Genossenschaftliche FinanzGruppe
Volksbanken Raiffeisenbanken

December 31, 2019

Regulatory risk report of the DZ BANK banking group

DZ BANK Gruppe

Contents

The present version is based on the German regulatory risk report published on April 28 2020, and includes, in a very small number of cases, corrections and adjustments to individual tables and references as well as additions of qualitative information for a better understanding of the information provided. The presentation of the key statements regarding the risk profile and compliance with the minimum regulatory requirements remain unaffected.

1 Basis of regulatory risk reporting

1.1 Legal basis

The Basel Committee on Banking Supervision has created a global regulatory framework called Basel III setting out international standards for the capital adequacy and liquidity of banks. This framework was implemented into European law by Directive 2013/36/EU on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms (**Capital Requirements Directive IV, CRD IV**) and Regulation (EU) No. 575/2013 (**Capital Requirements Regulation, CRR**).
A **new capital requirements regulation** (**Capital Requirements Regulation II, CRR II**) came into force on June 27, 2019, introducing extensive changes to the Pillar 3 banking supervision disclosure requirements. At the same time, this means that the final version of Basel III has been implemented in European law. The first reporting date to which the new requirements apply is June 30, 2021.

Articles 431 to 455 (Part 8) CRR define the quantitative and qualitative requirements in respect of regulatory disclosure. The **Guidelines on disclosure requirements under Part 8 of Regulation (EU) No. 575/2013 (EBA/GL/2016/11)** published by the European Banking Authority (EBA) dated August 7, 2017, the **Guidelines on LCR disclosure to complement the disclosure of liquidity risk management under article 435 of Regulation (EU) No. 575/2013 (EBA/GL/2017/01)** dated June 21, 2017 and, since December 31, 2019, the **Guidelines on disclosure of non-performing and forborne exposures (EBA/GL/2018/10)** apply, along with the CRR and various implementing and regulatory standards applicable to disclosure.

The guidelines set out the CRR disclosure requirements in more detail by providing specific requirements and formats, in particular by stipulating the tables and templates to be used. **Circular 05/2015 (BA)** from the Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin) [German Federal Financial Supervisory Authority] dated June 8, 2015 also continues to apply in relation to implementation of the EBA's guidelines on the disclosure of the materiality of information, proprietary and confidential information, and on disclosure frequency (EBA/GL/2014/14 dated December 23, 2014). The requirements regarding the frequency of disclosure have also been increased due to EBA/GL/2016/11. These guidelines remain valid until the start of the full application of CRR II. Article 434a CRR II also mandates the EBA to develop standardized disclosure formats. This mandate is valid immediately. The EBA will provide the European Commission with draft regulatory technical standards by June 28, 2020.

As the parent company (EU parent institution) of the DZ BANK banking group (pursuant to section 10a (1) of the German Banking Act (KWG)), DZ BANK AG Deutsche Zentral-Genossenschaftsbank, Frankfurt am Main, (DZ BANK) has fulfilled its disclosure requirement (pursuant to article 436 (1) letter a CRR) at banking group level by publishing this consolidated **regulatory risk report** as at December 31, 2019.

This report focuses on the regulatory **requirements in the CRR regarding disclosure**, whereas the combined opportunity and risk report ('opportunity and risk report') contained in the DZ BANK Group's Annual Report is oriented to international and national accounting law.

As well as information on **risk management** and the **scope of application**, this report, which is based on the DZ BANK banking group, contains disclosures on the following:

- **Liquidity coverage ratio** (LCR)
- **Own funds** and **capital requirements**
- **Credit risk**, including **counterparty credit risk**
- **Securitizations**
- **Market risk**
- **Operational risk** and **reputational risk**
- Macroprudential regulatory measures, such as the **countercyclical capital buffer** and the **indicators of global systemic importance**
- **Leverage ratio** (LR)

- **Asset encumbrance** (AE)
- **Remuneration policy**

The **country-by-country reporting** information pursuant to the disclosure requirements defined in section 26a (1) sentence 2 et seq. KWG is not contained in this report. The country-by-country reporting is disclosed separately on DZ BANK's website in the Investor Relations section under Reports.

The **disclosure of the return on assets** required by section 26a (1) sentence 4 KWG can be found in the 2019 Annual Financial Statements and Management Report of DZ BANK AG in the management report, chapter II 'Business report', section 4 'Net assets' (page 42). In the year under review, there was no intra-group financial support that would have had to be disclosed pursuant to **section 35 of the German Bank Recovery and Resolution Act (SAG)**.

In line with article 434 CRR, DZ BANK publishes the regulatory risk report on its website in the Investor Relations section under Reports, while the annexes on capital instruments can be found under Bondholder Information.

Fig. 1 shows the different sources to which reference is made in this regulatory risk report and where they are published.

FIG. 1 – REFERENCES IN THE REGULATORY RISK REPORT TO OTHER SOURCES

Source	Publication medium
DZ BANK Annual Report	https://www.dzbank.de/content/dzbank_de/de/home/unser_profil/investorrelations/berichte/2019.html
Annual Financial Statements and Management Report of DZ BANK AG	
Country-by-country reporting	
Results of the collection of data to identify global systemically important institutions	
Regulatory risk report, including the capital instruments annex	
Remuneration policy disclosures	
Full contractual terms and conditions for capital instruments, pursuant to article 437 (1) letter c CRR	https://www.dzbank.de/content/dzbank_de/de/home/unser_profil/investorrelations/info_fuer_fremdkapitalgeber/kapitalinstrumente.disclaimer.disclaimer_kapitalinstrumente.html

There is no statutory requirement for the regulatory risk report to contain an independent auditor's report, so no such report is included.

1.2 Implementation in the DZ BANK banking group

This regulatory risk report comprehensively describes the risk profile of the DZ BANK banking group as at the reporting date by fulfilling all CRR disclosure requirements relevant to the banking group, while taking account of the principle of materiality pursuant to article 432 (1) CRR. The exemptions pursuant to article 432 (1) CRR are not used.

The DZ BANK banking group makes use of the option to refer to other reports. This report contains the information required by the CRR, provided it has not already been published in other media. Where this is the case, the regulatory risk report makes reference to those sources.

The basis for regulatory risk reporting is the **disclosure policy** approved by the Board of Managing Directors. This policy sets out the principles and fundamental decisions for the methods, organizational structure, and IT systems to be used for disclosure in the DZ BANK banking group. The disclosure policy also governs the integration of risk disclosure into general financial disclosure and provides the link to internal risk reporting. By adopting the policy, the Board of Managing Directors also established the key elements of the risk-related disclosure procedures and communicated them throughout the DZ BANK banking group. With this policy, DZ BANK has therefore implemented a formal process in which the operational steps – from preparing the report to obtaining the adoption of a resolution by the Board of Managing Directors and publishing the report – are defined, along with the required controls. This process also sets out all roles and responsibilities. The policy is audited regularly to assess whether it remains appropriate and is amended in line with changes to internal and external circumstances, thereby complying with the requirements of article 431 (3) CRR.

Section 2 (pages 16 to 21) on the management of the DZ BANK Group in the 'DZ BANK Group fundamentals' chapter of DZ BANK's 2019 Annual Report, in conjunction with sections 3.5 to 5 (pages 71 to 87) of the opportunity and risk report, describes the **information flow** within the DZ BANK banking group to the management body pursuant to article 435 (2) letters d and e CRR and section 26a KWG.

The **frequency** and **scope** (article 433 CRR) of the regulatory risk report are determined by the indicators regarding frequency of disclosure that are listed in Title V of EBA/GL/2016/11. These assessment criteria include not only DZ BANK's classification as an other systemically important institution (O-SII) but also the DZ BANK Group's total assets and the consolidated exposures pursuant to article 429 CRR. As at the reporting date, DZ BANK was one of the three largest banks in Germany. The assessment found that the DZ BANK banking group was again obliged in 2019 to publish certain information in an interim report. Under CRR II too, DZ BANK is classified as a large institution as defined by article 4 (1) CRR II. This classification is also based on the criteria for classifying DZ BANK as an O-SII and on the total assets of the DZ BANK Group. CRR II specifies binding rules on the frequency and scope of disclosure that are based on the principle of proportionality. However, the updated disclosure requirements do not have to be implemented until the general application start date of June 28, 2021.

To ensure the necessary transparency for market participants, **comparative figures** as at previous reporting dates or relating to a previous period are disclosed in accordance with the requirements in EBA/GL/2016/11. Any significant changes – particularly to quantitative disclosures – between the reporting periods are explained.

Unless otherwise indicated, all information in this report relates to the entities consolidated for regulatory purposes in the **DZ BANK banking group** as at the reporting date pursuant to section 10a KWG in conjunction with articles 11 to 22 CRR and CRR II.

In accordance with article 13 (1) CRR II, **large subsidiaries** must disclose the information specified in article 437 CRR (own funds), article 438 CRR (capital requirements), article 440 CRR (capital buffers), article 442 CRR (credit risk adjustments and loss allowances), article 450 CRR (remuneration), article 451 CRR (leverage ratio), article 451a (liquidity requirements), and article 453 CRR (risk mitigation) on an individual basis or, where necessary, on a sub-consolidated basis. To identify and categorize subsidiaries as large, the criteria in article 4 CRR II are applied to those subsidiaries classified as a credit institution or investment firm under the CRR. The subsidiaries identified must comply with the requirements in article 13 CRR II unless they are covered by the **waiver** pursuant to article 7 CRR. The disclosures required for these subsidiaries on the basis of article 13 CRR II can be found in the regulatory risk reports on the websites of the subsidiaries in question. The additional disclosure requirements for large subsidiaries pursuant to article 13 (1) CRR II are presented in section 4.2.5 of this report.

The disclosure requirements pursuant to article 13 CRR II have to be applied to BSH, which is categorized as large.

DVB voluntarily published a own disclosure report as at December 31, 2019.

Pursuant to article 7 CRR, this disclosure requirement is waived for DZ HYP on an individual basis. For UMH and VR Smart Finanz, this disclosure requirement is waived on an individual basis in accordance with section 2 (7) KWG.

To calculate the **regulatory capital requirements** pursuant to the CRR, the DZ BANK banking group mainly applies the foundation internal ratings-based approach (IRB approach or IRBA) for credit risk.

The regulatory credit risk measurement methods used by DVB Bank SE, Frankfurt am Main, (DVB Bank; subgroup abbreviated to DVB) are based on the advanced IRB approach. The regulatory credit risk measurement methods used by Bausparkasse Schwäbisch Hall AG, Schwäbisch Hall, (Bausparkasse Schwäbisch Hall; subgroup abbreviated to BSH), DZ HYP AG, Hamburg, (DZ HYP), and TeamBank AG Nürnberg, Nuremberg, (TeamBank) are based on the foundation IRB approach. The IRB approach is used to calculate the credit risk of the retail businesses of BSH, DZ HYP, and TeamBank, although the probability of default (PD) and the loss given default (LGD) are based on internal accounting estimates.

Capital requirements for market risk are predominantly measured using internal calculation models and, to a minor extent, the regulatory Standardized Approaches. The Standardized Approach is used at the DZ BANK banking group level to determine operational risk in accordance with regulatory requirements, while the individual institutions are responsible for their own calculations and reporting (as a rule the Standardized Approach, although the Basic Indicator Approach is possible in exceptional cases) in accordance with article 315 et seq. CRR.

Significant components of the **qualitative regulatory risk reporting** requirements are covered in the opportunity and risk report. The DZ BANK banking group predominantly utilizes the option available under article 434 (1) CRR to make reference to the opportunity and risk report for the qualitative disclosures. The section references for each topic are included in this report.

Disclosures that are solely of relevance for regulatory purposes are published in the regulatory risk report. This also applies to information that is fundamentally integral to the internal risk management system but, because of the detailed level of disclosure required, is not included in the opportunity and risk report so as not to impair the report's usefulness in the decision-making process. In particular, this concerns the detailed information on the internal rating systems and the disclosures about the risk models approved by the European Central Bank (ECB) for calculating the regulatory capital requirements for general and specific market risk. The same applies to the accounting-related disclosures on long-term equity investments and securitizations, which are also included in this regulatory risk report. As in the procedure adopted for qualitative disclosures, however, the quantitative disclosures required in regulatory risk reporting, which are derived from the internal risk management system, are included in the opportunity and risk report rather than in the regulatory risk report.

Unless indicated otherwise, the quantitative disclosures in this risk report are rounded to the nearest whole million euros. This may give rise to small discrepancies between the totals shown in the tables and diagrams and totals calculated from the individual values shown. Table cells with a dark gray background are not relevant for disclosure purposes. The symbol – is used to indicate that a line item in a table has no value. If a line item (after rounding) amounts to less than €1 million, a value of 0 is disclosed.
In its Pillar 3 reporting, DZ BANK aims to ensure the **consistency and comparability of disclosures** over time at the level of the DZ BANK banking group and to contribute to consistency and comparability across the industry. The quantitative disclosures in this report are therefore based, in particular, on the requirements in EBA/GL/2016/11. Some of them are still based on the table formats (referred to as 'use cases') recommended by the specialist disclosure subcommittee (as at September 2012) and the applicable (EU) implementing regulations in order to fully comply with the disclosure requirements of Part 8 CRR.

In general, all disclosure requirements pursuant to Part 8 CRR are met. The following requirements are currently **not relevant** to the DZ BANK banking group, and the corresponding data has therefore not been included in this regulatory risk report:

– Disclosure of the alpha factor pursuant to article 439 sentence 1 letter i CRR is not necessary since no internal DZ BANK banking group models approved by the supervisory authority were used in 2019 to calculate capital requirements for derivative counterparty risk exposure.

- The same applies to securitizations under the early amortization approach pursuant to article 449 sentence 1 letter n (iv) CRR. Such securitizations were not carried out by entities in the DZ BANK banking group during the reporting year, nor are they part of any existing business.

- In the case of risk in connection with fair value changes in the correlation trading portfolio (CTP, article 455 sentence 1 letter a (ii) CRR), no internal model approved by the supervisory authority is currently available, so the capital requirements for these exposures are calculated using the Standardized Approach.

- An RWA flow statement for counterparty credit risk under the internal model method (IMM) (table EU CCR7) is not included, as DZ BANK does not have an IMM for this risk.

- As the banking group's operational risks are calculated in accordance with the Standardized Approach, there are no disclosures about the use of Advanced Measurement Approaches for operational risk (article 454 CRR).

- International Financial Reporting Standard 9 (IFRS 9) came into effect on January 1, 2018. The DZ BANK banking group is not currently using the regulatory transitional provisions for the effects of initial application of IFRS 9 in accordance with article 473a CRR.

1.3 Risks covered in the regulatory risk report

The regulatory risk report covers the risk types listed in section 1.1 for the **subsidiaries** that must be consolidated as part of the DZ BANK banking group for regulatory purposes in accordance with article 4 (1) no. 16 CRR and section 10a (4) and (5) KWG. Risks arising at subsidiaries that are not consolidated for regulatory purposes are disclosed in the opportunity and risk report at the DZ BANK Group level.

Regulatory capital requirements mainly relate to the following **risk types**: credit risk (including equity investment risk), market risk, and operational risk. In addition to these risk types, the technical risk of a home savings and loan company, actuarial risk, and business risk are also backed by economic risk capital as part of the internal economic capital management process (Pillar 2). The internal model for calculating regulatory market risk corresponds to the internal model for determining market risk in Pillar 2. Liquidity risk is also taken into account in a separate liquidity-related analysis of risk-bearing capacity.

There are also **differences between economic and regulatory risk coverage**, in particular:

- When the **regulatory capital requirements** and the related disclosures **are being determined**, risk-bearing exposures are treated differently in terms of quantification of their risk depending on whether they are allocated to the trading book or banking book. For example, on-balance-sheet and off-balance-sheet exposures in the banking book and counterparty risk arising from derivatives exposure in the banking book and trading book are classified under credit risk. The issuer-related exposures in the trading book are treated as market risk exposures and are therefore backed with regulatory own funds, whereas they are treated as issuer risks and classified under credit risk for internal management purposes.

- As a result of this approach, the **credit risk exposures** presented in this risk report are based on regulatory bases of assessment and therefore differ from the lending volume presented in the opportunity and risk report, which is based on figures in the internal management accounts.

- Furthermore, **equity investment risk** is recognized as a separate type of risk in the internal management accounts. Credit risk and equity investment risk are determined in the internal management accounts using their own portfolio models.

– The **market risk** disclosed using the methods in Pillar 1 essentially corresponds to the market risk managed on the basis of the rules of Pillar 2. In the context of the economic management of market risk, interest-rate risk also includes interest-rate risk in the banking book for which no backing with own funds is required for regulatory purposes under Pillar 1.

– In the DZ BANK banking group, the Standardized Approach was used as at December 31, 2019 to calculate the regulatory own funds (as described in section 1.2 above) for operational risk in accordance with article 317 et seq. CRR. In respect of the economic capital requirements, however, a statistical model is used for the management units (see section I.1 of the group management report, page 10) that satisfies the criteria for an Advanced Measurement Approach (AMA). The results from this portfolio model, combined with the materiality treshold for collation of loss data, scenario-based risk self-assessments, and risk indicators, are used to manage operational risk.

1.4 Developments in relation to transparency rules in banking regulation

On October 16, 2019, the EBA published a consultation paper on the disclosure requirements pursuant to Titles II and III Part 8 CRR (EBA-CP-2019-09). The aim is to specify and formalize the requirements in CRR II and to aggregate the disclosure requirements – with a few exceptions – in one place. The deadline for submitting comments was January 16, 2020. The final draft is to be presented to the European Commission in June 2020, which is expected to adopt it in October 2020. The ITS will have be applied with effect from June 28, 2021, at the same time as CRR II.

The EBA also published a consultation paper on the disclosure and reporting of TLAC and MREL on November 22, 2019 (EBA-CP-2019-14). The consultation period ended on February 22, 2020. The TLAC disclosure requirements will apply from when the ITS is adopted by the European Commission, so they will also have to be applied with effect from June 28, 2021. The MREL disclosure requirements will have to be applied with effect from January 1, 2024.

In November 2019, the Basel Committee published proposals for implementing the disclosure of market risk (BCBS 484) and sovereign exposures (BCBS 485) into European law and asked for feedback. The consultation phase for the two publications ended on February 14, 2020.

2 Risk management, objectives, and rules

2.1 Risk management objectives and policies

(ARTICLE 435 (1) CRR)

The principles and objectives of risk management and the methods used to manage risk are covered in the qualitative reporting, which – as stated in section 1.2 of this report – is based on the information in the opportunity and risk report. The governance structure of risk management in the DZ BANK Group is presented as a schematic diagram in figure 8 (page 72) in the opportunity and risk report. Supplementary disclosures relating to the DZ BANK Group and its management are described in chapter I 'DZ BANK Group fundamentals' (pages 10 to 21) in the group management report. The information required according to article 435 (2) CRR that is not presented in DZ BANK's 2019 Annual Report is set out in the following sections of this regulatory risk report.

FIG. 2 – DISCLOSURES IN THE REGULATORY RISK REPORT RELATING TO ARTICLE 435 (1) CRR

		This disclosure report		Opportunity and risk report	
Article	**Subject**	**Section**	**Page**	**Section**	**Page**
Article 435 sentence 1 CRR	**Risk management objectives and policies for each individual risk category**	1.2, 1.3, 2.1, 5.1, 6.1, 6.7.1, 8.1, 9, 10, 11.1	5 to 12, 49, 54, 127, 148 to 149, 158, 159, 160	3.1	69 to 70
Article 435 sentence 1 letter a CRR	**Strategies and processes for the management of risk**	2.1.2	11 et seq.	3.3, 3.,4, 3.5.2	70 to 72
Article 435 sentence 1 letter b CRR	**Description of the structure and organization of the risk management function, including information on its authority and status or other appropriate arrangements**			3.5	71 to 77
Article 435 sentence 1 letter c CRR	**Scope and nature of risk measurement systems**			3.6	77 to 81
Article 435 sentence 1 letter d CRR	**Guidelines for mitigating and hedging risk as well as strategies and procedures for monitoring the ongoing effectiveness of the measures taken to mitigate and hedge risk**			3.6.5, 6.2.5, 8.6.7, 10.5.5, 14.4.4, 16.5., 17.3.2, 18.3.2, 20.2	79 to 80, 89 to 90, 109 to 111, 125 to 126, 133, 143 to 144, 147 to 148, 153, 154
Article 435 sentence 1 letter e CRR	**Adequacy declarations to be made by the Board of Managing Directors**	2.1.1	10		
Article 435 sentence 1 letter f CRR	**Risk statement to be made by the Board of Managing Directors**	2.1.3	11 to 12		

For the definitions of the individual risks, please see the relevant sections of the opportunity and risk report.

2.1.1 Adequacy declarations to be made by the Board of Managing Directors

(ARTICLE 435 (1) LETTER E CRR)

The Board of Managing Directors of DZ BANK considers that the risk management system in place is adequate with regard to the risk profile and risk strategy of the DZ BANK Group. DZ BANK continuously develops the risk management system and ensures that any identified need for improvement is addressed systematically without delay.

2.1.2 Strategies and processes for the management of risk in the context of stress tests

(ARTICLE 435 (1) LETTER A CRR)

The DZ BANK Group regularly conducts stress tests comprising scenarios for internal capital and risk management (internal capital adequacy assessment process, ICAAP), liquidity management (internal liquidity adequacy assessment process, ILAAP), and the planning for capital, funding, and the balance sheet. Stress tests are also carried out as part of bank recovery and resolution planning. In addition, the DZ BANK Group participates in stress tests organized by the supervisory authorities, such as those of the EBA and ECB.

The aforementioned ICAAP stress tests are broken down into the groupwide stress tests for adverse stress scenarios, reverse stress tests, risk-type-specific stress tests, ad hoc stress tests, and the stress tests at the level of the management units (DZ BANK AG and the material subsidiaries).
In-depth discussions on the results of the stress tests are held regularly by DZ BANK's various steering committees, providing vital management input. Potential management action may consist of both business planning and liquidity- and capital-related measures. The regular tests of whether the stress tests are appropriate are generally integrated by means of the various scenarios.

The aforementioned stress tests cover all of the relevant portfolios within the risk types that are examined. The DZ BANK Group publishes detailed information on the strategy and processes for managing the risks in accordance with article 435 (1) letter a CRR in the opportunity and risk report. This information can be found in the sections of the 2019 opportunity and risk report indicated below.

General information on stress testing
Section 3.6.3 'Stress tests' and section 3.6.6 'Risk reporting and risk manual'

Information on risk management in respect of liquidity adequacy
Section 6.2.5 'Risk management' in conjunction with section 6.2.2 'Business background and risk strategy'

Information on risk management in respect of capital adequacy
Section 7.4 'Stress tests for types of risk covered by capital' in conjunction with section 10.5.3 'Backtesting and stress tests' and 11.4 'Risk management' for the technical risk of a home savings and loan company.

The aforementioned information also applies to the performance of ad hoc stress tests and the stress tests carried out as part of bank recovery and resolution planning. The methods and processes for the ICAAP stress tests are also used for the stress tests organized by the supervisory authorities, taking account of the different requirements imposed by the supervisory authorities. Because of their public nature, and the possible implications for the Supervisory Review and Evaluation Process (SREP), the EBA/ECB stress tests are a particularly effective management instrument.

2.1.3 Risk statement to be made by the Board of Managing Directors
(ARTICLE 435 (1) LETTER F CRR)

The requirements regarding the concise risk statement to be made by the Board of Managing Directors pursuant to article 435 (1) letter f CRR are met by means of the information provided in the following aggregated sections of the 2019 opportunity and risk report. Furthermore, no material intra-group transactions were carried out in the DZ BANK Group in 2019.

Requirements in article 435 (1) letter f CRR	Reference to the opportunity and risk report
Risk profile of the DZ BANK Group	Formation of the risk profile based on the DZ BANK Group's business model (section 2.4.2 in conjunction with figure 5)
Risks in the DZ BANK Group's business model and disclosure of the risks	Features of managed risks (section 2.4.1, incl. figure 5 therein) Disclosure of the risks (sections 8 to 14)
Interaction between the risk profile and risk tolerance	Explanation of the risk strategy (section 3.3) and risk appetite (section 3.4) and the interaction between the risk profile and risk appetite in respect of liquidity adequacy (section 6) and in respect of capital adequacy (section 7, incl. Fig 16 therein for limits by risk type) Risk-related KPIs, incl. internal minimum targets (section 2.4.2)

Key figures and disclosures	Risk-related KPIs (section 2.4.2) Regulatory capital ratios (section 7.3.3) Leverage ratio (section 7.3.3) Liquidity adequacy (section 2.4.2 in conjunction with section 6) Capital adequacy (section 2.4.2 in conjunction with section 7, incl. figure 16 therein for limits by risk type)

2.2 Corporate governance arrangements

2.2.1 Number of executive or supervisory directorships held by members of the management body

(ARTICLE 435 (2) LETTERS A AND B CRR)

Fig. 3 to Fig. 5 provide an overview of the number of executive or supervisory directorships held by members of the Board of Managing Directors and Supervisory Board, counted in accordance with article 91 (3) and (4) CRD IV.

FIG. 3 – NUMBER OF EXECUTIVE OR SUPERVISORY DIRECTORSHIPS HELD BY MEMBERS OF THE BOARD OF MANAGING DIRECTORS

	Number of executive directorships		Number of supervisory directorships	
	Dec. 31, 2019[1]	Dec. 31, 2018	**Dec. 31, 2019[1]**	Dec. 31, 2018
Uwe Fröhlich Co-Chief Executive Officer (from January 1, 2019)	**1**	1	**1**	3
Dr. Cornelius Riese Co-Chief Executive Officer (from January 1, 2019)	**1**	1	**1**	1
Wolfgang Kirsch, Chief Executive Officer (until December 31, 2018)	-	1	-	2
Uwe Berghaus	1	1	2	2
Dr. Christian Brauckmann	1	1	2	2
Ulrike Brouzi (from September 1, 2018)	1	1	2	1
Wolfgang Köhler	1	1	2	2
Michael Speth	1	1	2	2
Thomas Ullrich	1	1	2	2

1 Disclosure of directorships pursuant to article 91 (3) to (5) of Directive 2013/36/EU.

FIG. 4 – NUMBER OF EXECUTIVE OR SUPERVISORY DIRECTORSHIPS HELD BY MEMBERS OF THE BOARD OF MANAGING DIRECTORS

	Number of executive directorships	Number of supervisory directorships
	2020[1]	
Uwe Fröhlich Co-Chief Executive Officer (from January 1, 2019)	1	1
Dr. Cornelius Riese Co-Chief Executive Officer (from January 1, 2019)	1	1
Uwe Berghaus	1	2
Dr. Christian Brauckmann	1	2
Ulrike Brouzi	1	2
Wolfgang Köhler	1	2
Michael Speth	1	2
Thomas Ullrich	1	2

1 Disclosure of directorships pursuant to article 91 (3) to (5) of Directive 2013/36/EU.

FIG. 5 – NUMBER[1] OF EXECUTIVE OR SUPERVISORY DIRECTORSHIPS HELD BY MEMBERS OF THE SUPERVISORY BOARD

	Number of executive directorships		Number of supervisory directorships	
	Dec. 31, 2019	Dec. 31, 2018	Dec. 31, 2019	Dec. 31, 2018
Henning Deneke-Jöhrens[2]	1	1	1	1
Heiner Beckmann	-	-	1	1
Ulrich Birkenstock[3]	-	-	1	1
Hermann Buerstedde	1	1	1	1
Martin Eul[4]	1	1	2	1
Uwe Goldstein	-	1	1	1
Timm Häberle	1	1	1	1
Dr. Peter Hanker	1	1	1	1
Marija Kolak	-	-	3	3
Andrea Hartmann	-	-	1	1
Pilar Herrero Lerma	-	-	1	1
Dr. Dierk Hirschel	-	-	2	2
Renate Mack	-	-	1	1
Rainer Mangels	-	-	1	1
Stephan Schack	1	1	1	1
Gregor Scheller	1	1	1	1
Uwe Spitzbarth	-	-	2	2
Sigrid Stenzel	-	-	1	1
Ingo Stockhausen	1	1	1	1
Dr. Wolfgang Thomasberger	1	1	1	1

1 As a significant institution, DZ BANK calculated the number of executive or supervisory directorships held by members of the Supervisory Board in 2018 and 2019 in accordance with clause 57 sentences 1 and 2 of EBA/GL/2016/11 in conjunction with article 91 (3) to (5) of Directive 2013/36/EU.
2 Chairman of the Supervisory Board since May 30, 2018.
3 Deputy Chairman since May 28, 2015.
4 Deputy Chairman/member of the Supervisory Board since May 30, 2018.

2.2.2 Recruitment policy for the selection of members of the management body and their actual knowledge, skills and expertise

(ARTICLE 435 (2) LETTER B CRR)

2.2.2.1 Supervisory Board

The Articles of Association of DZ BANK state that the Supervisory Board consists of 20 members, 9 of whom are elected by the Annual General Meeting and 10 of whom are elected by employees pursuant to the provisions of the 1976 German Codetermination Act (MitbestG). The Bundesverband der Deutschen Volksbanken und Raiffeisenbanken e. V., Berlin, (BVR) [National Association of German Cooperative Banks], has the right to delegate one member of its Board of Managing Directors to the Supervisory Board. Only members of the managing body of a cooperative enterprise that is a shareholder of DZ BANK may be elected as shareholder representatives on the Supervisory Board. The term of appointment of a Supervisory Board member is terminated prematurely

a) at the end of the next ordinary Annual General Meeting if the member no longer meets the above requirements, or
b) at the end of the ordinary Annual General Meeting in the calendar year in which the member reaches the age of 67.

In accordance with section 25d (11) sentence 2 no. 1 KWG, the Supervisory Board has adopted a process for preparing nominations for the election of members of the DZ BANK Supervisory Board that includes job descriptions and candidate profiles. This process is regularly put into practice when new Supervisory Board members are nominated.

In accordance with section 25d (11) sentence 2 nos. 3 and 4 KWG, a process has also been implemented by the Supervisory Board for regularly evaluating the Supervisory Board and its members. The self-evaluation conducted by the Supervisory Board in February 2020 found that the structure, size, composition, and performance of the Supervisory Board and the knowledge, skills, and experience of the individual Supervisory Board members and the Supervisory Board as a whole fulfilled the requirements laid down by law and in the Articles of Association. The Supervisory Board therefore confirmed the individual suitability of the individual members of the Supervisory Board and the collective suitability of the Supervisory Board as a whole. The Supervisory Board also signed off the profile of skills and expertise for the Supervisory Board.

Regardless of the period of time that they have been board members, DZ BANK also offers members of the Supervisory Board various training courses. These include internal training courses and a modular training program that is run by an external provider and tailored specifically to the needs of members of supervisory boards. The modular concept enables each member of the Supervisory Board to construct a program based on his or her own training needs that consists of various basic or specialist seminars relating to the work of a supervisory board. DZ BANK provides the necessary financial resources.

Mr. Uwe Goldstein is stepping down from the Supervisory Board in 2020. Mr. Sascha Monschauer has been nominated as his successor on the Supervisory Board. Elections for the employees' councils will also be held in the DZ BANK Group, which means that there are likely to be changes to the employee representatives on the Supervisory Board. However, the numbers and names are not yet known.

2.2.2.2 Board of Managing Directors

The Articles of Association of DZ BANK state that the Board of Managing Directors consists of at least 3 members. The number of members is determined by the Supervisory Board, which also appoints and removes members. The Supervisory Board can appoint up to 2 Chief Executive Officers and a Deputy Chief Executive Officer. As at the reporting date, the Board of Managing Directors of DZ BANK consisted of 8 full members of the Board of Managing Directors including two Chief Executive Officers. Detailed career histories of the members of the Board of Managing Directors are presented on the DZ BANK website.

Only persons who have the professional qualifications specified in section 25c KWG and comply with other regulatory and stock corporation law requirements can be appointed to the Board of Managing Directors. In accordance with the rules of procedure for the Supervisory Board, the Nominations Committee assists the Supervisory Board in determining suitable candidates for appointment to the Board of Managing Directors. For this purpose, the Supervisory Board has approved principles for the selection and appointment of managing directors, including job descriptions and candidate profiles as required by section 25d (11) sentence 2 nos. 1 and 2 KWG. When selecting suitable candidates, the Nominations Committee takes into account the balance and diversity of the knowledge, skills, and experience of all the members of the Board of Managing Directors.

In accordance with section 25d (11) sentence 2 nos. 3 and 4 KWG, a process has also been implemented for regularly evaluating the Board of Managing Directors as a whole. The evaluation conducted by the Supervisory Board in February 2020 found that the structure, size, composition, and performance of the Board of Managing Directors, and the knowledge, skills, and experience of the individual members and the Board of Managing Directors as a whole fulfilled the requirements laid down by law and in the Articles of Association. The Supervisory Board therefore confirmed the individual suitability of the individual members of the Board of Managing Directors and the collective suitability of the Board of Managing Directors as a whole.

Regardless of the period of time that they have been board members, DZ BANK also offers members of the Board of Managing Directors various training courses. For example, they can undertake training through DZ BANK's Corporate Campus for Management & Strategy. This is an interactive platform with the objective of facilitating the development of new perspectives and ideas at top-management level, thereby reinforcing the sustainability of the DZ BANK Group and the Volksbanken Raiffeisenbanken cooperative financial network.

2.2.3 Diversity policy for selecting members of the management body, its objectives, relevant targets and achievement of targets
(ARTICLE 435 (2) LETTER C CRR)

2.2.3.1 Supervisory Board
In accordance with section 25d (11) sentence 2 no. 2 KWG, the Supervisory Board has adopted a strategy aimed at promoting the nomination of women, who are currently under-represented on the DZ BANK Supervisory Board. In a resolution passed on November 29, 2018, the Supervisory Board modified this strategy and reset the target. Under this strategy, the Supervisory Board's objective is, by 2023, to stabilize the proportion of female members (who are currently under-represented) at the current level as a minimum (on the date of the adopted resolution and as at December 31, 2019: 5 members or 25 percent). This quota was met throughout 2019.

2.2.3.2 Board of Managing Directors
In a resolution passed on November 29, 2018, the Supervisory Board set a target of 12.5 percent for the proportion of women (who are currently under-represented) on the Board of Managing Directors of DZ BANK for the period up to October 31, 2023. This quota was met throughout 2019.

2.3 Disclosures regarding the formation of a risk committee and the number of times it has met
(ARTICLE 435 (2) LETTER D CRR)

The DZ BANK banking group has formed a separate Risk Committee, which met five times in 2019.

2.4 Information flow to the Supervisory Board
(ARTICLE 435 (2) LETTER E CRR)

The disclosures required pursuant to article 435 (2) letter e CRR are published in the 'Report of the Supervisory Board' (pages 380 to 385) in the 2019 Annual Report.

Pursuant to article 435 (2) letter e CRR, the information flow to the Board of Managing Directors is generally presented in the opportunity and risk report, section 3.5.1 (page 71) Governance structure, section 3.5.3 (page 72) Risk control, section 3.5.6 (page 73) Data protection, and section 3.6.6 (page 80) Risk reporting and risk manual. Within the opportunity and risk report, the information flow regarding capital adequacy is described in section 7.1 (pages 93 to 94) Strategy, organization and responsibility, regarding liquidity adequacy in section 6.3.2 (page 93) Organization, responsibility and reporting, regarding stress tests for types of risk covered by capital in sections 7.4.1 and 7.4.2 (pages 101 to 102), regarding credit risk in section 8.5 (page 104) Organization, responsibility and risk reporting, and chapter 8.6.5 (pages. 107 to 108) Management of credit exposure in trading transactions, regarding business risk in section 12.3 (page 130) Organization and risk management, regarding operational risks in section 14.3 (p. 132) Organization, responsibility and risk reporting, section 14.6.2 (page 134) Risk management, section 14.8.2 (pages 135 to 136) Risk management, as well as in section 14.9.2 (page 136) Risk management.

3 Scope of application

In the reporting, a disclosure is material if its omission or misstatement could change or influence the assessment or decision of a user who is relying on this disclosure to make economic decisions (use test).

The use test for regulatory risk reporting is enshrined in article 432 CRR, which sets out the information that does not have to be disclosed if it is not regarded as material pursuant to article 432 (1) CRR. However, this explicitly does not apply to the disclosures required pursuant to article 435 (2) letter c (diversity policy for members of the management body), article 437 (own funds), and article 450 (remuneration policy) CRR and the disclosures required pursuant to Part 8 Title III CRR that are not at the discretion of the individual institution. The disclosures in this risk report relate to all entities that are consolidated for regulatory purposes pursuant to article 432 (1) CRR. All entities consolidated for regulatory purposes are included in these disclosures to ensure that the key regulatory figures are consistent with the figures reported. The quantitative information presented (apart from the exceptions referred to above) relates to the significant entities in the DZ BANK banking group. The terms DZ BANK Group and DZ BANK financial conglomerate are synonymous and refer to all the management units together. The context dictates the choice of term. For example, in the case of disclosures relating to economic management, the focus is on the DZ BANK Group, whereas in the case of regulatory issues relating to all the management units in the DZ BANK Group, the appropriate term is DZ BANK financial conglomerate.

The DZ BANK financial conglomerate largely comprises the DZ BANK banking group and the R+V Versicherung AG insurance group. DZ BANK acts as the financial conglomerate's parent company.

As part of the DZ BANK financial conglomerate, the DZ BANK banking group and the R+V Versicherung AG insurance group are subject to the provisions of the German Supervision of Financial Conglomerates Act (FKAG). In conjunction with article 49 (1) CRR on the requirements for waiving capital deductions for long-term equity investments in insurance companies and the regulatory technical standards for the application of the calculation methods of capital adequacy requirements for financial conglomerates (Delegated Regulation (EU) No. 342/2014 dated January 21, 2014) published in April 2014, the FKAG governs the capital adequacy requirements for the DZ BANK financial conglomerate. The additional regulation of financial conglomerates applies to groups of financial institutions that operate to a large degree across both the banking and the insurance sectors and includes requirements for capital adequacy, for recording and monitoring material risk concentrations and transactions within the conglomerate, and for cross-sectoral risk management. In this regard, it has to meet the relevant requirements with respect to **financial conglomerates' solvency** and the establishment of an overarching risk management structure.

All subsidiaries in the financial conglomerate are integrated into the DZ BANK Group's centralized risk management system. All subsidiaries that are consolidated for regulatory purposes are included in this report, subject to the principle of materiality pursuant to article 432 (1) CRR. Materiality is determined on the basis of the materiality concept that is used in opportunity and risk reporting pursuant to commercial law. The risk types and risk capital requirements that are measured centrally in the DZ BANK Group, combined with the limits set for the risk and buffer capital amounts by the individual management units, are used to determine materiality.

3.1 Differences between the scope of consolidation for accounting purposes and the scope of consolidation for regulatory purposes

(ARTICLE 436 SENTENCE 1 LETTER B CRR)

The entities in which DZ BANK has a direct or indirect long-term equity investment are aggregated and consolidated both for financial reporting purposes and in order to satisfy regulatory requirements. The commercial-law provisions to be applied for consolidation in accordance with IFRS differ in some regards from the provisions applicable to consolidation for regulatory purposes, in terms of both the consolidation methods used and the entities to be included. The consolidation matrix below (Fig. 6) shows the entities that are significant for internal risk management purposes and the companies that are consolidated for regulatory purposes. It is limited to the consolidated subgroup parent companies and other entities. As required by EBA/GL/2016/11 (updated on July 6, 2017), the description in column f of the matrix classifies the entities according to the nature of their business and based on the definitions in article 4 CRR. The entities are also categorized according to the nature of their treatment for regulatory purposes (columns b to e) and the nature of their consolidation for accounting purposes (column a).

FIG. 6 – EU LI3 – DIFFERENCES IN THE SCOPES OF CONSOLIDATION (ENTITY BY ENTITY) – CONSOLIDATION MATRIX

	a	b	c		d	e	f
Name of the entity	**Method of accounting consolidation**	**Method of regulatory consolidation**					**Description of the entity**
		Full consolidation	**Proportional consolidation**	**Equity method**	**Neither consolidated nor deducted**	**Deducted**	
DZ BANK AG Deutsche Zentral-Genossenschaftsbank, Frankfurt am Main, (DZ BANK)	Full consolidation	●					Credit institution
AGIMA Aktiengesellschaft für Immobilien-Anlage, Frankfurt am Main	Full consolidation	●					Rental and leasing of land and buildings
Bausparkasse Schwäbisch Hall AG, Schwäbisch Hall, (BSH)	Full consolidation	●					Credit institution
Beteiligungsgesellschaft Westend 1 mbH & Co. KG, Frankfurt am Main	Full consolidation	●					Management of long-term equity investments
Deutsche WertpapierService Bank AG, Frankfurt am Main, (dwpbank)	Equity method		●				Credit institution
DVB Bank SE, Frankfurt am Main, (DVB)	Full consolidation	●					Credit institution
DZ BANK Capital Funding LLC I, Wilmington, USA	Full consolidation	●					Other activities linked to financial services
DZ BANK Capital Funding LLC II, Wilmington, USA	Full consolidation	●					Other activities linked to financial services
DZ BANK Capital Funding LLC III, Wilmington, USA	Full consolidation	●					Other activities linked to financial services
DZ BANK Capital Funding Trust I, Wilmington, USA	Full consolidation	●					Other activities linked to financial services
DZ BANK Capital Funding Trust II, Wilmington, USA	Full consolidation	●					Other activities linked to financial services
DZ BANK Capital Funding Trust III, Wilmington, USA	Full consolidation	●					Other activities linked to financial services
DZ BANK Perpetual Funding (Jersey) Limited, St. Helier, Jersey	Full consolidation	●					Other activities linked to financial services
DZ BANK Perpetual Funding Issuer (Jersey) Limited, St. Helier, Jersey	Full consolidation				●		Other activities linked to financial services

	a	b	c		d	e	f
Name of the entity	**Method of accounting consolidation**	**Method of regulatory consolidation**					**Description of the entity**
		Full consolidation	**Proportional consolidation**	**Equity method**	**Neither consolidated nor deducted**	**Deducted**	
DZ Beteiligungsgesellschaft mbH Nr. 18, Frankfurt am Main	Full consolidation	●					Management of long-term equity investments
DZ HYP AG, Hamburg/Münster, (DZ HYP)	Full consolidation	●					Credit institution
DZ PRIVATBANK (Schweiz) AG, Zurich, Switzerland	Full consolidation	●					Credit institution
DZ PRIVATBANK S.A., Strassen, Luxembourg (DZ PRIVATBANK)	Full consolidation	●					Credit institution
DZ Vierte Beteiligungs-gesellschaft mbH, Frankfurt am Main	Full consolidation	●					Management of long-term equity investments
GAF Active Life 1 Rendite-beteiligungs-GmbH & Co. KG, Nidderau	Not consolidated	●					Other financial services
GAF Active Life 2 Rendite-beteiligungs-GmbH & Co. KG, Nidderau	Not consolidated	●					Other financial services
Immobilien-Gesellschaft 'DG Bank-Turm, Frankfurt am Main, Westend' mbH & Co. KG des genossenschaft-lichen Verbundes, Frankfurt am Main	Full consolidation	●					Rental and leasing of land and buildings
IMPETUS Bietergesellschaft mbH, Düsseldorf	Full consolidation	●					Management of long-term equity investments
IPConcept (Luxemburg) S.A., Strassen, Luxembourg	Full consolidation	●					Other financial services
IPConcept (Schweiz) AG, Zurich, Switzerland	Full consolidation	●					Other financial services
KBIH Beteiligungsgesellschaft für Industrie und Handel mbH, Frankfurt am Main	Full consolidation	●					Management of long-term equity investments
Phoenix Beteiligungs-gesellschaft mbH, Düsseldorf	Full consolidation	●					Management of long-term equity investments
R+V Versicherung AG, Wiesbaden, (R+V)	Full consolidation			●			Insurance company
ReiseBank Aktien-gesellschaft, Frankfurt am Main	Full consolidation	●					Credit institution
TeamBank AG Nürnberg, Nuremberg, (TeamBank)	Full consolidation	●					Credit institution
Union Asset Management Holding AG, Frankfurt am Main, (UMH)	Full consolidation	●					Financial services
VR Equitypartner GmbH, Frankfurt am Main	Full consolidation	●					Management of long-term equity investments

	a	b	c		d	e	f
Name of the entity	Method of accounting consolidation	Method of regulatory consolidation					Description of the entity
		Full consolidation	Proportional consolidation	Equity method	Neither consolidated nor deducted	Deducted	
VR GbR, Frankfurt am Main	Full consolidation	●					Management of long-term equity investments
VR Payment GmbH, Frankfurt am Main	Full consolidation	●					Other activities linked to financial services
VR Smart Finanz AG, Eschborn (VR Smart Finanz)	Full consolidation	●					Financial services

The significant entities are consolidated for both regulatory and commercial-law purposes. However, insurance companies and companies not in the financial sector are not required to be consolidated in the banking group for regulatory purposes. In this context, R+V is fully consolidated for commercial-law purposes but is not directly subject to banking regulation. Instead, it is factored into the procedure used to determine the DZ BANK banking group's capital requirements and disclosures using the risk-weighted carrying amount of DZ BANK's investment in R+V. Furthermore, R+V is included in the cross-sectoral surveillance by the banking supervisory authority of the DZ BANK financial conglomerate at consolidated level (based on the consolidation of the entire R+V Versicherung AG insurance group) in the legal framework applicable to financial conglomerates.

In both cases, the scope of consolidation includes a large number of other entities that are not shown because they are less material.

The LCR is based on the DZ BANK banking group's scope of consolidation pursuant to article 11 (3) CRR, which differs from the scope of consolidation used to determine regulatory own funds. The difference is that the provisions of article 18 (2) to (8) CRR are not used to determine the consolidated liquidity position pursuant to article 18 (1) CRR. Accordingly, certain types of entity (such as providers of related services and asset management companies), entities consolidated on a voluntary/pro-rata basis, and entities that are not subsidiaries are not consolidated for liquidity purposes. In addition, requests to waive consolidation of certain subsidiaries for the purposes of meeting liquidity requirements were granted by BaFin in 2014 and the ECB in 2016. This means that the regulators have agreed that subsidiaries that can be disregarded in the banking regulators' liquidity risk targets for the DZ BANK banking group do not have to be consolidated for liquidity purposes. This ruling applies specifically to entities that are almost entirely funded by equity or are funded to a large degree from within the group.

Including the entities listed in Fig. 6, a total of 66 entities were **fully consolidated for regulatory purposes** pursuant to articles 11 to 20 and article 22 CRR as at December 31, 2019 (September 30, 2019: 68). They can be broken down into the following types:

- 10 banks (September 30, 2019: 15),
- 4 financial institutions in the form of other credit institutions pursuant to KWG (September 30, 2019: 0),
- 8 financial institutions that are asset management companies (September 30, 2019: 8),
- 28 financial institutions considered to be finance companies under KWG and 5 financial institutions categorized as other financial institutions (September 30, 2019: 34),
- 3 investment firms (September 30, 2019: 4),
- 2 payment institutions (September 30, 2019: 1), and
- 6 ancillary services undertaking (September 30, 2019: 6).

As the characteristics of the individual types of entity were modified as at the reporting date, the disclosures on the banks and financial institutions in this report are not directly comparable with those in the report as at September 30, 2019.

In addition, 3 banks (September 30, 2019: 3) and 1 asset management company (September 30, 2019: 1) were proportionally consolidated. Furthermore, 1 ancillary services undertakingwas consolidated on a voluntary basis as at the reporting date (September 30, 2019: 1).

DZ BANK is either directly or indirectly the major shareholder in the long-term equity investments consolidated for regulatory purposes. Most of the companies are based either in Germany or elsewhere in the European Union. On the reporting date there were no **restrictions on the transfer of cash or own funds** as defined in article 436 sentence 1 letter c CRR within the DZ BANK banking group imposed by third-party individuals, private or public-sector companies, supranational organizations, or sovereign states.

The **waiver** according to which – provided certain conditions are met – the regulatory supervision of individual Germany-based institutions within a banking group may be replaced by supervision of the entire banking group, is used in the DZ BANK banking group for DZ HYP (group waiver pursuant to article 7 (1) CRR).

Deutsche Genossenschafts-Hypothekenbank AG, Hamburg (DG HYP), which was the predecessor institution of DZ HYP, reported this to the banking supervisory authority in November 2012 together with evidence that the application criteria had been met. In the context of the merger of the former WL BANK with DG HYP, the ECB was notified that the waiver would continue to be used for DZ HYP. The prerequisites for this waiver continue to be met following this merger (article 436 letter e CRR).

The **waiver** can only be used if the subordinate entity is closely integrated into the group structure. This is particularly assumed to be the case if the parent company is able to exercise control over the subordinated entity because it holds the majority of its voting rights and it has issued an unrestricted letter of comfort in relation to the subordinated entity. Furthermore, the regulatory management of the subordinated institution by the parent company must meet ECB requirements. The entity that is the subject of the waiver must be included in the strategy, risk-bearing capacity, and risk management processes of the parent institution. The parent company must also be able to issue direct instructions within the group in order to ensure the integration of the subordinated entity. DZ HYP is fully integrated into the internal processes and risk management of DZ BANK as the parent company of the banking group. In addition to legal, organizational, and structural integration, this particularly applies to the structure of its decision-making bodies, ICAAP, the strategic planning process, business and risk strategies, and the reporting and disclosure system. There are no current or foreseeable legal or actual material obstacles to the immediate transfer of own funds from DZ BANK to DZ HYP or to the repayment of liabilities to DZ HYP by DZ BANK.
Fig. 7 shows how the entities included in the DZ BANK banking group are integrated into the quantitative regulatory disclosures pursuant to article 432 (1) CRR. The effects of intragroup consolidation have been taken into account.

As a rule, all subsidiaries that are consolidated for regulatory purposes are integrated into the quantitative disclosures where the risk is relevant to the subsidiary in question. This information is shown in Fig. 7 below.

FIG. 7 – INCLUSION OF ENTITIES IN THE DZ BANK BANKING GROUP IN QUANTITATIVE REGULATORY DISCLOSURES

Entity	Liquidity ratios	Own funds	Capital requirements	Capital ratios	Indicators of global systemic importance	Loss allowances for loans and advances	Standardized Approach exposure	IRBA[1] exposure	Collateralized lending volume	Counterparty credit risk	Securitizations	Market risk (SA)	Market risk (IMA)	Interest-rate risk in the banking book	Risk on long-term equity investments not included in the trading book	Countercyclical capital buffer	Leverage ratio	Asset encumbrance	Remuneration policy	Non-performing loans
DZ BANK	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
BSH	•	•	•	•	•	•	•	•	•	•		•		•	•	•	•	•	•	•
DZ HYP	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•	•	•	•
DVB	•	•	•	•	•	•	•	•	•	•		•		•	•	•	•	•	•	•
DZ PRIVATBANK	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•	•	•	•
TeamBank	•	•	•	•	•	•	•	•				•		•	•	•	•	•	•	•
UMH		•	•	•	•	•	•			•		•		•	•	•	•	•		•
VR Smart Finanz AG	•	•	•	•	•	•	•		•	•		•		•	•	•	•	•		•
Other companies of relevance for regulatory purposes	•	•	•	•	•	•	•	•				•				•	•	•	•	•

1 IRBA – internal ratings-based approach.
2 Interest-rate risk results from reviewing the funds held in own-account investments.

3.2 Differences in the basis of consolidation for accounting and regulatory purposes

(ARTICLE 436 SENTENCE 1 LETTER B CRR)

Fig. 8 compares the carrying amounts – as published in the DZ BANK Group's consolidated financial statements on the basis of the scope of consolidation for accounting purposes (column a) – with the carrying amounts resulting from application of the scope of consolidation for regulatory purposes (column b). Furthermore, the amounts stated in the consolidated financial statements and applied to the scope of consolidation for regulatory purposes are broken down by the risk categories described in Part 3 Title II CRR (columns c to g). The breakdown for columns c to f in the following table EU LI1 thus follows the frameworks for

- credit risk (column c),
- counterparty credit risk (column d),
- securitizations (column e), and
- market risk (column f).

Column g shows amounts that are subject to direct deduction or are not subject to capital requirements. Please note that the amounts in columns c to g do not necessarily match the carrying amounts disclosed in column b. This is due to the fact that, in the context of capital requirements, individual asset and liability items on the balance sheet are subject to more than one of the risk types described in Fig. 10. For reasons of consistency, securities financing transactions are assigned to the credit risk category. Consequently, securities classed as investments subject to sale and repurchase agreements are recognized twice in the credit risk category because not only the credit risk but also an existing counterparty risk is recognized for the underlying securities.

