2.5	11	71.76	1	0
100.00 (Default)	95	2	0.16	94	100.00	0.9	42.49	2.5	0	0.00	40	66
Sub-total	5,619	5,684	3.03	5,752	2.50	12.6	25.16	2.5	2,089	36.32	55	73
All exposure classes												
Total	5,753	5,860	3.13	5,936	2.55	13.4	25.47	2.5	2,168	36.53	58	75

Advanced IRB exposure

Article 452 (g) (i-v) CRR

The following series of tables details Deutsche Bank's advanced internal rating based (IRB) exposures distributed on its internal rating scale for all relevant regulatory exposure classes. The tables 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 on-balance sheet 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 the borrower and not to the exposure class of the counterparty providing Deutsche Bank credit protection.

In addition, the tables provide the exposure post CRM and CCF, where exposures covered by guarantees or credit derivatives are assigned to the protection seller.

The exposure post CCF and CRM is presented in conjunction with exposures-weighted average PD, LGD, maturity as well as the RWA and the average risk weight. The effect of double default, as far as applicable to exposures outside of former Postbank, is considered in the average risk weight. 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 Deutsche Bank applies an LGD estimate 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, regulatory expected loss and provisions comprising specific risk adjustments.

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

Dec 31, 2022												
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	110,755	372	24.56	122,838	0.00	0.1	50.36	1.3	1,020	0.83	2	0
0.00 to <0.10	110,410	370	24.58	122,493	0.00	0.1	50.36	1.3	970	0.79	1	0
0.10 to <0.15	345	2	20.01	345	0.14	0.0	49.57	2.0	50	14.37	0	0
0.15 to <0.25	795	1	22.50	1,130	0.23	0.0	50.00	2.0	563	49.82	1	0
0.25 to <0.50	1,303	1	28.99	1,019	0.39	0.0	48.83	2.7	738	72.43	2	0
0.50 to <0.75	803	2	47.01	415	0.64	0.0	50.01	1.1	296	71.45	1	0
0.75 to <2.50	5,027	183	35.12	4,525	1.76	0.0	97.12	4.8	10,930	241.54	2	1
0.75 to <1.75	73	16	36.34	26	0.99	0.0	37.50	2.7	20	76.15	0	0
1.75 to <2.5	4,955	167	35.00	4,499	1.76	0.0	97.46	4.8	10,911	242.49	2	1
2.50 to <10.00	1,193	709	39.85	304	6.47	0.0	42.82	3.1	318	104.76	5	5
2.50 to <5	599	135	35.85	138	4.69	0.0	49.38	4.7	117	84.77	0	2
5 to <10	593	575	40.78	166	7.95	0.0	37.36	1.7	201	121.40	5	3
10.00 to <100.00	874	22	35.01	784	13.01	0.0	50.00	1.0	1,797	229.17	51	2
10 to <20	874	22	35.01	784	13.01	0.0	50.00	1.0	1,797	229.17	51	2
20 to <30	0	0	0	0	22.01	0.00	50.00	1.95	0	279.27	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)	1,422	328	35.02	271	100.00	0.0	17.86	1.7	225	83.13	12	10
Sub-total	122,172	1,619	34.75	131,285	0.37	0.2	51.87	1.5	15,887	12.10	77	18
Institutions												
0.00 to <0.15	7,608	5,063	39.15	12,843	0.05	0.4	60.21	1.5	1,429	11.13	2	1
0.00 to <0.10	7,531	4,765	39.47	12,663	0.05	0.4	60.67	1.5	1,386	10.95	2	1
0.10 to <0.15	77	298	34.05	179	0.13	0.0	28.22	2.5	43	23.86	0	0
0.15 to <0.25	471	402	42.90	668	0.16	0.1	43.51	0.6	192	28.74	0	0
0.25 to <0.50	392	700	33.47	674	0.33	0.1	47.98	1.1	410	60.83	1	0
0.50 to <0.75	1,034	200	62.37	1,071	0.69	0.0	39.59	1.2	753	70.31	3	2
0.75 to <2.50	1,435	206	53.12	1,463	1.82	0.1	8.17	2.6	368	25.14	3	1
0.75 to <1.75	159	39	60.65	188	1.13	0.0	13.52	2.3	55	29.15	0	0
1.75 to <2.5	1,276	167	51.35	1,275	1.93	0.0	7.38	2.7	313	24.55	2	1
2.50 to <10.00	1,426	529	37.46	1,475	3.59	0.0	9.87	2.0	498	33.74	6	4
2.50 to <5	1,338	160	70.98	1,329	3.22	0.0	8.35	1.9	360	27.11	4	3
5 to <10	88	369	22.93	146	7.00	0.0	23.70	2.8	137	94.00	2	1
10.00 to <100.00	2	52	43.81	23	13.21	0.0	6.29	1.9	7	32.26	0	0
10 to <20	2	52	43.81	23	13.21	0.0	6.29	1.9	7	32.26	0	0
20 to <30	0	0	0	0	0	0	0	0	0	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)	2,465	0	100.00	2,466	100.00	0.0	0.37	5.0	83	3.35	8	1
Sub-total	14,832	7,153	39.77	20,682	12.40	0.7	43.74	2.0	3,740	18.08	24	10

Dec 31, 2022

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
Corporates												
0.00 to <0.15	64,316	102,120	32.29	101,576	0.07	16.4	30.78	2.3	18,059	17.78	31	10
0.00 to <0.10	53,353	95,097	32.10	87,717	0.06	13.4	32.61	2.2	14,738	16.80	20	7
0.10 to <0.15	10,963	7,023	34.87	13,859	0.13	3.0	19.23	2.5	3,321	23.96	11	3
0.15 to <0.25	23,844	25,553	29.24	30,744	0.20	5.4	26.17	2.5	7,203	23.43	15	13
0.25 to <0.50	31,550	63,781	17.88	40,073	0.36	9.1	33.17	2.2	16,585	41.39	46	36
0.50 to <0.75	22,026	12,195	37.09	25,698	0.64	4.8	28.78	2.4	11,963	46.55	49	37
0.75 to <2.50	48,242	27,216	36.19	51,944	1.47	7.6	29.31	2.3	30,340	58.41	189	146
0.75 to <1.75	24,121	14,352	34.38	25,912	1.11	4.7	26.79	2.1	13,578	52.40	76	55
1.75 to <2.5	24,121	12,864	38.22	26,031	1.83	2.9	31.82	2.5	16,762	64.39	113	91
2.50 to <10.00	32,886	24,994	27.14	35,447	5.02	3.7	20.20	2.5	23,239	65.56	321	255
2.50 to <5	20,747	20,484	25.31	23,391	3.70	2.6	23.32	2.5	16,550	70.75	191	176
5 to <10	12,139	4,510	35.43	12,056	7.58	1.1	14.14	2.3	6,689	55.48	130	79
10.00 to <100.00	4,254	1,798	43.23	4,253	16.76	0.6	17.66	2.1	3,318	78.02	125	90
10 to <20	2,932	1,466	43.13	3,061	13.13	0.3	17.72	2.1	2,394	78.20	73	49
20 to <30	716	181	45.67	649	22.22	0.1	17.44	2.0	411	63.28	18	21
30.00 to <100.00	606	151	41.25	543	32.26	0.2	15.15	2.0	514	94.58	33	21
100.00 (Default)	16,488	2,259	34.64	16,389	100.00	3.0	23.67	3.1	4,479	27.33	3,607	4,164
Sub-total	243,606	259,916	28.69	306,124	6.56	50.7	28.42	2.3	115,186	37.63	4,382	4,749
of which:												
SMEs												
0.00 to <0.15	4,224	2,660	32.97	5,291	0.07	4.9	23.09	3.4	484	9.15	1	1
0.00 to <0.10	3,063	1,897	34.33	3,859	0.06	3.2	22.68	3.6	300	7.78	0	0
0.10 to <0.15	1,161	762	29.59	1,432	0.12	1.7	24.17	3.0	184	12.84	0	0
0.15 to <0.25	1,947	1,440	34.96	2,412	0.20	2.5	35.78	3.2	695	28.81	2	2
0.25 to <0.50	2,413	2,011	34.52	2,929	0.36	4.2	43.39	2.8	1,213	41.40	5	3
0.50 to <0.75	2,392	1,037	40.16	2,556	0.66	1.8	40.52	2.3	1,242	48.60	7	4
0.75 to <2.50	3,682	1,831	34.91	3,863	1.42	2.6	40.05	2.2	2,387	61.78	22	16
0.75 to <1.75	2,152	1,187	35.14	2,384	1.11	1.5	37.44	2.2	1,261	52.90	10	6
1.75 to <2.5	1,531	644	34.48	1,479	1.92	1.1	44.27	2.3	1,125	76.10	12	9
2.50 to <10.00	1,955	1,332	34.33	1,914	4.82	1.3	41.19	2.2	1,697	88.64	37	25
2.50 to <5	1,349	1,041	31.89	1,320	3.62	0.9	42.02	2.5	1,120	84.84	20	17
5 to <10	605	291	43.09	594	7.49	0.4	39.35	1.6	577	97.09	17	8
10.00 to <100.00	453	101	28.87	330	20.31	0.3	41.32	2.7	503	152.15	26	25
10 to <20	204	35	26.07	184	13.95	0.1	40.84	2.3	252	136.70	11	9
20 to <30	135	42	26.37	54	21.52	0.1	61.86	0.9	120	221.20	7	12
30.00 to <100.00	115	24	37.46	92	32.36	0.1	30.09	4.4	131	142.26	9	4
100.00 (Default)	2,513	147	35.92	2,505	100.00	1.8	47.44	1.7	706	28.16	1,166	1,541
Sub-total	19,579	10,558	34.75	21,801	12.64	19.4	36.93	2.7	8,926	40.94	1,265	1,616

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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	4,035	51	32.93	3,951	0.11	0.1	4.41	3.2	163	4.14	0	0
0.00 to <0.10	1,870	38	20.01	1,794	0.08	0.0	3.27	3.4	45	2.53	0	0
0.10 to <0.15	2,165	14	69.13	2,157	0.13	0.0	5.36	3.1	118	5.47	0	0
0.15 to <0.25	4,051	248	31.55	4,072	0.21	0.1	4.76	2.6	220	5.40	0	2
0.25 to <0.50	3,815	535	75.37	4,059	0.39	0.1	11.88	2.7	809	19.92	2	2
0.50 to <0.75	5,568	745	84.69	6,277	0.66	0.2	15.23	2.8	1,750	27.88	6	7
0.75 to <2.50	9,441	1,300	40.22	9,576	1.49	0.3	8.00	2.2	1,863	19.46	11	11
0.75 to <1.75	4,742	563	46.95	4,847	1.13	0.1	7.98	2.1	861	17.77	4	3
1.75 to <2.5	4,699	737	35.07	4,729	1.87	0.2	8.02	2.2	1,002	21.19	7	8
2.50 to <10.00	15,802	2,103	27.08	15,732	5.47	0.4	6.34	2.2	3,360	21.36	49	40
2.50 to <5	9,472	1,308	31.37	9,404	3.90	0.3	7.75	2.0	2,246	23.88	28	26
5 to <10	6,330	794	20.01	6,328	7.79	0.2	4.24	2.4	1,114	17.61	22	14
10.00 to <100.00	1,626	225	24.31	1,681	14.89	0.0	5.30	2.5	384	22.87	15	11
10 to <20	1,427	219	24.39	1,480	12.97	0.0	5.19	2.5	316	21.37	10	11
20 to <30	120	2	34.31	121	22.01	0.0	2.51	1.9	17	14.12	1	0
30.00 to <100.00	79	4	13.89	80	39.77	0.0	11.48	3.6	51	63.88	4	0
100.00 (Default)	3,661	158	28.28	3,648	100.00	0.1	21.87	3.1	466	12.78	765	751
Sub-total	47,999	5,364	43.26	48,996	10.15	1.4	9.09	2.5	9,016	18.40	849	825
Other												
0.00 to <0.15	56,058	99,409	32.27	92,334	0.07	11.5	32.35	2.1	17,411	18.86	29	9
0.00 to <0.10	48,420	93,161	32.06	82,064	0.06	10.2	33.71	2.1	14,393	17.54	19	6
0.10 to <0.15	7,637	6,247	35.44	10,270	0.14	1.3	21.46	2.3	3,019	29.39	10	3
0.15 to <0.25	17,847	23,865	28.87	24,259	0.19	2.9	28.81	2.4	6,288	25.92	13	10
0.25 to <0.50	25,322	61,236	16.84	33,086	0.35	4.8	34.87	2.0	14,564	44.02	40	30
0.50 to <0.75	14,065	10,413	33.38	16,865	0.62	2.8	32.04	2.2	8,971	53.19	36	26
0.75 to <2.50	35,119	24,085	36.07	38,505	1.47	4.7	33.53	2.3	26,090	67.76	155	119
0.75 to <1.75	17,228	12,601	33.74	18,681	1.10	3.0	30.31	2.1	11,455	61.32	62	45
1.75 to <2.5	17,891	11,484	38.63	19,824	1.82	1.7	36.57	2.5	14,635	73.82	94	74
2.50 to <10.00	15,130	21,559	26.70	17,801	4.64	2.0	30.18	2.7	18,181	102.14	235	190
2.50 to <5	9,926	18,135	24.50	12,667	3.55	1.5	32.93	3.0	13,184	104.08	143	133
5 to <10	5,204	3,425	38.36	5,134	7.32	0.5	23.41	2.2	4,997	97.35	92	56
10.00 to <100.00	2,174	1,473	47.10	2,242	17.63	0.3	23.45	1.7	2,431	108.44	84	54
10 to <20	1,301	1,212	47.01	1,396	13.20	0.1	27.94	1.7	1,825	130.73	53	29
20 to <30	461	137	51.73	474	22.36	0.1	16.15	2.2	273	57.71	11	8
30.00 to <100.00	412	123	42.79	372	30.62	0.1	12.25	1.1	333	89.40	21	17
100.00 (Default)	10,314	1,954	35.06	10,236	100.00	1.0	18.49	3.4	3,307	32.31	1,676	1,871
Sub-total	176,028	243,994	28.11	235,327	5.25	29.9	31.66	2.3	97,244	41.32	2,268	2,308

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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	43,858	16,684	54.72	53,567	0.08	3,111.3	25.91	15.1	3,770	7.04	36	6
0.00 to <0.10	27,419	11,138	64.48	35,105	0.06	2,395.2	26.82	14.5	1,101	3.14	6	3
0.10 to <0.15	16,439	5,547	35.13	18,462	0.11	716.1	24.17	16.4	2,670	14.46	30	3
0.15 to <0.25	29,064	4,607	63.71	32,029	0.19	1,125.3	22.22	22.0	2,639	8.24	14	11
0.25 to <0.50	43,079	4,487	66.84	46,065	0.37	933.5	22.86	22.7	6,730	14.61	40	27
0.50 to <0.75	31,789	3,316	80.02	34,275	0.69	555.6	23.18	25.3	7,993	23.32	55	42
0.75 to <2.50	38,618	3,629	69.17	40,838	1.38	1,495.1	30.79	20.2	18,479	45.25	204	136
0.75 to <1.75	24,830	2,612	70.91	26,574	1.02	862.4	29.19	23.8	9,986	37.58	104	65
1.75 to <2.5	13,788	1,017	64.68	14,264	1.83	632.7	28.32	13.1	8,493	59.54	100	70
2.50 to <10.00	16,509	986	60.34	16,685	4.98	785.9	37.24	15.9	12,565	75.31	301	261
2.50 to <5	10,602	700	57.13	10,681	3.67	549.8	38.75	14.9	7,567	70.85	149	125
5 to <10	5,907	286	68.19	6,004	7.31	236.1	34.56	17.6	4,998	83.24	152	136
10.00 to <100.00	3,873	160	69.47	3,844	11.65	162.5	52.38	39.4	4,362	113.47	273	208
10 to <20	2,286	101	71.89	2,299	13.30	85.5	32.62	17.5	2,428	105.63	100	81
20 to <30	763	27	65.24	747	22.13	36.8	36.22	15.9	976	130.68	60	51
30.00 to <100.00	825	31	65.37	799	35.83	40.2	35.81	16.8	958	119.92	113	77
100.00 (Default)	3,608	87	65.61	3,582	100.00	195.4	49.19	9.4	1,341	37.42	1,824	1,727
Sub-total	210,399	33,954	61.82	230,884	2.57	8,364.7	26.87	20.4	57,877	25.07	2,746	2,419
of which:												
Secured by real estate property SMEs												
0.00 to <0.15	3,409	320	58.74	3,597	0.07	15.9	13.55	15.5	80	2.21	0	0
0.00 to <0.10	2,425	249	59.05	2,572	0.06	11.5	13.25	15.5	46	1.79	0	0
0.10 to <0.15	984	71	57.64	1,025	0.11	4.5	14.31	15.6	34	3.28	0	0
0.15 to <0.25	1,163	90	62.64	1,219	0.18	5.2	13.94	15.8	54	4.42	0	0
0.25 to <0.50	1,752	109	57.98	1,815	0.36	8.5	14.90	15.7	145	7.98	1	1
0.50 to <0.75	210	20	67.25	220	0.56	0.7	14.09	16.7	22	10.18	0	0
0.75 to <2.50	1,379	89	66.96	1,429	1.27	5.4	14.87	15.8	264	18.49	3	4
0.75 to <1.75	1,083	76	70.00	1,129	1.03	4.3	14.90	15.8	185	16.41	2	2
1.75 to <2.5	296	13	48.91	299	2.15	1.1	14.76	16.1	79	26.33	1	2
2.50 to <10.00	303	15	38.49	301	5.01	1.3	15.72	15.1	131	43.39	2	3
2.50 to <5	186	12	35.67	184	3.67	0.7	15.27	15.4	67	36.12	1	2
5 to <10	117	2	52.44	117	7.13	0.5	16.43	14.5	64	54.81	1	2
10.00 to <100.00	65	1	42.28	64	21.35	0.3	15.54	15.4	47	73.72	2	2
10 to <20	38	1	43.35	38	14.71	0.2	15.86	16.3	27	72.28	1	1
20 to <30	14	0	40.69	13	26.13	0.1	16.32	14.5	11	82.09	1	0
30.00 to <100.00	13	0	26.98	13	36.43	0.1	13.72	13.7	9	69.32	1	0
100.00 (Default)	74	0	40.44	73	100.00	0.4	30.21	10.6	37	51.04	22	26
Sub-total	8,354	644	60.07	8,717	1.52	37.7	14.35	15.6	780	8.95	31	37

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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
Secured by real estate property non-SMEs												
0.00 to <0.15	37,203	1,321	54.22	37,919	0.08	281.7	17.12	19.4	1,382	3.64	6	4
0.00 to <0.10	23,466	861	53.79	23,929	0.06	175.8	16.87	19.1	692	2.89	3	2
0.10 to <0.15	13,736	460	55.04	13,989	0.11	105.9	17.55	20.0	690	4.93	3	2
0.15 to <0.25	25,919	928	76.91	26,633	0.19	194.0	17.37	24.9	1,954	7.34	9	9
0.25 to <0.50	37,800	1,833	85.01	39,355	0.37	246.4	18.81	24.9	5,010	12.73	28	20
0.50 to <0.75	29,473	1,924	99.45	31,381	0.69	182.7	21.31	26.8	7,015	22.35	46	35
0.75 to <2.50	26,511	1,628	90.45	27,965	1.34	196.3	21.16	26.5	10,765	38.50	107	65
0.75 to <1.75	18,334	1,254	90.08	19,452	1.00	148.7	21.55	29.8	6,303	32.40	65	38
1.75 to <2.5	8,177	374	91.72	8,513	1.76	47.6	11.16	17.8	4,462	52.42	41	27
2.50 to <10.00	7,484	224	87.88	7,664	5.17	52.1	20.05	27.3	5,410	70.59	79	78
2.50 to <5	4,477	152	88.98	4,602	3.75	32.3	20.45	26.8	2,864	62.24	35	34
5 to <10	3,007	71	85.55	3,062	7.30	19.9	19.45	28.0	2,546	83.13	44	44
10.00 to <100.00	2,108	52	93.75	2,143	5.00	14.0	53.92	65.6	2,395	111.72	97	59
10 to <20	1,274	37	95.40	1,307	13.33	7.9	20.68	25.8	1,459	111.66	36	25
20 to <30	391	7	88.69	394	22.14	2.7	21.17	24.8	509	129.34	18	13
30.00 to <100.00	442	8	90.53	443	35.04	3.4	21.39	25.4	426	96.23	44	21
100.00 (Default)	1,249	20	94.00	1,265	100.00	11.5	22.91	21.4	620	49.05	301	244
Sub-total	167,746	7,930	83.72	174,324	1.48	1,178.8	19.56	24.9	34,552	19.82	674	514
Qualifying Revolving												
0.00 to <0.15	47	9,604	68.82	6,656	0.06	2,134.6	67.21	0.0	203	3.05	3	0
0.00 to <0.10	29	7,918	68.84	5,480	0.05	1,716.4	67.54	0.0	146	2.66	2	0
0.10 to <0.15	18	1,686	68.71	1,176	0.11	418.1	65.67	0.0	57	4.87	1	0
0.15 to <0.25	54	2,393	66.86	1,654	0.18	626.5	63.57	0.0	120	7.26	2	0
0.25 to <0.50	113	976	65.02	747	0.37	345.5	65.13	0.0	95	12.74	2	1
0.50 to <0.75	70	402	58.73	306	0.69	140.4	59.21	0.0	60	19.52	1	0
0.75 to <2.50	218	525	63.19	550	1.42	343.5	64.86	0.0	193	35.12	5	3
0.75 to <1.75	132	368	63.93	367	1.10	224.0	66.00	0.0	109	29.69	3	1
1.75 to <2.5	86	157	61.44	183	2.06	119.5	62.59	0.0	84	46.02	2	1
2.50 to <10.00	164	210	63.64	298	5.36	164.3	61.57	0.0	258	86.64	10	6
2.50 to <5	91	113	61.91	160	3.72	94.2	61.14	0.0	110	68.39	4	2
5 to <10	73	98	65.63	137	7.27	70.1	62.07	0.0	148	107.92	6	4
10.00 to <100.00	70	44	65.54	98	21.05	44.4	61.42	0.0	171	173.66	13	7
10 to <20	32	32	66.07	53	13.19	23.1	60.91	0.0	80	150.26	4	2
20 to <30	16	8	62.09	21	21.59	9.9	61.82	0.0	40	187.75	3	2
30.00 to <100.00	21	4	67.69	24	37.59	11.4	62.17	0.0	52	212.16	6	3
100.00 (Default)	103	16	67.99	114	100.00	50.5	68.73	0.0	99	87.52	73	76
Sub-total	838	14,169	67.65	10,422	1.63	3,849.7	65.92	0.0	1,200	11.51	109	94

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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	868	2,431	26.62	1,470	0.08	47.0	50.30	3.2	135	9.16	1	0
0.00 to <0.10	431	789	53.49	828	0.06	29.0	51.95	4.0	58	7.00	0	0
0.10 to <0.15	437	1,642	13.71	642	0.12	18.0	48.17	2.2	77	11.95	0	0
0.15 to <0.25	344	511	32.48	511	0.20	15.8	53.38	4.3	95	18.58	1	0
0.25 to <0.50	530	696	31.59	689	0.37	21.9	53.35	3.2	184	26.68	1	0
0.50 to <0.75	379	449	34.74	377	0.62	10.2	56.04	3.8	141	37.37	1	0
0.75 to <2.50	974	639	44.30	969	1.35	16.2	59.61	3.9	515	53.16	8	3
0.75 to <1.75	540	414	44.64	611	1.06	10.8	57.31	4.0	292	47.72	4	1
1.75 to <2.5	434	225	43.67	358	1.86	5.4	63.53	3.5	224	62.47	4	2
2.50 to <10.00	777	277	38.83	501	4.50	10.3	63.65	2.7	355	70.93	13	8
2.50 to <5	599	229	39.52	390	3.63	7.4	64.35	2.8	273	70.09	9	5
5 to <10	178	48	35.57	111	7.56	3.0	61.19	2.4	82	73.87	5	3
10.00 to <100.00	188	28	41.24	81	19.85	2.6	66.79	2.2	84	104.01	10	6
10 to <20	91	16	42.22	44	13.17	1.3	66.04	2.2	41	91.94	4	2
20 to <30	44	7	45.67	18	22.53	0.7	64.72	2.2	20	109.81	2	1
30.00 to <100.00	52	5	31.98	19	33.02	0.7	70.50	2.3	24	126.91	4	3
100.00 (Default)	318	19	38.65	257	100.00	3.6	67.09	1.8	134	51.95	176	212
Sub-total	4,379	5,050	31.65	4,857	6.51	127.6	55.90	3.3	1,643	33.84	210	231
Other retail non-SMEs												
0.00 to <0.15	2,331	3,009	32.22	3,925	0.08	632.1	42.93	3.7	1,971	50.21	26	1
0.00 to <0.10	1,068	1,321	52.89	2,295	0.06	462.5	39.46	3.6	159	6.92	1	1
0.10 to <0.15	1,263	1,688	16.04	1,630	0.11	169.6	47.80	3.8	1,812	111.16	25	1
0.15 to <0.25	1,585	684	58.31	2,013	0.19	283.9	49.62	10.7	416	20.66	2	2
0.25 to <0.50	2,884	873	59.93	3,459	0.38	311.1	57.96	9.6	1,296	37.46	8	5
0.50 to <0.75	1,657	521	64.23	1,991	0.68	221.6	41.89	10.6	755	37.91	6	5
0.75 to <2.50	9,536	749	48.53	9,926	1.51	933.7	55.50	6.1	6,741	67.91	82	61
0.75 to <1.75	4,741	500	49.86	5,014	1.10	474.6	55.94	6.3	3,097	61.76	30	22
1.75 to <2.5	4,795	249	45.86	4,911	1.92	459.1	55.05	5.9	3,644	74.19	52	39
2.50 to <10.00	7,781	260	58.09	7,920	4.81	557.8	52.11	6.3	6,410	80.94	196	166
2.50 to <5	5,249	194	51.46	5,345	3.60	415.2	52.77	5.9	4,253	79.58	101	82
5 to <10	2,532	66	77.49	2,575	7.32	142.7	50.73	7.0	2,157	83.76	96	84
10.00 to <100.00	1,444	34	61.34	1,457	19.92	101.2	50.32	6.6	1,665	114.24	151	134
10 to <20	850	15	58.87	857	13.22	53.1	48.09	6.7	821	95.88	55	51
20 to <30	298	5	64.25	301	21.97	23.5	53.29	6.3	396	131.80	36	35
30.00 to <100.00	295	14	62.85	300	37.01	24.6	53.69	6.5	447	149.06	59	49
100.00 (Default)	1,865	31	62.57	1,873	100.00	129.4	64.03	3.0	450	24.01	1,252	1,169
Sub-total	29,082	6,161	45.14	32,564	8.38	3,170.9	52.48	6.6	19,703	60.51	1,723	1,543
All exposure classes												
Total	591,009	302,642	32.70	688,976	4.22	8,416.4	32.83	8.2	192,690	27.97	7,229	7,196

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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
Central governments and central banks												
0.00 to <0.15	110,142	377	24.96	124,606	0.00	0.1	50.39	1.3	1,082	0.87	2	0
0.00 to <0.10	109,957	375	24.99	124,420	0.00	0.1	50.39	1.3	1,033	0.83	2	0
0.10 to <0.15	185	2	20.10	186	0.14	0.0	50.00	0.9	49	26.41	0	0
0.15 to <0.25	1,336	7	20.17	1,659	0.23	0.0	50.00	1.6	758	45.67	2	0
0.25 to <0.50	1,247	145	20.05	1,276	0.39	0.0	49.89	1.9	825	64.65	2	0
0.50 to <0.75	620	2	55.03	410	0.64	0.0	50.00	0.9	279	67.92	1	0
0.75 to <2.50	5,445	170	35.28	5,003	1.76	0.0	97.35	4.8	12,120	242.23	2	1
0.75 to <1.75	87	1	97.62	18	1.07	0.0	31.94	3.6	13	74.71	0	0
1.75 to <2.5	5,358	170	35.03	4,986	1.76	0.0	97.58	4.8	12,107	242.83	2	1
2.50 to <10.00	1,852	692	45.52	395	6.18	0.0	39.45	3.2	361	91.53	4	10
2.50 to <5	681	171	35.24	217	4.73	0.0	49.86	4.8	181	83.38	0	3
5 to <10	1,171	521	48.90	178	7.95	0.0	26.73	1.3	180	101.49	4	8
10.00 to <100.00	1,389	34	35.00	694	13.01	0.0	41.97	1.1	1,349	194.18	38	5
10 to <20	1,389	34	35.00	694	13.01	0.0	41.97	1.1	1,349	194.18	38	5
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)	164	2	35.02	70	100.00	0.0	18.94	1.1	137	195.61	13	12
Sub-total	122,195	1,430	35.92	134,114	0.21	0.2	52.04	1.5	16,910	12.61	65	29
Institutions												
0.00 to <0.15	9,043	5,486	41.31	14,839	0.05	0.4	55.88	1.4	1,836	12.37	3	2
0.00 to <0.10	8,553	5,005	42.06	14,143	0.05	0.4	56.72	1.4	1,660	11.74	2	2
0.10 to <0.15	490	480	33.59	695	0.15	0.1	38.86	0.9	176	25.25	0	0
0.15 to <0.25	299	222	35.79	532	0.25	0.1	48.96	1.2	265	49.83	1	0
0.25 to <0.50	192	531	53.48	418	0.43	0.1	31.09	0.8	200	47.95	1	0
0.50 to <0.75	1,621	453	74.49	1,764	0.70	0.1	30.56	1.0	997	56.56	4	2
0.75 to <2.50	824	446	18.46	772	1.72	0.1	8.99	2.7	193	25.00	1	1
0.75 to <1.75	186	41	59.76	205	1.13	0.0	15.34	2.2	69	33.61	0	0
1.75 to <2.5	638	406	14.34	567	1.93	0.0	6.69	2.9	124	21.89	1	0
2.50 to <10.00	1,249	659	43.85	1,313	3.51	0.0	10.99	1.9	483	36.75	6	5
2.50 to <5	1,195	338	61.94	1,268	3.32	0.0	10.76	1.9	451	35.56	5	3
5 to <10	54	321	24.80	46	8.74	0.0	17.33	1.1	32	69.69	1	3
10.00 to <100.00	31	59	43.89	56	13.58	0.0	19.38	3.6	61	109.19	2	0
10 to <20	31	59	43.89	56	13.57	0.0	19.37	3.6	61	109.15	2	0
20 to <30	0	0	0	0	0	0	0	0	0	0	0	–
30.00 to <100.00	0	0	0	0	49.50	0.0	43.9800	0.00	0	213.11	0	0
100.00 (Default)	1,903	1	100.00	1,904	100.00	0.0	0.30	4.9	65	3.41	4	1
Sub-total	15,163	7,857	42.83	21,597	9.23	0.8	43.76	1.7	4,101	18.99	22	12

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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
Corporates												
0.00 to <0.15	82,081	125,781	32.20	123,430	0.08	19.4	32.39	2.1	26,384	21.38	57	22
0.00 to <0.10	62,516	99,772	32.25	96,559	0.06	14.2	32.84	2.1	15,532	16.09	20	13
0.10 to <0.15	19,565	26,009	32.00	26,871	0.15	5.2	30.74	2.3	10,852	40.38	37	9
0.15 to <0.25	22,697	21,512	29.39	27,919	0.24	6.3	28.04	2.4	8,073	28.91	18	12
0.25 to <0.50	22,928	17,629	32.16	27,403	0.41	5.9	28.70	2.3	10,980	40.07	32	21
0.50 to <0.75	20,565	11,015	32.84	22,763	0.67	5.0	26.35	2.4	10,167	44.66	44	28
0.75 to <2.50	40,351	54,397	14.88	43,211	1.50	7.1	27.99	2.5	24,011	55.57	163	113
0.75 to <1.75	17,164	12,801	32.36	19,053	1.11	4.0	23.94	2.2	9,514	49.93	52	41
1.75 to <2.5	23,187	41,595	9.53	24,158	1.80	3.1	31.17	2.8	14,497	60.01	111	72
2.50 to <10.00	33,995	28,596	30.55	38,273	5.27	4.0	20.28	2.6	26,708	69.78	374	289
2.50 to <5	22,786	20,392	31.20	25,932	3.92	3.3	23.20	2.7	19,385	74.75	228	196
5 to <10	11,208	8,204	28.93	12,342	8.10	0.8	14.17	2.2	7,324	59.34	146	93
10.00 to <100.00	5,819	2,660	39.62	5,293	18.11	0.9	20.28	2.0	4,407	83.27	155	112
10 to <20	3,840	2,197	38.12	3,585	13.47	0.4	18.09	2.1	2,833	79.03	89	68
20 to <30	997	316	49.82	771	22.14	0.3	24.39	2.0	991	128.56	42	31
30.00 to <100.00	982	146	40.07	937	32.55	0.2	25.27	1.5	583	62.21	24	13
100.00 (Default)	16,064	2,602	27.66	15,888	100.00	3.2	24.39	3.1	3,173	19.97	3,859	3,903
Sub-total	244,499	264,191	28.28	304,181	6.56	51.8	28.43	2.3	113,903	37.45	4,702	4,500
of which:												
SMEs												
0.00 to <0.15	3,906	3,337	32.52	4,976	0.10	5.0	29.55	3.2	709	14.24	1	1
0.00 to <0.10	2,310	2,047	31.72	3,026	0.07	2.7	29.33	3.3	336	11.10	1	1
0.10 to <0.15	1,596	1,290	33.80	1,950	0.15	2.3	29.90	3.2	373	19.13	1	0
0.15 to <0.25	2,732	1,497	33.21	2,984	0.24	3.0	34.89	3.4	923	30.94	3	2
0.25 to <0.50	2,101	1,605	34.39	2,357	0.41	2.8	32.58	3.1	802	34.02	3	3
0.50 to <0.75	2,258	1,071	38.97	2,325	0.68	2.2	35.77	2.5	1,042	44.81	5	4
0.75 to <2.50	4,091	1,865	34.04	3,873	1.54	3.1	37.96	2.9	1,769	45.67	23	19
0.75 to <1.75	1,624	1,164	31.21	1,612	1.13	1.7	33.32	2.4	823	51.09	6	5
1.75 to <2.5	2,466	701	38.74	2,262	1.82	1.3	41.27	3.3	945	41.80	17	14
2.50 to <10.00	2,353	949	36.38	2,090	4.98	1.5	35.22	2.4	1,668	79.83	34	26
2.50 to <5	1,802	773	32.55	1,507	3.77	1.3	37.76	2.6	1,181	78.38	21	19
5 to <10	551	175	53.30	583	8.11	0.3	28.66	2.0	487	83.59	14	7
10.00 to <100.00	505	131	33.94	329	21.13	0.4	41.95	2.8	521	158.45	27	23
10 to <20	207	92	26.20	163	13.57	0.1	41.02	2.5	233	143.00	9	6
20 to <30	170	16	63.68	60	21.33	0.2	66.78	0.9	143	237.99	8	13
30.00 to <100.00	128	24	44.32	106	32.68	0.1	29.28	4.4	145	137.19	10	4
100.00 (Default)	2,284	356	23.12	2,319	100.00	2.1	65.22	1.7	591	25.48	1,505	1,612
Sub-total	20,228	10,811	33.84	21,252	12.18	20.1	37.49	2.8	8,025	37.76	1,602	1,689