The equity components are reconciled separately, so they are not shown in Fig. 8. There is therefore no reconciliation of total assets to total equity and liabilities. For the reconciliation of the equity reported on the balance sheet with the regulatory own funds of the DZ BANK banking group, please see Fig. 16.

FIG. 8 – EU LI1 – DIFFERENCES BETWEEN ACCOUNTING AND REGULATORY SCOPES OF CONSOLIDATION AND RECONCILIATION OF FINANCIAL STATEMENTS CATEGORIES TO REGULATORY RISK CATEGORIES AS AT DECEMBER 31, 2019

	a	b	c	d	e	f	g
			Carrying amounts of items				
€ million	Carrying amounts as reported in published consolidated financial statements	Carrying amounts under scope of regulatory consolidation	Subject to the credit risk framework	Subject to the CCR framework	Subject to the securitization framework	Subject to the market risk framework	Subject to deduction from capital or not subject to capital requirements
Assets							
Cash and cash equivalents	52,545	52,674	52,674	0	0	375	0
Loans and advances to banks	97,544	97,330	109,630	0	0	205	0
Loans and advances to customers	186,244	188,947	187,373	0	1,420	9,809	0
Hedging instruments (positive fair values)	201	201	3	246	0	136	0
Financial assets held for trading	44,781	43,949	9,973	19,503	26	14,447	0
Investments	56,927	64,200	60,199	0	3,121	2,374	0
Investments held by insurance companies	113,549	0	0	0	0	0	0
Property, plant and equipment, investment property, and right-of-use assets	1,632	1,639	1,633	0	0	41	0
Income tax assets	1,018	654	1,178	0	0	10	112
Other assets	5,444	2,213	1,829	0	0	87	499
Loss allowances	-2,277	-2,312	-2,312	0	0	-500	0
Non-current assets and disposal groups classified as held for sale	516	376	375	0	0	347	0
Fair value changes of the hedged items in portfolio hedges of interest-rate risk	1,275	1,275	1,275	0	0	0	0
Total assets	**559,379**	**451,146**	**423,830**	**9,749**	**4,567**	**27,332**	**611**
Liabilities							
Deposits from banks	141,121	141,284	5,008	0	0	323	143,943
Deposits from customers	131,516	135,977	0	0	0	2,843	135,321
Debt certificates issued including bonds	85,123	85,324	0	0	0	880	85,312
Hedging instruments (negative fair values)	1,306	1,306	0	1,308	0	12	0
Financial liabilities held for trading	51,762	51,780	0	18,868	1	166	32,956
Provisions	3,835	3,894	8	0	0	5	3,883
Insurance liabilities	104,346	0	0	0	0	0	0
Income tax liabilities	1,069	236	0	0	0	5	336
Other liabilities	9,173	2,457	0	0	0	89	2,594
Subordinated capital	2,187	2,208	0	0	0	234	2,251
Liabilities included in disposal groups classified as held for sale	1	1	0	0	0	1	0
Fair value changes of the hedged items in portfolio hedges of interest-rate risk	144	144	0	0	0	0	143
Total liabilities	**531,583**	**424,631**	**5,016**	**20,176**	**1**	**4,559**	**406,739**

The difference of €108,233 million between the total assets in columns a and b is mainly the result of the deconsolidation of R+V (€121,973 million) and the recognition of this entity in the scope of consolidation for regulatory purposes at its carrying amount of €6,829 million calculated using the equity method. There are also differences totaling €1,605 million in the scopes of consolidation of the subgroups, mainly BSH. The discrepancies between the scopes of consolidation also give rise to differences of €5,306 million in the consolidation of intragroup transactions.

FIG. 9 – EU LI1 – DIFFERENCES BETWEEN ACCOUNTING AND REGULATORY SCOPES OF CONSOLIDATION AND RECONCILIATION OF FINANCIAL STATEMENTS CATEGORIES TO REGULATORY RISK CATEGORIES AS AT DECEMBER 31, 2018

	a	b	c	d	e	f	g
			Carrying amounts of items				
€ million	Carrying amounts as reported in published consolidated financial statements	Carrying amounts under scope of regulatory consolidation	Subject to the credit risk framework	Subject to the CCR framework	Subject to the securitization framework	Subject to the market risk framework	Subject to deduction from capital or not subject to capital requirements
Assets							
Cash and cash equivalents	51,845	52,010	52,010	-	-	287	-
Loans and advances to banks	91,627	91,496	91,496	-	-	564	-
Loans and advances to customers	174,438	179,019	177,474	-	1,545	14,600	-
Loss allowances	883	883	-	883	-	5	-
Derivatives used for hedging (positive fair values)	37,942	37,834	9,594	15,650	28	12,732	-
Financial assets held for trading	48,262	54,301	57,734	-	2,212	2,134	-
Investments	100,840	-	-	-	-	-	-
Investments held by insurance companies	1,423	1,384	1,384	-	-	29	-
Property, plant and equipment, and investment property	1,457	1,102	1,094	-	-	6	8
Income tax assets	4,655	1,775	1,252	-	-	170	524
Other assets	-2,305	-2,375	-2,370	-	-6	-607	-
Non-current assets and disposal groups classified as held for sale	7,133	7,332	7,332	-	-	5,288	-
Fair value changes of the hedged items in portfolio hedges of interest-rate risk	533	539	539	-	-	6	-
Total assets	**518,733**	**425,300**	**397,539**	**16,533**	**3,779**	**35,214**	**532**
Liabilities							
Deposits from banks	142,486	142,783	3,470	-	-	293	139,021
Deposits from customers	132,548	138,533	-	-	-	5,194	133,339
Debt certificates issued including bonds	63,909	64,282	-	-	-	3,121	61,161
Derivatives used for hedging (negative fair values)	2,516	2,524	-	847	-	10	1,677
Financial liabilities held for trading	44,979	44,984	-	15,541	2	381	29,441
Provisions	3,380	3,451	6	-	-	367	3,083
Insurance liabilities	93,252	-	-	-	-	-	-
Income tax liabilities	920	401	-	-	-	8	392
Other liabilities	7,919	2,146	-	-	-	94	2,053
Subordinated capital	2,897	2,918	-	-	-	-2	2,920
Liabilities included in disposal groups classified as held for sale	281	604	-	-	-	18	586
Fair value changes of the hedged items in portfolio hedges of interest-rate risk	134	134	-	-	-	-	134
Total liabilities	**495,221**	**402,760**	**3,476**	**16,388**	**2**	**9,484**	**373,807**

1 Amount restated.

3.3 Differences between the carrying amounts in the consolidated financial statements and the exposures recognized for regulatory purposes

(ARTICLE 436 SENTENCE 1 LETTER B CRR)

Fig. 10 shows the differences between the carrying amounts in the consolidated financial statements and the exposures used for regulatory purposes, unless already included in Fig. 8. To provide a comparison, Fig. 11 shows the same differences as at December 31, 2018.

FIG. 10 – EU LI2 – MAIN SOURCES OF DIFFERENCES BETWEEN REGULATORY EXPOSURE AMOUNTS AND CARRYING AMOUNTS IN FINANCIAL STATEMENTS AS AT DECEMBER 31, 2019

		a	b	c	d	e
		Total	Items subject to			
€ million			Credit risk framework	CCR framework	Securitization framework	Market risk framework
1	Carrying amount of assets under the scope of regulatory consolidation (as per template EU LI1)	449,868	423,830	19,749	4,567	27,332
2	Carrying amount of liabilities under the scope of regulatory consolidation (as per template EU LI1)	26,891	5,016	20,176	1	4,559
3	Total net amount under the regulatory scope of consolidation	422,977	418,814	-427	4,566	22,773
4	Off-balance-sheet amounts	65,684	26,612	0	1,952	2
5	Adjustment due to use of conversion factors (off-balance-sheet transactions)	0	37,118	0	0	0
6	Adjustment for multiple recognition (SFTs[1], market risk)	16,999	0	0	0	0
7	Adjustment of exposures in the internal model (market risk)	-14,456	0	0	0	-14,456
8	Differences in valuations	12,923	4,470	14,181	0	-5,728
9	Differences due to different netting rules, other than those already included in row 2	-1,711	-7,734	6,540	0	-517
10	Differences due to consideration of provisions	2,440	2,439	0	1	0
11	Adjustment due to foreign currency exposures	92	0	0	0	92
12	Differences in brokerage transactions	611	0	611	0	0
13	Other reconciliation items	2,131	-	-	-	-
14	**Exposure amounts considered for regulatory purposes**	**507,692**	**479,524**	**19,462**	**6,659**	**2,046**

1 SFTs = securities financing transactions.

FIG. 11 – EU LI2 – MAIN SOURCES OF DIFFERENCES BETWEEN REGULATORY EXPOSURE AMOUNTS AND CARRYING AMOUNTS IN FINANCIAL STATEMENTS AS AT DECEMBER 31, 2018

		a	b	c	d	e
		Total	Items subject to			
€ million			Credit risk framework	CCR framework	Securitization framework	Market risk framework
1	Carrying amount of assets under the scope of regulatory consolidation (as per template EU LI1)	424,772	397,543	16,533	3,779	35,214
2	Carrying amount of liabilities under the scope of regulatory consolidation (as per template EU LI1)	28,953	3,476	16,388	2	9,484
3	Total net amount under the regulatory scope of consolidation	395,819	394,068	145	3,777	25,730
4	Off-balance-sheet amounts	68,530	29,641	-	2,360	130
5	Adjustment due to use of conversion factors (off-balance-sheet transactions)	-	36,398	-	-	-
6	Adjustment for multiple recognition (SFTs[1], market risk)	27,901	-	-	-	-
7	Adjustment of exposures in the internal model (market risk)	-12,561	-	-	-	-12,561
8	Differences in valuations	893	968	17,013	5	-17,094
9	Differences due to different netting rules, other than those already included in row 2	-5,298	-9,426	-2,921	-	7,049
10	Differences due to consideration of provisions	2,275	2,273	-	2	-
11	Adjustment due to foreign currency exposures	74	1	-	-	73
12	Other reconciliation items	1,845	-	-	-	-
13	**Exposure amounts considered for regulatory purposes**	**479,480**	**454,308**	**16,222**	**6,180**	**2,770**

1 SFTs = securities financing transactions.

Rows 1 and 2 are attributable to the carrying amounts of the assets and liabilities under the regulatory scope of consolidation and are transferred from Fig. 8 to Fig. 10 without the exposures that are subject to direct deduction or are not subject to capital requirements (Fig. 8, column g).

Row 3 therefore shows the total net amount for these items under the regulatory scope of consolidation. In respect of the off-balance-sheet amounts (row 4), please note that the off-balance-sheet exposures in column a are recognized before application of the credit conversion factors (CCFs), whereas the CCFs have been applied in columns b to e. Consequently, an adjustment to the reconciliation is necessary in row 5 because the exposures recognized for regulatory purposes include off-balance-sheet exposures to which CCFs have not been applied.

To ensure consistency between column a and columns b to e, the carrying amounts of exposures are shown in column a that are assigned to multiple risk categories (row 6), for example credit risk exposures denominated in a foreign currency. Further differences between the regulatory and accounting amounts arise due to the disclosure of market risk exposures in the internal model in Fig. 8, because these exposures are not included in the regulatory basis of assessment for the market risk category. The related adjustment is made in row 7.

The reconciliation of the carrying amounts under the regulatory scope of consolidation to the total of the regulatory bases of assessment is continued with the determination of the valuation differences. Among other items, the add-on for derivative exposures is included in row 8. After the total net amount has been calculated in row 3 of Fig. 10, it has to be adjusted to reflect the actual regulatory netting (row 9). In the liquidation netting of derivatives, for example, a netting rule is used that differs from the simple calculation of the net amount in row 3.

Another difference affects the recognition of loan loss allowances and provisions in the IRB approach that are not part of the regulatory basis of assessment and are adjusted through row 10. Row 11 contains adjustments resulting, in particular, from foreign currency exposures for which different exchange rates are used in the accounts and for regulatory purposes. Brokerage transactions in the context of derivatives business, which are not accounted for pursuant to commercial law, are disclosed (row 12). The other reconciliation items in row 13 include regulatory risk adjustments to exposures in internal models.

4 Capital adequacy

All material risks affecting capital resources are managed on the basis of groupwide risk capital management. The aim of risk capital management is to ensure the availability of capital resources that are commensurate with the risks assumed (capital adequacy).

4.1 Economic capital adequacy

(ARTICLE 438 SENTENCE 1 LETTER A CRR)

Information on the management of economic capital and on capital adequacy is disclosed in section 7.2 'Economic perspective' (pages 94 to 97) of the opportunity and risk report. Economic capital management is based on internal risk measurement methods that take into account all types of risk that are material from a capital adequacy perspective. The risk capital requirement is determined by aggregating the relevant risk types of all management units. The methods selected serve to meet the statutory requirements for a groupwide integrated risk capital management system.

In the **risk-bearing-capacity analysis**, the risk capital requirement (including capital buffer) is compared with the available internal capital in order to determine the economic capital adequacy. The Board of Managing Directors determines a limit for the risk capital requirement (including capital buffer) for a particular year on the basis of the available internal capital. This limit is then broken down by risk type and entity for operational management purposes. If necessary, the limits can be adjusted during the year, e.g. if economic conditions change.

Available internal capital comprises equity and hidden reserves. It corresponds to the own funds, as defined using economic criteria, that are available to cover unexpected losses. It is reviewed on a quarterly basis.

4.2 Regulatory capital adequacy

Regulatory capital adequacy is defined as the holding of sufficient capital to cover the risks assumed by the business. At DZ BANK, the **Group Finance** division is responsible for monitoring regulatory capital adequacy. Regular monitoring is designed to ensure that the applicable minimum regulatory requirements for solvency are met at all times. Monitoring takes place monthly for the DZ BANK financial conglomerate, the DZ BANK banking group and DZ BANK, and at least quarterly for the R+V Versicherung AG insurance group. The Board of Managing Directors and the supervisory authority are notified of the results within the monthly reports on capital management.

4.2.1 Own funds

(ARTICLE 437 CRR)

The regulatory own funds of the DZ BANK banking group are derived from the provisions of CRR II/CRD V. The new rules have had to be applied to individual classes and components of own funds since they came into force on June 27, 2019. Pursuant to the provisions of CRR II (article 25 et seq.), regulatory eligible own funds consist of common equity Tier 1 capital (CET1), additional Tier 1 capital (AT1), and Tier 2 capital (T2). They are based on the carrying amounts recognized under IFRS and essentially comprise the equity reported on the balance sheet, hybrid capital instruments, and subordinated liabilities. In accordance with the applicable rules, Tier 2 capital has to be amortized on a day-by-day basis in the last five years before the maturity date.

Fig. 12 shows the DZ BANK banking group's own funds as defined by article 437 (1) letters d and e CRR in conjunction with Commission Implementing Regulation (EU) No. 1423/2013 dated December 20, 2013. These disclosures relate to all the entities consolidated for regulatory purposes in the DZ BANK banking group.

The regulatory **own funds** of the **DZ BANK banking group** (Fig. 12, row 59) as at December 31, 2019 determined in accordance with the currently applicable CRR provisions amounted to a total of €25,689 million (September 30, 2019: €23,384 million). The amounts and ratios given here for own funds are slightly different to those in the opportunity and risk report due to a subsequent correction to the information on own funds in the COREP report. The current composition of regulatory own funds is shown below.

FIG. 12 – STRUCTURE OF OWN FUNDS AS AT DECEMBER 31, 2019
(ARTICLE 437 (1) LETTERS D AND E CRR IN CONJUNCTION WITH ANNEX IV OF IMPLEMENTING REGULATION (EU) NO. 1423/2013)

		(A)	(A)	(B)
		Amount on disclosure reporting date	Amount on disclosure reporting date	Reference to article of Regulation (EU) No. 575/2013
€ million		**Dec. 31, 2019**	Sep. 30, 2019	
Common equity Tier 1 (CET1): instruments and reserves				
1	Capital instruments and related share premium accounts	10,478	10,478	26 (1), 27, 28, 29
1a	of which: financial instrument type 1	-	-	EBA list in accordance with article 26 (3)
1b	of which: financial instrument type 2	-	-	
1c	of which: financial instrument type 3	-	-	
2	Retained earnings	6,810	6,557	26 (1) (c)
3	Accumulated other comprehensive income (and other reserves)	3,147	3,216	26 (1)
3a	Fund for general banking risks	-	-	26 (1) (f)
4	Amount of qualifying items referred to in article 484 (3) CRR and the related share premium accounts subject to phase out from CET1	-	-	486 (2)
5	Non-controlling interests (amount allowed in consolidated CET1)	31	30	84
5a	Independently reviewed interim profits net of any foreseeable charge or dividend	1,362	517	26 (2)
5b	Transitional adjustments due to additional non-controlling interests	114	109	
6	**Common equity Tier 1 (CET1) before regulatory adjustments**	**21,942**	20,907	Sum of rows 1 to 5a
Common equity Tier 1 (CET1): regulatory adjustments				
7	Additional value adjustments (negative amount)	-274	-328	34, 105
8	Intangible assets (net of related tax liability) (negative amount)	-518	-508	36 (1) (b), 37
9	Empty set in the EU	●	●	
10	Deferred tax assets that rely on future profitability, excluding those arising from temporary differences (net of related tax liability where the conditions in article 38 (3) CRR are met) (negative amount)	-7	-5	36 (1) (c), 38
11	Fair value reserves related to gains and losses on cash flow hedges	0	0	33 (1) (a)
12	Negative amounts resulting from the calculation of expected loss amounts	-213	-200	36 (1) (d), 40, 159
13	Any increase in equity arising from securitized assets (negative amount)	-	-	32 (1)
14	Gains or losses on liabilities recognized at fair value resulting from changes in own credit standing	52	160	32 (1) (b)
14a	Fair value gains and losses arising from the institution's own credit risk related to derivative liabilities	-11	-24	
15	Defined benefit pension fund assets (negative amount)	-2	0	36 (1) (e), 41
16	Direct and indirect holdings by an institution of own CET1 capital instruments (negative amount)	-	-	36 (1) (f), 42
17	Direct, indirect and synthetic holdings by the institution of the CET1 instruments of financial-sector entities where those entities have reciprocal cross-holdings with the institution designed to artificially inflate the institution's own funds (negative amount)	-2	-2	36 (1) (g), 44
18	Direct, indirect and synthetic holdings by the institution of CET1 instruments of financial-sector entities where the institution does not have a significant investment in those entities (above 10% and net of eligible short positions) (negative amount)	-	-	36 (1) (h), 43, 45, 46, 49 (2) and (3), 79
19	Direct, indirect and synthetic holdings by the institution of CET1 instruments of financial-sector entities where the institution has a significant investment in those entities (above 10% and net of eligible short positions) (negative amount)	-	-	36 (1) (i), 43, 45, 47, 48 (1) (b), 49 (1) to (3), 79
20	Empty set in the EU	●	●	
20a	Exposure arising from the following items qualifying for a risk weight of 1,250%, where the institution opts for the deduction alternative	-227	-250	36 (1) (k)
20b	of which: qualifying holdings outside the financial sector (negative amount)	-	-	36 (1) (k) (i), 89 to 91

€ million	(A) Amount on disclosure reporting date Dec. 31, 2019	(A) Amount on disclosure reporting date Sep. 30, 2019	(B) Reference to article of Regulation (EU) No. 575/2013
20c of which: securitization exposures (negative amount)	-227	-250	36 (1) (k) (ii), 243 (1) (b), 244 (1) (b), 258
20d of which: free deliveries (negative amount)	-	-	36 (1) (k) (iii), 379 (3)
21 Deferred tax assets that rely on future profitability, arising from temporary differences (amount above 10% threshold, net of related tax liability where the conditions in article 38 (3) CRR are met) (negative amount)	-	-	36 (1) (c), 38, 48 (1) (a)
22 Amount exceeding the 15% threshold (negative amount)	-	-	48 (1)
23 of which: direct and indirect holdings by the institution of CET1 instruments of financial-sector entities where the institution has a significant investment in those entities	-	-	36 (1) (i), 48 (1) (b)
24 Empty set in the EU	●	●	
25 of which: deferred tax assets that rely on future profitability, arising from temporary differences	-	-	36 (1) (c), 38, 48 (1) (a)
25a Losses for the current financial year (negative amount)	-	-	36 (1) (a)
25b Foreseeable tax charges relating to CET1 items (negative amount)	-	-	36 (1) (l)
27 Qualifying AT1 deductions that exceed the AT1 capital of the institution (negative amount)	-	-	36 (1) (j)
27a Other capital elements or deductions from common equity Tier 1	-36	–36	
28 Total regulatory adjustments to common equity Tier 1 (CET1)	**-1,238**	-1,193	Sum of rows 7 to 20a, 21, 22 and 25a to 27
29 Common equity Tier 1 (CET1)	**20,705**	19,714	Row 6 minus row 28
Additional Tier 1 capital (AT1): instruments			
30 Capital instruments and related share premium accounts	2,150	750	51, 52
31 of which: classified as equity under applicable accounting standards	2,150	750	
32 of which: classified as liabilities under applicable accounting standards	-	-	
33 Amount of qualifying items referred to in article 484 (4) CRR and the related share premium accounts subject to phase out from AT1	739	739	486 (3)
34 Qualifying Tier 1 capital instruments included in consolidated AT1 capital (including non-controlling interests not included in row 5) issued by subsidiaries and held by third parties	24	23	85, 86
35 of which: instruments issued by subsidiaries subject to phase out	-	-	486 (3)
36 Additional Tier 1 capital (AT1) before regulatory adjustments	**2,913**	1,512	Sum of rows 30, 33 and 34
Additional Tier 1 capital (AT1): regulatory adjustments			
37 Direct and indirect holdings by an institution of its own AT1 instruments (negative amount)	-65	-65	52 (1) (b), 56 (a), 57
38 Direct, indirect and synthetic holdings by the institution of the AT1 instruments of financial-sector entities where those entities have reciprocal cross-holdings with the institution designed to artificially inflate the institution's own funds (negative amount)	-	-	56 (b), 58
39 Direct, indirect and synthetic holdings by the institution of AT1 instruments of financial-sector entities where the institution does not have a significant investment in those entities (above 10% and net of eligible short positions) (negative amount)	-	-	56 (c), 59, 60, 79
40 Direct, indirect and synthetic holdings by the institution of AT1 instruments of financial-sector entities where the institution has a significant investment in those entities (less than 10% and net of eligible short positions) (negative amount)	-	-	56 (d), 59, 79
41 Empty set in the EU[1]	-	-	
42 Qualifying T2 deductions that exceed the T2 capital of the institution (negative amount)	-	-	56 (e)
43 Total regulatory adjustments to additional Tier 1 capital (AT1)	**-65**	–65	Sum of rows 37 to 42
44 Additional Tier 1 capital (AT1)	**2,848**	1,447	Row 36 minus row 43
45 Tier 1 capital (T1 = CET1 + AT1)	**23,553**	21,161	Sum of rows 29 and 44
Tier 2 capital (T2): instruments and reserves			
46 Capital instruments and related share premium accounts	1,137	1,205	62, 63
47 Amount of qualifying items referred to in article 484 (5) CRR and the related share premium accounts subject to phase out from T2	671	671	486 (4)

€ million	(A) Amount on disclosure reporting date Dec. 31, 2019	(A) Amount on disclosure reporting date Sep. 30, 2019	(B) Reference to article of Regulation (EU) No. 575/2013
48 Qualifying own funds instruments in consolidated T2 capital (including non-controlling interests and AT1 instruments not included in rows 5 or 34) issued by subsidiaries and held by third parties	44	59	87, 88
49 of which: instruments issued by subsidiaries subject to phase out	-	-	486 (4)
50 Credit risk adjustments	337	340	62 (c) and (d)
51 Tier 2 capital (T2) before regulatory adjustments	**2,189**	**2,275**	
Tier 2 capital (T2): regulatory adjustments			
52 Direct and indirect holdings by an institution of its own T2 instruments and subordinated loans (negative amount)	-51	–51	63 (b) (i), 66 (a), 67
53 Holdings of T2 instruments and subordinated loans of financial-sector entities where those entities have reciprocal cross-holdings with the institution designed to artificially inflate the institution's own funds (negative amount)	-	-	66 (b), 68
54 Direct and indirect holdings by the institution of T2 instruments and subordinated loans of financial-sector entities where the institution does not have a significant investment in those entities (above 10% and net of eligible short positions) (negative amount)	-	-	66 (c), 69, 70, 79
55 Direct and indirect holdings by the institution of 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)	-1	–1	66 (d), 69, 79
56 Empty set in the EU[1]	-	-	
57 Total regulatory adjustments to Tier 2 capital (T2)	**-52**	**–52**	Sum of rows 52 to 56
58 Tier 2 capital (T2)	**2,136**	**2,223**	Row 51 minus row 57
59 Total capital (TC = T1 + T2)	25,690	**23,384**	Sum of rows 45 and 58
60 Total risk-weighted assets	**143,800**	**144,097**	
Capital ratios and buffers			
61 Common equity Tier 1 capital ratio (as a percentage of total exposure)	14.40	13.68	92 (2) (a)
62 Tier 1 capital ratio (as a percentage of total exposure)	16.38	14.69	92 (2) (b)
63 Total capital ratio (as a percentage of total exposure)	17.86	16.23	92 (2) (c)
64 Institution-specific capital buffer requirement (minimum CET1 requirement pursuant to article 92 (1) letter a CRR, plus capital conservation and countercyclical capital buffer requirements, systemic risk buffer and systemically important institution buffer (G-SII or O-SII buffer), expressed as a percentage of total exposure) [2]	9.80	9.78	CRD 128, 129, 130, 131, 133
65 of which: capital conservation buffer	2.50	2.50	
66 of which: countercyclical capital buffer	0.05	0.03	
67 of which: systemic risk buffer	1.00	1.00	
67a of which: buffer for global systemically important institutions (G-SII) or other systemically important institutions (O-SII)	1.00	1.00	
68 Common equity Tier 1 available to meet buffers (as a percentage of total exposure)	9.90	8.69	CRD 128
69 Not relevant in EU regulation	●	●	
70 Not relevant in EU regulation	●	●	
71 Not relevant in EU regulation	●	●	
Amounts below threshold for deductions (before risk weight)			
72 Direct and indirect holdings by the institution of capital instruments of financial-sector entities where the institution does not have a significant investment in those entities (less than 10% and net of eligible short positions)	945	1,014	36 (1) (h), 46, 45, 56 (c), 59, 60, 66 (c), 69, 70
73 Direct and indirect holdings by the institution of CET1 instruments of financial-sector entities where the institution holds a significant investment in those entities (above 10% and net of eligible short positions)	239	551	36 (1) (i), 45, 48
74 Empty set in the EU	●	●	
75 Deferred tax assets that rely on future profitability, arising from temporary differences (amount below 10% threshold, net of related tax liability where the conditions in article 38 (3) CRR are met)	426	653	36 (1) (c), 38, 48

€ million		(A) Amount on disclosure reporting date Dec. 31, 2019	(A) Amount on disclosure reporting date Sep. 30, 2019	(B) Reference to article of Regulation (EU) No. 575/2013
Applicable caps on the inclusion of provisions in Tier 2 capital				
76	Credit risk adjustments included in Tier 2 capital in respect of exposures subject to the standardized approach (prior to application of cap)	-	-	62
77	Cap on inclusion of credit risk adjustments in Tier 2 capital under standardized approach	312	305	62
78	Credit risk adjustments included in Tier 2 capital in respect of exposures subject to internal ratings-based approach (prior to application of cap)	337	340	62
79	Cap on inclusion of credit risk adjustments in Tier 2 capital under internal ratings based approach	564	576	62
Capital instruments subject to phase-out arrangements (only applicable between January 1, 2014 and January 1, 2022)				
80	Current cap on CET1 instruments subject to phase-out arrangements	-	-	484 (3), 486 (2) and (5)
81	Amount excluded from CET1 due to cap (excess over cap after redemptions and maturities)	-	-	484 (3), 486 (2) and (5)
82	Current cap on AT1 instruments subject to phase-out arrangements	739	739	484 (4), 486 (3) and (5)
83	Amount excluded from AT1 due to cap (excess over cap after redemptions and maturities)	671	671	484 (4), 486 (3) and (5)
84	Current cap on T2 instruments subject to phase-out arrangements	-	-	484 (5), 486 (4) and (5)
85	Amount excluded from T2 due to cap (excess over cap after redemptions and maturities)	-	-	484 (5), 486 (4) and (5)

1 Since January 1, 2018: additional Tier 1 capital instruments that, although subject to the provisions of article 486 CRR, were still eligible as additional Tier 1 capital as at the reporting date.
2 Including the Pillar 2 requirement of 1.75 percent.

As at December 31, 2019, **common equity Tier 1 capital (CET1)** (Fig. 12, row 29) amounted to €20,705 million, an increase of €991 million (September 30, 2019: €19,714 million). Common equity Tier 1 capital largely consists of paid-in capital plus the capital reserve, retained earnings, and non-controlling interests. Under the CRR, certain assets have to be deducted directly from capital. Apart from a few exceptions, all of these deductions have to be made from common equity Tier 1 capital. They are largely attributable to deductions where the valuation of assets is not sufficiently prudent from a regulatory perspective and to intangible assets including goodwill, deferred income tax assets, reciprocal cross-holdings, and shortfalls resulting from the comparison between expected losses (ELs) and the loss allowances recognized in this regard.

The increase in common equity Tier 1 capital was due to the €846 million rise in interim profit (Fig. 12, row 5a) and the €252 million rise in retained earnings (Fig. 12, row 2). Conversely, this capital component was reduced by €69 million owing to accumulated other comprehensive income including other reserves (Fig. 12, row 3). There were also increases in common equity Tier 1 capital of €54 million due to additional value adjustments (Fig. 12, row 7) and of €23 million due to the smaller deduction in the securitization exposures (Fig. 12, row 20a). At the same time, common equity Tier 1 capital was reduced by the €10 million increase in the deductions for intangible assets (Fig. 12, row 8) and the €13 million rise in the loan loss allowance shortfalls for IRBA exposures ('IRB shortfall', Fig. 12, row 12). There was also a reduction in common equity Tier 1 capital as at December 31, 2019 compared with the end of the previous quarter because the adjustment item resulting from DZ BANK's own liabilities and derivative liabilities measured at fair value caused by the change in DZ BANK's own credit standing decreased by €95 million (Fig. 12, rows 14 and 14a).

Common equity Tier 1 capital plus **additional Tier 1 capital (AT1)** equals **Tier 1 capital (T1)**. Tier 1 capital consists, in particular, of profit-sharing rights and subordinated capital that is bound by certain conditions. There was a €1,401 million increase in additional Tier 1 capital from €1,447 million to €2,848 million as at December 31, 2019 that was predominantly due to the issue of new AT1 capital in an amount of €1,400 million.

At the reporting date, **Tier 2 capital (T2)** pursuant to article 62 CRR and before capital deductions (Fig. 12, row 51) amounted to €2,189 million (September 30, 2019: €2,275 million). The main components of Tier 2 capital were subordinated capital pursuant to article 63 CRR II of €1,137 million (Fig. 12, row 46) and subordinated debt instruments that are no longer eligible as additional Tier 1 capital of €671 million (Fig. 12, row 47). The total decrease in Tier 2 capital of €87 million was largely due to the effects of €68 million of the reduced level of eligibility of subordinated capital under the CRR in the last five years before the maturity date (Fig. 12, row 46).

Fig. 13 shows the **items, features, and terms and conditions** of the additional Tier 1 capital instruments classified as **additional Tier 1 capital** (AT1) before consolidation.

FIG. 13 – ADDITIONAL TIER 1 CAPITAL INSTRUMENTS AS AT DECEMBER 31, 2019 (PURSUANT TO ANNEX II OF IMPLEMENTING REGULATION (EU) NO. 1423/2013)

Issuer	Volume (€ million)	Interest rate (%)[1]	Start date	Maturity	Next call date
DZ BANK Capital Funding LLC, Wilmington[2]	300	3m EURIBOR + 250bp	Nov. 7, 2003	Perpetual	Feb. 7, 2020
DZ BANK Capital Funding LLC II, Wilmington[2]	500	3m EURIBOR + 160bp	Nov. 22, 2004	Perpetual	Feb. 22, 2020
DZ BANK Capital Funding LLC III, Wilmington[2]	350	3m EURIBOR + 150bp	Jun. 6, 2005	Perpetual	Mar. 6, 2020
DZ BANK Perpetual Funding (Jersey) Limited, St. Helier[2]	45	3m EURIBOR + 110bp	Jan. 9, 2006	Perpetual	Jan. 9, 2020
DZ BANK Perpetual Funding (Jersey) Limited, St. Helier[2]	84	3m EURIBOR + 80bp	Feb. 13, 2006	Perpetual	Feb. 12, 2020
DZ BANK Perpetual Funding (Jersey) Limited, St. Helier[2]	4	3m EURIBOR + 100bp	Mar. 17, 2006	Perpetual	Mar. 18, 2020
DZ BANK Perpetual Funding (Jersey) Limited, St. Helier[2]	87	3m EURIBOR + 80bp	Sep. 4, 2006	Perpetual	Mar. 6, 2020
DZ BANK Perpetual Funding (Jersey) Limited, St. Helier[2]	40	3m EURIBOR + 50bp	Apr. 16, 2007	Perpetual	Jan. 16, 2020
Subtotal I	**1,410**				
DZ BANK	221	12m EURIBOR + 420bp	Nov. 11, 2015	Perpetual	Aug. 1, 2021
DZ BANK	221	12m EURIBOR + 420bp	Nov. 11, 2015	Perpetual	Aug. 1, 2021
DZ BANK	74	4.85%, from Aug. 1, 2021 12m EURIBOR + 420bp	Nov. 11, 2015	Perpetual	Aug. 1, 2021
DZ BANK	134	5.5%, from Aug. 1, 2026 12m EURIBOR + 420bp	Nov. 11, 2015	Perpetual	Aug. 1, 2026
DZ BANK	100	4.85%, from Aug. 1, 2021 fixed rate based on 5-year euro mid-swap rate + 440bp	Nov. 11, 2015	Perpetual	Aug. 1, 2021
DZ BANK	624	12m EURIBOR + 305bp	Nov. 19, 2019	Perpetual	Aug. 1, 2025
DZ BANK	147	3.00%, from Aug. 1, 2025 fixed-rate swap rate + 305bp	Nov. 19, 2019	Perpetual	Aug. 1, 2025
DZ BANK	382	3.29%, from Aug. 1, 2030 fixed-rate swap rate + 305bp	Nov. 19, 2019	Perpetual	Aug. 1, 2030
DZ BANK	246	3.03%, from Aug. 1, 2025 fixed rate based on 5-year euro mid-swap rate + 318bp	Nov. 19, 2019	Perpetual	Aug. 1, 2025
Subtotal II	**2,149**				
Total	**3,559**				

1 bp = basis points.
2 Instruments subject to phase-out arrangements pursuant to articles 484 and 486 CRR.

Tier 2 capital (T2) amounted to €2,136 million as at the reporting date (September 30, 2019: €2,223 million). The bulk of this amount (€1,137 million) was attributable to own funds instruments as at December 31, 2019 (September 30, 2019: €1,205 million). In the last five years before their maturity date, these components of Tier 2 capital are only included after they have been amortized on a straight-line basis.

Fig. 14 provides an overview of the items, features, and terms and conditions related to this subordinated capital.

FIG. 14 – SUBORDINATED CAPITAL AS AT DECEMBER 31, 2019 (PURSUANT TO ANNEX II OF IMPLEMENTING REGULATION (EU) NO. 1423/2013)

Issuer	Volume		Interest rate (%)[1]	Start date	Maturity
	€ million	Currency million			
DZ BANK	63	€63	7.1000	2008	2020
DZ BANK	371	€371	3.574 to 7.150	2004 to 2010	2020
DZ BANK	20	€20	3.100 to 3.200	2013	2020
DZ BANK	15	€15	7.000 to 7.070	2009	2021
DZ BANK	224	€224	3.640 to 5.000	2013 to 2014	2021
DZ BANK	156	€156	3.300 to 6.350	2009 to 2013	2022
DZ BANK	30	€30	4.039 to 7.250	2003	2023
DZ BANK	281	€281	3.230 to 4.370	2013	2023
DZ BANK	111	CHF 120	3.240	2013	2023
DZ BANK	6	USD 7	2.600	2015	2021
DZ BANK	38	€38	1.7500	2015	2023
DZ BANK	72	€72	6.500	2009	2024
DZ BANK	3	€3	5.700	2010	2025
DZ BANK	279	€279	2.250 to 2.890/ EURIBOR + 1.250 to 1.750	2015	2025
DZ BANK	1	€1	3.080	2015	2027
DZ BANK	64	€64	3.085 to 3.300	2015	2030
DZ BANK	50	€50	3.5 fixed, then 6m EURIBOR + 1.3 variable	2015	2030
DZ BANK	89	USD 100	4.800 to 4.900	2015	2030
DZ BANK	5	€5	0.425% 0.43%	2019	2024
DZ BANK	13	€23	0.99%–1.04%	2019	2029
DVB	100	€100	2.000	2015	2021
DVB	77	€77	2.300 to 2.560	2015	2022
DVB	50	€50	2.000	2015	2023
Total	**2,118**	371			

1 bp = basis points.

Another component of own funds derives from the **comparison of loan loss allowances** pursuant to article 159 CRR, which DZ BANK carries out at banking group level. In this comparison, the expected losses computed on the IRBA exposure classes of central governments and central banks, institutions, corporates, and retail business are compared with the amounts that can effectively be recognized in the annual or interim financial statements for actual or potential impairment losses (split into receivables that are in default and not in default).

This **comparison of loan loss allowances for debt instruments that are in default** produced an **excess**, i.e. the loss allowances recognized for the IRBA exposures in the exposure classes listed above exceeded the expected regulatory losses for these exposures. The comparison of loan loss allowances for debt instruments that are not in default produced a shortfall, i.e. the expected losses for the IRBA exposures in the exposure classes listed above exceeded the loss allowances recognized for these exposures.

The bank classifies the **excess** computed for the DZ BANK banking group for **debt instruemnts that are in default** as Tier 2 capital in accordance with article 62 sentence 1 letter d CRR. This classification is consequently capped at 0.6 percent of the risk-weighted IRBA exposure amounts. This cap had no effect as at December 31,

2019. The total eligible amount (Fig. 12, row 50) for the DZ BANK banking group was calculated at €337 million (September 30, 2019: €340 million).

The bank classifies the write-down deficit computed for the DZ BANK banking group for receivables that are not in default as Tier 1 capital in accordance with article 159 CRR. The amount deducted from common equity Tier 1 capital was calculated at €44 million (September 30, 2019: €26 million).
As at the reporting date, there was a **shortfall** (Fig. 12, row 12) totaling €169 million (September 30, 2019: €175 million) for **long-term equity investments** that was deducted from common equity Tier 1 capital pursuant to article 36 (1) letter d CRR II.

Pursuant to article 437 (1) letter b CRR II, the DZ BANK banking group is obliged to disclose a description of the **main features of the common equity Tier 1, additional Tier 1, and Tier 2 capital instruments issued** in accordance with Implementing Regulation (EU) No. 1423/2013.

This description is published in a separate annex on DZ BANK's website in the Investor Relations section under Bondholder Information, subsection Capital Instruments, together with the **full terms and conditions connected with these capital instruments**, whose publication is required pursuant to article 437 (1) letter c CRR II
(https://www.dzbank.de/content/dzbank_de/de/home/unser_profil/investorrelations/info_fuer_fremdkapitalgeber/kapitalinstrumente.disclaimer.disclaimer_kapitalinstrumente.html).

4.2.2 Reconciliation of equity reported on the balance sheet with regulatory own funds of the DZ BANK banking group

(ARTICLE 437 (1) LETTER A CRR)

One of the disclosure requirements is a reconciliation of equity reported under IFRS with equity reported for companies consolidated for regulatory purposes (Financial Reporting,
FINREP) and regulatory own funds (Common Reporting, COREP). This reconciliation as at the reporting date is shown in Fig. 15.

FIG. 15 – RECONCILIATION OF EQUITY REPORTED ON THE BALANCE SHEET WITH REGULATORY OWN FUNDS AS AT DECEMBER 31, 2019 (ARTICLE 437 (1) LETTER A CRR IN CONJUNCTION WITH ANNEX I OF IMPLEMENTING REGULATION (EU) NO. 1423/2013)

€ million	Carrying amounts on consolidated balance sheet in accordance with financial reporting (IFRS)	Consolidation/ deconsolidation of entities	Carrying amounts under scope of regulatory consolidation (FINREP)	Regulatory law (COREP)	Reference to Fig. 12 – Structure of own funds
Assets					
Cash and cash equivalents	52,545	129	52,674	-	
Loans and advances to banks	97,544	-214	97,330	-	
Loans and advances to customers	186,224	2,723	188,947	-	
Hedging instruments (positive fair values)	201	0	201	-	
Financial assets held for trading	44,781	-832	43,949	-	
Investments	56,927	7,273	64,200	0	
Investments held by insurance companies	113,549	-113,549	0	-	
Property, plant and equipment, investment property, and right-of-use assets	1,632	7	1,639	-	
Income tax assets	1,018	-364	654	420	
Other assets	5,444	-3,231	2,213	531	
Loss allowances	-2,277	-35	-2,312	-	
Non-current assets and disposal groups classified as held for sale	516	-140	376	-	

€ million	Carrying amounts on consolidated balance sheet in accordance with financial reporting (IFRS)	Consolidation/ deconsolidation of entities	Carrying amounts under scope of regulatory consolidation (FINREP)	Regulatory law (COREP)	Reference to Fig. 12 – Structure of own funds
Fair value changes of the hedged items in portfolio hedges of interest-rate risk	1,275	0	1,275	-	
Total assets	**559,379**	**-108,233**	**451,146**	**-**	
Equity and liabilities					
Deposits from banks	141,121	163	141,284	-	
Deposits from customers	131,516	4,481	135,997	-	
Debt certificates issued including bonds	85,123	201	85,324	-	
Hedging instruments (negative fair values)	1,306	0	1,306	-	
Financial liabilities held for trading	51,762	18	51,780	-	
Provisions	3,835	59	3,894	-	
Insurance liabilities	104,346	-104,346	0	-	
Income tax liabilities	1,069	-833	236	13	
Other liabilities	9,173	-6,716	2,457	-	
Subordinated capital	2,187	21	2,208	-	
Liabilities included in disposal groups classified as held for sale	1	0	1	-	
Fair value changes of the hedged items in portfolio hedges of interest-rate risk	144	0	144	-	
Common equity Tier 1 (CET1) before regulatory adjustments					
Subscribed capital	4,926	0	4,926	4,926	1
Capital reserve	5,551	0	5,551	5,551	1
Retained earnings	10,047	-1,607	8,440	8,844	2 3
Reserve from other comprehensive income	1,694	103	1,797	1,114	3
Non-controlling interests	3,009	-1,138	1,871	146	5 5b
Unappropriated earnings	324	1,361	1,685	1,362	5a
Total common equity Tier 1 (CET1) before regulatory adjustments				**21,943**	**6**
Common equity Tier 1 (CET1): regulatory adjustments					
Capital deductions					
Loan loss allowances resulting from prudent valuation requirements (negative amount)				-274	7
Intangible assets (negative amount)	-532	1	-531	-531	8
Deferred taxes related to other intangible assets (negative amount)	7	6	13	13	8
Deferred tax assets that rely on future profitability, not arising from temporary differences (negative amount)	-43	36	-7	-7	10
Hedge reserve (cash flow hedge reserve)			-	0	11
Negative amounts resulting from the calculation of expected loss amounts			-	-213	12
Effects resulting from measurement of own liabilities			-	41	14/14a
Defined benefit pension fund assets			-	-2	15
Holdings of the CET1 instruments of financial-sector entities where those entities have reciprocal cross-holdings with the institution			-	-2	17
Exposure arising from the following items qualifying for a risk weight of 1,250%, where the institution opts for the deduction alternative			-	-227	20a

€ million	Carrying amounts on consolidated balance sheet in accordance with financial reporting (IFRS)	Consolidation/ deconsolidation of entities	Carrying amounts under scope of regulatory consolidation (FINREP)	Regulatory law (COREP)	Reference to Fig. 12 – Structure of own funds
Deductible deferred tax assets that rely on future profitability, arising from temporary differences (negative amount)	-603	190	-413	-	21
Other capital elements or deductions from common equity Tier 1			-	-36	27a
Total regulatory adjustments to common equity Tier 1 (CET1)			-	**-1,238**	**28**
Common equity Tier 1 (CET1) after regulatory adjustments				**20,705**	**-**
Additional Tier 1 capital (AT1) before regulatory adjustments: instruments					
Capital instruments and related share premium accounts (additional equity components)	2,245	0	2,245	2,150	30 31
Amount of qualifying items referred to in article 484 (4) CRR and the related share premium accounts subject to phase out from AT1	1,410	0	1,410	739	33
Non-controlling interests in subsidiaries				24	34
Qualifying Tier 1 capital instruments included in consolidated AT1 capital (including non-controlling interests not included in row 5) issued by subsidiaries and held by third parties				-	35
Additional Tier 1 capital (AT1) before regulatory adjustments				**2,913**	**36**
Additional Tier 1 capital (AT1): regulatory adjustments					
Direct and indirect holdings by an institution of its own AT1 instruments (negative amount)	25	-20	5	-65	37
Holdings of AT1 instruments of financial-sector entities where those entities have reciprocal cross-holdings with the institution designed to artificially inflate the institution's own funds (negative amount)			-	-	38
Direct and indirect holdings by the institution of AT1 capital instruments of financial-sector entities where the institution does not have a significant investment in those entities (above 10% and net of eligible short positions) (negative amount)			-	-	39
Direct and indirect holdings by the institution of AT1 capital instruments of financial-sector entities where the institution has a significant investment in those entities (above 10% and net of eligible short positions) (negative amount)			-	-	40
Qualifying T2 deductions that exceed the T2 capital of the institution (negative amount)			-	-	42
Total regulatory adjustments to additional Tier 1 capital (AT1)				**-65**	**43**
Additional Tier 1 capital (AT1) after regulatory adjustments				**2,848**	**44**
Tier 1 capital (T1 = CET1 + AT1)				**23,553**	**45**
Tier 2 capital (T2): instruments and reserves					
Capital instruments and related share premium accounts	2,187	21	2,208	1,137	46

€ million	Carrying amounts on consolidated balance sheet in accordance with financial reporting (IFRS)	Consolidation/ deconsolidation of entities	Carrying amounts under scope of regulatory consolidation (FINREP)	Regulatory law (COREP)	Reference to Fig. 12 – Structure of own funds
Amount of qualifying items referred to in article 484 (5) CRR and the related share premium accounts subject to phase out from T2				671	47
Qualifying own funds instruments in consolidated T2 capital (including non-controlling interests and AT1 instruments not included in rows 5 or 34) issued by subsidiaries and held by third parties				44	48
of which: instruments issued by subsidiaries subject to phase out				-	49
Credit risk adjustments				337	50
IRB excess of provisions over expected losses, eligible					50
Tier 2 capital (T2) before regulatory adjustments				**2,189**	**51**
Tier 2 capital (T2): regulatory adjustments					
Direct and indirect holdings by an institution of its own T2 instruments and subordinated loans (negative amount)				-51	52
Holdings of T2 instruments and subordinated loans of financial-sector entities where those entities have reciprocal cross-holdings with the institution designed to artificially inflate the institution's own funds (negative amount)			-	-	53
Direct and indirect holdings by the institution of T2 instruments and subordinated loans of financial-sector entities where the institution does not have a significant investment in those entities (above 10% and net of eligible short positions) (negative amount)			-	-	54
of which: new holdings not subject to transitional arrangements			-	-	54a
of which: holdings existing before January 1, 2013 and subject to transitional arrangements			-	-	54b
Direct and indirect holdings by the institution of T2 instruments and subordinated loans of financial-sector entities where the institution has a significant investment in those entities (above 10% and net of eligible short positions) (negative amount)			-	-1	55
Regulatory adjustments to Tier 2 capital in respect of amounts subject to pre-CRR treatment and transitional treatments subject to phase out pursuant to Regulation (EU) No. 575/2013 (i.e. CRR residual amounts)			-	-	56
Total regulatory adjustments to Tier 2 capital (T2)				**-52**	**57**
Tier 2 capital (T2) after regulatory adjustments				**2,137**	**58**
Equity (IFRS/FINREP)/ own funds (COREP)	**27,796**	**-1,281**	**26,515**	**25,689**	**59**
Total equity and liabilities	**559,379**	**-108,233**	**451,146**		

FIG. 16 – RECONCILIATION OF EQUITY REPORTED ON THE BALANCE SHEET WITH REGULATORY OWN FUNDS AS AT JUNE 30, 2019 (ARTICLE 437 (1) LETTER A CRR IN CONJUNCTION WITH ANNEX I OF IMPLEMENTING REGULATION (EU) NO. 1423/2013)

€ million	Carrying amounts on consolidated balance sheet in accordance with financial reporting (IFRS)	Consolidation/ deconsolidation of entities	Carrying amounts under scope of regulatory consolidation (FINREP)	Regulatory law (COREP)	Reference to Fig. 12 – Structure of own funds
Assets					
Cash and cash equivalents	66,270	122	66,392	-	
Loans and advances to banks	92,953	-326	92,627	-	
Loans and advances to customers	181,814	2,760	184,574	-	
Hedging instruments (positive fair values)	259	0	259	-	
Financial assets held for trading	48,134	-507	47,627	-	
Investments	50,303	6,868	57,171	-	
Investments held by insurance companies	109,335	-109,335	0	-	
Property, plant and equipment, investment property, and right-of-use assets	1,686	-23	1,663	-	
Income tax assets	1,089	-260	829	-647	
Other assets	5,263	-3,374	1,889	518	
Loss allowances	-2,335	-30	-2,365	-	
Non-current assets and disposal groups classified as held for sale	4,572	-154	4,418	-	
Fair value changes of the hedged items in portfolio hedges of interest-rate risk	1,440	0	1,440	-	
Total assets	**560,783**	**-104,259**	**456,524**	**-**	
Equity and liabilities					
Deposits from banks	146,386	177	146,563	-	
Deposits from customers	137,130	4,971	142,101	-	
Debt certificates issued including bonds	72,323	245	72,568	-	
Hedging instruments (negative fair values)	995	0	995	-	
Financial liabilities held for trading	61,281	11	61,292	-	
Provisions	3,709	63	3,772	-	
Insurance liabilities	101,417	-101,417	0	-	
Income tax liabilities	1,221	-838	383	10	
Other liabilities	8,051	-6,134	1,917	-	
Subordinated capital	2,620	11	2,631	-	
Liabilities included in disposal groups classified as held for sale	22	0	22	-	
Fair value changes of the hedged items in portfolio hedges of interest-rate risk	157	0	157	-	
Common equity Tier 1 (CET1) before regulatory adjustments					
Subscribed capital	4,926	0	4,926	4,926	1
Capital reserve	5,551	0	5,551	5,551	1
Retained earnings	8,384	-245	8,139	6,599	2
Reserve from other comprehensive income	1,891	92	1,983	3,243	3
Non-controlling interests	2,955	-1,115	1,840	138	5 5b
Unappropriated earnings	919	-80	839	526	5a
Total common equity Tier 1 (CET1) before regulatory adjustments				**20,984**	**6**
Common equity Tier 1 (CET1): regulatory adjustments					
Capital deductions					
Loan loss allowances resulting from prudent valuation requirements (negative amount)				-308	7

€ million	Carrying amounts on consolidated balance sheet in accordance with financial reporting (IFRS)	Consolidation/ deconsolidation of entities	Carrying amounts under scope of regulatory consolidation (FINREP)	Regulatory law (COREP)	Reference to Fig. 12 – Structure of own funds
Intangible assets (negative amount)	-519	1	-518	-518	8
Deferred taxes related to other intangible assets (negative amount)	4	6	10	10	8
Deferred tax assets that rely on future profitability, not arising from temporary differences (negative amount)	-23	19	-4	-5	10
Hedge reserve (cash flow hedge reserve)			0	0	11
Negative amounts resulting from the calculation of expected loss amounts			-	-173	12
Effects resulting from measurement of own liabilities			-	154	14
Defined benefit pension fund assets			-	0	15
Holdings of the CET1 instruments of financial-sector entities where those entities have reciprocal cross-holdings with the institution			-	-2	17
Exposure arising from the following items qualifying for a risk weight of 1,250%, where the institution opts for the deduction alternative			-	-271	20a 20c
Deductible deferred tax assets that rely on future profitability, arising from temporary differences (negative amount)	-825	182	-643	-	21
Other capital elements or deductions from common equity Tier 1			-	-36	27a
Total regulatory adjustments to common equity Tier 1 (CET1)			-	-1,149	28
Common equity Tier 1 (CET1) after regulatory adjustments				**19,835**	**29**
Additional Tier 1 capital (AT1) before regulatory adjustments: instruments					
Capital instruments and related share premium accounts (additional equity components)	845	0	845	750	30 31
Amount of qualifying items referred to in article 484 (4) CRR and the related share premium accounts subject to phase out from AT1	1,410	0	1,410	739	33
Non-controlling interests in subsidiaries				-	33a
Qualifying Tier 1 capital instruments included in consolidated AT1 capital (including non-controlling interests not included in row 5) issued by subsidiaries and held by third parties				24	34 and 35
Additional Tier 1 capital (AT1) before regulatory adjustments				**1,513**	**36**
Additional Tier 1 capital (AT1): regulatory adjustments					
Direct and indirect holdings by an institution of its own AT1 instruments (negative amount)	33	-20	13	-65	37
Holdings of AT1 instruments of financial-sector entities where those entities have reciprocal cross-holdings with the institution designed to artificially inflate the institution's own funds (negative amount)			-	-	38
Direct and indirect holdings by the institution of AT1 capital instruments of financial-sector entities where the institution does not have a significant investment in those entities (above			-	-	39

€ million	Carrying amounts on consolidated balance sheet in accordance with financial reporting (IFRS)	Consolidation/ deconsolidation of entities	Carrying amounts under scope of regulatory consolidation (FINREP)	Regulatory law (COREP)	Reference to Fig. 12 – Structure of own funds
10% and net of eligible short positions) (negative amount)					
Direct and indirect holdings by the institution of AT1 capital instruments of financial-sector entities where the institution has a significant investment in those entities (above 10% and net of eligible short positions) (negative amount)			-	-	40
Qualifying T2 deductions that exceed the T2 capital of the institution (negative amount)			-	-	42
Total regulatory adjustments to additional Tier 1 capital (AT1)				**-65**	**43**
Additional Tier 1 capital (AT1) after regulatory adjustments				**1,448**	**44**
Tier 1 capital (T1 = CET1 + AT1)				**21,283**	**45**
Tier 2 capital (T2): instruments and reserves					
Capital instruments and related share premium accounts	2,620	11	2,631	1,284	46
Amount of qualifying items referred to in article 484 (5) CRR and the related share premium accounts subject to phase out from T2				671	47
Qualifying own funds instruments in consolidated T2 capital (including non-controlling interests and AT1 instruments not included in rows 5 or 34) issued by subsidiaries and held by third parties				62	48
of which: instruments issued by subsidiaries subject to phase out				-	49
Credit risk adjustments				373	50
IRB excess of provisions over expected losses, eligible				-	50
Tier 2 capital (T2) before regulatory adjustments				**2,390**	**51**
Tier 2 capital (T2): regulatory adjustments					
Direct and indirect holdings by an institution of its own T2 instruments and subordinated loans (negative amount)				-51	52
Holdings of T2 instruments and subordinated loans of financial-sector entities where those entities have reciprocal cross-holdings with the institution designed to artificially inflate the institution’s own funds (negative amount)			-	-	53
Direct and indirect holdings by the institution of T2 instruments and subordinated loans of financial-sector entities where the institution does not have a significant investment in those entities (above 10% and net of eligible short positions) (negative amount)			-	-	54
of which: new holdings not subject to transitional arrangements			-	-	54a
of which: holdings existing before January 1, 2013 and subject to transitional arrangements			-	-	54b

€ million	Carrying amounts on consolidated balance sheet in accordance with financial reporting (IFRS)	Consolidation/ deconsolidation of entities	Carrying amounts under scope of regulatory consolidation (FINREP)	Regulatory law (COREP)	Reference to Fig. 12 – Structure of own funds
Direct and indirect holdings by the institution of T2 instruments and subordinated loans of financial-sector entities where the institution has a significant investment in those entities (above 10% and net of eligible short positions) (negative amount)			-	-1	55
Regulatory adjustments to Tier 2 capital in respect of amounts subject to pre-CRR treatment and transitional treatments subject to phase out pursuant to Regulation (EU) No. 575/2013 (i.e. CRR residual amounts)			-	-	56
Total regulatory adjustments to Tier 2 capital (T2)				**-52**	**57**
Tier 2 capital (T2) after regulatory adjustments				**2,338**	**58**
Equity (IFRS/FINREP)/ own funds (COREP)	**25,471**	**-1,348**	**24,123**	**23,621**	**59**
Total equity and liabilities	**560,783**	**-104,259**	**456,524**		

The differences between the assets and the equity and liabilities reported in the IFRS consolidated financial statements and the DZ BANK banking group's assets and equity and liabilities under FINREP arose from different entities being included in each scope of consolidation and from different consolidation methods.