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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	7,365	463	62.97	7,524	0.11	0.1	4.84	3.1	347	4.62	0	2
0.00 to <0.10	4,233	294	46.73	4,281	0.08	0.1	4.58	3.0	165	3.85	0	0
0.10 to <0.15	3,132	169	91.34	3,243	0.14	0.1	5.18	3.1	182	5.62	0	2
0.15 to <0.25	3,592	83	19.09	3,518	0.23	0.1	5.79	2.6	224	6.37	0	0
0.25 to <0.50	4,008	702	82.41	4,490	0.39	0.1	14.29	2.6	1,038	23.13	2	2
0.50 to <0.75	4,438	357	77.56	4,687	0.65	0.1	13.11	2.8	1,164	24.84	4	4
0.75 to <2.50	6,456	1,386	50.97	6,745	1.43	0.3	9.46	2.7	1,664	24.67	9	8
0.75 to <1.75	3,284	664	47.43	3,428	1.09	0.2	9.81	2.4	778	22.70	4	3
1.75 to <2.5	3,171	722	54.23	3,317	1.78	0.1	9.10	2.9	886	26.71	6	5
2.50 to <10.00	14,400	1,869	28.47	14,424	5.89	0.4	6.78	2.3	3,542	24.55	54	39
2.50 to <5	7,715	968	36.34	7,739	4.13	0.2	7.70	2.5	1,979	25.57	23	21
5 to <10	6,685	901	20.01	6,686	7.93	0.2	5.70	2.0	1,563	23.38	31	18
10.00 to <100.00	1,922	302	26.57	1,994	14.79	0.0	10.25	2.4	1,012	50.75	33	18
10 to <20	1,556	284	27.02	1,625	13.01	0.0	7.90	2.5	585	36.01	17	11
20 to <30	340	18	19.56	344	22.01	0.0	21.97	1.9	424	123.44	17	8
30.00 to <100.00	25	0	0	25	31.01	0.0	2.00	4.1	2	9.49	0	0
100.00 (Default)	3,100	72	41.92	3,090	100.00	0.1	22.79	2.9	436	14.10	714	631
Sub-total	45,281	5,234	47.99	46,473	9.46	1.4	9.36	2.6	9,427	20.29	818	705
Other												
0.00 to <0.15	70,810	121,981	32.07	110,930	0.08	14.3	34.38	2.0	25,328	22.83	55	19
0.00 to <0.10	55,973	97,431	32.22	89,252	0.06	11.5	34.32	2.0	15,031	16.84	19	13
0.10 to <0.15	14,837	24,550	31.50	21,678	0.15	2.8	34.64	2.1	10,297	47.50	36	6
0.15 to <0.25	16,373	19,932	29.15	21,416	0.24	3.3	30.74	2.2	6,925	32.34	15	10
0.25 to <0.50	16,819	15,323	29.62	20,557	0.41	3.0	31.40	2.2	9,140	44.46	27	16
0.50 to <0.75	13,869	9,587	30.49	15,751	0.67	2.6	28.90	2.2	7,960	50.54	35	20
0.75 to <2.50	29,804	51,146	13.21	32,593	1.50	3.7	30.65	2.4	20,578	63.14	131	86
0.75 to <1.75	12,256	10,973	31.57	14,014	1.12	2.1	26.32	2.1	7,912	56.46	42	34
1.75 to <2.5	17,549	40,173	8.22	18,580	1.79	1.6	33.88	2.7	12,666	68.17	89	53
2.50 to <10.00	17,242	25,779	30.48	21,759	4.88	2.1	27.80	2.7	21,498	98.80	286	225
2.50 to <5	13,270	18,651	30.88	16,686	3.84	1.8	29.07	2.8	16,224	97.24	184	157
5 to <10	3,973	7,128	29.45	5,074	8.31	0.4	23.66	2.4	5,274	103.95	102	68
10.00 to <100.00	3,393	2,226	41.73	2,970	20.01	0.4	24.61	1.7	2,875	96.78	94	70
10 to <20	2,077	1,821	40.46	1,797	13.88	0.2	25.22	1.8	2,015	112.13	64	51
20 to <30	486	282	51.01	367	22.39	0.1	19.73	2.3	424	115.49	17	11
30.00 to <100.00	829	123	39.26	806	32.59	0.1	25.48	1.1	435	54.03	14	9
100.00 (Default)	10,680	2,174	27.93	10,479	100.00	1.0	15.83	3.5	2,147	20.49	1,640	1,660
Sub-total	178,990	248,147	27.62	236,456	5.48	30.4	31.36	2.2	96,451	40.79	2,282	2,106

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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	32,055	18,144	54.97	42,997	0.11	3,533.0	25.45	14.0	2,132	4.96	12	9
0.00 to <0.10	16,335	14,986	53.61	25,153	0.08	2,814.3	28.67	11.3	978	3.89	6	4
0.10 to <0.15	15,720	3,158	61.44	17,843	0.15	718.7	20.92	17.8	1,153	6.46	6	4
0.15 to <0.25	27,221	4,182	60.78	29,839	0.25	808.4	20.20	21.4	2,802	9.39	15	12
0.25 to <0.50	39,306	5,084	66.14	42,610	0.41	782.7	20.66	23.7	6,129	14.38	37	28
0.50 to <0.75	44,987	4,897	75.45	48,517	0.73	828.4	22.38	23.2	11,210	23.11	79	58
0.75 to <2.50	46,535	4,216	72.29	49,157	0.71	1,427.9	27.81	18.6	20,778	42.27	214	140
0.75 to <1.75	29,375	2,911	75.93	31,381	1.26	753.6	25.64	20.0	11,397	36.32	101	61
1.75 to <2.5	17,160	1,305	64.17	17,776	2.04	674.3	31.63	16.3	9,382	52.78	113	79
2.50 to <10.00	18,772	1,156	63.30	19,061	4.90	802.9	33.11	16.5	13,150	68.99	302	277
2.50 to <5	14,112	881	59.62	14,276	3.87	626.9	33.78	15.6	9,298	65.13	184	171
5 to <10	4,660	275	75.07	4,785	7.97	176.0	31.11	19.2	3,852	80.51	119	106
10.00 to <100.00	3,498	206	77.07	3,519	21.52	150.3	30.71	18.4	3,927	111.58	233	178
10 to <20	1,964	130	80.26	2,011	13.88	77.7	29.95	18.8	2,057	102.29	83	71
20 to <30	720	44	72.95	713	22.60	33.9	31.93	17.4	874	122.67	51	43
30.00 to <100.00	814	32	69.69	796	39.88	38.7	31.53	18.5	996	125.15	99	64
100.00 (Default)	3,744	107	59.06	3,736	100.00	203.4	45.47	9.7	1,246	33.35	1,727	1,784
Sub-total	216,118	37,992	62.05	239,436	2.68	8,537.1	24.81	19.7	61,374	25.63	2,619	2,487
of which:												
Secured by real estate property SMEs												
0.00 to <0.15	1,371	191	58.35	1,476	0.12	7.9	14.11	14.9	50	3.38	0	0
0.00 to <0.10	454	78	60.93	500	0.09	3.1	13.81	14.3	13	2.58	0	0
0.10 to <0.15	917	113	56.57	976	0.14	4.8	14.26	15.2	37	3.79	0	0
0.15 to <0.25	1,606	131	58.87	1,678	0.23	7.3	14.39	15.7	93	5.56	1	0
0.25 to <0.50	1,646	121	57.81	1,706	0.40	7.2	14.86	15.8	144	8.47	1	1
0.50 to <0.75	1,363	88	56.14	1,392	0.66	6.0	14.58	15.9	167	12.02	1	1
0.75 to <2.50	1,629	72	54.47	1,617	1.39	6.6	14.82	15.8	326	20.17	3	4
0.75 to <1.75	974	45	57.75	963	1.11	4.2	15.29	15.9	175	18.12	2	2
1.75 to <2.5	655	27	48.88	655	1.82	2.5	14.13	15.6	152	23.19	2	2
2.50 to <10.00	618	24	53.39	620	4.33	2.5	14.20	15.1	233	37.54	4	6
2.50 to <5	526	21	54.82	529	3.67	2.1	14.28	15.2	186	35.08	3	4
5 to <10	92	4	44.93	91	8.19	0.4	13.73	14.3	47	51.78	1	1
10.00 to <100.00	80	5	45.56	79	19.39	0.4	13.59	14.6	50	63.63	2	2
10 to <20	45	4	45.28	46	13.35	0.2	14.29	15.6	28	62.13	1	1
20 to <30	19	1	47.28	18	22.72	0.1	13.71	13.8	13	71.34	1	1
30.00 to <100.00	16	0	64.00	15	33.32	0.1	11.41	12.8	9	59.12	1	1
100.00 (Default)	83	0	39.39	79	100.00	0.4	29.86	9.9	35	44.07	25	34
Sub-total	8,395	633	57.31	8,647	1.91	38.3	14.67	15.5	1,099	12.71	37	47

Jun 30, 2022

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
Secured by real estate property non-SMEs												
0.00 to <0.15	27,189	983	59.48	27,770	0.12	252.1	14.68	20.1	1,217	4.38	5	5
0.00 to <0.10	13,721	439	58.59	13,978	0.09	144.7	13.74	19.1	448	3.20	2	2
0.10 to <0.15	13,468	543	60.21	13,793	0.15	107.4	15.62	21.1	770	5.58	3	3
0.15 to <0.25	23,313	1,210	72.48	24,185	0.25	171.9	16.30	24.1	1,996	8.25	10	10
0.25 to <0.50	34,655	2,408	82.69	36,634	0.41	226.9	18.02	25.7	4,834	13.20	27	23
0.50 to <0.75	39,879	2,999	87.78	42,493	0.73	253.0	19.98	25.0	9,247	21.76	63	47
0.75 to <2.50	34,178	2,451	88.38	36,314	0.40	207.0	21.31	22.7	13,596	37.44	120	68
0.75 to <1.75	23,585	1,878	89.84	25,258	1.28	143.2	21.29	22.9	8,484	33.59	70	37
1.75 to <2.5	10,592	573	83.59	11,057	2.10	63.8	21.38	22.2	5,111	46.23	51	31
2.50 to <10.00	9,267	332	81.65	9,512	4.97	62.2	18.71	25.9	6,183	65.00	90	92
2.50 to <5	6,838	265	79.84	7,029	3.93	46.3	18.47	24.6	4,035	57.40	52	59
5 to <10	2,430	66	88.89	2,484	7.92	15.9	19.41	29.7	2,149	86.50	38	33
10.00 to <100.00	2,082	53	93.43	2,115	22.04	13.8	19.99	25.6	2,410	113.93	95	54
10 to <20	1,173	33	94.47	1,200	13.93	7.6	19.75	25.7	1,303	108.63	33	22
20 to <30	418	9	89.61	422	22.70	2.8	20.01	25.0	519	123.03	19	13
30.00 to <100.00	491	11	93.48	493	41.18	3.4	20.56	25.9	587	119.06	43	19
100.00 (Default)	1,331	27	95.23	1,351	100.00	12.1	21.05	21.4	654	48.37	293	271
Sub-total	171,893	10,463	82.18	180,375	1.66	1,199.0	18.48	23.8	40,136	22.25	704	569
Qualifying Revolving												
0.00 to <0.15	55	11,130	68.56	7,685	0.08	2,488.1	55.53	0.0	245	3.18	4	1
0.00 to <0.10	23	9,609	68.62	6,617	0.07	2,087.4	55.81	0.0	186	2.81	3	0
0.10 to <0.15	32	1,520	68.19	1,068	0.16	400.7	53.79	0.0	59	5.51	1	0
0.15 to <0.25	63	1,257	66.14	895	0.25	368.2	53.49	0.0	70	7.88	1	0
0.25 to <0.50	91	764	63.37	575	0.42	273.4	52.78	0.0	67	11.60	1	0
0.50 to <0.75	125	526	61.62	449	0.73	236.2	52.72	0.0	81	18.09	2	1
0.75 to <2.50	208	445	62.15	485	1.61	278.6	52.17	0.0	156	32.13	4	2
0.75 to <1.75	113	285	62.08	289	1.27	162.5	52.16	0.0	78	27.11	2	1
1.75 to <2.5	96	160	62.28	196	2.12	116.1	52.17	0.0	77	39.54	2	1
2.50 to <10.00	166	203	63.81	296	5.37	166.5	53.68	0.0	226	76.43	9	6
2.50 to <5	110	139	63.99	199	4.05	119.6	52.69	0.0	125	62.65	4	3
5 to <10	56	64	63.44	97	8.06	46.9	55.71	0.0	102	104.74	4	3
10.00 to <100.00	58	38	65.78	83	21.59	39.7	55.09	0.0	132	158.11	10	6
10 to <20	28	27	66.28	45	14.03	21.5	56.01	0.0	65	143.36	4	2
20 to <30	14	8	65.23	19	22.44	9.0	54.48	0.0	32	169.48	2	1
30.00 to <100.00	17	3	63.31	19	38.72	9.3	53.51	0.0	35	181.97	4	2
100.00 (Default)	103	16	68.19	115	100.00	51.8	60.54	0.0	77	67.34	64	76
Sub-total	870	14,379	67.55	10,583	1.61	3,902.5	54.93	0.0	1,054	9.96	95	92

Jun 30, 2022

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
Other retail SMEs												
0.00 to <0.15	660	2,535	22.54	1,376	0.11	38.0	44.45	2.9	135	9.81	1	0
0.00 to <0.10	356	2,073	16.30	819	0.09	23.7	45.27	2.6	73	8.88	0	0
0.10 to <0.15	304	462	50.53	557	0.14	14.4	43.26	3.4	62	11.17	0	0
0.15 to <0.25	484	797	34.71	786	0.23	23.6	44.45	4.2	131	16.71	1	0
0.25 to <0.50	574	946	27.17	744	0.39	26.1	45.81	3.3	179	24.08	1	1
0.50 to <0.75	539	560	38.04	617	0.65	16.5	49.60	5.1	210	33.98	2	1
0.75 to <2.50	1,030	624	43.83	944	1.40	17.0	55.61	3.7	474	50.25	7	3
0.75 to <1.75	527	357	41.93	509	1.08	10.1	54.15	3.8	231	45.35	3	1
1.75 to <2.5	503	267	46.36	435	1.77	6.9	57.31	3.6	243	55.98	4	2
2.50 to <10.00	814	269	38.69	527	4.42	11.6	60.90	2.6	356	67.65	13	7
2.50 to <5	662	232	39.32	432	3.65	8.9	61.38	2.6	289	66.85	9	5
5 to <10	152	37	34.68	94	7.96	2.6	58.74	3.0	67	71.32	4	3
10.00 to <100.00	176	33	49.79	81	20.24	2.7	61.18	2.1	78	96.65	9	6
10 to <20	80	14	37.34	35	13.04	1.2	61.50	2.2	29	84.35	3	2
20 to <30	52	15	67.83	30	22.01	0.7	58.11	1.8	30	99.91	3	1
30.00 to <100.00	44	5	30.16	16	32.32	0.8	66.07	2.7	19	116.90	3	3
100.00 (Default)	285	20	24.24	238	100.00	3.3	59.67	1.8	102	43.05	142	200
Sub-total	4,562	5,783	29.68	5,312	5.66	138.8	49.79	3.5	1,666	31.37	176	218
Other retail non-SMEs												
0.00 to <0.15	2,781	3,306	32.55	4,689	0.10	747.0	37.98	4.3	485	10.34	2	2
0.00 to <0.10	1,781	2,787	28.60	3,240	0.08	555.5	35.71	2.8	259	8.00	1	1
0.10 to <0.15	1,000	519	53.72	1,449	0.15	191.5	43.06	7.4	225	15.56	1	1
0.15 to <0.25	1,755	787	60.92	2,296	0.25	237.5	44.36	11.7	511	22.27	3	2
0.25 to <0.50	2,341	845	66.24	2,951	0.41	249.1	44.21	13.2	905	30.67	6	4
0.50 to <0.75	3,081	725	65.68	3,567	0.72	316.6	45.53	11.0	1,505	42.19	12	9
0.75 to <2.50	9,491	625	46.86	9,797	1.63	918.7	50.14	6.4	6,226	63.56	79	63
0.75 to <1.75	4,176	346	49.30	4,362	1.22	433.6	48.08	6.8	2,429	55.68	25	21
1.75 to <2.5	5,314	279	43.83	5,435	1.96	485.1	51.81	6.0	3,798	69.88	54	42
2.50 to <10.00	7,907	328	65.32	8,106	4.86	560.2	48.89	7.1	6,151	75.89	187	167
2.50 to <5	5,977	224	54.44	6,088	3.82	450.0	50.57	6.7	4,664	76.62	116	100
5 to <10	1,931	104	88.64	2,018	8.02	110.2	43.82	8.1	1,487	73.70	71	66
10.00 to <100.00	1,102	77	85.29	1,161	20.82	93.6	47.51	8.1	1,257	108.26	116	111
10 to <20	638	53	92.36	685	13.86	47.1	45.50	9.0	631	92.05	43	44
20 to <30	218	11	73.22	224	22.48	21.3	50.45	7.0	281	125.18	26	27
30.00 to <100.00	247	12	65.95	251	38.34	25.2	50.36	6.7	345	137.38	48	40
100.00 (Default)	1,941	43	49.25	1,953	100.00	135.7	60.39	3.2	378	19.36	1,203	1,204
Sub-total	30,399	6,735	47.29	34,519	8.10	3,258.5	47.32	7.6	17,419	50.46	1,608	1,561
All exposure classes												
Total	597,976	311,470	32.80	699,329	4.10	8,589.9	32.19	8.1	196,288	28.07	7,408	7,028

Total IRB exposure covered by credit derivatives

Article 453 (j) CRR

The table below presents the Group's IRB exposures, split into FIRB and AIRB. The table shows the RWA by the relevant exposure 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.

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

in € m.	Dec 31, 2022		Jun 30, 2022	
	a	b	a	b
	pre-credit derivatives RWA	Actual RWA	pre-credit derivatives RWA	Actual RWA
1	Exposures under FIRB			
2	0	0	0	0
3	10	10	3	3
3a	1,746	1,750	2,753	2,757
	of which:			
4	41	41	77	77
5	601	601	591	591
	1,103	1,108	2,085	2,089
6a	1,755	1,760	2,756	2,759
7	Exposures under AIRB			
8	15,887	15,887	16,910	16,910
9	3,675	3,740	4,046	4,101
9a	116,539	115,186	115,301	113,903
	of which:			
10	8,926	8,926	8,025	8,025
11	9,016	9,016	9,427	9,427
	98,596	97,244	97,849	96,451
12a	57,877	57,877	61,374	61,374
	of which:			
13	780	780	1,099	1,099
14	34,552	34,552	40,136	40,136
15	1,200	1,200	1,054	1,054
16	1,643	1,643	1,666	1,666
17	19,703	19,703	17,419	17,419
19a	193,978	192,690	197,632	196,288
20	195,734	194,450	200,387	199,047

Deutsche Bank's RWA for exposures under the IRB approach is € 194.5 billion as of December 31, 2022, in comparison to € 199.0 billion as of the prior period. The decrease of € 4.6 billion is predominantly driven by decreases in RWA within the Group's AIRB for the exposure classes "retail – secured by real estate property non-SMEs" and "central governments and central banks" as well as a decrease in the FIRB for the exposure class "corporates – others". These decreases were partly offset by increases in Deutsche Bank's AIRB for exposure classes "retail – other non-SMEs", "corporates – SMEs" and "corporates – others". 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 presents the Group's FIRB and AIRB exposures and the extent of the use of CRM techniques broken down by exposure classes. The CRM techniques are separately shown for funded credit protection and unfunded credit protection. For funded credit protection the table also presents a split between the part of exposures covered by other eligible collaterals and the part of exposures covered by other funded credit protection. Additionally, the RWA without substitution effects (reduction effects only) and the RWA with substitution effects (both reduction and substitution effects) are shown.

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

														Dec 31, 2022																																		
														m	n																																	
														Credit risk Mitigation methods in the calculation of RWEAs																																		
														Unfunded credit protection (UFCP)																																		
														Funded credit protection (FCP)																																		
														Part of exposures covered by Other eligible collaterals (%)		Part of exposures covered by Other funded credit protection (%)																																
														of which: Part of exposures covered by Immovable property		of which: Part of exposures covered by Receivables		of which: Part of exposures covered by Other physical collateral		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 substitution effects)																
in € m. (unless stated otherwise)	Total exposures	Part of exposures covered by Financial Collaterals (%)	Total	Collaterals (%)	Total	Collaterals (%)	Total	Collaterals (%)	Total	Collaterals (%)	Total	Collaterals (%)	Total	Collaterals (%)	Total	Collaterals (%)	Total	Collaterals (%)	Total	Collaterals (%)	Total	Collaterals (%)	Total	Collaterals (%)																								
1	Central governments and central banks																							23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0
2	Institutions																							6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10	10
3	Corporates																							6,204	0.00	10.15	10.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1,750	1,750
3	of which:																																															
3.1	SME																							116	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	41	41
3.2	Specialized lending																							921	0.00	68.29	68.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	601	601
3.3	Other																							5,167	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1,107	1,108
4	Total																							6,233	0.00	10.10	10.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1,760	1,760

Jun 30, 2022

	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)	
	in € m. (unless stated otherwise)	Total exposures	Part of exposures covered by Financial Collaterals (%)	Part of exposures covered by Other eligible collaterals (%)				Part of exposures covered by Other funded credit protection (%)					RWA without substitution effects (reduction effects only)	RWA with substitution effects (both reduction and substitution effects)
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 (%)		
Central governments and central banks	50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0
1 Institutions	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3	3
2 Corporates	6,792	0.00	9.46	9.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2,757	2,757
3 of which:														
3.1 SME	130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	77	77
3.2 Specialized lending	910	0.00	70.51	70.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	591	591
3.3 Other	5,752	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2,089	2,089
4 Total	6,846	0.00	9.39	9.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2,759	2,759

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

Dec 31, 2022

	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)	
	in € m. (unless stated otherwise)	Total exposures	Part of exposures covered by Financial Collaterals (%)	Part of exposures covered by Other eligible collaterals (%)				Part of exposures covered by Other funded credit protection (%)					RWA without substitution effects (reduction effects only)	RWA with substitution effects (both reduction and substitution effects)
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 (%)		
Central governments and central banks	131,284	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	16,317	15,887
1 Institutions	20,682	11.03	1.70	1.70	0.00	0.00	0.57	0.56	0.01	0.00	0.00	0.00	3,647	3,740
2 Corporates	306,125	17.83	19.98	19.12	0.70	0.16	1.46	1.02	0.44	0.00	1.84	0.00	116,340	115,186
3 of which:														
3.1 SME	21,801	6.74	21.18	20.18	0.12	0.87	1.26	0.36	0.90	0.00	11.46	0.00	9,017	8,926
3.2 Specialized lending	48,996	1.67	66.03	66.03	0.00	0.00	0.11	0.11	0.00	0.00	0.00	0.00	9,392	9,016
3.3 Other	235,328	22.22	10.29	9.26	0.90	0.13	1.76	1.27	0.49	0.00	1.33	0.00	97,931	97,244

Dec 31, 2022

	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 (%)									
				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 (%)		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 substitution effects)
in € m. (unless stated otherwise)	Total exposures	Part of exposures covered by Financial Collaterals (%)	Total				Total							
4 Retail	230,884	2.80	56.75	56.56	0.18	0.01	0.32	0.00	0.32	0.00	0.72	0.00	57,665	57,877
of which:														
4.1 Secured by real estate property SMEs	8,717	1.85	71.16	70.66	0.47	0.03	1.68	0.01	1.67	0.00	4.49	0.00	788	780
4.2 Secured by real estate property non-SMEs	174,324	2.32	71.51	71.35	0.16	0.00	0.29	0.00	0.29	0.00	0.22	0.00	34,583	34,552
4.3 Qualifying revolving	10,422	0.58	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.02	0.00	1,200	1,200
4.4 Other retail SMEs	4,857	4.07	2.15	0.13	1.66	0.37	0.91	0.01	0.90	0.00	13.72	0.00	1,538	1,643
4.5 Other retail non-SMEs	32,564	6.16	0.16	0.10	0.05	0.01	0.12	0.01	0.11	0.00	0.65	0.00	19,556	19,703
5 Total	688,976	9.19	27.95	27.50	0.37	0.07	0.78	0.47	0.30	0.00	1.06	0.00	193,969	192,690

Jun 30, 2022

	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 substitution effects)
1 Central governments and central banks		134,114	0.00	0.00	0.00	0.00	0.00	0.09	0.09	0.00	0.00	0.00	0.00	17,189	16,910
2 Institutions		21,597	7.30	1.54	1.34	0.00	0.20	0.53	0.52	0.01	0.00	0.00	0.00	3,907	4,101
3 Corporates		304,181	16.27	19.35	17.72	0.35	1.28	1.79	1.31	0.49	0.00	0.00	0.00	115,315	113,903
	of which:														
3.1 SME		21,252	6.26	24.78	22.53	0.17	2.08	1.19	1.00	0.88	0.00	0.00	0.00	8,100	8,025
3.2 Specialized lending		46,473	0.80	65.77	62.42	0.00	3.35	0.12	0.12	0.00	0.00	0.00	0.00	9,733	9,427
3.3 Other		236,456	20.21	9.74	8.50	0.43	0.81	2.17	1.57	0.55	0.00	0.00	0.00	97,483	96,451
4 Retail		239,436	2.86	54.26	54.07	0.18	0.01	0.43	0.01	0.42	0.00	0.00	0.00	61,039	61,374
	of which:														
4.1 Secured by real estate property SMEs		8,647	2.45	73.89	73.40	0.46	0.02	2.50	0.01	2.49	0.00	0.00	0.00	1,126	1,099
4.2 Secured by real estate property non-SMEs		180,375	2.42	68.42	68.23	0.19	0.00	0.39	0.00	0.39	0.00	0.00	0.00	40,181	40,136
4.3 Qualifying revolving		10,583	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1,054	1,054
4.4 Other retail SMEs		5,312	4.11	1.20	0.11	0.82	0.27	0.97	0.01	0.96	0.00	0.00	0.00	1,453	1,666
4.5 Other retail non-SMEs		34,519	5.99	0.13	0.09	0.04	0.01	0.14	0.01	0.13	0.00	0.00	0.00	17,225	17,419
5 Total		699,329	8.28	27.04	26.26	0.21	0.57	0.96	0.60	0.36	0.00	0.00	0.00	197,451	196,288

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, covered in the 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, 2022	Three months ended Sep 30, 2022
		a	a
in € m.		RWA	RWA
1	Risk weighted exposure amount as at the end of the previous reporting period	195,887	195,573
2	Asset size	1,552	(4,136)
3	Asset quality	(2,016)	255
4	Model updates	0	0
5	Methodology and policy	2,998	302
6	Acquisitions and disposals	0	0
7	Foreign exchange movements	(6,261)	3,892
8	Other	0	0
9	Risk weighted exposure amount as at the end of the reporting period	192,160	195,887

Organic changes in the Group's 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 decrease in RWA for credit risk exposures under the IRB approach of 1.9% or € 3.7 billion since September 30, 2022, is primarily resulting from foreign exchange movements. Additionally, the category "asset quality" reflects a RWA decrease stemming particularly from improved counterparty ratings. These decreases were partly offset by an increase in the category "methodology and policy" which includes impacts driven by the introduction of EBA guidelines. Additionally, the increase in category "asset size" reflects growing client demand in Deutsche Bank's core businesses.

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 appropriately conservative.

The below table EU CR9 aims at providing backtesting information for probabilities of default 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, 2022					
a/b	c	d	e	f	g	h	
Exposure class/ PD Range	Number of obligors at the end of previous year		Observed average default rate (%)	Exposures weighted average PD (%)	Average PD (%)	Average historical annual default rate (%)	
	Total	Of which number of obligors which defaulted in the year					
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	2	0	0.00%	0.23%	0.19%	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	N/M	N/M	0.00%	100.00%	N/M	
Sub-total	2	0	0.00%	0.00%	0.19%	0.00%	
Institutions							
0.00 to <0.15	14	0	0.00%	0.05%	0.05%	0.00%	
0.00 to <0.10	12	0	0.00%	0.05%	0.04%	0.00%	
0.10 to <0.15	2	0	0.00%	0.11%	0.11%	0.00%	
0.15 to <0.25	2	0	0.00%	0.15%	0.19%	0.00%	
0.25 to <0.50	3	0	0.00%	0.38%	0.34%	0.00%	
0.50 to <0.75	1	0	0.00%	0.64%	0.69%	0.00%	
0.75 to <2.50	1	0	0.00%	0.00%	0.77%	0.00%	
0.75 to <1.75	1	0	0.00%	0.00%	0.77%	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	11	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	11	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	N/M	N/M	0.00%	100.00%	N/M	
Sub-total	32	0	0.00%	9.97%	6.99%	0.00%	
Corporates							
0.00 to <0.15	760	1	0.13%	0.07%	0.09%	0.10%	
0.00 to <0.10	505	0	0.00%	0.06%	0.07%	0.07%	
0.10 to <0.15	255	1	0.39%	0.11%	0.11%	0.12%	
0.15 to <0.25	1,917	2	0.10%	0.17%	0.21%	0.21%	
0.25 to <0.50	2,854	9	0.32%	0.31%	0.36%	0.23%	
0.50 to <0.75	1,609	9	0.56%	0.66%	0.69%	0.22%	
0.75 to <2.50	973	16	1.64%	1.30%	1.32%	0.91%	
0.75 to <1.75	808	13	1.61%	1.15%	1.16%	0.75%	
1.75 to <2.5	165	3	1.82%	1.94%	2.10%	1.62%	
2.50 to <10.00	176	3	1.70%	4.68%	5.37%	2.70%	
2.5 to <5	99	0	0.00%	3.56%	3.87%	2.04%	
5 to <10	77	3	3.90%	7.48%	7.30%	3.30%	
10.00 to <100.00	970	11	1.13%	23.71%	20.10%	1.22%	
10 to <20	22	1	4.55%	13.83%	14.21%	5.01%	
20 to <30	940	9	0.96%	20.85%	20.02%	0.48%	
30.00 to <100.00	8	1	12.50%	35.68%	45.03%	11.46%	
100.00 (Default)	117	N/M	N/M	100.00%	100.00%	N/M	
Sub-total	9,376	51	0.54%	0.83%	3.84%	0.38%	

							Dec 31, 2022
a/b	c		d	e	f	g	h
Exposure class/ PD Range	Number of obligors at the end of previous year		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 (%)
	Total						
of which:							
SMEs							
0.00 to <0.15	16	0		0.00%	0.05%	0.11%	0.00%
0.00 to <0.10	2	0		0.00%	0.04%	0.06%	0.00%
0.10 to <0.15	14	0		0.00%	0.11%	0.12%	0.00%
0.15 to <0.25	84	0		0.00%	0.21%	0.20%	0.00%
0.25 to <0.50	160	2		1.25%	0.35%	0.36%	0.39%
0.50 to <0.75	93	2		2.15%	0.72%	0.69%	1.20%
0.75 to <2.50	105	1		0.95%	1.59%	1.37%	1.97%
0.75 to <1.75	82	1		1.22%	1.27%	1.12%	1.79%
1.75 to <2.5	23	0		0.00%	1.94%	2.25%	2.50%
2.50 to <10.00	43	2		4.65%	5.00%	5.86%	12.12%
2.5 to <5	19	0		0.00%	3.35%	3.65%	14.17%
5 to <10	24	2		8.33%	7.03%	7.62%	10.00%
10.00 to <100.00	134	6		4.48%	20.03%	20.95%	2.78%
10 to <20	5	1		20.00%	14.18%	15.98%	15.67%
20 to <30	125	4		3.20%	20.15%	20.08%	0.64%
30.00 to <100.00	4	1		25.00%	35.81%	54.37%	12.50%
100.00 (Default)	14	N/M		N/M	100.00%	100.00%	N/M
Sub-total	649	13		2.00%	4.74%	7.31%	1.85%
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	N/M		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	745	1		0.13%	0.07%	0.09%	0.10%
0.00 to <0.10	504	0		0.00%	0.06%	0.07%	0.07%
0.10 to <0.15	241	1		0.41%	0.11%	0.11%	0.12%
0.15 to <0.25	1,833	2		0.11%	0.17%	0.21%	0.22%
0.25 to <0.50	2,661	7		0.26%	0.31%	0.36%	0.21%
0.50 to <0.75	1,514	7		0.46%	0.66%	0.69%	0.19%
0.75 to <2.50	825	15		1.82%	1.29%	1.29%	0.89%
0.75 to <1.75	720	12		1.67%	1.15%	1.17%	0.72%
1.75 to <2.5	105	3		2.86%	1.94%	2.09%	1.74%
2.50 to <10.00	133	1		0.75%	4.61%	5.21%	1.64%
2.5 to <5	80	0		0.00%	3.60%	3.92%	1.30%
5 to <10	53	1		1.89%	7.67%	7.16%	1.94%
10.00 to <100.00	836	5		0.60%	24.74%	20.06%	0.96%
10 to <20	17	0		0.00%	13.04%	13.69%	2.58%
20 to <30	814	5		0.61%	21.01%	20.02%	0.44%
30.00 to <100.00	5	0		0.00%	35.66%	48.32%	8.33%
100.00 (Default)	101	N/M		N/M	100.00%	100.00%	N/M
Sub-total	8,648	38		0.44%	0.74%	3.59%	0.33%
Total	9,327	51		0.55%	0.83%	3.85%	0.34%

							Dec 31, 2021
a/b	c		d	e	f	g	h
Exposure class/ PD Range	Number of obligors at the end of previous year		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 (%)
	Total						
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
				0.00		0.00	
Sub-total	0	0	%	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	
Exposure class/ PD Range	Number of obligors at the end of previous year		Observed average default rate (%)	Exposures weighted average PD (%)	Average PD (%)	Average historical annual default rate (%)	
	Total	Of which number of obligors which defaulted in the year					
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 2022 for advanced IRBA rating systems triggered recalibrations as shown in the table below. None of the triggered recalibrations individually nor all triggered recalibrations in the aggregate indicated to impact our regulatory capital requirements in a progressive way.

Validation results for risk parameters used in our advanced IRBA

	2022					
	PD		LGD		EAD	
	Count	EAD in %	Count	EAD in %	Count	EAD in %
Appropriate	84	87.3	103	71.8	66	90.0
Overly conservative	6	6.9	27	25.0	15	6.5
Progressive	19	5.8	25	3.2	8	3.5
Total	109	100.0	155	100.0	89	100.0

	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

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, 2022 and December 31, 2021.

The validations during 2022 largely confirmed our parameter settings. Validations classified two LGD parameters with high materiality (contributing 7.6% and 5.4 % of EAD) as overly conservative. All other negatively validated parameters are only applied to smaller portfolios with accordingly lower materiality. Overall, for the majority of risk parameters where a recalibration was triggered during the 2022 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 2023.

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 the bank’s 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 the bank’s 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, 2022					
a/b	c	d	e	f	g	h	
Exposure class/ PD Range	Number of obligors at the end of previous year		Observed average default rate (%)	Exposures weighted average PD (%)	Average PD (%)	Average historical annual default rate (%)	
	Total	Of which number of obligors which defaulted in the year					
Central governments and central banks							
0.00 to <0.15	130	0	0.00%	0.00%	0.04%	0.00%	
0.00 to <0.10	121	0	0.00%	0.00%	0.03%	0.00%	
0.10 to <0.15	9	0	0.00%	0.14%	0.14%	0.00%	
0.15 to <0.25	19	0	0.00%	0.23%	0.23%	0.00%	
0.25 to <0.50	12	0	0.00%	0.39%	0.40%	0.00%	
0.50 to <0.75	28	0	0.00%	0.64%	0.65%	0.00%	
0.75 to <2.50	20	0	0.00%	1.76%	1.36%	0.00%	
0.75 to <1.75	12	0	0.00%	0.99%	1.08%	0.00%	
1.75 to <2.5	8	0	0.00%	1.76%	1.78%	0.00%	
2.50 to <10.00	34	6	17.65%	6.47%	5.54%	7.10%	
2.5 to <5	22	3	13.64%	4.69%	4.22%	6.56%	
5 to <10	12	3	25.00%	7.95%	7.95%	8.33%	
10.00 to <100.00	5	0	0.00%	13.01%	13.01%	3.33%	
10 to <20	5	0	0.00%	13.01%	13.01%	4.00%	
20 to <30	0	0	0.00%	22.01%	0.00%	0.00%	
30.00 to <100.00	0	0	0.00%	0.00%	0.00%	0.00%	
100.00 (Default)	7	N/M	N/M	100.00%	100.00%	N/M	
Sub-total	255	6	2.35%	0.37%	3.97%	0.97%	
Institutions							
0.00 to <0.15	887	0	0.00%	0.05%	0.05%	0.03%	
0.00 to <0.10	855	0	0.00%	0.05%	0.05%	0.00%	
0.10 to <0.15	32	0	0.00%	0.13%	0.13%	0.22%	
0.15 to <0.25	114	0	0.00%	0.16%	0.18%	0.34%	
0.25 to <0.50	160	0	0.00%	0.33%	0.36%	0.16%	
0.50 to <0.75	67	0	0.00%	0.69%	0.68%	0.00%	
0.75 to <2.50	85	1	1.18%	1.82%	1.44%	0.54%	
0.75 to <1.75	53	0	0.00%	1.13%	1.15%	0.00%	
1.75 to <2.5	32	1	3.13%	1.93%	1.90%	1.34%	
2.50 to <10.00	45	0	0.00%	3.59%	4.47%	0.50%	
2.5 to <5	32	0	0.00%	3.22%	3.38%	0.74%	
5 to <10	13	0	0.00%	7.00%	7.17%	0.00%	
10.00 to <100.00	19	1	5.26%	13.21%	15.33%	2.39%	
10 to <20	16	1	6.25%	13.21%	14.06%	1.25%	
20 to <30	3	0	0.00%	0.00%	22.07%	5.00%	
30.00 to <100.00	0	0	0.00%	0.00%	0.00%	0.00%	
100.00 (Default)	5	N/M	N/M	100.00%	100.00%	N/M	
Sub-total	1,382	2	0.14%	12.40%	0.93%	0.21%	
Corporates							
0.00 to <0.15	22,552	34	0.15%	0.07%	0.07%	0.03%	
0.00 to <0.10	18,751	27	0.14%	0.06%	0.05%	0.02%	
0.10 to <0.15	3,801	7	0.18%	0.13%	0.14%	0.08%	
0.15 to <0.25	5,861	11	0.19%	0.20%	0.21%	0.11%	
0.25 to <0.50	7,427	35	0.47%	0.36%	0.36%	0.18%	
0.50 to <0.75	4,875	21	0.43%	0.64%	0.65%	0.40%	
0.75 to <2.50	7,208	77	1.07%	1.47%	1.37%	1.01%	
0.75 to <1.75	4,924	40	0.81%	1.11%	1.15%	0.78%	
1.75 to <2.5	2,284	37	1.62%	1.83%	1.85%	1.43%	
2.50 to <10.00	4,049	116	2.86%	5.02%	4.93%	2.68%	
2.5 to <5	2,650	64	2.42%	3.70%	3.64%	2.34%	
5 to <10	1,399	52	3.72%	7.58%	7.39%	3.71%	
10.00 to <100.00	759	52	6.85%	16.76%	20.34%	8.47%	
10 to <20	394	23	5.84%	13.13%	13.58%	7.91%	
20 to <30	215	15	6.98%	22.22%	21.88%	7.60%	
30.00 to <100.00	150	14	9.33%	32.26%	35.88%	10.90%	
100.00 (Default)	3,633	N/M	N/M	100.00%	100.00%	N/M	
Sub-total	56,364	346	0.61%	6.56%	7.40%	0.56%	

							Dec 31, 2022
a/b	c	d	e	f	g	h	
Exposure class/ PD Range	Number of obligors at the end of previous year		Observed average default rate (%)	Exposures weighted average PD (%)	Average PD (%)	Average historical annual default rate (%)	
of which:	Total	Of which number of obligors which defaulted in the year					
SMEs							
0.00 to <0.15	5,720	2	0.03%	0.07%	0.08%	0.03%	
0.00 to <0.10	3,731	1	0.03%	0.06%	0.05%	0.01%	
0.10 to <0.15	1,989	1	0.05%	0.12%	0.13%	0.07%	
0.15 to <0.25	2,090	2	0.10%	0.20%	0.21%	0.07%	
0.25 to <0.50	2,675	12	0.45%	0.36%	0.37%	0.22%	
0.50 to <0.75	1,951	3	0.15%	0.66%	0.64%	0.33%	
0.75 to <2.50	3,077	32	1.04%	1.42%	1.36%	1.05%	
0.75 to <1.75	2,355	18	0.76%	1.11%	1.20%	0.84%	
1.75 to <2.5	722	14	1.94%	1.92%	1.90%	1.50%	
2.50 to <10.00	1,489	49	3.29%	4.82%	4.57%	3.05%	
2.5 to <5	1,062	31	2.92%	3.62%	3.46%	2.73%	
5 to <10	427	18	4.22%	7.49%	7.31%	4.25%	
10.00 to <100.00	296	32	10.81%	20.31%	20.06%	10.20%	
10 to <20	153	11	7.19%	13.95%	13.82%	8.57%	
20 to <30	93	11	11.83%	21.52%	22.10%	8.51%	
30.00 to <100.00	50	10	20.00%	32.36%	35.37%	16.92%	
100.00 (Default)	1,073	N/M	N/M	100.00%	100.00%	N/M	
Sub-total	18,371	132	0.72%	12.64%	6.93%	0.66%	
Specialized lending							
0.00 to <0.15	126	1	0.79%	0.11%	0.10%	0.16%	
0.00 to <0.10	73	1	1.37%	0.08%	0.08%	0.27%	
0.10 to <0.15	53	0	0.00%	0.13%	0.13%	0.00%	
0.15 to <0.25	119	0	0.00%	0.21%	0.21%	0.00%	
0.25 to <0.50	113	0	0.00%	0.39%	0.39%	0.19%	
0.50 to <0.75	126	1	0.79%	0.66%	0.66%	0.65%	
0.75 to <2.50	287	2	0.70%	1.49%	1.33%	1.04%	
0.75 to <1.75	188	2	1.06%	1.13%	1.09%	0.78%	
1.75 to <2.5	99	0	0.00%	1.87%	1.80%	1.23%	
2.50 to <10.00	324	8	2.47%	5.47%	5.88%	2.49%	
2.5 to <5	171	4	2.34%	3.90%	4.07%	1.92%	
5 to <10	153	4	2.61%	7.79%	7.91%	3.81%	
10.00 to <100.00	68	6	8.82%	14.89%	18.34%	7.06%	
10 to <20	48	5	10.42%	12.97%	13.00%	7.18%	
20 to <30	15	1	6.67%	22.01%	22.01%	6.11%	
30.00 to <100.00	5	0	0.00%	39.77%	58.61%	7.58%	
100.00 (Default)	155	N/M	N/M	100.00%	100.00%	N/M	
Sub-total	1,318	18	1.37%	10.15%	14.57%	2.02%	
Other							
0.00 to <0.15	16,776	32	0.19%	0.07%	0.06%	0.07%	
0.00 to <0.10	14,997	25	0.17%	0.06%	0.05%	0.05%	
0.10 to <0.15	1,779	7	0.39%	0.14%	0.14%	0.14%	
0.15 to <0.25	3,670	9	0.25%	0.19%	0.20%	0.16%	
0.25 to <0.50	4,657	23	0.49%	0.35%	0.36%	0.24%	
0.50 to <0.75	2,816	17	0.60%	0.62%	0.66%	0.45%	
0.75 to <2.50	3,854	43	1.12%	1.47%	1.38%	1.01%	
0.75 to <1.75	2,389	20	0.84%	1.10%	1.10%	0.73%	
1.75 to <2.5	1,465	23	1.57%	1.82%	1.84%	1.44%	
2.50 to <10.00	2,245	59	2.63%	4.64%	5.04%	2.44%	
2.5 to <5	1,421	29	2.04%	3.55%	3.71%	2.09%	
5 to <10	824	30	3.64%	7.32%	7.33%	3.44%	
10.00 to <100.00	395	14	3.54%	17.63%	20.89%	7.70%	
10 to <20	193	7	3.63%	13.20%	13.54%	7.74%	
20 to <30	107	3	2.80%	22.36%	21.67%	7.79%	
30.00 to <100.00	95	4	4.21%	30.62%	34.95%	7.54%	
100.00 (Default)	2,405	N/M	N/M	100.00%	100.00%	N/M	
Sub-total	36,818	197	0.54%	5.25%	7.35%	0.47%	

		Dec 31, 2022					
a/b	c	d	e	f	g	h	
Exposure class/ PD Range	Number of obligors at the end of previous year		Observed average default rate (%)	Exposures weighted average PD (%)	Average PD (%)	Average historical annual default rate (%)	
	Total	Of which number of obligors which defaulted in the year					
Retail							
0.00 to <0.15	2,538,713	1,187	0.05%	0.08%	0.07%	0.04%	
0.00 to <0.10	2,109,833	758	0.04%	0.06%	0.06%	0.03%	
0.10 to <0.15	428,880	429	0.10%	0.11%	0.12%	0.07%	
0.15 to <0.25	686,541	1,066	0.16%	0.19%	0.18%	0.11%	
0.25 to <0.50	1,218,814	3,608	0.30%	0.37%	0.34%	0.23%	
0.50 to <0.75	395,342	1,982	0.50%	0.69%	0.70%	0.39%	
0.75 to <2.50	1,619,642	18,364	1.13%	1.38%	1.44%	0.90%	
0.75 to <1.75	996,605	8,142	0.82%	1.02%	1.08%	0.67%	
1.75 to <2.5	623,037	10,222	1.64%	1.83%	2.01%	1.19%	
2.50 to <10.00	752,185	31,950	4.25%	4.98%	4.83%	3.22%	
2.5 to <5	485,417	16,677	3.44%	3.67%	3.60%	2.66%	
5 to <10	266,768	15,273	5.73%	7.31%	7.06%	4.60%	
10.00 to <100.00	173,869	29,855	17.17%	11.65%	21.40%	18.60%	
10 to <20	72,201	8,283	11.47%	13.30%	14.12%	11.99%	
20 to <30	69,578	6,392	9.19%	22.13%	21.38%	17.16%	
30.00 to <100.00	32,090	15,180	47.30%	35.83%	37.86%	37.23%	
100.00 (Default)	198,871	N/M	N/M	100.00%	100.00%	N/M	
Sub-total	7,583,977	88,012	1.16%	2.57%	4.03%	1.06%	
of which:							
Secured by real estate property - SME							
0.00 to <0.15	7,360	1	0.01%	0.07%	0.12%	0.04%	
0.00 to <0.10	3,129	1	0.03%	0.06%	0.08%	0.06%	
0.10 to <0.15	4,231	0	0.00%	0.11%	0.14%	0.04%	
0.15 to <0.25	7,140	7	0.10%	0.18%	0.22%	0.09%	
0.25 to <0.50	8,196	16	0.20%	0.36%	0.38%	0.13%	
0.50 to <0.75	6,214	24	0.39%	0.56%	0.65%	0.22%	
0.75 to <2.50	7,035	32	0.45%	1.27%	1.36%	0.46%	
0.75 to <1.75	4,485	21	0.47%	1.03%	1.10%	0.38%	
1.75 to <2.5	2,550	11	0.43%	2.15%	1.81%	0.59%	
2.50 to <10.00	2,640	58	2.20%	5.01%	4.38%	2.02%	
2.5 to <5	2,029	38	1.87%	3.67%	3.54%	1.56%	
5 to <10	611	20	3.27%	7.13%	7.15%	3.97%	
10.00 to <100.00	410	73	17.80%	21.35%	20.08%	15.67%	
10 to <20	229	20	8.73%	14.71%	13.33%	7.36%	
20 to <30	87	12	13.79%	26.13%	22.62%	13.44%	
30.00 to <100.00	94	41	43.62%	36.43%	34.18%	35.38%	
100.00 (Default)	374	N/M	N/M	100.00%	100.00%	N/M	
Sub-total	39,369	211	0.54%	1.52%	1.94%	0.61%	
Secured by real estate property - Non-SME							
0.00 to <0.15	162,809	242	0.15%	0.08%	0.09%	0.09%	
0.00 to <0.10	117,804	135	0.11%	0.06%	0.08%	0.06%	
0.10 to <0.15	45,005	107	0.24%	0.11%	0.12%	0.14%	
0.15 to <0.25	158,151	396	0.25%	0.19%	0.19%	0.15%	
0.25 to <0.50	337,440	905	0.27%	0.37%	0.36%	0.20%	
0.50 to <0.75	124,929	294	0.24%	0.69%	0.70%	0.27%	
0.75 to <2.50	335,643	2,032	0.61%	1.34%	1.23%	0.52%	
0.75 to <1.75	272,137	1,617	0.59%	1.00%	1.03%	0.43%	
1.75 to <2.5	63,506	415	0.65%	1.76%	2.08%	0.69%	
2.50 to <10.00	61,157	1,270	2.08%	5.17%	4.96%	1.79%	
2.5 to <5	39,214	608	1.55%	3.75%	3.68%	1.44%	
5 to <10	21,943	662	3.02%	7.30%	7.24%	2.70%	
10.00 to <100.00	13,969	1,783	12.76%	5.00%	21.58%	13.34%	
10 to <20	7,928	492	6.21%	13.33%	13.97%	8.38%	
20 to <30	2,800	358	12.79%	22.14%	22.90%	14.07%	
30.00 to <100.00	3,241	933	28.79%	35.04%	39.05%	29.81%	
100.00 (Default)	12,101	N/M	N/M	100.00%	100.00%	N/M	
Sub-total	1,206,199	6,922	0.57%	1.48%	2.06%	0.63%	

		Dec 31, 2022					
a/b	c	d	e	f	g	h	
Exposure class/ PD Range	Number of obligors at the end of previous year		Observed average default rate (%)	Exposures weighted average PD (%)	Average PD (%)	Average historical annual default rate (%)	
	Total	Of which number of obligors which defaulted in the year					
Qualifying revolving							
0.00 to <0.15	2,097,553	852	0.04%	0.06%	0.07%	0.03%	
0.00 to <0.10	1,800,212	577	0.03%	0.05%	0.06%	0.02%	
0.10 to <0.15	297,341	275	0.09%	0.11%	0.12%	0.06%	
0.15 to <0.25	407,438	467	0.11%	0.18%	0.17%	0.07%	
0.25 to <0.50	636,726	2,074	0.33%	0.37%	0.33%	0.18%	
0.50 to <0.75	110,008	972	0.88%	0.69%	0.70%	0.40%	
0.75 to <2.50	417,448	6,114	1.46%	1.42%	1.33%	0.86%	
0.75 to <1.75	298,958	3,342	1.12%	1.10%	1.04%	0.67%	
1.75 to <2.5	118,490	2,772	2.34%	2.06%	2.08%	1.21%	
2.50 to <10.00	170,198	8,917	5.24%	5.36%	5.19%	3.11%	
2.5 to <5	102,179	4,238	4.15%	3.72%	3.77%	2.56%	
5 to <10	68,019	4,679	6.88%	7.27%	7.32%	4.00%	
10.00 to <100.00	40,245	8,381	20.82%	21.05%	21.29%	13.33%	
10 to <20	22,377	2,716	12.14%	13.19%	14.05%	8.74%	
20 to <30	9,116	1,799	19.73%	21.59%	22.65%	12.40%	
30.00 to <100.00	8,752	3,866	44.17%	37.59%	38.40%	27.14%	
100.00 (Default)	60,185	N/M	N/M	100.00%	100.00%	N/M	
Sub-total	3,939,801	27,777	0.71%	1.63%	2.24%	0.45%	
Other - SME							
0.00 to <0.15	35,752	18	0.05%	0.08%	0.11%	0.04%	
0.00 to <0.10	14,048	3	0.02%	0.06%	0.08%	0.04%	
0.10 to <0.15	21,704	15	0.07%	0.12%	0.13%	0.05%	
0.15 to <0.25	24,342	22	0.09%	0.20%	0.22%	0.08%	
0.25 to <0.50	29,000	65	0.22%	0.37%	0.38%	0.14%	
0.50 to <0.75	17,619	81	0.46%	0.62%	0.67%	0.33%	
0.75 to <2.50	20,656	188	0.91%	1.35%	1.39%	0.86%	
0.75 to <1.75	12,930	86	0.67%	1.06%	1.12%	0.66%	
1.75 to <2.5	7,726	102	1.32%	1.86%	1.84%	1.17%	
2.50 to <10.00	11,834	367	3.10%	4.50%	4.82%	2.80%	
2.5 to <5	7,441	188	2.53%	3.63%	3.51%	2.36%	
5 to <10	4,393	179	4.07%	7.56%	7.04%	3.92%	
10.00 to <100.00	2,789	508	18.21%	19.85%	20.78%	16.93%	
10 to <20	1,272	127	9.98%	13.17%	13.68%	8.41%	
20 to <30	823	106	12.88%	22.53%	22.31%	14.70%	
30.00 to <100.00	694	275	39.63%	33.02%	31.96%	34.58%	
100.00 (Default)	3,453	N/M	N/M	100.00%	100.00%	N/M	
Sub-total	145,445	1,249	0.86%	6.51%	3.58%	0.83%	
Other - Non-SME							
0.00 to <0.15	559,921	284	0.05%	0.08%	0.08%	0.05%	
0.00 to <0.10	441,950	172	0.04%	0.06%	0.07%	0.03%	
0.10 to <0.15	117,971	112	0.09%	0.11%	0.12%	0.09%	
0.15 to <0.25	205,566	336	0.16%	0.19%	0.18%	0.17%	
0.25 to <0.50	443,998	1,243	0.28%	0.38%	0.35%	0.32%	
0.50 to <0.75	193,176	850	0.44%	0.68%	0.70%	0.50%	
0.75 to <2.50	1,055,696	12,641	1.20%	1.51%	1.53%	1.04%	
0.75 to <1.75	562,532	4,580	0.81%	1.10%	1.12%	0.78%	
1.75 to <2.5	493,164	8,061	1.63%	1.92%	2.01%	1.31%	
2.50 to <10.00	584,882	25,016	4.28%	4.81%	4.75%	3.61%	
2.5 to <5	383,573	13,323	3.47%	3.60%	3.57%	2.96%	
5 to <10	201,309	11,693	5.81%	7.32%	6.99%	5.59%	
10.00 to <100.00	134,458	22,776	16.94%	19.92%	21.49%	21.75%	
10 to <20	50,183	6,043	12.04%	13.22%	14.18%	14.77%	
20 to <30	60,679	4,844	7.98%	21.97%	21.20%	19.11%	
30.00 to <100.00	23,596	11,889	50.39%	37.01%	37.78%	42.87%	
100.00 (Default)	137,235	N/M	N/M	100.00%	100.00%	N/M	
Sub-total	3,314,932	63,146	1.90%	8.38%	6.45%	2.08%	
Total	7,639,654	88,355	1.16%	4.22%	4.06%	1.06%	

							Dec 31, 2021
a/b	c		d	e	f	g	h
Exposure class/ PD Range	Number of obligors at the end of previous year		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 (%)
	Total						
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	
Exposure class/ PD Range	Number of obligors at the end of previous year		Observed average default rate (%)	Exposures weighted average PD (%)	Average PD (%)	Average historical annual default rate (%)	
	Total	Of which number of obligors which defaulted in the year					
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
Exposure class/ PD Range	Number of obligors at the end of previous year		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 (%)
	Total						
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%

		Dec 31, 2021					
a/b	c	d	e	f	g	h	
Exposure class/ PD Range	Number of obligors at the end of previous year		Observed average default rate (%)	Exposures weighted average PD (%)	Average PD (%)	Average historical annual default rate (%)	
	Total	Of which number of obligors which defaulted in the year					
Qualifying revolving							
0.00 to <0.15	2,086,169	1,582	0.08%	0.08%	0.07%	0.02%	
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%	1.04%	

The vast majority of the bank's 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 5.9 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 the foundation approach exposure for specialized lending where a former Postbank portfolio is part of the “income-producing real estate and high volatility commercial real estate” slotting category. Deutsche Bank does not treat any further exposures under the slotting approach as they are covered under the AIRB. Consequently, Deutsche Bank does 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 the risk weight. The table presents the on- and off-balance-sheet exposures, the EAD and RWA as well as the associated regulatory expected losses.

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

in € m.
(unless stated otherwise)

Specialized lending		Dec 31, 2022					
Regulatory categories	Remaining maturity	a	b	c	d	e	f
		On-balance sheet amount	Off-balance sheet amount	Risk weight	Exposure amount	RWA	Expected losses
Category 1	Less than 2.5 years	225	50	50 %	262	131	0
	Equal to or more than 2.5 years	519	3	70 %	522	365	2
Category 2	Less than 2.5 years	73	0	70 %	73	51	0
	Equal to or more than 2.5 years	33	35	90 %	60	54	0
Category 3	Less than 2.5 years	0	0	115 %	0	0	0
	Equal to or more than 2.5 years	0	0	115 %	0	0	0
Category 4	Less than 2.5 years	0	0	250 %	0	0	0
	Equal to or more than 2.5 years	0	0	250 %	0	0	0
Category 5	Less than 2.5 years	0	0	–	0	0	0
	Equal to or more than 2.5 years	4	0	–	4	0	4
Total	Less than 2.5 years	298	50	–	335	182	0
	Equal to or more than 2.5 years	556	38	–	585	419	7

in € m.
(unless stated otherwise)

Specialized lending		Jun 30, 2022					
Regulatory categories	Remaining maturity	a	b	c	d	e	f
		On-balance sheet amount	Off-balance sheet amount	Risk weight	Exposure amount	RWA	Expected losses
Category 1	Less than 2.5 years	171	61	50 %	217	108	0
	Equal to or more than 2.5 years	659	25	70 %	678	475	3
Category 2	Less than 2.5 years	14	0	70 %	14	10	0
	Equal to or more than 2.5 years	15	0	90 %	15	13	0
Category 3	Less than 2.5 years	0	0	115 %	0	0	0
	Equal to or more than 2.5 years	0	0	115 %	0	0	0
Category 4	Less than 2.5 years	0	0	250 %	0	0	0
	Equal to or more than 2.5 years	0	0	250 %	0	0	0
Category 5	Less than 2.5 years	0	0	–	0	0	0
	Equal to or more than 2.5 years	10	0	–	10	0	9
Total	Less than 2.5 years	186	61	–	231	119	0
	Equal to or more than 2.5 years	684	25	–	703	488	12

As part of the advanced IRBA Deutsche Bank uses supervisory defined risk weights according to the simple risk weight approach for the Group’s 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 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)

Dec 31, 2022

Categories	Equities under the simple risk-weighted approach					
	a	b	c	d	e	f
	On-balance sheet amount	Off-balance sheet amount	Risk weight	Exposure amount	RWA	Capital requirements
Private equity exposures sufficiently diversified	541	0	190 %	541	1,028	4
Exchange-traded equity exposures	24	869	290 %	893	2,591	7
All other equity exposures	1,450	25	370 %	1,474	5,455	35
Total	2,014	894	–	2,909	9,074	47

in € m.

(unless stated otherwise)

Jun 30, 2022

Categories	Equities under the simple risk-weighted approach					
	a	b	c	d	e	f
	On-balance sheet amount	Off-balance sheet amount	Risk weight	Exposure amount	RWA	Capital requirements
Private equity exposures sufficiently diversified	298	0	190 %	298	566	2
Exchange-traded equity exposures	175	792	290 %	966	2,803	8
All other equity exposures	2,094	29	370 %	2,123	7,857	51
Total	2,567	821	–	3,388	11,225	61

Deutsche Bank's RWA for equity exposures under the simple risk-weighted approach were at € 9.1 billion as of December 31, 2022, in comparison to € 11.2 billion in the prior period. The decrease of € 2.2 billion is predominantly driven by an increase in diversification in an equity portfolio, which led to the move of these exposures from other equity exposures to private equity exposures. Additionally, further reductions in other equity exposures decreased the related RWA.

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 business activities in derivatives and securities financing transactions (SFT) and is the risk that the counterparty to a transaction may default before completing the satisfactory settlement of the transaction. The exposure to CCR is calculated by 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, the potential future replacement costs of the portfolios are estimated over their lifetimes or, in case of collateralized portfolios, over appropriate unwind periods. The potential future exposure is measured against a limit set for the counterparty for this type of transactions.

Limits for CCR exposures are established based on the principles for assigning credit limits as described in the sections "General qualitative information on credit risk" starting and "General qualitative information on credit risk mitigation". 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.

The potential future exposure analysis is supplemented with stress tests to estimate the immediate impact of extreme market events on the 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 Deutsche Bank AG, exposures), the internal model method is used 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. By applying this approach, the EAD calculations are based 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, the exposure measures potential future exposure, average expected exposure, expected positive exposure and effective expected positive exposure are derived.

The potential future exposure measure which Deutsche Bank uses 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 the 95th quantile of the resulting distribution of market values is employed, 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 Deutsche Bank uses to reflect expected future replacement costs within the credit risk economic capital, and the expected positive exposure measure driving Deutsche Bank's regulatory capital requirements. While average expected exposure and expected positive exposure are generally calculated with respect to a time horizon of one year, the potential future exposure 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. The aforementioned calculation process is employed to derive stressed exposure results for input into the credit portfolio stress testing.

The potential future exposure profile of each counterparty is compared daily to the potential future exposure limit profile set by the respective credit officer. Potential future exposure limits are an integral part of the overall counterparty credit exposure management in line with other limit types. Breaches of potential future exposure limits at any one profile time point are highlighted for action within the credit risk management process. The expected positive exposure is an input to the Pillar 1 capital requirement, whereas average expected exposure 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 a clearing via central counterparty is not available, Deutsche Bank regularly seeks 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 the 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), Deutsche Bank also enters into master agreements under which payment netting applies with respect to transactions covered by such master agreements, reducing settlement risk. The risk measurement and risk assessment processes apply close-out netting only to the extent it is believed 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 the 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 Deutsche Bank believes the annex is enforceable, it is reflected in the exposure measurement.

Deutsche Bank also establishes 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 Deutsche Bank has 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, the bank utilizes its established process for calibrating its own alpha factor (as defined in Article 284 (9) CRR) to estimate the overall wrong-way risk in the bank's derivatives and securities financing transactions portfolio.

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. The Group also enters 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 only to Deutsche Bank. The Group analyzes and monitors its potential contingent payment obligations resulting from a rating downgrade in the bank's 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

in €	Dec 31, 2022		Dec 31, 2021	
	One-notch downgrade	Two-notch downgrade	One-notch downgrade	Two-notch downgrade
Contractual derivatives funding or margin requirements	389	434	205	294
Other contractual funding or margin requirements	0	0	0	0

Estimate of alpha factor

Article 439 (k) CRR

Under the IMM approach the EAD is calculated as the product of the effective expected positive exposure and a multiplier 'alpha' (α). The scaling factor alpha is applied in order to correct for correlations between counterparties, 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. For its regulatory capital calculation, however, the regulatory minimum level needs to be applied, which has been increased from 1.2 to 1.25 in 2020.

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 CVA charges and exposures cleared through a central counterparty 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. Deutsche Bank also uses the new SA-CCR to calculate the exposure at default for derivatives. This approach still consists of a replacement cost and a potential future exposure but also considers a multiplier. The multiplier differentiates between margined and non-margined trades and recognizes netting and hedging benefits as well as collateralization. Under the IMM only the effective expected positive exposure and the exposure at default are presented. For the calculation of the Group's CCR RWA the higher of the stressed effective expected positive exposure and the unstressed effective expected positive exposure is taken into consideration. The simulation process of future market values in the internal model also includes the impact from regulatory netting and collateralization across all asset classes.

EU CCR1 – Analysis of CCR exposure by approach

		Dec 31, 2022							
		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)	1,758	2,679	–	1.4	10,799	6,212	6,212	2,216
2	IMM (for derivatives and SFTs)	–	–	53,755	1.25	601,058	67,437	67,193	19,251
	of which:								
2a	Securities financing transactions netting sets	–	–	26,336	–	488,416	32,920	32,920	2,587
2b	Derivatives and long settlement transactions netting sets	–	–	27,419	–	112,642	34,517	34,273	16,664
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)	–	–	–	–	37,392	21,212	21,212	1,370
5	VaR for SFTs	–	–	–	–	0	0	0	0
6	Total	–	–	–	–	649,248	94,861	94,617	22,837

		Jun 30, 2022							
		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
	EU - Original Exposure								
EU1	Method (for derivatives)	0	0	–	1.4	0	0	0	0
	EU - Simplified SA-CCR (for derivatives)	0	0	–	1.4	0	0	0	0
EU2	SA-CCR (for derivatives)	2,482	2,981	–	1.4	11,319	7,648	7,648	2,793
	IMM (for derivatives and SFTs)	–	–	60,243	1.25	586,541	75,548	75,303	19,058
	of which:								
	Securities financing transactions netting sets	–	–	27,149	–	472,315	33,937	33,937	2,317
2a	Derivatives and long settlement transactions netting sets	–	–	33,093	–	114,226	41,611	41,367	16,741
2b	from Contractual cross- product netting sets	–	–	0	–	0	0	0	0
2c	Financial collateral simple method (for SFTs)	–	–	–	–	0	0	0	0
3	Financial collateral comprehensive method (for SFTs)	–	–	–	–	58,037	26,232	26,232	1,628
4	VaR for SFTs	–	–	–	–	0	0	0	0
5	Total	–	–	–	–	655,897	109,428	109,184	23,479
6									

The size of Deutsche Bank's on- and off-balance-sheet derivative business is at € 620.6 billion as of December 31, 2022 (€ 686.5 billion as of June 30, 2022), which makes around 46% of its total assets.

Deutsche Bank's CRR RWA stands at € 22.8 billion as of December 31, 2022, reflecting a decrease of € 0.6 billion from June 30, 2022. The decrease is predominantly driven by reduced RWA under SA-CCR for derivatives as well as financial collateral comprehensive method for securities financing transactions, partly offset by increased RWA under 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 exposures calculated under the 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, 2022	Three months ended Sep 30, 2022
		a	a
in € m.		RWA	RWA
1	Counterparty credit risk RWA under the IMM opening balance	22,786	19,201
2	Asset size	(2,339)	2,987
3	Credit quality of counterparties	80	(36)
4	Model updates (IMM only)	0	0
5	Methodology and policy (IMM only)	0	0
6	Acquisitions and disposals	0	0
7	Foreign exchange movements	(1,122)	634
8	Other	0	0
9	Counterparty credit risk RWA under the IMM closing balance	19,406	22,786

Organic changes in 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 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 decreased by 14.8% or € 3.4 billion since September 30, 2022 and is primarily driven by the categories “asset size” and “foreign exchange movements”. The decrease in “asset size” is reflecting a reduction in trading activities as part of balance sheet management.

CCR CVA capital charge

Article 439 (h) CRR

The table below EU CCR2 provides a breakdown of the CVA RWA into advanced and standardized approaches. Furthermore, the incremental contributions from the VaR and stressed VaR components are highlighted. The Group calculates the majority of the CVA based on an 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 € 6.1 billion (99%), whilst the standardized method covers only € 63 million (1%) 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 increase of € 1.4 billion (+29%) is primarily driven by business activities and additionally from processing of underlying trades.

EU CCR2 – CVA capital charge

in € m.	Dec 31, 2022		Jun 30, 2022	
	a	b	a	b
	Exposure value	RWA	Exposure value	RWA
1	Total portfolios subject to the Advanced Method			
	59,735	6,121	68,046	4,712
2	(i) VaR component (including the 3× multiplier)			
	0	849	0	677 ¹
3	(ii) Stressed VaR component (including the 3× multiplier)			
	0	5,273	0	4,036 ¹
4	Transactions subject to the Standardised method			
	362	63	415	96
	Transactions subject to the Alternative approach (Based on the Original Exposure Method)			
EU4	0	0	0	0
5	Total transactions subject to own funds requirements for CVA risk			
	60,097	6,184	68,462	4,808

1. Comparatives aligned to current presentation

CCR exposures to central counterparties

Article 439 (i) CRR

The table below presents an overview of Deutsche Bank’s exposures and RWA to central counterparties arising from transactions, margins and contributions to default funds. As of December 31, 2022, Deutsche Bank mainly reported exposures to qualifying central counterparties (QCCP) as defined in Article 4 (88) CRR.

EU CCR8 – Exposures to CCPs

in € m.	Dec 31, 2022		Jun 30, 2022	
	a	b	a	b
	Exposure value	RWA	Exposure value	RWA
1 Exposures to QCCPs (total)	-	652	-	593
Exposures for trades at QCCPs (excluding initial margin and default fund contributions)	7,959	159	5,928	119
of which:				
3 (i) OTC derivatives	2,981	60	1,488	30
4 (ii) Exchange-traded derivatives	1,435	29	1,001	20
5 (iii) Securities financing transactions	3,543	71	3,438	69
6 (iv) Netting sets where cross-product netting has been approved	0	0	0	0
7 Segregated initial margin	5,695	-	5,331	-
8 Non-segregated initial margin	2,781	56	2,780	56
9 Pre-funded default fund contributions	1,510	437	1,615	419
10 Unfunded default fund contributions	2,390	0	0	0
11 Exposures to non-QCCPs (total)	-	323	-	0
Exposures for trades at non-QCCPs (excluding initial margin and default fund contributions)	8	8	0	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	8	8	0	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	6	73	0	0
20 Unfunded default fund contributions	19	242	0	0

Deutsche Bank's RWA for central counterparties are at € 1.0 billion as of December 31, 2022, reflecting an increase of € 0.4 billion from June 30, 2022. The increase is predominantly driven by a central counterparty which is no longer recognized as qualifying as defined in Article 4 (88) CRR, which led to an increase of € 0.3 billion in prefunded and unfunded default fund contributions.