The variance in the consolidation methods relates to R+V, which was consolidated using the equity method in the DZ BANK banking group's financial statements under FINREP but was fully consolidated in the consolidated financial statements. As a result, the figure for non-controlling interests was €1,168 million lower (June 30, 2019: €1,146 million lower).

Differences in the scope of consolidation also arose at the level of the consolidated subgroups DVB and UMH.

The differences between the equity under FINREP and the common equity Tier 1 capital under the CRR/COREP arise solely from the provisions of the CRR. The reconciliation figures shown in Fig. 16 are explained below.

- The retained earnings according to FINREP includes the losses arising from revaluation of defined benefit pension plans in an amount of €685 million. In COREP, this line item is included in accumulated other comprehensive income (Fig. 12, row 3). The retained earnings according to FINREP also include other reserves in an amount of €1,799 million that, under COREP, are also recognized in accumulated other comprehensive income (Fig. 12, row 3). According to COREP, the fund for home savings risk is not eligible as CET1 and must therefore be deducted in an amount of €282 million.
- According to article 35 CRR in conjunction with article 468 CRR II, 100 percent of the total volume of the reserve from other comprehensive income is eligible as CET1.
- The capital instruments and related share premium accounts amounting to €2,245 million contain the €750 million previously included in additional Tier 1 capital (AT1) under COREP, the AT1 bonds of €1,400 million that were issued in the fourth quarter of 2019, and further instruments of €95 million that have to be shown as Tier 2 capital according to article 63 CRR.
- The non-controlling interests contain further AT1 capital instruments of €1,410 million that, under COREP, have to be shown as additional Tier 1 capital in an amount of €739 million according to the transitional guidance.

The Tier 2 capital (T2) mainly consists of subordinated capital instruments. Under IFRS, these are included in the ‘capital instruments and related share premium accounts’ line item on the balance sheet. The eligibility of the instruments under the CRR is limited if their term to maturity is less than five years. This is the main reason for the reduction in eligibility for regulatory purposes. Furthermore, use of the pro rata interest reported on the balance sheet is not permitted according to the regulatory requirements.

4.2.3 Capital requirements

(ARTICLE 438 CRR)

Fig. 17, Fig. 18, and Fig. 19 give an overview of risk-weighted assets and the corresponding capital requirements.

The **DZ BANK banking group’s** regulatory **capital requirements** totaled €11,504 million as at the reporting date (September 30, 2019: €11,528 million).

Fig. 17 provides an overview of risk-weighted assets and the associated capital requirements in accordance with the stipulations in EBA/GL/2016/11. The capital requirements in the table below are shown for **credit risk excluding counterparty credit risk** in accordance with the **Standardized Approach to credit risk (CRSA)** and in accordance with the **internal ratings-based approach (IRB approach)** and for **counterparty credit risk (CCR)**. The capital requirement for **securitizations** also differs under the Standardized Approach and under the IRB approach. The exposures reported under the IRB approach are further broken down by ratings-based approach and Internal Assessment Approach. The capital requirement for **market risk** is determined using the **Standardized Approach** and **internal models approach (IMA)**; for **operational risk**, only the Standardized Approach is used. Row 27 contains amounts below the thresholds for deductions that relate to significant long-term equity investments within the financial sector that are subject to a risk weight of 250 percent and deductions for deferred taxes resulting from temporary differences.

FIG. 17 – EU OV1 – OVERVIEW OF RISK-WEIGHTED ASSETS (RWAS)

Reference to CRR			Dec. 31, 2019		Sep. 30, 2019	
			Risk-weighted assets	Capital requirements	Risk-weighted assets	Capital requirements
€ million						
	1	**Credit risk (excluding CCR)**	**114,775**	**9,182**	**114,606**	**9,169**
Article 438 (c) and (d)	2	of which: Standardized Approach	21,807	1,745	20,756	1,661
	3	of which: foundation IRB (FIRB) approach	51,147	4,092	51,707	4,137
	4	of which: advanced IRB (AIRB) approach	15,804	1,264	15,266	1,221
Article 438 (d)	5	of which: long-term equity investments in the IRB approach under the simple risk-weighted approach or IMA	26,017	2,081	26,877	2,150
Article 107 Article 438 (c) and (d)	6	**Counterparty credit risk (CCR)**	**4,734**	**379**	**5,064**	**405**
Article 438 (c) and (d)	7	of which: mark-to-market method	3,434	275	3,636	291
	8	of which: original exposure method	-	-	-	-
	9	of which: Standardized Approach	-	-	-	-
	10	of which: internal model method (IMM)	-	-	-	-
Article 438 (c) and (d)	11	of which: risk exposure amount for contributions to the default fund of a central counterparty (CCP)	192	15	214	17
	12	of which: credit valuation adjustments (CVA)	1,108	89	1,214	97
Article 438 (e)	13	**Settlement risk**	**5**	**0**	**103**	**8**
Article 449 (o) and (i)	14	**Securitization exposure in the banking book (after the cap)**	**3,662**	**293**	**3,349**	**187**
	15	of which: IRB approach	178	14	317	25
	16	of which: IRB Supervisory Formula Approach (SFA)	-	-	-	-
	17	of which: Internal Assessment Approach (IAA)	2,172	174	2,021	162
	18	of which: Standardized Approach	572	46	671	54
	19	of which: new securitization framework	740	59	340	27
Article 438 (e)	20	**Market risk**	**8,350**	**668**	**7,296**	**584**
	21	of which: Standardized Approach	1,672	134	1,877	150
	22	of which: IMA	6,678	534	5,419	434
Article 438 (e)	23	**Large exposures**	**-**	**-**	**-**	**-**
Article 438 (f)	24	**Operational risk**	**10,716**	**857**	**10,716**	**857**
	25	of which: Basic Indicator Approach	-	-	-	-
	26	of which: Standardized Approach	10,716	857	10,716	857
	27	of which: Advanced Measurement Approach	-	-	-	-
Article 437 (2), article 48, and article 60	28	Amounts below the thresholds for deduction (subject to 250% risk weight)	1,558	125	2,963	237
Article 500	29	Floor adjustment	-	-	-	-
	30	**Total**	**143,800**	**11,504**	**144,097**	**11,528**

With a capital requirement of €9,182 million, credit risk is particularly important within the DZ BANK banking group. The €24 million reduction in risk-weighted assets compared with the previous reporting date (row 29) was largely due to the increase under the internal market risk model (row 21) and the fall in risk-weighted assets resulting from exposures with a risk weight of 250 percent (row 27).

Fig. 18 and Fig. 19 show the capital requirements in relation to the risk types of relevance for regulatory purposes (credit risk, market risk, and operational risk) as at December 31, 2019. These disclosures cover all the entities consolidated for regulatory purposes in the DZ BANK banking group.

FIG. 18 – CAPITAL REQUIREMENTS (PART 1)

	Dec. 31, 2019		Sep. 30, 2019	
€ million	**Risk-weighted assets**	**Capital requirements**	Risk-weighted assets	Capital requirements
1 Credit risk				
1.1 Standardized Approach to credit risk				
Central governments and central banks	1,264	101	1,790	143
Regional governments or local authorities	289	23	302	24
Other public-sector entities	171	14	139	11
Multilateral development banks	3	0	3	0
International organizations	0	0	-	-
Institutions	790	63	413	33
Corporates	12,087	967	10,376	830
Retail business	3,429	274	3,404	272
Exposures secured by mortgages on immovable property	1,337	107	2,307	185
Exposures in default	560	45	420	34
Exposures associated with particularly high risk	837	67	881	70
Covered bonds	39	3	41	3
Institutions and corporates with a short-term credit assessment	0	0	0	0
Units or shares in collective investment undertakings (‘CIUs’)	2,170	174	2,122	170
Other items	1,278	102	1,450	116
Total credit risk under the Standardized Approach	**24,255**	**1,940**	**23,649**	**1,892**
1.2 IRB approaches to credit risk				
Central governments and central banks	936	75	1,533	123
Institutions	8,409	673	8,365	669
Corporates	41,792	3,343	42,704	3,416
of which: SMEs	2,125	170	2,138	171
Retail business	14,721	1,178	13,597	1,088
of which: mortgage-backed	8,868	709	8,515	681
qualified revolving	0	0	-	-
other retail business	5,852	468	5,083	407
Other non-credit-obligation assets	1,613	129	1,706	137
Total under IRB approaches to credit risk	**67,471**	**5,398**	**67,906**	**5,432**
1.3 Securitizations				
Securitizations under the Standardized Approach to credit risk	572	46	671	54
of which: re-securitizations	0	0	-	-
Securitizations under IRB approaches	1,601	128	1,663	133
of which: re-securitizations	0	0	-	-
Total securitizations	**2,173**	**174**	**2,334**	**187**
1.4 Long-term equity investments				
Long-term equity investments under IRB approaches	26,629	2,130	28,316	2,265
of which: internal modeling approach	0	0	0	0
PD/LGD approaches	118	9	112	9
simple risk-weight approach	26,017	2,081	26,877	2,150
of which: exchange-traded equity investments	0	0	0	0
equity investments not exchange-traded, but part of a diversified portfolio	53	4	55	4
other equity investments	25,963	2,077	26,822	2,146
Equity investments exempted from IRB approaches and included in Standardized Approach to credit risk	105	8	102	8
of which: grandfathering	0	0	-	-
Total long-term equity investments	**26,734**	**2,139**	**28,418**	**2,273**
1.5 Exposure amount for contributions to default fund of a CCP	**192**	**15**	**214**	**17**
1.6 Credit valuation adjustments (CVA charge)	**1,108**	**89**	**1,214**	**97**
1.7 Exposure amount for counterparty and settlement risk	**5**	**0**	**103**	**8**
1.8 Large exposure excess amounts in the trading book	**0**	**0**	**-**	**-**
Total credit risk	**121,937**	**9,755**	**123,837**	**9,907**

FIG. 19 – CAPITAL REQUIREMENTS (PART 2)

€ million	Dec. 31, 2019		Sep. 30, 2019	
	Risk-weighted assets	Capital requirements	Risk-weighted assets	Capital requirements
2 Market risk				
Standardized approach	1,672	134	1,877	150
of which: trading book risk exposures	61	5	49	149
of which: interest-rate risk	61	5	48	4
of which: general and specific price risk (net interest-rate exposure)	61	5	48	4
of which: specific price risk for securitization exposures in trading book	60	5	46	4
specific price risk in CTP	1	0	1	0
equity risk	0	0	1	0
special approach for position risk from CIUs	5	0	3	0
currency risk	1,590	127	1,810	145
commodity risk	15	1	15	1
Internal modeling approach	6,678	534	5,419	434
Total market risk	8,350	668	7,296	584
3 Operational risk				
Operational risk under Basic Indicator Approach	0	0	-	-
Operational risk under Standardized Approach	10,716	857	10,716	857
Operational risk under Advanced Measurement Approach (AMA)	0	0	-	-
Total operational risk	10,716	857	10,716	857
4 Other				
Additional exposure pursuant to article 3 CRR	2,134	171	1,908	153
Exposure amounts for new securitization framework	663	53	340	27
Total other exposures	2,797	224	2,248	180
Sum total	143,800	11,504	144,097	11,528

Fig. 17 is based on the disclosure requirements in EBA/GL/2016/11 and provides a condensed summary of the risk-weighted assets and the associated capital requirements.

Under the Standardized Approach to credit risk, risk-weighted assets had risen by €606 million as at the reporting date compared with September 30, 2019. There were two main reasons for this rise: €1,174 million was attributable to new business in the overall DZ BANK Group and €568 million to the reduction in deferred tax assets.

A fall in R+V's carrying amount, calculated in accordance with the equity method, caused an €888 million reduction in the exposure for long-term equity investments and can be seen in row 1.4 (long-term equity investments in the IRB approach under the simple risk-weighted approach). The rise in market risk of €1,259 million was due to the increase under the internal market risk model, which was primarily attributable to an increase in the 60-day average under the sVaR.

The fall in the total risk amount was largely due to a number of countervailing effects, such as new business under the Standardized Approach to credit risk, the increase under the internal market risk model, the reduction in deferred tax assets, and the decrease in R+V's carrying amount, calculated in accordance with the equity method.

4.2.4 Risk-weighted exposure amounts for specialized lending and long-term equity investments

(ARTICLE 438 SENTENCE 2 CRR)

Fig. 20 shows the risk exposures contained in the portfolio as at the reporting date for the banking group's specialized lending under the supervisory slotting approach (assignment of risk weights prescribed by the supervisory authority). It also contains exposures for long-term equity investments under the simple risk-weighted approach, for which prescribed risk weights have to be used.

FIG. 20 – EU CR10 – IRB (SPECIALIZED LENDING AND LONG-TERM EQUITY INVESTMENTS)

Specialized lending

€ million

Regulatory categories	Remaining maturity	On-balance-sheet amount	Off-balance-sheet amount	Risk weight (%)	Exposure amount	RWAs	Expected losses
Category 1	Less than 2.5 years	208	4	50%	211	105	0
	Equal to or more than 2.5 years	435	24	70%	475	332	2
Category 2	Less than 2.5 years	24	16	70%	38	27	0
	Equal to or more than 2.5 years	763	93	90%	832	749	7
Category 3	Less than 2.5 years	6	85	115%	56	64	2
	Equal to or more than 2.5 years	445	115	115%	534	615	15
Category 4	Less than 2.5 years	-	-	250%	-	-	-
	Equal to or more than 2.5 years	-	-	250%	-	-	-
Category 5	Less than 2.5 years	-	-	-	-	-	-
	Equal to or more than 2.5 years	-	-	-	-	-	-
Total as at Dec. 31, 2019	**Less than 2.5 years**	-	-		-	-	-
	Equal to or more than 2.5 years	-	-		-	-	-
Total as at Jun. 30, 2019	Less than 2.5 years	238	105		304	196	2
	Equal to or more than 2.5 years	1,643	232		1,841	1,696	24

Long-term equity investments under the simple risk-weighted approach

Regulatory categories	On-balance-sheet amount	Off-balance-sheet amount	Risk weight	Exposure amount	RWAs	Capital requirements
Private long-term equity investments	28		190%	28	53	4
Exchange-traded long-term equity investments			290%	-	-	-
Other long-term equity investments	3,434		370%	3,426	12,677	1,014
Total as at Dec. 31, 2019	**3,462**	-		**3,454**	**12,731**	**1,018**
Total as at Jun. 30, 2019	3,450	0		3,443	12,687	1,015

DZ BANK has a significant long-term equity investment in R+V. The carrying amount (before risk weight) of this long-term equity investment is not deducted from DZ BANK's own funds. Instead, it is deemed a risk-weighted asset and backed by own funds. Fig. 21 summarizes the effects for the DZ BANK banking group of the long-term equity investment in R+V.

FIG. 21 – EU INS1 – NON-DEDUCTED PARTICIPATIONS IN INSURANCE UNDERTAKINGS

	Value	
€ million	**Dec. 31, 2019**	Jun. 30, 2019
Holdings of own funds instruments of a financial-sector entity where the institution has a significant investment not deducted from own funds (before risk-weighting)	6,829	6,725
Total risk-weighted assets (RWAs)	25,268	24,881

The €387 million increase in risk-weighted assets was mainly the result of the adjustment to R+V's carrying amount, calculated in accordance with the equity method.

4.2.5 Capital ratios

The **total capital ratio** of the **DZ BANK banking group** rose to 17.9 percent as at December 31, 2019 (September 30, 2019: 16.2 percent). The **Tier 1 capital ratio** of 16.4 percent as at the reporting date was also higher than the figure of 14.7 percent as at September 30, 2019. At 14.4 percent as at December 31, 2019, the

common equity Tier 1 capital ratio exceeded the ratio of 13.7 percent as at September 30, 2019 by 0.7 percentage points.

FIG. 22 – REGULATORY CAPITAL RATIOS OF THE DZ BANK BANKING GROUP IN ACCORDANCE WITH THE CRR

%	Total capital ratio			Tier 1 capital ratio			Common equity Tier 1 capital ratio		
Entity	Dec. 31, 2019	Sep. 30, 2019	Dec. 31, 2018	Dec. 31, 2019	Sep. 30, 2019	Dec. 31, 2018	Dec. 31, 2019	Sep. 30, 2019	Dec. 31, 2018
DZ BANK banking group	**17.9**	16.2	16.8	**16.4**	14.7	15.0	**14.4**	13.7	13.7
DZ BANK (individual institution)	19.5		19.7	16.7		16.3	14.5		15.4
BSH (banking group)	31.4		30.4	31.4		30.4	31.4		30.4
DVB (banking group)	66.02		36.1	51.54		27.0	51.54		27.0
DZ PRIVATBANK (banking group)	23.7		22.7	23.7		22.7	23.7		22.7
TeamBank (banking group)	13.3		15.0	11.1		12.7	10.7		12.0

This increase in the DZ BANK banking group's capital ratios was primarily attributable to the effects described in sections 4.2.1 and 4.2.5. There were no other material changes to the DZ BANK banking group's capital adequacy compared with September 30, 2019.

As at the reporting data, there were no unconsolidated subsidiaries whose own funds fell short of the level of own funds currently stipulated.

4.2.6 Regulatory minimum capital requirements

The minimum capital requirements that the DZ BANK banking group had to comply with in 2019 comprised those components of Pillar 1 laid down as mandatory by law and those individually specified by the banking supervisor. Institution-specific requirements under the additional capital requirements in Pillar 2, determined in the outcome of the Supervisory Review and Evaluation Process (SREP) conducted for the DZ BANK banking group in 2018, also had to be satisfied. In this process, the banking supervisor specified a mandatory add-on (Pillar 2 requirement) that is factored into the basis of calculation used to determine the threshold for the maximum distributable amount (MDA). Distributions are restricted if capital falls below the MDA threshold.

BaFin has classified DZ BANK as an other systemically important institution (O-SII) since 2016. The DZ BANK banking group had to comply with an **O-SII capital buffer** (comprising common equity Tier 1 capital) as defined in section 10g (1) KWG at a level of 1.00 percent in 2019. The mandatory minimum capital requirements and their components applicable as at December 31, 2019 and, as a comparison, as at September 30, 2019 are shown in Fig. 23.

FIG. 23 – REGULATORY MINIMUM REQUIREMENTS

%	Dec. 31, 2019	Sep. 30, 2019
Minimum requirement for common equity Tier 1 capital	4.50	4.50
Additional Pillar 2 capital requirement[1]	1.75	1.75
Capital conservation buffer	2.50	2.50
Countercyclical capital buffer	0.05	0.03
O-SII capital buffer	1.00	1.00
Mandatory minimum requirement for common equity Tier 1 capital	**9.80**	**9.78**
Minimum requirement for additional Tier 1 capital[2]	1.50	1.50
Mandatory minimum requirement for Tier 1 capital	**11.30**	**11.28**
Minimum requirement for Tier 2 capital[3]	2.00	2.00
Mandatory minimum requirement for total capital	**13.30**	**13.28**

1 Disclosure pursuant to article 438 sentence 1 letter b CRR.
2 The minimum requirement can also be satisfied with common equity Tier 1 capital.
3 The minimum requirement can also be satisfied with common equity Tier 1 or additional Tier 1 capital.

In addition to this mandatory component, there is a recommended own funds amount under Pillar 2 (Pillar 2 guidance), which likewise is determined from the SREP, but unlike the mandatory component currently relates only to common equity Tier 1 capital. Failure to comply with the own funds guidance under Pillar 2 does not constitute a breach of regulatory capital requirements. Nevertheless, this figure is relevant as an early warning indicator for capital planning.

Applying the CRR in full, the mandatory minimum capital requirements stipulated by the supervisory authorities and the recommended minimum capital requirements were also complied with on every reporting date in 2019.

4.2.7 Financial conglomerate solvency

The FKAG forms the main legal basis for the supervision of the DZ BANK financial conglomerate. The calculation methodology for the coverage ratio is governed by Commission Delegated Regulation (EU) No. 342/2014 in conjunction with article 49 (1) CRR and Circular 04/2018 from BaFin.

DZ BANK was classified as a financial conglomerate by way of a decision issued by BaFin on December 2, 2015; DZ BANK AG acts as the financial conglomerate's parent company.

The financial conglomerate coverage ratio is the ratio between the total of own funds in the financial conglomerate and the total of solvency requirements for the conglomerate. The resulting ratio must be at least 100 percent.

Financial conglomerate solvency is reported to the supervisory authority annually.

The solvency ratios as at December 31, 2018 were finalized in the first half of 2019. On the basis of a provisional calculation, the DZ BANK financial conglomerate's eligible own funds as at December 31, 2019 amounted to €29,641 million (December 31, 2018: confirmed final eligible own funds of €26,413 million). On the other side of the ratio, the solvency requirement based on a provisional calculation was €17,244 million (December 31, 2018: confirmed final solvency requirements of €15,181 million). This gives a coverage ratio, based on a provisional calculation, of 171.9 percent (December 31, 2018: confirmed final coverage ratio of 174.0 percent), which is significantly in excess of the regulatory minimum requirement of 100 percent.

5 Liquidity adequacy

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

Liquidity risk is defined in section 2.4.1, figure 5 (page 66 et seq.) in conjunction with section 6.2.1 (page 87) of the opportunity and risk report.

5.1 Management of liquidity adequacy

(ARTICLE 435 (1) CRR)

The principles for the management of liquidity adequacy and the risk management strategies and processes in respect of liquidity risk are presented in sections 6.1, 6.2.2, and 6.2.5 (pages 87 to 90) of the opportunity and risk report. The structure and organization of the liquidity risk management function are described in sections 6.2.3 and 6.3.2 (pages 88 and 93) of the opportunity and risk report. Further details of the scope and nature of the liquidity risk measurement systems are provided in sections 6.2.3, 6.2.4, and 6.3.2 (pages 88 to 89 and 93) of the opportunity and risk report. Sections 6.2.2, 6.2.4, and 6.2.5 (pages 87 to 90) of the opportunity and risk report set out the strategies for hedging and mitigating liquidity risk as well as strategies and processes for monitoring the ongoing effectiveness of the measures taken to hedge liquidity risk. A declaration approved by the Board of Managing Directors on the appropriateness of the liquidity risk management agreements can be found in section 2.1.2 (page 61 et seq.) of the opportunity and risk report. Section 2 in conjunction with section 6.2.7 (page 91 et seq.) contains the liquidity risk statement approved by the Board of Managing Directors, which describes the institution's entire liquidity risk profile relating to the business strategy.

5.2 Liquidity coverage ratio (LCR)

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

Since January 1, 2018, a minimum LCR of 100 percent has had to be maintained. DZ BANK reports the LCR of the banking group, calculated in accordance with the CRR in conjunction with Delegated Regulation (EU) No. 2015/61 dated July 29, 2015, to the supervisory authority on a monthly basis.

The liquidity coverage ratio shown for the DZ BANK banking group in Fig. 24 is based on EBA/GL/2017/01 dated June 21, 2017, which has had to be applied since December 31, 2017. In accordance with EBA/GL/2017/01, the liquidity coverage ratio is disclosed quarterly at consolidated level in line with the descriptions in section 3. The disclosed line items are each calculated as the average of the month-end values for the previous 12 months.

The average LCR for the DZ BANK banking group as at December 31, 2019 calculated in accordance with this method was 148.34 percent (September 30, 2019: 148.05 percent), based on average liquid assets of €88,187 million (September 30, 2019: €87,693 million) and net liquidity outflows of €59,565 million (September 30, 2019: €59,335 million) (Fig. 24).

FIG. 24 – LIQUIDITY COVERAGE RATIO OF THE DZ BANK BANKING GROUP (AVERAGE)

		Total weighted value (average)	
		Dec. 31, 2019	Sep. 30, 2019
21	Liquidity buffer (€ million)	**88,187**	87,693
22	Net liquidity outflows (€ million)	**59,565**	59,335
23	Liquidity coverage ratio (%)	**148.34**	148.05

In addition, the DZ BANK banking group discloses the liquidity buffer, net liquidity outflows, and the liquidity coverage ratio as at the reporting date at the end of each six-month period in accordance with Delegated Regulation (EU) No. 2015/61. These are shown in Fig. 25. The LCR as at December 31, 2019 was 144.61 percent (June 30, 2019: 135.19 percent), based on liquid assets of €84,091 million (June 30, 2019: €90,629 million) and net liquidity outflows of €58,151 million (June 30, 2019: €67,040 million). The DZ BANK banking group's LCR is thus higher than the minimum ratio of 100 percent that has been mandatory since 2018.

FIG. 25 – LIQUIDITY COVERAGE RATIO OF THE DZ BANK BANKING GROUP (AS AT THE REPORTING DATE)

		Total weighted value (reporting date)	
		Dec. 31, 2019	Jun. 30, 2019
21	Liquidity buffer (€ million)	**84,091**	90,629
22	Net liquidity outflows (€ million)	**58,151**	67,040
23	Liquidity coverage ratio (%)	**144.61**	135.19

The increase in the LCR measured for the DZ BANK banking group from 135.19 percent as at June 30, 2019 to 144.61 percent as at December 31, 2019 was largely attributable to higher excess cover at the level of DZ BANK, although some of the gain was offset by countervailing effects in the group subsidiaries. Excess cover in relation to the LCR is the difference between the liquidity buffer and the net liquidity outflows.

The rise at the level of DZ BANK was largely due to the extension of the term of the funding, which involved offsetting the fall in short-term deposits by issuing commercial paper with maturities of more than 30 days.

FIG. 26 – LEVEL AND COMPONENTS OF THE LCR IN 2019

Consolidated € million	Total unweighted value (average)				Total weighted value (average)			
Quarter ending on	**Mar. 31, 2019**	**Jun. 30, 2019**	**Sep. 30, 2019**	**Dec. 31, 2019**	**Mar. 31, 2019**	**Jun. 30, 2019**	**Sep. 30, 2019**	**Dec. 31, 2019**
Number of data points used in the calculation of the averages	12	12	12	12	12	12	12	12
High-quality liquid assets								
1 Total high-quality liquid assets (HQLA)					87,533	86,530	87,693	88,187
Cash outflows								
2 Retail deposits and deposits from small business customers, of which:	2,103	2,069	2,071	2,123	648	635	623	640
3 stable deposits	553	532	519	514	28	27	26	26
4 less stable deposits	1,086	1,083	1,115	1,163	156	155	161	169
5 Unsecured wholesale funding	88,867	89,990	91,653	92,052	55,968	56,642	57,571	58,163
6 Operational deposits (all counterparties) and deposits in networks of cooperative banks	35,441	36,274	37,264	36,839	8,860	9,069	9,316	9,210

Consolidated € million	Total unweighted value (average)				Total weighted value (average)			
Quarter ending on	Mar. 31, 2019	Jun. 30, 2019	Sep. 30, 2019	Dec. 31, 2019	Mar. 31, 2019	Jun. 30, 2019	Sep. 30, 2019	Dec. 31, 2019
7 Non-operational deposits (all counterparties)	47,000	47,561	47,871	47,886	40,681	41,419	41,738	41,626
8 Unsecured debt	6,427	6,155	6,517	7,327	6,427	6,155	6,517	7,327
9 Secured wholesale funding					205	251	303	325
10 Additional requirements	30,627	30,732	31,074	32,078	9,916	9,764	9,858	10,230
11 Outflows related to derivative exposures and other collateral requirements	4,873	4,852	4,848	5,008	3,800	3,644	3,587	3,775
12 Outflows related to loss of funding on debt products	111	90	89	124	111	90	89	124
13 Credit and liquidity facilities	25,643	25,791	26,138	26,946	6,006	6,030	6,182	6,332
14 Other contractual funding obligations	1,809	1,854	1,832	1,791	1,426	1,410	1,367	1,350
15 Other contingent funding obligations	46,491	45,044	41,281	37,410	99	118	197	332
16 Total cash outflows	-	-	-	-	**68,262**	**68,820**	**69,919**	**71,040**
Cash inflows								
17 Secured lending (e.g. reverse repos)	5,950	6,107	6,162	6,694	669	809	881	1,008
18 Inflows from fully performing exposures	9,638	9,682	9,953	10,523	6,911	6,843	6,919	7,378
19 Other cash inflows	2,956	3,149	3,446	3,781	2,364	2,524	2,783	3,089
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)	-	-	-	-	-	-	-	-
EU-19b (Excess inflows from a related specialized credit institution)	-	-	-	-	-	-	-	-
20 Total cash inflows	**18,544**	**18,938**	**19,561**	**20,998**	**9,943**	**10,175**	**10,583**	**11,475**
EU-20a Fully exempt inflows	-	-	-	-	-	-	-	-
EU-20b Inflows subject to 90% cap	182	190	200	210	118	123	129	135
EU-20c Inflows subject to 75% cap	18,272	18,672	19,299	20,734	9,825	10,053	10,455	11,339
21 Liquidity buffer					87,533	86,530	87,693	88,187
22 Total net cash outflows					58,318	58,645	59,335	59,565
23 Liquidity coverage ratio (%)					150.3%	147.9%	148.1%	148.3%

5.3 Qualitative LCR disclosures

Further qualitative explanations regarding the LCR are provided below in accordance with the requirements of EBA/GL/2017/01.

5.3.1 Concentration of funding and liquidity sources

The DZ BANK banking group's main short-term and medium-term funding sources on the unsecured money markets essentially comprise deposits from local cooperative banks, deposits from corporate customers and institutional customers, and commercial paper held by institutional investors.

The DZ BANK banking group also obtains long-term funding through structured and non-structured capital market products that are mainly marketed to local cooperative banks and other institutional customers.

A large proportion of the long-term funding results from the issuance of covered bonds such as Pfandbriefe or DZ BANK BRIEFE, which are issued on a decentralized basis, in other words based on the different cover assets at DZ BANK, DZ HYP, and DVB. Another major source of funding is Bausparkasse Schwäbisch Hall's home savings deposits.

Within the LCR, deposits from corporate customers, deposits from local cooperative banks, and deposits from financial customers with a term to maturity of under 30 days have the biggest impact on the liquidity outflows of the DZ BANK banking group.

The liquidity sources included in the liquidity buffer for the LCR at the level of the DZ BANK banking group predominantly consist of balances with central banks and liquid securities. The dominant liquid securities under assets at level 1 (assets that are of extremely high liquidity and credit quality) are government and regional government bonds, bonds of public-sector entities and multilateral development banks, and extremely high-quality covered bonds. The assets at level 2 (assets that are of high liquidity and credit quality) largely comprise high-quality covered bonds and liquid corporate bonds.

5.3.2 Derivative exposures and potential collateral calls

Line item 11 in Fig. 26 – outflows related to derivative exposures and other collateral requirements – consists of potential outflows as a result of

- fluctuations in the fair value of derivatives and the related volatility of the collateral,
- subsequent collateral requirements caused by an assumed worsening of an entity's own credit rating by three notches,
- other potential collateral calls.

The biggest contribution to this line item is the simulation – using the historical look-back approach (HLBA) – of the effects of fluctuations in the fair value of derivatives on the collateral. This involves simulating a stress scenario specified by the supervisory authority.

The effects of subsequent collateral requirements owing to a simulated worsening of the credit rating of the entities in the DZ BANK banking group by three notches also have a significant influence on the aforementioned line item. This is because some OTC collateral agreements that entities in the DZ BANK banking group have entered into contain rating-based triggers. A downgrade in an entity's own credit rating would trigger collateral calls by counterparties.

5.3.3 Currency mismatch in the liquidity coverage ratio

At the level of the DZ BANK banking group, the US dollar is the only significant foreign currency as the liabilities in this currency exceed 5 percent of the total liabilities of the DZ BANK banking group. This gives rise to a requirement to disclose the LCR in US dollars on a monthly basis. However, there is no minimum LCR requirement for US dollars.

The currency mismatch in the liquidity coverage ratio for the US dollar, pound sterling, the Swiss franc, the Hong Kong dollar, and the Singapore dollar, which are the most significant currencies for the DZ BANK banking group besides the euro, is calculated and monitored monthly.

Details of the management of foreign-currency liquidity risk can be found in section 6.2.4 'Measurement of liquidity risk' (pages 88 to 89) of the opportunity and risk report.

5.3.4 Degree of centralization of liquidity management and interaction between the group's units

In the DZ BANK banking group, there is no group waiver pursuant to article 8 CRR that has been approved by the supervisory authority for the disclosure of, and compliance with, regulatory liquidity ratios. As a result, each subsidiary listed in Fig. 7 in the liquidity ratios column has to meet the LCR requirements itself.

Liquidity management of the entities in the DZ BANK banking group and the interaction between the individual entities in the banking group are described in the business report, section 5 'Financial position'.

Disclosures relating to the management of liquidity risk in the DZ BANK banking group can be found in section 6.2.5 'Management of limits for liquidity risk' (pages 89 to 90) of the opportunity and risk report.

5.3.5 Remarks about the LCR disclosure

Short-term deposits from major corporate customers and financial customers have a big impact on the level of liquidity outflows under the LCR of the DZ BANK banking group. The corresponding line items (Fig. 26, rows 5 and 6) are dominated by deposits from the local cooperative banks. DZ BANK performs the central cash-pooling function for these institutions. Local cooperative banks with available liquidity can invest it with DZ BANK, while those requiring liquidity can obtain it from DZ BANK.

The DZ BANK banking group also has inflows that, contrary to the fundamental eligibility cap of 75 percent pursuant to article 33 (4) of Delegated Regulation (EU) No. 2015/61, are subject to a cap of 90 percent (Fig. 26, row EU-20b). These are attributable to TeamBank AG, which has been granted approval by the competent supervisory authority to apply the aforementioned article in conjunction with article 33 (5) of Delegated Regulation (EU) No. 2015/61. This entity's liquidity inflows are therefore not subject to the usual cap on eligibility for the LCR.

5.4 Net stable funding ratio (NSFR)

The net stable funding ratio (NSFR) is a structural liquidity ratio that is used to measure the degree to which an institution matches the maturities of its funding over a 1-year horizon. It is the ratio of available stable funding (ASF) to required stable funding (RSF). Required stable funding is based on the receivables recognized on the assets side of the balance sheet, whereas available stable funding is derived from the equity and liabilities side of the balance sheet. In the calculation of the NSFR, the individual RSF and ASF items are weighted with the factors specified by the supervisory authority.

The NSFR supplements the regulatory requirements in Pillar 1 for measuring liquidity risk, and its final definition was set out when CRR II was published on May 20, 2019. According to the requirements in CRR II, a minimum NSFR of 100 percent has to be maintained at all times with effect from June 28, 2021.

6 Credit risk

Credit risk is defined in section 2.4, figure 5 (page 66 et seq.) of the opportunity and risk report.

6.1 Credit risk management objectives and policies

(ARTICLE 435 (1) CRR)

The principles for the management of credit risk and the strategies and processes in respect of credit risk management (article 435 (1) CRR) are presented in sections 8.1, 8.2, 8.4, and 8.5 (pages 102 to 104) of the opportunity and risk report. The structure and organization of the credit risk management function are described in section 8.5 (page 104) of the opportunity and risk report. The scope and nature of the credit risk reporting and measuring systems are presented in sections 8.5 and 8.6 (pages 105 to 112) of the opportunity and risk report, while sections 8.6.6 to 8.6.8 (pages 108 to 112) of the opportunity and risk report set out the strategies for hedging and mitigating credit risk and the strategies and processes for monitoring the ongoing effectiveness of the measures taken to hedge credit risk.

6.2 Credit risk information

Sections 6.2 to 6.6 of this risk report contain information about credit risk attaching to the instruments subject to Part 3 Title II Chapter 2 (Standardized Approach) and Chapter 3 (IRB approach) CRR. Risk-weighted exposures arising from DZ BANK’s trading activities are not covered here; please refer to section 8 ‘Market risk’ in this report instead. Disclosures on exposures with counterparty credit risk (section 0) are not covered here either. In line with the requirements in EBA/GL/2016/11, disclosures on securitizations are also not included here. Instead, they are covered in section 7 ‘Securitizations’. Moreover, securities financing transactions are included in these sections on credit risk rather than in those on counterparty credit risk.

6.2.1 Qualitative information on credit risk

(ARTICLE 442 SENTENCE 1 LETTERS A AND B CRR)

The amount and structure of the lending volume are key factors in determining credit risk. For external risk reporting in the DZ BANK banking group, the lending volume is broken down pursuant to article 442 sentence 1 letters c to f CRR by the exposure classes used for the Standardized Approach to credit risk and the internal ratings-based approach.

In accordance with article 442 sentence 1 letters c to i CRR, the exposures after accounting offsets and without taking into account the effects of credit risk mitigation are broken down by geographical distribution, industry, and residual maturity so that volume concentrations can be identified. Non-performing and past-due exposures as well as specific and general credit risk adjustments are broken down in the same way.

The **policies and procedures governing the recognition of loss allowances** applicable to the entities in the DZ BANK banking group (article 442 sentence 1 letter b CRR) and other **accounting-related details on credit risk** (article 442 sentence 1 letter a CRR) are described in section 8.6 (pages 104 to 112) of the opportunity and risk report. Non-performing exposures are all transactions that are value-adjusted in accordance with IFRS 9 or for which there is a default in accordance with Article 178 CRR. Under IFRS 9, value-adjusted exposures are those that are classified as credit-impaired (level 3). Companies in the banking sector classify a loan as non-performing if it is rated between 5A and 5E on the VR rating master scale. This corresponds with the default definition given by the CRR. Non-performing loans are also referred to as NPL. An exposure is classified as past due if interest or principal payments and fees due were not paid at the maturity date.
The amount of overdue receivables (> 90 days) that are not considered impaired as of December 31, 2019 amounts to €112 million. Of this amount, € 106 million is attributable to a Group company for which a product-specific reason for default > 90 days has been implemented, as it is not subject to the CRR requirements as a financial services provider. From a product-specific perspective, only receivables in the amount of € 1.3 million are more than 90 days overdue. Only from the debtor's point of view does the significantly higher amount result. In the case of another Group company, the materiality threshold applicable to the Group-wide definition of

default was implemented for the definition of default, impairment classification and NPE classification. With regard to classification into clusters of days in arrears in accordance with FinReporting, however, a default day count without materiality threshold is used.

Distressed restructuring, which, in accordance with Article 178 (3) (d) of the CRR, is to be regarded as an indication that a liability is unlikely to be settled, is defined as follows at DZ BANK: A forbearance measure in accordance with Annex V of Commission Regulation (EU) No. 680/2014, which results in a present value loss of > 1 percent or is accompanied by an assessment that the liability is unlikely to be settled. In this context, certain characteristics of the implemented forbearance measure, such as a high final installment or a long grace period, are assessed particularly critically.

6.2.2 Quantitative information on credit risk

6.2.2.1 Total and average amounts of net exposures by exposure class

(ARTICLE 442 SENTENCE 1 LETTER C CRR)

Fig. 27 compares the net exposures at the reporting date with the average amount of the net exposures over the course of the reporting year, broken down by exposure class and by risk approach. The average exposure is shown for each exposure class as the average for the four quarterly reporting dates of the year. For on-balance-sheet items, the net value is the gross carrying amount of the exposure (after write-offs) less allowances/impairments. Off-balance-sheet items are shown at their gross carrying amount, i.e. nominal amount without application of a credit conversion factor (CCF), less provisions.

FIG. 27 – EU CRB-B – TOTAL AND AVERAGE NET AMOUNT OF EXPOSURES

	Exposure class	**a**	**b**	a	b
		Dec. 31, 2019		Dec. 31, 2018	
	€ million	**Net value of exposures at the end of the period**	**Average net exposures over the period**	Net value of exposures at the end of the period	Average net exposures over the period
1	Central governments and central banks	11,783	14,520	9,802	14,178
2	Institutions	38,845	40,366	29,756	30,592
3	Corporates	105,687	98,654	105,237	103,604
4	of which: specialized lending	31,814	29,320	27,418	26,950
5	of which: SMEs	6,486	3,730	8,946	8,890
6	Retail business	78,716	67,036	73,541	71,807
7	Exposures secured by mortgages on immovable property	64,098	52,605	58,978	57,354
8	of which: SMEs	-	-	-	0
9	of which: non-SMEs	64,098	52,605	58,978	57,354
10	Qualified revolving	-	-	-	0
11	Other retail business	14,618	14,431	14,564	14,453
12	of which: SMEs	371	125	1	2
13	of which: non-SMEs	14,247	14,332	14,563	14,452
14	Equity exposures	7,214	7,092	3,519	3,574
15	Other non-credit-obligation assets	1,613	1,740	1,960	2,272
16	**Total IRB approach**	**243,858**	**229,408**	**223,815**	**226,027**
17	Central governments and central banks	51,617	59,997	51,565	54,987
18	Regional governments or local authorities	32,256	29,427	32,935	34,031
19	Public-sector entities	9,331	8,469	8,901	9,753
20	Multilateral development banks	13	88	415	424
21	International organizations	477	461	585	617
22	Institutions	99,324	96,925	94,559	93,068
23	Corporates	18,126	15,594	15,268	14,872
24	of which: SMEs	1,912	2,020	2,265	2,378
25	Retail business	8,988	9,152	9,478	8,729
26	of which: SMEs	1,920	1,860	1,886	1,675
27	Exposures secured by mortgages on immovable property	2,847	2,030	5,325	5,280
28	of which: SMEs	12	15	2,709	2,707
29	Exposures in default	534	359	233	228

Exposure class	a	b	a	b
	Dec. 31, 2019		Dec. 31, 2018	
€ million	Net value of exposures at the end of the period	Average net exposures over the period	Net value of exposures at the end of the period	Average net exposures over the period
30 Exposures associated with particularly high risk	333	468	607	588
31 Covered bonds	883	837	496	391
32 Exposures to institutions and corporates with a short-term credit assessment	0	0	0	0
33 CIUs	3,216	2,838	2,545	2,527
34 Equity exposures	100	93	79	80
35 Other items	290	310	192	245
36 Total Standardized Approach	**228,336**	**227,048**	**223,183**	**225,820**
37 Total	**472,194**	**456,456**	**446,999**	**451,847**

The changes in the exposures under the Standardized Approach were predominantly attributable to the exposure classes of institutions and corporates. The changes in the exposures under the IRB approach were mainly due to the increases in the three exposure classes of retail business, institutions, and exposures secured by mortgages on immovable property. The overall increase was the result of the sharp rise in new business in the DZ BANK banking group.

6.2.2.2 Geographical structure of the exposure classes

(ARTICLE 442 SENTENCE 1 LETTER D CRR)

Fig. 28 gives a geographical breakdown of the credit-risk-bearing exposures by country group. The lending volume is assigned to the individual country groups using the breakdown of the International Monetary Fund (IMF), which is updated annually. A country is deemed material if its share of the total exposure (Standardized Approach to credit risk and IRB approach) exceeds the materiality threshold of 5 percent. This system is essentially applied to all country-group breakdowns related to credit risk that follow in this regulatory risk report.

Whereas the table below shows the exposures broken down by sector and aggregated into country groups, annex 2 of this report contains a full, detailed breakdown of the exposures by geographical area and material country. Annex 3 of this report contains the disclosures for the countries categorized as non-material, which have been allocated to the Other countries column here.

FIG. 28 – EU CRB-C – GEOGRAPHICAL BREAKDOWN OF EXPOSURES (SUMMARY)

Exposure class	Geographical area							
	a	b	c	d	e	f	g	g
€ million	Germany	Other industrialized countries	Advanced economies	Emerging markets	Supranational organizations	Not allocated to a geographical area	Total as at Dec. 31, 2019	Total as at Dec. 31, 2018
1 Central governments and central banks	-	9,914	1	636	1,232	-	11,783	9,802
2 Institutions	10,264	25,510	685	2,387	-	-	38,845	29,756
3 Corporates	77,895	19,764	1,846	6,182	-	-	105,687	105,237
3a of which: specialized lending	22,340	8,606	132	736	-	-	31,814	27,418
3b of which: SMEs	6,481	4	-	-	-	-	6,486	8,946
4 Retail business	78,226	455	13	21	-	-	78,716	73,541
4a Exposures secured by mortgages on immovable property	63,745	324	11	18	-	-	64,098	58,978
of which: SMEs	-	-	-	-	-	-	-	-
of which: non-SMEs	63,745	324	11	18	-	-	64,098	58,978
4b Qualified revolving	-	-	-	-	-	-	-	-

Exposure class		Geographical area							
		a	b	c	d	e	f	g	g
€ million		Germany	Other industrialized countries	Advanced economies	Emerging markets	Supranational organizations	Not allocated to a geographical area	Total as at Dec. 31, 2019	Total as at Dec. 31, 2018
4c	Other retail business	14,481	131	2	3	-	-	14,618	14,564
	of which: SMEs	362	8	1	-	-	-	371	1
	of which: non-SMEs	14,119	123	2	3	-	-	14,247	14,563
5	Equity exposures	7,033	119	-	61	-	-	7,214	3,519
	Other non-credit-obligation assets	449	88	5	124	-	947	1,613	1,960
6	**Total IRB approach**	**173,867**	**55,851**	**2,551**	**9,412**	**1,232**	**947**	**243,858**	**223,815**
7	Central governments and central banks	42,450	7,526	586	1,039	-	15	51,617	51,565
8	Regional governments or local authorities	28,786	3,470	-	1	-	-	32,256	32,935
9	Public-sector entities	8,314	1,017	-	-	-	-	9,331	8,901
10	Multilateral development banks	-	13	-	-	-	-	13	415
11	International organizations	-	-	-	-	477	-	477	585
12	Institutions	98,968	236	65	55	-	-	99,324	94,559
13	Corporates	12,284	4,399	173	1,237	-	32	18,126	15,268
13a	of which: SMEs	1,822	63	12	16	-	-	1,912	2,265
14	Retail business	6,854	1,060	664	410	-	-	8,988	9,478
14a	of which: SMEs	1,915	3	1	-	-	-	1,920	1,886
15	Exposures secured by mortgages on immovable property	1,114	81	52	1,600	-	-	2,847	5,325
15a	of which: SMEs	12	-	-	-	-	-	12	2,709
16	Exposures in default	354	53	54	72	-	-	534	233
17	Exposures associated with particularly high risk	272	61	-	-	-	-	333	607
18	Covered bonds	709	138	36	-	-	-	883	496
19	Exposures to institutions and corporates with a short-term credit assessment	-	-	-	-	-	-	-	0
20	CIUs	397	2,195	14	132	1	-	2,739	2,545
21	Equity exposures	96	477	5	-	-	-	577	79
22	Other items	61	33	14	43	5	134	290	192
23	**Total Standardized Approach**	**200,660**	**20,759**	**1,662**	**4,589**	**483**	**182**	**228,336**	**223,183**
24	**Total as at Dec. 31, 2019**	**374,527**	**76,610**	**4,213**	**14,001**	**1,715**	**1,129**	**472,194**	
	Total as at Dec. 31, 2018	355,187	65,072	7,603	16,523	1,432	1,181		446,999

As at December 31, 2019, the DZ BANK banking group's total exposure was concentrated in Germany with a total of €374,527 million (December 31, 2018: €355,187 million); other industrialized countries accounted for €76,610 million (December 31, 2018: €65,072 million).

6.2.2.3 Exposure classes by sector

(ARTICLE 442 SENTENCE 1 LETTER E CRR)

Fig. 29 shows the breakdown of on-balance-sheet and off-balance-sheet exposures by sector; the exposures are assigned solely on the basis of the direct counterparties. They are assigned to the individual sectors based on the industry codes used by Deutsche Bundesbank. This system also applies to all other sector breakdowns related to risk in this report.