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

in € m.	Dec 31, 2022						
	Risk Weight						
	a	b	c	d	e	f	g
Exposure classes	0%	2%	4%	10%	20%	50%	70%
1 Central governments or central banks	2,979	0	0	0	0	0	0
2 Regional governments or local authorities	159	0	0	0	0	0	0
3 Public sector entities	278	0	0	0	4	0	0
4 Multilateral development banks	394	0	0	0	0	0	0
5 International organizations	0	0	0	0	0	0	0
6 Institutions	4	10,739	1	0	79	3	0
7 Corporates	57	0	0	0	31	5	0
8 Retail	0	0	0	0	0	0	0
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	3,871	10,739	1	0	114	9	0

		Dec 31, 2022				
in € m.		Risk Weight				
		h	i	j	k	l
Exposure classes		75%	100%	150%	Others	Total
1	Central governments or central banks	0	0	0	0	2,979
2	Regional governments or local authorities	0	0	0	0	159
3	Public sector entities	0	0	0	0	282
4	Multilateral development banks	0	0	0	0	394
5	International organizations	0	0	0	0	0
6	Institutions	0	14	0	0	10,841
7	Corporates	0	1,023	0	0	1,116
8	Retail	1	0	0	0	1
9	Institutions and corporates with a short-term credit assessment	0	0	0	0	0
10	Other items	0	79	3	0	82
11	Total	1	1,115	3	0	15,853

		Jun 30, 2022						
in € m.		Risk Weight						
		a	b	c	d	e	f	g
Exposure classes		0%	2%	4%	10%	20%	50%	70%
1	Central governments or central banks	3,459	0	0	0	0	0	0
2	Regional governments or local authorities	115	0	0	0	0	0	0
3	Public sector entities	370	0	0	0	3	0	0
4	Multilateral development banks	404	0	0	0	0	0	0
5	International organizations	0	0	0	0	0	0	0
6	Institutions	15	8,706	1	0	96	23	0
7	Corporates	125	0	0	0	217	5	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	4,487	8,706	1	0	315	29	0

		Jun 30, 2022				
in € m.		Risk Weight				
		h	i	j	k	l
Exposure classes		75%	100%	150%	Others	Total
1	Central governments or central banks	0	0	0	0	3,459
2	Regional governments or local authorities	0	0	0	0	115
3	Public sector entities	0	0	0	0	372
4	Multilateral development banks	0	0	0	0	404
5	International organizations	0	0	0	0	0
6	Institutions	0	11	0	0	8,853
7	Corporates	0	1,005	2	0	1,353
8	Retail	1	0	0	0	1
9	Institutions and corporates with a short-term credit assessment	0	0	0	0	0
10	Other items	0	0	2	0	2
11	Total	1	1,016	4	0	14,558

CCR exposures within the foundation IRBA

Article 452 (g) CRR

The following tables disclose Deutsche Bank's foundation IRBA counterparty credit risk exposures, i.e., derivatives and securities financing transactions, distributed on its internal rating scale for exposure classes central governments and central banks, institutions as well as corporates with its relevant subcategories. CVA charges or exposures cleared through a CCP are excluded.

Deutsche Bank discloses the exposure after CCF and CRM, where exposures covered by guarantees or credit derivatives are assigned to the protection seller.

The exposure after CCF and CRM is presented in conjunction with exposures-weighted average PD, RWAs, the average risk weight 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, 2022
	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	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
Corporates							
0.00 to <0.15	0	0.11	0.0	45.00	2.5	0	70.00
0.15 to <0.25	0	N/M	0	N/M	N/M	0	0
0.25 to <0.50	0	0.38	0.0	45.00	2.5	0	50.00
0.50 to <0.75	0	N/M	0	N/M	N/M	0	0
0.75 to <2.50	0	N/M	0	N/M	N/M	0	0
2.50 to <10.00	0	N/M	0	N/M	N/M	0	0
10.00 to <100.00	0	N/M	0	N/M	N/M	0	0
100.00 (Default)	0	N/M	0	N/M	N/M	0	0
Sub-total	0	0.23	0.0	45.00	2.5	0	62.96
of which:							
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
Specialized Lending							
0.00 to <0.15	0	0.11	0.0	45.00	2.5	0	70.00
0.15 to <0.25	0	0	0	0	2.5	0	0
0.25 to <0.50	0	0.38	0.0	45.00	2.5	0	50.00
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	0.23	0.0	45.00	2.5	0	62.96
Other							
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
Total	0	0.23	0.0	45.00	2.5	0	62.96

							Jun 30, 2022
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
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	5	0.16	0.1	45.00	2.5	2	38.78
0.15 to <0.25	28	0.26	0.0	45.00	2.5	15	53.09
0.25 to <0.50	6	0.49	0.0	45.00	2.5	5	72.01
0.50 to <0.75	7	0.82	0.0	45.00	2.5	7	90.46
0.75 to <2.50	25	2.03	0.1	45.00	2.5	18	71.74
2.50 to <10.00	2	4.29	0.0	45.00	2.5	2	99.11
10.00 to <100.00	0	19.61	0.0	45.00	2.5	0	218.35
100.00 (Default)	2	100.00	0.0	45.00	2.5	0	0
Sub-total¹	75	3.60	0.3	45.00	2.5	48	63.63
of which:							
SMEs							
0.00 to <0.15	1	0.15	0.0	45.00	2.5	0	26.55
0.15 to <0.25	0	0.26	0.0	45.00	2.5	0	37.86
0.25 to <0.50	0	0.44	0.0	45.00	2.5	0	46.40
0.50 to <0.75	0	0.76	0.0	45.00	2.5	0	61.77
0.75 to <2.50	2	1.89	0.0	45.00	2.5	1	77.21
2.50 to <10.00	2	4.13	0.0	45.00	2.5	2	95.25
10.00 to <100.00	0	15.96	0.0	45.00	2.5	0	163.93
100.00 (Default)	0	100.00	0.0	45.00	2.5	0	0
Sub-total	6	2.32	0.1	45.00	2.5	4	71.41
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	22	2.06	0.0	45.00	2.5	16	69.96
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)	2	100.00	0.0	45.00	2.5	0	0
Sub-total¹	24	9.50	0.0	45.00	2.5	16	64.65
Other							
0.00 to <0.15	4	0.17	0.0	45.00	2.5	2	42.06
0.15 to <0.25	28	0.26	0.0	45.00	2.5	15	53.28
0.25 to <0.50	6	0.49	0.0	45.00	2.5	4	72.83
0.50 to <0.75	7	0.82	0.0	45.00	2.5	6	90.97
0.75 to <2.50	1	1.47	0.0	45.00	2.5	1	110.78
2.50 to <10.00	0	8.12	0.0	45.00	2.5	0	189.24
10.00 to <100.00	0	22.21	0.0	45.00	2.5	0	257.12
100.00 (Default)	0	100.00	0.0	45.00	2.5	0	0
Sub-total	46	0.66	0.2	45.00	2.5	28	62.13
Total	75	3.60	0.3	45.00	2.5	48	63.63

CCR exposures within the advanced IRBA

Article 452 (g) CRR

The following tables disclose Deutsche Bank's advanced IRBA counterparty credit risk exposures, i.e. derivatives and securities financing transactions, distributed on its internal rating scale for exposure classes central governments and central banks, institutions as well as corporates with its relevant subcategories. CVA charges or exposures cleared through a CCP are excluded.

Deutsche Bank discloses the exposure after CCF and CRM, where exposures covered by guarantees or credit derivatives are assigned to the protection seller.

The exposure after CCF and CRM 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 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 Deutsche Bank applies an LGD estimate 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

Dec 31, 2022

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
Central governments and central banks							
0.00 to <0.15	11,006	0.01	0.1	42.80	0.5	260	2.36
0.15 to <0.25	208	0.23	0.0	45.68	1.7	96	46.14
0.25 to <0.50	0	0.39	0.0	50.00	1.0	0	53.48
0.50 to <0.75	9	0.64	0.0	45.34	1.9	7	71.45
0.75 to <2.50	126	1.52	0.0	42.83	2.8	135	106.83
2.50 to <10.00	626	3.34	0.0	12.01	2.1	247	39.48
10.00 to <100.00	0	0	0	0	0	0	0
100.00 (Default)	0	0	0	0	0	0	0
Sub-total	11,976	0.21	0.1	41.24	0.6	745	6.22
Institutions							
0.00 to <0.15	12,948	0.05	0.3	39.63	1.1	1,938	14.97
0.15 to <0.25	564	0.17	0.1	40.02	1.3	180	31.87
0.25 to <0.50	802	0.32	0.1	46.50	1.6	497	61.97
0.50 to <0.75	535	0.70	0.0	45.93	1.2	456	85.23
0.75 to <2.50	1,044	1.78	0.0	18.44	0.4	539	51.66
2.50 to <10.00	81	4.26	0.0	47.94	3.0	161	198.91
10.00 to <100.00	0	14.31	0.0	45.00	1.0	1	214.46
100.00 (Default)	0	0	0	0	0	0	0
Sub-total	15,974	0.22	0.5	38.86	1.1	3,772	23.61
Corporates							
0.00 to <0.15	45,872	0.04	6.9	35.33	1.3	6,282	13.69
0.15 to <0.25	4,718	0.20	1.0	35.28	1.6	1,412	29.93
0.25 to <0.50	4,521	0.35	1.2	46.23	2.1	2,479	54.82
0.50 to <0.75	2,069	0.65	0.9	58.62	1.8	2,121	102.52
0.75 to <2.50	3,151	1.39	1.3	41.19	1.8	3,032	96.25
2.50 to <10.00	1,043	4.14	0.5	51.12	2.4	1,466	140.59
10.00 to <100.00	67	23.15	0.1	57.50	1.5	214	319.57
100.00 (Default)	94	100.00	0.1	26.78	2.0	158	168.18
Sub-total	61,535	0.42	11.8	37.49	1.4	17,164	27.89
of which:							
SMEs							
0.00 to <0.15	2,357	0.04	0.3	31.58	0.8	134	5.70
0.15 to <0.25	29	0.21	0.1	36.76	1.3	6	22.17
0.25 to <0.50	198	0.36	0.2	60.23	1.3	98	49.62
0.50 to <0.75	278	0.65	0.1	80.66	1.0	258	92.80
0.75 to <2.50	243	1.58	0.3	74.14	1.3	298	122.87
2.50 to <10.00	199	3.37	0.1	60.83	2.0	127	63.76
10.00 to <100.00	1	16.64	0.0	68.90	1.7	1	215.16
100.00 (Default)	45	100.00	0.0	30.38	1.3	92	201.74
Sub-total	3,350	1.78	1.2	42.21	0.9	1,015	30.31
Specialized Lending							
0.00 to <0.15	11	0.06	0.0	49.37	4.4	4	37.08
0.15 to <0.25	11	0.23	0.0	22.08	4.7	4	35.45
0.25 to <0.50	191	0.43	0.0	3.22	4.9	12	6.31
0.50 to <0.75	12	0.64	0.0	51.39	4.0	13	107.51
0.75 to <2.50	90	1.65	0.0	23.78	2.4	44	48.68
2.50 to <10.00	101	7.20	0.0	29.67	4.7	141	139.18
10.00 to <100.00	3	13.35	0.0	50.21	2.3	6	248.44
100.00 (Default)	12	100.00	0.0	29.80	5.0	7	62.21
Sub-total	430	5.13	0.1	17.76	4.3	231	53.69
Other							
0.00 to <0.15	43,504	0.04	6.6	35.53	1.3	6,143	14.12
0.15 to <0.25	4,679	0.20	0.9	35.30	1.6	1,402	29.97
0.25 to <0.50	4,132	0.35	1.0	47.54	2.0	2,368	57.31
0.50 to <0.75	1,779	0.65	0.8	55.23	1.9	1,850	104.00
0.75 to <2.50	2,818	1.37	1.0	38.90	1.8	2,690	95.47
2.50 to <10.00	743	3.93	0.3	51.43	2.2	1,198	161.37
10.00 to <100.00	64	23.61	0.0	57.68	1.5	206	323.46
100.00 (Default)	37	100.00	0.0	21.36	1.9	59	161.39
Sub-total	57,755	0.30	10.6	37.37	1.5	15,918	27.56

Dec 31, 2022

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
Retail							
0.00 to <0.15	6	0.08	0.2	10.82	0.8	0	2.43
0.15 to <0.25	1	0.20	0.1	38.43	5.9	0	15.97
0.25 to <0.50	2	0.35	0.1	52.96	2.8	1	33.75
0.50 to <0.75	3	0.58	0.1	48.85	2.2	1	36.56
0.75 to <2.50	6	1.50	0.1	71.89	1.8	5	82.63
2.50 to <10.00	6	3.79	0.1	80.91	1.3	7	114.33
10.00 to <100.00	1	15.75	0.0	81.89	1.4	2	151.00
100.00 (Default)	0	100.00	0.0	16.50	1.4	1	206.25
Sub-total	26	3.58	0.6	54.68	1.8	17	65.60
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	0	0.09	0.0	37.22	1.4	0	7.38
0.15 to <0.25	0	0.23	0.0	81.90	1.1	0	29.40
0.25 to <0.50	0	0.40	0.0	37.80	2.6	0	19.18
0.50 to <0.75	1	0.63	0.0	79.35	1.4	1	52.59
0.75 to <2.50	2	1.50	0.0	72.57	1.4	1	69.21
2.50 to <10.00	2	4.40	0.0	80.04	1.4	2	93.45
10.00 to <100.00	1	13.65	0.0	82.24	1.1	1	125.26
100.00 (Default)	0	100.00	0.0	16.50	1.4	1	206.25
Sub-total	6	9.12	0.1	72.15	1.4	5	83.51

Dec 31, 2022

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	
Other retail non-SMEs								
0.00 to <0.15	6	0.08	0.2	9.90	0.8	0	2.26	
0.15 to <0.25	1	0.19	0.0	33.38	6.5	0	14.41	
0.25 to <0.50	2	0.35	0.1	53.75	2.8	1	34.51	
0.50 to <0.75	2	0.56	0.0	33.84	2.5	1	28.68	
0.75 to <2.50	4	1.50	0.1	71.56	2.0	4	89.23	
2.50 to <10.00	5	3.57	0.1	81.23	1.3	6	121.95	
10.00 to <100.00	1	17.87	0.0	81.53	1.7	1	177.20	
100.00 (Default)	0	0	0	0	0	0	0	
Sub-total	20	1.86	0.5	49.23	1.9	12	60.01	
Total (all exposure classes)	89,512	0.35	13.1	38.24	1.3	21,699	24.24	

Jun 30, 2022

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 %)
Central governments and central banks							
0.00 to <0.15	13,310	0.01	0.1	42.66	0.5	262	1.97
0.15 to <0.25	125	0.23	0.0	36.83	3.3	53	42.35
0.25 to <0.50	182	0.39	0.0	50.00	1.0	97	53.48
0.50 to <0.75	8	0.64	0.0	40.12	3.0	6	73.09
0.75 to <2.50	173	1.76	0.0	42.22	3.3	201	116.52
2.50 to <10.00	711	2.93	0.0	9.87	2.3	207	29.06
10.00 to <100.00	0	0	0	0	0	0	0
100.00 (Default)	0	0	0	0	0	0	0
Sub-total	14,510	0.18	0.1	41.09	0.6	827	5.70
Institutions							
0.00 to <0.15	12,782	0.06	0.3	41.42	0.9	2,089	16.35
0.15 to <0.25	733	0.25	0.0	32.79	1.3	281	38.31
0.25 to <0.50	354	0.42	0.0	50.47	2.5	317	89.64
0.50 to <0.75	532	0.69	0.0	40.35	1.4	462	86.88
0.75 to <2.50	1,572	1.79	0.0	16.94	1.6	722	45.93
2.50 to <10.00	339	3.48	0.0	13.48	0.9	172	50.86
10.00 to <100.00	2	14.31	0.0	47.75	0.7	4	230.95
100.00 (Default)	0	0	0	0	0	0	0
Sub-total	16,314	0.33	0.5	38.35	1.1	4,048	24.81
Corporates							
0.00 to <0.15	58,188	0.05	8.2	35.58	1.2	6,981	12.00
0.15 to <0.25	3,042	0.24	1.2	43.20	2.4	1,584	52.06
0.25 to <0.50	2,574	0.41	0.9	57.13	1.7	1,948	75.66
0.50 to <0.75	2,146	0.66	0.8	54.14	2.0	2,163	100.75
0.75 to <2.50	5,313	1.25	1.1	26.96	1.6	3,191	60.06
2.50 to <10.00	1,000	3.81	0.5	45.29	2.6	1,332	133.22
10.00 to <100.00	61	20.16	0.1	52.97	1.8	169	276.45
100.00 (Default)	77	100.00	0.0	34.36	3.8	79	101.85
Sub-total	72,402	0.35	12.9	36.73	1.3	17,447	24.10
of which:							
SMEs							
0.00 to <0.15	3,456	0.04	0.4	32.02	0.4	148	4.30
0.15 to <0.25	78	0.24	0.1	49.67	1.9	33	42.36
0.25 to <0.50	103	0.41	0.1	80.90	2.8	94	91.17
0.50 to <0.75	204	0.64	0.1	76.10	1.9	226	111.09
0.75 to <2.50	233	1.43	0.3	94.93	1.6	235	100.65
2.50 to <10.00	111	4.11	0.2	65.24	2.1	152	136.49
10.00 to <100.00	2	14.01	0.0	63.31	1.5	5	196.20
100.00 (Default)	3	100.00	0.0	76.61	1.1	5	193.67
Sub-total	4,190	0.34	1.2	40.12	0.7	898	21.43
Specialized Lending							
0.00 to <0.15	251	0.08	0.0	19.41	4.5	43	17.32
0.15 to <0.25	73	0.23	0.0	37.96	4.0	41	55.67
0.25 to <0.50	10	0.39	0.0	36.81	3.5	6	58.44
0.50 to <0.75	18	0.64	0.0	54.30	4.0	23	124.51
0.75 to <2.50	80	1.55	0.0	33.62	3.6	60	75.46
2.50 to <10.00	129	3.00	0.0	16.62	5.0	81	63.01
10.00 to <100.00	1	22.02	0.0	59.69	3.0	4	342.56
100.00 (Default)	18	100.00	0.0	29.50	4.9	11	61.24
Sub-total	580	4.13	0.1	24.89	4.4	269	46.37
Other							
0.00 to <0.15	54,481	0.05	7.8	35.88	1.2	6,789	12.46
0.15 to <0.25	2,891	0.24	1.1	43.16	2.3	1,510	52.23
0.25 to <0.50	2,461	0.41	0.8	56.23	1.6	1,848	75.09
0.50 to <0.75	1,924	0.66	0.7	51.81	2.0	1,913	99.43
0.75 to <2.50	5,000	1.24	0.8	23.68	1.5	2,896	57.92
2.50 to <10.00	760	3.90	0.3	47.21	2.3	1,099	144.62
10.00 to <100.00	58	20.37	0.0	52.42	1.8	161	278.53
100.00 (Default)	57	100.00	0.0	34.00	3.6	63	110.66
Sub-total	67,632	0.32	11.5	36.63	1.3	16,280	24.07

Jun 30, 2022

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 %)
Retail							
0.00 to <0.15	9	0.07	0.3	56.71	1.9	1	10.77
0.15 to <0.25	4	0.23	0.1	55.77	1.1	1	26.37
0.25 to <0.50	1	0.39	0.1	71.10	3.2	1	41.02
0.50 to <0.75	2	0.64	0.1	75.91	1.4	2	62.65
0.75 to <2.50	5	1.39	0.1	78.76	1.7	4	87.40
2.50 to <10.00	8	4.86	0.1	81.61	1.2	10	117.53
10.00 to <100.00	1	47.38	0.0	82.50	1.1	2	134.35
100.00 (Default)	0	100.00	0.0	15.40	1.1	0	192.55
Sub-total	31	3.63	0.7	69.70	1.6	20	63.40
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	0.07	0.0	63.35	1.0	0	10.23
0.15 to <0.25	0	0.23	0.0	56.98	1.0	0	20.47
0.25 to <0.50	1	0.39	0.0	77.41	1.1	0	38.90
0.50 to <0.75	1	0.64	0.0	76.27	0.9	0	50.66
0.75 to <2.50	2	1.20	0.0	80.57	1.1	1	70.32
2.50 to <10.00	3	5.11	0.0	81.96	1.2	2	97.76
10.00 to <100.00	0	26.00	0.0	82.50	1.3	0	158.56
100.00 (Default)	0	100.00	0.0	5.00	0.4	0	62.50
Sub-total	7	3.36	0.1	77.23	1.1	5	68.37
Other retail non-SMEs							
0.00 to <0.15	8	0.07	0.3	55.69	2.0	1	10.86
0.15 to <0.25	4	0.23	0.0	55.75	1.1	1	26.47
0.25 to <0.50	1	0.39	0.0	65.22	5.2	0	43.01
0.50 to <0.75	2	0.64	0.0	75.80	1.5	1	66.09
0.75 to <2.50	3	1.48	0.1	77.82	2.1	3	96.26
2.50 to <10.00	6	4.75	0.1	81.46	1.2	7	126.24
10.00 to <100.00	1	53.84	0.0	82.50	1.0	1	127.03
100.00 (Default)	0	100.00	0.0	16.50	1.1	0	206.25
Sub-total	24	3.71	0.5	67.54	1.7	15	61.98
Total (all exposure classes)	103,257	0.32	14.2	37.61	1.2	22,342	21.64

CCR exposures after credit risk mitigation

Article 439 (e) CRR

The following table presents information on Deutsche Bank's counterparty credit risk (CCR) exposure and the composition of collateral used in both derivatives transactions and securities financing transactions (SFTs).

Table EU CCR5 discloses a breakdown of all types of collateral posted or received to support or reduce CCR exposures related to derivatives and SFTs. For SFTs, 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, 2022							
		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
1	Cash – domestic currency	1	47,352	0	37,744	291	66,754	0	84,802
2	Cash – other currencies	444	44,940	3	24,644	14,148	140,973	0	197,678
3	Domestic sovereign debt	99	161	0	1,809	0	2,691	0	1,024
4	Other Sovereign debt	0	0	0	0	9	6,940	57	8,892
5	Government agency debt	0	0	0	0	0	0	0	0
6	Corporate bonds	1,280	23,625	0	5,461	1,662	237,388	4,015	210,635
7	Equity securities	280	3,254	0	0	472	73,304	22,675	43,038
8	Other collateral	5,399	3,126	5,713	9,355	0	4,748	0	1,051
9	Total	7,502	122,458	5,715	79,014	16,582	532,798	26,746	547,120

		Jun 30, 2022							
		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
1	Cash – domestic currency	1	43,340	0	35,868	1,016	77,580	0	85,449
2	Cash – other currencies	751	46,418	2	31,134	12,821	149,444	0	195,196
3	Domestic sovereign debt	110	228	0	2,101	7	4,248	4	1,175
4	Other Sovereign debt	0	0	0	0	23	4,572	23	8,962
5	Government agency debt	0	0	0	0	0	0	0	0
6	Corporate bonds	1,131	19,851	0	6,979	1,491	242,618	2,744	244,462
7	Equity securities	0	3,191	0	0	659	66,364	23,508	24,965
8	Other collateral	5,302	3,220	5,390	4,673	0	7,230	0	3,865
9	Total	7,295	116,247	5,392	80,755	16,019	552,056	26,279	564,075

Credit derivatives exposures

Article 439 (j) CRR

The table below discloses the exposure of the credit derivative transactions split into protection bought and sold, as well as a split into product types.

EU CCR6 – Credit derivatives exposures

		Dec 31, 2022		Jun 30, 2022	
		a	b	a	b
		Protection bought	Protection sold	Protection bought	Protection sold
in € m.					
Notionals					
1	Single-name credit default swaps	10,328	331	10,059	400
2	Index credit default swaps	76	2	848	2
3	Total return swaps	1,070	0	2,060	0
4	Credit options	0	0	1,359	200
5	Other credit derivatives	773,091	738,277	636,723	612,661
6	Total notionals	784,565	738,611	651,049	613,263
Fair values					
7	Positive fair value (asset)	3,623	6,208	7,689	2,612
8	Negative fair value (liability)	(5,943)	(2,351)	(2,415)	(6,495)

Deutsche Bank's total notionals are at € 1,523.2 billion as of December 31, 2022, reflecting an increase of € 258.9 billion from June 30, 2022, which was predominately driven by other credit derivatives in the trading book.

Exposure to securitization positions

Objectives in relation to securitization activity

Article 449 (a) CRR (EU SECA)

Deutsche Bank engages 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 its own credit risk exposure. In order to achieve its business objectives, Deutsche Bank acts 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, Deutsche Bank acts as originator, sponsor and investor. As an originator the Group uses securitizations primarily as a strategy to reduce credit risk, mainly through the Strategic Corporate Lending. Strategic Corporate Lending 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 Cash Lending MidCap portfolio, primarily domiciled in Germany and the Netherlands. In addition, the Corporate Bank, through the Global Transaction Banking division, also manages some of its 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 a simple transparent and standardized securitization (Article 18 of Regulation (EU) 2017/2402), principally through the issuance of credit linked notes providing first loss protection.

Additionally, on a limited basis Deutsche Bank has 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 its existing role as sponsor, the Group continues to establish and manage securitization schemes in which special purpose entities purchase exposures from third-party entities on behalf of investors. In these transactions, the Group has substantial influence on the selection of the purchased exposures and ultimate composition of the securitized portfolios.

Furthermore, Deutsche Bank acts as an investor in third party securitizations through the purchase of tranches from third party-issued securitizations including simple transparent and standardized securitizations (as part of the Treasury SLR program), or by providing liquidity, credit support or other form of financing. Additionally, the Group assists 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.

In compliance with the regulatory requirements for risk retention, due diligence and monitoring according to the applicable regulatory requirements is part of the Group's 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, Deutsche Bank acts as originator, sponsor and investor. In the role of investor, its main objective is to serve as a market maker in the secondary market. The market making function consists of providing liquidity for its customers and providing two way markets (buy and sell) to generate flow trading revenues. In the role of originator, the Group finances loans to be securitized, predominantly in the commercial real estate business. Trading book activities where the Group has the role of a sponsor (excluding activities derived from multi-seller originator transactions) as described above are minimal.

Its 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.

In compliance with Article 5 of Regulation (EU) 2017/2402, 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", 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. Deutsche Bank is 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.

The Group's 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 and commercial mortgage backed securities backed by first and second lien loans, collateralized loan obligations backed by corporate senior secured loans and unsecured debt and consumer asset backed securities, 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 Deutsche Bank's liquidity activity. For example, the Group enters into securitization transactions as part of an active liquidity risk management strategy. However, the Group also faces risk of potential drawdown under the revolving commitments provided under certain securitization facilities. This liquidity risk is monitored by its Treasury department and is included in its 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 Deutsche Bank's 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, which 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 or cannot 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.

Deutsche Bank does not make use of the option provided 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 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, 2022.

As of year end 2022, 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.

More than a half of the total banking book securitization exposure was subject to SEC-IRBA. This approach was 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, Deutsche Bank estimates 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.

The approach SEC-SA was used in most cases in absence of SEC-IRBA, and it was used for positions backed by a variety of asset classes including corporate loans, real estate loans and diverse ABS positions such as backed by aircraft leasing, credit card loans and consumer loans. The approach SEC-ERBA was only applied to a minority of securitization exposures. 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 rest of the securitization exposures were treated by getting assigned a risk weight of 1,250 % 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 pursuant to Article 337 CRR. For this, the market risk standardized approach risk weight for trading book securitization positions is calculated by using the same methodologies, which apply to banking book securitization positions. The market risk standardized approach 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 market risk standardized approach 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)
- 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” of this Pillar 3 report for general information on the Group’s 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. The predominantly used method for assessing risk-weighted assets in the trading book was the SEC-ERBA. To a lesser extent the SEC-SA was used. The method SEC-IRBA was only used for a minority of exposure. Another minor part of the 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 Deutsche Bank acts as originator and uses a securitization special purpose entity (SSPE) for transferring securitized assets it occasionally retains exposure to the securitization special purpose entities. The portion of retained exposures to securitization special purpose entities is only a very minor part of all retained positions where Deutsche Bank was originator. The types of exposure to the securitization special purpose entities were either liquidity facilities or derivatives, and in that case foremost interest rate swaps.

Deutsche Bank occasionally uses securitization special purpose entities to securitize third-party exposures in which the Group acts as a sponsor. In certain cases Deutsche Bank also retains some of the securitized exposures. Most of these positions are secured by mortgages on residential properties. The Group also retains occasionally exposures to securitization special purpose entities where it acts as sponsor. As of December 31, 2022, 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.

When Deutsche Bank acts as originator or sponsor of a securitization transaction, it sells 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, the Group does not offer such tranches to operative corporate clients to which, at the same time, the Group offers investment advisory services.

Deutsche Bank’s business division Asset Management 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. As of December 31, 2022 only a small minority of those positions consisted of tranches in securitization transactions where Deutsche Bank acted as originator or sponsor.

Deutsche Bank generally does not provide securitization related services to securitization special purpose entities which are out of its regulatory scope of consolidation and for which the Group claims risk transfer or where the Group acts as sponsor.

For the purpose of regulatory reporting and as of December 31, 2022, there were no securitization special purpose entities, which were in Deutsche Bank's regulatory scope of consolidation.

Article 449 (e) CRR

Deutsche Bank has not provided any implicit support to its securitization vehicles. In consequence, as of December 31, 2022 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 holds 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 banking and trading book securitizations of Deutsche Bank, please refer to section "Banking and trading book securitization exposures" 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.

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. 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.

- 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; 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.
- 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 (recognized based on expectations of potential credit losses).

- 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 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 include Trading Liabilities, Financial Liabilities Designated at Fair Value through Profit or Loss and Non-Participating Investment Contracts. 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. 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.

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.

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.

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.

External rating agencies used for securitizations and internal Assessment Approach

Article 449 (h-i) 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 external credit assessment institutes is used indiscriminately for all securitization positions to which they apply, and there is no preference of external credit assessment institutes per exposure type imposed by the Group.

As the Group ceased to use asset backed commercial paper ("ABCP") programs in 2015, there were no securitizations positions subject to the Internal Assessment Approach as of December 31, 2022. For a description of the RWA calculation approaches used for securitization positions please refer to the section "Approaches to calculation of RWA for securitizations mapped to types of exposures" 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 the Group's securitization exposures separately for the regulatory non-trading and trading book. The details of the Group's 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 the Group has securitized in its 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 ('simple, transparent and standardised securitisation' or 'STS securitisation' means a securitisation that meets the requirements set out in Article 18 of Regulation (EU) 2017/2402) securitization transactions. The originator and sponsor columns (a-k) also contain retained positions, even where the Group does not achieve significant risk transfer (SRT) and shows the current retention of its contribution to the originated or sponsored amount. The amounts reported are the securitized principal notional amounts where no significant risk transfer is achieved. If significant risk transfer is achieved, then the EAD are shown. As the Group ceased the use of asset backed commercial paper programs in 2015, there are no securitizations positions subject to the internal assessment approach as of December 31, 2022.

The table EU SEC2 provides the total purchased or retained securitization exposure held in the bank's 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 simple transparent and standardized securitizations. The amounts reported are the EAD.

EU SEC1 – Securitization exposures in the non-trading book

															Dec 31, 2022
	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	214	0	72	72	20,496	20,496	20,781	0	2,444	0	2,444	506	47,437	0	47,943
Retail	214	0	41	41	0	0	255	0	1,820	0	1,820	489	13,490	0	13,979
of which:															
Residential Mortgage	0	0	41	41	0	0	41	0	1,785	0	1,785	481	6,120	0	6,602
Credit Card	0	0	0	0	0	0	0	0	0	0	0	0	438	0	438
Other retail exposures	214	0	0	0	0	0	214	0	34	0	34	8	6,931	0	6,939
Re-securitization	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wholesale	0	0	31	31	20,496	20,496	20,527	0	625	0	625	16	33,947	0	33,964
of which:															
Loans to corporates	0	0	0	0	20,496	20,496	20,496	0	437	0	437	1	25,148	0	25,149
Commercial Mortgage	0	0	31	31	0	0	31	0	88	0	88	0	284	0	284
Lease and receivables	0	0	0	0	0	0	0	0	100	0	100	0	3,089	0	3,089
Other wholesale	0	0	0	0	0	0	0	0	0	0	0	15	5,426	0	5,442
Re-securitization	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

															Jun 30, 2022
	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	214	0	71	71	18,461	18,461	18,746	0	2,498	0	2,498	700	45,438	0	46,138
Retail	214	0	40	40	0	0	255	0	1,884	0	1,884	636	13,141	0	13,778
of which:															
Residential Mortgage	0	0	40	40	0	0	40	0	1,867	0	1,867	624	6,808	0	7,432
Credit Card	0	0	0	0	0	0	0	0	0	0	0	0	442	0	442
Other retail exposures	214	0	0	0	0	0	214	0	17	0	17	13	5,891	0	5,904
Re-securitization	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wholesale	0	0	31	31	18,461	18,461	18,492	0	614	0	614	64	32,296	0	32,360
of which:															
Loans to corporates	0	0	0	0	18,461	18,461	18,461	0	468	0	468	5	24,714	0	24,719
Commercial Mortgage	0	0	31	31	0	0	31	0	105	0	105	0	180	0	180
Lease and receivables	0	0	0	0	0	0	0	0	41	0	41	33	3,159	0	3,192
Other wholesale	0	0	0	0	0	0	0	0	0	0	0	26	4,243	0	4,270
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, 2022		
	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	Subtotal	Traditional		Synthetic	Subtotal	Traditional		Synthetic	Subtotal		
in € m.	STS	Non-STS			STS	Non-STS			STS	Non-STS				
Total exposures	0	133	0	133	0	0	0	0	2	1,979	0	1,980		
Retail	0	0	0	0	0	0	0	0	2	612	0	613		
of which:														
Residential Mortgage	0	0	0	0	0	0	0	0	1	530	0	531		
Credit Card	0	0	0	0	0	0	0	0	0	5	0	5		
Other retail exposures	0	0	0	0	0	0	0	0	1	77	0	78		
Re-securitization	0	0	0	0	0	0	0	0	0	0	0	0		
Wholesale	0	133	0	133	0	0	0	0	0	1,367	0	1,367		
of which:														
Loans to corporates	0	0	0	0	0	0	0	0	0	943	0	943		
Commercial Mortgage	0	132	0	132	0	0	0	0	0	239	0	239		
Lease and receivables	0	0	0	0	0	0	0	0	0	48	0	48		
Other wholesale	0	0	0	0	0	0	0	0	0	137	0	137		
Re-securitization	0	0	0	0	0	0	0	0	0	0	0	0		

...

												Jun 30, 2022		
	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	Subtotal	Traditional		Synthetic	Subtotal	Traditional		Synthetic	Subtotal		
in € m.	STS	Non-STS			STS	Non-STS			STS	Non-STS				
Total exposures	0	207	0	207	0	0	0	0	4	2,489	0	2,493		
Retail	0	0	0	0	0	0	0	0	4	909	0	913		
of which:														
Residential Mortgage	0	0	0	0	0	0	0	0	4	812	0	816		
Credit Card	0	0	0	0	0	0	0	0	0	19	0	19		
Other retail exposures	0	0	0	0	0	0	0	0	0	78	0	78		
Re-securitization	0	0	0	0	0	0	0	0	0	0	0	0		
Wholesale	0	207	0	207	0	0	0	0	0	1,580	0	1,580		
of which:														
Loans to corporates	0	0	0	0	0	0	0	0	0	1,005	0	1,005		
Commercial Mortgage	0	207	0	207	0	0	0	0	0	407	0	407		
Lease and receivables	0	0	0	0	0	0	0	0	0	21	0	21		
Other wholesale	0	0	0	0	0	0	0	0	0	147	0	147		
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 € 73.3 billion as of December 31, 2022, which was an increase of € 3.2 billion compared to June 30, 2022. A large majority of the exposure resided in the non-trading book with € 71.2 billion, whereas the trading book portion represented only a minor contribution of € 2.1 billion aggregate exposure value. That was an increase of € 3.8 billion in the non-trading book driven by originator and investor positions and a decrease of € 0.6 billion in the trading book, compared to June 30, 2022.

As of December 31, 2022, in the non-trading book there were two dominant contributions, which together cover € 68.4 billion of the total € 71.2 billion aggregate exposure volume of that book. One dominant part consisted of the traditional securitizations with a volume of € 47.9 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 € 20.5 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 € 46.1 billion of exposure volume, or 65% of the overall exposure volume in the non-trading book, and in the trading book the loans to corporates covered € 0.9 billion, representing 45% of the total exposure volume of that book. The mortgages represented the second dominant part in the trading book with € 0.9 billion out of € 2.1 billion, representing 43% of the trading book. In the non-trading book with a contribution of € 8.8 billion the mortgages were the less dominant part in that book, representing 12% of exposure volume of that book. Together, the securitized asset types “Loans to corporates” and “Mortgage”, underlied around € 56.8 billion of € 73.3 billion overall securitization position exposure, which represented 77% of that volume.

Of the overall volume of securitization business of € 73.3 billion only a minority of € 0.7 billion was classified as simple, transparent and standardized (STS). This represented 1% of the overall exposure volume in securitizations.

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, the exposure values are broken down by risk-weight bands (columns a-e). Additionally, the Group presents 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 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 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) of the pool of securitized assets needs to be calculated as if it was not securitized and as if it was 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, 2022
	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% RW	>20% to 50% RW	>50% to 100% RW	>100% to <1250% RW	1250% RW/ deductions	SEC-IRBA	SEC-ERBA(incl uding IAA)	SEC-SA	1250% / deductions	SEC-IRBA	SEC-ERBA(incl uding IAA)	SEC-SA	1250% / deductions	SEC-IRBA	SEC-ERBA(incl uding IAA)	SEC-SA	1250% / deductions	
Total exposures	22,238	711	10	44	8	22,840	40	124	8	3,607	136	55	104	298	5	4	8	
Traditional transactions	2,417	53	10	35	0	2,352	40	124	0	356	136	55	1	25	5	4	0	
Securitization	2,417	53	10	35	0	2,352	40	124	0	356	136	55	0	25	5	4	0	
Retail underlying	1,820	1	10	29	0	1,813	32	16	0	272	109	37	0	18	3	3	0	
of which:																		
STS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Wholesale	597	52	0	7	0	540	7	109	0	84	26	18	0	7	2	1	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	0	0	0	0	0	
Synthetic transactions	19,821	658	0	8	8	20,487	0	0	8	3,251	0	0	104	272	0	0	8	
Securitization	19,821	658	0	8	8	20,487	0	0	8	3,251	0	0	104	272	0	0	8	
Retail underlying	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Wholesale	19,821	658	0	8	8	20,487	0	0	8	3,251	0	0	104	272	0	0	8	
Re-securitization	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

																		Jun 30, 2022
	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% RW	>20% to 50% RW	>50% to 100% RW	>100% to <1250% RW	1250% RW/ deductions	SEC-IRBA	SEC-ERBA(incl uding IAA)	SEC-SA	1250% / deductions	SEC-IRBA	SEC-ERBA(incl uding IAA)	SEC-SA	1250% / deductions	SEC-IRBA	SEC-ERBA(incl uding IAA)	SEC-SA	1250% / deductions	
Total exposures	17,656	3,311	0	42	21	20,803	42	164	21	3,455	135	26	261	305	5	2	21	
Traditional transactions	2,530	0	0	37	1	2,362	42	164	1	364	135	26	11	24	5	2	1	
Securitization	2,530	0	0	37	1	2,362	42	164	1	364	135	26	11	24	5	2	1	
Retail underlying	1,894	0	0	30	0	1,876	21	28	0	291	99	6	1	18	3	0	0	
of which:																		
STS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Wholesale	636	0	0	7	1	486	21	137	1	73	36	20	10	6	3	2	1	
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	15,125	3,311	0	5	20	18,441	0	0	20	3,091	0	0	250	282	0	0	20	
Securitization	15,125	3,311	0	5	20	18,441	0	0	20	3,091	0	0	250	282	0	0	20	
Retail underlying	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Wholesale	15,125	3,311	0	5	20	18,441	0	0	20	3,091	0	0	250	282	0	0	20	
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 € 71 billion by December 31, 2022, of which € 23 billion were represented by positions for which the Group acts as originator or sponsor, which was an increase of € 2 billion compared to June 30, 2022. 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 almost exclusively treated by the SEC-IRBA method of the securitization framework of CRR. This reflects first and foremost the way the own synthetic on-balance sheet securitizations, which covered € 20.5 billion or 89% of the € 23 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. As a 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 decreased by € 18 million from € 333 million as of June 30, 2022 to € 315 million by December 31, 2022, of which € 298 million or around 94% were treated under SEC-IRBA. The small relative movements in that portfolio, around 9% increase in exposure levels and 5% decrease of capital requirements reflect the stability of the originating business by way of on-balance sheet securitizations in the reporting period.

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, the exposure values are broken down by risk-weight bands (columns a-e). Additionally, the Group presents 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 these values are vertically broken down by traditional and synthetic transactions, securitization and re-securitization, as well as by retail or wholesale and a specific row 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, 2022
	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% RW	>20% to 50% RW	>50% to 100% RW	>100% to <1250% RW	1250% RW/ deductions	SEC-IRBA	SEC-ERBA(incl uding IAA)	SEC-SA	1250% / deductions	SEC-IRBA	SEC-ERBA(incl uding IAA)	SEC-SA	1250% / deductions	SEC-IRBA	SEC-ERBA(incl uding IAA)	SEC-SA	1250% / deductions	
Total exposures	43,867	2,269	1,547	247	13	20,378	1,025	26,527	13	3,760	967	6,963	159	273	49	397	13	
Traditional transactions	43,867	2,269	1,547	247	13	20,378	1,025	26,527	13	3,760	967	6,963	159	273	49	397	13	
Securitization	43,867	2,269	1,547	247	13	20,378	1,025	26,527	13	3,760	967	6,963	156	273	49	397	13	
Retail underlying	11,490	1,288	1,009	189	3	9,202	529	4,245	3	1,975	701	2,482	35	134	29	90	3	
of which:																		
STS	489	0	0	0	0	0	94	395	0	0	9	40	0	0	1	3	0	
Wholesale	32,377	981	538	58	10	11,176	496	22,282	10	1,784	266	4,481	121	139	20	307	10	
of which:																		
STS	16	0	0	0	0	0	16	0	0	0	2	0	0	0	0	0	0	
Re-securitization	0	0	0	0	0	0	0	0	0	0	0	0	3	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, 2022
	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% RW	>20% to 50% RW	>50% to 100% RW	>100% to <1250% RW	1250% RW/ deductions	SEC-IRBA	SEC-ERBA(incl uding IAA)	SEC-SA	1250% / deductions	SEC-IRBA	SEC-ERBA(incl uding IAA)	SEC-SA	1250% / deductions	SEC-IRBA	SEC-ERBA(incl uding IAA)	SEC-SA	1250% / deductions	
Total exposures	42,148	2,023	1,625	317	25	21,000	611	24,501	25	4,085	533	6,741	313	296	33	380	15	
Traditional transactions	42,148	2,023	1,625	317	25	21,000	611	24,501	25	4,085	533	6,741	313	296	33	380	15	
Securitization	42,148	2,023	1,625	317	25	21,000	611	24,501	25	4,085	533	6,741	309	296	33	380	14	
Retail underlying	11,699	1,033	777	254	15	9,413	389	3,961	15	2,038	312	3,124	183	135	16	92	4	
of which:																		
STS	636	0	0	0	0	0	0	636	0	0	0	69	0	0	0	6	0	
Wholesale	30,449	989	848	63	10	11,587	223	20,540	10	2,047	221	3,617	126	160	16	288	10	
of which:																		
STS	64	0	0	0	0	0	59	5	0	0	6	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	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 € 71 billion by December 31, 2022, for which € 48 billion or 68% the Group acts as investor, which was an increase of € 1.8 billion compared with June 30, 2022. With € 43.9 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 two most important methods applied to the investor portfolio were the SEC-IRBA and the SEC-SA. The SEC-SA was applied to an exposure volume of € 26.5 billion or 55% and the SEC-IRBA was applied to € 20.4 billion or 43% of the full investor exposure amount. A minority portion of € 1 billion was covered by the SEC-ERBA. The least beneficial approach resulting in 1250% risk-weight had to be applied only to € 13 million exposure volume of this portfolio. The impact on capital requirements after the cap was, that also the two look-through approaches, SEC-IRBA and SEC-SA, covered almost 92% of the investor portfolio capital requirements, which amounted to € 670 million. The SEC-SA covered € 397 million or 54% and the SEC-IRBA covered € 273 million or 37% of the overall capital requirements of € 732 million, which was an increase of € 8 million compared to June 30, 2022 with an amount of € 724 million.

Compared to June 30, 2022 there was an increase of € 3.8 billion in the overall exposure volume of the non-trading book, which was mainly driven both by originator and investor positions. That movement was mainly resulting from an increase of € 1.8 billion in the investor activities, supported by an increase of € 2 billion in the originator and sponsor business, which was mainly due to two new synthetic originator transactions. The two main components of that € 3.8 billion movement were an increase of € 6.3 billion within the lowest risk-weight bucket, with risk-weights below or equal to 20%, and a decrease of € 2.4 billion the second lowest risk-weight bucket of risk-weights greater than 20% and lower than or equal to 50%. As a result, the overall capital requirements of the non-trading book decreased by 1% from € 1,057 million as of June 30, 2022, to € 1,047 million by December 31, 2022.

Exposures securitized by the institution - Exposures in default and specific credit risk adjustments

Article 449 (I) 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 (I) CRR - Exposures securitized by the institution - Exposures in default and specific credit risk adjustments

	Dec 31, 2022		
	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	125,044	3,757	164
Retail (total)	36,811	1,930	0
Residential mortgage	32,251	1,876	0
Credit card	0	0	0
Other retail exposures	4,465	54	0
Re-securitization	95	0	0
Wholesale (total)	88,233	1,827	164
Loans to corporates	24,115	137	164
Commercial mortgage	64,006	1,690	0
Lease and receivables	112	0	0
Other wholesale	0	0	0
Re-securitization	1	0	0

in € m.	Jun 30, 2022		
	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
	Total	of which exposures in default	
Total exposures	125,014	4,014	98
Retail (total)	37,092	2,110	0
Residential mortgage	32,590	2,062	0
Credit card	0	0	0
Other retail exposures	4,402	48	0
Re-securitization	100	0	0
Wholesale (total)	87,922	1,903	98
Loans to corporates	21,177	85	98
Commercial mortgage	66,700	1,819	0
Lease and receivables	44	0	0
Other wholesale	0	0	0
Re-securitization	1	0	0

The total outstanding nominal amount of securitized assets by the Group in the roles of originator or sponsor as December 31, 2022 was € 125 billion, which was no movement compared with June 30, 2022. The increase of loans to corporates by € 2.9 billion was balanced by a decrease of € 2.7 billion in commercial mortgages. The outstanding nominal amount where the Group acts as originator contributed the majority of € 121.6 billion or 97% of the total outstanding nominal amount. The outstanding nominal amount where the Group acts as sponsor was represented by € 3.5 billion or 3% of the total outstanding amount. Breaking down the total outstanding nominal amount of securitized assets into asset types, mortgages contributed € 96.3 billion or 77% of the total outstanding amount. These can be broken down into commercial mortgages representing € 64 billion of the outstanding amount and residential mortgages contributing € 32.3 billion of the outstanding nominal amount. The second essential part was comprised of loans to corporates, which contributed € 24.1 billion of the outstanding nominal amount or 19% of the total outstanding nominal amount.

Securitized assets flagged as defaulted by December 31, 2022 added up to a total of € 3.8 billion, which were split into € 1.7 billion for commercial mortgages, € 1.9 billion for residential mortgages and € 0.1 billion for loans to corporates. In relative terms the defaulted asset ratios were 2.6% for commercial mortgages, 5.8% for residential mortgages and 0.6% for loans to corporates. Overall, the ratio of defaulted assets in the pools of these securitization was at 3.0%, which is a slight decrease of 0.2 percentage points compared to June 30, 2022.

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 the Group's businesses are subject to market risk, defined as the potential for change in the market value of the 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 the exposure.

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 the 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 the Group's 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 the 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.

The market risk can be distinguished between three substantially different types:

- 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 the trading units, in the 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 the Group's 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.

The aim is to accurately measure all types of market risks by a comprehensive set of risk metrics embedding accounting, economic and regulatory considerations.

Market risks are measured by several internally developed key risk metrics and regulatory defined market risk approaches.

Trading Market Risk

The primary mechanism to manage trading market risk is the application of the Group's risk appetite framework of which the limit framework is a key component. The 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 the Corporate Divisions and their individual business units based on established and agreed business plans. The business aligned heads within Market Risk Management also 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.

The 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 the bank's trading units, in its 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 the risk appetite and limit framework is also applied to manage the Group's exposure to nontrading market risk. At 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 the market risk measurement and reporting systems are described in the section "Risk management objectives and policies – Enterprise Risk - Scope and nature of risk measurement and reporting systems" 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 the bank's trading units, in its 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 this area have been outlined above in Section Article 435 (1)(b).

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 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. The Group Treasury function is mandated to manage the interest rate risk centrally, with Market Risk Management acting as "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 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

measures the change in economic value of equity (ΔEVE) as the maximum decrease of the banking book economic value under the six standard scenarios defined by the EBA in addition to internal stress scenarios for risk steering purposes. For the reporting of internal stress scenarios and risk appetite the Group applies a few different modelling assumptions as used in this disclosure. When aggregating the economic value of equity ΔEVE across different currencies, DB adds up negative and positive changes without applying weight factors 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 over a defined time horizon, compared to a defined benchmark scenario. Thereby the Group measures net interest income ΔNII as the maximum reduction under the six standard scenarios defined by the 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. 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, the Group uses interest rate swaps to manage the exposure to cash flow variability of the 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 the Private Bank and Corporate Bank divisions. Those positions are subject to risk of changes in client's behavior with regard to their deposits as well as loan products. The Group regularly tests the assumptions and updates them where appropriate following a defined governance process. In particular, the Group has made changes to its assumptions during the early phase of rising interest rates where a slower repricing in deposits was observed than it was anticipated.

The Group manages the interest rate risk exposure of its non-maturity deposits 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 non-maturity deposits 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 2.32 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 the bank's 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

hedged 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 the 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 the 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 the non-consolidated investment holdings in the banking book and from the equity compensation plans.

The Group's 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 the 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 the Group's alternative asset activities. The review of new or increased principal investment commitments is the task of the Principal Investment Commitment Approval Group, established by the Enterprise Risk Committee as a risk management forum for alternative asset investments. The Principal Investment Commitment Approval Group 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 Enterprise Risk Committee.

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 Asset Management business division primarily result from principal guaranteed funds or accounts, but also from co-investments in the Group's funds.

Own funds requirements under the Market Risk Standardized Approach

Article 445 CRR

As of December 31, 2022, the securitization positions, for which the specific interest rate risk is calculated using the market risk standardized approach, generated capital requirements of € 196 million corresponding to risk weighted-assets of € 2.45 billion. As of June 30, 2022 these positions generated capital requirements of € 223 million corresponding to risk weighted-assets of € 2.79 billion.

The capital requirement for Collective Investment Undertakings under the market risk standardized approach was € 10 million corresponding to risk weighted-assets of € 129 million as of December 31, 2022, compared with € 24 million and € 302 million, respectively, as of June 30, 2022.

EU MR1 – Market risk under the standardized approach

in € m.	Dec 31, 2022	Jun 30, 2022
	a	a
	RWA	RWA
Outright products		
1 Interest rate risk (general and specific) ¹	165	149
2 Equity risk (general and specific) ²	47	96
3 Foreign exchange risk ³	196	201
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	2,449	2,785
9 Total	2,857	3,231

¹ Interest Rate risk RWA includes € 57 million from collective investment undertakings and € 108 million as per Article 325b of CRR which relates to consolidation of exposures of certain legal entities for own funds requirements

² Equity risk RWA of € 47 million is from collective investment undertakings

³ Foreign Exchange risk RWA includes € 25 million from collective investment undertakings and € 171 million related to placeholders for foreign exchange exposures

Qualitative information on the internal model approach

Characteristics of the market risk models

Article 455 (a)(i) CRR (EU MRB)

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, the Group measures market and related risks using several key risk metrics listed below:

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.

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.

The Group’s value-at-risk for the trading businesses is based on internal model approach. In October 1998, the German Banking Supervisory Authority (now the BaFin) approved the internal model for calculating the regulatory market risk capital for the general and specific market risks based on a sensitivity based Monte Carlo approach. In October 2020, the ECB approved a significant change to the 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 historical simulation approach provides more accurate modelling of the risks, enhances the Group's 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 the market risk systems and models to the end of day pricing.

Risk management VaR is calibrated to a 99 % confidence level and a one day holding period. This indicates a 1 in 100 chance that a mark-to-market loss from the trading positions will be at least as large as the reported VaR. For regulatory capital purposes, the 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.

The 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 the Group to apply a consistent measure across the 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 the market risk both over time and against the 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

The process of systematically capturing and evaluating risks currently not captured in the VaR model has been further developed and improved. An assessment is made to determine the level of materiality of these risks and material items are prioritized for inclusion in the internal model. Risks not in VaR are monitored and assessed on a regular basis through the Risk Not In VaR (RNIV) framework. This framework has also undergone a significant overhaul in 2020.

The bank is committed to the ongoing development of the internal risk models, and allocates 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. The Group calculates a stressed value-at-risk measure using a 99 % confidence level. Stressed VaR is calculated with a holding period of ten days. The 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 2022, the stress period selection process for DB Group was conducted as outlined above. As a result, the SVaR window used at various periods in 2022 included the Financial credit crisis of 2008/09 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),(f) CRR and EU MRB

The incremental risk charge (IRC) is based on the bank's internal model and is intended to complement the value-at-risk modeling framework. The bank uses 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.

The incremental risk charge is calculated 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, the model applies 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 Enterprise Risk Management 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)

The Group continually analyzes potential weaknesses of the 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, the P&L impact on a portfolio for a trading day valued with current market prices and parameters assuming it had been left untouched for that day is estimated and compared with the estimates from the value-at-risk model from the preceding day. The 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 the value-at-risk from the preceding day. On average, 99% confidence level should give rise to two to three outliers representing 1% of approximately 260 trading days in any one year. Market risk analyzes and documents underlying reasons for outliers and classifies them either as due to market movements, risks not included in the value-at-risk model, model or process shortcomings. The results are used for further enhancement of the 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 the value-at-risk model, which allows the bank to improve and adjust the risk estimation process accordingly.

A model validation team reviews all quantitative aspects of the 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)

The Group's value-at-risk for the trading businesses is based on the Group's own internal model. In October 1998, the German Banking Supervisory Authority (now the BaFin) approved the internal model for calculating the regulatory market risk capital for the general and specific market risks based on a sensitivity based Monte Carlo approach. In October 2020, the ECB approved a significant change to the 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).

The Group also has approval to use the 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)

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.

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 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, 2022 the amount of the additional value adjustments was € 2 billion. The December 31, 2021 amount was € 1.8 billion. The increase was predominantly due to widening price dispersions across multiple asset classes as a result of the broader market volatility observed in 2022.

As of December 31, 2022 the reduction of the expected loss from subtracting the additional value adjustments was € 123 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, 2022		Jun 30, 2022	
	a	b	a	b
in € m.	RWA	Capital requirements	RWA	Capital requirements
1 VaR (higher of values a and b)	7,413	593	5,951	476
a) Previous day's VaR (Article 365(1) (VaRt-1))	–	122	–	124
b) Multiplication factor (mc) x average of previous 60 working days (VaRavg)	–	593	–	476
2 SVaR (higher of values a and b)	12,221	978	14,677	1,174
a) Latest SVaR (sVaRt-1)	–	154	–	286
b) Multiplication factor (ms) x average of previous 60 working days (sVaRavg)	–	978	–	1,174
3 Incremental risk charge -IRC (higher of values a and b)	3,639	291	4,195	336
a) Most recent IRC value	–	270	–	301
b) 12 weeks average IRC measure	–	291	–	336
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	0	0	0	0
6 Total	23,274	1,862	24,824	1,986

As of December 31, 2022, the Internal Models Approach (IMA) components for market risk totaled € 23.3 billion, which was a decrease of € 1.6 billion since June 30, 2022. The decrease in stressed value-at-risk was driven by changes in credit and rates exposures in the Investment Bank. There was an offsetting increase in value-at-risk mainly due to inclusion of more volatile market data introduced into the value-at-risk 1-year window. Additionally, there was a slight offsetting increase in value-at-risk and stressed value-at-risk components driven by increase in capital multiplier from 4.65 to 4.85 due to increase in buy & hold back testing outliers from 7 to 9.

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

in € m.	Three months ended Dec 31, 2022						
	a	b	c	d	e	f	g
	VaR	SVaR	IRC	Compre- hensive risk measure	Other	Total RWA	Total capital requirements
1 Market Risk RWA opening balance	7,758	10,117	3,455	–	0	21,330	1,706
1a Regulatory adjustment ¹	(6,149)	(6,570)	(357)	–	0	(13,075)	(1,046)
1b RWA at the previous quarter-end (end of the day)	1,610	3,547	3,099	–	0	8,256	660
2 Movement in risk levels	(903)	(1,626)	278	–	0	(2,251)	(180)
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	822	0	0	–	0	822	66
7 Other	0	0	0	–	0	0	0
8a RWA at the end of the reporting period (end of the day)	1,528	1,921	3,377	–	0	6,827	546
8b Regulatory adjustment ¹	5,885	10,300	262	–	0	16,447	1,316
8 Market Risk RWA closing balance	7,413	12,221	3,639	–	0	23,274	1,862

¹ Indicates the difference between reported RWA (based on 60day average) and RWA (based on VaR / SVaR as of quarter-end) at the beginning (1b) and end (8a) of the reporting period.

in € m.	Three months ended Sep 30, 2022						
	a	b	c	d	e	f	g
	VaR	SVaR	IRC	Compre- hensive risk measure	Other	Total RWA	Total capital requirements
1 Market Risk RWA opening balance	5,951	14,677	4,195	–	0	24,824	1,986
1a Regulatory adjustment ¹	(4,397)	(11,102)	(429)	–	0	(15,928)	(1,274)
1b RWA at the previous quarter-end (end of the day)	1,554	3,575	3,766	–	0	8,895	712
2 Movement in risk levels	(199)	(28)	(667)	–	0	(895)	(72)
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	255	0	0	–	0	255	20
7 Other	0	0	0	–	0	0	0
8a RWA at the end of the reporting period (end of the day)	1,610	3,547	3,099	–	0	8,256	660
8b Regulatory adjustment ¹	6,149	6,570	357	–	0	13,075	1,046
8 Market Risk RWA closing balance	7,758	10,117	3,455	–	0	21,330	1,706

¹ Indicates the difference between reported RWA (based on 60day average) and RWA (based on VaR / SVaR as of quarter-end) at the beginning (1b) and end (8b) of the reporting period.

² Indicates the spot impact on RWA at the time of go-live and does not reflect the RWA impact from market volatility feeding through the VaR model.

The market risk RWA movements due to position changes are represented in line “Movement in risk levels”. Changes to the Group’s 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 the Group reflects regulatory driven changes to its 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, return assumptions for negative market levels, volatilities, correlations, liquidity and ratings are included under the “Market data changes and recalibrations” category.

As of December 31, 2022, the IMA components for market risk totaled € 23.3 billion, which was an increase of € 1.9 billion since September 30, 2022. The increase in average stressed value-at-risk was mainly driven by changes in rates and foreign exchange exposures across Investment Bank which led to a change in stressed value-at-risk market data window to Lehman crisis period (July’ 2008 – June’ 2009) following the regular stress period selection review.

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.

EU MR3 – IMA values for trading portfolios¹

in € m.		Dec 31, 2022	Jun 30, 2022
		a	a
VaR (10 day 99 %)			
1	Maximum value	155.7	181.1
2	Average value	122.6	91.9
3	Minimum value	89.9	54.5
4	Period end	123.0	133.3
SVaR (10 day 99 %)			
5	Maximum value	309.4	372.7
6	Average value	205.1	239.9
7	Minimum value	127.0	142.1
8	Period end	174.6	290.7
IRC (99.9 %)			
9	Maximum value	385.0	414.0
10	Average value	283.8	315.7
11	Minimum value	211.8	233.3
12	Period end	270.2	301.3
Comprehensive risk capital charge (99.9 %)			
13	Maximum value	–	–
14	Average value	–	–
15	Minimum value	–	–
16	Period end	–	–

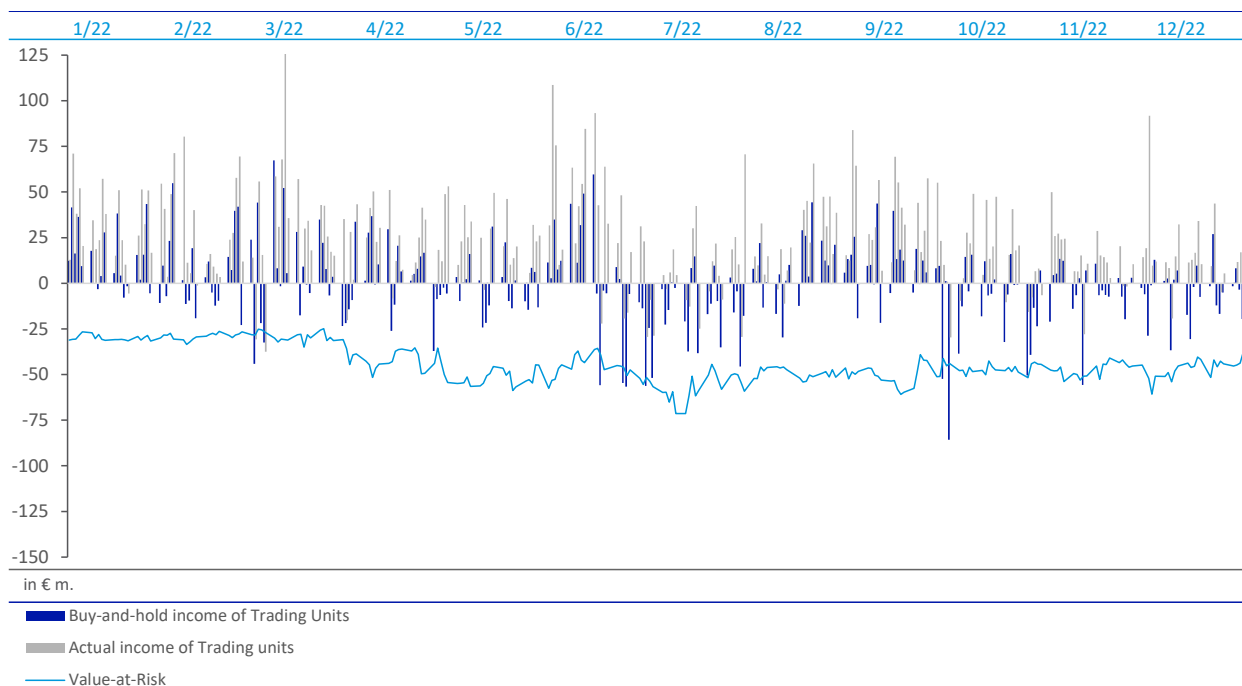
¹ Amounts show the maximum, average and minimum for the preceding six-month period.

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 the Group's trading positions with the buy and hold income.

EU MR4 – Comparison of VaR estimates with gains and losses



During the reporting period (January 2022 – December 2022), the Group observed 2 Actual and 9 buy-and-hold backtesting outliers. The outliers were driven by a sharp increase in market volatility in interest rates and credit spreads on the back of uncertainty from Russia-Ukraine crisis in 1Q 2022, market anticipations on central bank moves to curb inflation in 2Q 2022 and disruptions in UK gilts market in 3Q 2022, leading to market moves that were larger than those within the preceding one-year period used in the value-at-risk calculation.

Prudent valuation adjustments

Article 436 (e) CRR

Deutsche Bank determines the amount of the Prudent Valuation Adjustment based on the methodology defined in the 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, 2022				
in € m.		a	b	c	d	e
		Risk Category				
Category level AVA		Equity	Interest Rates	Foreign Exchange	Credit	Commodities
1	Market price uncertainty	340	838	139	835	1
3	Close-out cost	198	353	118	165	0
4	Concentrated positions	12	147	5	121	0
5	Early termination	0	0	0	0	0
6	Model risk	2	16	3	1	0
7	Operational risk	0	0	0	0	0
10	Future administrative costs	4	18	2	22	0
12	Total Additional Valuation Adjustments (AVAs)	556	1,372	266	1,144	1

						Dec 31, 2022				
						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					106	28	1,161	1,094	67
3	Close-out cost					6	6	425	401	24
4	Concentrated positions					0	0	284	268	16
5	Early termination					0	0	0	0	0
6	Model risk					172	10	112	105	6
7	Operational risk					0	0	0	0	0
10	Future administrative costs					0	0	47	44	3
12	Total Additional Valuation Adjustments (AVAs)					284	44	2,029	1,912	116

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.

Deutsche Bank's operational risk appetite sets out the amount of operational risk it is willing to accept as a consequence of doing business. The bank takes 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 risk appetite, risk reducing actions must be undertaken, including remediating the risks, insuring risks or ceasing business.

The Operational Risk Management Framework 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. Operational Risk Management Framework 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.

Operational risk is a risk type on the Group's Risk Type Taxonomy. Together with Reputational Risk it forms Non-Financial risk. The Operational Risk Management Framework is a set of interrelated tools and processes that are used to identify, assess, measure, monitor and mitigate Deutsche Bank Group's operational risks according to regulatory and industry-established definition of operational risk. It applies to the operational sub-risk types on a more granular level and enables the bank to aggregate and monitor its operational risk profile. 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 and challenges 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; the results of these assessments and controls are regularly reported to the Management Board and Supervisory Board. The Compliance department also assists the Regulatory Management team with regulatory engagement
- Financial crime risks are managed by the 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, 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 Deutsche Bank Group's data privacy risk and control framework
 - Ensuring appropriate quality assurance in relation to all of the above
- NFRM Product Governance oversees Product Lifecycle risk and manages the New Product Approval (NPA) and Systematic Product Review (SPR) cross-risk processes. These processes are central to the control framework designed to manage risks associated with the implementation of new products and services, and changes in products and services during their lifecycles. Applicable bank-wide, the cross-risk processes cover different stages of the product lifecycle with NPA focusing on pre-implementation and Systematic Product Review 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 Systematic Product Review process focuses on the periodic review of all products to determine if they are to remain live or need to be modified or withdrawn. In 2022, NFRM Product Governance has continued to develop its Future State operating model, an ongoing multi-year program to improve the risk management of new products. NFRM Product Governance also continues to monitor emerging risks, such as ESG, to ensure their appropriate consideration.
- NFRM is the Risk Type Controller 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 Risk Type Controller 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 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 Operational Risk Management Framework 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 Operational Risk Management Framework, including the operational risk capital model. The Head of NFRM monitors and challenges the Operational Risk Management Framework's Group wide implementation and monitors overall risk levels against the bank's operational risk appetite.

The Non-Financial Risk Committee, 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 business divisions and infrastructure functions. Several sub- fora with attendees from both the 1st LoD and 2nd LoD support the Non-Financial Risk Committee to effectively fulfil its mandate. In addition to the Group level Non-Financial Risk Committee, business divisions have established 1st LoD non-financial risk (NFR) fora for the oversight and management of operational risks on various levels of the organization.

The governance of operational risks follows the bank's 3LoD approach to managing all of its financial and non-financial risks. The Operational Risk Management Framework 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 1st LoD: Risk owners as the 1st LoD have full accountability for their operational risks and manage these against a defined risk appetite.

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 2nd LoD: Risk Type Controllers act as the 2nd LoD control functions for all sub-risk types under the overarching risk type “operational risk”.

Risk Type Controllers establish the framework and define Group level risk appetite statements for the specific operational risk type they oversee. Risk Type Controllers 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. Risk Type Controllers provide independent operational risk oversight and prepare aggregated risk type profile reporting. Risk Type Controllers 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, Risk Type Controllers 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, Risk Type Controller roles are located only in infrastructure functions.

Operational risk requirements for NFRM as the Risk Type Controller for the overarching risk type “operational risk”: As the Risk Type Controller / risk control function for operational risk, NFRM establishes and maintains the overarching Operational Risk Management Framework 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 Risk Type Controllers 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)

To manage the broad range of sub-risk types underlying operational risk, the Operational Risk Management Framework provides a set of tools and processes that apply to all operational risk types across the bank. These enable the bank to determine its operational risk profile in relation to risk appetite for operational risk, to systematically identify operational risk themes and concentrations, and to define risk mitigating measures and priorities.

In 2022, the bank continued to mature the management of operational risks by further integrating and simplifying the risk management processes, by enhancing the bank’s central controls inventory, by upgrading systems to capture and analyze operational risk loss events, by enhancing governance around risk appetite, and by strengthening control activities conducted by both 1st LoD and 2nd LoD functions at various levels across the bank.

Loss data collection: Data on internal and relevant external operational risk events (with a P&L impact \geq €10,000) is independently validated in a timely manner. Material operational risk events trigger clearly defined lessons learned and read-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 2022, the bank implemented a new system (Event Management Application ‘EMApp’) for capturing and managing operational risk events to replace dbIRS. The historical data on loss events has been migrated from dbIRS to EMApp, and its completeness and potential impacts on the operational risk model were tested and documented.

Scenario analysis: The operational risk profile is complemented by incorporating exploratory scenario analysis into day-to-day risk management activities. Scenario analysis is used as a risk identification and management tool that enables risk owners and Risk Type Controllers to explore potential exposure to risk as the basis for identifying potential gaps in the banks existing

operational risk profile. Scenario storylines build on internal losses, emerging risk reviews, top risk concentrations, and the review of external peer operational risk loss events. Information from actual and potential future loss events are systematically utilized to identify thematic susceptibilities and actively seek to reduce the likelihood of similar incidents, for example through deep dive analyses or risk profile reviews. In 2022, the scenario analysis process has been strengthened by further tightening the roles and responsibilities within the 1st LoD and 2nd LoD in executing scenarios. Furthermore, scenario analysis continues to play an important role in operational resilience exercises particularly in assessing impacts on emerging risk themes such as the Ukraine/Russia conflict, energy shortage etc., to assist the bank to prepare for crisis management decisions.