FIG. 29 – EU CRB-D – CONCENTRATION OF EXPOSURES BY INDUSTRY OR COUNTERPARTY TYPE

	Exposure class	a	b	c	d	e	e
	€ million	Financial sector	Public sector	Corporates and retail customers	Other	Total as at Dec. 31, 2019	Total as at Dec. 31, 2018
1	Central governments and central banks	10,888	895	-	-	11,783	9,802
2	Institutions	38,843	-	2	-	38,845	29,756
3	Corporates	9,742	65	95,880	-	105,687	105,237
3a	of which: specialized lending	2,117	65	29,633	-	31,814	27,418
3b	of which: SMEs	45	-	6,441	-	6,486	8,946
4	Retail business	373	0	78,342	-	78,716	73,541
4a	Exposures secured by mortgages on immovable property	342	0	63,756	-	64,098	58,978
	of which: SMEs	-	-	-	-	-	-
	of which: non-SMEs	342	0	63,756	-	64,098	58,978
4b	Qualified revolving	-	-	-	-		-
4c	Other retail business	31	-	14,587	-	14,618	14,564
	of which: SMEs	3	-	368	-	371	1
	of which: non-SMEs	28	-	14,219	-	14,247	14,563
5	Equity exposures	3,495	-	3,718	-	7,214	3,519
	Other non-credit-obligation assets	3	-183	529	1,265	1,613	1,960
6	**Total IRB approach**	**63,345**	**777**	**178,471**	**1,265**	**243,858**	**223,815**
7	Central governments and central banks	42,934	8,666	1	15	51,617	51,565
8	Regional governments or local authorities	-	30,362	1,894	-	32,256	32,935
9	Public-sector entities	7,435	1,699	197	-	9,331	8,901
10	Multilateral development banks	13			-	13	415
11	International organizations	100	377		-	477	585
12	Institutions	99,313		11	0	99,324	94,559
13	Corporates	6,905	133	11,056	32	18,126	15,268
13a	of which: SMEs	149	0	1,763	-	1,912	2,265
14	Retail business	67	0	8,921	-	8,988	9,478
14a	of which: SMEs	29	0	1,890	-	1,920	1,886
15	Exposures secured by mortgages on immovable property	973	-	1,873	-	2,847	5,325
15a	of which: SMEs	-	-	12	-	12	2,709
16	Exposures in default	11	17	506	-	534	233
17	Exposures associated with particularly high risk	178	-	145	10	333	607
18	Covered bonds	883	-	-	-	883	-
19	Exposures to institutions and corporates with a short-term credit assessment	0	-	-	-	0	0
20	CIUs	703	57	922	1,534	3,216	2,545
21	Equity exposures	6	-	94	0	100	79
22	Other items	5	-	15	269	290	192
23	**Total Standardized Approach**	**159,528**	**41,311**	**25,636**	**1,861**	**228,336**	**223,183**
24	**Total as at Dec. 31, 2019**	**222,873**	**42,088**	**204,107**	**3,126**	**472,194**	
	Total as at Dec. 31, 2018	206,159	41,854	195,860	3,126		446,999

As at December 31, 2019, a high proportion of the DZ BANK banking group's lending volume (47 percent) was concentrated in the financial sector, representing only a very slight change on the proportion a year earlier (December 31, 2018: 46 percent). In addition to the local cooperative banks, the borrowers in this customer segment comprised banks from other sectors of the banking industry and other financial institutions. The volume attributable to public-sector entities increased to €42,088 million as at December 31, 2019 (December 31, 2018: €41,854 million); the volume of lending to private individuals and companies grew to €204,107 million as at the reporting date (December 31, 2018: €195,860 million).
In its role as central institution for the Volksbanken Raiffeisenbanken cooperative financial network, DZ BANK provides funding for the entities in the DZ BANK Group and for the cooperative banks. For this reason, the cooperative banks account for one of the largest receivables items in the DZ BANK Group's credit portfolio. DZ BANK also supports the cooperative banks in the provision of larger-scale funding to corporate customers.

The resulting syndicated business, DZ BANK, DZ HYP and DVB's direct business with corporate customers in Germany and abroad, the retail real-estate business under the umbrella of BSH, TeamBank's consumer finance business, and DZ HYP's real-estate lending and local authority loans businesses determine the sectoral breakdown of the remainder of the portfolio.

6.2.2.4 Lending volume by maturity band and exposure class

(ARTICLE 442 SENTENCE 1 LETTER F CRR)

Fig. 30 and Fig. 31 show the on-balance-sheet and off-balance-sheet exposures net of loss allowances broken down by contractual residual maturity and by CRR exposure class in order to comply with both the CRR and EBA/GL/2016/11. The disclosure is based on the IFRS carrying amounts for the companies consolidated for regulatory purposes. The table is limited to the material exposure classes pursuant to articles 112 and 147 CRR and applying EBA/GL/2014/14; non-material exposures are aggregated under Other items. This report contains a separate table showing only the residual maturities of on-balance-sheet exposures (pursuant to EBA GL 2016-11). However, there is also a table showing the on-balance-sheet and off-balance-sheet exposures and SFTs (pursuant to article 442 CRR).

FIG. 30 – EU CRB-E – MATURITY OF EXPOSURES (ONLY ON-BALANCE-SHEET EXPOSURES)

	Exposure class	a	b	c	d	e	f	f
		Net exposure value						
	€ million	On demand	≤ 1 year	> 1 year ≤ 5 years	> 5 years	No stated maturity	Total as at Dec. 31, 2019	Total as at Dec. 31, 2018
1	Central governments or central banks	7,721	92	248	888	0	8,950	**8,918**
2	Institutions	9,222	5,114	9,561	8,345	0	32,242	**25,992**
3	Corporates	5,423	7,727	25,440	38,969	0	77,560	**77,067**
3a	of which: specialized lending	1,587	1,462	8,702	15,082	0	26,833	**23,342**
3b	of which: SMEs	156	312	367	4,285	0	5,121	**7,373**
4	Retail business	76	5,687	12,036	54,116	0	71,915	**67,671**
4a	Exposures secured by mortgages on immovable property	62	1,344	10,170	45,810	0	57,386	**53,389**
	of which: SMEs	0	0	0	0	0	0	**-**
	of which: non-SMEs	62	1,344	10,170	45,810	0	57,386	**53,389**
4b	Qualified revolving	0	0	0	0	0	0	**-**
4c	Other retail business	14	4,342	1,866	8,307	0	14,529	**14,283**
	of which: SMEs	0	363	5	3	0	371	**1**
	of which: non-SMEs	14	3,980	1,861	8,303	0	14,158	**14,282**
5	Equity exposures	3,526	0	0	0	3,688	7,214	**3,519**
	Other non-credit-obligation assets	496	94	58	0	965	1,613	**1,960**
6	**Total IRB approach**	**26,464**	**18,714**	**47,344**	**102,318**	**4,653**	**199,494**	**185,127**
7	Central governments or central banks	31,145	556	1,359	5,924	577	39,561	**51,225**

Exposure class	a	b	c	d	e	f	f
	Net exposure value						
€ million	On demand	≤ 1 year	> 1 year ≤ 5 years	> 5 years	No stated maturity	Total as at Dec. 31, 2019	Total as at Dec. 31, 2018
8 Regional governments or local authorities	98	3,019	7,791	20,896	64	31,868	32,651
9 Public-sector entities	253	1,170	3,644	4,133	0	9,200	8,850
10 Multilateral development banks	0	0	0	0	0	0	415
11 International organizations	0	0	132	343	3	477	586
12 Institutions	1,902	7,208	12,654	57,986	688	80,438	75,770
13 Corporates	2,405	2,181	3,176	4,048	640	12,450	10,465
13a of which: SMEs	45	281	653	806	0	1,784	2,026
14 Retail business	54	384	2,072	2,223	2,381	7,113	4,765
14a of which: SMEs	2	78	1,045	636	0	1,762	1,722
15 Secured by mortgages on immovable property	1	285	885	1,650	22	2,842	5,266
15a of which: SMEs	0	0	1	10	0	11	2,672
16 Exposures in default	190	20	123	142	22	497	213
17 Exposures associated with particularly high risk	15	10	128	40	0	193	408
18 Covered bonds	0	10	267	460	0	737	496
19 Exposures to institutions and corporates with a short-term credit assessment	0	0	0	0	0	0	0
20 CIUs	0	5	11	1,672	1,524	3,211	2,545
21 Equity exposures	0	0	0	79	20	99	79
22 Other items	11	29	68	34	56	198	127
23 Total Standardized Approach	**36,074**	**14,877**	**32,308**	**99,629**	**5,997**	**188,886**	**192,850**
24 Total as at Dec. 31, 2019	**62,538**	**33,591**	**79,652**	**201,947**	**10,650**	**388,380**	
Total as at Dec. 31, 2018	**20,506**	**76,678**	**81,579**	**190,689**	**8,523**		**377,975**

FIG. 31 – EU CRB-E – MATURITY OF EXPOSURES (ON-BALANCE-SHEET AND OFF-BALANCE-SHEET EXPOSURES AND SFTS)

Exposure class	a	b	c	d	e	f	f
	Net exposure value						
€ million	On demand	≤ 1 year	> 1 year ≤ 5 years	> 5 years	No stated maturity	Total as at Dec. 31, 2019	Total as at Dec. 31, 2018
1 Central governments or central banks	9,931	716	248	888	-	11,783	9,802
2 Institutions	10,236	9,274	9,905	9,430	0	38,845	29,756
3 Corporates	7,852	15,788	36,596	45,451	-	105,687	105,237
3a of which: specialized lending	3,813	1,787	9,874	16,341	-	31,814	27,418
3b of which: SMEs	157	840	638	4,850	-	6,486	8,946
4 Retail business	143	10,983	12,330	55,260	-	78,716	73,541
4a Exposures secured by mortgages on immovable property	129	6,594	10,426	46,949	-	64,098	58,978
of which: SMEs	-	-	-	-	-	-	-
of which: non-SMEs	129	6,594	10,426	46,949	-	64,098	58,978
4b Qualified revolving	-	-	-	-	-	-	-
4c Other retail business	14	4,389	1,904	8,311	-	14,618	14,564
of which: SMEs	-	363	5	3	-	371	1
of which: non-SMEs	14	4,026	1,899	8,308	-	14,247	14,563
5 Equity exposures	3,526	0	-	-	3,688	7,214	3,519
Other non-credit-obligation assets	472	97	58	-	986	1,613	1,960

Exposure class		a	b	c	d	e	f	f
		Net exposure value						
€ million		On demand	≤ 1 year	> 1 year ≤ 5 years	> 5 years	No stated maturity	Total as at Dec. 31, 2019	Total as at Dec. 31, 2018
6	**Total IRB approach**	**32,160**	**36,858**	**59,137**	**111,029**	**4,674**	**243,858**	**223,815**
7	Central governments and central banks	42,668	1,037	1,409	5,926	577	51,617	51,565
8	Regional governments or local authorities	98	3,074	7,964	21,056	64	32,256	32,935
9	Public-sector entities	253	1,220	3,644	4,214	-	9,331	8,901
10	Multilateral development banks	-	-	-	13	-	13	415
11	International organizations	-	-	132	343	3	477	586
12	Institutions	1,935	25,033	12,988	58,680	688	99,324	94,559
13	Corporates	2,533	4,141	4,749	6,063	640	18,126	15,268
13 a	of which: SMEs	45	323	695	849	-	1,912	2,265
14	Retail business	54	443	2,132	2,379	3,980	8,988	9,478
14 a	of which: SMEs	2	99	1,083	736	-	1,920	1,886
15	Secured by mortgages on immovable property	1	285	886	1,654	22	2,847	5,325
15 a	of which: SMEs	-	0	1	11	-	12	2,709
16	Exposures in default	191	25	132	164	22	534	233
17	Exposures associated with particularly high risk	29	127	129	49	-	333	607
18	Covered bonds	-	10	267	606	-	883	496
19	Exposures to institutions and corporates with a short-term credit assessment	0	-	-	-	-	0	0
20	CIUs	-	5	11	1,676	1,524	3,216	2,545
21	Equity exposures	-	-	-	79	21	100	79
22	Other items	11	32	79	112	56	290	192
23	**Total Standardized Approach**	**47,773**	**35,432**	**34,520**	**103,014**	**7,597**	**228,336**	**223,183**
24	**Total as at Dec. 31, 2019**	**79,933**	**72,290**	**93,657**	**214,043**	**12,271**	**472,194**	
	Total as at Dec. 31, 2018	**21,177**	**113,439**	**94,722**	**204,441**	**12,064**		**446,999**

The increase in the exposures to €472,194 million (December 31, 2018: €446,999 million) was attributable to new business in the exposure classes of retail business, institutions, and corporates. The receivables in the DZ BANK banking group are mainly concentrated in non-current receivables with a residual maturity of more than 5 years, which had a volume of €214,043 million (December 31, 2018: €204,441 million).

6.2.2.5 Credit quality, past-due, non-performing, and forborne exposures

(ARTICLE 442 SENTENCE 1 LETTERS G AND H CRR)

The following sections of this regulatory risk report disclose the credit quality of on-balance-sheet and off-balance-sheet exposures by exposure class and by risk approach. Following implementation of EBA/GL/2016/11, exposures in the overviews EU CR1-A (Fig. 32) to EU CR1-C (Fig. 34) have to be broken down according to whether they are in default pursuant to article 178 CRR or not. Section 0 contains disclosures on counterparty credit risk. In accordance with the guidelines mentioned above, information on securitizations has not been included in the credit risk disclosures; this is provided in section 7.

Pursuant to Delegated Regulation (EU) No. 183/2014 dated December 20, 2013 specifying the calculation of specific and general credit risk adjustments, specific credit risk adjustments (SCRA) and general credit risk adjustments (GCRA) must be classified as types of provision in accordance with IFRS. The DZ BANK Group prepares consolidated financial statements and interim consolidated financial statements as at the reporting date in accordance with IFRS. All impairment losses recognized at group level therefore have to be classified as specific credit risk adjustments.

The tables below provide a comprehensive picture of the credit quality of the DZ BANK banking group's on-balance-sheet and off-balance-sheet exposures. The past-due or impaired exposures contained in the COREP report are examined separately, as are the loss allowances recognized. These exposures are broken down by the Standardized Approach to credit risk and the IRB approach and by exposure class, sector, and region.

FIG. 32 – EU CR1-A – CREDIT QUALITY OF EXPOSURES BY EXPOSURE CLASS AND INSTRUMENT

				Dec. 31, 2019					Jun. 30, 2019
	Exposure class	**a**	**b**	**c**	**d**	**e**	**f**	**g**	**g**
		Gross carrying amounts of		**Specific credit risk adjustments**	**General credit risk adjustments**	**Accumulated write-offs**	**Credit risk adjustment charges in the reporting period**	**Net values**	**Net values**
	€ million	**Defaulted exposures**	**Non-defaulted exposures**					**(a+b-c-d)**	
1	Central governments and central banks	-	11,783	0	-	0	0	11,783	15,941
2	Institutions	79	38,779	13	-	60	8	38,845	40,008
3	Corporates	2,145	104,606	1,064	-	82	712	105,687	107,771
4	of which: specialized lending	197	31,728	111	-	3	110	31,814	28,350
5	of which: SMEs	-	6,495	9	-	0	6	6,486	6,389
6	Retail business	929	78,292	505	-	6	363	78,716	74,426
7	Exposures secured by mortgages on immovable property	584	63,663	149	-	4	54	64,098	60,072
8	of which: SMEs	-	-	-	-	-	-	-	-
9	of which: non-SMEs	584	63,663	149	-	4	54	64,098	60,072
10	Qualified revolving	-	-	-	-		-	-	-
11	Other retail business	346	14,629	357	-	3	310	14,618	14,354
12	of which: SMEs	0	371	-	-	0		371	1
13	of which: non-SMEs	345	14,258	357	-	3	310	14,247	14,353
14	Equity exposures	0	7,214	-	-		2	7,214	7,089
	Other non-credit-obligation assets	-	1,613	-	-	0	0	1,613	1,777
15	**Total IRB approach**	**3,153**	**242,287**	**1,583**	**-**	**148**	**1,086**	**243,858**	**247,012**
	of which: loans	2,891	171,579	1,458	-	148	765	173,012	176,694
	of which: debt securities	-	23,433	3	-	0	1	23,430	23,947
	of which: off-balance-sheet receivables	263	36,769	121	-	-	88	36,911	35,516
16	Central governments and central banks	-	51,621	4	-	1	2	51,617	62,394
17	Regional governments or local authorities	17	32,283	27	-	0	40	32,273	32,142
18	Public-sector entities	-	9,332	1	-	0	2	9,331	8,892
19	Multilateral development banks	-	13	-	-	-	-	13	108
20	International organizations	-	477	0	-	0	0	477	429
21	Institutions	-	99,328	3	-	0	3	99,324	96,619
22	Corporates	691	18,173	309	-	108	268	18,555	15,360
23	of which: SMEs	61	1,920	27	-	12	20	1,954	2,151
24	Retail business	172	9,050	157	-	55	119	9,066	8,534
25	of which: SMEs	61	1,939	52	-	37	56	1,948	1,820
26	Exposures secured by mortgages on immovable property	18	2,858	18	-	0	6	2,858	4,967
27	of which: SMEs	-	12	0	-	-	-	12	101
28	Exposures in default	896	2	364	-	145	317	534	280

Exposure class	a	b	c	d	e	f	g	g
	Dec. 31, 2019							Jun. 30, 2019
	Gross carrying amounts of		Specific credit risk adjustments	General credit risk adjustments	Accumulated write-offs	Credit risk adjustment charges in the reporting period	Net values	Net values
€ million	Defaulted exposures	Non-defaulted exposures					(a+b-c-d)	
29 Exposures associated with particularly high risk	0	334	1	-	0	1	333	518
30 Covered bonds	-	884	0	-	-	0	883	769
31 Exposures to institutions and corporates with a short-term credit assessment	-	0	-	-	-	-	0	0
32 CIUs	-	3,216	0	-	-	-	3,216	2,514
33 Equity exposures	-	100	-	-	-	-	100	95
34 Other items	0	291	1	-	0	0	290	304
35 Total Standardized Approach	**898**	**227,958**	**521**	**-**	**165**	**441**	**228,336**	**233,646**
of which: loans	835	164,566	447	-	165	370	164,954	174,016
of which: debt securities	-	30,553	32	-	0	41	30,521	28,352
of which: off-balance-sheet receivables	60	28,774	36	-	-	24	28,799	27,881
36 Total as at Dec. 31, 2019	**4,051**	**470,245**	**2,103**		**313**	**1,528**	**472,194**	
37 of which: loans	3,725	336,146	1,905	-	313	1,136	337,966	350,709
38 of which: debt securities	-	53,985	35	-	0	43	53,950	52,298
39 of which: off-balance-sheet receivables	323	65,543	157	-	-	112	65,709	63,397
36 Total as at Jun. 30, 2019	4,373	478,428	2,143	-	250	1,429		480,658

The gross carrying amounts of the exposures not in default decreased from €480,658 million as at June 30, 2019 to €472,194 million as at the reporting date. This change was due to transactions that had matured as at December 31, 2019 in the banking group.

6.2.2.6 Past-due and non-performing exposures by sector

(ARTICLE 442 SENTENCE 1 LETTER G CRR)

Fig. 33 shows **exposures** in default and not in default, broken down by **sector**. Sectors of little significance to the DZ BANK banking group are aggregated in the 'other' row in Fig. 33.

FIG. 33 – EU CR1-B – CREDIT QUALITY OF EXPOSURES BY INDUSTRY

		a	b	c	d	e	f	g	g
		Dec. 31, 2019							Jun. 30, 2019
		Gross carrying amounts of							
€ million		Defaulted exposures	Non-defaulted exposures	Specific credit risk adjustments	General credit risk adjustments	Accumulated write-offs	Credit risk adjustment charges	Net values (a+b-c-d)	Net values
1	Financial sector	135	222,768	30	-	60	20	222,873	235,543
2	Public sector	18	39,543	35	-	1	43	39,525	40,764
3	Corporates and retail customers	3,898	204,809	2,038	-	252	1,464	206,669	201,460
4	Other	-	3,127	0	-	-	-	3,127	2,891
5	Total as at Dec. 31, 2019	4,051	470,245	2,103		313	1,528	472,194	
	Total as at Jun. 30, 2019	4,373	478,428	2,143	-	250	1,429		480,658

The lower gross carrying amounts for the financial sector were the result of the decrease in business activity at the end of the year under review. By contrast, the gross carrying amounts for the public sector, for corporates and retail customers, and for ‘other’ changed only moderately, reflecting normal fluctuation.

6.2.2.7 Past-due and non-performing exposures by country group

(ARTICLE 442 SENTENCE 1 LETTER H CRR)

Fig. 34 provides an overview of exposures in default and not in default, broken down into major geographical areas. Areas of little significance are aggregated in rows 11, 19, 28, and 34 of this table as ‘other countries’ or ‘other’. Row 35 shows the institutions that are not assigned to a geographical area. The individual volumes in these rows do not exceed the limit of 5 percent of the entire exposure.

FIG. 34 – EU CR1-C – CREDIT QUALITY OF EXPOSURES BY GEOGRAPHY

		a	b	c	d	e	f	g	
		Dec. 31, 2019							Jun. 30, 2019
		Gross carrying amounts of							
€ million		Defaulted exposures	Non-defaulted exposures	Specific credit risk adjustments of non-defaulted exposures	General credit risk adjustments	Accumulated write-offs	Credit risk adjustment charges	Net values (a+b-c-d)	Net values
1	**Germany**	**2,399**	**373,384**	**1,255**	**0**	**228**	**982**	**374,528**	**375,732**
2	**Other industrialized countries**	**845**	**76,301**	**492**	**0**	**29**	**385**	**76,653**	**80,055**
3	France	46	8,776	27	0	0	9	8,795	10,590
4	United Kingdom	17	9,251	4	0	0	3	9,264	11,283
5	Luxembourg	4	6,236	5	0	0	5	6,234	6,642
6	Netherlands	27	5,025	16	0	0	14	5,036	4,262
7	Austria	28	4,687	40	0	0	31	4,676	3,925
8	Switzerland	30	11,490	2	0	24	1	11,518	13,619
9	United States	108	8,410	27	0	4	30	8,491	8,424
10	Other countries	584	22,426	371	0	0	292	22,639	18,070
11	**Advanced economies**	**344**	**3,998**	**150**	**0**	**41**	**47**	**4,192**	**4,666**
12	Hong Kong	80	396	30	0	0	11	446	589
13	Korea	0	503	0	0	0	0	503	527
14	Malta	13	362	13	0	0	1	362	425
15	Singapore	138	1,448	73	0	6	23	1,512	1,612
16	Slovakia	39	1,046	24	0	0	0	1,062	1,045
17	Other countries	74	243	10	0	36	11	307	380
18	**Emerging markets**	**463**	**13,743**	**206**	**0**	**15**	**114**	**14,001**	**17,489**

€ million	a	b	c	d	e	f	g	
	Dec. 31, 2019							Jun. 30, 2019
	Gross carrying amounts of							
	Defaulted exposures	Non-defaulted exposures	Specific credit risk adjustments of non-defaulted exposures	General credit risk adjustments	Accumulated write-offs	Credit risk adjustment charges	Net values (a+b-c-d)	Net values
19 Bermuda	32	496	12	0	0	3	516	558
20 China	3	1,714	13	0	0	2	1,704	1,771
21 Croatia	0	379	0	0	0	0	379	-
22 Russia	0	703	0	0	0	0	703	-
23 Liberia	0	1,090	1	0	0	1	1,089	1,241
24 Marshall Islands	132	2,062	20	0	0	11	2,173	2,692
25 Turkey	0	790	5	0	0	3	785	902
26 Hungary	27	2,001	15	0	0	8	2,012	1,919
27 Other countries	270	4,510	139	0	15	85	4,641	7,718
28 Supranational organizations	**0**	**1,715**	**0**	**0**	**0**	**0**	**1,715**	**1,616**
29 Other European institutions, governing bodies, and organizations	0	1	0	0	0	0	375	1
30 European Financial Stability Facility	0	62	0	0	0	0	105	43
31 European Investment Bank	0	61	0	0	0	0	814	815
34 Other	0	191	0	0	0	0	191	757
35 Not allocated to a geographical area	**0**	**1,105**	**0**	**0**	**0**	**0**	**1,105**	**1,099**
36 Total as at Dec. 31, 2019	**4,051**	**470,245**	**2,103**	**0**	**313**	**1,528**	**472,194**	
37 Total as at Jun. 30, 2019	**4,373**	**478,428**	**2,143**	**-**	**250**	**1,429**		**480,658**

Whereas the exposures in Germany, advanced economies, and supranational organizations remained largely unchanged, the exposures in emerging markets and other industrialized countries fell sharply due to transactions that had matured at DZ BANK.

6.2.2.8 Changes in loss allowances for loans and advances

(ARTICLE 442 SENTENCE 1 LETTER I CRR)

Fig. 35 below focuses only on the changes in the balance of specific and general credit risk adjustments for defaulting or impaired exposures. Only specific credit risk adjustments are relevant in the DZ BANK banking group. Consequently, no values are shown in column b of Fig. 35.

FIG. 35 – EU CR2-A – CHANGES IN THE STOCK OF GENERAL AND SPECIFIC CREDIT RISK ADJUSTMENTS

		a	b	a	b
		Dec. 31, 2019		Jun. 30, 2019	
€ million		Accumulated specific credit risk adjustment	Accumulated general credit risk adjustment	Accumulated specific credit risk adjustment	Accumulated general credit risk adjustment
1	Opening balance	2,365		2,374	
2	Increases due to amounts set aside for estimated loan losses during the period	-206		-110	
3	Decreases due to amounts reversed for estimated loan losses during the period	98		3	
4	Decreases due to amounts taken against accumulated credit risk adjustments	-117		-43	
5	Transfers between credit risk adjustments	2		-	
6	Impact of exchange rate differences	3		1	
7	Business combinations, including acquisitions and disposals of subsidiaries	-		-	
8	Other adjustments	156		139	
9	Closing balance	2,301		2,365	
10	Recoveries on credit risk adjustments recorded directly to the income statement	-78		-29	
11	Specific credit risk adjustments recorded directly to the income statement	32		16	
12	Direct write-downs or write-offs	3		3	
13	Recoveries on direct write-downs or write-offs	0		-	

In the financial year, there were transfers of €2 million between the individual portfolios of credit risk adjustments (Fig. 35, row 5). However, the income statement was directly affected by income from derecognized receivables amounting to €78 million (June 30, 2019: €29 million), expenses arising on changes to the balances of specific credit risk adjustments in an amount of €32 million (June 30, 2019: €16 million), and directly recognized impairment losses of €3 million (June 30, 2019: €3 million).

The balance of specific credit risk adjustments decreased by a total of €64 million in 2019. This largely reflected the decrease in loss allowances at DZ BANK. In particular, the increase due to amounts set aside for estimated loan losses during the reporting period (Fig. 35, row 2) fell substantially compared with June 30, 2019. Supplementing the flow statement for credit risk adjustments in Fig. 52, Fig. 36 shows the balance of defaulting and impaired loans and debt securities, thereby providing a flow statement for exposures in default. Based on the scope of consolidation for regulatory purposes, the values disclosed correspond to the IFRS carrying amounts at the reporting date after deduction of impairment losses.

FIG. 36 – EU CR2-B – CHANGES IN THE STOCK OF DEFAULTED AND IMPAIRED LOANS AND DEBT SECURITIES

€ million		Dec. 31, 2019 Gross carrying amount of defaulted exposures	Jun. 30, 2019 Gross carrying amount of defaulted exposures
1	Opening balance	4,583	4,699
2	Loans and debt securities that have defaulted or been impaired since the last reporting period	1,026	826
3	Returned to non-defaulted status	278	277
4	Amounts written off	1,046	539
5	Other changes	-2,590	–1,758
6	Closing balance	4,335	4,583

Loans and debt securities in default (row 2) increased by €200 million compared with June 30, 2019, primarily due to the reduction in loss allowances in the banking group. As at the reporting date, amounts written off (row 4) were up by €507 million compared with June 30, 2019.

6.3 Non-performing and forborne exposures

(ARTICLE 442 SENTENCE 1 LETTERS G AND I CRR)

Section 6.3 of this risk report contains information about non-performing and forborne exposures that are defined as such according to Annex V of Commission Implementing Regulation (EU) No. 680/2014. This information has to be disclosed for the first time as at December 31, 2019 as a result of EBA/GL/2018/10 coming into force. Proportionality applies based on the significance of the credit institution and on the level of NPEs reported according to the scope of application specified for each individual template. The templates that are applicable only to credit institutions that are significant and have a gross NPL ratio of 5 percent or above were not relevant to the DZ BANK banking group in the reporting year.

In accordance with EBA/GL/2018/10 paragraph 17 et seq., disclosure of the information below replaces the presentation of the maturity structure of past-due on-balance-sheet exposures in accordance with FINREP (Implementing Regulation (EU) No. 680/2014 dated April 16, 2014 amended by Implementing Regulation (EU) No. 2017/1443 dated June 29, 2017), disregarding whether they are impaired or not, and the presentation of non-performing forborne exposures in accordance with FINREP (Implementing Regulation (EU) No. 680/2014 dated April 16, 2014, amended by Implementing Regulation (EU) No. 2017/1443 dated June 29, 2017) in tables EU CR1-D and EU-CR1-E of the EBA Guidelines on disclosure requirements under Part 8 of Regulation (EU) No. 575/2013.

6.3.1 Forbearance

Fig. 37 shows the gross carrying amount of the forborne exposures and the related accumulated impairment, provisions, accumulated change in fair value due to credit risk, and collateral and financial guarantees received based on the scope of consolidation for regulatory purposes in accordance with Part 1 Title II Chapter 2 CRR.

FIG. 37 – EU CQ1: CREDIT QUALITY OF FORBORNE EXPOSURES

	a	b	c	d	e	f	g	h
	Gross carrying amount/nominal amount of exposures with forbearance measures				Accumulated impairment, accumulated negative changes in fair value due to credit risk, and provisions		Collateral received and financial guarantees received on forborne exposures	
		Non-performing forborne						
€ million	Performing forborne		Of which defaulted	Of which impaired	On performing forborne exposures	On non-performing forborne exposures		Of which collateral and financial guarantees received on non-performing exposures with forbearance measures
Loans and advances	727	2,785	2,526	2,269	-17	-1,141	1,504	1,114
Central banks	-	-	-	-	-	-	-	-
General governments	5	-	-	-	0	-	-	-
Credit institutions	-	23	23	23	-	-2	21	21
Other financial corporations	10	276	276	85	0	-96	84	84
Non-financial corporations	313	1,703	1,699	1,641	-7	-907	702	557
Households	399	783	528	520	-11	-137	696	452
Debt securities	-	0	-	-	-	0	-	-
Loan commitments given	87	28	28	2	-2	-18	9	1
Total	**814**	**2,814**	**2,554**	**2,270**	**-19**	**-1,159**	**1,513**	**1,115**

The gross amount of the exposures with forbearance measures was €3,628 million as at December 31, 2019. Of this total, €814 million was accounted for by performing forborne exposures and €2,814 million by non-performing forborne exposures.

As at December 31, 2019, the accumulated impairment stood at €1,179 million, of which €1,159 million was attributable to non-performing forborne exposures.
The majority of the accumulated impairment of non-performing forborne exposures was attributable to non-financial corporations (€907 million or 78 percent), while €137 million (12 percent) was attributable to households and €96 million (8 percent) to other financial corporations.

As at December 31, 2019, the collateral and financial guarantees received on forborne exposures totaled €1,513 million, of which €1,115 million (74 percent) was attributable to non-performing exposures with forbearance measures.

6.3.2 Non-performing exposures

Fig. 38 shows the gross carrying amount of performing and non-performing exposures based on the scope of consolidation for regulatory purposes in accordance with Part 1 Title II Chapter 2 CRR.

FIG. 38 – EU CQ3: CREDIT QUALITY OF PERFORMING AND NON-PERFORMING EXPOSURES BY PAST DUE DAYS

	a	b	c	d	e	f	g	h	i	j	k	l
	Gross carrying amount/nominal amount											
	Performing exposures			Non-performing exposures								
€ million		Not past due or past due ≤ 30 days	Past due > 30 days ≤ 90 days		Unlikely to pay that are not past due or are past due ≤ 90 days	Past due > 90 days ≤ 180 days	Past due > 180 days ≤ 1 year	Past due > 1 year ≤ 2 years	Past due > 2 years ≤ 5 years	Past due > 5 years ≤ 7 years	Past due > 7 years	Of which defaulted
Loans and advances	334,645	334,449	196	4,605	2,700	270	261	397	479	233	265	4,296
Central banks	52,296	52,296	-	-	-	-	-	-	-	-	-	-
General governments	19,892	19,891	1	-	-	-	-	-	-	-	-	-
Credit institutions	97,324	97,322	2	70	47	-	-	-	-	-	23	70
Other financial corporations	14,186	14,185	1	299	290	1	0	1	1	6	-	299
Non-financial corporations	77,805	77,718	87	2,875	1,617	142	129	268	310	196	213	2,861
Of which SMEs	8,648	8,629	20	154	55	13	17	14	7	7	41	151
Households	73,142	73,036	106	1,362	746	128	131	128	167	32	30	1,066
Debt securities	51,630	51,630	-	170	134	35	-	-	-	-	-	170
Central banks	-	-	-	-	-	-	-	-	-	-	-	-
General governments	23,000	23,000	-	-	-	-	-	-	-	-	-	-
Credit institutions	20,843	20,843	-	9	9	-	-	-	-	-	-	9
Other financial corporations	4,042	4,042	-	160	125	35	-	-	-	-	-	160
Non-financial corporations	3,745	3,745	-	0	0	-	-	-	-	-	-	0
Off-balance-sheet exposures	64,878	-	-	289	-	-	-	-	-	-	-	288
Central banks	0	-	-	-	-	-	-	-	-	-	-	-
General governments	439	-	-	-	-	-	-	-	-	-	-	-
Credit institutions	20,348	-	-	2	-	-	-	-	-	-	-	2
Other financial corporations	6,604	-	-	7	-	-	-	-	-	-	-	7
Non-financial corporations	28,445	-	-	262	-	-	-	-	-	-	-	262
Households	9,041	-	-	19	-	-	-	-	-	-	-	18
Total	**451,153**	**386,079**	**196**	**5,064**	**2,835**	**305**	**261**	**397**	**479**	**233**	**265**	**4,754**

The gross amount of the performing and non-performing exposures was €456,217 million as at December 31, 2019. Of this total, €451,153 million was accounted for by performing exposures and €5,064 million by non-performing exposures.

Of the non-performing exposures, the majority (€3,136 million or 62 percent) was attributable to non-financial corporations, while €1,380 million (27 percent) was attributable to households and €466 million (9 percent) to other financial corporations. In total, 60 percent of the non-performing exposures were past due by 90 days or fewer and 19 percent were past due by more than 2 years. Off-balance-sheet exposures are not included in the breakdown by past-due period. Overall, 94 percent of non-performing exposures were in default.

The DZ BANK Group's gross NPL ratio was 1.1 percent.

Fig. 39 shows the gross carrying amount of the performing and non-performing exposures and the related accumulated impairment, provisions, accumulated changes in fair value due to credit risk, accumulated partial write-offs, and collateral and financial guarantees received based on the scope of consolidation for regulatory purposes in accordance with Part 1 Title II Chapter 2 CRR.

FIG. 39 – EU CR1: PERFORMING AND NON-PERFORMING EXPOSURES AND RELATED PROVISIONS

	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**						**Accumulated partial write-offs**	**Collateral and financial guarantees received**	
	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**				**On performing exposures**	**On non-performing exposures**
€ million		**Of which stage 1**	**Of which stage 2**		**Of which stage 2**	**Of which stage 3**		**Of which stage 1**	**Of which stage 2**		**Of which stage 2**	**Of which stage 3**			
Loans and advances	334,645	323,680	6,808	4,605	474	3,908	-419	-218	-201	-1,920	-7	-1,833	0	130,879	1,976
Central banks	52,296	52,296	-	-	-	-	-	-	-	-	-	-	-	-	-
General governments	19,892	18,974	34	-	-	-	-2	-2	0	-	-	-	-	4,278	-
Credit institutions	97,324	94,882	15	70	-	70	-7	-7	0	-5	-	-5	-	6,934	61
Other financial corporations	14,186	13,699	349	299	1	133	-7	-6	-1	-101	0	-46	-	7,642	84
Non-financial corporations	77,805	75,533	1,898	2,875	175	2,642	-140	-89	-51	-1,456	0	-1,432	0	51,699	963
Of which SMEs	8,648	8,215	375	154	9	118	-34	-15	-19	-88	-	-84	-	4,612	18
Households	73,142	68,296	4,512	1,362	298	1,063	-264	-114	-149	-358	-7	-351	0	60,327	867
Debt securities	51,630	44,064	294	170	-	129	-41	-14	-27	-65	-	-64	-	0	-
Central banks	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
General governments	23,000	16,846	228	-	-	-	-29	-5	-24	-	-	-	-	-	-
Credit institutions	20,843	19,957	-	9	-	9	-2	-2	-	-9	-	-9	-	-	-
Other financial corporations	4,042	3,718	66	160	-	120	-9	-5	-4	-55	-	-54	-	-	-
Non-financial corporations	3,745	3,542	-	0	-	-	-1	-1	-	0	-	-	-	0	-
Off-balance-sheet exposures	64,878	64,302	576	289	0	289	-56	-44	-11	-140	-	-140	-	2,299	16
Central banks	0	0	-	-	-	-	0	0	-	-	-	-	-	-	-
General governments	439	439	-	-	-	-	0	0	0	-	-	-	-	-	-
Credit institutions	20,348	20,271	77	2	-	2	-2	-2	0	0	-	0	-	110	2
Other financial corporations	6,604	6,553	51	7	-	7	-4	-3	0	0	-	0	-	162	0
Non-financial corporations	28,445	28,020	426	262	0	262	-41	-31	-11	-126	-	-126	-	1,785	13
Households	9,041	9,020	22	19	-	19	-8	-8	0	-13	-	-13	-	242	1
Total	**451,153**	**432,046**	**7,678**	**5,064**	**474**	**4,326**	**-516**	**-277**	**-239**	**-2125**	**-7**	**-2,036**	**0**	**133,178**	**1,992**

Of the total performing exposures, 96 percent were assigned to stage 1 and 2 percent to stage 2. Of the non-performing exposures, 85 percent were assigned to stage 3 and 9 percent to stage 2.

As at December 31, 2019, accumulated impairment for non-performing exposures amounted to €2,125 million, of which 0.3 percent was assigned to stage 2 and 96 percent to stage 3.

As at December 31, 2019, collateral and financial guarantees received for performing and non-performing exposures totaled €135,170 million, of which €1,992 million (2 percent) was attributable to non-performing exposures.

6.3.3 Foreclosed assets

The DZ BANK Group has no collateral that it obtained by taking possession of foreclosed assets.

6.4 Use of credit risk mitigation techniques

6.4.1 Qualitative information on credit risk mitigation

(ARTICLE 452 SENTENCE 1 LETTER B (III) AND ARTICLE 453 SENTENCE 1 LETTERS A TO E CRR)

The methods used by the DZ BANK banking group to mitigate credit risk are described in section 8.6.7 (pages 109 to 111) of the opportunity and risk report. The description is divided into the following topics:

- Collateral strategy and secured transactions
- Types of collateral
- Management of traditional loan collateral
- Collateral management
- Central counterparties (CCPs).

Section 8.6.7 (pages 109 to 111) of the opportunity and risk report contains a description of the credit risk mitigation rules and processes applicable to on-balance-sheet and off-balance-sheet netting. This is supplemented in section 8.6.7 (pages 109 to 111) of the opportunity and risk report by details of the rules and processes for the measurement and management of collateral as well as details of the most important types of collateral. The most important types of guarantor and counterparty for credit derivatives, and their creditworthiness, are disclosed in section 8.6.7 (page 110) of the opportunity and risk report. In addition to financial institutions, which make up the majority of the guarantors, corporates also constitute as guarantors. These consist mainly of Union funds. The majority of corporates are in the rating classes 1B to 2B, and financial institutions in the rating classes 1C to 2C. Concentrations of market risk or credit risk within credit risk mitigation are outlined in section 8.6.6 (pages 108 to 109) of the opportunity and risk report.

6.4.2 Quantitative information on credit risk mitigation

(ARTICLE 453 SENTENCE 1 LETTERS F AND G CRR)

This section contains information about exposures collateralised by financial collateral, other collateral, guarantees, and credit derivatives.

Fig. 40 and Fig. 41 provide an overview of the extent to which credit risk mitigation techniques are used in the DZ BANK banking group. The tables also show the secured and unsecured exposures. All collateral, financial guarantees, and credit derivatives used to mitigate the credit risk of the secured exposures are listed, irrespective of whether the risk-weighted assets are calculated under the Standardized Approach (simple and comprehensive method of recognizing financial collateral) or under the IRB approach. The figures shown for credit risk mitigation in each case are the regulatory risk-weighted values.

Disclosures about the use of credit risk mitigation techniques under the Standardized Approach can be found in section 6.5 of this risk report, whereas information about credit risk mitigation techniques under the IRB approach is provided in section 6.6.

For certain IRBA assets held by BSH, DZ HYP, and DVB, the mortgage-related or real-estate collateral recognized for credit risk mitigation purposes is included in the calculation of capital requirements as LGD.

FIG. 40 – EU CR3 – CREDIT RISK MITIGATION TECHNIQUES – OVERVIEW AS AT DECEMBER 31, 2019

	Exposure class	a	b	c	d	e
	€ million	Unsecured exposures – carrying amount	Secured exposures – carrying amount	Exposures secured by collateral	Exposures secured by financial guarantees	Exposures secured by credit derivatives
1	Central governments and central banks	11,159	624	614	-	-
2	Institutions	25,946	12,899	3,896	791	-
3	Corporates	69,854	35,833	29,016	2,872	-
4	of which: specialized lending	21,721	10,093	7,642	892	-
5	of which: SMEs	2,656	3,829	3,526	27	-
6	Retail business	25,995	52,720	50,375	103	0
7	Exposures secured by mortgages on immovable property	13,389	50,709	49,752	41	0
8	of which: SMEs	-	-	-	-	-
9	of which: non-SMEs	13,389	50,709	49,752	41	-
10	Qualified revolving					-
11	Other retail business	12,607	2,011	623	62	0
12	of which: SMEs	370	1		1	-
13	of which: non-SMEs	12,237	2,010	623	61	-
14	Equity exposures	7,207	7	7	-	-
15	Other non-credit-obligation assets	1,636	2	-	-	-
16	**Total IRB approach**	**141,797**	**102,085**	**83,908**	**3,766**	**0**
17	of which: loans	81,145	91,867	76,128	2,788	-
18	of which: debt securities	21,261	2,169	1,828	245	-
19	of which: in default	600	1,889	1,633	90	-
20	Central governments and central banks	50,857	760	586	30	-
21	Regional governments or local authorities	32,175	82	2	0	-
22	Public-sector entities	8,268	1,063	8	611	-
23	Multilateral development banks	13	-	-	-	-
24	International organizations	477	-	-	-	-
25	Institutions	98,951	373	4		-
26	Corporates	13,526	4,599	564	1,864	-
27	of which: SMEs	1,649	264	18	178	-
28	Retail business	8,615	374	150	0	-
29	of which: SMEs	1,911	8	5	0	-
30	Secured by mortgages on immovable property	21	2,825	2,825	-	-
31	of which: SMEs	-	12	12	-	-
32	Exposures in default	436	98	10	59	-
33	Exposures associated with particularly high risk	332	0	-	-	-
34	Covered bonds	883	-	-	-	-
35	Exposures to institutions and corporates with a short-term credit assessment	0	-	-	-	-
36	CIUs	3,216	-	-	-	-
37	Equity exposures	100	-	-	-	-
38	Other items	290	0	-	-	-
39	**Total Standardized Approach**	**218,161**	**10,174**	**4,150**	**2,564**	**0**
40	of which: loans	156,543	8,411	2,222	2,001	-
41	of which: debt securities	29,634	887	223	433	-
42	of which: in default	437	1,272	8	59	-

Exposure class	a	b	c	d	e
€ million	Unsecured exposures – carrying amount	Secured exposures – carrying amount	Exposures secured by collateral	Exposures secured by financial guarantees	Exposures secured by credit derivatives
43 **Total exposures**	**359,958**	**112,260**	**88,058**	**6,330**	**0**
44 of which: loans	237,688	100,279	78,349	4,789	0
45 of which: debt securities	50,895	3,055	2,051	678	0
46 of which: in default	1,037	3,161	1,641	149	0

FIG. 41 – EU CR3 – CREDIT RISK MITIGATION TECHNIQUES – OVERVIEW AS AT JUNE 30, 2019

Exposure class	a	b	c	d	e
€ million	Unsecured exposures – carrying amount	Secured exposures – carrying amount	Exposures secured by collateral	Exposures secured by financial guarantees	Exposures secured by credit derivatives
1 Central governments and central banks	13,565	2,376	1,809	436	-
2 Institutions	21,592	17,738	5,992	792	-
3 Corporates	65,576	42,195	35,026	3,202	-
4 of which: specialized lending	18,749	9,601	6,606	877	-
5 of which: SMEs	2,394	3,994	3,492	355	-
6 Retail business	13,958	60,468	52,221	78	-
7 Exposures secured by mortgages on immovable property	1,610	58,462	51,615	31	-
8 of which: SMEs	-	-	-	-	-
9 of which: non-SMEs	1,610	58,462	51,615	31	-
10 Qualified revolving	-	-	-	-	-
11 Other retail business	12,347	2,006	606	48	-
12 of which: SMEs	1	-	-	-	-
13 of which: non-SMEs	12,346	2,006	606	48	-
14 Equity exposures	3,517	3,572	7	-	-
15 Other non-credit-obligation assets	1,841	-64	-	-	-
16 **Total IRB approach**	**120,049**	**126,286**	**95,056**	**4,509**	**-**
17 of which: loans	68,171	108,522	86,132	3,419	-
18 of which: debt securities	17,032	6,237	4,391	243	-
19 of which: in default	459	2,634	2,120	202	-
20 Central governments and central banks	61,381	1,013	40	-	-
21 Regional governments or local authorities	31,900	226	4	1	-
22 Public-sector entities	7,721	1,171	203	614	-
23 Multilateral development banks	80	29	-	-	-
24 International organizations	429	-	-	-	-
25 Institutions	96,288	331	2	-	-
26 Corporates	11,138	4,037	492	1,359	-
27 of which: SMEs	1,830	297	21	203	-
28 Retail business	7,832	632	149	2	-
29 of which: SMEs	1,784	12	5	2	-
30 Exposures secured by mortgages on immovable property	-	4,958	4,936	-	-
31 of which: SMEs	-	100	100	-	-
32 Exposures in default	223	57	8	36	-
33 Exposures associated with particularly high risk	518	-	-	-	-
34 Covered bonds	614	155	-	-	-
35 Exposures to institutions and corporates with a short-term credit assessment	0	-	-	-	-
36 CIUs	2,514	-	-	-	-

Exposure class € million		a Unsecured exposures – carrying amount	b Secured exposures – carrying amount	c Exposures secured by collateral	d Exposures secured by financial guarantees	e Exposures secured by credit derivatives
37	Equity exposures	95	-	-	-	-
38	Other items	278	26	-	-	-
39	**Total Standardized Approach**	**221,011**	**12,635**	**5,834**	**2,012**	**-**
40	of which: loans	164,392	9,617	2,064	1,514	-
41	of which: debt securities	27,224	1,127	7	438	-
42	of which: in default	223	3,390	6	36	-
43	**Total exposures**	**341,059**	**138,920**	**100,890**	**6,522**	**-**
44	of which: loans	232,563	118,139	88,196	4,933	-
45	of which: debt securities	44,256	7,364	4,398	682	-
46	of which: in default	682	6,024	2,126	239	-

Whereas the unsecured exposures rose by €18,899 million to €359,958 million as at the reporting date (June 30, 2019: €341,059 million), the secured exposures fell by €26,660 million to €112,260 million as at December 31, 2019 (June 30, 2019: €138,920 million) and the exposures secured by collateral fell by €12,832 million to €88,058 million (June 30, 2019: €100,890 million). The changes in these three categories were caused by transactions that had matured as at the end of the reporting year. By contrast, there were only minimal changes in the exposures secured by financial guarantees compared with the position as at June 30, 2019 and these were the result of fluctuation within the normal range.

6.5 Credit risk and techniques for mitigating credit risk under the Standardized Approach

6.5.1 Qualitative information on use of the Standardized Approach

(ARTICLE 444 SENTENCE 1 LETTER A CRR)

As in previous years, the rating agencies below are used to help determine the capital requirements for all exposure classes under the Standardized Approach to credit risk for which credit ratings are used (see also section 5.3 'Rating downgrades' in the opportunity and risk report (page 87 et seq.)).

- Standard & Poor's Ratings Services (Standard & Poor's)
- Moody's Investors Service (Moody's) and
- Fitch Ratings, Ltd. (Fitch).

6.5.1.1 Transfer of credit ratings for bond issues to assets

(ARTICLE 444 SENTENCE 1 LETTERS B, C, AND D CRR)

External credit ratings awarded by recognized rating agencies or export insurance agencies are applied to assets of the DZ BANK banking group in accordance with the requirements of articles 137 to 141 CRR and apply to all exposure classes used for the Standardized Approach to credit risk listed in article 112 CRR in which external credit ratings are used (article 444 sentence 1 letter b CRR). To assess creditworthiness, the DZ BANK banking group draws on all of the main external rating sources that are available in the reporting software. The logic used by this software is described below.

In cases where an exposure-specific credit rating is not available for an exposure, and only an issuer-specific credit rating or a credit rating for another of the issuer's issues is available, DZ BANK applies this credit rating to the unrated exposure in accordance with the criteria of article 139 CRR. The available credit rating is applied if it

1. produces a higher risk weight than for the unrated exposure and the unrated exposure's ranking is equal to or lower than that of the rated exposure (article 139 (2) sentence 1 letter a CRR) or if it
2. produces a lower risk weight than for the unrated exposure and the rated exposure's ranking is equal to or higher than that of the unrated exposure (article 139 (2) sentence 1 letter b CRR).
3. If these conditions are not met, the exposure is treated as unrated pursuant to article 139 (2) sentence 2 CRR.

No bond issue credit ratings are transferred to comparable exposures of equal or higher ranking.

Currently, the DZ BANK banking group does not use the aforementioned process for applying credit ratings of issuers and issues to exposures in the banking book as it is not relevant. DZ BANK uses the standard assignment of credit ratings as published by the EBA. Therefore, no separate disclosure pursuant to article 444 sentence 1 letter d CRR is required.

6.5.2 Quantitative information on use of the Standardized Approach

(ARTICLE 444 LETTER E AND ARTICLE 453 SENTENCE 1 LETTERS F AND G CRR)

Fig. 42 shows the exposures broken down by exposure class under the Standardized Approach to credit risk where such exposures are secured by financial collateral, life insurance, or guarantees. The figures for credit risk mitigation in each case are the regulatory risk-weighted values.

In this context, the exposures assigned to the exposure classes under the Standardized Approach to credit risk are shown before and after credit risk mitigation under the Standardized Approach. The classification of transactions in the regulatory risk weight categories depends on how the transactions are classified in the regulatory exposure classes, on the credit ratings of borrowers and transactions, and on the particular collateral provided. The sum total of exposures after credit risks have been mitigated under the Standardized Approach to credit risk arises from the provision of personal collateral for IRBA transactions by protection providers treated according to the Standardized Approach to credit risk.

In some cases, the exposures reported after credit risk mitigation are larger than exposures before credit risk mitigation. This is because exposures after credit risks have been mitigated include exposures reported under the IRB approach that are backed by protection providers, in particular guarantors, treated according to the Standardized Approach to credit risk.