Risk & Control Assessment: The risk and control assessment process 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 2022, the bank continued to embed the dynamic, trigger-based approach to the risk and control assessment to review the bank's risk profile on a real time basis through non-financial risk governance meetings. In addition, the bank has continued to mature its central control inventory as well as assurance and assessment activities to provide greater transparency to the risk owners on the effectiveness of the control environments mitigating their risks.

Top risks: The bank regularly reports and performs analyses on 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 operational top risk themes back within risk appetite. In 2022, the frequency of Group top risk reporting was changed from monthly to quarterly to align with divisional top risk reporting cadence, noting that any risk and remediation updates may be reflected dynamically via the risk and control assessment process.

Transformation Risk Assessment: To appropriately identify and manage risks from material change initiatives within the bank, a transformation risk assessment 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 2022, a number of changes were introduced in order to improve the robustness of the assessment. To that end, the timeframe to finalize the assessment has been extended, the template has been enhanced, and the role of 2nd LoD functions to challenge and input into the assessment was further strengthened.

Risk appetite: Non-financial risk appetite is the amount of non-financial risk the bank is willing to accept as a consequence of doing business. The non-financial risk 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 2022, the design of an enhanced risk appetite framework was developed and tested for a subset of risk types. Further refinements to the approach and a fuller implementation plan will be a focus for 2023.

Findings and issue management: The findings and issue management process facilitates the bank in mitigating 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.

Operational risk measurement

Article 446 CRR

Deutsche Bank calculates and measures the regulatory and economic capital requirements for operational risk using the AMA methodology. The 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) complemented by scenario data are used to estimate the risk profile (i.e., a loss frequency and a loss severity distribution). The loss distribution approach model includes conservatism by recognizing losses on events that arise over multiple years as single events in the 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 considering qualitative adjustments after deducting expected loss.

The regulatory and economic capital requirements for operational risk is derived from the 99.9 % percentile; see the section “Internal 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

As of December 31, 2022, operational losses for the Group were €528 million. Losses from “Clients, Products and Business Practices” and “Others” contributed to 80% of operational risk regulatory and economic capital demand.

In view of the relevance of legal risks within the bank’s operational risk profile, specific attention is dedicated to the management and measurement of 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 annual operational risk loss that will not be exceeded with a given probability. This loss amount is driven by a component that due to the IFRS criteria is reflected in the bank’s financial statements and a component beyond the amount reflected as provisions within the bank’s financial statements.

The legal losses which the bank expects with a likelihood of more than 50 % are already reflected in the 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 the bank’s financial statements as provisions because they do not meet the recognition criteria under IAS 37 are considered within “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 generally comprise 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.

The legal forecasts are included in the “relevant loss data” used in the 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.

AMA model validation and quality control concept

All AMA model components are independently validated. 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 of the AMA model regarding the selection of non-financial risk appetite metrics and the methodology driving its forward-looking component, which are now included in the model.

The model’s input sources such as loss data, scenario analyses, risk & control assessments, and expected loss are subject to comprehensive quality controls in the business divisions and the control functions.

Operational risk management stress testing concept

Stress testing is conducted on a regular basis to complement the AMA methodology, to analyze the impact of extreme stress scenarios on capital and the profit-and-loss account. It also contains reputational impacts. In 2022, NFRM took part in 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 the 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

The regulatory and economic capital requirements for operational risk are calculated and measured 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 entire Deutsche Bank group.

EU OR1 - Operational risk own funds requirements and risk-weighted exposure amounts

in € m.	Dec 31, 2022				
	a	b	c	d	e
	Relevant indicator			Own funds requirements secured by financial guarantees	Risk exposure amount secured by credit derivatives
Banking activities	2020	2021	2022		
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	23,271	25,072	27,163	4,668	58,349

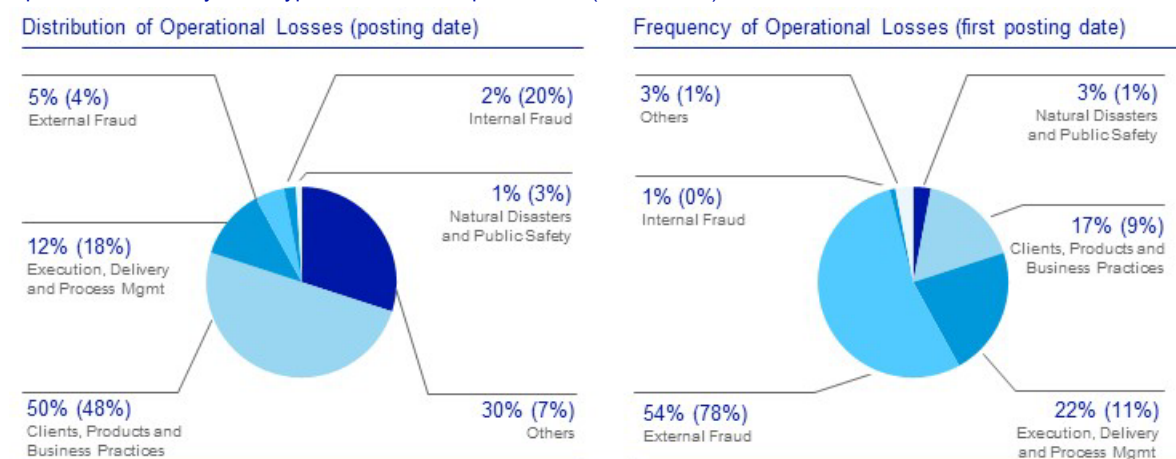
Operational Risk losses by event type (profit and loss view)

in € m.	2022	2021 ¹
Clients, Products and Business Practices	263	347
Others	158	78
Execution, Delivery and Process Management	65	38
External Fraud	28	12
Internal Fraud	7	72
Natural Disasters and Public Safety	7	6
Group	528	553

¹ 2021 loss figures revised from prior year presentation due to subsequent capture of losses and reclassification. Losses are reported after offsetting insurance.

As of December 31, 2022, operational losses reduced by € 25 million to € 528 million. The overall reduction in losses was driven by the event type "Internal Fraud" offset partially by increases in "Execution, Delivery and Process Management" and "External Fraud". Legal losses were broadly stable when aggregating settled matters and changes in litigation reserves for unsettled matters across "Clients, Products and Business Practices" and "Others".

Operational losses by event type occurred in the period 2022 (2017 - 2021)¹



¹ Percentages in brackets correspond to loss frequency respectively to loss amount for losses occurred in 2017-2021 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 2022, against the average for the comparative five-year period 2017-2021 (in brackets). The event type “Clients, Products and Business Practices” represents 50% of operational losses and is largely made up of settled matters and changes in litigation reserves for unsettled matters.

“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 2022), against the average for the comparative five-year period 2017-2021 (in brackets). The highest event type frequency, “External Fraud” made up 54% of all observed loss events. Although this event type contributed majorly to the frequency distribution of event losses in 2022, the size of losses experiences were minor compared with other event types.

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 insurance strategy and supporting insurance policy and guidelines is the responsibility of the specialized unit Corporate Insurance/Deukona. Corporate Insurance/Deukona is responsible for the global corporate insurance policy which is approved by the Management Board.

Corporate Insurance/Deukona is responsible for acquiring insurance coverage and for negotiating contract terms and premiums. Corporate Insurance/Deukona also has a role in the allocation of insurance premiums to the businesses. Corporate Insurance/Deukona 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. Corporate Insurance/Deukona is actively involved in industry efforts to reflect the effect of insurance in the results of the capital calculations.

Insurance is bought in order to protect 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.

Two insurance companies are maintained. 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 € 57 million as of December 31, 2022 compared with € 30 million as of December 31, 2021. Currently, no other risk transfer techniques beyond insurance are recognized in the AMA model.

Corporate Insurance/Deukona 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 Corporate Insurance/Deukona activities, is audited by Group Audit on a risk-based approach.

Exposure to interest rate risk in the banking book

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. The Group Treasury function is mandated to manage the interest rate risk centrally, with Market Risk Management acting as "2nd Line of Defense" (LoD) independently assessing and challenging the implementation of the framework and adherence to the risk appetite. Group Audit in its role as the "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 measures the change in economic value of equity (Δ EVE) as the maximum decrease of the banking book economic value under the six standard scenarios defined by the EBA in addition to internal stress scenarios for risk steering purposes. For the reporting of internal stress scenarios and risk appetite the Group applies a few different modelling assumptions as used in this disclosure. When aggregating the economic value of equity Δ EVE across different currencies, DB adds up negative and positive changes without applying weight factors 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 over a defined time horizon, compared to a defined benchmark scenario. Thereby the Group measures net interest income Δ NII as the maximum reduction under the six standard scenarios defined by the 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. 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, the Group uses interest rate swaps to manage the exposure to cash flow variability of the 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 the Private Bank and Corporate Bank divisions. Those positions are subject to risk of changes in client's behavior with regard to their deposits as well as loan products. The Group regularly tests the assumptions and updates them where appropriate following a defined governance process. In particular, the Group has made changes to its assumptions during the early phase of rising interest rates where a slower repricing in deposits was observed than it was anticipated.

The Group manages the interest rate risk exposure of its non-maturity deposits 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 non-maturity deposits 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 1.98 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 EBA.

EU IRRBB1 - Changes in the economic value of equity and net interest income under six supervisory shock scenarios

in € bn.	Changes of the economic value of equity		Changes of the net interest income ¹	
	Dec 31, 2022	June 30, 2022	Dec 31, 2022	June 30, 2022
Parallel up	(4.6)	(4.4)	1.9	2.2
Parallel down	1.3	0.6	(1.1)	(1.0)
Steeper	(0.1)	(0.3)	(0.4)	(0.4)
Flattener	(1.4)	(1.4)	1.5	1.8
Short rates up	(2.4)	(2.3)	2.3	2.6
Short rates down	1.2	0.9	(1.2)	(1.0)
Maximum	(4.6)	(4.4)	(1.2)	(1.0)

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 loss was € (4.6) billion as of December 2022, compared to € (4.4) billion as of June 2022.

The maximum economic value of equity loss for the 'Parallel up' interest rate scenario was essentially flat during the second half of 2022 due to active management of Deutsche Bank's banking book positions via defined risk management strategies.

The maximum one-year loss in net interest income (NII) was € (1.2) billion as of December 2022, compared to € (1.0) billion as of June 2022.

The increase in the maximum net interest income loss in the "Short rates down" scenario was mainly driven by the increase in Euro interest rates observed in 2022. The increase leads to higher interest rate downward shocks that are applied in floored regulatory standard scenarios with corresponding higher net interest income losses.

Additionally, the higher interest rate environment resulted in a more normalized NIM (Net Interest Margin) in the base scenario compared to a compressed margin in the downwards shock scenario.

Environmental, social and governance (ESG) risks

Article 449a CRR

ESG disclosures are included in accordance with Article 449a CRR and the EBA ITS 2022/01. ESG risks are the risks of current and future losses arising from any negative financial, operational and/or reputational impacts on Deutsche Bank's clients, invested assets and/or operations as it relates to ESG factors.

Environmental risk includes both physical and transition risks related to climate change. Physical risks are the risks of losses arising from any negative impact on the bank from acute near-term risks such as extreme weather events or chronic longer-term impacts of rising temperatures. Transition risks are driven by policy, behavioral and technology changes required to foster the transition to a low carbon economy and can also impact the bank's clients and invested assets. In addition, there are other environmental risks resulting from factors such as water stress, biodiversity loss, land erosion and depletion. All of these environmental risks can impact the bank's assets, operations and its clients.

Social risks include losses arising from any negative financial impact on Deutsche Bank because of current or prospective impacts from social factors, such as matters related to human rights or workforce management: while governance risks are the risk of losses arising from governance factors such as anti-financial crime or non-compliance with policies or regulations. Both of these risks can impact the bank's assets, operations and its clients.

As ESG disclosure requirements and its metrics are evolving and are being newly implemented in the banking industry, there remains uncertainty on how disclosure requirements could be interpreted and there are limitations on the amount and granularity of available data. As a result, Deutsche bank's interpretations, methodologies, and availability of data will be further enhanced in the future as additional guidance and information becomes available.

ESG risks

ESGT1-3

Governance

Deutsche Bank believes it is part of the Group's responsibility to support and where possible, accelerate the transformation towards a more sustainable society and economy. Thus, the bank supports the European Commission's Action Plan on sustainable finance as a crucial contribution toward the European Union's achievement of its climate commitment under the Paris Agreement and its wider sustainability agenda.

The Group Sustainability Committee, chaired by the bank's Chief Executive Officer, acts as the senior decision-making body for sustainability-related matters at group level, including those related to ESG risks and the bank's net zero targets. In 2022, the bank enhanced its sustainability governance by appointing a Chief Sustainability Officer and establishing a Sustainability Strategy Steering Committee responsible for monitoring the timely and complete implementation of the bank's sustainability transformation agenda and escalating material risks or issues to the Group Sustainability Committee. The bank also established the Net-Zero Forum responsible for the assessment of new transactions with a significant impact on the bank's financed emissions and/or net zero targets with representatives from business divisions, Risk, and the Chief Sustainability Office. Both groups are chaired by the Chief Sustainability Officer.

Each of Deutsche Bank's core businesses divisions integrates climate and broader ESG risks into its planning and risk appetite statements as part of the bank's annual strategic planning process, and are approved by the Management Board.

Within the Chief Risk Office, the Group Risk Committee, chaired by the Chief Risk Officer, is established by the Management Board to serve as the central forum for review and decision making on matters related to risk, capital, and liquidity. This includes oversight of the Bank's climate and environmental risk management frameworks. A number of delegated fora of the Group Risk Committee are responsible for management and decision making in relation to specific elements of ESG risks, such as the Enterprise Risk Committee and the ESG Risk Forum.

The ESG Risk Forum comprises experts across all key risk types and control functions, oversees the integration of climate risk into the bank's existing risk frameworks for managing financial and non-financial risks. ESG topics are also regularly discussed in business unit risk councils and other committees and fora.

To closely and visibly link the bank's sustainability strategy and performance with the compensation of the Management Board, the bank's strategic sustainability goals are reflected in the compensation system, which forms the basis of the Management Board's total compensation. The variable components of the Management Board's compensation are linked to several ESG targets, such as the amount of sustainable financing and investments, and concretely defined targets from the area of climate

risk management. ESG related factors are also incorporated, where appropriate, into the Balanced Scorecards used for assessing individual and divisional performance and compensation.

Strategy and processes

Sustainability is a key theme of Deutsche Bank's "Global Hausbank" strategy. The bank is embedding sustainability into its policies, processes, and products, focusing on four pillars:

- Sustainable Finance
- Policies & Commitments
- People & Operations
- Thought Leadership & Stakeholder Engagement

All of the bank's business activities, own operations, relations with employees or suppliers, and respective processes are covered by these four pillars and address the ESG-related risk factors. Managing these risks and providing solutions to such challenges are part of the bank's sustainability strategy and risk management processes.

Seizing business opportunities arising from ESG challenges, Deutsche Bank set the target of achieving a cumulative volume since January 2020 of at least € 200 billion in sustainable financing and investment by year end 2022 (excluding DWS) and € 500 billion by the end of 2025(excluding DWS), as defined in the bank's Sustainable Finance Framework. The Sustainable Finance Framework outlines the methodology and associated procedures for classifying financial products and services offered by Deutsche Bank as sustainable. The framework specifies the classification logic, the eligibility parameter criteria, the applicable environmental and social due diligence requirements, as well as the verification and monitoring process. It is aligned to the extent possible with the requirements of the EU Taxonomy Regulation.

Risk Management

Managing emerging ESG risks to the bank's balance sheet and operations is a key component of the Group's sustainability strategy. Deutsche Bank has set interim (2030) and final (2050) net zero aligned targets for four carbon intensive sectors and has established frameworks and processes for enhanced due diligence in relation to sectors and clients identified as having elevated inherent environmental and social risks and/or elevated impacts on the bank's financed emissions and net zero pathways. The bank's Environmental and Social policy framework prohibits business activity in certain high impact areas. The bank's Reputational Risk Framework is utilized to discuss any counterparty concerns that are perceived to be in contradiction with Deutsche Bank's values and beliefs including those driven by ESG factors. Deutsche Bank's ESG risk management frameworks are discussed in more detail below.

Deutsche Bank regularly performs a materiality assessment to determine the relevance of individual non-financial topics across ESG. The bank follows the Global Reporting Initiative (GRI) standard and applies the concept of double materiality (i.e., considering the potential positive and negative impacts Deutsche Bank may have on these topics and the potential financial impacts of these topics on the bank.) The results of the materiality assessment drive the bank's sustainability agenda and the selection of topics reported in its Non-Financial Report.

The Chief Risk Office in addition conducts a comprehensive and granular materiality assessment of climate and other environmental risks to identify potential impacts across key impacted risk types in the short, medium, and long-term. Results are integrated into the Group's risk identification processes and risk inventory and reviewed against internal controls. The 2022 materiality assessment concluded that climate transition risk is the most material risk driver for the Group in the short-to-medium term (below 5year horizon).

Environmental risk

ESGT1

Governance

Overall governance and oversight of environmental risks are fully aligned and embedded in the ESG committees and frameworks described above Risks. To allow for the monitoring of climate risk metrics in the bank's portfolios, the Group Risk Committee, and the Group Sustainability Committee receive quarterly climate and environmental risk reports that include financed emissions, exposure to carbon-intensive sectors, alignment with portfolio decarbonization targets and other climate risk-related topics, including key industry and regulatory developments.

Strategy and processes

In October 2022, Deutsche Bank published its net zero emission reduction targets for four key carbon-intensive sectors in the bank's corporate lending portfolio:

- Oil and Gas (Upstream)

- Power Generation
- Automotives (Light Duty Vehicles)
- Steel production

Quantitative thresholds around these targets have been integrated into the Group's Risk Appetite Statement, together with a broader threshold on the overall carbon footprint of the bank's corporate loan commitments. New transactions or limit extensions with a significant impact on the bank's financed emissions and/or net zero targets are reviewed by a dedicated Net Zero Forum. The forum's review includes an assessment of client sustainability disclosures, transition strategies, decarbonization targets and governance.

Deutsche Bank publishes annually absolute emissions and progress towards net zero aligned targets following the standard from the Partnership for Carbon Accounting Financials, relevant international greenhouse gases emissions reporting protocols and emerging best-practice climate portfolio alignment methodologies.

Deutsche Bank strives to do business responsibly. This involves properly identifying transactions and/or clients that might expose the bank to potential environmental issues. The bank has defined sectors having an inherently elevated potential for negative environmental impacts and requires enhanced due diligence based on the provisions summarized in the bank's Environmental and Social Policy Framework. For some sectors, the bank has made specific commitments. For example, since 2016 Deutsche Bank does not finance any new coal projects, be it in power or thermal coal mining.

As part of the bank's environmental and social due diligence, the bank engages where required with clients to understand risks and mitigants associated with a transaction or a counterparty.

In 2022, the bank began preparing a portfolio review of its coal clients in the Asia-Pacific region. The preparations included defining the scope of clients covered by the review as well as updating the related questionnaires. The review is scheduled to start in 2023. A similar review in 2021 for coal power clients in the United States and Europe led to insights into clients' progress on their carbon footprint and existing transition plans. Building on this, a process for a client transition dialogue is being developed to support clients on their way to a more sustainable business model. In 2022, the bank also continued to perform the systematic review of its global business activities in the Oil and Gas sector, set a target to significantly reduce the volume of financed emissions (Scope 3) by 2030 for the sector, and started the dialog with its clients on their decarbonization strategies.

In accordance with Article 8 of the Taxonomy Regulation and the related Climate Disclosures Delegated Act, as well as the Commission Delegated Regulation (EU) 2022/1214, Deutsche Bank started for the full year 2021 disclosing the proportion of exposures to taxonomy eligible and taxonomy non-eligible economic activities in its covered assets, as well as several key performance indicators related to the proportion of selected exposures in their total assets. The assessment of taxonomy eligible economic activities of corporate clients is performed for in-scope counterparties and products as described in the aforementioned regulations. Where the use of proceeds is known, the bank reports the exposures to the corporate client to the extent and proportion that the project funded finances are taxonomy eligible economic activity and also discloses the portion that is non-eligible. For general purpose lending or where the use of proceeds is not known, Deutsche Bank looks to the counterparty's disclosures to determine the percentage of its capital expenditures that are used for eligible and non-eligible economic activities. Building renovation loans and motor vehicle loans are currently not included in the taxonomy eligible disclosure. Residential real estate loans against households collateralized by residential immovable property are considered as taxonomy eligible.

Risk management

Climate change and environmental degradation may lead to the emergence of new sources of financial and non-financial risks. Transition risks to the bank's portfolios are increasingly likely to materialize in the short-to-medium term as governments introduce ambitious climate-related targets and policies, as society adapts its behavior and as investor appetite for carbon intensive clients / sectors becomes more selective. These risks include but are not limited to:

- Increased default risk and/or valuation losses on exposures to clients and assets that may be impacted by climate physical and/or transition risks, such as climate-related developments in policy and regulations, the emergence of disruptive technology or business models, shifting market sentiment, and societal preferences
- Reputational risks resulting from a failure to adapt to climate risks, which may also lead to litigation by parties seeking compensation after suffering loss or damage, and
- Business disruption risks to the bank's offices, employees, and processes in locations facing physical climate risks, such as extreme weather events and/or disruptive longer-term increases in global temperatures

In addition, climate and other environmental risks are considered as risk drivers of all other main risk types of the bank: credit risk, non-financial risk, liquidity risk, and market risk) and is, incorporated into their respective management frameworks. The integration of climate and other environmental risks in the risk type frameworks of the bank is overseen by the Enterprise Risk Committee.

Deutsche Bank's framework for the management of environmental risks has four key elements and each one considers the short, medium and long-term effects of environmental risks:

- Risk identification and materiality assessment
- Risk measurement, monitoring and mitigation, integration into risk type frameworks and processes
- Scenario analysis and stress testing, and
- Risk metrics, targets, and integration in appetite

Deutsche Bank relies on a number of different industry frameworks and standards for the management of climate and other environmental risks. The overall risk assessment and reporting framework reflects the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD). Estimation of financed emissions are based on the standard from the Partnership for Carbon Accounting Financials (PCAF). Methodologies for the bank's sector decarbonization targets are proprietary, but these methodologies significantly apply the Paris Agreement Capital Transition Assessment (PACTA) approaches and are in line with those set by peers.

Deutsche Bank conducts comprehensive materiality assessments of climate and other environmental risks to identify key impacts across potentially affected risk types. The drivers considered in the materiality analysis are climate transition risks arising from policy, technology and behavioral changes, acute and chronic physical risks and other environmental risks. Material climate and environmental risk drivers are then managed through the relevant risk type frameworks of the bank (Strategic, Credit, Market, Liquidity, Operational and Reputational risks).

The impact assessment uses a combination of stress test results, other scenario and sensitivity analysis and qualitative expert judgement. The risk drivers covered in the materiality assessment are used to integrate climate risk considerations into the risk identification process, which functions as a basis for the group risk inventory, and the Internal Capital Adequacy Assessment Process.

Deutsche Bank is committed to align its loan portfolios with emission reduction pathways needed to achieve net zero by 2025. The bank's decarbonization targets, together with the quantitative risk appetite thresholds integrated into the Group Risk Appetite Statement, are the main levers used to mitigate climate transition risks by progressively reducing the carbon intensity of the bank's portfolio.

In addition, Deutsche Bank's Environmental and Social Policy Framework, including the bank's provisions for the fossil fuel sectors outlines specific restrictions and escalation requirements for sectors with inherently elevated potential for negative environmental impacts.

To support the bank's materiality assessment, monitor portfolio alignment to decarbonization targets, and for risk management purposes, Deutsche Bank uses a number of complementary KPI and metrics such as:

- Upstream Oil & Gas: Scope 3 Absolute financed emissions (million tonnes of CO₂)
- Power Generation: Physical emission intensity (kgCO₂e per MWh)
- Automotive (Light Duty Vehicles) sector: Physical emission intensity (gCO₂e per vehicle km)
- Steel production sector: Physical emission intensity (kgCO₂e per tonne of steel)
- Corporate loan commitments
- Corporate loan commitments: absolute financed emissions (scope 1 and 2, million tonnes of CO₂e) and annual increase in financed emissions
- Corporate loan outstanding: absolute financed emissions (scope 1 and 2, million tonnes of CO₂e)
- Sectors in scope of net-zero targets: Share of net-zero clients
- Relevant sectors in scope of net-zero targets: Technology mix
- Financed emissions for selected mortgage and commercial real estate portfolios (using proxies based on Energy Performance Certificate ratings and internal methodologies)
- Exposure to physical climate risk for uncollateralised loans and loans collateralised by Real Estate assets

Furthermore, climate and broader environmental risk drivers are integrated into the frameworks and processes of Deutsche Bank's main risk types: Credit, Market, Liquidity and Non Financial (Operational / Reputational) risks.

- Credit risk - climate risk drivers are integrated across the different stages of the transaction lifecycle, including transaction approval / client onboarding, risk classification and credit ratings, portfolio analysis and monitoring, collateral valuation
- Market risk - climate related risks are currently managed within the existing risk framework and treated as a price trigger, in the same way as market events such as central bank announcements or earnings announcements
- Liquidity risk - Deutsche Bank uses stress testing and pathway analysis to assess the impact of climate risk; in particular, the bank's stressed Net Liquidity Position scenarios, that are run on a daily basis, include climate disasters as possible triggers of stress

- Operational Risk Management Framework - climate risk identification takes place through analysis of past internal and external operational risk events; exploratory scenario analysis is also used to analyze potential event situations and the effectiveness of related controls to identify areas for further risk mitigation and strengthening of the control environment Business Continuity and Third Party Risk Management frameworks are in place to manage risks of disruption to processes and services taking an all-hazards approach
- Reputational risk - impacts arising from the bank's business activities in higher risk sectors are managed through its Environmental and Social Policy Framework, an integral part of the bank's Reputational Risk Framework which outlines specific restrictions, escalation and due diligence requirements for sectors with elevated environmental risks

Data and methodologies for measuring and assessing climate related risks for selected products and portfolios are still under development. Lack of availability of comprehensive and consistent climate and environmental risk disclosures by clients means that risk analysis is heavily reliant on proxy emission estimates and top down, sectoral/product-based taxonomies. In 2022 the bank migrated to strategic ESG data partners for transition risk data and onboarded new data to monitor transition pathways and physical risks.

Risk appetite for the four sectors in-scope of the de-carbonization targets is calibrated to science-based emission reduction pathways aligned with the International Energy Agency net zero scenario. Some deviation from net-zero pathway is allowed in earlier years given simplified assumption of linear reduction and potential for portfolio and economic volatility to impact alignment. In addition to sector-level appetite, a threshold on overall carbon footprint of corporate loan commitments is in place to avoid reputational risks associated with disclosure of large increases in financed emissions.

Risk appetite is monitored quarterly via a dedicated Climate Report. Breaches in risk appetite are escalated to the Group Risk Committee and the Group Sustainability Committee.

Social risk

ESGT2

Governance

As part of Deutsche Bank's overall ESG governance, the bank established a dedicated group-wide Human Rights Forum with a mandate to ensure oversight of the bank's human rights management across key stakeholders (i.e., the bank's employees, suppliers, and clients).

The Human Rights Forum is co-chaired by the Chief Sustainability Officer and Head of Group Sustainability and reports to the bank's Group Sustainability Committee chaired by the Chief Executive Officer. It consists of senior representatives from the bank's business divisions and infrastructure functions and meets bi-monthly.

The Forum complements the bank's established risk management and due diligence processes within its businesses and operations. In line with the Group's reputational risk management processes, individual cases related to potential social challenges linked to a client profile or transaction may get escalated to one of the bank's Regional Reputational Risk Committees or referred to the Group Reputational Risk Committee co-chaired by the Chief Risk Officer and Head of the Corporate Bank.

To fight modern slavery and human trafficking, the Anti-Financial Crime (AFC) function of Deutsche Bank has established a dedicated working group, which is a sub-group of the group-wide Human Rights Forum and has the objective to develop and pursue concrete measures and initiatives within the AFC function.

Strategy and processes

Deutsche Bank's materiality assessment considers human rights as a material social topic for both the bank and its stakeholders. While it remains the governments' legal obligation to protect against human rights abuses by persons, including businesses, through appropriate policies, legislation, and adjudication, Deutsche Bank acknowledges its corporate responsibility pursuant to the "Protect, Respect and Remedy" framework of the UN Guiding Principles on Business and Human Rights.

This responsibility includes the need to respect human rights by avoiding adverse human rights impacts through the bank's own activities and by seeking to prevent or mitigate adverse human rights impacts which are directly linked to Deutsche Bank's operations, products, or services. As such, the bank has established policies and processes to ensure human rights are respected in its activities, and across its operations. Deutsche Bank's Human Rights Statement is publicly available.

Deutsche Bank's objectives in terms of the bank's contribution to preventing, minimizing, or resolving human rights related and social challenges and risks cover:

- Understanding where the bank's business activities might trigger human rights impacts to identify, prevent and/or mitigate adverse human rights impacts or offer financial solutions helping to address social and human rights related challenges
- Identifying sectors and jurisdictions having inherently higher risks of negatively impacting human rights
- Ensuring that the bank's policies and procedures adequately address human rights issues including the bank's commitment to respect human rights embedded in Deutsche Bank's Code of Conduct
- Defining the bank's risk appetite in case potential human rights issues cannot be excluded
- Providing transparency on the bank's human rights management approach

Risk Management

Deutsche Bank takes steps to prevent, minimize and/or resolve adverse human rights impacts by understanding where its business activities and operations might trigger them. The bank's minimum standards relating to social risks are:

- Deutsche Bank will not engage in business activities where the Group has substantiated evidence of material adverse human rights impacts and it is determined through its internal processes that such adverse human rights impacts cannot be avoided or appropriately mitigated
- Enhanced due diligence requirements in the defense sector with exclusions including controversial weapons, conflict countries, private military security companies, as well as civilian-use automatic and semi-automatic firearms and human-out-of-the-loop weapon systems
- Enhanced due diligence requirements with regards to adult entertainment with exclusion of any business directly associated with adult entertainment (commercial enterprises related to the sale or purchase of sex-related services, ranging from individual workers in prostitution to the pornographic entertainment industry), associated branded products or services or prostitution
- Enhanced due diligence required related to gambling with exclusion of online gambling Business-to-Consumer operators with exposure to markets where gambling is prohibited

Know-Your-Client Process

As a global bank, Deutsche Bank operates in many jurisdictions across the world and supports many sectors with its financial services which provide an opportunity to help addressing social challenges, but also might expose the bank to the risk of being linked to adverse social impacts. The bank's Know-Your-Client processes utilize a range of tools to identify adverse issues related to a client. For example, the bank considers media screening as part of its onboarding and regular client review processes. In case adverse social issues are being identified the client must be referred to the bank's Group Sustainability function for further assessment in line with the bank's requirements for enhanced due diligence.

Deutsche Bank has established enhanced due diligence requirements for clients active in sectors and geographies identified as being sensitive to negative human rights impacts. The bank's requirements build on international standards such as the UN Guiding Principles on Business and Human Rights and the International Labour Organization's Core Labor Standards and integrate human rights considerations such as child and labor rights, health and safety of workers and communities including indigenous peoples' rights. The respective social due diligence provisions are developed by the bank's central Group Sustainability function and are embedded into Deutsche Bank's reputational risk procedures.

While assessing its clients' human rights related practices, the bank expects as a minimum compliance with respective national laws and regulations and, where appropriate, the bank embeds industry specific internationally recognized best practices and standards.

As a signatory to the Equator Principles, the bank's due diligence for project financing in scope of the Equator Principles application follows the respective requirements, including the International Finance Corporation's Performance Standards 5 and 7, which specifically addresses social topics such as resettlement and indigenous rights.

If Deutsche Bank has concerns about a client with regards to human rights, it consults with relevant stakeholders. This might include direct engagement with the client as well as with civil society representatives that are familiar with the situation. Where appropriate, the bank obtains the advice of independent experts. Based on the available information and its assessment of the risks that have been identified, the bank decides on the further course of action, which may include termination of a business relationship.

Being a global financial institution that provides a broad range of products and services also exposes Deutsche Bank to diverse financial crime risks, including modern slavery and human trafficking. Deutsche Bank's bank-wide framework for the prevention of financial crime is inter alia preventing, deterring, and detecting client activities that might be linked to potential human rights violations. The Principles for the Management of Financial Crime Risks outline the responsibilities and accountabilities of the AFC function and of all Deutsche Bank employees and describe the essential organizational requirements and relevant processes for the management of financial crime risks across the 1st and 2nd line of defense. Global AFC policies define minimum standards for managing financial crime risks, including those with implications for human rights. These bank-wide policies are supplemented by country-specific policies and procedures that reflect national laws and regulations.

Further to the policies and processes stipulating the due diligence requirements regarding social and human rights management practices of clients, Deutsche Bank policies and procedures also address potential sector-inherent adverse social impacts associated with product offering by certain sectors. Especially the bank has established policies regarding the defense sector, gaming industry as well as adult entertainment sector, which are addressed in the bank's Reputational Risk Framework's minimum standards. In accordance with the Reputational Risk Framework matters linked to these industries must be reviewed by subject matter experts.

Externally Deutsche Bank reports on progress in implementing its human rights approach by publishing an annual Modern Slavery and Human Trafficking Statement and in the "Human Rights" chapter of the annual Non-Financial Report.

The Reputational Risk Team provides monthly updates on reputational risk topics to the Regional Reputational Risk Committee chairs and secretaries of the Unit Reputational Risk Assessment Process, as well as quarterly updates to the Group Reputational Risk Committee. The Risk and Capital Profile Report, which includes updates on reputational risks, is distributed to the Management Board on a monthly basis and to the Supervisory Board on a quarterly basis. It includes details such as the number of reputational risk issues assessed by the various committees and their decisions.

Governance risk

ESGT3

Governance

Types of governance risk include counterparties with issues such as transparency and inclusiveness, or clients involved in bribery and corruption scandals, or accused of tax avoidance or optimization. Deutsche Bank addresses these concerns via different frameworks and processes including those relating to reputational risk and AFC.

The Reputational Risk 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. It is also utilized to discuss any counterparty concerns that are perceived to be in contradiction with Deutsche Bank's values and beliefs. Concerns can be driven by environmental, social and governance factors. For additional details on the Reputational Risk Framework, please refer to the Reputational Risk section in this report.

AFC acts as an independent function setting policies and minimum control standards for the management and mitigation of financial crime risks at Deutsche Bank, including those relating to clients or counterparties that may be the subject of allegations of bribery and corruption. Deutsche Bank's business divisions are responsible and accountable for the implementation and operationalization of these policies and standards. The Management Board ensures that AFC can execute its tasks independently and effectively.