FIG. 42 – CRSA EXPOSURES BEFORE CREDIT RISK MITIGATION BY RATING CATEGORY

€ million	Risk weight (%)															
Exposure class	**0**	**2**	**4**	**10**	**20**	**35**	**50**	**70**	**75**	**100**	**150**	**250**	**370**	**1,250**	**Other**	**Capital deduction**
Exposure before credit risk mitigation																
Central governments and central banks	50,769	-	-	-	311	-	44	-	-	58	11	426	-	0	0	-
Regional governments or local authorities	31,414	0	0	0	1,098	0	142	0	0	1	0	0	-	0	0	-
Other public-sector entities	8,535	0	0	0	580	0	282	0	0	317	0	0	-	0	0	-
Multilateral development banks	0	0	0	0	13	0	0	0	0	0	0	0	-	0	0	-
International organizations	478	0	0	0	0	0	0	0	0	0	0	0	-	0	0	-
Institutions	86,824	0	0	0	1,980	0	433	0	0	26	0	0	-	0	0	-
Corporates	241	0	0	0	1,303	0	1,540	0	0	13,735	1	0	-	0	3	-
Retail business	0	0	0	0	7	0	215	0	5,479	216	0	0	-	0	0	-

€ million	Risk weight (%)															
Exposure class	**0**	**2**	**4**	**10**	**20**	**35**	**50**	**70**	**75**	**100**	**150**	**250**	**370**	**1,250**	**Other**	**Capital deduction**
Exposure before credit risk mitigation																
Exposures secured by mortgages on immovable property	0	0	0	0	0	528	667	0	1,259	0	0	0	-	0	0	-
Past-due exposures	0	0	0	0	0	0	0	0	0	234	251	0	-	0	0	-
Exposures associated with particularly high risk	0	0	0	0	0	1,634	16	0	0	0	213	0	-	0	0	-
Covered bonds	446	0	0	0	161	0	0	0	0	0	0	0	-	0	0	-
Institutions and corporates with a short-term credit assessment	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	-
CIUs	0	0	0	0	0	0	0	0	0	6	0	0	-	0	1,528	-
Long-term equity investments	0	0	0	0	0	0	0	0	0	154	0	1	-	0	0	-
Other items	6	0	0	0	5	0	0	0	0	186	7	0	-	67	0	-
Total as at Dec. 31, 2019	**178,713**	**0**	**0**	**0**	**5,458**	**2,162**	**3,339**	**0**	**6,739**	**14,933**	**483**	**427**	**0**	**67**	**1,531**	**-**
Total as at Jun. 30, 2019	187,614	-	-	-	4,051	2,574	4,695	-	7,076	12,286	547	654	-	55	2,470	-

The reduction in the exposures in the 0 percent risk weight class is based on the sharp fall in business activity in the central governments and central banks exposure class as at the reporting date. The fluctuation in the other risk weight classes compared with June 30, 2019 was normal.

6.5.2.1 Credit risk and the effects of credit risk mitigation under the Standardized Approach

(ARTICLE 453 LETTERS F AND G CRR)

Fig. 43 shows the effect of all the credit risk mitigation techniques used by DZ BANK as at the reporting date resulting from the recognition of financial collateral when calculating the capital requirements under the Standardized Approach in the DZ BANK banking group. In accordance with the requirements, receivables subject to counterparty credit risk or the frameworks for securitizations are not included in this table. RWA density is calculated by dividing exposures after credit conversion factor and credit risk mitigation by the total sum of risk-weighted assets. The values in this table are based on the regulatory figures according to the COREP report.

FIG. 43 – EU CR4 – STANDARDIZED APPROACH – CREDIT RISK EXPOSURE AND CREDIT RISK MITIGATION EFFECTS

		a	b	c	d	e	f
	Exposure class	**Exposures before credit conversion factor and credit risk mitigation**		**Exposures after credit conversion factor and credit risk mitigation**		**RWAs and RWA density**	
	€ million	**On-balance-sheet amount**	**Off-balance-sheet amount**	**On-balance-sheet amount**	**Off-balance-sheet amount**	**RWAs**	**RWA density (%)**
1	Central governments and central banks	51,565	52	53,881	373	1,264	2.33%
2	Regional governments or local authorities	32,027	246	32,606	116	287	0.88%
3	Public-sector entities	9,281	50	8,512	12	171	2.01%
4	Multilateral development banks	13	0	43	0	3	6.19%
5	International organizations	477	0	477	0	0	0.00%
6	Institutions	80,900	18,424	81,572	1,899	384	0.46%
7	Corporates	12,815	5,740	9,999	2,062	11,010	91.29%
8	Retail business	4,923	4,142	4,995	266	3,429	65.18%
9	Secured by mortgages on immovable property	2,854	4	2,713	3	1,337	49.22%
10	Exposures in default	497	37	434	25	560	122.16%
11	Exposures associated with particularly high risk	264	69	205	8	837	393.38%
12	Covered bonds	883	0	883	0	39	4.46%
13	Institutions and corporates with a short-term credit assessment	0	0	0	0	0	50.00%
14	CIUs	3,212	4	3,212	4	2,170	67.48%
15	Long-term equity investments	99	1	99	1	105	104.89%
16	Other items	257	33	425	41	1,278	274.18%
17	**Total as at Dec. 31, 2019**	**199,591**	**28,745**	**199,999**	**4,867**	**22,875**	**11.17%**
	Total as at Jun. 30, 2019	207,285	28,017	206,448	4,542	21,522	10.20

In Fig. 43, the on-balance-sheet and off-balance-sheet exposure values before credit conversion factor and credit risk mitigation fell overall, by €6,966 million, (columns a and b) in the reporting period due to transactions that had matured as at the end of the reporting year at DZ BANK. Here too, the main factor was the decrease in business activity with central governments and central banks. Because the risk assets in this exposure class are given a weight of zero, the risk-weighted assets increased by €1,353 million.

The biggest changes in the risk-weighted assets outside the risk categories mentioned above were registered in the following components of the risk-weighted assets:

- Central governments and central banks: down by €522 million (June 30, 2019: €1,785 million),
- Institutions: up by €407 million (June 30, 2019: €383 million),
- Corporates: up by €1,945 million (June 30, 2019: €10,141 million),
- Exposures secured by mortgages on immovable property: down by €981 million (June 30, 2019: €2,318 million), and
- Collective investment undertakings (CIUs): up by €448 million (June 30, 2019: €1,721 million).

6.5.2.2 Breakdown of exposures by risk weight under the Standardized Approach

(ARTICLE 444 LETTER E CRR)

Fig. 44 provides a breakdown of the DZ BANK banking group's regulatory exposures at the reporting date, broken down by risk weight under the Standardized Approach. The table also shows the exposures broken down by credit conversion factor and credit risk mitigation techniques.

FIG. 44 – EU CR5 – STANDARDIZED APPROACH – CREDIT RISK BY EXPOSURE CLASS AND RISK WEIGHT

Exposure class		Risk weight (%)																**Total**	**of which: unrated**
€ million		**0**	**2**	**4**	**10**	**20**	**35**	**50**	**70**	**75**	**100**	**150**	**250**	**370**	**1,250**	**Other**	**Deducted**		
1	Central governments and central banks	53,273	-	-	-	311	-	215	-	-	28	1	426	-	-	0	-	54,254	48,563
2	Regional governments or local authorities	31,500	-	-	-	1,079	-	142	-	-	0	-	-	-	-	-	-	32,722	31,171
3	Public-sector entities	7,920	-	-	-	475	-	107		0	22	0	-	-	-	-	-	8,525	7,921
4	Multilateral development banks	30	-	-	-	13	-	-	-	-	-	-	-	-	-	-	-	43	30
5	International organizations	477	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	477	474
6	Institutions	81,809	-	-	-	1,618	-	17	-	-	26	-	-	-	-	-	-	83,471	83,099
7	Corporates	-	-	-	-	1,091	0	961	2	-	10,002	0	-	-	-	3	-	12,060	9,017
8	Retail business	-	-	-	-	-	-	-	-	5,261			-	-	-		-	5,261	4,779
9	Exposures secured by mortgages on immovable property	-	-	-	-	-	2,033	683	-	-	-	-	-	-	-	-	-	2,716	2,695
10	Exposures in default	-	-	-	-	-	-	-	-	-	255	203	-	-	-	-	-	458	439
11	Exposures associated with particularly high risk	-	-	-	-	-	-	-	-	-	0	213	-	-	-	-	-	213	213
12	Covered bonds	687	-	-	-	197	-	-	-	-	-	-	-	-	-	-	-	883	723
13	Institutions and corporates with a short-term credit assessment	-	-	-	-	-	-	0	-	-	-	-	-	-	-	-	-	0	0
14	Collective investment undertakings	-	-	-	-	-	-	-	-	-	6	-	-	-	-	3,210	-	3,216	3,216
15	Long-term equity investments	-	-	-	-	-	-	-	-	-	99	-	1	-	-	-	-	100	100
16	Other items	183	-	-	-	5	-	-	-	0	211				67	-	-	466	436
17	**Total as at Dec. 31, 2019**	**175,879**	**0**	**0**	**0**	**4,791**	**2,033**	**2,126**	**2**	**5,261**	**10,651**	**417**	**427**	**0**	**67**	**3,213**	**0**	**204,866**	**192,876**
	Total as at Jun. 30, 2019	183,953	-	-	-	3,890	2,451	3,520	2	4,720	8,765	511	654	-	55	2,470	-	210,991	193,623

Fig. 44 shows exposures of €204,866 million as at December 31, 2019 (June 30, 2019: €210,991 million). The decrease in the exposures in the 0 percent risk weight class mainly results from transactions that had matured as at the end of the financial year in the central governments and central banks exposure class. The fluctuation in the other risk weight classes compared with June 30, 2019 was within the normal range.

6.6 Credit risk and techniques for mitigating credit risk under the IRB approach

(ARTICLE 452 SENTENCE 1 LETTER A CRR)

This section of the DZ BANK banking group's regulatory risk report contains only disclosures relating to the use of IRBA models to determine credit risk.

Exposures subject to the framework for securitizations or to counterparty credit risk are not included in the tables in this section.

6.6.1 Qualitative information on use of the IRB approach

In this section, information is provided about the IRB models used in the DZ BANK banking group to calculate the RWAs. The main features of these IRB models are described and their particular scope of application is defined. The percentage for the RWAs is listed in section 6.6.3.1 of the regulatory risk report. This indicates the degree to which each regulatory portfolio is covered by the relevant model.

6.6.2 Rating systems

Characteristics of the rating systems

The generation of internal credit ratings for the counterparties of entities in the DZ BANK banking group helps to provide a solid basis for lending decisions in the management of transactions, in that the expected losses from defaults in the lending business are then factored into pricing. In addition, internal ratings are used to incorporate the credit quality of the counterparties when calculating unexpected losses in the credit portfolio.

The **VR rating system**, which is used as standard across most of the cooperative financial network, ensures that all the entities in the network apply a sophisticated uniform methodology producing ratings that are comparable.

DZ BANK primarily uses VR rating systems in its credit risk management system to assess large and medium-sized companies, major corporate customers, banks, investment funds, and project finance. The internal assessment approach is also used to evaluate the liquidity facilities and credit enhancements made available by DZ BANK to programs for the issuance of asset-backed commercial paper (ABCP). These rating systems have been approved by the competent supervisory authority for the purposes of calculating regulatory capital using the **foundation IRB approach**. In addition, the rating systems for open-ended real estate funds and for commercial real estate used by the former WGZ BANK Group have also been approved for use under the IRB approach.

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

Most of the other entities in the DZ BANK banking group use the DZ BANK rating systems for banks, countries, and major corporate customers. Rating systems for specific business segments are also used by individual subsidiaries.

On July 10, 2019, the DZ BANK banking group applied to the ECB to permanently transfer certain rating systems from the IRBA back to the Standardized Approach to credit risk. This application was for DZ BANK AG and the subsidiaries BSH, DVB Bank SE, DZ HYP AG, and DZ PRIVATBANK. In this application, permission was sought to permanently transfer the following rating systems back to the Standardized Approach to credit risk:

– Acquisition financing (DZ BANK AG)
– Object finance (DZ BANK AG)
– VR rating for countries (DZ BANK AG, DZ HYP AG, DZ PRIVATBANK, BSH AG, DVB Bank SE)
– VR rating for large and medium-sized companies (DZ HYP AG)
– Aviation (DVB Bank SE)
– Land transport (DVB Bank SE).

This application was based on the provisions in article 150 (1) letter c CRR, according to which the Standardized Approach can be applied to exposures in non-significant business units and to exposure classes or types of exposure that are immaterial in terms of size and perceived risk profile.
The ECB approved the application to permanently transfer the aforementioned rating systems back to the Standardized Approach to credit risk on December 9, 2019.

Based on this approval, and in agreement with the ECB, all of the aforementioned rating systems were transferred back with immediate effect, with the exception of the one for the aviation portfolio at DVB Bank SE as it was still material as at December 31, 2019.

6.6.3 Development and expansion of rating systems

All internal **rating systems** approved by the banking supervisor for solvency reporting were **validated** in 2019. Validation processes at DZ HYP have not yet been completed in full for all rating systems because of merger activities. The revision of the rating system for **project finance** used by DZ BANK for internal management purposes has been completed. The same also applies to the development of the supervisory **slotting approach for project finance**, which is being used from 2020 onward to calculate the regulatory capital requirement. The regulatory review of the slotting approach was successfully completed in the first half of 2019 and was thus approved by the supervisory authority in the first quarter. In addition, the enhanced **rating system for banks** went live in the reporting year.

In 2019, the rating systems used for the IRB approach were revised in accordance with the EBA's Guidelines on PD estimation, LGD estimation and the treatment of defaulted exposures (EBA/GL/2017/16) and the EBA's Guidelines on the application of the definition of default (EBA/GL/2016/07).

Further information about the rating systems for the exposure classes used for the Standardized Approach to credit risk and the IRB approach can be found in sections 6.5.1 and 6.6.1 of this report.

6.6.3.1 Summary of internal rating systems

(ARTICLE 452 SENTENCE 1 LETTER A CRR)

In 2007, the DZ BANK banking group received official approval from the competent supervisory authority to calculate its own funds using the foundation IRB approach and the IRB approach for retail business. Fig. 46. Fig. 47 and Fig. 48 show the approved internal rating systems used by the DZ BANK banking group to determine the parameters for calculating its regulatory capital requirements based on the IRB approaches. The overviews cover the rating systems developed and applied by DZ BANK that are also made available to BSH, DZ HYP, and DVB, as well as those specially customized to the respective business models of BSH and DZ HYP. TeamBank uses a proprietary rating system for retail business, while DVB uses proprietary rating systems for the corporates exposure class.

As at the reporting date, the coverage ratio by the IRBA according to the implementation plan was 94 percent measured in terms of exposures (EAD) and 86 percent in relation to RWAs according to the requirements of section 11 of the Solvency Regulation (SolvV). DVB is not included in the above values. In accordance with section 13 (2) no. 6 SolvV, the banking supervisor has given permission for this entity to be excluded from the calculation of the coverage ratio. The coverage ratio in relation to the RWAs was below the 92 percent threshold required by the supervisory authority. However, the authority tolerates this insufficient coverage because of the systematic changes that are about to be made to the partial use rules in the context of the Targeted Review of Internal Models (TRIM).

Fig. 45 provides an overview of the exposure classes of the entire DZ BANK banking group under the Standardized Approach to credit risk, FIRB approach, and AIRB approach, and their share of the total EAD.

FIG. 45 – DISTRIBUTION OF THE EXPOSURE CLASSES AND THEIR PERCENTAGE OF COVERAGE UNDER THE STANDARDIZED APPROACH TO CREDIT RISK, FIRB APPROACH, AND AIRB APPROACH (SHARE OF TOTAL EAD)

%	CRSA	FIRB	AIRB	Total
IRB approach exposure class				
Central governments and central banks		2.11	0.00	2.11
Institutions		7.64	0.00	7.64
Corporates		19.41	1.55	20.97
Retail business		0.00	16.75	16.75
Exposures secured by mortgages on immovable property		0.00	13.58	13.58
Qualified revolving		0.00	0.00	0.00
Other retail business		0.00	3.17	3.17
Equity exposures		1.50	0.00	1.50
Other non-credit-obligation assets		0.34	0.00	0.34
Standardized approach exposure class				0.00
Central governments and central banks	10.92			10.92
Regional governments or local authorities	6.94			6.94
Public-sector entities	2.06			2.06
Multilateral development banks	0.00			0.00
International organizations	0.10			0.10
Institutions	22.42			22.42
Corporates	4.38			4.38
Retail business	1.92			1.92
Exposures secured by mortgages on immovable property	0.66			0.66
Exposures in default	0.22			0.22
Exposures associated with particularly high risk	0.15			0.15
Covered bonds	0.19			0.19
Exposures to institutions and corporates with a short-term credit assessment	0.00			0.00
CIUs	0.69			0.69
Equity exposures	0.02			0.02
Other items	0.13			0.13
Total as at Dec. 31, 2019	**50.82**	**31.01**	**18.30**	**100.00**
Total as at Dec. 31, 2018	**49.70**	**30.94**	**19.46**	**100.00**

The ECB, which is the competent supervisory authority, is notified of the percentage of coverage at regular intervals. If required, necessary action steps are agreed in the event of any potential changes to the regulatory requirements.

The figures below show the rating systems used by the DZ BANK banking group.

FIG. 46 – RATING SYSTEMS DEVELOPED BY DZ BANK AND THEIR USE BY OTHER ENTITIES IN THE DZ BANK BANKING GROUP

					Exposure class										
									Corporates				Retail business		
Rating system	DZ BANK	BSH	DZ HYP	DVB	Central governments and central banks	Institutions	Long-term equity investments	Securitizations	Corporates (narrow sense)	SMEs	Specialized lending	Receivables purchased	Mortgage-backed	Qualified revolving	Other
VR rating for large and medium-sized companies	•								•	•					
VR rating for major corporate customers	•								•						
VR rating for banks	•	•	•	•	•	•	•								
Project finance	•										•				
Internal Assessment Approach	•							•							
Investment fund rating	•								•						

FIG. 47 – PROPRIETARY RATING SYSTEMS DEVELOPED BY BSH

	Exposure class										
					Corporates				Retail business		
Rating system	Central governments and central banks	Institutions	Long-term equity investments	Securitizations	Corporates (narrow sense)	SMEs	Specialized lending	Receivables purchased	Mortgage-backed	Qualified revolving	Other
Mortgage-backed retail business											
Application scoring									•		
Behavioral scoring									•		
LGD scoring									•		
EAD									•		
Non-mortgage-backed retail business											
Application scoring											•
Behavioral scoring											•
LGD scoring											•
EAD											•

FIG. 48 – PROPRIETARY RATING SYSTEMS DEVELOPED BY DZ HYP

	Exposure class										
					Corporates				Retail business		
Ratingsystem	Central governments and central banks	Institutions	Long-term equity investments	Securitizations	Corporates (narrow sense)	SMEs	Specialized lending	Receivables purchased	Mortgage-backed	Qualified revolving	Other
VR Bauträgerrating							•				
VR Investorenrating					•						
VR Objektgesellschaftrating							•				
VR Projektentwicklerrating							•				
VR Wohnungsgesellschaftsrating					•						
ICRE-Rating (SLRE Ausland)							•				
VR Offene Immobilienfonds-Rating					•						
Verhaltensscoring Retail									•		
VR-Rating Privatkunden									•		
WL-Rating GFI									•		
DG HYP LGD-Modell Retail									•		
WL BANK LGD Modell Mengengeschäft									•		
WL BANK CCF Modell Mengengeschäft									•		

In addition to the rating systems developed by DZ BANK, DVB uses separate rating systems for the following segments in order to classify the risks for the exposure class of corporates (in the narrow sense of the term):

- Aviation (aircraft)
- Aviation (aircraft engines)
- Land transport (until December 31, 2019)
- Leasing companies
- Shipping (containers)
- Shipping (vessels).

When using DZ BANK’s VR rating for banks, DVB applies its own LGD estimates.

TeamBank generally uses its consumer-finance rating system to determine the credit ratings for loan exposures in its retail business exposure class. However, the following retail products are currently covered by the Standardized Approach to credit risk:

– Purchased but not yet settled credit card transactions that, in total, are below the activation threshold for conversion into consumer finance
– Loan commitments in connection with the Finanzreserve loan facility
– Special easyCredit subportfolios: easyCredit loans to self-employed people (run-down portfolio) and easyCredit with an account overview ('easyCredit mit Kontoblick')
– Receivables purchased in connection with the integrated e-commerce finance solution and at the point of sale ('ratenkauf by easyCredit'); consumer finance marketed to retail customers in Austria ('fairer Credit').

Applications to transfer the following subportfolios to the IRBA have already been submitted to the supervisory authority: loan commitments in connection with the Finanzreserve loan facility and consumer finance marketed to retail customers in Austria.

6.6.3.2 Description of internal rating systems

(ARTICLE 452 SENTENCE 1 LETTERS B (I) AND C CRR)

Application of the IRB approaches requires the use of internal rating systems to classify the risks of the exposures measured using the IRB approaches and to classify guarantors. Internal rating systems are considered suitable if they meet the minimum requirements for use of the IRB approaches pursuant to article 143 CRR. Apart from meeting the requirements relating to methodology and process organization, the rating systems must have demonstrated their suitability for classifying existing and new business. Rating systems are defined by article 142 (1) no. 1 CRR as all of the methods, processes, controls, and data collection and IT systems that support the assessment of credit risk, the assignment of exposures to rating grades or pools, and the quantification of default and loss estimates that have been developed for a certain type of exposure.

Most of the internal rating systems have been developed as the standard for the entire cooperative financial network by DZ BANK. This uniform approach for the entire cooperative network brings substantial efficiency gains for DZ BANK as the cooperative central institution and for the local cooperative banks. If DZ BANK requires rating systems for specialist segments that go beyond the scope of the rating systems developed for the cooperative network, DZ BANK will develop any such rating systems itself.

The internal rating systems used by the entities in the DZ BANK banking group feature a modular construction; they generally consist of a quantitative module and a qualitative module (although TeamBank, for example, does not use a qualitative module in standardized retail business). When rating systems are developed, various factors affecting credit ratings are identified and initially developed in isolation. The next stage is to take account of interdependencies between individual modules at the level of the overall model. The advantage of this approach is that individual modules of a particular rating system can be revised, for example, in the light of new methodical-conceptual or empirical findings, without any other module being affected by this. This reduces the cost of developing and refining rating systems.

The PD/LGD approach pursuant to article 155 (3) CRR is used for equity exposures if the equity exposure falls within the scope of a rating system approved for the IRBA and for which approval has been given. This is currently only the case for the VR rating for banks. Otherwise, the simple risk weight approach pursuant to article 155 (2) CRR is used.

The **VR rating system** standardizes rating methods and ensures comparability of rating results within the cooperative financial network. The VR rating system is differentiated by customer segment and is gradually being extended to cover all relevant customer groups.

The section below presents the main rating systems used by the DZ BANK banking group. These rating systems have been approved by the competent supervisory authority for the purposes of calculating regulatory own funds using the foundation IRB approach. Each of these rating systems differentiates between a total of 25 rating categories; 20 of these categories are for non-defaulting counterparties and 5 are for defaulting counterparties. The regulatory lower limits for the probability of default to be used in the calculation of capital requirements, known as PD floors, are taken into account for the relevant exposure class in accordance with the provisions of the CRR.

The **VR rating for large and medium-sized companies** is used for the exposure class of corporates (in the narrow sense of the term) and small and medium-sized enterprises and therefore applies to 27 percent and 70 percent respectively of the RWAs in the corresponding exposure class in the DZ BANK banking group. This rating system covers the central institution's typical corporate customers that generate revenue of up to €1.0 billion. It is applied, among other things, to loans jointly extended by entities in the DZ BANK banking group to local cooperative banks or their customers and, in addition, is used by all local cooperative banks in Germany throughout the cooperative financial network. A characteristic of the VR rating system devised for large and medium-sized companies is the large number of historical data records of defaulting and non-defaulting customers that were collected throughout the cooperative financial network. Given this ideal data scenario, a good/bad analysis was selected as the development method.

The **VR rating for major corporate customers** is used for large domestic and international customers that generate revenue in excess of €1.0 billion and belong to the exposure class of corporates (in the narrow sense of the term). It applies to 49 percent of the RWAs in this exposure class in the DZ BANK banking group. A characteristic of the VR rating system devised for major corporate customers is the small number of defaulting customers. Given this data scenario, the external rating method was selected as the development method. Under this approach, data was collected from many financial years for a large number of externally rated international companies from various sectors.

The **VR rating for banks** is used for the exposure class of central governments and central banks, institutions, and equity exposures and therefore applies to 100 percent of the RWAs in the corresponding exposure class in the DZ BANK banking group. This rating system is applied to German and international banks (including central banks), irrespective of legal structure or size. The external rating method was again chosen as the development method. Under this approach, data was collected from externally rated banks worldwide. The rating system is applied irrespective of the product type (debt exposure or equity exposure), i.e. there is no dedicated procedure for equity exposures. The rules on calculating the RWAs for equity exposures under the PD/LGD approach (article 165 CRR) are taken into account.

The internal rating systems specified below are used exclusively by DZ BANK within the banking group to calculate capital requirements:

– The **project finance rating system** is used to assess complex transport and infrastructure projects. It therefore applies to 27 percent of the RWAs in the specialized lending exposure class in the DZ BANK banking group. As there are only a small number of external ratings available for project finance and an insufficient number of internal data sets, a combination of ratings by experts and cash flow simulations were selected to develop the rating model.

– The **Internal Assessment Approach (IAA)** is used to rate liquidity facilities and credit enhancements that are made available to programs for the purpose of issuing ABCP.

– The **investment fund rating system** is used for funds in Germany and Luxembourg that mainly invest in liquid fixed assets. It therefore applies to 1 percent of the RWAs in the exposure class of corporates (in the narrow sense of the term) in the DZ BANK banking group. Because neither default data for funds in this scope of application nor external credit ratings for investment funds are available, a simulation-based approach using time series of fund returns combined with a qualitative sub-module were selected to develop this rating system.

Supplement of the Regulatory Risk Report as of December 31, 2019, chapter 6.6.3.2

DZ HYP

The **VR rating for property companies** evaluates special purpose vehicles and closed funds, which serve the long-term management of rented or leased property. The servicing of the loan derives exclusively or predominantly from the current income of the loan object(s). For this reason, cash flow and value development are simulated over the term of the loan (max. 20 years) and contrasted with the cost of the loan and the residual value. This is used to calculate the key figures DSCR and LTV, whose distribution over time determines the PD. This procedure covers an RWA share of 41 per cent in the "Corporates - specialised lending" risk position class of the DZ BANK banking group.

The **VR rating for property developer** evaluates property developers who plan and realise residential buildings in their own name and on their own account without providing construction services themselves. The financing required for construction is settled by the sale of the individual residential properties. The evaluation is based on a scorecard with predominantly property criteria, some qualitative borrower criteria and taking into account residual and completion risk. The procedure covers an RWA share of 4 percent in the "Corporates - specialised lending" risk position class of the DZ BANK banking group.

The **VR rating for project developer** assesses companies that have overall project responsibility for a construction project. This includes the selection and acquisition of land, the planning and in some cases also construction of the property, the conclusion of rental agreements, as well as the handling of sale and financing. The evaluation is based on a scorecard with mainly qualitative criteria concerning the management qualities of the borrower, property criteria and taking into account the construction, letting and completion risk. The procedure covers an RWA share of 10 percent in the "Corporates - specialised lending" risk position class of the DZ BANK banking group.

The **VR rating for housing companies** evaluates companies that are characterised by the provision, management and partial refurbishment of housing for private individuals. The rating is based on a scorecard, which includes borrower criteria (e.g. management quality, profit expectations) and property criteria (location and vacancy of the apartments) and considers balance sheet figures. The procedure covers an RWA share of 25 or, respectively, 5 percent in the corresponding risk position class of the DZ BANK banking group ("Corporates - SME" or "Corporates - other").

The **VR rating for investors** evaluates natural persons and partnerships, and in rare cases legal entities, that invest in residential and commercial real estate and use the income generated from these investments to generate the majority of their income. The rating is based on a scorecard with criteria relating to the borrower, the property and the ability to service debt. The procedure covers an RWA share of 5 or, respectively, 10 percent in the corresponding risk position class of the DZ BANK banking group ("Corporates - SME" or "Corporates - other").

The **VR rating for open property funds** evaluates open property funds of capital management companies (KVG) that are subject to the regulations of the German Capital Investment Code (KAGB) or the Austrian Real Estate Investment Fund Act (ImmoInvFG), as well as property companies that are themselves part of the relevant fund via an equity interest (if the capital management company has issued an unlimited credit order for the account of the fund prior to granting the credit). The rating consists of two submodules, a purely quantitative value change model (distance-to-default model) and an expert model, which is composed in particular of quantitative and qualitative factors relating to the balance sheet structure and type of portfolio. As this is a portfolio in which no defaults have been observed to date and for which no external credit ratings are available for a shadow rating approach, the score is calibrated with a central tendency determined using the Bayes formula. This procedure covers an RWA share of 4 percent in the "Corporates - other" risk position category of the DZ BANK banking group.

The **ICRE rating** (International Commercial Real Estate or Specialised Lending Real Estates Abroad) is used to assess special purpose vehicles or economically comparable risk positions whose financed real estate/the focus of the real estate portfolio may be at any location worldwide outside Germany. The rating simulates the development of the cash flow, which is primarily based on the projected income/proceeds from the financed

property or property portfolio - and not on the general asset situation or creditworthiness of the owner of the property or property portfolio. The cash flow is examined as to possible default scenarios and supplemented by qualitative criteria and a possible transfer risk. The procedure covers an RWA share of 6 percent in the "Corporates - specialised lending" risk position class of the DZ BANK banking group.
The **retail scoring of the former DGHYP** evaluates the wind-down portfolio of the retail customers of the former DG HYP (residential property use) using a scorecard that is essentially based on behavioural indicators of account development (reminders, arrears). The method covers an RWA share of 1 per cent in the "Retail business - non-SMEs, secured by mortgages on immovable property" risk position class of the DZ BANK banking group. Under the LGD model - Retail of the former DGHYP the LGD for private real estate financing is determined using a recovery rate-based model based on empirical recovery ratio distributions. Other components such as cure rate, costs and discounting are also taken into account.
DZ HYP's private clients procedure assesses natural persons who derive the majority of their income from non-self-employment. The procedure comprises an application scorecard, which is used for (new) lending and determines the PD by borrower and property criteria. The ongoing assessment is carried out by means of a behavioural scorecard, which mainly uses account features (reminders, arrears). The procedure covers an RWA share of 6 percent in the "Retail business – non-SMEs, secured by mortgages on immovable property" risk position class of the DZ BANK banking group.
DZ HYP's GFI rating procedure assesses natural persons who derive most of their income from self-employment. This includes commercial customers, freelancers and (private) investors. For (private) investors there is an engagement limit of 1 million. The procedure includes an application scorecard, which is used for (new) lending and where the PD is determined by borrower and property criteria. An ongoing assessment is carried out using a behavioural scorecard, which mainly uses account management features (reminders, arrears). The procedure covers an RWA share of 5 percent in the "Retail business – non-SMEs, secured by mortgages on immovable property" risk position class of the DZ BANK banking group.
The LGD model - Retail of the former WL BANK ("LGD grading") is a mathematical-statistical procedure for estimating the amount of loss in the event of default in the real estate lending business, based on property-specific recovery rates.

TeamBank
TeamBank's rating system assesses unsecured installment loans to private individuals with a main income from non-self-employed activities. Its scope of application extends to installment loans sold in Germany (easyCredit), including drawdowns of loan commitments under the product Financial Reserve with Credit Card, and thus onto the IRBA position class "Other retail business". The rating is based on mathematical-statistical models for the PD and LGD components, which were developed and calibrated on the basis of TeamBank's long-standing data history. The rating is updated monthly as part of a fully automated process (no qualitative expert assessment/overruling). The procedure covers an RWA share of 88 percent in the "Other retail business" risk position class of the DZ BANK banking group.

BSH
Application scoring is applied to all loans in new customer lending business (with the exception of legal entities, commercial lending and foreign lending, which are not material). The procedure takes into account, among other things, qualitative and quantitative characteristics, the payment history of loans already approved (progression hypothesis), obligations on building society accounts in the case of TA loans, and a Schufa score specially developed for BSH. There is a distinction between loans in rem and loans not in rem, whereby loans in rem are loans for which there is real security. The method covers an RWA share of 15 percent in the corresponding risk position classes („Retail - non-SMEs, secured by mortgages on immovable property “ or „Retail – non-SME, other “) of the DZ BANK banking group.
Behavioural scoring is used for the monthly assessment of credit risks of the entire customer loan portfolio. The assessment is carried out at individual loan agreement level. The scorecards used take into account the historical payment history of the last 3 years. There is a distinction between loans in rem and loans not in rem, whereby loans in rem are loans for which there is real security. The procedure covers an RWA share of 74 and 6

percent in the corresponding risk position classes („Retail - non-SMEs, secured by mortgages on immovable property " or „Retail – non-SME, other ")of the DZ BANK banking group.
LGD scoring is used to determine the loss ratio in the event of default. LGD scoring takes into account information on credit security, e.g. the loan value. The basis for determining the loss rate is the total portfolio of defaulted receivables managed in the default database. When determining LGD, a distinction is made between the Realised Loss Given Default (RLGD) and the Expected Loss Given Default (ELGD).

DVB
Internal models are used to calculate the capital requirements of the DVB Bank SE sub-group in accordance with the Advanced IRB Approach, both for estimating probabilities of default (PD) and loss given default (LGD). These models are allocated to the corporates ("Corporates - other") risk position category, and cover an RWA share of 4 per cent in this risk position category of the DZ BANK banking group.
The Shipping and Leasing Companies PD models for financing customers focus primarily on the creditworthiness structures of the borrowers themselves. These are calibrated to internal and external data, with the information collected externally covering a large number of annual financial statements of companies with external ratings.
In addition, the LGD models "Vessel" and "Container boxes" reflect the risk structure of the loan collateral, using mathematical methods to calculate scenarios for their future performance.
A reconciliation of external and internal ratings, which illustrates the relationship between internal allocations to rating categories and external credit ratings, is presented in section 8.6.2, figure 23 (page 106) of the opportunity and risk report.

6.6.3.3 Approved transitional rules for IRB approaches (partial use)
(ARTICLE 452 SENTENCE 1 LETTER A CRR)

Capital requirements for credit risk in the entities within the DZ BANK banking group are always calculated using the IRB approaches as well as the Standardized Approach to credit risk (partial use). In accordance with article 150 CRR, use of the Standardized Approach to credit risk by institutions that use the IRB approach is limited, and threshold values must be complied with. In order to monitor compliance, the cover ratio as defined by article 143 CRR in conjunction with section 11 SolvV is calculated on an ongoing basis. Because DVB has been using the advanced IRB approach to report its capital requirements for credit risk since January 1, 2008, it is exempted under section 13 (2) no. 6 SolvV from the calculation of the DZ BANK banking group's cover ratio.

The individual IRBA institutions use internal rating systems to cover their main business lines. Only segments that are immaterial in terms of their level of credit risk will continue to use the Standardized Approach to credit risk indefinitely. The other entities use the Standardized Approach to credit risk.

In the foundation IRB approach, the PD is estimated by the institutions themselves, while the loss given default (LGD) is specified by law. LGD values in the IRB approach for retail business and the advanced IRB approach are also based on the institutions' own estimates. By contrast, the Standardized Approach to credit risk is based on risk weights that either depend on external ratings or are set in accordance with regulatory requirements.

Validation activities are carried out depending on the method chosen for a rating system (see 'Description of internal rating systems' in this section). For example, the Gini coefficient is calculated in order to assess the discriminant power of the rating systems with a good/bad analysis, whereas the hit rate is used with the external rating method. The minimum data history of five years as required by article 180 et seq. CRR is maintained for both the estimates and the validation of risk parameters. Validation also involves comparing the expected probability of default with the actual default rate for each rating system and, in the event of significant discrepancies, describing the underlying causes.

For each institution that uses the IRB approach there is an implementation plan that ensures compliance with the thresholds prescribed by the CRR or approved by the supervisory authority. Compliance with these thresholds is one of the preconditions for using the IRB approaches.

6.6.3.4 Use of internal estimates for purposes other than calculating risk-weighted exposures under the IRB approach

(ARTICLE 452 SENTENCE 1 LETTER B (II) CRR)

Internal rating systems are at the heart of credit risk management for the entities in the DZ BANK banking group. The credit ratings used for internal management purposes and regulatory reporting purposes are identical. Internal rating systems are used in the following areas:

– The **exposure limits** for lending or trading transactions for which there is a risk of default are partly determined by internal ratings.

The profit-contribution-based **pre-analysis** of loans, which is carried out as part of operational planning and constitutes the basis for pricing, is based on sales commission and cost determinants such as standard risk costs and the regulatory and economic capital costs involved in covering expected and unexpected losses. The two latter cost components are based on internal ratings.

– The **level of authority** for decision-makers in both front-office and back-office divisions to approve loan applications is also determined by internal ratings.

When **loans are analyzed ex-post** after an agreement has been concluded, the profit contributed is determined by, for example, the standard risk costs and the regulatory and economic capital costs based on internal ratings.

– During the term of the loan, internal ratings determine the extent to which **credit ratings are monitored**.

– Taking the overall economic situation into account, **specific and portfolio loan loss allowances are planned** on the basis of the calculation of standard risk costs and credit risk (expected loss). The level of costs depends on internal ratings and, if applicable, loss rates.

– The risk of unexpected losses is measured using **credit value-at-risk systems** that are based on internal credit ratings and the corresponding default probabilities as well as further risk parameters.

– And finally, internal ratings play a key role in internal **credit risk reporting**.

6.6.3.5 Control mechanisms for the rating systems

(ARTICLE 452 SENTENCE 1 LETTER B (IV) CRR)

The internal rating systems used are validated once a year on the basis of internal and, in some cases, external data. **Validation** consists partly of quantitative analysis aimed at measuring the rating systems' discriminant power and stability and at calibrating them. It also includes qualitative analysis that tests the use of these rating systems for internal management purposes with respect to their model design and data quality. In addition, pool validation is carried out on the standard rating systems used throughout the cooperative financial network. When pool validation is conducted, the rating-related data of all banks that use the rating system concerned is collected and analyzed in the same way as in the internal bank validation process. If validations reveal any room for improvement, improvements are made when the rating systems are refined.

The monitoring function also includes checking that the rating systems are being properly used, regularly estimating the risk parameters derived from them, and reviewing these estimates. The findings of these monitoring activities are integrated into the internal reporting system.

The rating systems used by DZ BANK have been approved by the Board of Managing Directors.

The independent validation unit at DZ BANK acts as the credit risk monitoring unit for the rating systems in the Group Risk Controlling division. It operates independently of the personnel and management functions that are responsible for originating and renewing exposures. It reports directly to senior management and is responsible for monitoring DZ BANK's rating systems. Because the development and validation of rating systems have to be kept separate in accordance with regulatory requirements, some of the tasks of the credit risk monitoring unit relating to development of the systems are carried out by another unit.

The Internal Audit function is independent of this process and regularly reviews the adequacy of internal rating systems, including compliance with the minimum requirements for using these systems.

Similar arrangements are in place in all entities in the DZ BANK banking group.

As well as the internal rating systems (PD models), all of the DZ BANK banking group's LGD and CCF models are validated once a year on the basis of internal and external data. This task is the responsibility of the independent validation units of the various subsidiaries in the DZ BANK banking group.

As a rule, validation of the LGD and CCF models consists of quantitative analysis aimed at measuring predictive power and stability and at calibrating the procedures. It also includes qualitative analysis that tests the use of the models for internal management purposes with respect to their model design and data quality. Furthermore, the analysis focuses on gauging whether the observations are representative of loss events that are expected in the future.

Process validation is another key aspect of the review of the LGD and CCF models. In this case, the focus is on checking the correct technical implementation of the parameters in all of the systems in which they are applied.

6.6.3.6 Process of assigning exposures and borrowers to rating categories and risk pools

(ARTICLE 452 SENTENCE 1 LETTER C CRR)

Every borrower clearly falls into a defined area of an internal rating system based on industrial sector codes, revenue characteristics, and business specifics. As a rule, it is not possible to conduct business that bears a default risk with borrowers who do not have an internal rating. All rating systems are assigned – without any overlaps – to one regulatory exposure class. The relevant rating models are used as part of the credit application and approval process to classify the applicant or the guarantor. The classification of every borrower or guarantor must be reviewed at least once a year. All relevant input factors and ratings conducted are saved in the data processing systems so that there is a complete rating history for every customer and every transaction.

6.6.4 Quantitative information on use of the IRB approach

(ARTICLE 452 SENTENCE 1 LETTERS D TO H CRR)

This section focuses on default risk for exposures under the IRB approach.

Fig. 49 and Fig. 50 show the lending volumes under the IRB approach for borrowers and transactions that are classified on the basis of internal credit ratings. The rating systems used internally are unambiguously assigned to one regulatory exposure class. The borrowers/transactions are assigned to a credit rating category based on their individual rating in the form of their specific default probability or the expected loss for a rating category. Classification as 'investment grade', 'non-investment grade', or 'default' is based on the corresponding default probabilities for each rating category on the standardized groupwide master scale of the DZ BANK banking group. This rating scale is described in section 8.6.2, figure 23 (page 106) of the opportunity and risk report.

6.6.4.1 Lending volume broken down by PD category under the foundation IRB approach

(ARTICLE 452 SENTENCE 1 LETTERS D TO G CRR)

Fig. 49 shows the parameters used in the DZ BANK banking group to calculate the capital requirements on the basis of IRB rating systems. The exposure classes are broken down by PD category so that the credit quality of the portfolio can be assessed. The on-balance-sheet exposures before credit conversion factor and the off-balance-sheet exposures before credit risk mitigation are disclosed in columns a and b, while columns c to l contain the regulatory values, e.g. average values for PD, LGD, and term to maturity, as well as the RWAs and their density, expected loss (EL), and loan loss allowances and provisions for each exposure class.

The disclosures are based on the exposure classes (central governments and central banks, institutions, corporates, and long-term equity investments) under the IRB approach and are also broken down by PD category. The exposure for undrawn credit lines is calculated by applying the credit conversion factors to the carrying amount. The average risk weights reveal borrowers' credit ratings and the extent to which transactions are collateralized. The number of borrowers in each exposure class is also stated.

Fig. 49 does not contain any disclosures regarding securitization exposures. Information on these exposures is presented separately in section 7.

FIG. 49 – EU CR6 – FIRB APPROACH – CREDIT RISK EXPOSURES BY EXPOSURE CLASS AND PD RANGE (FIRB)

PD scale	a	b	c	d	e	f	g	h	i	j	k	l
€ million (unless indicated otherwise)	Original on-balance-sheet gross exposures	Off-balance-sheet exposures pre-CCF	Average CCF (%)	EAD after credit risk mitigation and after CCF	Average PD (%)	Number of borrowers	Average LGD (%)	Average maturity (days)	RWAs	RWA density (%)	EL	Loan loss allowances and provisions
Central governments and central banks												
0.00 to < 0.15	11,147	-	-	11,420	0.01	17	45.00	898	912	7.99	1	-
0.15 to < 0.25	11	-	-	11	0.15	1	45.00	900	4	39.67	-	-
0.25 to < 0.50		-	-	-	-	-	-	-	-	-	-	-
0.50 to < 0.75	256	-	-	256	0.50	1	0.31	180	1	0.34	-	-
0.75 to < 2.50	369	-	-	369	0.75	1	1.15	180	6	1.57	-	-
2.50 to < 10.00	-	-	20.00	-	8.84	3	45.00	900		195.29	-	-
10.00 to < 100.00	-	-	-	-	-	-	-	-	-	-	-	-
100.00 (default)	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal	**11,783**	**-**	**20.00**	**12,056**	**0.04**	**23**	**42.71**	**860**	**923**	**7.66**	**1**	**-**
Institutions												
0.00 to < 0.15	24,727	1,424	41.50	25,081	0.06	469	24.76	830	3,694	14.73	4	-1
0.15 to < 0.25	4,774	88	20.67	4,809	0.19	118	13.42	692	785	16.33	1	-1
0.25 to < 0.50	1,945	31	70.98	1,968	0.35	44	17.78	898	589	29.91	1	-1
0.50 to < 0.75	1,478	99	14.91	1,437	0.50	71	25.04	878	727	50.61	2	-1
0.75 to < 2.50	935	183	47.49	847	0.97	82	35.08	896	749	88.40	3	-2
2.50 to < 10.00	464	153	24.72	357	4.88	83	42.48	900	623	174.34	7	-3
10.00 to < 100.00	6	59	22.48	19	24.54	45	45.00	900	54	283.23	2	
100.00 (default)	136	2	75.00	98	100.00	4	45.00	900			44	-64
Subtotal	**34,464**	**2,039**	**38.53**	**34,616**	**0.48**	**915**	**23.31**	**819**	**7,220**	**20.86**	**64**	**-72**
Corporates – total												
0.00 to < 0.15	28,519	4,917	213.38	31,646	0.18	1,904	117.66	2,700	6,367	55.79	8	-4
0.15 to < 0.25	15,925	7,677	185.68	20,455	0.81	1,556	169.75	3,600	8,851	169.22	17	-9
0.25 to < 0.50	7,746	5,266	182.32	10,402	1.40	1,009	173.63	3,600	6,283	228.86	16	-9
0.50 to < 0.75	5,036	3,275	169.07	6,369	2.00	891	177.61	3,600	4,657	282.83	14	-9
0.75 to < 2.50	9,077	5,405	274.52	10,664	4.47	2,011	178.32	3,600	10,187	383.16	49	-35
2.50 to < 10.00	1,429	823	168.08	1,237	15.75	423	175.97	3,600	1,654	554.35	19	-15
10.00 to < 100.00	88	42	147.39	97	76.37	129	123.42	2,700	238	708.79	11	-17
100.00 (default)	994	134	152.16	1,040	300.00	326	134.17	2,700		0.00	463	-492
Subtotal	**68,814**	**27,538**	**285.47**	**81,909**	**7.37**	**8,249**	**168.59**	**3,600**	**38,236**	**203.65**	**597**	**-589**
Corporates – of which: SMEs												
0.00 to < 0.15	3,377	221	74.27	3,542	0.06	441	36.56	900	495	13.96	1	-
0.15 to < 0.25	498	202	52.44	612	0.19	263	39.28	900	195	31.83	-	-
0.25 to < 0.50	189	148	55.90	272	0.35	191	42.39	900	136	50.04	-	-

PD scale € million (unless indicated otherwise)	a Original on-balance-sheet gross exposures	b Off-balance-sheet exposures pre-CCF	c Average CCF (%)	d EAD after credit risk mitigation and after CCF	e Average PD (%)	f Number of borrowers	g Average LGD (%)	h Average maturity (days)	i RWAs	j RWA density (%)	k EL	l Loan loss allowances and provisions
0.50 to < 0.75	224	156	53.01	303	0.50	200	43.21	900	187	61.56	1	-
0.75 to < 2.50	626	524	55.77	899	1.13	600	44.66	900	782	86.95	5	-3
2.50 to < 10.00	175	112	54.84	235	3.83	178	41.84	900	273	116.26	4	-4
10.00 to < 100.00	12	-	13.25	12	22.57	15	37.49	900	25	209.65	1	-1
100.00 (default)	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal	**5,103**	**1,364**	**57.89**	**5,876**	**0.47**	**1,888**	**38.91**	**900**	**2,092**	**35.61**	**12**	**-9**
Corporates – of which: specialized lending												
0.00 to < 0.15	9,619	732	76.97	10,167	0.06	538	40.61	900	2,133	20.98	3	-1
0.15 to < 0.25	5,930	1,456	75.63	6,995	0.20	382	42.61	900	3,087	44.12	6	-3
0.25 to < 0.50	3,217	1,224	74.67	4,019	0.35	248	42.89	900	2,396	59.61	6	-4
0.50 to < 0.75	1,809	599	73.48	2,135	0.50	202	44.70	900	1,577	73.85	5	-3
0.75 to < 2.50	3,583	497	73.56	3,450	0.99	400	44.47	900	3,316	96.11	15	-13
2.50 to < 10.00	126	57	74.45	67	3.44	35	44.42	900	94	140.81	1	-3
10.00 to < 100.00	35	36	59.49	41	28.12	84	44.64	900	106	258.30	5	-5
100.00 (default)	181	18	74.47	179	100.00	36	44.59	900			80	-73
Subtotal	**24,501**	**4,620**	**74.94**	**27,053**	**1.00**	**1,925**	**42.32**	**900**	**12,708**	**46.97**	**121**	**-105**
Corporates – of which: purchased receivables												
0.00 to < 0.15	-	-	-	-	-	-	-	-	-	-	-	-
0.15 to < 0.25	34	-	-	34	0.23	3	44.80	900	17	49.93	-	-
0.25 to < 0.50	16	-	-	14	0.35	6	44.17	900	8	57.82	-	-
0.50 to < 0.75	19	-	-	19	0.50	3	45.00	900	14	73.79	-	-
0.75 to < 2.50	21	8	100.00	29	1.31	10	44.70	900	30	103.70	-	-
2.50 to < 10.00	4	-	-	4	5.21	2	45.00	900	6	159.79	-	-
10.00 to < 100.00	-	-	-	-	-	-	-	-	-	-	-	-
100.00 (default)	3	-	-	3	100.00	1	45.00	900	-	-	1	-
Subtotal	**97**	**8**	**100.00**	**103**	**3.77**	**25**	**44.73**	**900**	**75**	**73.27**	**2**	**-**
Corporates – of which: other												
0.00 to < 0.15	15,523	3,963	62.14	17,936	0.06	925	40.48	900	3,739	20.85	4	-3
0.15 to < 0.25	9,463	6,019	57.61	12,814	0.19	908	43.06	900	5,552	43.33	11	-5
0.25 to < 0.50	4,324	3,894	51.75	6,096	0.35	564	44.19	900	3,742	61.39	9	-5
0.50 to < 0.75	2,984	2,520	42.58	3,911	0.50	486	44.70	900	2,880	73.63	9	-5
0.75 to < 2.50	4,847	4,375	45.19	6,286	1.04	1,001	44.50	900	6,060	96.41	29	-18
2.50 to < 10.00	1,124	654	38.79	931	3.27	208	44.71	900	1,280	137.49	14	-9
10.00 to < 100.00	41	6	74.64	44	25.69	30	41.29	900	107	240.84	5	-11
100.00 (default)	810	116	77.69	858	100.00	289	44.59	900			382	-419
Subtotal	**39,114**	**21,547**	**52.64**	**48,876**	**2.13**	**4,411**	**42.63**	**900**	**23,360**	**47.79**	**463**	**-476**
Long-term equity investments												
0.00 to < 0.15	38	-	-	38	0.09	4	90.00	1,800	37	96.48	-	-
0.15 to < 0.25	-	-	-	-	-	-	-	-	-	-	-	-
0.25 to < 0.50	-	-	-	-	-	-	-	-	-	-	-	-
0.50 to < 0.75	1	-	-	1	0.50	2	90.00	1,800	1	209.22	-	-
0.75 to < 2.50	31	-	-	31	0.75	1	90.00	1,800	74	241.04	-	-
2.50 to < 10.00	1	-	-	1	5.57	2	90.00	1,800	6	392.45	-	-
10.00 to < 100.00	-	-	-	-	-	-	-	-	-	-	-	-
100.00 (default)	-	-	-	-	100.00	3	90.00	5	-	-	-	-
Subtotal	**71**	**-**	**-**	**71**	**0.50**	**12**	**90.00**	**1,800**	**118**	**165.73**	**-**	**-**
Total of all portfolios as at Dec. 31, 2019	**115,132**	**29,578**	**55.41**	**128,651**	**1.18**	**9,171**	**37.23**	**875**	**46,497**	**36.14**	**662**	**-662**

PD scale € million (unless indicated otherwise)	a Original on-balance-sheet gross exposures	b Off-balance-sheet exposures pre-CCF	c Average CCF (%)	d EAD after credit risk mitigation and after CCF	e Average PD (%)	f Number of borrowers	g Average LGD (%)	h Average maturity (days)	i RWAs	j RWA density (%)	k EL	l Loan loss allowances and provisions
Total of all portfolios as at Jun. 30, 2019	113,977	28,867	56.60	127,501	1.37	9,594	36.96	862	45,091	35.36	751	-762

The growth of on-balance-sheet and off-balance-sheet exposures is due to the larger volume of new business at DZ BANK. Expected losses (EL) decreased compared with June 30, 2019 as a result of the lower average PDs. This was met with a fall in loss allowances.

6.6.4.2 Lending volume broken down by PD category under the advanced IRB approach

(ARTICLE 452 SENTENCE 1 LETTERS D TO G CRR)

Fig. 50 shows the transactions assigned to the advanced IRB approach, broken down by exposure class pursuant to article 147 CRR. Within the exposure classes, they are allocated to one of 8 PD categories.

FIG. 50 – EU CR6 – AIRB APPROACH – CREDIT RISK EXPOSURES BY EXPOSURE CLASS AND PROBABILITY OF DEFAULT

PD scale € million (unless indicated otherwise)	a Original on-balance-sheet gross exposures	b Off-balance-sheet exposures pre-CCF	c Average CCF (%)	d EAD after credit risk mitigation and after CCF	e Average PD (%)	f Number of borrowers	g Average LGD (%)	h Average maturity (days)	i RWAs	j RWA density (%)	k EL	l Loan loss allowances and provisions
Central governments and central banks												
0.00 to < 0.15	-	-	-	-	-	-	-	-	-	-	-	-
0.15 to < 0.25	-	-	-	-	-	-	-	-	-	-	-	-
0.25 to < 0.50	-	-	-	-	-	-	-	-	-	-	-	-
0.50 to < 0.75	-	-	-	-	-	-	-	-	-	-	-	-
0.75 to < 2.50	-	-	-	-	-	-	-	-	-	-	-	-
2.50 to < 10.00	-	-	-	-	-	-	-	-	-	-	-	-
10.00 to < 100.00	-	-	-	-	-	-	-	-	-	-	-	-
100.00 (default)	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal	-	-	-	-	-	-	-	-	-	-	-	-
Institutions												
0.00 to < 0.15	-	-	-	-	-	-	-	-	-	-	-	-
0.15 to < 0.25	-	-	-	-	-	-	-	-	-	-	-	-
0.25 to < 0.50	-	-	-	-	-	-	-	-	-	-	-	-
0.50 to < 0.75	-	-	-	-	-	-	-	-	-	-	-	-
0.75 to < 2.50	-	-	-	-	-	-	-	-	-	-	-	-
2.50 to < 10.00	-	-	-	-	-	-	-	-	-	-	-	-
10.00 to < 100.00	-	-	-	-	-	-	-	-	-	-	-	-
100.00 (default)	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal	-	-	-	-	-	-	-	-	-	-	-	-
Corporates – total												
0.00 to < 0.15	20	-	-	20	0.10	1	65.00	2		2.09	-	-
0.15 to < 0.25	441	-	-	441	0.19	15	3.16	775	15	3.29	-	-
0.25 to < 0.50	703	15	100.00	718	0.35	69	3.26	1,148	44	6.15	-	-
0.50 to < 0.75	-	-	-	-	-	-	-	-	-	-	-	-
0.75 to < 2.50	2,264	90	100.00	2,354	1.45	118	4.13	1,000	266	11.29	2	-3

PD scale	a	b	c	d	e	f	g	h	i	j	k	l
€ million (unless indicated otherwise)	Original on-balance-sheet gross exposures	Off-balance-sheet exposures pre-CCF	Average CCF (%)	EAD after credit risk mitigation and after CCF	Average PD (%)	Number of borrowers	Average LGD (%)	Average maturity (days)	RWAs	RWA density (%)	EL	Loan loss allowances and provisions
2.50 to < 10.00	2,551	48	100.00	2,599	5.87	161	1.42	910	137	5.28	2	-2
10.00 to < 100.00	114	-	-	114	31.52	13	5.63	521	36	31.36	2	-2
100.00 (default)	982	116	100.00	1,098	100.00	61	41.98	1,007	-	-	460	-541
Subtotal	**7,075**	**269**	**100.00**	**7,344**	**18.04**	**438**	**8.88**	**960**	**498**	**6.78**	**466**	**-547**
Corporates – of which: SMEs												
0.00 to < 0.15	-	-	-	-	-	-	-	-	-	-	-	-
0.15 to < 0.25	-	-	-	-	-	-	-	-	-	-	-	-
0.25 to < 0.50	-	-	-	-	-	-	-	-	-	-	-	-
0.50 to < 0.75	-	-	-	-	-	-	-	-	-	-	-	-
0.75 to < 2.50	-	-	-	-	-	-	-	-	-	-	-	-
2.50 to < 10.00	-	-	-	-	-	-	-	-	-	-	-	-
10.00 to < 100.00	-	-	-	-	-	-	-	-	-	-	-	-
100.00 (default)	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Corporates – of which: specialized lending												
0.00 to < 0.15	-	-	-	-	-	-	-	-	-	-	-	-
0.15 to < 0.25	-	-	-	-	-	-	-	-	-	-	-	-
0.25 to < 0.50	-	-	-	-	-	-	-	-	-	-	-	-
0.50 to < 0.75	-	-	-	-	-	-	-	-	-	-	-	-
0.75 to < 2.50	-	-	-	-	-	-	-	-	-	-	-	-
2.50 to < 10.00	-	-	-	-	-	-	-	-	-	-	-	-
10.00 to < 100.00	-	-	-	-	-	-	-	-	-	-	-	-
100.00 (default)	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Corporates – of which: purchased receivables												
0.00 to < 0.15	-	-	-	-	-	-	-	-	-	-	-	-
0.15 to < 0.25	-	-	-	-	-	-	-	-	-	-	-	-
0.25 to < 0.50	-	-	-	-	-	-	-	-	-	-	-	-
0.50 to < 0.75	-	-	-	-	-	-	-	-	-	-	-	-
0.75 to < 2.50	-	-	-	-	-	-	-	-	-	-	-	-
2.50 to < 10.00	-	-	-	-	-	-	-	-	-	-	-	-
10.00 to < 100.00	-	-	-	-	-	-	-	-	-	-	-	-
100.00 (default)	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Corporates – of which: other												
0.00 to < 0.15	20	-	-	20	0.10	1	65.00	2		2.09	-	-
0.15 to < 0.25	441	-	-	441	0.19	15	3.16	775	15	3.29	-	-
0.25 to < 0.50	703	15	100.00	718	0.35	69	3.26	1,148	44	6.15	-	-
0.50 to < 0.75	-	-	-	-	-	-	-	-	-	-	-	-
0.75 to < 2.50	2,264	90	100.00	2,354	1.45	118	4.13	1,000	266	11.29	2	-3
2.50 to < 10.00	2,551	48	100.00	2,599	5.87	161	1.42	910	137	5.28	2	-2
10.00 to < 100.00	114	-	-	114	31.52	13	5.63	521	36	31.36	2	-2
100.00 (default)	982	116	100.00	1,098	100.00	61	41.98	1,007	-	-	460	-541
Subtotal	**7,075**	**269**	**100.00**	**7,344**	**18.04**	**438**	**8.88**	**960**	**498**	**6.78**	**466**	**-547**
Retail business – total												
0.00 to < 0.15	8,504	151	57.94	8,592	0.10	67,094	17.63	675	421	4.90	2	-1
0.15 to < 0.25	4,736	416	56.58	4,972	0.20	141,445	14.70	614	298	5.99	1	-1
0.25 to < 0.50	4,158	276	69.96	4,351	0.37	260,593	23.59	631	696	15.98	4	-5
0.50 to < 0.75	13,056	894	91.80	13,876	0.53	442,017	15.39	357	1,873	13.50	13	-11
0.75 to < 2.50	33,316	4,491	97.67	37,702	1.09	702,596	13.59	310	6,876	18.24	63	-47
2.50 to < 10.00	6,170	472	98.67	6,636	4.21	228,320	22.20	417	3,052	45.99	63	-69

PD scale	a	b	c	d	e	f	g	h	i	j	k	l
€ million (unless indicated otherwise)	Original on-balance-sheet gross exposures	Off-balance-sheet exposures pre-CCF	Average CCF (%)	EAD after credit risk mitigation and after CCF	Average PD (%)	Number of borrowers	Average LGD (%)	Average maturity (days)	RWAs	RWA density (%)	EL	Loan loss allowances and provisions
10.00 to < 100.00	1,555	96	99.25	1,650	33.42	61,609	19.19	327	1,158	70.16	87	-101
100.00 (default)	929	10	99.14	939	100.00	50,878	27.43	289	348	37.09	234	-281
Subtotal	**72,425**	**6,807**	**92.48**	**78,718**	**2.91**	**1,934,464**	**15.98**	**346**	**14,721**	**18.70**	**467**	**-516**
Retail business – SMEs, secured by mortgages on immovable property												
0.00 to < 0.15	-	-	-	-	-	-	-	-	-	-	-	-
0.15 to < 0.25	-	-	-	-	-	-	-	-	-	-	-	-
0.25 to < 0.50	-	-	-	-	-	-	-	-	-	-	-	-
0.50 to < 0.75	-	-	-	-	-	-	-	-	-	-	-	-
0.75 to < 2.50	-	-	-	-	-	-	-	-	-	-	-	-
2.50 to < 10.00	-	-	-	-	-	-	-	-	-	-	-	-
10.00 to < 100.00	-	-	-	-	-	-	-	-	-	-	-	-
100.00 (default)	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal	-	-	-	-	-	-	-	-	-	-	-	-
Retail business – non-SMEs, secured by mortgages on immovable property												
0.00 to < 0.15	4,768	142	55.43	4,847	0.08	46,282	11.22	850	121	2.50		-1
0.15 to < 0.25	4,008	394	54.08	4,221	0.19	37,227	12.61	739	222	5.25	1	-1
0.25 to < 0.50	2,583	256	67.61	2,756	0.35	35,715	10.86	462	192	6.96	1	-1
0.50 to < 0.75	10,451	884	91.70	11,261	0.50	143,925	9.29	134	865	7.68	5	-3
0.75 to < 2.50	29,675	4,476	97.66	34,046	1.06	393,377	10.51	28	4,941	14.51	39	-22
2.50 to < 10.00	4,357	463	98.65	4,813	4.08	56,400	11.27	57	1,619	33.64	22	-19
10.00 to < 100.00	1,112	94	99.23	1,206	36.53	16,200	10.62	33	726	60.21	46	-34
100.00 (default)	581	10	99.13	591	100.00	8,795	18.61	43	183	30.91	98	-76
Subtotal	**57,537**	**6,718**	**92.38**	**63,742**	**2.62**	**737,921**	**10.64**	**174**	**8,868**	**13.91**	**212**	**-156**
Retail business – qualified revolving												
0.00 to < 0.15	-	-	-	-	-	-	-	-	-	-	-	-
0.15 to < 0.25	-	-	-	-	-	-	-	-	-	-	-	-
0.25 to < 0.50	-	-	-	-	-	-	-	-	-	-	-	-
0.50 to < 0.75	-	-	-	-	-	-	-	-	-	-	-	-
0.75 to < 2.50	-	-	-	-	-	-	-	-	-	-	-	-
2.50 to < 10.00	-	-	-	-	-	-	-	-	-	-	-	-
10.00 to < 100.00	-	-	-	-	-	-	-	-	-	-	-	-
100.00 (default)	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal	-	-	-	-	-	-	-	-	-	-	-	-
Retail business – other SMEs												
0.00 to < 0.15	2	-	-	2	0.13	8	25.89	-	-	6.11	-	-
0.15 to < 0.25	364	-	-	364	0.23	1,414	33.24	-	43	11.93	-	-
0.25 to < 0.50	-	-	-	-	-	-	-	-	-	-	-	-
0.50 to < 0.75	-	-	-	-	-	-	-	-	-	-	-	-
0.75 to < 2.50	-	-	-	-	-	-	-	-	-	-	-	-
2.50 to < 10.00	-	-	-	-	-	-	-	-	-	-	-	-
10.00 to < 100.00	5	-	-	4	30.00	6	45.00	-	4	92.86	1	-
100.00 (default)	-	-	-	-	-	2	-	-	-	-	-	-
Subtotal	**371**	-	-	**370**	**0.59**	**1,430**	**33.35**	-	**48**	**12.88**	**1**	-
Retail business – other non-SMEs												
0.00 to < 0.15	3,734	8	100.00	3,743	0.13	20,804	25.93	-	300	8.01	1	-
0.15 to < 0.25	364	23	100.00	387	0.21	102,804	20.01	134	33	8.42	-	-
0.25 to < 0.50	1,575	20	100.00	1,595	0.41	224,878	45.58	1,320	504	31.57	3	-4
0.50 to < 0.75	2,605	11	100.00	2,615	0.66	298,092	41.66	1,246	1,008	38.55	8	-8
0.75 to < 2.50	3,641	16	100.00	3,656	1.39	309,219	42.28	1,436	1,934	52.91	24	-25
2.50 to < 10.00	1,814	9	100.00	1,823	4.55	171,920	51.07	1,856	1,433	78.62	42	-51

PD scale	a	b	c	d	e	f	g	h	i	j	k	l
€ million (unless indicated otherwise)	Original on-balance-sheet gross exposures	Off-balance-sheet exposures pre-CCF	Average CCF (%)	EAD after credit risk mitigation and after CCF	Average PD (%)	Number of borrowers	Average LGD (%)	Average maturity (days)	RWAs	RWA density (%)	EL	Loan loss allowances and provisions
10.00 to < 100.00	438	2	100.00	440	24.94	45,403	42.43	1,497	428	97.21	40	-66
100.00 (default)	348	-	100.00	348	100.00	42,081	42.41	1,272	166	47.61	136	-205
Subtotal	**14,517**	**89**	**100.00**	**14,607**	**4.25**	**1,195,113**	**38.85**	**1,037**	**5,805**	**39.74**	**254**	**-360**
Other non-credit-obligation assets												
0.00 to < 0.15	-	-	-	-	-	-	-	-	-	-	-	-
0.15 to < 0.25	-	-	-	-	-	-	-	-	-	-	-	-
0.25 to < 0.50	-	-	-	-	-	-	-	-	-	-	-	-
0.50 to < 0.75	-	-	-	-	-	-	-	-	-	-	-	-
0.75 to < 2.50	-	-	-	-	-	-	-	-	-	-	-	-
2.50 to < 10.00	-	-	-	-	-	-	-	-	-	-	-	-
10.00 to < 100.00	-	-	-	-	-	-	-	-	-		-	-
100.00 (default)	-	-	-	-	-	-	-	-	-		-	-
Subtotal	-	-	-	-	-	-	-	-	-	-	-	-
Total of all portfolios as at Dec. 31, 2019	**79,499**	**7,076**	**92.76**	**86,063**	**4.20**	**1,934,902**	**15.37**	**1,011**	**15,219**	**17.68**	**933**	**-1,063**
Total of all portfolios as at Jun. 30, 2019	81,964	6,523	91.90	87,958	4.83	1,933,545	14.24	455	14,537	16.53	1,070	-1,157

1 Amount for prior-year period restated.

The reduction in on-balance-sheet and off-balance-sheet exposures in Fig. 50 is attributable to new retail business at DZ BANK. Conversely, there was a fall in the ‘corporates – other’ subportfolio that was attributable to sales at DVB. The risk-weighted assets increased only moderately due to the low average PDs. The reduction in the risk-weighted assets was the result of fluctuation in the subportfolios that was within the normal range. The reduction in loan loss allowances and provisions is attributable to the winding down of exposures in default in the ‘corporates – other’ subportfolio.

6.6.4.3 Collateralized lending volume under the IRB approaches

(ARTICLE 453 SENTENCE 1 LETTER G CRR)

This section presents the impact of credit derivatives on the calculation of capital requirements under the IRB approach. To this end, Fig. 51 shows the RWAs before credit risk has been mitigated using credit derivatives and compares them with the actual RWAs (i.e. after risk mitigation using credit derivatives and guarantees). The RWA disclosures are also based on on-balance-sheet and off-balance-sheet exposures. However, exposures subject to counterparty credit risk are not included in the following table.

FIG. 51 – EU CR7 – IRB APPROACH – EFFECT ON THE RWAS OF CREDIT DERIVATIVES USED AS CREDIT RISK MITIGATION TECHNIQUES

		a	b	a	b
		Dec. 31, 2019		Jun. 30, 2019	
€ million		**RWAs before credit derivatives**	**Actual RWAs**	RWAs before credit derivatives	Actual RWAs
1	**FIRB approach exposure class**	**49,517**	**49,517**	**48,152**	**48,152**
2	Central governments and central banks	923	923	1,481	1,481
3	Institutions	7,229	7,229	6,617	6,617
	Corporates – total	41,365	41,365	40,792	40,792
4	Corporates – SMEs	2,104	2,104	2,032	2,032

€ million		a	b	a	b
		Dec. 31, 2019		Jun. 30, 2019	
		RWAs before credit derivatives	Actual RWAs	RWAs before credit derivatives	Actual RWAs
5	Corporates – specialized lending	15,676	15,676	14,909	14,909
6	Corporates – other	23,585	23,585	23,851	23,851
7	**AIRB approach exposure class**	**43,460**	**43,460**	**43,114**	**43,114**
8	Central governments and central banks	0	0	-	-
9	Institutions	0	0	10	10
	Corporates – total	498	498	1,269	1,269
10	Corporates – of which: SMEs	0	0	-	-
11	Corporates – of which: specialized lending	0	0	-	-
12	Corporates – of which: other	498	498	1,269	1,269
	Retail business – total	14,721	14,721	13,258	13,258
13	Retail business – SMEs, secured by mortgages on immovable property	0	0	-	-
14	Retail business – non-SMEs, secured by mortgages on immovable property	8,868	8,868	8,259	8,259
15	Retail business – qualified revolving	0	0	-	-
16	Retail business – other SMEs	48	48	0	0
17	Retail business – other non-SMEs	5,805	5,805	4,999	4,999
18	Long-term equity investments under the IRB approach	26,629	26,629	26,866	26,866
19	Other non-credit-obligation assets[1]	1,613	1,613	1,711	1,711
20	**Total**	**92,978**	**92,978**	**91,267**	**91,267**

1 Other assets are assigned to the FIRB approach and form part of the total in row 1.

The RWAs under the IRB approach in Fig. 51 went up in the second half of the year under review, primarily because of normal business activity.

In the DZ BANK banking group, no credit derivatives were used for risk mitigation under the IRB approach. As a result, the RWAs before the mitigation of credit risk using credit derivatives are the same as the actual RWAs.

6.6.4.4 RWA flow statement for credit risk under the IRB approach

(ARTICLE 438 SENTENCE 1 LETTER D CRR)

Fig. 52 explains the fluctuation in the RWAs of risk-weighted exposure amounts under the IRB approach. The associated capital requirements during the reporting period are also shown.

FIG. 52 – EU CR8 – RWA FLOW STATEMENT OF CREDIT RISK EXPOSURES UNDER THE IRB APPROACH

€ million		a	b	a	b
		Dec. 31, 2019		Sep. 30, 2019	
		Risk-weighted assets	Capital requirements	Risk-weighted assets	Capital requirements
1	**Total RWAs as at the end of the previous reporting period**	**94,835**	**7,587**	**93,485**	**7,479**
2	Asset size	689	55	1,318	105
3	Asset quality	0	0	-	-
4	Model updates	-1,770	-142	-	-
5	Methodology and policy	868	70	381	30
6	Acquisitions and disposals	-1,511	-121	-	-
7	Foreign exchange movements	6	0	13	1
8	Other	-139	-11	-362	-29
9	**Total RWAs as at the end of the reporting period**	**92,978**	**7,438**	**94,835**	**7,587**

The RWA amounts declined from €94,835 million as at September 30, 2019 to €92,978 million as at the reporting date. This decrease in the RWAs of €1,719 million predominantly comprised three effects. Firstly, the risk exposures went down by €1,857 million owing to model changes. Secondly, risk exposures declined by €1,511 million in relation to acquisitions and disposals in the DZ BANK Group. And thirdly, risk exposures increased by €448 million on the back of new business.

6.6.4.5 Actual specific credit risk adjustments and factors influencing losses incurred in lending business

(ARTICLE 452 SENTENCE 1 LETTERS G AND H CRR)

Fig. 53 contains information about the losses in the past 5 years in the following exposure classes: central governments and central banks, institutions, corporates (including SMEs, specialized lending, and purchased receivables that are treated as corporate loans), long-term equity investments that are backed by own funds based on individual probabilities of default (PD/LGD approach), and retail business (broken down into mortgage-backed exposures, qualified revolving, and other exposures under the IRB approach).

The calculations of losses presented in Fig. 53 are based on the carrying amounts recognized under IFRS. Market-price-related write-downs on securities portfolios and long-term equity investments managed according to their default probabilities are not taken into account.

An actual loss of €451 million for the reporting period (2018: €295 million) was calculated for the subportfolios presented in accordance with the IRB approach (IRBA) in Fig. 53.

The information disclosed in the regulatory risk report includes the changes in loss allowances, provisions for loan commitments, and provisions for financial guarantee contracts that are reported in DZ BANK's 2019 Annual Report as follows: note 45 'Loss allowances' (page 237), note 61 'Loss allowances' (page 249), and note 69 'Provisions' (page 255).

Fig. 53 compares the expected losses with the losses actually incurred in the period January 1 to December 31 of the 2015 to 2019 financial years for the following IRBA exposure classes:

- Central governments and central banks
- Institutions
- Corporates (including SMEs, specialized lending, and purchased receivables that are treated as corporate loans)
- Long-term equity investments recognized under the PD/LGD approach
- Retail business.

The estimate of the expected losses for 2019 relates to the non-defaulting risk-weighted assets in the traditional lending business. The losses shown that have actually been incurred also relate to the exposures that had not yet defaulted at the beginning of the year under review. The definition of 'loss' corresponds to the definition used in Fig. 53. The supervisory authority intends this comparison to be the basis for measuring the efficiency of the process for allocating exposures or borrowers to rating categories as required by section 452 sentence 1 letter i CRR. In this respect, the table can be seen as a supplement to the description of the internal validation processes in the section 'Control mechanisms for the rating systems' in this report.

However, the comparison of expected and actual losses in the form described above should be viewed with the reservation that, due to methodology reasons, very few of the figures are directly comparable with each other. Furthermore, the expected losses relate to a static portfolio of risk-weighted assets, whereas the losses incurred are the result of a credit portfolio that is subject to change over the course of the year.

FIG. 53 – YEAR-ON-YEAR CHANGE IN THE ACTUAL LOSSES IN THE TOTAL CREDIT PORTFOLIO UNDER THE IRB APPROACH BY EXPOSURE CLASS

€ million

Exposure class	Jan. 1, 2019 to Dec. 31, 2019	Jan. 1, 2018 to Dec. 31, 2018	Jan. 1, 2017 to Dec. 31, 2017	Jan. 1, 2016 to Dec. 31, 2016	Jan. 1, 2015 to Dec. 31, 2015
Central governments and central banks	0	-	-	-	-
Institutions	-1	0	-	5	-5
Corporates	246	101	830	356	72
Equity exposures	20	-	-	-	-
Mortgage-backed retail IRBA receivables	5	-1	28	9	45
Qualified revolving retail IRBA receivables	-	-	-	-	-
Other retail IRBA receivables	181	195	55	48	65
Total	451	295	912	419	178

6.6.4.6 Validation results

(ARTICLE 452 SENTENCE 1 LETTER I CRR)

The findings of the reviews of the IRBA credit rating systems and EAD/LGD models conducted as part of validations in 2019 were largely unremarkable. The validation results for all separately calibrated IRBA parameters and partial models are set out in the following table, broken down by PD, LGD, and CCF.

FIG. 54 – VAL2 – VALIDATION RESULTS OF THE DZ BANK BANKING GROUP AS AT DECEMBER 31, 2019

	PD		LGD		CCF	
Validation	**Number**	**EAD (%)**	**Number**	**EAD (%)**	**Number**	**EAD (%)**
Adequate	27	80%	8	77%	0	0%
Too conservative – adjustment recommended	2	3%	0	0%	1	100%
Too progressive – adjustment recommended	0	0%	2	22%	0	0%
Validation not yet completed	6	17%	1	1%	0	0%
Total	**35**	**100%**	**11**	**100%**	**1**	**100%**

Individual risk parameter variants are classified as adequate if the validation does not trigger a recalibration and the current variant can continue to be used because it remains sufficiently conservative. A parameter is classified as too conservative or too progressive if the validation triggers a recalibration analysis that potentially may lead to the current variant being adjusted.

PD validations classified two models as too conservative. The validation reports recommended that the models be recalibrated. The models are likely to be extensively modified this year in accordance with the rules in the PD/LGD guidelines.

LGD validations classified two models as too progressive. The validation reports recommended that the models be revised. This will probably be tackled in the course of this year.

The CCF validation classified one model as too conservative. The model development department is currently examining whether it needs to be revised.

Validation processes at DZ HYP have not yet been completed in full for all rating systems because of merger activities. This affects six PD models and one LGD model.

Fig. 55 and Fig. 57 compare the PD determined per exposure class for the calculation of capital requirements with the effective default rates of the DZ BANK banking group's borrowers, under the FIRB and AIRB approaches respectively.

The gray fields in Fig. 55 to Fig. 58 indicate that no external rating is available for the particular variant.
The following tables show DZ BANK's credit rating master scale, in which internal credit ratings are matched to the ratings used by Moody's, Standard & Poor's, and Fitch. It should be noted that some internal ratings cannot be matched with a particular external rating because of the greater degree of refinement in the credit rating master scale.

FIG. 55 – EU CR9 – FIRB APPROACH – BACKTESTING OF THE PROBABILITY OF DEFAULT (PD) PER EXPOSURE CLASS AS AT DECEMBER 31, 2019

€ million (unless indicated otherwise)

a	b			c	d	e		f	g	h	i
Exposure class	PD range	External rating equivalent			Weighted average PD (%)	Arithmetic average PD by borrower (%)	Number of borrowers		Defaulted borrowers in the year		Average historical annual default rate (%)
		Moody's	Standard & Poor's	Fitch			End of previous year	End of the year		Of which: new borrowers	
Central governments and central banks											
Investment grade											
1A	0.00 – 0.02	Aaa-Aa2	AAA-AA	AAA-AA	0.01	0.00	122	25	-	-	0.00
1B	0.02 – 0.02	Aa3	AA-	AA-	-	-	3	-	-	-	0.00
1C	0.02 – 0.03				0.03	0.00	4	1	-	-	0.00
1D	0.03 – 0.04	A1	A+	A+	-	-	5	-	-	-	0.00
1E	0.04 – 0.06				-	-	2	-	-	-	0.00
2A	0.06 – 0.08	A2	A	A	-	-	2	-	-	-	0.00
2B	0.08 – 0.12	A3	A-	A-	-	-	2	-	-	-	0.00
2C	0.12 – 0.19	Baa1	BBB+	BBB+	0.15	0.00	-	1	-	-	0.00
2D	0.19 – 0.28	Baa2	BBB	BBB	-	-	22	-	-	-	0.00
2E	0.28 – 0.42				-	-	4	-	-	-	0.00
3A	0.42 – 0.63	Baa3	BBB-	BBB-	0.50	0.01	12	1	-	-	0.00
Non-investment grade											
3B	0.63 – 0.94	Ba1	BB+	BB+	0.75	0.01	14	1	-	-	0.00
3C	0.94 – 1.42	Ba2	BB	BB	-	-	35	-	-	-	0.00
3D	1.42 – 2.12				-	-	13	-	-	-	0.00
3E	2.12 – 3.19	Ba3	BB-	BB-	-	-	7	-	-	-	0.00
4A	3.19 – 4.78	B1	B+	B+	-	-	27	-	-	-	0.00
4B	4.78 – 7.17	B2	B	B	6.00	0.08	25	2	-	-	0.00
4C	7.17 – 10.75	B3	B-	B-			10	-	-	-	0.00
4D	10.75 – 16.13				9.00	0.09	33	1	-	-	0.00
4E	16.13 – 100.00	Caa1 or lower	CCC+ or lower	CCC+ or lower	-	-	3	-	-	-	0.00
Default											
5	100.00				-	-	-	-	-	-	0.00
Institutions											
Investment grade											
1A	0.00 – 0.02	Aaa-Aa2	AAA-AA	AAA-AA	"-"	"-"	-	"-"	"-"	"-"	"-"
1B	0.02 – 0.02	Aa3	AA-	AA-	0.03	0.00	-	1	"-"	"-"	0.00
1C	0.02 – 0.03				0.03	0.00	819	183	"-"	"-"	0.00
1D	0.03 – 0.04	A1	A+	A+	0.04	0.00	228	52	"-"	"-"	0.00
1E	0.04 – 0.06				0.05	0.00	418	53	"-"	"-"	0.00
2A	0.06 – 0.08	A2	A	A	0.07	0.00	1,267	125	"-"	"-"	0.00
2B	0.08 – 0.12	A3	A-	A-	0.10	0.00	1,081	122	"-"	"-"	0.00
2C	0.12 – 0.19	Baa1	BBB+	BBB+	0.15	0.00	453	79	"-"	"-"	0.00
2D	0.19 – 0.28	Baa2	BBB	BBB	0.24	0.00	410	71	"-"	"-"	0.00
2E	0.28 – 0.42	"-"	"-"	"-"	0.35	0.01	186	50	"-"	"-"	0.00
3A	0.42 – 0.63	Baa3	BBB-	BBB-	0.49	0.01	278	72	"-"	"-"	0.00
Non-investment grade											
3B	0.63 – 0.94	Ba1	BB+	BB+	0.80	0.01	267	38	"-"	"-"	0.00
3C	0.94 – 1.42	Ba2	BB	BB	0.98	0.02	248	42	"-"	"-"	0.00
3D	1.42 – 2.12				1.71	0.02	55	19	"-"	"-"	0.00
3E	2.12 – 3.19	Ba3	BB-	BB-	2.95	0.05	192	32	"-"	"-"	0.00
4A	3.19 – 4.78	B1	B+	B+	3.99	0.05	66	25	"-"	"-"	0.00
4B	4.78 – 7.17	B2	B	B	6.02	0.07	13	12	"-"	"-"	0.00
4C	7.17 – 10.75	B3	B-	B-	9.01	0.12	73	29	"-"	"-"	0.00
4D	10.75 – 16.13	"-"	"-"	"-"	13.71	0.14	62	18	"-"	"-"	0.00

€ million (unless indicated otherwise)

a	b	c			d	e	f		g	h	i
Exposure class	PD range	External rating equivalent			Weighted average PD (%)	Arithmetic average PD by borrower (%)	Number of borrowers		Defaulted borrowers in the year		Average historical annual default rate (%)
		Moody's	Standard & Poor's	Fitch			End of previous year	End of the year		Of which: new borrowers	
4E	16.13 – 100.00	Caa1 or lower	CCC+ or lower	CCC+ or lower	29.81	0.28	188	31	1	"-"	"-"
Default											
5	100.00	"-"	"-"	"-"	99.84	0.57	70	7	1	"-"	"-"
Corporates											
Investment grade											
1A	0.00 – 0.02	Aaa-Aa2	AAA-AA	AAA-AA	-	-	1	-	0	0	-
1B	0.02 – 0.02	Aa3	AA-	AA-	-	-	-	-	0	0	-
1C	0.02 – 0.03				0.03	0.00	981	189	0	0	0.03
1D	0.03 – 0.04	A1	A+	A+	0.04	0.00	389	269	0	0	0.04
1E	0.04 – 0.06				0.05	0.00	657	575	1	1	0.05
2A	0.06 – 0.08	A2	A	A	0.08	0.00	1,941	449	0	0	0.08
2B	0.08 – 0.12	A3	A-	A-	0.12	0.00	1,677	552	0	0	0.12
2C	0.12 – 0.19	Baa1	BBB+	BBB+	0.16	0.00	2,246	732	0	0	0.16
2D	0.19 – 0.28	Baa2	BBB	BBB	0.25	0.00	3,538	949	0	0	0.25
2E	0.28 – 0.42				0.40	0.01	4,106	1,135	3	0	0.40
3A	0.42 – 0.63	Baa3	BBB-	BBB-	2.26	0.01	3,987	1,102	3	2	2.26
Non-investment grade											
3B	0.63 – 0.94	Ba1	BB+	BB+	0.89	0.02	4,076	995	5	3	0.02
3C	0.94 – 1.42	Ba2	BB	BB	1.74	0.03	2,830	752	6	2	0.01
3D	1.42 – 2.12				2.36	0.06	1,945	534	7	5	0.05
3E	2.12 – 3.19	Ba3	BB-	BB-	7.70	0.12	1,008	253	10	4	0.12
4A	3.19 – 4.78	B1	B+	B+	4.40	0.10	526	135	4	4	0.12
4B	4.78 – 7.17	B2	B	B	39.26	0.36	178	44	5	3	0.59
4C	7.17 – 10.75	B3	B-	B-	15.32	0.17	142	34	4	0	0.24
4D	10.75 – 16.13				48.57	0.30	58	23	1	0	1.00
4E	16.13 – 100.00	Caa1 or lower	CCC+ or lower	CCC+ or lower	17.26	0.29	1,647	104	2	2	0.26
Default											
5	100.00				99.63	1.00	1,882	307	50	27	0.00
Corporates – of which: SMEs											
Investment grade											
1A	0.00 – 0.02	Aaa-Aa2	AAA-AA	AAA-AA	0.00	0.00	-	-	-	-	0.00
1B	0.02 – 0.02	Aa3	AA-	AA-	0.00	0.00	-	-	-	-	0.00
1C	0.02 – 0.03				0.00	0.00	-	-	-	-	0.00
1D	0.03 – 0.04	A1	A+	A+	0.04	0.00	-	54	-	-	0.00
1E	0.04 – 0.06				0.05	0.00	63	200	-	-	0.00
2A	0.06 – 0.08	A2	A	A	0.07	0.00	289	111	-	-	0.00
2B	0.08 – 0.12	A3	A-	A-	0.10	0.00	153	78	-	-	0.00
2C	0.12 – 0.19	Baa1	BBB+	BBB+	0.16	0.00	123	111	-	-	0.00
2D	0.19 – 0.28	Baa2	BBB	BBB	0.30	0.00	443	184	-	-	0.00
2E	0.28 – 0.42				0.41	0.01	618	202	-	-	0.00
3A	0.42 – 0.63	Baa3	BBB-	BBB-	0.62	0.01	579	226	-	-	0.00
Non-investment grade											
3B	0.63 – 0.94	Ba1	BB+	BB+	0.94	0.01	852	261	-	-	0.01
3C	0.94 – 1.42	Ba2	BB	BB	1.12	0.02	668	249	1	-	0.00
3D	1.42 – 2.12				1.84	0.03	608	209	-	-	0.04
3E	2.12 – 3.19	Ba3	BB-	BB-	2.89	0.04	308	111	-	-	0.09
4A	3.19 – 4.78	B1	B+	B+	4.27	0.06	179	57	-	-	0.03
4B	4.78 – 7.17	B2	B	B	7.34	0.09	91	14	1	-	0.14
4C	7.17 – 10.75	B3	B-	B-	6.51	0.14	40	13	-	-	0.00
4D	10.75 – 16.13				3.99	0.14	24	5	-	-	0.00
4E	16.13 – 100.00	Caa1 or lower	CCC+ or lower	CCC+ or lower	29.63	0.28	1,481	9	-	-	0.26
Default											
5	100.00				0.00	0.00	168	-	4	-	0.00

€ million (unless indicated otherwise)

a	b	c			d	e	f		g	h	i
Exposure class	PD range	External rating equivalent			Weighted average PD (%)	Arithmetic average PD by borrower (%)	Number of borrowers		Defaulted borrowers in the year		Average historical annual default rate (%)
		Moody's	Standard & Poor's	Fitch			End of previous year	End of the year		Of which: new borrowers	
Corporates – of which: specialized lending											
Investment grade											
1A	0.00 – 0.02	Aaa-Aa2	AAA-AA	AAA-AA	0.00	0.00	-	-	-	-	0.00
1B	0.02 – 0.02	Aa3	AA-	AA-	0.00	0.00	-	-	-	-	0.00
1C	0.02 – 0.03				0.03	0.00	2	14	-	-	0.00
1D	0.03 – 0.04	A1	A+	A+	0.05	0.00	52	119	-	-	0.00
1E	0.04 – 0.06				0.06	0.00	102	150	-	-	0.00
2A	0.06 – 0.08	A2	A	A	0.11	0.01	1,141	153	-	-	0.00
2B	0.08 – 0.12	A3	A-	A-	0.11	0.00	518	144	-	-	0.00
2C	0.12 – 0.19	Baa1	BBB+	BBB+	0.15	0.00	428	139	-	-	0.00
2D	0.19 – 0.28	Baa2	BBB	BBB	0.23	0.01	1,140	234	-	-	0.00
2E	0.28 – 0.42				0.38	0.01	1,022	305	-	-	0.00
3A	0.42 – 0.63	Baa3	BBB-	BBB-	0.50	0.01	953	238	-	-	0.00
3B	0.63 – 0.94	Ba1	BB+	BB+	0.80	0.02	1,008	206	-	-	0.00
3C	0.94 – 1.42	Ba2	BB	BB	1.77	0.02	664	122	-	-	0.00
3D	1.42 – 2.12				1.44	0.02	326	51	-	-	0.00
3E	2.12 – 3.19	Ba3	BB-	BB-	2.84	0.03	177	9	-	-	0.00
4A	3.19 – 4.78	B1	B+	B+	3.87	0.03	79	19	-	-	0.03
4B	4.78 – 7.17	B2	B	B	5.99	0.05	46	6	-	-	0.00
4C	7.17 – 10.75	B3	B-	B-	13.50	0.14	50	1	3	-	0.00
4D	10.75 – 16.13				79.06	0.39	3	3	1	-	0.77
4E	16.13 – 100.00	Caa1 or lower	CCC+ or lower	CCC+ or lower	30.00	0.31	122	63	-	-	0.00
Default											
5	100.00				98.53	1.00	554	36	6	1	0.00
Corporates – of which: purchased receivables											
Investment grade											
1A	0.00 – 0.02	Aaa-Aa2	AAA-AA	AAA-AA	0.00	0.00	-	-	-	-	0.00
1B	0.02 – 0.02	Aa3	AA-	AA-	0.00	0.00	-	-	-	-	0.00
1C	0.02 – 0.03				0.00	0.00	-	-	-	-	0.00
1D	0.03 – 0.04	A1	A+	A+	0.00	0.00	-	-	-	-	0.00
1E	0.04 – 0.06				0.00	0.00	-	-	-	-	0.00
2A	0.06 – 0.08	A2	A	A	0.00	0.00	-	-	-	-	0.00
2B	0.08 – 0.12	A3	A-	A-	0.15	0.00	2	1	-	-	0.00
2C	0.12 – 0.19	Baa1	BBB+	BBB+	0.00	0.00	1		-	-	0.00
2D	0.19 – 0.28	Baa2	BBB	BBB	0.25	0.00	5	3	-	-	0.00
2E	0.28 – 0.42				0.35	0.00	3	4	-	-	0.00
3A	0.42 – 0.63	Baa3	BBB-	BBB-	0.56	0.01	19	6	-	-	0.00
Non-investment grade											
3B	0.63 – 0.94	Ba1	BB+	BB+	0.61	0.01	4	3	-	-	0.00
3C	0.94 – 1.42	Ba2	BB	BB	1.21	0.01	7	4	-	-	0.00
3D	1.42 – 2.12				2.03	0.02	5	3	-	-	0.00
3E	2.12 – 3.19	Ba3	BB-	BB-	0.00	0.00	1		-	-	0.00
4A	3.19 – 4.78	B1	B+	B+	9.00	0.09	6	1	-	-	0.00
4B	4.78 – 7.17	B2	B	B	0.00	0.00	-	-	-	-	0.00
4C	7.17 – 10.75	B3	B-	B-	0.00	0.00	3	-	-	-	0.00
4D	10.75 – 16.13				-	-	-	-	-	-	-
4E	16.13 – 100.00	Caa1 or lower	CCC+ or lower	CCC+ or lower	-	-	-	-	-	-	-
Default											
5	100.00				100.00	1.00	-	1	-	-	0.00
Corporates – of which: other											
Investment grade											
1A	0.00 – 0.02	Aaa-Aa2	AAA-AA	AAA-AA	0.00	0.00	1	-	-	-	0.00
1B	0.02 – 0.02	Aa3	AA-	AA-	-	-	-	-	-	-	-
1C	0.02 – 0.03				0.03	0.00	979	175	-	-	0.00

€ million (unless indicated otherwise)

a	b			c	d	e		f	g	h	i
Exposure class	PD range	External rating equivalent			Weighted average PD (%)	Arithmetic average PD by borrower (%)	Number of borrowers		Defaulted borrowers in the year		Average historical annual default rate (%)
		Moody's	Standard & Poor's	Fitch			End of previous year	End of the year		Of which: new borrowers	
1D	0.03 – 0.04	A1	A+	A+	0.04	0.00	337	96	-	-	0.00
1E	0.04 – 0.06				0.05	0.00	492	225	1	1	0.00
2A	0.06 – 0.08	A2	A	A	0.07	0.00	511	185	-	-	0.00
2B	0.08 – 0.12	A3	A-	A-	0.12	0.00	1,004	329	-	-	0.00
2C	0.12 – 0.19	Baa1	BBB+	BBB+	0.16	0.00	1,694	482	-	-	0.00
2D	0.19 – 0.28	Baa2	BBB	BBB	0.26	0.00	1,950	528	-	-	0.00
2E	0.28 – 0.42				0.41	0.01	2,463	624	3		0.00
3A	0.42 – 0.63	Baa3	BBB-	BBB-	3.30	0.02	2,436	632	3	2	0.02
Non-investment grade											
3B	0.63 – 0.94	Ba1	BB+	BB+	0.93	0.03	2,212	525	5	3	0.01
3C	0.94 – 1.42	Ba2	BB	BB	1.88	0.03	1,491	377	5	2	0.01
3D	1.42 – 2.12				2.68	0.08	1,006	271	7	5	0.01
3E	2.12 – 3.19	Ba3	BB-	BB-	8.61	0.20	522	133	10	4	0.04
4A	3.19 – 4.78	B1	B+	B+	4.48	0.16	262	58	4	4	0.06
4B	4.78 – 7.17	B2	B	B	46.19	0.60	41	24	4	3	0.45
4C	7.17 – 10.75	B3	B-	B-	20.87	0.19	49	20	1	-	0.24
4D	10.75 – 16.13				20.86	0.33	31	15	-	-	0.23
4E	16.13 – 100.00	Caa1 or lower	CCC+ or lower	CCC+ or lower	15.29	0.25	44	32	2	2	0.00
Default											
5	100.00				99.89	1.00	1,160	270	40	26	0.00
Long-term equity investments											
Investment grade											
1A	0.00 – 0.02	Aaa-Aa2	AAA-AA	AAA-AA	-	-	1	-	-	-	0.00
1B	0.02 – 0.02	Aa3	AA-	AA-	-	-	-	-	-	-	0.00
1C	0.02 – 0.03				-	-	6	-	-	-	0.00
1D	0.03 – 0.04	A1	A+	A+	-	-	1	-	-	-	0.00
1E	0.04 – 0.06				-	-	-	-	-	-	0.00
2A	0.06 – 0.08	A2	A	A	-	-	3	-	-	-	0.00
2B	0.08 – 0.12	A3	A-	A-	0.09	0.09	1	6	-	-	0.00
2C	0.12 – 0.19	Baa1	BBB+	BBB+	-	-	4	-	-	-	0.00
2D	0.19 – 0.28	Baa2	BBB	BBB	-	-	9	-	-	-	0.00
2E	0.28 – 0.42				0.50	0.50	6	5	-	-	0.00
3A	0.42 – 0.63	Baa3	BBB-	BBB-	0.50	0.50	3	1	-	-	0.00
Non-investment grade											
3B	0.63 – 0.94	Ba1	BB+	BB+	-	-	-	-	-	-	0.00
3C	0.94 – 1.42	Ba2	BB	BB	0.75	0.75	2	1	-	-	0.00
3D	1.42 – 2.12				-	-	-	-	-	-	0.00
3E	2.12 – 3.19	Ba3	BB-	BB-	-	-	-	-	-	-	0.00
4A	3.19 – 4.78	B1	B+	B+	4.00	4.00	1	1	-	-	0.00
4B	4.78 – 7.17	B2	B	B	6.00	6.00	1	1	-	-	0.00
4C	7.17 – 10.75	B3	B-	B-	-	-	-	-	-	-	0.00
4D	10.75 – 16.13				-	-	-	-	-	-	0.00
4E	16.13 – 100.00	Caa1 or lower	CCC+ or lower	CCC+ or lower	-	-	-	-	-	-	0.00
Default											
5	100.00				100.00	100.00	-	3	-	-	0.00

FIG. 56 – EU CR9 – FIRB APPROACH – BACKTESTING OF THE PROBABILITY OF DEFAULT (PD) PER EXPOSURE CLASS AS AT DECEMBER 31, 2018

€ million (unless indicated otherwise)

a	b			c	d	e		f	g	h	i
Exposure class	PD range	External rating equivalent			Weighted average PD (%)	Arithmetic average PD by borrower (%)	Number of borrowers		Defaulted borrowers in the year		Average historical annual default rate (%)
		Moody's	Standard & Poor's	Fitch			End of previous year	End of the year		Of which: new borrowers	
Central governments and central banks											
Investment grade											
1A	0.00 – 0.02	Aaa-Aa2	AAA-AA	AAA-AA	0.01	0.00	32	122	-	-	0.00
1B	0.02 – 0.02	Aa3	AA-	AA-	0.02	0.00	2	3	-	-	0.00
1C	0.02 – 0.03				0.01	0.00	1	4	-	-	0.00
1D	0.03 – 0.04	A1	A+	A+	0.04	0.00	-	5	-	-	0.00
1E	0.04 – 0.06				0.13	0.02	2	2	-	-	0.00
2A	0.06 – 0.08	A2	A	A	0.07	0.00	26	2	-	-	0.00
2B	0.08 – 0.12	A3	A-	A-	0.10	0.00	-	2	-	-	0.00
2C	0.12 – 0.19	Baa1	BBB+	BBB+	-	-	1	-	-	-	0.00
2D	0.19 – 0.28	Baa2	BBB	BBB	0.23	0.02	18	22	-	-	0.00
2E	0.28 – 0.42				9.75	0.06	17	4	-	-	0.00
3A	0.42 – 0.63	Baa3	BBB-	BBB-	0.50	0.01	16	12	-	-	0.00
Non-investment grade											
3B	0.63 – 0.94	Ba1	BB+	BB+	0.50	0.02	25	14	-	-	0.00
3C	0.94 – 1.42	Ba2	BB	BB	1.09	0.02	28	35	-	-	0.00
3D	1.42 – 2.12				1.10	0.01	4	13	-	-	0.00
3E	2.12 – 3.19	Ba3	BB-	BB-	2.60	0.03	5	7	-	-	0.00
4A	3.19 – 4.78	B1	B+	B+	5.94	0.05	11	27	-	-	0.00
4B	4.78 – 7.17	B2	B	B	6.00	0.06	15	25	-	-	0.00
4C	7.17 – 10.75	B3	B-	B-	8.99	0.09	13	10	-	-	0.00
4D	10.75 – 16.13				13.50	0.14	7	33	-	-	0.00
4E	16.13 – 100.00	Caa1 or lower	CCC+ or lower	CCC+ or lower	30.00	0.30	1	3	-	-	0.00
Default											
5	100.00				-	-	1	-	-	-	0.00
Institutions											
Investment grade											
1A	0.00 – 0.02	Aaa-Aa2	AAA-AA	AAA-AA	-	-	7	-	1	-	0.00
1B	0.02 – 0.02	Aa3	AA-	AA-	-	-	1	-	-	-	0.00
1C	0.02 – 0.03				0.03	0.00	1356	819	-	-	0.00
1D	0.03 – 0.04	A1	A+	A+	0.04	0.00	54	228	-	-	0.00
1E	0.04 – 0.06				0.05	0.00	54	418	-	-	0.00
2A	0.06 – 0.08	A2	A	A	0.07	0.00	105	1,267	-	-	0.00
2B	0.08 – 0.12	A3	A-	A-	0.10	0.00	117	1,081	-	-	0.00
2C	0.12 – 0.19	Baa1	BBB+	BBB+	0.14	0.00	111	453	-	-	0.00
2D	0.19 – 0.28	Baa2	BBB	BBB	0.22	0.00	64	410	-	-	0.00
2E	0.28 – 0.42				0.36	0.01	75	186	-	-	0.00
3A	0.42 – 0.63	Baa3	BBB-	BBB-	0.49	0.00	69	278	-	-	0.00
Non-investment grade											
3B	0.63 – 0.94	Ba1	BB+	BB+	0.72	0.01	60	267	-	-	0.00
3C	0.94 – 1.42	Ba2	BB	BB	1.17	0.02	53	248	-	-	0.00
3D	1.42 – 2.12				1.66	0.02	19	55	-	-	0.00
3E	2.12 – 3.19	Ba3	BB-	BB-	2.60	0.03	17	192	-	-	0.00
4A	3.19 – 4.78	B1	B+	B+	4.00	0.04	16	66	-	-	0.00
4B	4.78 – 7.17	B2	B	B	8.90	0.10	9	13	-	-	0.00
4C	7.17 – 10.75	B3	B-	B-	9.00	0.09	14	73	-	-	0.00
4D	10.75 – 16.13				13.44	0.13	24	62	-	-	0.00
4E	16.13 – 100.00	Caa1 or lower	CCC+ or lower	CCC+ or lower	33.35	0.35	35	188	30	2	0.39
Default											
5	100.00				100.00	1.00	5	70	52	49	0.00
Corporates											
Investment grade											
1A	0.00 – 0.02	Aaa-Aa2	AAA-AA	AAA-AA	0.35	0.00	1	1	-	-	0.00
1B	0.02 – 0.02	Aa3	AA-	AA-	-	-	-	-	-	-	-

€ million (unless indicated otherwise)

a	b	c			d	e	f		g	h	i
Exposure class	PD range	External rating equivalent			Weighted average PD (%)	Arithmetic average PD by borrower (%)	Number of borrowers		Defaulted borrowers in the year		Average historical annual default rate (%)
		Moody's	Standard & Poor's	Fitch			End of previous year	End of the year		Of which: new borrowers	
1C	0.02 – 0.03				0.03	0.00	218	981	-	-	0.00
1D	0.03 – 0.04	A1	A+	A+	0.04	0.00	60	389	-	-	0.00
1E	0.04 – 0.06				0.05	0.00	104	657	-	-	0.00
2A	0.06 – 0.08	A2	A	A	0.13	0.00	502	1,941	2	-	0.00
2B	0.08 – 0.12	A3	A-	A-	0.11	0.00	414	1,677	-	-	0.00
2C	0.12 – 0.19	Baa1	BBB+	BBB+	0.24	0.00	509	2,246	4	-	0.00
2D	0.19 – 0.28	Baa2	BBB	BBB	0.40	0.01	743	3,538	2	-	0.00
2E	0.28 – 0.42				0.50	0.01	996	4,106	7	2	0.00
3A	0.42 – 0.63	Baa3	BBB-	BBB-	0.66	0.01	996	3,987	2	-	0.00
Non-investment grade											
3B	0.63 – 0.94	Ba1	BB+	BB+	0.84	0.01	971	4,076	6	2	0.00
3C	0.94 – 1.42	Ba2	BB	BB	1.67	0.02	758	2,830	20	5	0.01
3D	1.42 – 2.12				2.52	0.03	543	1,945	14	5	0.01
3E	2.12 – 3.19	Ba3	BB-	BB-	2.86	0.03	266	1,008	1	-	0.02
4A	3.19 – 4.78	B1	B+	B+	4.35	0.04	182	526	1	-	0.00
4B	4.78 – 7.17	B2	B	B	8.33	0.10	69	178	7	2	0.04
4C	7.17 – 10.75	B3	B-	B-	22.68	0.17	46	142	15	7	0.09
4D	10.75 – 16.13				13.11	0.10	14	58	-	-	0.00
4E	16.13 – 100.00	Caa1 or lower	CCC+ or lower	CCC+ or lower	17.90	0.30	1,294	1,647	2	-	0.01
Default											
5	100.00				99.19	0.99	385	1,882	67	63	0.00
Corporates – of which: SMEs											
Investment grade											
1A	0.00 – 0.02	Aaa-Aa2	AAA-AA	AAA-AA	-	-	-	-	-	-	-
1B	0.02 – 0.02	Aa3	AA-	AA-	-	-	-	-	-	-	-
1C	0.02 – 0.03				-	-	1	-	-	-	-
1D	0.03 – 0.04	A1	A+	A+	-	-	-	-	-	-	-
1E	0.04 – 0.06				0.05	0.00	-	63	-	-	0.00
2A	0.06 – 0.08	A2	A	A	0.07	0.00	-	289	-	-	0.00
2B	0.08 – 0.12	A3	A-	A-	0.10	0.00	6	153	-	-	0.00
2C	0.12 – 0.19	Baa1	BBB+	BBB+	0.21	0.01	48	123	-	-	0.00
2D	0.19 – 0.28	Baa2	BBB	BBB	0.88	0.02	109	443	2	-	0.00
2E	0.28 – 0.42				0.38	0.00	170	618	-	-	0.00
3A	0.42 – 0.63	Baa3	BBB-	BBB-	1.10	0.01	202	579	2	-	0.00
Non-investment grade											
3B	0.63 – 0.94	Ba1	BB+	BB+	0.81	0.01	243	852	-	-	0.00
3C	0.94 – 1.42	Ba2	BB	BB	1.40	0.02	231	668	6	2	0.00
3D	1.42 – 2.12				1.90	0.02	202	608	1	-	0.00
3E	2.12 – 3.19	Ba3	BB-	BB-	2.82	0.02	107	308	-	-	0.00
4A	3.19 – 4.78	B1	B+	B+	5.30	0.05	66	179	1	-	0.00
4B	4.78 – 7.17	B2	B	B	12.45	0.15	36	91	7	2	0.08
4C	7.17 – 10.75	B3	B-	B-	10.56	0.09	17	40	-	-	0.00
4D	10.75 – 16.13				11.58	0.09	7	24	-	-	0.00
4E	16.13 – 100.00	Caa1 or lower	CCC+ or lower	CCC+ or lower	18.57	0.30	1,223	1,481	-	-	0.00
Default											
5	100.00				96.81	0.93	56	168	14	10	0.00
Corporates – of which: specialized lending											
Investment grade											
1A	0.00 - 0.02	Aaa-Aa2	AAA-AA	AAA-AA	-	-	1	-	-	-	-
1B	0.00 – 0.02	Aa3	AA-	AA-	-	-	-	-	-	-	-
1C	0.02 – 0.02				0.03	0.00	2	2	-	-	0.00
1D	0.02 – 0.03	A1	A+	A+	0.04	0.00	-	52	-	-	0.00
1E	0.03 – 0.04				0.05	0.00	1	102	-	-	0.00
2A	0.04 – 0.06	A2	A	A	0.23	0.01	409	1,141	2	-	0.00
2B	0.06 – 0.08	A3	A-	A-	0.14	0.00	192	518	-	-	0.00