Strategy and processes

Deutsche Bank has limited appetite for transactions or relationships with material reputational risk or in areas which inherently pose a higher reputational risk such as the defense, gaming, or adult entertainment sectors, where there are ethical concerns and potential concerns of corruption and bribery. Reputational risk cannot be precluded as it can be driven by unforeseeable changes in perception of the Group's practices by various stakeholders (e.g., public, clients, shareholders and regulators). Deutsche Bank strives to promote sustainable standards that will enhance profitability and minimize reputational risk. Additionally, Deutsche Bank has no tolerance for its employees or third parties acting on its behalf engaging in bribery or corruption.

Risk management

Under the Reputational Risk Framework, all employees are responsible for identifying potential reputational risks and reporting them by means of the Unit Reputational Risk Assessment Process (Unit RRAP). Through the Unit Reputational Risk Assessment Process relevant stakeholders are consulted for input, such as country management, key control functions, and other second-line subject matter experts. The Unit Reputational Risk Assessment Process is chaired by a business division's relevant senior manager and applies to all matters deemed to pose moderate or greater reputational risk. If a matter is considered to pose a material reputational risk and/or meets one of the bank's mandatory referral criteria, it is referred for further review to the relevant Regional Reputational Risk Committee. In exceptional circumstances, matters are referred to the Group Reputational Risk Committee.

To the extent the bank engages with third parties either to act on its behalf or as part of a joint venture or strategic investment, AFC will conduct appropriate levels of due diligence before entering into such a relationship to gain comfort with regard to the counterparty's controls and whether engaging with the counterparty is within risk appetite. Equally, all new client adoptions are assessed for bribery and corruption concerns, and, where appropriate, will be reviewed as part of the reputational risk process described above.

Climate change transition risk

Financed emissions are emissions that banks and investors finance through on-balance sheet lending and investing activities. Greenhouse gases (GHG) can be distinguished into three categories: Scope 1, 2 and 3.

- Scope 1 - Direct GHG emissions occur from sources owned or controlled by the counterparty
- Scope 2 - Indirect GHG emissions from generation of purchased or acquired electricity, steam, heating, or cooling consumed by the counterparty
- Scope 3 - Other indirect GHG emissions not included in Scope 2 occurring in the value chain of the counterparty; it can be further broken down into upstream emissions i.e., life cycle of materials, products or services up to the point of sale and downstream emissions i.e., distribution, storage, use and end-of-life treatment of products and services

Deutsche Bank reports estimated financed emissions for the corporate lending portfolio in the Non-Financial Report and will start reporting its estimates of financed emissions for exposures in the banking book in the Pillar 3 Report in 2024. The Bank calculates its financed emissions based on the standard of the Partnership for Carbon Accounting Financials (PCAF) and plans to use the same standard for its Pillar 3 disclosures in the future.

Table ESG1 highlights potential transition risks the Group is exposed to on loans and advances, debt securities and equity instruments in the banking book as clients transition to a low-carbon and climate-resilient economy. Transition risk is deemed to be higher for those exposures not aligned with the EU Paris-Benchmark and exposures with a longer maturity, especially from clients operating in carbon-related sectors and highly contributing to climate change.

Determination of clients not aligned with the EU Paris-Benchmark is done on a best-efforts basis either based on available third-party data or relevant NACE codes. The coverage of available information on counterparty exposures is expected to improve over time and could result in further counterparties being identified as not aligned.

For those exposures excluded from the EU-Paris aligned Benchmarks, the bank manages these exposures within its risk management framework and in accordance with the bank's net zero targets and Environmental and Social Framework, and related sectoral policies, where applicable.

Exposures to other financial corporates are included in "K - Financial and insurance activities". The industry classification is currently based on the client's NACE code. In the future, certain holding companies and SPE's may have a different NACE code as it will be based on the subsidiary or parent benefitting from the financing.

ESG1 – Banking book- Climate Change transition risk: Credit quality of exposures by sector and maturity

Dec 31, 2022

	a	b	d	e	f	g	h	i	m	n	o	p	
	Gross carrying amount				Accumulated impairment, accumulated negative changes in fair value due to credit risk and provisions								
	of which: exposures towards companies excluded from EU Paris-aligned Benchmarks in accordance with points (d) to (g) of Article 12.1 and in accordance with Article 12.2 of Climate Benchmark Standards Regulation				of which: non-performing exposures		of which: non-performing exposures		<= 5 years	> 5 year <= 10 years	> 10 year <= 20 years	> 20 years	Average weighted maturity
	in € m.												
1	Exposures towards sectors that highly contribute to climate change*	129,488	6,223	16,613	4,314	1,665	153	1,392	104,191	12,997	7,472	4,828	3.7
2	A - Agriculture, forestry and fishing	524	23	76	23	10	1	8	263	152	86	23	5.9
3	B - Mining and quarrying	2,474	2,190	137	70	32	5	23	1,798	662	12	3	3.3
4	B.05 - Mining of coal and lignite	42	35	9	8	3	1	2	20	20	2	0	4.8
5	B.06 - Extraction of crude petroleum and natural gas	1,395	1,394	15	0	4	2	0	854	540	1	1	3.7
6	B.07 - Mining of metal ores	483	483	64	27	7	2	4	480	0	3	0	1.8
7	B.08 - Other mining and quarrying	143	104	24	3	2	0	1	95	42	5	2	4.3
8	B.09 - Mining support service activities	411	175	24	32	17	0	15	350	61	0	0	3.0
9	C - Manufacturing	32,571	1,802	4,747	1,309	624	66	523	29,042	2,484	906	139	2.0
10	C.10 - Manufacture of food products	3,212	1	387	94	52	4	44	2,850	294	54	14	1.9
11	C.11 - Manufacture of beverages	897	0	87	12	5	1	3	827	65	5	1	1.1
12	C.12 - Manufacture of tobacco products	0	0	0	0	0	0	0	0	0	0	0	0.0
13	C.13 - Manufacture of textiles	840	0	74	41	22	0	21	704	83	50	3	2.6
14	C.14 - Manufacture of wearing apparel	235	0	38	30	21	0	20	191	19	24	1	3.4
15	C.15 - Manufacture of leather and related products	121	0	19	8	6	0	5	101	11	8	1	2.6
16	C.16 - Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	251	0	25	17	15	0	14	207	21	18	4	4.1
17	C.17 - Manufacture of pulp, paper and paperboard	770	0	125	19	11	1	9	663	87	18	2	2.0
18	C.18 - Printing and service activities related to printing	228	0	35	9	5	1	4	180	22	20	6	4.6
19	C.19 - Manufacture of coke oven products	1,768	1,514	213	58	3	2	0	1,611	156	1	0	1.5
20	C.20 - Production of chemicals	3,062	246	487	96	53	5	45	2,677	167	215	4	2.0
21	C.21 - Manufacture of pharmaceutical preparations	1,017	0	120	1	6	4	1	951	49	17	0	1.5
22	C.22 - Manufacture of rubber products	1,647	2	223	55	45	4	39	1,398	215	32	2	2.0
23	C.23 - Manufacture of other non-metallic mineral products	733	0	148	27	21	2	18	622	96	11	4	2.5
24	C.24 - Manufacture of basic metals	1,727	38	407	236	65	10	53	1,554	131	40	3	2.0
25	C.25 - Manufacture of fabricated metal products, except machinery and equipment	2,285	1	366	99	64	4	58	1,869	310	88	18	2.8
26	C.26 - Manufacture of computer, electronic and optical products	1,245	0	199	13	14	1	10	1,157	42	44	2	1.8
27	C.27 - Manufacture of electrical equipment	2,655	0	490	97	39	5	29	2,445	160	43	6	1.5
28	C.28 - Manufacture of machinery and equipment n.e.c.	3,543	0	416	121	80	3	73	3,170	263	81	29	2.0
29	C.29 - Manufacture of motor vehicles, trailers and semi-trailers	3,049	0	425	172	39	11	25	2,952	81	16	1	0.9
30	C.30 - Manufacture of other transport equipment	706	0	226	39	11	3	7	604	54	47	1	2.3
31	C.31 - Manufacture of furniture	342	0	77	19	16	1	15	273	47	15	8	3.3
32	C.32 - Other manufacturing	1,379	1	152	24	13	1	10	1,195	104	58	21	2.6

Dec 31, 2022

	a	b	d	e	f	g	h	l	m	n	o	p	
	Gross carrying amount				Accumulated impairment, accumulated negative changes in fair value due to credit risk and provisions								
	of which: exposures towards companies excluded from EU Paris-aligned Benchmarks in accordance with points (d) to (g) of Article 12.1 and in accordance with Article 12.2 of Climate Benchmark Standards Regulation				of which: stage 2 exposures		of which: non-performing exposures		of which: stage 2 exposures		of which: non-performing exposures		Average weighted maturity
in € m.								<= 5 years	> 5 year <= 10 years	> 10 year <= 20 years	> 20 years		
33	C.33 - Repair and installation of machinery and equipment	58	0	7	1	0	0	45	3	4	6	5.5	
34	D - Electricity, gas, steam and air conditioning supply	7,018	936	563	75	48	5	33	4,992	1,556	428	42	3.5
35	D35.1 - Electric power generation, transmission and distribution	6,071	872	454	73	45	4	32	4,437	1,233	361	41	4.3
36	D35.11 - Production of electricity	3,401	863	430	73	45	4	32	2,472	636	253	40	3.7
37	D35.2 - Manufacture of gas; distribution of gaseous fuels through mains	885	64	98	0	2	1	0	524	298	62	0	4.9
38	D35.3 - Steam and air conditioning supply	62	0	10	1	1	0	1	30	25	5	1	6.4
39	E - Water supply; sewerage, waste management and remediation activities	582	56	63	39	8	1	6	412	100	66	4	4.2
40	F - Construction	4,663	0	700	281	116	9	102	3,430	419	517	297	5.2
41	F.41 - Construction of buildings	2,370	0	352	120	65	4	57	2,024	157	112	78	3.6
42	F.42 - Civil engineering	298	0	62	38	14	1	13	166	46	68	18	8.3
43	F.43 - Specialised construction activities	1,994	0	285	122	37	4	31	1,240	216	337	201	6.7
44	G - Wholesale and retail trade; repair of motor vehicles and motorcycles	22,867	1,183	2,551	766	437	30	386	19,978	1,178	1,347	363	2.3
45	H - Transportation and storage	6,195	32	642	254	85	8	66	4,838	817	481	59	3.5
46	H.49 - Land transport and transport via pipelines	1,246	32	99	74	21	1	16	1,063	130	25	28	2.9
47	H.50 - Water transport	1,507	0	362	24	10	3	5	890	264	353	1	5.3
48	H.51 - Air transport	955	0	18	74	35	0	35	951	3	0	1	2.3
49	H.52 - Warehousing and support activities for transportation	2,090	0	147	78	17	4	9	1,596	371	98	26	3.5
50	H.53 - Postal and courier activities	396	0	17	3	1	0	1	338	49	6	3	1.4
51	I - Accommodation and food service activities	1,968	0	466	117	66	5	60	1,229	378	237	123	6.4
52	L - Real estate activities	50,626	0	6,668	1,381	239	22	187	38,208	5,251	3,392	3,775	5.1
53	Exposures towards sectors other than those that highly contribute to climate change*	192,105	560	11,232	3,559	1,299	133	987	139,533	15,453	6,588	30,531	10.8
54	K - Financial and insurance activities ¹	153,992	559	7,625	2,323	735	74	532	112,770	10,571	2,841	27,810	12.1
55	Exposures to other sectors (NACE codes J, M - U)	38,113	0	3,607	1,236	564	59	455	26,762	4,883	3,747	2,722	5.5
56	Total	321,592	6,782	27,844	7,873	2,964	286	2,379	243,724	28,450	14,060	35,359	7.9

¹ Included exposures to other financial corporates as per EBA Q&A 2022_6600

Energy efficiency of real estate collateral

Table ESG2 highlights the energy efficiency of commercial and residential real estate collateralizing loans on Deutsche Bank's balance sheet. Information includes energy efficiency measured in terms of kWh/m² energy consumption and Energy Performance Certificate (EPC) labels.

In general, energy efficiency data is not available for most collateral. While some local EPC data bases are available for Spain and Italy, a major part of the Group's portfolios are located in countries without any public source of EPC data. Since mid-2022, the bank started collecting EPCs for new residential real estate loans for portfolios within the EU. However, for a larger portion of the portfolio, the bank is able to estimate EPCs based on collateral information and external data bases such as PCAF and Hotmaps. If contracts are secured by multiple properties, the kWh/m² are allocated on a pro rata basis to each of the properties based on the weighted average lending value.

Loans collateralized by immovable property are predominantly arising from the bank's German residential real estate portfolio (€ 159 billion) where Deutsche Bank has a good market coverage and energy efficiency can be estimated with a robust methodology. Due to the large amount of newly constructed properties in its German mortgage portfolio, a high proportion of the gross carrying amount is shown with low energy efficiency levels. Due to data protection schemes, EPCs are not systematically collected by private households and there is a low amount of actual EPC label available for residential immovable properties. A significant portion of the bank's reported numbers on collected EPC labels are linked to the Spanish mortgage portfolio. For all private household clients, Deutsche Bank collects EPC documentation where it's legally necessary for the client to have an EPC label for the property. Processes for collecting energy-efficiency labels for commercial immovable properties is in process of being developed. Loans collateralized with garages and plots (included in residential immovable property), do not have a kWh/m² estimate and are classified as 100 kWh/m² in column c. For loans where an EPC label is not available, these exposures are reported under column o.

For portfolios outside of the EU there is a lack of comprehensive and consistent local energy-efficiency standards which are comparable to the EU. Deutsche Bank is in the process of collecting, but does not yet have systematic, reliable data to estimate kWh/m² for these portfolios. Hence, most non-EU portfolios are reported without kWh/m² or EPC information.

ESG2 – Banking book - Climate change transition risk: Loans collateralised by immovable property - Energy efficiency of the collateral

Dec 31, 2022																	
	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	
	Total gross carrying amount																
	Level of energy efficiency (EP score in kWh/m ² of collateral)								Level of energy efficiency (EPC label of collateral)							Without EPC label of collateral	
	in € m.	0; <= 100	> 100; <= 200	> 200; <= 300	> 300; <= 400	> 400; <= 500	> 500	A	B	C	D	E	F	G	of which: level of energy efficiency (EP score in kWh/m ² of collateral) estimated (in %)		
1	Total EU area	203,517	58,238	64,990	52,779	691	667	189	276	139	216	469	1,763	653	1,086	198,915	87
2	Of which Loans collateralized by commercial immovable property	28,511	760	6,174	336	6	75	1	4	3	4	8	9	9	4	28,469	26
3	Of which Loans collateralized by residential immovable property	174,995	57,479	58,816	52,442	685	592	188	272	136	212	461	1,754	643	1,082	170,434	97
4	Of which Collateral obtained by taking possession: residential and commercial immovable properties	12	0	0	1	0	0	0	0	0	0	0	0	0	0	11	8
5	Of which Level of energy efficiency (EP score in kWh/m ² of collateral) estimated	173,756	57,712	63,653	51,430	278	543	139	-	-	-	-	-	-	-	172,963	100
6	Total non-EU area	44,028	159	644	73	3	2	1	0	2	2	13	1	7	0	44,002	2
7	Of which Loans collateralized by commercial immovable property	36,749	1	26	3	0	0	0	0	0	0	0	0	0	0	36,749	0
8	Of which Loans collateralized by residential immovable property	7,279	157	619	70	3	2	1	0	2	2	13	1	7	0	7,254	11
9	Of which Collateral obtained by taking possession: residential and commercial immovable properties	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	Of which Level of energy efficiency (EP score in kWh/m ² of collateral) estimated	867	157	639	68	1	0	1	-	-	-	-	-	-	-	857	100

Exposures to Top 20 carbon-intensive firms

Table ESG4 highlights the aggregate exposure Deutsche Bank has towards the top 20 most carbon-intensive firms and its subsidiaries in the world by gross carrying amount (including loans and advances, debt securities and equity instruments) in the banking book and weighted average maturity. The underlying data source for identifying the top 20 most carbon-intensive firms is the publicly available list from the Carbon Majors Database.

ESG4 - Exposures in the banking book to the top 20 carbon-intensive firms in the world

		Dec 31, 2022			
		a	b	d	e
		Gross carrying amount (aggregate)	Gross carrying amount towards the counterparties compared to total gross carrying amount (aggregate in %)	Weighted average maturity	Number of top 20 polluting firms included
1	in € m.				
	Top 20 polluting firms	3,215	0.51	1.7	17

Deutsche Bank's exposure towards the Top 20 firms is low at 0.51% of Deutsche Bank's overall exposure and a weighted average maturity of 1.7 years.

Climate change - physical risk

Acute and chronic climate change events are defined as the likelihood of gradual changes in weather and climate conditions. These changes can have a potential impact on economic output and productivity, can cause sudden damage to properties, disruption of supply chains, and depreciation of assets, as well as additional cost related to operational downtime.

The bank utilizes data provided by Standard & Poor's (S&P) to map locations as having acute or chronic hazard scores. S&P's exposure scores forecast climate event probabilities for eight hazards and four climate scenarios. The exposure scores represent the likelihood of each climate hazard and scenario over the next eight decades.

For purposes of determining Deutsche Bank's physical risk, it has selected the exposure scores from the Representative Concentration Pathways 6 (RCP6) (2.0° – 3.7°) scenario projection for the decade 2020-2030 to determine if an exposure has an acute risk to climate change events. Acute risks are defined by seven S&P hazards (i.e., tropical cyclone, extreme heat, extreme cold, fluvial floods, coastal floods, wildfire and drought). An exposure is impacted by acute climate risk if the exposure scores are above a 98% confidence interval for any one out of the seven S&P hazards.

Chronic risks are defined by water stress. A loan is reported as being impacted by chronic climate risk when the hazard exposure score is above the 98% confidence level for the 2040-2050 decade for either a tropical cyclone, fluvial floods, coastal floods, extreme heat and drought.

If the loan has real estate as collateral, the bank provides S&P with the properties zip code to determine the exposure score. For larger companies with multiple, regionally diversified locations and loans not secured by real estate, S&P provides an exposure score from their internal asset and client database, which aggregates the risk based on the company's multiple locations, operations, etc. If the borrower is not in S&P's database and does not have real estate as collateral, Deutsche Bank will use the clients domiciled address to determine the appropriate exposure score based on similar locations with information available from S&P. As of December 31, 2022, the Group obtained exposure scores on 98% of the German Private Bank real estate loans and 81% of the international banking book across Private Bank, Corporate Bank and Investment Bank.

Table ESG5 provides information on exposures in the banking book (including loans and advances and debt securities) towards non-financial corporates with a geographical grouping in four regions: Europe, the Middle East and Africa (EMEA), Asia Pacific, North America and Latin America. The gross carrying amount of the loans do not consider any risk mitigation, adaption or resilience measures the bank may have taken to reduce the risk of physical loss or any costs related to climate change.

The industry classification is based on the client's NACE code. In the future certain holding companies may have a different NACE code as it will be based on the subsidiary or parent benefitting from the financing.

Dec 31, 2022

	b	c	d	e	f	g	h	i	j	k	l	m	n	o
	Total gross carrying amount													
	of which:													
	exposures sensitive to impact from climate change physical events													
	of which:													
	Accumulated impairment, accumulated negative changes in fair value due to credit risk and provisions													
	Breakdown by maturity bucket													
	of which: exposures sensitive to impact from chronic climate change events													
	of which: exposures sensitive to impact from acute climate change events													
	of which: exposures sensitive to impact both from chronic and acute climate change events													
	of which: non-performing exposures													
	of which: Stage 2 exposures													
	of which: non-performing exposures													
in € m.	<= 5 years	> 5 year <= 10 years	> 10 year <= 20 years	> 20 years	Average weighted maturity	of which: exposures sensitive to impact from chronic climate change events	of which: exposures sensitive to impact from acute climate change events	of which: exposures sensitive to impact both from chronic and acute climate change events	of which: Stage 2 exposures	of which: non-performing exposures	of which: Stage 2 exposures	of which: non-performing exposures	of which: Stage 2 exposures	of which: non-performing exposures
10 Loans collateralised by residential immovable property	6,688	4,017	2	209	1,431	8.5	5,658	2,540	2,540	453	42	6	2	0
11 Loans collateralised by commercial immovable property	25,546	14,189	4,798	270	0	1.9	19,192	7,913	7,850	4,100	371	47	7	28
12 Repossessed colaterals	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0
13 Other relevant sectors (breakdown below where relevant)	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0

ESG5 – Banking book - Climate change physical risk: Exposures subject to physical risk – Latin America

Dec 31, 2022

	b	c	d	e	f	g	h	i	j	k	l	m	n	o
	Total gross carrying amount													
	of which:													
	exposures sensitive to impact from climate change physical events													
	of which:													
	Accumulated impairment, accumulated negative changes in fair value due to credit risk and provisions													
	Breakdown by maturity bucket													
	of which: exposures sensitive to impact from chronic climate change events													
	of which: exposures sensitive to impact from acute climate change events													
	of which: exposures sensitive to impact both from chronic and acute climate change events													
	of which: non-performing exposures													
	of which: Stage 2 exposures													
	of which: non-performing exposures													
in € m.	<= 5 years	> 5 year <= 10 years	> 10 year <= 20 years	> 20 years	Average weighted maturity	of which: exposures sensitive to impact from chronic climate change events	of which: exposures sensitive to impact from acute climate change events	of which: exposures sensitive to impact both from chronic and acute climate change events	of which: Stage 2 exposures	of which: non-performing exposures	of which: Stage 2 exposures	of which: non-performing exposures	of which: Stage 2 exposures	of which: non-performing exposures
1 A - Agriculture, forestry and fishing	3	0	0	0	0	0.6	0	0	0	0	0	0	0	0
2 B - Mining and quarrying	340	0	0	0	0	0.0	0	0	0	0	0	0	0	0
3 C - Manufacturing	930	146	83	7	235	1.7	82	82	7	11	0	0	0	0
4 D - Electricity, gas, steam and air conditioning supply	51	0	0	0	0	0.0	0	0	0	0	0	0	0	0
5 E - Water supply; sewerage, waste management and remediation activities	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0
6 F - Construction	50	6	0	0	6	0.6	0	0	0	0	0	0	0	0
7 G - Wholesale and retail trade; repair of motor vehicles and motorcycles	347	61	44	0	105	1.9	28	28	28	0	0	0	0	0
8 H - Transportation and storage	507	46	33	0	79	4.0	79	79	79	33	0	0	0	0
9 L - Real estate activities	117	0	0	0	0	0.0	0	0	0	0	0	0	0	0
10 Loans collateralised by residential immovable property	204	0	0	1	2	11.6	1	1	0	0	0	0	0	0
11 Loans collateralised by commercial immovable property	710	0	0	0	0	9.1	0	0	0	0	0	0	0	0
12 Repossessed colaterals	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0
13 Other relevant sectors (breakdown below where relevant)	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0

Climate change mitigating actions not covered in EU Taxonomy

The following table ESG10 provides an overview of on balance-sheet loans and bonds as of year end 2022 that are supporting the transition toward sustainable growth and a low-carbon economy.

Loans aimed at climate change mitigation were assessed in accordance with Deutsche Bank Green Financing Framework. These loans support projects related to mitigation of climate change transition risk, such as generation of renewable energy, development and implementation of products or technology that reduce the use of energy, green buildings, clean transportation as well as development of energy-efficient data centers, hosting, and related activities. Bonds aimed at climate change mitigation were facilitated by Deutsche Bank as part of its target to achieve at least € 200 billion in sustainable financing and investments between 2020 and year end 2022, as defined in the Group's Sustainable Finance Framework. Reported numbers are on balance-sheet positions as of December 31, 2022.

The majority of the € 10 billion assets reported by Deutsche Bank in ESG10 are loans.

As ESG metrics are being newly implemented in the banking industry, there are limitations on the amount and granularity of available data. As a result, Deutsche Bank's disclosure of on balance-sheet loans and bonds supporting the transition toward sustainable growth and a low-carbon economy will be further enhanced over time as more granular data is obtained and additional information becomes available.

Furthermore, ESG10 is supposed to include exposures aimed at mitigating climate change-related risks that are not covered by the Green Asset Ratio disclosure in Templates 7 and 8. Given that Templates 7 and 8 are not required to be disclosed until year end 2023, ESG10 currently covers all exposures aimed at mitigation of climate change-related risks, including those potentially aligned with the EU Taxonomy and relevant for Green Asset ratio calculation. From year end 2023, exposures aligned with the EU Taxonomy will no longer be included in this table and will be disclosed in Templates 7 and 8.

ESG10 – Other climate change risk mitigating actions that are not covered in the EU Taxonomy

Dec 31, 2022

	in € m.	b	c	d	e	f
Type of financial instrument	Type of counterparty	Gross carrying amount	Type of risk mitigated (Climate change transition risk)	Type of risk mitigated (Climate change physical risk)	Qualitative information on the nature of the mitigating actions	
1	Financial corporations	170	Climate change transition risk		Projects pertaining to renewable energy generation (solar, wind and hydro power), energy efficiency, clean transportation, green buildings, and sustainable management of natural resources and land use	
2						
3	Non-financial corporations	161	Climate change transition risk			
	Of which Loans collateralised by commercial immovable property	0				
4	Bonds (e.g. green, sustainable, sustainability-linked under standards other than the EU standards)	Households	0			
5		Of which Loans collateralised by residential immovable property	0			
6		Of which building renovation loans	0			
7					Projects pertaining to renewable energy generation (solar, wind and hydro power), energy efficiency, clean transportation, green buildings, and sustainable management of natural resources and land use	
	Other counterparties	193	Climate change transition risk			
8	Financial corporations	414	Climate change transition risk			
9					Loans for projects for setting up and operating Solar, Wind and Biomass Power plants (renewable energy). Loans to energy efficient commercial buildings	
	Non-financial corporations	3,696	Climate change transition risk			
10	Loans (e.g. green, sustainable, sustainability-linked under standards other than the EU standards)	Of which Loans collateralised by commercial immovable property	1,260	Climate change transition risk	Loans for energy efficient commercial buildings	
11		Households	5,230	Climate change transition risk	Loans for construction and acquisition of new and existing energy efficient residential buildings	
12		Of which Loans collateralised by residential immovable property	5,230	Climate change transition risk	Loans for construction and acquisition of new and existing energy efficient residential buildings	
13		Of which building renovation loans	0			
14	Other counterparties	0				

Liquidity risk

Risk management objectives and policies

Liquidity risk management strategies and processes

Article 435 (1)(a) CRR (EU OVA & EU LIQA)

The Group's liquidity risk management principles are documented in the global Liquidity Risk Management Policy and the framework is described in the Liquidity Risk Management Framework document. They adhere to the eight key risk management practices, namely risk governance, risk organization 3-Lines of Defense, risk culture, risk appetite and -strategy, risk identification and -assessment, risk mitigation and controls, risk measurement and reporting, stress planning and -execution. The individual roles and responsibilities within the liquidity risk management framework are laid out and documented in the Global Responsibility Matrix, which provides further 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 Group as well as the risk appetite, based on recommendations made by the Group Asset and Liability Committee and Group Risk Committee. The Management Board reviews and approves the risk appetite at least annually. The risk appetite is applied to the Group and its key liquidity entities e.g., Deutsche Bank AG to monitor and control liquidity risk as well as the Group's long-term funding and issuance plan. The liquidity managing functions are organized in alignment with the three lines of defense structure, which is described in the Risk Management Policy". The lines of business and Treasury comprise the 1LoD, responsible for executing the steps needed to manage the bank's liquidity position. Risk comprises the 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 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 has overall accountability for the accurate and timely production of both external regulatory liquidity reporting (Pillar 1) as well as internal management reporting (Pillar 2) for liquidity risk of the Group. In addition, Liquidity & Treasury Reporting & Analysis is responsible for the development of management information systems and the related analysis to support the liquidity risk framework and its governance for Treasury and Liquidity Risk Management.

Policies for hedging and mitigating liquidity risk

Article 435 (1)(d) CRR (EU OVA & EU LIQA)

The Group's liquidity risk management principles are documented in the global "Global Liquidity Risk Management Policy" and the framework is described in the "Liquidity Risk Management Framework" document. 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 the Global Liquidity Risk Management Policy and are subject to the standards the Global Liquidity Risk Management Policy 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.

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.

The Group's average LCR of 135% (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 142% as of December 31, 2022, or € 64 billion of excess over the regulatory minimum of 100%. This compares to 136%, or € 60 billion of excess liquidity at September 30, 2022. The increase is primarily driven by higher deposits and new capital market issuances partially offset by increased lending activity and partial repayment of the ECB's TLTRO.

Concentration of funding and liquidity sources

Diversification of the Group's funding profile in terms of investor types, regions and products is an important element of the Group's liquidity risk management framework. The Group's most stable funding sources stem from capital markets issuances and equity, as well as from Private Bank and Corporate Bank deposits. Other customer deposits and secured funding and short positions are additional sources of funding. Unsecured wholesale funding represents unsecured wholesale liabilities sourced primarily by the Treasury Pool Management team. Given the relatively short-term nature of these liabilities, it is predominantly used to fund liquid trading assets.

To promote the additional diversification of the Group's refinancing activities, the bank holds a license to issue mortgage Pfandbriefe. The Group continues to run a program for the purpose of issuing Covered Bonds under Spanish law (Cedulas) and participate in the ECB's TLTRO program. Additionally, the Group also issues green bonds under the Group's Sustainable Finance Framework. The Group also issued an inaugural Panda bond, following recent regulatory changes by PBoC and SAFE to facilitate foreign remittance of Panda bond proceeds

Unsecured wholesale funding comprises a range of institutional products, such as certificate of deposits, commercial papers 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, the Group has implemented limits (across tenors) on these funding sources which are derived from daily stress testing analysis. In addition, the bank limits 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 € 218 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, 2022 of € 219 billion is primarily held in Level 1 cash and central bank reserves (71%) and Level 1 high quality securities (27%). This compares to € 227 billion as of September 30, 2022 primarily held in Level 1 cash and central bank reserves (70%) and Level 1 high quality securities (28%).

Derivative exposures and potential collateral calls

The majority of outflows related to derivative exposures and other collateral requirements shown in item 11 below are in relation to derivative contractual cash outflows that are offset by derivative cash inflows shown below in item 19 Other cash inflows.

Other significant outflows included in item 11 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. The Group does not consider anything else relevant for disclosure.

Quantitative information on LCR

Article 451a CRR

EU LIQ1 – LCR disclosure template

in € bn.		Total unweighted value (average)				Total weighted value (average)			
Quarter ending on		Dec 31, 2022	Sep 30, 2022	Jun 30, 2022	Mar 31, 2022	Dec 31, 2022	Sep 30, 2022	Jun 30, 2022	Mar 31, 2022
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)	–	–	–	–	218	218	215	218
Cash-outflows									
2	Retail deposits and deposits from small business costumers	278	277	277	279	15	15	15	16
of which:									
3	Stable deposits	130	129	127	123	7	6	6	6
4	Less stable deposits	67	66	67	72	9	8	9	9
5	Unsecured wholesale funding	249	248	242	235	108	108	105	101
of which:									
6	Operational deposits (all counterparties) and deposits in network of cooperative banks	89	89	86	84	22	22	21	21
7	Non-operational deposits (all counterparties)	158	157	154	149	84	84	82	79
8	Unsecured debt	2	2	2	2	2	2	2	2
9	Secured wholesale funding	–	–	–	–	11	11	13	15
10	Additional requirements	225	220	214	207	74	71	68	66
of which:									
11	Outflows related to derivative exposures and other collateral requirements	28	27	26	25	25	23	22	20
12	Outflows related to loss of funding on debt products	0	0	0	0	0	0	0	0
13	Credit and liquidity facilities	197	193	187	181	50	48	46	46
14	Other contractual funding obligations	64	66	65	61	9	8	8	8
15	Other contingent funding obligations	257	246	223	201	3	4	5	5
16	Total cash outflows	–	–	–	–	220	217	214	212
Cash - inflows									
17	Secured lending (e.g. reverse repos)	314	310	310	300	14	14	15	16
18	Inflows from fully performing exposures	54	54	52	49	38	38	36	34
19	Other cash inflows	12	11	10	8	12	11	10	8
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	–	–	–	–	5	5	4	3
EU 19b	Excess inflows from a related specialized credit institution	–	–	–	–	0	0	0	0
20	Total cash inflows	380	375	371	357	59	58	57	55
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	351	345	339	324	59	58	57	55
Total adjusted value									
21	Liquidity buffer	–	–	–	–	218	218	215	218
22	Total net cash outflows	–	–	–	–	161	160	157	157
23	Liquidity coverage ratio (%)	–	–	–	–	135	136	137	140

Net Stable Funding Ratio

The NSFR requires banks to maintain a stable funding profile in relation to its 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 NSFR as of December 31, 2022 calculated in accordance with the CRR2 stands at 120%, or €99 billion of excess over regulatory minimum of 100% as compared to 116% as of June 30 2022, or € 85 billion of excess over regulatory minimum of 100%. The increase was primarily driven by higher deposits, new capital market issuances and lower derivatives, partially offset by ECB's TLTRO repayment, increased lending activity and higher securities.