€ million (unless indicated otherwise)

a	b	c			d	e	f		g	h	i
Exposure class	PD range	External rating equivalent			Weighted average PD (%)	Arithmetic average PD by borrower (%)	Number of borrowers		Defaulted borrowers in the year		Average historical annual default rate (%)
		Moody's	Standard & Poor's	Fitch			End of previous year	End of the year		Of which: new borrowers	
2C	0.08 – 0.12	Baa1	BBB+	BBB+	0.53	0.01	143	428	4	-	0.00
2D	0.12 – 0.19	Baa2	BBB	BBB	0.27	0.00	209	1,140	-	-	0.00
2E	0.19 – 0.28				0.33	0.01	270	1,022	-	-	0.00
3A	0.28 – 0.42	Baa3	BBB-	BBB-	0.81	0.01	192	953	-	-	0.00
Non-investment grade											
3B	0.63 – 0.94	Ba1	BB+	BB+	-	-	-	-	-	-	-
3C	0.94 – 1.42	Ba2	BB	BB	-	-	-	-	-	-	-
3D	1.42 – 2.12				-	-	-	-	-	-	-
3E	2.12 – 3.19	Ba3	BB-	BB-	-	-	-	-	-	-	-
4A	3.19 – 4.78	B1	B+	B+	-	-	-	-	-	-	-
4B	4.78 – 7.17	B2	B	B	-	-	-	-	-	-	-
4C	7.17 – 10.75	B3	B-	B-	-	-	-	-	-	-	-
4D	10.75 – 16.13				-	-	-	-	-	-	-
4E	16.13 – 100.00	Caa1 or lower	CCC+ or lower	CCC+ or lower	-	-	-	-	-	-	-
Default											
5	100.00				100.00	1.00	107	554	9	9	0.00
Corporates – of which: purchased receivables											
Investment grade											
1A	0.00 – 0.02	Aaa-Aa2	AAA-AA	AAA-AA	-	-	-	-	-	-	-
1B	0.02 – 0.02	Aa3	AA-	AA-	-	-	-	-	-	-	-
1C	0.02 – 0.03				-	-	-	-	-	-	-
1D	0.03 – 0.04	A1	A+	A+	-	-	-	-	-	-	-
1E	0.04 – 0.06				-	-	-	-	-	-	-
2A	0.06 – 0.08	A2	A	A	-	-	-	-	-	-	-
2B	0.08 – 0.12	A3	A-	A-	0.10	0.00	-	2	-	-	0.00
2C	0.12 – 0.19	Baa1	BBB+	BBB+	0.10	0.00	3	1	-	-	0.00
2D	0.19 – 0.28	Baa2	BBB	BBB	0.23	0.00	3	5	-	-	0.00
2E	0.28 – 0.42				0.41	0.00	2	3	-	-	0.00
3A	0.42 – 0.63	Baa3	BBB-	BBB-	0.50	0.00	10	19	-	-	0.00
Non-investment grade											
3B	0.63 – 0.94	Ba1	BB+	BB+	0.75	0.01	3	4			0.00
3C	0.94 – 1.42	Ba2	BB	BB	1.04	0.01	7	7	-	-	0.00
3D	1.42 – 2.12				71.54	0.21	3	5	-	-	0.00
3E	2.12 – 3.19	Ba3	BB-	BB-	1.70	0.02	-	1	-	-	0.00
4A	3.19 – 4.78	B1	B+	B+	3.30	0.03	4	6	-	-	0.00
4B	4.78 – 7.17	B2	B	B	-	-	-	-	-	-	-
4C	7.17 – 10.75	B3	B-	B-	0.75	0.01	1	3	-	-	0.00
4D	10.75 – 16.13				-	-	-	-	-	-	-
4E	16.13 – 100.00	Caa1 or lower	CCC+ or lower	CCC+ or lower	-	-	-	-	-	-	-
Default											
5	100.00				-	-	-	-	-	-	-
Corporates – other											
Investment grade											
1A	0.00 – 0.02	Aaa-Aa2	AAA-AA	AAA-AA	0.35	0.00	-	1	-	-	0.00
1B	0.02 – 0.02	Aa3	AA-	AA-	-	-	-	-	-	-	-
1C	0.02 – 0.03				0.03	0.00	215	979	-	-	0.00
1D	0.03 – 0.04	A1	A+	A+	0.04	0.00	60	337	-	-	0.00
1E	0.04 – 0.06				0.05	0.00	103	492	-	-	0.00
2A	0.06 – 0.08	A2	A	A	0.07	0.00	93	511	-	-	0.00
2B	0.08 – 0.12	A3	A-	A-	0.10	0.00	216	1,004	-	-	0.00
2C	0.12 – 0.19	Baa1	BBB+	BBB+	0.15	0.00	315	1,694	-	-	0.00
2D	0.19 – 0.28	Baa2	BBB	BBB	0.40	0.01	422	1,950	-	-	0.00
2E	0.28 – 0.42				0.68	0.01	554	2,463	7	2	0.00
3A	0.42 – 0.63	Baa3	BBB-	BBB-	0.58	0.01	592	2,436	-	-	0.00

€ million (unless indicated otherwise)

a	b	c			d	e	f		g	h	i
Exposure class	PD range	External rating equivalent			Weighted average PD (%)	Arithmetic average PD by borrower (%)	Number of borrowers		Defaulted borrowers in the year		Average historical annual default rate (%)
		Moody's	Standard & Poor's	Fitch			End of previous year	End of the year		Of which: new borrowers	
Non-investment grade											
3B	0.63 – 0.94	Ba1	BB+	BB+	0.86	0.01	480	2,212	6	2	0.00
3C	0.94 – 1.42	Ba2	BB	BB	1.68	0.03	402	1,491	10	3	0.01
3D	1.42 – 2.12				2.81	0.04	271	1,006	13	5	0.02
3E	2.12 – 3.19	Ba3	BB-	BB-	2.73	0.04	111	522	1	-	0.03
4A	3.19 – 4.78	B1	B+	B+	4.39	0.04	85	262	-	-	0.01
4B	4.78 – 7.17	B2	B	B	6.38	0.07	19	41	-	-	0.00
4C	7.17 – 10.75	B3	B-	B-	10.38	0.07	9	49	-	-	0.00
4D	10.75 – 16.13				13.45	0.10	1	31	-	-	0.00
4E	16.13 – 100.00	Caa1 or lower	CCC+ or lower	CCC+ or lower	27.82	0.27	27	44	-	-	0.04
Default											
5	100.00				98.79	0.99	222	1,160	44	44	0.00
Long-term equity investments											
Investment grade											
1A	0.00 – 0.02	Aaa-Aa2	AAA-AA	AAA-AA	0.09	0.00	-	1	-	-	0.00
1B	0.02 – 0.02	Aa3	AA-	AA-	-	-	-	-	-	-	
1C	0.02 – 0.03				0.09	0.00	1	6	-	-	0.00
1D	0.03 – 0.04	A1	A+	A+	0.09	0.00	-	1	-	-	0.00
1E	0.04 – 0.06				-	-	-	-	-	-	
2A	0.06 – 0.08	A2	A	A	0.00	0.00	-	3	-	-	0.00
2B	0.08 – 0.12	A3	A-	A-	0.10	0.00	4	1	-	-	0.00
2C	0.12 – 0.19	Baa1	BBB+	BBB+	0.15	0.00	3	4	-	-	0.00
2D	0.19 – 0.28	Baa2	BBB	BBB	0.23	0.00	6	9	-	-	0.00
2E	0.28 – 0.42				0.35	0.01	3	6	-	-	0.00
3A	0.42 – 0.63	Baa3	BBB-	BBB-	-	0.01	1	3	-	-	0.00
Non-investment grade											
3B	0.63 – 0.94	Ba1	BB+	BB+	-	-	1	-	-	-	-
3C	0.94 – 1.42	Ba2	BB	BB	1.10	0.04	-	2	-	-	0.00
3D	1.42 – 2.12				-	-	1	-	-	-	-
3E	2.12 – 3.19	Ba3	BB-	BB-	-	-	-	-	-	-	-
4A	3.19 – 4.78	B1	B+	B+	4.00	0.12	1	1	-	-	0.00
4B	4.78 – 7.17	B2	B	B	6.00	0.18	1	1	-	-	0.00
4C	7.17 – 10.75	B3	B-	B-	-	-	-	-	-	-	-
4D	10.75 – 16.13				-	-	-	-	-	-	-
4E	16.13 – 100.00	Caa1 or lower	CCC+ or lower	CCC+ or lower	-	-	-	-	-	-	-
Default											
5	100.00				-	-	4	-	-	-	-

FIG. 57 – EU CR9 – AIRB APPROACH – BACKTESTING OF THE PROBABILITY OF DEFAULT (PD) PER EXPOSURE CLASS AS AT DECEMBER 31, 2019

a	b	c			d	e	f		g	h	i
Exposure class	PD range	External rating equivalent			Weighted average PD	Arithmetic average PD by borrower	Number of borrowers		Defaulted borrowers in the year		Average historical annual default rate
		Moody's	Standard & Poor's	Fitch			End of previous year	End of the year		Of which: new borrowers	
Central governments and central banks											
Investment grade											
1A	0.00 – 0.02	Aaa-Aa2	AAA-AA	AAA-AA	-	-	-	-	-	-	-
1B	0.02 – 0.02	Aa3	AA-	AA-	-	-	-	-	-	-	-
1C	0.02 – 0.03				-	-	-	-	-	-	-
1D	0.03 – 0.04	A1	A+	A+	-	-	-	-	-	-	-
1E	0.04 – 0.06				-	-	-	-	-	-	-
2A	0.06 – 0.08	A2	A	A	-	-	-	-	-	-	-

a	b	c			d	e	f		g	h	i
Exposure class	PD range	External rating equivalent			Weighted average PD	Arithmetic average PD by borrower	Number of borrowers		Defaulted borrowers in the year		Average historical annual default rate
		Moody's	Standard & Poor's	Fitch			End of previous year	End of the year		Of which: new borrowers	
2B	0.08 – 0.12	A3	A-	A-	-	-	-	-	-	-	-
2C	0.12 – 0.19	Baa1	BBB+	BBB+	-	-	-	-	-	-	-
2D	0.19 – 0.28	Baa2	BBB	BBB	-	-	-	-	-	-	-
2E	0.28 – 0.42				-	-	-	-	-	-	-
3A	0.42 – 0.63	Baa3	BBB-	BBB-	-	-	-	-	-	-	-
Non-investment grade											
3B	0.63 – 0.94	Ba1	BB+	BB+	-	-	-	-	-	-	-
3C	0.94 – 1.42	Ba2	BB	BB	-	-	-	-	-	-	-
3D	1.42 – 2.12				-	-	-	-	-	-	-
3E	2.12 – 3.19	Ba3	BB-	BB-	-	-	-	-	-	-	-
4A	3.19 – 4.78	B1	B+	B+	-	-	-	-	-	-	-
4B	4.78 – 7.17	B2	B	B	-	-	-	-	-	-	-
4C	7.17 – 10.75	B3	B-	B-	-	-	-	-	-	-	-
4D	10.75 – 16.13				-	-	-	-	-	-	-
4E	16.13 – 100.00	Caa1 or lower	CCC+ or lower	CCC+ or lower	-	-	-	-	-	-	-
Default											
5	100.00				-	-	-	-	-	-	-
Institutions											
Investment grade											
1A	0.00 – 0.02	Aaa-Aa2	AAA-AA	AAA-AA	-	-	-	-	-	-	-
1B	0.02 – 0.02	Aa3	AA-	AA-	-	-	-	-	-	-	-
1C	0.02 – 0.03				-	-	-	-	-	-	-
1D	0.03 – 0.04	A1	A+	A+	-	-	-	-	-	-	-
1E	0.04 – 0.06				-	-	-	-	-	-	-
2A	0.06 – 0.08	A2	A	A	-	-	-	-	-	-	-
2B	0.08 – 0.12	A3	A-	A-	-	-	-	-	-	-	-
2C	0.12 – 0.19	Baa1	BBB+	BBB+	-	-	-	-	-	-	-
2D	0.19 – 0.28	Baa2	BBB	BBB	-	-	-	-	-	-	-
2E	0.28 – 0.42				-	-	1	-	-	-	-
3A	0.42 – 0.63	Baa3	BBB-	BBB-	-	-	9	-	-	-	-
Non-investment grade											
3B	0.63 – 0.94	Ba1	BB+	BB+	-	-	4	-	-	-	-
3C	0.94 – 1.42	Ba2	BB	BB	-	-	-	-	-	-	-
3D	1.42 – 2.12				-	-	-	-	-	-	-
3E	2.12 – 3.19	Ba3	BB-	BB-	-	-	-	-	-	-	-
4A	3.19 – 4.78	B1	B+	B+	-	-	-	-	-	-	-
4B	4.78 – 7.17	B2	B	B	-	-	-	-	-	-	-
4C	7.17 – 10.75	B3	B-	B-	-	-	-	-	-	-	-
4D	10.75 – 16.13				-	-	-	-	-	-	-
4E	16.13 – 100.00	Caa1 or lower	CCC+ or lower	CCC+ or lower	-	-	-	-	-	-	-
Default											
5	100.00				-	-	-	-	-	-	-
Corporates											
Investment grade											
1A	0.00 – 0.02	Aaa-Aa2	AAA-AA	AAA-AA	-	-	-	-	-	-	-
1B	0.02 – 0.02	Aa3	AA-	AA-	-	-	-	-	-	-	-
1C	0.02 – 0.03				-	-	-	-	-	-	-
1D	0.03 – 0.04	A1	A+	A+	-	-	-	-	-	-	-
1E	0.04 – 0.06				-	-	-	-	-	-	-
2A	0.06 – 0.08	A2	A	A	-	-	-	-	-	-	-
2B	0.08 – 0.12	A3	A-	A-	-	-	-	-	-	-	-
2C	0.12 – 0.19	Baa1	BBB+	BBB+	0.15	"-"	-	7	"-"	"-"	"-"
2D	0.19 – 0.28	Baa2	BBB	BBB	0.20	"-"	-	11	"-"	"-"	"-"
2E	0.28 – 0.42				0.35	"-"	5	69	"-"	"-"	"-"
3A	0.42 – 0.63	Baa3	BBB-	BBB-	"-"	"-"	2	"-"	"-"	"-"	"-"

a	b	c			d	e	f		g	h	i
Exposure class	PD range	External rating equivalent			Weighted average PD	Arithmetic average PD by borrower	Number of borrowers		Defaulted borrowers in the year		Average historical annual default rate
		Moody's	Standard & Poor's	Fitch			End of previous year	End of the year		Of which: new borrowers	
Non-investment grade											
3B	0.63 – 0.94	Ba1	BB+	BB+	"-"	"-"	168	"-"	"-"	"-"	"-"
3C	0.94 – 1.42	Ba2	BB	BB		"-"	-	"-"	"-"	"-"	0.01
3D	1.42 – 2.12				1.47"	"-"	-	126	1	"-"	0.01
3E	2.12 – 3.19	Ba3	BB-	BB-	"-"	"-"	153	"-"	"-"	"-"	"-"
4A	3.19 – 4.78	B1	B+	B+	-	"-"	-	"-"	"-"	"-"	"-"
4B	4.78 – 7.17	B2	B	B	5.35	"-"	-	130	1	"-"	0.01
4C	7.17 – 10.75	B3	B-	B-	9.15	"-"	173	27	2	"-"	0.02
4D	10.75 – 16.13				-	"-"	5	"-"	"-"	"-"	"-"
4E	16.13 – 100.00	Caa1 or lower	CCC+ or lower	CCC+ or lower	31.52	"-"	86	"-"	"-"	"-"	0.19"
Default											
5	100.00				100	"-"	149	"-"	"-"	"-"	0.00"
Corporates – of which: SMEs											
Investment grade											
1A	0.00 – 0.02	Aaa-Aa2	AAA-AA	AAA-AA	-	-	-	-	-	-	-
1B	0.02 – 0.02	Aa3	AA-	AA-	-	-	-	-	-	-	-
1C	0.02 – 0.03				-	-	-	-	-	-	-
1D	0.03 – 0.04	A1	A+	A+	-	-	-	-	-	-	-
1E	0.04 – 0.06				-	-	-	-	-	-	-
2A	0.06 – 0.08	A2	A	A	-	-	-	-	-	-	-
2B	0.08 – 0.12	A3	A-	A-	-	-	-	-	-	-	-
2C	0.12 – 0.19	Baa1	BBB+	BBB+	-	-	-	-	-	-	-
2D	0.19 – 0.28	Baa2	BBB	BBB	-	-	-	-	-	-	-
2E	0.28 – 0.42				-	-	-	-	-	-	-
3A	0.42 – 0.63	Baa3	BBB-	BBB-	-	-	-	-	-	-	-
Non-investment grade											
3B	0.63 – 0.94	Ba1	BB+	BB+	-	-	-	-	-	-	-
3C	0.94 – 1.42	Ba2	BB	BB	-	-	-	-	-	-	-
3D	1.42 – 2.12				-	-	-	-	-	-	-
3E	2.12 – 3.19	Ba3	BB-	BB-	-	-	-	-	-	-	-
4A	3.19 – 4.78	B1	B+	B+	-	-	-	-	-	-	-
4B	4.78 – 7.17	B2	B	B	-	-	-	-	-	-	-
4C	7.17 – 10.75	B3	B-	B-	-	-	-	-	-	-	-
4D	10.75 – 16.13				-	-	-	-	-	-	-
4E	16.13 – 100.00	Caa1 or lower	CCC+ or lower	CCC+ or lower	-	-	-	-	-	-	-
Default											
5	100.00				-	-	-	-	-	-	-
Corporates – of which: specialized lending											
Investment grade											
1A	0.00 – 0.02	Aaa-Aa2	AAA-AA	AAA-AA	-	-	-	-	-	-	-
1B	0.02 – 0.02	Aa3	AA-	AA-	-	-	-	-	-	-	-
1C	0.02 – 0.03				-	-	-	-	-	-	-
1D	0.03 – 0.04	A1	A+	A+	-	-	-	-	-	-	-
1E	0.04 – 0.06				-	-	-	-	-	-	-
2A	0.06 – 0.08	A2	A	A	-	-	-	-	-	-	-
2B	0.08 – 0.12	A3	A-	A-	-	-	-	-	-	-	-
2C	0.12 – 0.19	Baa1	BBB+	BBB+	-	-	-	-	-	-	-
2D	0.19 – 0.28	Baa2	BBB	BBB	-	-	-	-	-	-	-
2E	0.28 – 0.42				-	-	-	-	-	-	-
3A	0.42 – 0.63	Baa3	BBB-	BBB-	-	-	-	-	-	-	-
Non-investment grade											
3B	0.63 – 0.94	Ba1	BB+	BB+	-	-	-	-	-	-	-
3C	0.94 – 1.42	Ba2	BB	BB	-	-	-	-	-	-	-
3D	1.42 – 2.12				-	-	-	-	-	-	-
3E	2.12 – 3.19	Ba3	BB-	BB-	-	-	-	-	-	-	-
4A	3.19 – 4.78	B1	B+	B+	-	-	-	-	-	-	-

a	b	c			d	e	f		g	h	i
Exposure class	PD range	External rating equivalent			Weighted average PD	Arithmetic average PD by borrower	Number of borrowers		Defaulted borrowers in the year		Average historical annual default rate
		Moody's	Standard & Poor's	Fitch			End of previous year	End of the year		Of which: new borrowers	
4B	4.78 – 7.17	B2	B	B	-	-	-	-	-	-	-
4C	7.17 – 10.75	B3	B-	B-	-	-	-	-	-	-	-
4D	10.75 – 16.13				-	-	-	-	-	-	-
4E	16.13 – 100.00	Caa1 or lower	CCC+ or lower	CCC+ or lower	-	-	-	-	-	-	-
Default											
5	100.00				-	-	-	-	-	-	-
Corporates – of which: purchased receivables											
Investment grade											
1A	0.00 – 0.02	Aaa-Aa2	AAA-AA	AAA-AA	-	-	-	-	-	-	-
1B	0.02 – 0.02	Aa3	AA-	AA-	-	-	-	-	-	-	-
1C	0.02 – 0.03				-	-	-	-	-	-	-
1D	0.03 – 0.04	A1	A+	A+	-	-	-	-	-	-	-
1E	0.04 – 0.06				-	-	-	-	-	-	-
2A	0.06 – 0.08	A2	A	A	-	-	-	-	-	-	-
2B	0.08 – 0.12	A3	A-	A-	-	-	-	-	-	-	-
2C	0.12 – 0.19	Baa1	BBB+	BBB+	-	-	-	-	-	-	-
2D	0.19 – 0.28	Baa2	BBB	BBB	-	-	-	-	-	-	-
2E	0.28 – 0.42				-	-	-	-	-	-	-
3A	0.42 – 0.63	Baa3	BBB-	BBB-	-	-	-	-	-	-	-
Non-investment grade											
3B	0.63 – 0.94	Ba1	BB+	BB+	-	-	-	-	-	-	-
3C	0.94 – 1.42	Ba2	BB	BB	-	-	-	-	-	-	-
3D	1.42 – 2.12				-	-	-	-	-	-	-
3E	2.12 – 3.19	Ba3	BB-	BB-	-	-	-	-	-	-	-
4A	3.19 – 4.78	B1	B+	B+	-	-	-	-	-	-	-
4B	4.78 – 7.17	B2	B	B	-	-	-	-	-	-	-
4C	7.17 – 10.75	B3	B-	B-	-	-	-	-	-	-	-
4D	10.75 – 16.13				-	-	-	-	-	-	-
4E	16.13 – 100.00	Caa1 or lower	CCC+ or lower	CCC+ or lower	-	-	-	-	-	-	-
Default											
5	100.00				-	-	-	-	-	-	-
Corporates – of which: other											
Investment grade											
1A	0.00 – 0.02	Aaa-Aa2	AAA-AA	AAA-AA	-	-	-	-	-	-	-
1B	0.02 – 0.02	Aa3	AA-	AA-	-	-	-	-	-	-	-
1C	0.02 – 0.03				-	-	-	-	-	-	-
1D	0.03 – 0.04	A1	A+	A+	-	-	-	-	-	-	-
1E	0.04 – 0.06				-	-	-	-	-	-	-
2A	0.06 – 0.08	A2	A	A	-	-	-	-	-	-	-
2B	0.08 – 0.12	A3	A-	A-	-	-	-	-	-	-	-
2C	0.12 – 0.19	Baa1	BBB+	BBB+	0.15	"-"	-	7	"-"	"-"	"-"
2D	0.19 – 0.28	Baa2	BBB	BBB	0.20	"-"	-	11	"-"	"-"	"-"
2E	0.28 – 0.42				0.35	"-"	5	69	"-"	"-"	"-"
3A	0.42 – 0.63	Baa3	BBB-	BBB-	"-"	"-"	2	"-"	"-"	"-"	"-"
Non-investment grade											
3B	0.63 – 0.94	Ba1	BB+	BB+	"-"	"-"	168	"-"	"-"	"-"	"-"
3C	0.94 – 1.42	Ba2	BB	BB		"-"	-	"-"	"-"	"-"	0.01
3D	1.42 – 2.12				1.47"	"-"	-	126	1	"-"	0.01
3E	2.12 – 3.19	Ba3	BB-	BB-	"-"	"-"	153	"-"	"-"	"-"	"-"
4A	3.19 – 4.78	B1	B+	B+	-	"-"	-	"-"	"-"	"-"	"-"
4B	4.78 – 7.17	B2	B	B	5.35	"-"	-	130	1	"-"	0.01
4C	7.17 – 10.75	B3	B-	B-	9.15	"-"	173	27	2	"-"	0.02
4D	10.75 – 16.13				"-"	"-"	5	-	-	-	-
4E	16.13 – 100.00	Caa1 or lower	CCC+ or lower	CCC+ or lower	31.52	"-"	86	13	10	-	0.19"
Default											

a	b	c			d	e	f		g	h	i
Exposure class	PD range	External rating equivalent			Weighted average PD	Arithmetic average PD by borrower	Number of borrowers		Defaulted borrowers in the year		Average historical annual default rate
		Moody's	Standard & Poor's	Fitch			End of previous year	End of the year		Of which: new borrowers	
5	100.00				100	"-"	149	61	-	"-"	0.00"
Retail business – SMEs, secured by mortgages on immovable property											
Investment grade											
1A	0.00 – 0.02	Aaa-Aa2	AAA-AA	AAA-AA	-	-	-	-	-	-	-
1B	0.02 – 0.02	Aa3	AA-	AA-	-	-	-	-	-	-	-
1C	0.02 – 0.03				-	-	-	-	-	-	-
1D	0.03 – 0.04	A1	A+	A+	-	-	-	-	-	-	-
1E	0.04 – 0.06				-	-	-	-	-	-	-
2A	0.06 – 0.08	A2	A	A	-	-	-	-	-	-	-
2B	0.08 – 0.12	A3	A-	A-	-	-	-	-	-	-	-
2C	0.12 – 0.19	Baa1	BBB+	BBB+	-	-	-	-	-	-	-
2D	0.19 – 0.28	Baa2	BBB	BBB	-	-	-	-	-	-	-
2E	0.28 – 0.42				-	-	-	-	-	-	-
3A	0.42 – 0.63	Baa3	BBB-	BBB-	-	-	-	-	-	-	-
Non-investment grade											
3B	0.63 – 0.94	Ba1	BB+	BB+	-	-	-	-	-	-	-
3C	0.94 – 1.42	Ba2	BB	BB	-	-	-	-	-	-	-
3D	1.42 – 2.12				-	-	-	-	-	-	-
3E	2.12 – 3.19	Ba3	BB-	BB-	-	-	-	-	-	-	-
4A	3.19 – 4.78	B1	B+	B+	-	-	-	-	-	-	-
4B	4.78 – 7.17	B2	B	B	-	-	-	-	-	-	-
4C	7.17 – 10.75	B3	B-	B-	-	-	-	-	-	-	-
4D	10.75 – 16.13				-	-	-	-	-	-	-
4E	16.13 – 100.00	Caa1 or lower	CCC+ or lower	CCC+ or lower	-	-	-	-	-	-	-
Default											
5	100.00				-	-	-	-	-	-	-
Retail business – non-SMEs, secured by mortgages on immovable property											
Investment grade											
1A	0.00 – 0.02	Aaa-Aa2	AAA-AA	AAA-AA	-	-	-	-	-	-	-
1B	0.02 – 0.02	Aa3	AA-	AA-	-	-	-	-	-	-	-
1C	0.02 – 0.03				-	-		-	-	-	-
1D	0.03 – 0.04	A1	A+	A+	-	-		-	-	-	-
1E	0.04 – 0.06				-	-		-	-	-	-
2A	0.06 – 0.08	A2	A	A	0.07	0.00	97,999	71,457	-	-	-
2B	0.08 – 0.12	A3	A-	A-	0.10	0.00	36,929	26,927	-	-	-
2C	0.12 – 0.19	Baa1	BBB+	BBB+	0.16	0.00	54,418	39,680	7	-	-
2D	0.19 – 0.28	Baa2	BBB	BBB	0.25	0.00	166,487	121,397	5	-	-
2E	0.28 – 0.42				0.36	0.00	624	455	3	-	-
3A	0.42 – 0.63	Baa3	BBB-	BBB-	0.54	0.01	17,116	12,480	4	-	-
Non-investment grade											
3B	0.63 – 0.94	Ba1	BB+	BB+	0.88	0.01	229,414	167,281	13	-	-
3C	0.94 – 1.42	Ba2	BB	BB	1.23	0.02	198,037	144,402	3	-	-
3D	1.42 – 2.12				1.91	0.02	98,213	71,614	3	-	-
3E	2.12 – 3.19	Ba3	BB-	BB-	3.43	0.05	37,206	27,129	5	-	-
4A	3.19 – 4.78	B1	B+	B+	4.85	0.07	22,748	16,587	9	-	-
4B	4.78 – 7.17	B2	B	B	6.98	0.09	10,582	7,716	5	-	-
4C	7.17 – 10.75	B3	B-	B-	9.89	0.11	8,773	6,397	5	-	-
4D	10.75 – 16.13				13.47	0.14	4,724	3,445	4	-	-
4E	16.13 – 100.00	Caa1 or lower	CCC+ or lower	CCC+ or lower	30.04	0.31	16,676	12,160	50	-	-
Default											
5	100.00				92.30	0.90	15,454	8,795	87	2	
Retail business – qualified revolving											
Investment grade											
1A	0.00 – 0.02	Aaa-Aa2	AAA-AA	AAA-AA	-	-	-	-	-	-	-
1B	0.02 – 0.02	Aa3	AA-	AA-	-	-	-	-	-	-	-
1C	0.02 – 0.03				-	-	-	-	-	-	-

a	b	c			d	e	f		g	h	i
Exposure class	PD range	External rating equivalent			Weighted average PD	Arithmetic average PD by borrower	Number of borrowers		Defaulted borrowers in the year		Average historical annual default rate
		Moody's	Standard & Poor's	Fitch			End of previous year	End of the year		Of which: new borrowers	
1D	0.03 – 0.04	A1	A+	A+	-	-	-	-	-	-	-
1E	0.04 – 0.06				-	-	-	-	-	-	-
2A	0.06 – 0.08	A2	A	A	-	-	-	-	-	-	-
2B	0.08 – 0.12	A3	A-	A-	-	-	-	-	-	-	-
2C	0.12 – 0.19	Baa1	BBB+	BBB+	-	-	-	-	-	-	-
2D	0.19 – 0.28	Baa2	BBB	BBB	-	-	-	-	-	-	-
2E	0.28 – 0.42				-	-	-	-	-	-	-
3A	0.42 – 0.63	Baa3	BBB-	BBB-	-	-	-	-	-	-	-
Non-investment grade											
3B	0.63 – 0.94	Ba1	BB+	BB+	-	-	-	-	-	-	-
3C	0.94 – 1.42	Ba2	BB	BB	-	-	-	-	-	-	-
3D	1.42 – 2.12				-	-	-	-	-	-	-
3E	2.12 – 3.19	Ba3	BB-	BB-	-	-	-	-	-	-	-
4A	3.19 – 4.78	B1	B+	B+	-	-	-	-	-	-	-
4B	4.78 – 7.17	B2	B	B	-	-	-	-	-	-	-
4C	7.17 – 10.75	B3	B-	B-	-	-	-	-	-	-	-
4D	10.75 – 16.13				-	-	-	-	-	-	-
4E	16.13 – 100.00	Caa1 or lower	CCC+ or lower	CCC+ or lower	-	-	-	-	-	-	-
Default											
5	100.00				-	-	-	-	-	-	-
Retail business – other SMEs											
Investment grade											
1A	0.00 – 0.02	Aaa-Aa2	AAA-AA	AAA-AA	-	-	-	-	-	-	-
1B	0.02 – 0.02	Aa3	AA-	AA-	-	-	-	-	-	-	-
1C	0.02 – 0.03				-	-	-	-	-	-	-
1D	0.03 – 0.04	A1	A+	A+	-	-	-	-	-	-	-
1E	0.04 – 0.06				-	-	-	-	-	-	-
2A	0.06 – 0.08	A2	A	A	-	-	-	-	-	-	-
2B	0.08 – 0.12	A3	A-	A-	-	-	-	-	-	-	-
2C	0.12 – 0.19	Baa1	BBB+	BBB+	0.14	0.00	2	9	-	-	0.00
2D	0.19 – 0.28	Baa2	BBB	BBB	0.23	0.00	-	957	-	-	-
2E	0.28 – 0.42				-	-	-	-	-	-	-
3A	0.42 – 0.63	Baa3	BBB-	BBB-	-	-	-	-	-	-	-
Non-investment grade											
3B	0.63 – 0.94	Ba1	BB+	BB+	-	-	-	-	-	-	-
3C	0.94 – 1.42	Ba2	BB	BB	-	-	-	-	-	-	-
3D	1.42 – 2.12				-	-	-	-	-	-	-
3E	2.12 – 3.19	Ba3	BB-	BB-	-	-	-	-	-	-	-
4A	3.19 – 4.78	B1	B+	B+	-	-	-	-	-	-	-
4B	4.78 – 7.17	B2	B	B	-	-	-	-	-	-	-
4C	7.17 – 10.75	B3	B-	B-	-	-	-	-	-	-	-
4D	10.75 – 16.13				-	-	-	-	-	-	-
4E	16.13 – 100.00	Caa1 or lower	CCC+ or lower	CCC+ or lower	1.38	0.01		492	-	-	-
Default											
5	100.00				-	1.00	-	2	2	2	-
Retail business – other non-SMEs											
Investment grade											
1A	0.00 – 0.02	Aaa-Aa2	AAA-AA	AAA-AA	-	-	-	-	-	-	-
1B	0.02 – 0.02	Aa3	AA-	AA-	-	-	-	-	-	-	-
1C	0.02 – 0.03				-	-		-	-	-	-
1D	0.03 – 0.04	A1	A+	A+	-	-	-	-	-	-	-
1E	0.04 – 0.06				-	-	-	-	-	-	-
2A	0.06 – 0.08	A2	A	A	0.00	0	40,740	37,550	-	-	-
2B	0.08 – 0.12	A3	A-	A-	0.00	0	41,021	37,809	-	-	-
2C	0.12 – 0.19	Baa1	BBB+	BBB+	0.13	0	42,286	38,975	1	-	-
2D	0.19 – 0.28	Baa2	BBB	BBB	1.27	0	87,692	80,827	-	-	-

a	b	c			d	e	f		g	h	i
Exposure class	PD range	External rating equivalent			Weighted average PD	Arithmetic average PD by borrower	Number of borrowers		Defaulted borrowers in the year		Average historical annual default rate
		Moody's	Standard & Poor's	Fitch			End of previous year	End of the year		Of which: new borrowers	
2E	0.28 – 0.42				0.00	0	76,788	70,776	-	-	-
3A	0.42 – 0.63	Baa3	BBB-	BBB-	1.55	0	483,478	445,626	-	-	-
Non-investment grade											
3B	0.63 – 0.94	Ba1	BB+	BB+	0.74	0	76,911	70,890	-	-	-
3C	0.94 – 1.42	Ba2	BB	BB	2.24	0	34,507	31,805	-	-	-
3D	1.42 – 2.12				3.75	0	21,923	20,207	-	-	-
3E	2.12 – 3.19	Ba3	BB-	BB-	3.84	0	281,797	259,735	-	-	-
4A	3.19 – 4.78	B1	B+	B+	6.22	0	9,353	8,621	-	-	-
4B	4.78 – 7.17	B2	B	B	8.27	0	8,570	7,899	-	-	-
4C	7.17 – 10.75	B3	B-	B-	13.59	0	40,401	37,238	-	-	-
4D	10.75 – 16.13				19.66	0	14,035	12,936	-	-	-
4E	16.13 – 100.00	Caa1 or lower	CCC+ or lower	CCC+ or lower	39.47	0	13,263	12,225	-	-	-
Default											
5	100.00				95.26	1	55,419	42,081	3	3	-

FIG. 58 – EU CR9 – AIRB APPROACH – BACKTESTING OF THE PROBABILITY OF DEFAULT (PD) PER EXPOSURE CLASS AS AT DECEMBER 31, 2018

a	b	c			d	e	f		g	h	i
Exposure class	PD range	External rating equivalent			Weighted average PD	Arithmetic average PD by borrower	Number of borrowers		Defaulted borrowers in the year		Average historical annual default rate
		Moody's	Standard & Poor's	Fitch			End of previous year	End of the year		Of which: new borrowers	
Central governments and central banks											
Investment grade											
1A	0.00 – 0.02	Aaa-Aa2	AAA-AA	AAA-AA	-	-	-	-	-	-	0.00
1B	0.02 – 0.02	Aa3	AA-	AA-	-	-	-	-	-	-	0.00
1C	0.02 – 0.03				-	-	-	-	-	-	0.00
1D	0.03 – 0.04	A1	A+	A+	-	-	-	-	-	-	0.00
1E	0.04 – 0.06				-	-	-	-	-	-	0.00
2A	0.06 – 0.08	A2	A	A	-	-	-	-	-	-	0.00
2B	0.08 – 0.12	A3	A-	A-	-	-	-	-	-	-	0.00
2C	0.12 – 0.19	Baa1	BBB+	BBB+	-	-	-	-	-	-	0.00
2D	0.19 – 0.28	Baa2	BBB	BBB	-	-	-	-	-	-	0.00
2E	0.28 – 0.42				-	-	-	-	-	-	0.00
3A	0.42 – 0.63	Baa3	BBB-	BBB-	-	-	-	-	-	-	0.00
Non-investment grade											
3B	0.63 – 0.94	Ba1	BB+	BB+	-	-	-	-	-	-	0.00
3C	0.94 – 1.42	Ba2	BB	BB	-	-	-	-	-	-	0.00
3D	1.42 – 2.12				-	-	-	-	-	-	0.00
3E	2.12 – 3.19	Ba3	BB-	BB-	-	-	-	-	-	-	0.00
4A	3.19 – 4.78	B1	B+	B+	-	-	-	-	-	-	0.00
4B	4.78 – 7.17	B2	B	B	-	-	-	-	-	-	0.00
4C	7.17 – 10.75	B3	B-	B-	-	-	-	-	-	-	0.00
4D	10.75 – 16.13				-	-	-	-	-	-	0.00
4E	16.13 – 100.00	Caa1 or lower	CCC+ or lower	CCC+ or lower	-	-	-	-	-	-	0.00
Default											
5	100.00				-	-	-	-	-	-	0.00
Institutions											
Investment grade											
1A	0.00 – 0.02	Aaa-Aa2	AAA-AA	AAA-AA	-	-	-	-	-	-	0.00
1B	0.02 – 0.02	Aa3	AA-	AA-	-	-	-	-	-	-	0.00
1C	0.02 – 0.03				-	-	-	-	-	-	0.00
1D	0.03 – 0.04	A1	A+	A+	-	-	-	-	-	-	0.00
1E	0.04 – 0.06				-	-	-	-	-	-	0.00

a	b	c			d	e	f		g	h	i
Exposure class	PD range	External rating equivalent			Weighted average PD	Arithmetic average PD by borrower	Number of borrowers		Defaulted borrowers in the year		Average historical annual default rate
		Moody's	Standard & Poor's	Fitch			End of previous year	End of the year		Of which: new borrowers	
2A	0.06 – 0.08	A2	A	A	-	-	-	-	-	-	0.00
2B	0.08 – 0.12	A3	A-	A-	-	-	-	-	-	-	0.00
2C	0.12 – 0.19	Baa1	BBB+	BBB+	-	-	-	-	-	-	0.00
2D	0.19 – 0.28	Baa2	BBB	BBB	-	-	-	-	-	-	0.00
2E	0.28 – 0.42				0.03	0.00	-	1	-	-	0.00
3A	0.42 – 0.63	Baa3	BBB-	BBB-	0.08	0.00	-	9	-	-	0.00
Non-investment grade											
3B	0.63 – 0.94	Ba1	BB+	BB+	0.50	0.00	-	-	-	-	0.00
3C	0.94 – 1.42	Ba2	BB	BB	-	-	-	-	-	-	0.00
3D	1.42 – 2.12				-	-	-	-	-	-	0.00
3E	2.12 – 3.19	Ba3	BB-	BB-	-	-	-	-	-	-	0.00
4A	3.19 – 4.78	B1	B+	B+	-	-	-	-	-	-	0.00
4B	4.78 – 7.17	B2	B	B	-	-	-	-	-	-	0.00
4C	7.17 – 10.75	B3	B-	B-	-	-	-	-	-	-	0.00
4D	10.75 – 16.13				-	-	-	-	-	-	0.00
4E	16.13 – 100.00	Caa1 or lower	CCC+ or lower	CCC+ or lower	-	-	-	-	-	-	0.00
Default											
5	100.00				-	-	-	-	-	-	0.00
Corporates											
Investment grade											
1A	0.00 – 0.02	Aaa-Aa2	AAA-AA	AAA-AA	-	-	-	-	-	-	-
1B	0.02 – 0.02	Aa3	AA-	AA-	-	-	-	-	-	-	-
1C	0.02 – 0.03				-	-	-	-	-	-	-
1D	0.03 – 0.04	A1	A+	A+	-	-	-	-	-	-	-
1E	0.04 – 0.06				-	-	-	-	-	-	-
2A	0.06 – 0.08	A2	A	A	-	-	-	-	-	-	-
2B	0.08 – 0.12	A3	A-	A-	-	-	-	-	-	-	-
2C	0.12 – 0.19	Baa1	BBB+	BBB+	-	-	-	-	-	-	-
2D	0.19 – 0.28	Baa2	BBB	BBB	-	-	-	-	-	-	-
2E	0.28 – 0.42				0.13	0.00	-	5	-	-	0.00
3A	0.42 – 0.63	Baa3	BBB-	BBB-	0.11	0.00	-	2	-	-	0.00
Non-investment grade											
3B	0.63 – 0.94	Ba1	BB+	BB+	0.46	0.01	-	168	-	-	0.00
3C	0.94 – 1.42	Ba2	BB	BB	-	-	-	-	-	-	-
3D	1.42 – 2.12				-	-	-	-	-	-	-
3E	2.12 – 3.19	Ba3	BB-	BB-	1.89	0.02	-	153	-	-	0.00
4A	3.19 – 4.78	B1	B+	B+	-	-	-	-	-	-	-
4B	4.78 – 7.17	B2	B	B	-	-	-	-	-	-	-
4C	7.17 – 10.75	B3	B-	B-	8.09	0.08	-	173	6	-	0.00
4D	10.75 – 16.13				6.30	0.07	-	5	-	-	0.00
4E	16.13 – 100.00	Caa1 or lower	CCC+ or lower	CCC+ or lower	13.15	0.15	-	86	-	-	0.00
Default											
5	100.00				64.07	0.61	-	149	33	25	0.00
Corporates – of which: SMEs											
Investment grade											
1A	0.00 – 0.02	Aaa-Aa2	AAA-AA	AAA-AA	-	-	-	-	-	-	0.00
1B	0.02 – 0.02	Aa3	AA-	AA-	-	-	-	-	-	-	0.00
1C	0.02 – 0.03				-	-	-	-	-	-	0.00
1D	0.03 – 0.04	A1	A+	A+	-	-	-	-	-	-	0.00
1E	0.04 – 0.06				-	-	-	-	-	-	0.00
2A	0.06 – 0.08	A2	A	A	-	-	-	-	-	-	0.00
2B	0.08 – 0.12	A3	A-	A-	-	-	-	-	-	-	0.00
2C	0.12 – 0.19	Baa1	BBB+	BBB+	-	-	-	-	-	-	0.00
2D	0.19 – 0.28	Baa2	BBB	BBB	-	-	-	-	-	-	0.00
2E	0.28 – 0.42				-	-	-	-	-	-	0.00

a	b	c			d	e		f	g	h	i
Exposure class	PD range	External rating equivalent			Weighted average PD	Arithmetic average PD by borrower	Number of borrowers		Defaulted borrowers in the year		Average historical annual default rate
		Moody's	Standard & Poor's	Fitch			End of previous year	End of the year		Of which: new borrowers	
3A	0.42 – 0.63	Baa3	BBB-	BBB-	-	-	-	-	-	-	0.00
Non-investment grade											
3B	0.63 – 0.94	Ba1	BB+	BB+	-	-	-	-	-	-	0.00
3C	0.94 – 1.42	Ba2	BB	BB	-	-	-	-	-	-	0.00
3D	1.42 – 2.12				-	-	-	-	-	-	0.00
3E	2.12 – 3.19	Ba3	BB-	BB-	-	-	-	-	-	-	0.00
4A	3.19 – 4.78	B1	B+	B+	-	-	-	-	-	-	0.00
4B	4.78 – 7.17	B2	B	B	-	-	-	-	-	-	0.00
4C	7.17 – 10.75	B3	B-	B-	-	-	-	-	-	-	0.00
4D	10.75 – 16.13				-	-	-	-	-	-	0.00
4E	16.13 – 100.00	Caa1 or lower	CCC+ or lower	CCC+ or lower	-	-	-	-	-	-	0.00
Default											
5	100.00				-	-	-	-	-	-	0.00
Corporates – of which: specialized lending											
Investment grade											
1A	0.00 – 0.02	Aaa-Aa2	AAA-AA	AAA-AA	-	-	-	-	-	-	0.00
1B	0.02 – 0.02	Aa3	AA-	AA-	-	-	-	-	-	-	0.00
1C	0.02 – 0.03				-	-	-	-	-	-	0.00
1D	0.03 – 0.04	A1	A+	A+	-	-	-	-	-	-	0.00
1E	0.04 – 0.06				-	-	-	-	-	-	0.00
2A	0.06 – 0.08	A2	A	A	-	-	-	-	-	-	0.00
2B	0.08 – 0.12	A3	A-	A-	-	-	-	-	-	-	0.00
2C	0.12 – 0.19	Baa1	BBB+	BBB+	-	-	-	-	-	-	0.00
2D	0.19 – 0.28	Baa2	BBB	BBB	-	-	-	-	-	-	0.00
2E	0.28 – 0.42				-	-	-	-	-	-	0.00
3A	0.42 – 0.63	Baa3	BBB-	BBB-	-	-	-	-	-	-	0.00
Non-investment grade											
3B	0.63 – 0.94	Ba1	BB+	BB+	-	-	-	-	-	-	0.00
3C	0.94 – 1.42	Ba2	BB	BB	-	-	-	-	-	-	0.00
3D	1.42 – 2.12				-	-	-	-	-	-	0.00
3E	2.12 – 3.19	Ba3	BB-	BB-	-	-	-	-	-	-	0.00
4A	3.19 – 4.78	B1	B+	B+	-	-	-	-	-	-	0.00
4B	4.78 – 7.17	B2	B	B	-	-	-	-	-	-	0.00
4C	7.17 – 10.75	B3	B-	B-	-	-	-	-	-	-	0.00
4D	10.75 – 16.13				-	-	-	-	-	-	0.00
4E	16.13 – 100.00	Caa1 or lower	CCC+ or lower	CCC+ or lower	-	-	-	-	-	-	0.00
Default											
5	100.00				-	-	-	-	-	-	0.00
Corporates – of which: purchased receivables											
Investment grade											
1A	0.00 – 0.02	Aaa-Aa2	AAA-AA	AAA-AA	-	-	-	-	-	-	0.00
1B	0.02 – 0.02	Aa3	AA-	AA-	-	-	-	-	-	-	0.00
1C	0.02 – 0.03				-	-	-	-	-	-	0.00
1D	0.03 – 0.04	A1	A+	A+	-	-	-	-	-	-	0.00
1E	0.04 – 0.06				-	-	-	-	-	-	0.00
2A	0.06 – 0.08	A2	A	A	-	-	-	-	-	-	0.00
2B	0.08 – 0.12	A3	A-	A-	-	-	-	-	-	-	0.00
2C	0.12 – 0.19	Baa1	BBB+	BBB+	-	-	-	-	-	-	0.00
2D	0.19 – 0.28	Baa2	BBB	BBB	-	-	-	-	-	-	0.00
2E	0.28 – 0.42				-	-	-	-	-	-	0.00
3A	0.42 – 0.63	Baa3	BBB-	BBB-	-	-	-	-	-	-	0.00
Non-investment grade											
3B	0.63 – 0.94	Ba1	BB+	BB+	-	-	-	-	-	-	0.00
3C	0.94 – 1.42	Ba2	BB	BB	-	-	-	-	-	-	0.00
3D	1.42 – 2.12				-	-	-	-	-	-	0.00
3E	2.12 – 3.19	Ba3	BB-	BB-	-	-	-	-	-	-	0.00

a	b	c			d	e	f		g	h	i
Exposure class	PD range	External rating equivalent			Weighted average PD	Arithmetic average PD by borrower	Number of borrowers		Defaulted borrowers in the year		Average historical annual default rate
		Moody's	Standard & Poor's	Fitch			End of previous year	End of the year		Of which: new borrowers	
4A	3.19 – 4.78	B1	B+	B+	-	-	-	-	-	-	0.00
4B	4.78 – 7.17	B2	B	B	-	-	-	-	-	-	0.00
4C	7.17 – 10.75	B3	B-	B-	-	-	-	-	-	-	0.00
4D	10.75 – 16.13				-	-	-	-	-	-	0.00
4E	16.13 – 100.00	Caa1 or lower	CCC+ or lower	CCC+ or lower	-	-	-	-	-	-	0.00
Default											
5	100.00				-	-	-	-	-	-	0.00
Corporates – of which: other											
Investment grade											
1A	0.00 – 0.02	Aaa-Aa2	AAA-AA	AAA-AA	-	-	-	-	-	-	0.00
1B	0.02 – 0.02	Aa3	AA-	AA-	-	-	-	-	-	-	0.00
1C	0.02 – 0.03				-	-	-	-	-	-	0.00
1D	0.03 – 0.04	A1	A+	A+	-	-	-	-	-	-	0.00
1E	0.04 – 0.06				-	-	-	-	-	-	0.00
2A	0.06 – 0.08	A2	A	A	-	-	-	-	-	-	0.00
2B	0.08 – 0.12	A3	A-	A-	-	-	-	-	-	-	0.00
2C	0.12 – 0.19	Baa1	BBB+	BBB+	-	-	-	-	-	-	0.00
2D	0.19 – 0.28	Baa2	BBB	BBB	-	-	-	-	-	-	0.00
2E	0.28 – 0.42				0.13	0.00	-	5	-	-	0.00
3A	0.42 – 0.63	Baa3	BBB-	BBB-	0.11	0.00	-	2	-	-	0.00
Non-investment grade											
3B	0.63 – 0.94	Ba1	BB+	BB+	0.46	0.01	-	168	-	-	0.00
3C	0.94 – 1.42	Ba2	BB	BB	-	-	-	-	-	-	-
3D	1.42 – 2.12				-	-	-	-	-	-	-
3E	2.12 – 3.19	Ba3	BB-	BB-	1.89	0.02	-	153	-	-	0.00
4A	3.19 – 4.78	B1	B+	B+	-	-	-	-	-	-	-
4B	4.78 – 7.17	B2	B	B	-	-	-	-	-	-	-
4C	7.17 – 10.75	B3	B-	B-	8.09	0.08	-	173	6	-	0.00
4D	10.75 – 16.13				6.30	0.07	-	5	-	-	0.00
4E	16.13 – 100.00	Caa1 or lower	CCC+ or lower	CCC+ or lower	13.15	0.15	-	86	-	-	0.00
Default											
5	100.00				69.0456	0.6560	-	-	-	-	0.08
Retail business – SMEs, secured by mortgages on immovable property											
Investment grade											
1A	0.00 – 0.02	Aaa-Aa2	AAA-AA	AAA-AA	-	-	-	-	-	-	0.00
1B	0.02 – 0.02	Aa3	AA-	AA-	-	-	-	-	-	-	0.00
1C	0.02 – 0.03				-	-	-	-	-	-	0.00
1D	0.03 – 0.04	A1	A+	A+	-	-	-	-	-	-	0.00
1E	0.04 – 0.06				-	-	-	-	-	-	0.00
2A	0.06 – 0.08	A2	A	A	-	-	-	-	-	-	0.00
2B	0.08 – 0.12	A3	A-	A-	-	-	-	-	-	-	0.00
2C	0.12 – 0.19	Baa1	BBB+	BBB+	-	-	-	-	-	-	0.00
2D	0.19 – 0.28	Baa2	BBB	BBB	-	-	-	-	-	-	0.00
2E	0.28 – 0.42				-	-	-	-	-	-	0.00
3A	0.42 – 0.63	Baa3	BBB-	BBB-	-	-	-	-	-	-	0.00
Non-investment grade											
3B	0.63 – 0.94	Ba1	BB+	BB+	-	-	-	-	-	-	0.00
3C	0.94 – 1.42	Ba2	BB	BB	-	-	-	-	-	-	0.00
3D	1.42 – 2.12				-	-	-	-	-	-	0.00
3E	2.12 – 3.19	Ba3	BB-	BB-	-	-	-	-	-	-	0.00
4A	3.19 – 4.78	B1	B+	B+	-	-	-	-	-	-	0.00
4B	4.78 – 7.17	B2	B	B	-	-	-	-	-	-	-
4C	7.17 – 10.75	B3	B-	B-	-	-	-	-	-	-	-
4D	10.75 – 16.13				-	-	-	-	-	-	-
4E	16.13 – 100.00	Caa1 or lower	CCC+ or lower	CCC+ or lower	-	-	-	-	-	-	-