EU LIQ2 – Net stable funding ratio template

		Dec 31, 2022				
		a	b	c	d	e
		Unweighted value by residual maturity				Weighted value
in € b.		No maturity	< 6 months	6 months to < 1 year	≥ 1 year	
Available stable funding (ASF) Items						
1	Capital items and instruments	71	0	0	12	82
2	Own funds	71	0	0	10	80
3	Other capital instruments	–	0	0	2	2
4	Retail deposits	–	252	22	3	259
5	Stable deposits	–	170	20	2	182
6	Less stable deposits	–	82	2	1	76
7	Wholesale funding:	–	372	37	127	259
8	Operational deposits	–	88	0	0	44
9	Other wholesale funding	–	285	37	127	216
10	Interdependent liabilities	–	88	0	0	0
11	Other liabilities:	17	110	3	4	5
12	NSFR derivative liabilities	17	–	–	–	–
13	All other liabilities and capital instruments not included in the above categories	–	110	3	4	5
14	Total available stable funding (ASF)	–	–	–	–	606
Required stable funding (RSF) Items						
15	Total high-quality liquid assets (HQLA)	–	–	–	–	19
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 securities:	–	179	36	405	396
18	Performing securities financing transactions with financial customers collateralized by Level 1 HQLA subject to 0% haircut	–	61	5	0	3
19	Performing securities financing transaction with financial customers collateralized by other assets and loans and advances to financial institutions	–	26	9	57	64
20	Performing loans to non-financial corporate clients, loans to retail and small business customers, and loans to sovereigns, and PSEs,	–	55	15	145	161
	of which:					
21	With a risk weight of less than or equal to 35% under the Basel II Standardized Approach for credit risk	–	3	0	7	6
22	Performing residential mortgages,	–	8	1	126	93
	of which:					
23	With a risk weight of less than or equal to 35% under the Basel II Standardized Approach for credit risk	–	8	0	113	83
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	–	29	6	76	75
25	Interdependent assets	–	0	0	0	0
26	Other assets:	0	125	1	22	55
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	–	–	–	6	6
30	NSFR derivative liabilities before deduction of variation margin posted	–	–	–	56	3
31	All other assets not included in the above categories	–	57	1	22	40
32	Off-balance sheet items	–	94	25	140	16
33	Total required stable funding (RSF)	–	–	–	–	507
34	Net Stable Funding Ratio (in percent)	–	–	–	–	120

		Sep 30, 2022				
		a	b	c	d	e
		Unweighted value by residual maturity				Weighted value
in € b.		No maturity	< 6 months	6 months to < 1 year	≥ 1 year	
Available stable funding (ASF) Items						
1	Capital items and instruments	70	0	0	12	82
2	Own funds	70	0	0	10	80
3	Other capital instruments	–	0	0	2	2
4	Retail deposits	–	250	21	3	256
5	Stable deposits	–	171	19	2	183
6	Less stable deposits	–	79	2	1	73
7	Wholesale funding:	–	382	57	121	266
8	Operational deposits	–	88	0	0	44
9	Other wholesale funding	–	294	57	121	222
10	Interdependent liabilities	–	0	0	0	0
11	Other liabilities:	23	152	2	1	2
12	NSFR derivative liabilities	23	–	–	–	–
13	All other liabilities and capital instruments not included in the above categories	–	152	2	1	2
14	Total available stable funding (ASF)	–	–	–	–	606
Required stable funding (RSF) Items						
15	Total high-quality liquid assets (HQLA)	–	–	–	–	19
EU 15a	Assets encumbered for more than 12m in cover pool	–	0	0	24	20
16	Deposits held at other financial institutions for operational purposes	–	0	0	0	0
17	Performing loans and securities:	–	181	41	407	406
18	Performing securities financing transactions with financial customers collateralized by Level 1 HQLA subject to 0% haircut	–	53	7	0	5
19	Performing securities financing transaction with financial customers collateralized by other assets and loans and advances to financial institutions	–	28	10	60	68
20	Performing loans to non-financial corporate clients, loans to retail and small business customers, and loans to sovereigns, and PSEs,	–	65	15	138	161
	of which:					
21	With a risk weight of less than or equal to 35% under the Basel II Standardized Approach for credit risk	–	4	1	8	7
22	Performing residential mortgages,	–	4	1	132	96
	of which:					
23	With a risk weight of less than or equal to 35% under the Basel II Standardized Approach for credit risk	–	4	1	111	79
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	7	77	77
25	Interdependent assets	–	0	0	0	0
26	Other assets:	0	167	2	23	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	–	–	–	10	10
30	NSFR derivative liabilities before deduction of variation margin posted	–	–	–	76	4
31	All other assets not included in the above categories	–	74	2	23	40
32	Off-balance sheet items	–	99	26	146	16
33	Total required stable funding (RSF)	–	–	–	–	522
34	Net Stable Funding Ratio (in percent)	–	–	–	–	116

		Jun 30, 2022				
		a	b	c	d	e
		Unweighted value by residual maturity				Weighted value
in € b.		No maturity	< 6 months	6 months to < 1 year	≥ 1 year	
Available stable funding (ASF) Items						
1	Capital items and instruments	68	0	0	12	80
2	Own funds	68	0	0	10	78
3	Other capital instruments	–	0	0	2	2
4	Retail deposits	–	250	21	2	256
5	Stable deposits	–	175	20	2	187
6	Less stable deposits	–	75	2	1	69
7	Wholesale funding:	–	363	52	123	258
8	Operational deposits	–	82	0	0	41
9	Other wholesale funding	–	281	52	123	217
10	Interdependent liabilities	–	0	0	0	0
11	Other liabilities:	15	142	3	3	4
12	NSFR derivative liabilities	15	–	–	–	–
13	All other liabilities and capital instruments not included in the above categories	–	142	3	3	4
14	Total available stable funding (ASF)	–	–	–	–	598
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	23	20
16	Deposits held at other financial institutions for operational purposes	–	0	0	0	0
17	Performing loans and securities:	–	176	41	396	394
18	Performing securities financing transactions with financial customers collateralized by Level 1 HQLA subject to 0% haircut	–	57	7	1	5
19	Performing securities financing transaction with financial customers collateralized by other assets and loans and advances to financial institutions	–	24	11	53	61
20	Performing loans to non-financial corporate clients, loans to retail and small business customers, and loans to sovereigns, and PSEs,	–	59	15	137	157
	of which:					
	With a risk weight of less than or equal to 35% under the Basel II Standardized Approach for credit risk	–	2	0	4	4
21	Approach for credit risk	–	2	0	4	4
22	Performing residential mortgages,	–	3	1	132	97
	of which:					
	With a risk weight of less than or equal to 35% under the Basel II Standardized Approach for credit risk	–	2	1	105	74
23	Approach for credit risk	–	2	1	105	74
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	6	74	74
25	Interdependent assets	–	0	0	0	0
26	Other assets:	0	146	2	23	63
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	–			60	3
31	All other assets not included in the above categories	–	65	2	23	40
32	Off-balance sheet items	–	66	36	153	17
33	Total required stable funding (RSF)	–	–	–	–	514
34	Net Stable Funding Ratio (in percent)	–	–	–	–	116

		Mar 31, 2022				
		a	b	c	d	e
		Unweighted value by residual maturity				Weighted value
in € b.		No maturity	< 6 months	6 months to < 1 year	≥ 1 year	
Available stable funding (ASF) Items						
1	Capital items and instruments	65	0	0	13	79
2	Own funds	65	0	0	10	75
3	Other capital instruments	–	0	0	3	3
4	Retail deposits	–	249	22	2	255
5	Stable deposits	–	175	20	2	187
6	Less stable deposits	–	74	2	0	68
7	Wholesale funding:	–	258	30	143	269
8	Operational deposits	–	86	0	0	43
9	Other wholesale funding	–	172	30	143	226
10	Interdependent liabilities	–	0	0	0	0
11	Other liabilities:	10	162	2	3	4
12	NSFR derivative liabilities	10	–	–	–	–
13	All other liabilities and capital instruments not included in the above categories	–	162	2	3	4
14	Total available stable funding (ASF)	–	–	–	–	607
Required stable funding (RSF) Items						
15	Total high-quality liquid assets (HQLA)	–	–	–	–	19
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 securities:	–	182	27	390	385
18	Performing securities financing transactions with financial customers collateralized by Level 1 HQLA subject to 0% haircut	–	51	1	5	7
19	Performing securities financing transaction with financial customers collateralized by other assets and loans and advances to financial institutions	–	32	7	53	60
20	Performing loans to non-financial corporate clients, loans to retail and small business customers, and loans to sovereigns, and PSEs,	–	63	14	128	151
	of which:					
21	With a risk weight of less than or equal to 35% under the Basel II Standardized Approach for credit risk	–	5	1	7	7
22	Performing residential mortgages,	–	3	1	129	94
	of which:					
23	With a risk weight of less than or equal to 35% under the Basel II Standardized Approach for credit risk	–	3	1	107	76
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	74	73
25	Interdependent assets	–	0	0	0	0
26	Other assets:	0	151	2	22	62
27	Physical traded commodities	–	–	–	1	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	–	–	–	48	2
31	All other assets not included in the above categories	–	82	2	21	38
32	Off-balance sheet items	–	57	36	148	15
33	Total required stable funding (RSF)	–	–	–	–	501
34	Net Stable Funding Ratio (in percent)	–	–	–	–	121

Unencumbered assets

Qualitative information on unencumbered assets

Article 443 CRR and EU AE4

In accordance to the EBA ITS 2020/04 guideline the data on encumbered and unencumbered assets uses the median of the last four quarterly data points. Therefore, the sum of sub-components does not necessarily add up in the quantitative information disclosed below.

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

Article 443 CRR

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 December 2022, € 221 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 2022, the Group had received securities as collateral with a fair value of € 308 billion, of which € 256 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 2022							
		010	030	040	050	060	080	090	100
		Encumbered assets				Unencumbered assets			
		Carrying amount		Fair value		Carrying amount		Fair value	
		of which notionally eligible EHQLA and HQLA		of which notionally eligible EHQLA and HQLA		of which EHQLA and HQLA		of which EHQLA and HQLA	
in € bn.									
030	Equity instruments	0.5	0.2	–	–	3.0	1.2	–	–
040	Debt securities	70.9	54.8	70.9	54.9	80.5	50.2	80.5	50.2
	of which:								
050	Covered bonds	0.6	0.5	0.6	0.5	1.2	1.2	1.2	1.2
060	Securitisations	3.4	1.3	3.4	1.3	2.8	0.7	2.8	0.7
070	Issued by general governments	56.4	50.6	56.4	50.6	53.9	48.3	53.9	48.3
080	Issued by financial corporations	9.2	2.1	9.2	2.1	14.2	5.2	14.2	5.2
090	Issued by non-financial corporations	4.7	2.0	4.7	2.0	11.2	0.3	11.2	0.3
120	Other assets	149.3	13.6	–	–	1,075.3	160.1	–	–
010	Total	220.6	68.6	–	–	1,154.5	211.5	–	–

		Dec, 31 2021							
		010	030	040	050	060	080	090	100
		Encumbered assets				Unencumbered assets			
		Carrying amount		Fair value		Carrying amount		Fair value	
		of which notionally eligible EHQLA and HQLA		of which notionally eligible EHQLA and HQLA		of which EHQLA and HQLA		of which EHQLA and HQLA	
in € bn.									
030	Equity instruments	6.4	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	1.1	1.1	1.1	1.1
060	Asset-backed securities	2.3	1.4	2.3	1.4	2.5	1.3	2.5	1.3
070	Issued by general governments	53.7	47.5	53.7	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	–	–

EU AE2 – Collateral received

		Dec 31, 2022			
		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	
		of which notionally eligible EHQLA and HQLA		of which EHQLA and HQLA	
in € bn.					
140	Loans on demand	0	0	0	0
150	Equity instruments	2.0	1.3	0.5	0.3
160	Debt securities	251.7	219.9	46.0	28.2
of which:					
170	Covered bonds	3.2	3.2	1.4	1.4
180	Asset-backed securities	8.6	4.0	3.0	0.1
190	Issued by general governments	215.8	207.7	37.8	26.6
200	Issued by financial corporations	21.6	8.0	7.0	1.4
210	Issued by non-financial corporations	9.7	3.2	1.4	0.2
220	Loans and advances other than loans on demand	0	0	3.4	0
230	Other collateral received	1.7	0	2.0	0
130	Total collateral received	256.3	221.2	51.6	28.5
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	–	–	3.2	0.7
250	Total Assets, collateral received and own debt securities issued	468.2	284.8	–	–

		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	
		of which notionally eligible EHQLA and HQLA		of which EHQLA and HQLA	
in € bn.					
140	Loans on demand	0	0	0	0
150	Equity instruments	40.2	23.8	1.7	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
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	–	–

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, 2022		Dec 31, 2021	
		010	030	010	030
		Assets, collateral received and own debt securities issued other than covered bonds and ABSs encumbered		Assets, collateral received and own debt securities issued other than covered bonds and ABSs encumbered	
		Matching liabilities, contingent liabilities or securities lent		Matching liabilities, contingent liabilities or securities lent	
in € bn.					
010	Carrying amount of selected financial liabilities	355.6	380.5	329.5	356.0

Reputational Risk

Within the bank's 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 Deutsche Bank's values and beliefs.

Risk management objectives and policies

Reputational Risk Management strategies and processes

Article 435 (1)(a) CRR (EU OVA)

Deutsche Bank has limited appetite for transactions or relationships with material reputational risk or in areas which inherently pose a higher reputational risk such as the defence, gaming, or adult entertainment sectors, or where there are certain environmental concerns. Reputational risk cannot be precluded as it can be driven by unforeseeable changes in perception of its practices by its 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.

The Unit Reputational Risk Assessment Process is required to refer any material reputational risk matters to the respective Regional Reputational Risk Committee. 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 Regional Reputational Risk Committees. The Reputational Risk Regional Committees, 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 Regional Reputational Risk Committees meet, as a minimum, on a quarterly basis with ad hoc meetings as required. The Group Reputational Risk Committee 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 Group Reputational Risk Committee 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)

The Reputational Risk Team provides monthly updates on reputational risk topics to the Reputational Risk Regional Committee chairs and secretaries of the Unit Reputational Risk Assessment Process, as well as quarterly updates to the

Group Reputational Risk Committee and Regional Reputational Risk Committees. 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. Subject Matter Expert input is required for specific reputational risk drivers such as defence, gaming, and environmental issues. Due to geopolitical developments in 2022 there was an increased focus on the topic of defense.

Model risk

Risk management objectives and policies

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:

- A model risk management policy and procedure, and supporting documents aligned to risk appetite, regulatory requirements, and industry best practice, with clear roles and responsibilities for stakeholders
- Inventorisation of all sources of model risk, supporting ongoing model risk framework components including risk assessments and attestations
- Key controls for all sources of model risk from development through to decommissioning, including validation, approval, deployment and monitoring:
 - Independent Validations, and subsequent 2LoD approvals, verify that models and non-model estimates 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 limitations and weaknesses, resulting in findings and compensating controls, these may be conditions for use, such as adjustments or overlays
- 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. 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 is part of the bank's Risk Division and reports up into the Chief Risk Officer.

Group Audit comprises the 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 and non-model estimates within the bank. This includes initial and ongoing 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 and 2LoD individuals supported by Model Risk Councils and forums and a small number of senior committees escalating into the Supervisory Board – Risk Committee, to support management of model risk for individual models and non-model estimates, and in the aggregate.

Model Inventories owned by MoRM are the repository for sources of model risk across the firm and provide the basis for the reporting of model risk.

MoRM 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
- 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/ non-model estimate level, through appropriate actions independently verified as proportionate. These may be built into the model/ non-model estimate 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/ non-model estimate. These mitigants may take the form of adjustments to the output, the allocation of a reserve/buffer, limitations or restrictions on the use of a model/ non-model estimate, additional monitoring and/or restrictions or amendments to inputs and/or parameters.

These mitigants, are tracked and monitored as part of periodic reviews. Reassessments may also be triggered by significant changes to the model/ non-model estimate or its materiality, or potentially through the resolution of related weaknesses in the model/ non-model estimate.

Remuneration policy

Article 450 CRR, Article 435 (2)(a-c) CRR and EU OVB

Article 450 CRR, Article 435 (2)(a-c) CRR and related requirements such as table EU REMA and EU OVB and templates EU REM1-5 are addressed by the following section from the Employee Compensation Report from within our Annual Report 2021.

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, 2022	
	Number of executive and non-executive directorships	Number of supervisory board directorships
Christian Sewing	0	0
James von Moltke	0	0
Karl von Rohr	0	1 ¹
Fabrizio Campelli	0	2
Bernd Leukert	0	2 ²
Alexander von zur Mühlen	0	0
Christiana Riley	1 ¹	1
Rebecca Short	0	0
Stefan Simon	0	1
Olivier Vigneron	0	0

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 succession planning with external candidates, 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 internal candidates for 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. The Supervisory Board ensures that the legally required minimum gender participation on the Management Board is complied with pursuant to Section 76 (3a) of the German Stock Corporation Act (AktG) and has defined target values in accordance with Section 111 of the German Stock Corporation Act (AktG) for the percentage of women on the Management Board. With Christiana Riley and Rebecca Short, two women are members of the Management Board, and therefore the target percentage set by the Supervisory Board was met. 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. The first appointment period is for a maximum of three years. 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, which the Supervisory Board decides on.

Policy on diversity for board members

Article 435 (2)(c) CRR (EU OVB)

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. With Christiana Riley and Rebecca Short on the Management Board this goal has already been met since May 1, 2021. The current German Act to Supplement and Amend Regulations on the Equal Participation of Women and Men in Management Positions in the Private and Public Sectors (Equal Participation Act II (FüPoG II) requires that at least one woman and one man be appointed to a Management Board with more than three members however, no additional goals must be set. With two women being on the Management Board the bank exceeded this requirement as of December 31, 2022.

Deutsche Bank is firmly convinced that an improved gender balance in leadership roles will meaningfully contribute to its future success.

In accordance with the legal framework conditions and based on the bank's own strategy on diversity, equity and inclusion the bank is working on making progress on its ambitious goals of the "35 by "25" journey that the Management Board set on May 4, 2021.

The goals for the representation of women at the two management levels below the Management Board are now at least 30% women at the first management level and at least 30% women at the second management level below the Management Board. These goals are to be reached by December 31, 2025.

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

	Dec 31, 2022		Dec 31, 2021	Dec 31, 2020
	Goal	Result	Result	Result
Level (headcount, in %) ¹				
Supervisory Board	30.0	30.0	30.0	30.0
Management Board ²	20.0	20.0	20.0	10.0
Management Board level -1 ³	30.0	17.1	20.0	20.0
Management Board level -2 ³	30.0	29.6	27.5	23.9

¹ Pursuant to Germany's Act on the Equal Participation of Women and Men in Management Positions in the Private and Public Sectors.

² Goal reflects June 2022.

³ Goal reflects December 2025.

As of December 31, 2022, the proportion of women is 17,1% (2021: 20%) in the first management level below the Management Board and 29,6% (2021: 27,5%) on the second management level below the Management Board.

While the Group's commitment to increase the representation of women in senior management positions is global the Group's 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, the bank's 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 the bank's basic diversity concept, the bank 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 the bank's strategy as a leading European bank with a global reach and a strong home market in Germany, Diversity is a decisive factor for the bank's success. Diversity, equity and inclusion help Deutsche Bank in forming and strengthening sustainable relationships with the bank's clients and partners in the societies where the bank 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.

The bank are convinced that diversity, equity & 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, quity and 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, equity and inclusion. In accordance with the bank's 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, equity and 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 December 15, 2021, 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 the bank’s objectives specified above. Furthermore, the Supervisory Board and the Management Board should ensure long-term succession planning.

The current German Act to Supplement and Amend Regulations on the Equal Participation of Women and Men in Management Positions in the Private and Public Sectors (Equal Participation Act II (FüPoG II)) requires that at least one woman and one man be appointed to a Management Board with more than three members; however, no additional goals must be set. The bank exceeded this requirement as of December 31, 2022. 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 a candidate profiles for the members of the Management Board, based on a proposal from the Nomination Committee. These profiles takes into account an “Expertise and Capabilities 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. Individual succession plans are reviewed and internal 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 2022 financial year

At the end of the financial year, the Management Board comprised two women (20 %) and eight 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 44 to 57 years of age as of the date of this Corporate Governance Statement. The length of experience as member of the Management Board of Deutsche Bank as of the date of this Corporate Governance Statement ranged from less than one year to around ten years.

Also with the bank’s 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. Furthermore, in the Management Board Italy, the United Kingdom, France, Australia, New Zealand and the USA are represented as nationalities. However, the ethnic diversity of the Management Board does not currently reflect the full diversity of the markets where the bank do business or the diversity of the bank’s 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 Investor Relations, “Corporate Governance”, “Management Board”).

Compensation of the employees

The content of the 2022 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 2022 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 the bank's Group Compensation Strategy. The bank strives to be at the forefront of implementing regulatory requirements with respect to compensation and will continue to maintain a close exchange with its 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. These rules are applied to 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 Banking Act and in the Commission Delegated Regulation 2021/923. Deutsche Bank identifies MRTs at a Group level, at the level of Significant Institutions and, in accordance with the German Banking Act, 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 sector specific remuneration rules, such as the Alternative Investments Fund Managers Directive (AIFMD), the Undertakings for Collective Investments in Transferable Securities Directive (UCITS) and the Investment Firm Directive (IFD) including the applicable local transpositions. MRTs are also identified in these subsidiaries. Identified employees are subject to the remuneration provisions outlined in the applicable Guidelines on sound remuneration policies published by the European Securities and Markets Authority (ESMA) and the European Banking Authority (EBA).

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, specific provisions for employees deemed to be Relevant Persons are implemented with a view to ensuring that they act in the best interest of the bank's 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 the bank 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, the InstVV requirements are applied as minimum standards globally.

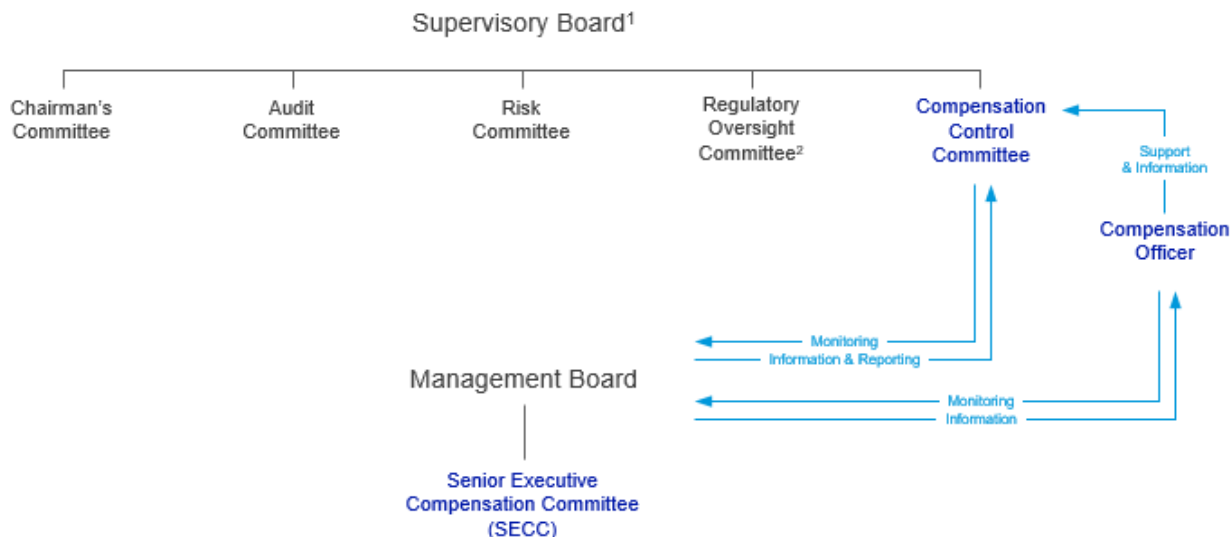
Compensation governance

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

² The Integrity Committee was replaced by the Regulatory Oversight Committee

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 Supervisory Board Chairperson as well as two other Supervisory Board Members representing shareholders and three Supervisory Board Members representing employees. The Committee held six meetings in the calendar year 2022. The members of the Risk Committee attended two meetings as guests, the Chairperson of the Risk Committee attended four meetings as guest. 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 strategy 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 2022, the SECC's membership comprised of the Global Head of Human Resources and the Chief Financial Officer as Co-Chairpersons, 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 nonvoting members. The SECC generally meets on a monthly basis but with more frequent meetings during the compensation process. It held twenty meetings in total with regard to the compensation process for the performance year 2022.

Compensation and Benefits Strategy

Deutsche Bank recognizes that its compensation framework plays a vital role in supporting its strategic objectives. It enables the bank to attract and retain the individuals required to achieve the 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 strategy

- 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

The 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 the 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 maximum 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 (such as Legal, Group Tax and Human Resources) should continue to be subject to a maximum ratio of 1:1 while Control Functions as defined by InstVV are subject to a maximum ratio of 2:1. These Control Functions comprise Risk, Compliance, Anti-Financial Crime, Group Audit and the Compensation Officer and his Deputy.

The bank has assigned a Reference Total Compensation (RTC) to eligible employees that describes a reference value for their role. This value provides employees with 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 order to attract and retain the right talent. For the majority of employees, FP is the primary compensation component.

Variable Compensation reflects affordability and performance at Group, divisional, and individual level. It allows the bank 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 the bank’s annual achievements in reaching its strategic targets, the four Key Performance Indicators (KPIs) utilized as the basis for determining the 2022 Group VC Component were: Common Equity Tier 1 (CET 1) Capital Ratio, Cost/Income Ratio (CIR), Post-Tax Return on Tangible Equity (RoTE) and ESG – Sustainable Finance Volume. These four KPIs represent the bank’s capital, cost, profitability and sustainability targets.

The Individual VC Component is delivered either in the form of Individual VC or as Recognition Award. An employee’s eligibility to receive either of these VC elements depends on division, region, profession, and Corporate Title. 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 the 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



Individual VC takes into consideration a number of financial and nonfinancial 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 can be paid out up to four times a year, following 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 the 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, nonexecutive 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, UCITS or IFD, while a limited number of employees remain in scope of the 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/IFD 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.

Tariff staff

Within Deutsche Bank Group there are 15,191 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

The bank puts a strong focus on its 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 derived from an assessment of the bank's profitability, solvency, and liquidity position, and the determination of VC pools for 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 – nonfinancial 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 both Deutsche Bank's overall and their own performance, it is not dependent on the performance of the division(s) that these functions oversee.

At the level of the individual employee, the Variable Compensation Guiding Principles are established, which detail the factors and metrics that have to be taken into account when making Individual VC decisions. 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 nonfinancial 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

The compensation structures are designed to provide a mechanism that promotes and supports long-term performance of employees and the 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, Deutsche Bank shares are used as instruments and as an effective way to align compensation with Deutsche Bank's sustainable performance and the interests of shareholders.

The bank continues to go beyond regulatory requirements with the scope as well as the amount of VC that is deferred and the 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, the bank starts 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) the bank applies 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.

Overview on 2022 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 2022 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 2022 TC > € 500,000	N/A	12 months	50% of upfront VC
Deferred: Restricted Incentive Award (RIA)	Deferred cash portion	All employees with deferred VC	Equal tranche vesting: MRTs: 4 years Senior Mgmt. ¹ : 5 years Non-MRTs in IB/CB/CRU: 4 years Other non-MRTs: 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 Senior Mgmt. ¹ : 5 years Non-MRTs in IB/CB/CRU: 4 years Other non-MRTs: 3 years	12 months for MRTs	50% of deferred VC

N/A – Not applicable

¹ For the purpose of Performance Year 2022 annual awards, Senior Management is defined as Deutsche Bank 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 Deutsche Bank AG refer to the Compensation Report for the Management Board

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. The Human Resources and Compliance functions, overseen by the Compensation Officer, work together to monitor employee trading activity and to ensure that all 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, the bank believes that a long-term view on conduct and performance of its employees is a key element of deferred VC. As a result, under the Management Board's oversight, 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 2022

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	<ul style="list-style-type: none"> - 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 2022

Year-end considerations and decisions for 2022

All compensation decisions are made within the boundaries of regulatory requirements. These requirements form the overarching framework for determining compensation at Deutsche Bank. In particular, management must ensure that compensation decisions are not detrimental to maintaining the bank's sound capital base and liquidity reserves.

In an environment of increasing geopolitical uncertainties and macroeconomic challenges the bank delivered its best results for more than a decade. This underlines the successful completion of the bank's strategic transformation announced in 2019. Deutsche Bank's key goals were achieved, and its earnings power was significantly improved. As a result, the bank is significantly more profitable with a pre-tax profit of € 5.6 billion and a net profit of € 5.7 billion.

Although 2022 was a successful year for Deutsche Bank, the bank again adopted a measured and forward-looking approach when deciding on variable compensation for 2022. This approach balanced the need to remain within the boundaries of affordability with the need to remunerate its employees fairly. When determining the level of year-end performance-based VC, the bank weighed the successful transformation and strong business performance against the current uncertain economic outlook and considerations of prudent capital planning and long-term capital stability. This resulted in VC levels for 2022 which are more conservative than the bank's financial performance, at the Group and divisional level, might have indicated. As in previous years, the SECC continuously monitored and reviewed the implications of potential VC awards, both for the bank's capital and liquidity base and for its ambitious cost targets.

With due consideration for all these factors, the Management Board determined that the bank is in a position to award variable compensation, including a year-end performance-based VC pool, of € 2.126 billion for 2022 (2021: € 2.099 billion). The VC for the Management Board of Deutsche Bank AG was determined, as always, by the Supervisory Board in a separate process.

As part of the overall 2022 VC awards granted in March 2023, the Group VC Component was awarded to all eligible employees in line with the assessment of the four defined KPIs which are outlined in the Group Compensation Framework chapter of this Report. The Management Board determined a payout rate of 80% for the Group VC Component in 2022, compared to 77.5% in 2021 and 72.5% in 2020.

The slight year-on-year increase of 2022 year-end performance-based VC reflects both Deutsche Bank's strong performance and the need for prudence.

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 45% in 2022. For the MRT population only, the deferral rate amounts to 90%.

Material Risk Taker compensation disclosure

On a global basis, 1,426 employees were identified as MRTs according to InstVV for financial year 2022, compared to 1,263 employees for 2021. This increase is attributable to the increased number of quantitative (remuneration driven) MRTs. The number of 2022 Group MRTs amounts to 1,171 individuals. Moreover, 194 individuals were identified by Significant Institutions (thereof 44 Group MRTs) and 123 individuals were identified by Other CRR Institutions (thereof 17 Group MRTs and one MRT identified by a Significant Institution). The remuneration elements for all those MRTs on a consolidated basis are detailed in the tables below in accordance with Section 16 InstVV and Article 450 CRR.

With regard to deferral arrangements and pay-out instruments, 87 MRTs identified by Other CRR Institutions, whose total remuneration amounts to € 18.7 million (thereof € 7.2 million variable remuneration including severance payments) benefit from a derogation laid down in Article 94(3) CRD point (a) and 61 MRTs identified by Group or Significant Institutions, whose total remuneration amounts to € 9.7 million (thereof € 1.6 million variable remuneration including severance payments) benefit from a derogation laid down in Article 94(3) CRD point (b).

Remuneration for 2022 - Material Risk Takers (REM 1)

		2022				
in € m. (unless stated otherwise) ¹		Super- visory Board ²	Manage- ment Board ³	Senior Management ⁴	Other Material Risk Takers	Group Total
	Number of MRTs ⁵	20	10	236	1,021	1,286
Fixed Pay	Total Fixed Pay	7	35	157	628	826
	of which: cash-based	5	30	148	597	780
	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	5	9	31	45
	Number of MRTs ⁵	0	10	231	984	1,224
Variable Pay	Total Variable Pay ⁶	0	41	129	579	750
	of which: cash-based	0	21	69	302	392
	of which: deferred	0	20	46	228	294
	of which: shares or equivalent ownership interests	0	21	52	277	349
	of which: deferred	0	21	42	227	290
	of which: share-linked instruments or equivalent non-cash instruments	0	0	7	1	8
	of which: deferred	0	0	5	1	5
	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	76	286	1,207	1,576

¹ The table may contain marginal rounding differences

² Supervisory Board represents the Supervisory Board Members of Deutsche Bank AG

³ Management Board represents the Management Board Members of Deutsche Bank AG

⁴ Senior Management is defined as Deutsche Bank AG MB-1 positions; voting members of Business Division Top Executive Committees; MB members of Significant and Other CRR Institutions and respective MB-1 positions with managerial responsibility

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 1,426 individuals identified as MRTs

⁶ Variable Pay includes Deutsche Bank's Year-end performance-based VC for 2022, 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)

		2022				
in € m. (unless stated otherwise) ¹		Super- visory Board ²	Manage- ment Board ³	Senior Management ⁴	Other Material Risk Takers	Group Total
Guaranteed variable remuneration awards						
	Number of MRTs ⁵	1	0	1	9	10
	Total amount	0	0	0	8	8
	of which: paid during financial year, not taken into account in bonus cap	0	0	0	2	2
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	0	10	38	48
	Total amount ⁶	0	0	11	21	32
	of which: paid during financial year	0	0	9	20	29
	of which: deferred	0	0	2	1	3
	of which: paid during financial year, not taken into account in bonus cap	0	0	9	20	29

¹ The table may contain marginal rounding differences

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³ Management Board represents the Management Board Members of Deutsche Bank AG

⁴ Senior Management is defined as Deutsche Bank AG MB-1 positions; voting members of Business Division Top Executive Committees; MB members of Significant and Other CRR Institutions and respective MB-1 positions with managerial responsibility

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 2022 amounts to € 4,054,481

Deferred remuneration - Material Risk Takers (REM 3)

	2022								
in € m. (unless stated otherwise) ¹	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	1	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	91	9	83	0	0	(5)	9	3	
Cash-based	39	5	34	0	0	0	5	0	
Shares or equivalent ownership interests	52	4	49	0	0	(5)	4	3	
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	357	104	253	0	0	(16)	104	47	
Cash-based	174	53	121	0	0	0	53	0	
Shares or equivalent ownership interests	167	48	119	0	0	(14)	48	44	
Share-linked instruments or equivalent non-cash instruments	14	3	11	0	0	(2)	3	3	
Other instruments	2	0	2	0	0	0	0	0	
Other forms	0	0	0	0	0	0	0	0	
Other Material Risk Takers	1,601	441	1,160	1	3	(75)	438	137	
Cash-based	820	248	573	1	1	0	246	0	
Shares or equivalent ownership interests	777	192	585	0	1	(74)	191	137	
Share-linked instruments or equivalent non-cash instruments	4	1	2	0	0	(1)	1	0	
Other instruments	0	0	0	0	0	0	0	0	
Other forms	0	0	0	0	0	0	0	0	
Total amount	2,049	554	1,496	1	3	(96)	551	188	

¹ The table may contain marginal rounding differences

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³ Management Board represents the Management Board Members of Deutsche Bank AG

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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 €	2022	2021
	Number of individuals ¹	Number of individuals ²
Total Pay ³		
1,000,000 to 1,499,999	299	234
1,500,000 to 1,999,999	120	115
2,000,000 to 2,499,999	47	56
2,500,000 to 2,999,999	36	33
3,000,000 to 3,499,999	16	19
3,500,000 to 3,999,999	12	19
4,000,000 to 4,499,999	9	9
4,500,000 to 4,999,999	5	4
5,000,000 to 5,999,999	7	10
6,000,000 to 6,999,999	6	6
7,000,000 to 7,999,999	8	8
8,000,000 to 8,999,999	4	3
9,000,000 to 9,999,999	2	3
10,000,000 to 10,999,999	1	1
Total	572	520

¹ Comprises MRTs only (including 2022 leavers)

² Comprises Group MRTs only; the total (incl. MRTs of Significant and Other CRR Institutions) corresponds to 524 MRT High Earners

³ Includes all components of FP and VC (including severances); buyouts are not included

In total, 572 MRTs received a Total Pay of € 1 million or more for 2022.

Compensation awards 2022 – Material Risk Takers (REM 5)

in € m. (unless stated otherwise) ¹	Management Body Remuneration			Business Areas							Total
	Super- visory Board ²	Manage- ment Board ²	Total Manage- ment Body	IB ²	CB ²	PB ²	AM ²	CRU ²	Corporate Functions ²	Control Functions ²	
Total number of Material Risk Takers³											1,286
of which: Management Body	20	10	30	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	16	29	59	6	6	88	32	236
of which: Other Material Risk Takers	N/A	N/A	N/A	578	79	127	6	15	133	83	1,021
Total Pay of Material Risk Takers	7	76	83	945	110	154	28	19	177	60	1,576
of which: variable pay ⁵	0	41	41	471	58	72	13	9	73	14	750
of which: fixed pay	7	35	41	475	53	82	15	10	104	46	826

¹ The table may contain marginal rounding differences

² Supervisory Board represents the Supervisory Board Members of Deutsche Bank AG, Management Board represents 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 1,426 individuals identified as MRTs

⁴ Senior Management is defined as Deutsche Bank AG MB-1 positions; voting members of Business Division Top Executive Committees; MB members of Significant and Other CRR Institutions and respective MB-1 positions with managerial responsibility

⁵ Variable Pay includes Deutsche Bank's Year-end performance-based VC for 2022, 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)

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