a	b	c			d	e	f		g	h	i
Exposure class	PD range	External rating equivalent			Weighted average PD	Arithmetic average PD by borrower	Number of borrowers		Defaulted borrowers in the year		Average historical annual default rate
		Moody's	Standard & Poor's	Fitch			End of previous year	End of the year		Of which: new borrowers	
Default											
5	100.00				-	-	-	-	-	-	0.00
Retail business – non-SMEs, secured by mortgages on immovable property											
Investment grade											
1A	0.00 – 0.02	Aaa-Aa2	AAA-AA	AAA-AA	-	-	-	-	-	-	0.00
1B	0.02 – 0.02	Aa3	AA-	AA-	-	-	-	-	-	-	-
1C	0.02 – 0.03				0.03	0.00	-	624	-	-	0.00
1D	0.03 – 0.04	A1	A+	A+	0.07	0.15	-	17,116	54	1,481	0.00
1E	0.04 – 0.06				0.10	0.06	-	47,979	21	-	0.00
2A	0.06 – 0.08	A2	A	A	0.16	0.00	-	32,280	9	-	0.00
2B	0.08 – 0.12	A3	A-	A-	0.27	0.13	-	36,929	107	1,886	0.00
2C	0.12 – 0.19	Baa1	BBB+	BBB+	0.35	0.11	-	54,418	98	1,135	0.00
2D	0.19 – 0.28	Baa2	BBB	BBB	0.50	0.04	-	166,487	345	13	0.00
2E	0.28 – 0.42				0.03	0.00	-	624	-	-	0.00
3A	0.42 – 0.63	Baa3	BBB-	BBB-	0.07	0.15	-	17,116	54	1,481	0.00
Non-investment grade											
3B	0.63 – 0.94	Ba1	BB+	BB+	0.76	0.03	-	229,414	814	1,537	0.00
3C	0.94 – 1.42	Ba2	BB	BB	1.11	0.03	-	198,037	1,007	71	0.00
3D	1.42 – 2.12				1.71	0.04	-	98,213	897	2,244	0.00
3E	2.12 – 3.19	Ba3	BB-	BB-	2.62	0.08	-	37,206	535	15	0.01
4A	3.19 – 4.78	B1	B+	B+	4.01	0.10		22,748	568	566	0.01
4B	4.78 – 7.17	B2	B	B	6.04	0.16	-	10,582	399	8	0.01
4C	7.17 – 10.75	B3	B-	B-	9.02	0.24	-	8,773	650	267	0.02
4D	10.75 – 16.13				13.56	0.63	-	4,724	468	1	0.03
4E	16.13 – 100.00	Caa1 or lower	CCC+ or lower	CCC+ or lower	43.22	2.78	-	16,676	4,569	120	0.09
Default											
5	100.00				99.31	0.97	-	15,454	11	-	0.00
Retail business – qualified revolving											
Investment grade											
1A	0.00 – 0.02	Aaa-Aa2	AAA-AA	AAA-AA	-	-	-	-	-	-	0.00
1B	0.02 – 0.02	Aa3	AA-	AA-	-	-	-	-	-	-	0.00
1C	0.02 – 0.03				-	-	-	-	-	-	0.00
1D	0.03 – 0.04	A1	A+	A+	-	-	-	-	-	-	0.00
1E	0.04 – 0.06				-	-	-	-	-	-	0.00
2A	0.06 – 0.08	A2	A	A	-	-	-	-	-	-	0.00
2B	0.08 – 0.12	A3	A-	A-	-	-	-	-	-	-	0.00
2C	0.12 – 0.19	Baa1	BBB+	BBB+	-	-	-	-	-	-	0.00
2D	0.19 – 0.28	Baa2	BBB	BBB	-	-	-	-	-	-	0.00
2E	0.28 – 0.42				-	-	-	-	-	-	0.00
3A	0.42 – 0.63	Baa3	BBB-	BBB-	-	-	-	-	-	-	0.00
Non-investment grade											
3B	0.63 – 0.94	Ba1	BB+	BB+	-	-	-	-	-	-	0.00
3C	0.94 – 1.42	Ba2	BB	BB	-	-	-	-	-	-	0.00
3D	1.42 – 2.12				-	-	-	-	-	-	0.00
3E	2.12 – 3.19	Ba3	BB-	BB-	-	-	-	-	-	-	0.00
4A	3.19 – 4.78	B1	B+	B+	-	-	-	-	-	-	0.00
4B	4.78 – 7.17	B2	B	B	-	-	-	-	-	-	0.00
4C	7.17 – 10.75	B3	B-	B-	-	-	-	-	-	-	0.00
4D	10.75 – 16.13				-	-	-	-	-	-	0.00
4E	16.13 – 100.00	Caa1 or lower	CCC+ or lower	CCC+ or lower	-	-	-	-	-	-	0.00
Default											
5	100.00				-	-	-	-	-	-	0.00
Retail business – other SMEs											
Investment grade											
1A	0.00 – 0.02	Aaa-Aa2	AAA-AA	AAA-AA	-	-	-	-	-	-	-
1B	0.02 – 0.02	Aa3	AA-	AA-	-	-	-	-	-	-	-

a	b	c			d	e	f		g	h	i
Exposure class	PD range	External rating equivalent			Weighted average PD	Arithmetic average PD by borrower	Number of borrowers		Defaulted borrowers in the year		Average historical annual default rate
		Moody's	Standard & Poor's	Fitch			End of previous year	End of the year		Of which: new borrowers	
1C	0.02 – 0.03				-	-	-	-	-	-	-
1D	0.03 – 0.04	A1	A+	A+	-	-	-	-	-	-	-
1E	0.04 – 0.06				-	-	-	-	-	-	-
2A	0.06 – 0.08	A2	A	A	-	-	-	-	-	-	-
2B	0.08 – 0.12	A3	A-	A-	-	-	-	-	-	-	-
2C	0.12 – 0.19	Baa1	BBB+	BBB+	0.14	0.00	-	2	-	-	0.00
2D	0.19 – 0.28	Baa2	BBB	BBB	-	-	-	-	-	-	-
2E	0.28 – 0.42				-	-	-	-	-	-	-
3A	0.42 – 0.63	Baa3	BBB-	BBB-	-	-	-	-	-	-	-
Non-investment grade											
3B	0.63 – 0.94	Ba1	BB+	BB+	-	-	-	-	-	-	0.00
3C	0.94 – 1.42	Ba2	BB	BB	-	-	-	-	-	-	0.00
3D	1.42 – 2.12				-	-	-	-	-	-	0.00
3E	2.12 – 3.19	Ba3	BB-	BB-	-	-	-	-	-	-	0.00
4A	3.19 – 4.78	B1	B+	B+	-	-	-	-	-	-	0.00
4B	4.78 – 7.17	B2	B	B	-	-	-	-	-	-	0.00
4C	7.17 – 10.75	B3	B-	B-	-	-	-	-	-	-	0.00
4D	10.75 – 16.13				-	-	-	-	-	-	0.00
4E	16.13 – 100.00	Caa1 or lower	CCC+ or lower	CCC+ or lower	-	-	-	-	-	-	0.00
Retail business – other non-SMEs											
Investment grade											
1A	0.00 – 0.02	Aaa-Aa2	AAA-AA	AAA-AA	-	-	-	-	-	-	-
1B	0.02 – 0.02	Aa3	AA-	AA-	-	-	-	-	-	-	-
1C	0.02 – 0.03				0.03	0.00	-	850	-	-	-
1D	0.03 – 0.04	A1	A+	A+	-	-	-	-	-	-	-
1E	0.04 – 0.06				-	-	-	-	-	-	-
2A	0.06 – 0.08	A2	A	A	0.45	0.01	-	39,890	68	1,192	0.83
2B	0.08 – 0.12	A3	A-	A-	0.10	0.00	-	41,021	10	195	0.00
2C	0.12 – 0.19	Baa1	BBB+	BBB+	0.14	0.00	-	42,286	17	0	0.00
2D	0.19 – 0.28	Baa2	BBB	BBB	0.23	0.00	-	87,692	130	2,694	0.00
2E	0.28 – 0.42				0.35	0.00	-	76,788	233	1,363	0.00
3A	0.42 – 0.63	Baa3	BBB-	BBB-	1.42	0.01	-	483,478	1,494	180	0.73
Non-investment grade											
3B	0.63 – 0.94	Ba1	BB+	BB+	0.75	0.01	-	76,911	464	1,798	0.01
3C	0.94 – 1.42	Ba2	BB	BB	1.10	0.01	-	34,507	274	21	0.01
3D	1.42 – 2.12				1.70	0.02	-	21,923	204	5,992	0.01
3E	2.12 – 3.19	Ba3	BB-	BB-	3.83	0.03	-	281,797	2,274	14	0.98
4A	3.19 – 4.78	B1	B+	B+	4.00	0.05	-	9,353	269	1,115	0.02
4B	4.78 – 7.17	B2	B	B	6.00	0.06	-	8,570	275	18	0.03
4C	7.17 – 10.75	B3	B-	B-	9.93	0.10	-	40,401	1,288	349	0.84
4D	10.75 – 16.13				14.69	0.15	-	14,035	700	2	0.79
4E	16.13 – 100.00	Caa1 or lower	CCC+ or lower	CCC+ or lower	44.08	0.44	-	13,263	3,454	215	0.29
Default											
5	100.00				100	0.72	-	55,419	7,754	560	0.84

FIG. 59 – COMPARISON OF LOSS ESTIMATES AND ACTUAL LOSSES IN NON-DEFAULTING EXPOSURE CLASSES UNDER THE IRB APPROACH

€ million

Exposure class	Expected Dec. 31, 2018	Actual 2019	Expected Dec. 31, 2017	Actual 2018	Expected Dec. 31, 2016	Actual 2017	Expected Dec. 31, 2015	Actual 2016	Expected Dec. 31, 2014	Actual 2015
Central governments and central banks	0	0	4	-	6	-	9	-	4	-
Institutions	0	0	15	0	17	-	22	5	29	2

€ million

Exposure class	Expected Dec. 31, 2018	Actual 2019	Expected Dec. 31, 2017	Actual 2018	Expected Dec. 31, 2016	Actual 2017	Expected Dec. 31, 2015	Actual 2016	Expected Dec. 31, 2014	Actual 2015
Corporates	23	46	173	71	263	442	298	203	220	166
Equity exposures	0	-	-	-	-	-	6	-	1	-
Mortgage-backed retail IRBA receivables	97	17	103	25	105	18	201	23	46	32
Qualified revolving retail IRBA receivables	-	-	-	-	-	-	-	-	-	-
Other retail IRBA receivables	119	125	101	131	101	86	198	78	100	86
Total	240	187	395	227	493	547	652	233	400	286

Fig. 59 shows that the losses of €187 million actually incurred in 2019 (2018: €227 million) across all exposure classes were lower than the expected figure of €240 million (December 31, 2018: €395 million).

6.6.4.7 Average risk parameters by country of domicile of borrowing entity and exposure class

(ARTICLE 452 SENTENCE 1 LETTER J CRR)

The information in Fig. 60 relates to the following exposure classes: central governments and central banks, institutions, corporates (including small and medium-sized enterprises (SMEs), specialized lending, and purchased receivables that are treated as corporate loans), and long-term equity investments that are backed by own funds based on individual probabilities of default (PD/LGD approach). Using the foundation IRB approach, the average exposure-weighted PD per country in which loans and advances are granted (country of asset) is disclosed as a percentage.

FIG. 60 – AVERAGE PD BY COUNTRY AND EXPOSURE CLASS UNDER THE FOUNDATION IRB APPROACH

	Exposure class								
	Central govern ments and central banks	Insti-tutions	Corporates				Long-term equity investments	Total	Total as at Dec. 31, 2018
			of which:						
Average PD (percent)			SMEs	Specialize d lending	Receiv-ables purchased	Other			
Country		Dec. 31, 2019							
Germany	-	0.21	0.47	0.84	2.47	2.41	0.12	1.64	1.90
Egypt	9.00	9.04	-	100.00	4.50	-	-	33.08	62.13
Algeria	0.75	0.75	-	-	-	-	-	0.75	1.05
Angola	-	9.00	-	-	-	-	-	9.00	9
Argentina	-	-	-	-	-	30.00	-	30.00	6.00
Armenia	-	-	-	-	-	-	-	-	-
Azerbaijan	-	-	-	-	-	-	-	-	1.70
Ethiopia	-	-	-	-	-	-	-	-	-
Australia	-	0.04	-	0.45	-	0.16	-	0.22	0.19
Bahamas	-	-	-	0.75	-	-	-	0.75	1.10
Bahrain	-	-	-	4.00	-	-	-	4.00	-
Bangladesh	-	9.00	-	-	-	-	-	9.00	6.00
Belgium	-	0.08	-	-	-	0.15	-	0.10	0.19
Benin	-	30.00	-	-	-	-	-	30.00	-
Bermuda	-	-	-	-	-	0.52	-	0.52	5.61
Botswana	-	1.10	-	-	-	-	-	1.10	-
Brazil	-	1.13	-	-	-	0.50	-	1.13	1.06
British Virgin Islands	-	-	-	0.04	-	-	-	0.04	0.04

Average PD (percent)	Exposure class: Central governments and central banks	Institutions	Corporates – of which: SMEs	Corporates – of which: Specialized lending	Corporates – of which: Receivables purchased	Corporates – of which: Other	Long-term equity investments	Total	Total as at Dec. 31, 2018
Country	**Dec. 31, 2019**								
Bulgaria	-	-	-	4.00	-	-	-	4.00	3.99
Burundi	-	-	-	-	-	-	-	-	0
Chile	-	-	-	-	-	-	-	-	0.067
China	-	0.11	-	-	0.23	3.65	-	0.41	0.12
Denmark	-	0.31	-	35.58	-	0.37	-	2.03	-
Côte d'Ivoire	-	30.00	-	-	-	-	-	30.00	3.34
Finland	-	0.07	-	-	-	0.38	-	0.10	-
France	-	0.09	-	0.33	0.04	0.18	-	0.14	0.11
Gabon	-	-	-	-	-	-	-	-	-
Georgia	-	-	-	-	-	-	-	-	0
Ghana	-	13.50	-	-	6.75	1.70	-	1.96	5.42
Greece	-	-	-	-	-	-	-	-	9
United Kingdom	-	0.07	0.56	3.42	0.10	0.34	-	0.33	0.39
Guernsey	-	-	-	0.13	-	-	-	0.13	0.14
Guinea	-	-	-	-	-	-	-	-	-
Hong Kong	0.03	0.07	-	-	0.03	0.77	-	0.45	0.5
India	-	0.67	-	-	0.85	0.74	-	0.73	1.71
Indonesia	-	0.50	-	-	0.25	-	-	0.50	0.5
Iran	-	-	-	-	-	100.00	-	100.00	100.00
Ireland	-	0.16	-	0.23	-	0.23	-	0.18	0.39
Iceland	-	95.98	-	-	-	-	-	95.98	96.16
Isle of Man	-	0.03	-	0.28	-	-	-	0.28	0.06
Israel	-	0.07	-	-	-	0.23	-	0.15	0.11
Italy	-	1.59	-	0.35	-	0.36	0.75	1.26	1.11
Japan	-	0.14	-		-	0.15	-	0.14	0.06
Jersey	-	-	-	0.10	-	-	-	0.10	0.26
Jordan	-	-	-	-	-	-	-	-	4.00
Cameroon	-	-	-	-	-	-	-	-	6.00
Canada	-	0.03	-	0.56	-	0.30	-	0.17	0.15
Kazakhstan	-	1.10	-		-	-	-	1.10	1.43
Qatar	-	0.08	-	0.61	0.05	-	-	0.34	0.26
Kenya	-	6.00	-	-	-	-	-	6.00	30.00
Colombia	-	0.50	-	-	-	-	-	0.50	0.5
Korea	-	0.06	-	-	-	0.05	-	0.06	-
Croatia	0.75	0.75	-	-	-	-	-	0.75	1.10
Cuba	-	65.64	-		50.00	-	-	65.64	98.47
Kuwait	-	0.08	-	-	-	-	-	0.08	0.05
Lebanon	-	-	-	-	-	-	-	-	-
Liberia	-	30.00	-	-	-	0.35	-	15.69	0.00
Liechtenstein	-	-	0.23	0.07	-	0.15	-	0.17	0.22
Lithuania	-	-	-	-	-	-	-	-	0.00
Luxembourg	-	0.23	-	0.21	-	0.29	-	0.22	0.22
Malaysia	-	0.23	-	0.75	-	-	-	0.74	0.15
Mali	-	-	-	-	-	-	-	-	-
Malta	-	-	-	1.70	-	1.70	-	1.70	1.70
Morocco	-	1.26	-	-	-	-	-	1.26	1.68
Mauritius	-	0.35	-	-	-	-	-	0.35	0.07
Mexico	-	0.32	-	1.10	-	0.92	-	1.07	0.27
Moldova	-	30.00	-	-	-	-	-	30.00	30.00
Mongolia	-	13.50	-	-	-	-	-	13.50	9.00
Myanmar	-	-	-	2.60	-	-	-	2.60	1.70
Namibia	-	1.10	-	-	-	-	-	1.10	0.75

	Exposure class								
	Central governments and central banks	Institutions	Corporates				Long-term equity investments	Total	Total as at Dec. 31, 2018
			of which:						
Average PD (percent)			SMEs	Specialized lending	Receivables purchased	Other			
Country				Dec. 31, 2019					
New Zealand	-	0.03	-	0.42	-	-	-	0.18	0.12
Netherlands	-	0.07	-	0.30	-	0.36	-	0.23	1.01
Netherlands Antilles	-	-	-	-	-	-	-	-	-
Niger	-	30.00	-	-	15.00	-	-	30.00	-
Nigeria	-	6.00	-	-	-	-	-	6.00	6.00
Norway	-	0.06	-	-	-	0.12	-	0.07	1.10
Oman	-	1.70	-	4.00	-	-	-	4.00	1.81
Austria	-	0.25	-	0.16	-	0.40	-	0.31	0.26
Pakistan	-	30.00	-	-	-	-	-	30.00	13.50
Panama	-	-	-	-	-	0.07	-	0.07	0.07
Papua New Guinea	-	6.00	-	-	-	-	-	6.00	-
Peru	-	0.15	-	-	-	0.50	-	0.50	0.50
Philippines	-	0.75	-	1.10	-	1.70	-	1.67	1.10
Poland	-	0.16	1.10	0.35	-	13.17	5.57	5.31	13.73
Portugal	-	0.50	-	0.47	-	0.35	-	0.47	0.99
Rwanda	-	13.50	-	-	-	-	-	13.50	-
Romania	-	0.75	-	-	-	-	-	0.75	0.74
Russia	0.50	0.62	-	-	0.32	0.94	-	0.59	0.81
Saudi Arabia	-	0.10	-	0.88	-	0.50	-	0.87	0.66
Sweden	-	0.06	-	0.63	-	0.10	-	0.10	0.08
Switzerland	0.01	2.56	-	0.07	-	0.39	-	0.55	0.73
Senegal	-	4.00	-	-	-	-	-	4.00	4.00
Zimbabwe	-	30.00	-	-	-	-	-	30.00	-
Singapore	0.01	0.03	-	28.51	-	0.82	-	6.16	0.83
Slovakia	-	0.50	-	-	-	-	-	0.50	-
Slovenia	-	-	-	-	-	0.15	-	0.15	0.15
Other	0.01	1.10	-	-	-	-	-	0.56	-
Spain	-	0.40	-	0.35	-	0.27	-	0.39	0.39
Sri Lanka	-	9.00	-	-	-	-	-	9.00	6.00
South Africa	-	1.10	-	-	-	-	-	1.10	0.75
Sudan	-	30.00	-	-	15.00	-	-	30.00	30.00
Taiwan	-	0.06	-	-	-	-	-	0.06	0.06
Tanzania	-	13.50	-	-	-	-	-	13.50	13.50
Thailand	0.15	0.23	-	0.49	-	-	-	0.31	0.23
Togo	-	-	-	-	-	-	-	-	30.00
Chad	-	-	-	-	-	-	-	-	-
Czech Republic	-	0.10	-	-	-	8.45	-	6.75	0.07
Tunisia	6.00	10.14	-	-	-	-	-	10.00	6.59
Turkey	-	4.01	-	12.03	2.00	4.00	-	4.22	-
Turkmenistan	-	9.00	-	-	-	-	-	9.00	-
Ukraine	-	13.50	-	-	6.75	-	-	13.50	-
Hungary	-	1.10	-	0.75	-	0.75	-	0.75	-
Uzbekistan	-	9.00	-	-	-	-	-	9.00	-
United Arab Emirates	-	0.09	-	0.56	-	-	-	0.32	-
United States	0.01	0.09	-	5.62	-	0.56	-	0.64	-
Vietnam	-	2.60	-	99.18	-	-	-	14.42	-
Belarus	-	9.44	-	-	4.82	-	-	9.44	-
Cyprus	-	-	-	-	-	1.70	-	1.70	1.03
Total average PD as at Dec. 31, 2019	**0.04**	**0.45**	**0.47**	**1.06**	**2.45**	**2.09**	**0.50**	**1.20**	
Total average PD as at Dec. 31, 2018	0.16	0.50	1.27	2.51	3.49	1.87	0.63		1.43

1 Prior-year value corrected.

The information given in Fig. 60 relates to the following exposure classes: central governments and central banks, institutions, corporates (including SMEs, specialized lending, and purchased receivables that are treated as corporate loans), long-term equity investments that are backed by own funds based on individual probabilities of default (PD/LGD approach), and retail business (broken down into mortgage-backed IRBA exposures, qualified revolving IRBA exposures, and other IRBA exposures). Using the advanced IRB approach, the average exposure-weighted PD and LGD per country in which loans and advances are granted (country of asset) is disclosed as a percentage.

FIG. 61 – AVERAGE PD AND LGD BY COUNTRY AND EXPOSURE CLASS UNDER THE ADVANCED IRB APPROACH

		Exposure class											
Country				Corporates				Retail business					
				of which:				of which:					
%	Risk parameter	Central governments and central banks	Institutions	SMEs	Specialized lending	Receivables purchased	Other	Mortgage-backed IRBA exposures	Qualified revolving	Other IRBA exposures	Long-term equity investments	Total as at Dec. 31, 2019	Total as at Dec. 31, 2018
Germany	Average PD	-	-	-	-	-	5.15	2.41	-	4.42	-	3.99	2.78
	Average LGD	-	-	-	-	-	0.35	10.62	-	38.83	-	16.60	15.59
Egypt	Average PD	-	-	-	-	-	-	-	-	100.00	-	100.00	-
	Average LGD	-	-	-	-	-	-	-	-	13.76	-	13.76	-
Andorra	Average PD	-	-	-	-	-	-	-	-	0.15	-	0.15	0.15
	Average LGD	-	-	-	-	-	-	-	-	25.89	-	25.89	26.00
Angola	Average PD	-	-	-	-	-	-	-	-	1.10	-	1.10	1.6
	Average LGD	-	-	-	-	-	-	-	-	50.12	-	50.12	18.02
Argentina	Average PD	-	-	-	-	-	-	1.58	-	70.24	-	35.91	4.52
	Average LGD	-	-	-	-	-	-	14.92	-	70.99	-	42.96	2.65
Australia	Average PD	-	-	-	-	-	-	0.90	-	4.51	-	2.70	74.16
	Average LGD	-	-	-	-	-	-	11.49	-	25.99	-	18.74	1.76
Bahamas	Average PD	-	-	-	-	-	56.42	-	-	-	-	56.42	2.6
	Average LGD	-	-	-	-	-	11.92	-	-	-	-	11.92	11.82
Barbados	Average PD	-	-	-	-	-	-	1.10	-	-	-	1.10	4.09
	Average LGD	-	-	-	-	-	-	11.29	-	-	-	11.29	2.92
Belgium	Average PD	-	-	-	-	-	4.44	4.58	-	7.80	-	5.61	19.22
	Average LGD	-	-	-	-	-	0.35	12.11	-	28.24	-	13.56	13.21
Bermuda	Average PD	-	-	-	-	-	9.99	-	-	-	-	9.99	-
	Average LGD	-	-	-	-	-	4.51	-	-	-	-	4.51	-
Bosnia and Herzegovina	Average PD	-	-	-	-	-	-	1.10	-	95.45	-	48.28	90.72
	Average LGD	-	-	-	-	-	-	11.62	-	40.75	-	26.18	47.64
Brazil	Average PD	-	-	-	-	-	100.00	0.96	-	20.17	-	40.38	13.99

	Average LGD	-	-	-	-	-	44.07	6.97	-	61.89	-	37.64	24.44
British Virgin Islands	Average PD	-	-	-	-	-	10.10	-	-	-	-	10.10	40.77
	Average LGD	-	-	-	-	-	3.16	-	-	-	-	3.16	20.91
Brunei	Average PD	-	-	-	-	-	-	-	-	1.10	-	1.10	21.05
	Average LGD	-	-	-	-	-	-	-	-	56.90	-	56.90	47.89
Bulgaria	Average PD	-	-	-	-	-	-	-	-	32.39	-	32.39	17.57
	Average LGD	-	-	-	-	-	-	-	-	55.33	-	55.33	11.51
Cayman Islands	Average PD	-	-	-	-	-	53.30	-	-	-	-	53.30	0.75
	Average LGD	-	-	-	-	-	39.72	-	-	-	-	39.72	0.2
Chile	Average PD	-	-	-	-	-	1.43	0.75	-	-	-	1.09	1.01
	Average LGD	-	-	-	-	-	0.35	13.36	-	-	-	6.85	5.80
China	Average PD	-	-	-	-	-	-	1.37	-	-	-	1.37	18.65
	Average LGD	-	-	-	-	-	-	8.42	-	-	-	8.42	42.9
Denmark	Average PD	-	-	-	-	-	-	1.13	-	4.90	-	3.02	-
	Average LGD	-	-	-	-	-	-	9.29	-	31.69	-	20.49	-
Estonia	Average PD	-	-	-	-	-	-	-	-	28.62	-	28.62	-
	Average LGD	-	-	-	-	-	-	-	-	65.32	-	65.32	-
Faroe Islands	Average PD	-	-	-	-	-	100.00	-	-	-	-	100.00	27.16
	Average LGD	-	-	-	-	-	55.23	-	-	-	-	55.23	57.58
Finland	Average PD	-	-	-	-	-	9.00	6.33	-	0.35	-	5.23	100
	Average LGD	-	-	-	-	-	0.35	26.60	-	22.14	-	16.37	54.44
France	Average PD	-	-	-	-	-	28.63	9.11	-	4.34	-	14.03	9.037
	Average LGD	-	-	-	-	-	19.23	10.38	-	27.28	-	18.96	0.33
Ghana	Average PD	-	-	-	-	-	-	0.07	-		-	0.07	9.91
	Average LGD	-	-	-	-	-	-	9.48	-		-	9.48	32.68
Greece	Average PD	-	-	-	-	-	100.00	3.46	-	37.29	-	46.92	51.82
	Average LGD	-	-	-	-	-	4.52	15.30	-	50.24	-	23.36	4.34
United Kingdom	Average PD	-	-	-	-	-	4.10	3.15	-	1.52	-	2.92	23.88
	Average LGD	-	-	-	-	-	24.10	10.22	-	26.28	-	20.20	30.78
Guatemala	Average PD	-	-	-	-	-	-	100.00	-	-	-	100.00	100
	Average LGD	-	-	-	-	-	-	22.70	-	-	-	22.70	26.19
Hong Kong	Average PD	-	-	-	-	-	27.12	5.14	-	100.00	-	44.09	-
	Average LGD	-	-	-	-	-	4.39	11.83	-	42.04	-	19.42	-
India	Average PD	-	-	-	-	-	21.50	-	-	-	-	21.50	26.63
	Average LGD	-	-	-	-	-	13.77	-	-	-	-	13.77	9.58

Indonesia	Average PD	-	-	-	-	-	-	-	-	26.55	-	26.55	48.32
	Average LGD	-	-	-	-	-	-	-	-	54.90	-	54.90	27.28
Iran	Average PD	-	-	-	-	-	-	4.00	-	-	-	4.00	13.44
	Average LGD	-	-	-	-	-	-	6.64	-	-	-	6.64	2.73
Ireland	Average PD	-	-	-	-	-	30.26	4.34	-	20.67	-	18.42	4
	Average LGD	-	-	-	-	-	18.07	10.07	-	26.13	-	18.09	6.67
Isle of Man	Average PD	-	-	-	-	-	27.40	-	-	-	-	27.40	12.84
	Average LGD	-	-	-	-	-	13.45	-	-	-	-	13.45	5.61
Israel	Average PD	-	-	-	-	-	-	1.63	-	0.15	-	0.89	1.1
	Average LGD	-	-	-	-	-	-	10.71	-	25.89	-	18.30	9.48
Italy	Average PD	-	-	-	-	-	9.00	3.83	-	43.49	-	18.77	20.61
	Average LGD	-	-	-	-	-	0.35	12.42	-	56.27	-	23.01	10.99
Jamaica	Average PD	-	-	-	-	-	-	1.70	-	-	-	1.70	8.59
	Average LGD	-	-	-	-	-	-	7.20	-	-	-	7.20	10.14
Japan	Average PD	-	-	-	-	-	5.21	25.03	-	-	-	15.12	32.67
	Average LGD	-	-	-	-	-	1.34	12.11	-	-	-	6.72	2.39
Jordan	Average PD	-	-	-	-	-	-	6.00	-	1.10	-	3.55	1.7
	Average LGD	-	-	-	-	-	-	7.16	-	44.53	-	25.84	7.37
Cambodia	Average PD	-	-	-	-	-	-	-	-	3.40	-	3.40	3.64
	Average LGD	-	-	-	-	-	-	-	-	47.93	-	47.93	2.16
Canada	Average PD	-	-	-	-	-	-	6.03	-	5.40	-	5.72	13.5
	Average LGD	-	-	-	-	-	-	9.12	-	52.74	-	30.93	2.7
Qatar	Average PD	-	-	-	-	-	0.75	1.18	-	-	-	0.96	13.50
	Average LGD	-	-	-	-	-	2.95	9.63	-	-	-	6.29	2.71
Korea	Average PD	-	-	-	-	-	30.00	-	-	0.29	-	15.14	5.49
	Average LGD	-	-	-	-	-	0.35	-	-	24.70	-	12.52	6.70
Kosovo	Average PD	-	-	-	-	-	-	-	-	30.26	-	30.26	0.77
	Average LGD	-	-	-	-	-	-	-	-	51.23	-	51.23	2.82
Croatia	Average PD	-	-	-	-	-	100.00	1.70	-	25.36	-	42.35	-
	Average LGD	-	-	-	-	-	90.35	6.40	-	59.24	-	52.00	-
Cuba	Average PD	-	-	-	-	-			-	0.75	-	0.75	-
	Average LGD	-	-	-	-	-			-	13.05	-	13.05	-
Kuwait	Average PD	-	-	-	-	-	9.00	0.69	-	-	-	4.84	-
	Average LGD	-	-	-	-	-	0.35	13.22	-	-	-	6.79	-
Latvia	Average PD	-	-	-	-	-	-	-	-	69.73	-	69.73	17.44

	Average LGD	-	-	-	-	-	-	-	-	40.13	-	40.13	36.44
Liberia	Average PD	-	-	-	-	-	4.21	-	-	-	-	4.21	0.75
	Average LGD	-	-	-	-	-	3.40	-	-	-	-	3.40	14.25
Liechtenstein	Average PD	-	-	-	-	-	-	1.29	-	0.15	-	0.72	8.83
	Average LGD	-	-	-	-	-	-	9.41	-	25.89	-	17.65	0.49
Lithuania	Average PD	-	-	-	-	-	-	-	-	1.10	-	1.10	33.61
	Average LGD	-	-	-	-	-	-	-	-	59.76	-	59.76	23.19
Luxembourg	Average PD	-	-	-	-	-	-	7.04	-	26.68	-	16.86	-
	Average LGD	-	-	-	-	-	-	12.58	-	11.04	-	11.81	-
North Macedonia	Average PD	-	-	-	-	-	-	-	-	100.00	-	100.00	14.39
	Average LGD	-	-	-	-	-	-	-	-	74.55	-	74.55	3.94
Malaysia	Average PD	-	-	-	-	-	-	0.66	-	-	-	0.66	1.183
	Average LGD	-	-	-	-	-	-	11.80	-	-	-	11.80	12.98
Malta	Average PD	-	-	-	-	-	8.14	0.10	-	30.00	-	12.75	1.1
	Average LGD	-	-	-	-	-	2.32	21.53	-	50.12	-	24.66	44.07
Morocco	Average PD	-	-	-	-	-	-	-	-	-	-	-	1.94
	Average LGD	-	-	-	-	-	-	-	-	-	-	-	7.02
Marshall Islands	Average PD	-	-	-	-	-	12.94	-	-	-	-	12.94	21.56
	Average LGD	-	-	-	-	-	3.05	-	-	-	-	3.05	10.06
Mauritius	Average PD	-	-	-	-	-	-	30.00	-	-	-	30.00	14.38
	Average LGD	-	-	-	-	-	-	13.65	-	-	-	13.65	8.27
Mexico	Average PD	-	-	-	-	-	21.92	1.10	-	-	-	11.51	0
	Average LGD	-	-	-	-	-	35.45	7.40	-	-	-	21.42	0
Moldova	Average PD	-	-	-	-	-	-	-	-	100.00	-	100.00	16.90
	Average LGD	-	-	-	-	-	-	-	-	15.87	-	15.87	4.63
Montenegro	Average PD	-	-	-	-	-	-	58.76	-	-	-	58.76	6.00
	Average LGD	-	-	-	-	-	-	3.44	-	-	-	3.44	14.88
Namibia	Average PD	-	-	-	-	-	-	0.97	-	100.00	-	50.48	100
	Average LGD	-	-	-	-	-	-	29.12	-	62.90	-	46.01	51.49
New Zealand	Average PD	-	-	-	-	-	-	1.70	-	0.50	-	1.10	22.21
	Average LGD	-	-	-	-	-	-	6.49	-	16.29	-	11.39	27.83
Netherlands	Average PD	-	-	-	-	-	13.18	5.66	-	7.32	-	8.72	100
	Average LGD	-	-	-	-	-	37.29	11.46	-	24.65	-	24.47	43.54
Netherlands Antilles	Average PD	-	-	-	-	-	-	-	-	-	-	-	1.1
	Average LGD	-	-	-	-	-	-	-	-	-	-	-	8.63

Norway	Average PD	-	-	-	-	-	57.54	2.07	-	9.55	-	23.06	14.90
	Average LGD	-	-	-	-	-	29.24	9.86	-	33.24	-	24.11	14.14
Oman	Average PD	-	-	-	-	-	-	0.75	-	-	-	0.75	1.726
	Average LGD	-	-	-	-	-	-	7.74	-	-	-	7.74	10.06
Austria	Average PD	-	-	-	-	-	-	2.98	-	6.39	-	4.69	35.12
	Average LGD	-	-	-	-	-	-	13.29	-	28.33	-	20.81	31.12
Panama	Average PD	-	-	-	-	-	12.79	0.07	-	0.15	-	4.34	9
	Average LGD	-	-	-	-	-	3.00	13.76	-	25.89	-	14.22	44.66
Philippines	Average PD	-	-	-	-	-	-	100.00	-	42.74	-	71.37	46.75
	Average LGD	-	-	-	-	-	-	22.70	-	53.24	-	37.97	27.33
Poland	Average PD	-	-	-	-	-	-	3.18	-	28.28	-	15.73	0.75
	Average LGD	-	-	-	-	-	-	9.35	-	45.91	-	27.63	8.77
Portugal	Average PD	-	-	-	-	-	-	2.60	-	26.54	-	14.57	1.9
	Average LGD	-	-	-	-	-	-	8.57	-	42.74	-	25.65	12.76
Romania	Average PD	-	-	-	-	-	-	-	-	40.86	-	40.86	8.56
	Average LGD	-	-	-	-	-	-	-	-	56.79	-	56.79	2.17
Russia	Average PD	-	-	-	-	-	-	6.38	-	39.70	-	23.04	14.31
	Average LGD	-	-	-	-	-	-	17.80	-	37.52	-	27.66	2.76
Saudi Arabia	Average PD	-	-	-	-	-	-	1.10	-	-	-	1.10	13.46
	Average LGD	-	-	-	-	-	-	7.48	-	-	-	7.48	3.20
Sweden	Average PD	-	-	-	-	-	-	14.74	-	7.91	-	11.33	13.26
	Average LGD	-	-	-	-	-	-	10.56	-	29.05	-	19.81	3.50
Switzerland	Average PD	-	-	-	-	-	-	2.64	-	1.79	-	2.22	36.58
	Average LGD	-	-	-	-	-	-	16.92	-	26.93	-	21.93	44.27
Singapore	Average PD	-	-	-	-	-	22.65	1.18	-	0.17	-	8.00	5.35
	Average LGD	-	-	-	-	-	10.90	12.32	-	25.04	-	16.09	18.22
Slovakia	Average PD	-	-	-	-	-	-	-	-	35.15	-	35.15	1.1
	Average LGD	-	-	-	-	-	-	-	-	57.16	-	57.16	7.61
Slovenia	Average PD	-	-	-	-	-	-	0.83	-	38.74	-	19.79	3.02
	Average LGD	-	-	-	-	-	-	8.50	-	44.19	-	26.35	12.71
Spain	Average PD	-	-	-	-	-	0.75	9.25	-	5.32	-	5.11	2.07
	Average LGD	-	-	-	-	-	2.95	9.48	-	28.03	-	13.49	14.23
South Africa	Average PD	-	-	-	-	-	-	1.96	-	-	-	1.96	49.55
	Average LGD	-	-	-	-	-	-	9.64	-	-	-	9.64	51.68
Taiwan	Average PD	-	-	-	-	-	-	0.23	-	-	-	0.23	23.99

	Average LGD	-	-	-	-	-	-	9.48	-	-	-	9.48	10.47
Tanzania	Average PD	-	-	-	-	-	-	-	-	1.10	-	1.10	45.88
	Average LGD	-	-	-	-	-	-	-	-	62.73	-	62.73	44.14
Thailand	Average PD	-	-	-	-	-	-	13.91	-	7.40	-	10.66	16.26
	Average LGD	-	-	-	-	-	-	9.21	-	45.15	-	27.18	20.12
Czech Republic	Average PD	-	-	-	-	-	-	10.81	-	9.72	-	10.26	1.55
	Average LGD	-	-	-	-	-	-	9.85	-	35.06	-	22.45	5.98
Tunisia	Average PD	-	-	-	-	-	-	0.35	-	-	-	0.35	0.75
	Average LGD	-	-	-	-	-	-	9.48	-	-	-	9.48	16.26
Turkey	Average PD	-	-	-	-	-	9.00	3.07	-	68.99	-	27.02	1.45
	Average LGD	-	-	-	-	-	1.92	11.72	-	45.06	-	19.57	8.88
Ukraine	Average PD	-	-	-	-	-	-	0.23	-	1.10	-	0.67	10.48
	Average LGD	-	-	-	-	-	-	9.48	-	45.54	-	27.51	3.21
Hungary	Average PD	-	-	-	-	-	-	0.70	-	32.23	-	16.47	0.39
	Average LGD	-	-	-	-	-	-	9.13	-	49.22	-	29.17	9.48
Uzbekistan	Average PD	-	-	-	-	-	-	-	-	13.50	-	13.50	2.96
	Average LGD	-	-	-	-	-	-	-	-	39.81	-	39.81	5.14
United Arab Emirates	Average PD	-	-	-	-	-	11.62	0.63	-	0.53	-	4.26	5.56
	Average LGD	-	-	-	-	-	0.35	10.13	-	22.53	-	11.01	17.54
United States	Average PD	-	-	-	-	-	33.68	2.15	-	2.06	-	12.63	0.75
	Average LGD	-	-	-	-	-	9.19	9.69	-	29.74	-	16.21	9.48
Vietnam	Average PD	-	-	-	-	-	-	2.31	-	-	-	2.31	5.70
	Average LGD	-	-	-	-	-	-	14.84	-	-	-	14.84	2.36
Cyprus	Average PD	-	-	-	-	-	6.90	8.23	-	-	-	7.56	29.46
	Average LGD	-	-	-	-	-	0.35	12.74	-	-	-	6.55	32.82
Total average PD as at Dec. 31, 2019		**-**	**-**	**-**	**-**	**-**	**19.72**	**2.42**	**-**	**4.44**	**-**	**8.86**	**-**
Total average LGD as at Dec. 31, 2019		**-**	**-**	**-**	**-**	**-**	**8.91**	**10.64**	**-**	**38.72**	**-**	**19.42**	**-**
Total average PD as at Dec. 31, 2018		-		-	-	-	16.46	2.63	-	4.38	-	-	6.83
Total average LGD as at Dec. 31, 2018		-		-	-	-	8.29	10.32	-	33.50	-	-	14.52

6.7 Counterparty credit risk

6.7.1 Required qualitative disclosures

(ARTICLE 435 SENTENCE 1 LETTER A CRR AND ARTICLE 439 LETTERS A TO D CRR)

Within the banking sector, counterparty credit risk is assigned to credit risk as replacement risk (see p. 66 of the opportunities and risk report) and refers to the risk of the counterparty to a transaction defaulting before the final settlement of the payments associated with that transaction. A counterparty is the business partner from a derivative transaction or Security Financing Transaction. A special feature of counterparty credit risk is that (in contrast to other credit risks) in accordance with Article 271 CRR, transactions in the trading book must be taken into account in addition to transactions in the banking book.

The following disclosures on managing derivative counterparty risk exposure in the banking book and trading book of the DZ BANK banking group can be found in the opportunity and risk report.

FIG. 62 – DISCLOSURES IN THE REGULATORY RISK REPORT RELATING TO ARTICLE 435 SENTENCE 1 LETTER A CRR AND ARTICLE 439 LETTERS A TO D CRR

Article	Subject	Opportunity and risk report	
		Section	Page
Article 435 sentence 1 letter a CRR	**Risk management objectives and –policies: strategies and processes for the steering of risks**	8.6.5	107 to 108
Article 439 letter a CRR	**Internal procedure for allocating capital** to cover derivative counterparty risk exposures and **procedure for determining the upper limits** for individual counterparties	3.6.2; 3.6.4; 8.6.5	78 to 79; 79; 107 to 108
Article 439 letter b CRR	**Procedure for obtaining collateral** (rules for guarantees and other measures for mitigating risk and for the measurement of counterparty credit risk)	3.6.5; 8.6.7	79 to 80; 109 to 111
Article 439 letter c CRR	**Handling of correlations** of market risk and counterparty risk	8.6.6	108 to 109

In the derivatives business, there are master agreements entered into with individual counterparties that contractually require additional collateral to be provided to the counterparty in the event of DZ BANK's external credit rating being downgraded (article 439 sentence 1 letter d CRR). A three-notch downgrade as at December 31, 2019 would have led to additional collateral being provided in a total amount of around €454 million.

6.7.2 Regulatory measures

(ARTICLE 439 LETTERS E, F, AND I CRR)

6.7.2.1 Analysis of counterparty credit risk

Fig. 63 presents the methods used to calculate the regulatory requirements for counterparty credit risk as well as the main parameters of each method.

FIG. 63 – EU CCR1 – ANALYSIS OF COUNTERPARTY CREDIT RISK BY APPROACH

€ million		a	b	c	d	e	f	g
Method		Notional	Replacement cost/current market value	Potential future credit exposure	Effective expected positive exposure (EEPE)	Multiplier	EAD after credit risk mitigation	RWAs
1	Mark-to-market method		9,105	4,550			9,620	2,506
2	Original exposure method	-					-	-
3	Standardized Approach		-				-	-
4	IMM (for derivatives and securities financing transactions)				-	-	-	-
5	of which: securities financing transactions				-	-	-	-
6	of which: derivatives and long-settlement transactions				-	-	-	-
7	of which: from contractual cross-product netting				-	-	-	-
8	Financial collateral simple method (for securities financing transactions)						-	-
9	Financial collateral comprehensive method (for securities financing transactions)						-	-
10	VaR for securities financing transactions						-	-
11	**Total as at Dec. 31, 2019**							**2,506**
	Total as at Jun. 30, 2019							2,529

The RWAs resulting from counterparty credit risk were lower than as at June 30, 2019 owing to reduced add-ons on the reporting date.

6.7.2.2 Capital requirement for adjustment of the credit valuation

(ARTICLE 439 LETTERS E AND F CRR)

The exposure value and the risk-weighted asset amount for transactions subject to capital requirements for credit valuation adjustments (CVA charge) must be disclosed separately. Based on the requirements in the CRR, Fig. 64 shows the regulatory calculations for adjustment of the credit valuation (broken down into the foundation and advanced approaches).

FIG. 64 – EU CCR2 – CVA CAPITAL CHARGE

		a	b	a	b
		Dec. 31, 2019		Jun. 30, 2019	
€ million		Exposure value	RWAs	Exposure value	RWAs
1	Total portfolios subject to the advanced method	-	-	-	-
2	i) VaR component (including the 3x multiplier)	-	-	-	-
3	ii) Stressed VaR component (sVaR, including the 3x multiplier)	-	-	-	-
4	All portfolios subject to the standardized method	2,654	1,108	2,785	1,212
EU4	Based on the original exposure method	-	-	-	-
5	**Total subject to the CVA capital charge**	**2,654**	**1,108**	**2,785**	**1,212**

The capital requirement for adjustment of the credit valuation as at December 31, 2019 varied only slightly from the requirement as at June 30, 2019.

6.7.2.3 Exposures to central counterparties

(ARTICLE 439 LETTERS E AND F CRR)

Specific information about credit risk arising from derivatives with central counterparties (CCPs) and associated exposures are shown in Fig. 65, which provides a comprehensive picture of the DZ BANK banking group's exposures. Only exposures to qualifying CCPs are included.

FIG. 65 – EU CCR8 – EXPOSURES TO CCPS

		a	b	a	b
		Dec. 31, 2019		Jun. 30, 2019	
€ million		EAD after credit risk mitigation	RWAs	EAD after credit risk mitigation	RWAs
1	**Total exposures to qualified CCPs**		**258**		**320**
2	Exposures for trades at qualified CCPs (excluding initial margin and default fund contributions); of which:	2,618	38	3,909	78
3	i) OTC derivatives	639	10	3,148	63
4	ii) Exchange-traded derivatives	1,438	24	172	3
5	iii) Securities financing transactions	541	3	589	12
6	iv) Netting sets where cross-product netting has been approved	-	-	-	-
7	Segregated initial margin	-		-	
8	Non-segregated initial margin	1,400	28	2,528	51
9	Prefunded default fund contributions	239	192	189	191
10	Alternative calculation of capital requirements for exposures		-		-
11	**Total exposures to non-qualified CCPs**		**41**		**62**
12	Exposures for trades at non-qualified CCPs (excluding initial margin and default fund contributions); of which:	41	41	62	62
13	i) OTC derivatives	41	41	62	62
14	ii) Exchange-traded derivatives	-	-	-	-
15	iii) Securities financing transactions	-	-	-	-
16	iv) Netting sets where cross-product netting has been approved	-	-	-	-
17	Segregated initial margin	-		-	
18	Non-segregated initial margin	-	-	-	-
19	Prefunded default fund contributions	-	-	-	-
20	Unfunded default fund contributions	-	-	-	-

Exposures to qualifying central counterparties are not subject to significant changes.

6.7.3 Counterparty credit risk exposures: Standardized Approach

(ARTICLE 444 SENTENCE 1 LETTER E IN CONJUNCTION WITH ARTICLE 92 SENTENCE 3 LETTER F CRR)

Fig. 66 shows the counterparty credit risk exposures after credit risk mitigation, broken down by portfolio (type of counterparty) and risk weight (risk content attributed according to the Standardized Approach).

FIG. 66 – EU CCR3 – STANDARDIZED APPROACH – COUNTERPARTY CREDIT RISK EXPOSURES BY REGULATORY PORTFOLIO AND RISK

€ million		Risk weight (%)											Total	of which: unrated
Exposure class		0	2	4	10	20	50	70	75	100	150	Other		
1	Central governments and central banks	12	-	-	-	0	-	-	-	-	-	-	12	5
2	Regional governments or local authorities	282	-	-	-	9	-	-	-	-	-	-	292	284
3	Public-sector entities	188	-	-	-	0	-	-	-	-	-	-	188	188

€ million	Risk weight (%)											Total	of which: unrated
Exposure class	0	2	4	10	20	50	70	75	100	150	Other		
4 Multilateral development banks		-	-	-	-	-	-	-	-	-	-	-	-
5 International organizations	1	-	-	-	-	-	-	-	-	-	-	1	1
6 Institutions	3,196	-	-	-	977	421	-	-	-	-	-	4,594	3,198
7 Corporates	-	-	-	-	295	237	-	-	900	-	-	1,432	888
8 Retail business	-	-	-	-	-	-	-	-	-	-	-	-	-
9 Institutions and corporates with a short-term credit assessment	-	-	-	-	-	-	-	-	-	-	-	-	-
10 Other items	-	-	-	-	-	-	-	-	0	0	-	0	0
11 Secured by mortgages on immovable property	-	-	-	-	-	-	-	-	-	-	-	-	-
12 Exposures in default	-	-	-	-	-	-	-	-	-	-	-	-	-
13 Exposures associated with particularly high risk	-	-	-	-	-	-	-	-	-	-	-	-	-
14 Covered bonds	-	-	-	-	-	-	-	-	-	-	-	-	-
15 CIUs	-	-	-	-	-	-	-	-	-	-	-	-	-
16 Equity exposures	-	-	-	-	-	-	-	-	-	-	-	-	-
17 Total as at Dec. 31, 2019	**3,679**	**-**	**-**	**-**	**1,282**	**658**	**-**	**-**	**900**	**0**	**-**	**6,519**	**4,564**
17 Total as at Jun. 30, 2019	**4,364**	**-**	**-**	**-**	**719**	**228**	**-**	**-**	**879**	**0**	**-**	**6,190**	**5,261**

The increase in the total exposure compared with June 30, 2019 was primarily attributable to the institutions exposure class. While this rise was due to the growth of business with this customer group, the changes between the reporting dates of June 30, 2019 and December 31, 2019 in the other exposure classes were the result of fluctuation within the normal range.

6.7.4 Counterparty credit risk exposures: IRB approach

(ARTICLE 452 SENTENCE 1 LETTER E IN CONJUNCTION WITH ARTICLE 92 SENTENCE 3 LETTER F CRR)

Fig. 67 and Fig. 68 show key parameters used to calculate the capital requirements for counterparty credit risk in the IRB models.

FIG. 67 – EU CCR4 – FIRB APPROACH – COUNTERPARTY CREDIT RISK EXPOSURES BY PORTFOLIO AND PD SCALE

€ million (unless indicated otherwise)	a	b	c	d	e	f	g
PD scale by exposure class	**EAD after credit risk mitigation**	**Average PD (%)**	**Number of borrowers**	**Average LGD (%)**	**Average maturity (days)**	**RWAs**	**RWA density (%)**
Central governments and central banks							
0.00 to < 0.15	68	0.01	103	45.00	900	5	7.98
0.15 to < 0.25	18	0.15	8	45.00	900	7	39.67
0.25 to < 0.50	-	-	-	-	-	-	-
0.50 to < 0.75	-	-	-	-	-	-	-
0.75 to < 2.50	0	0.75	2	45.00	900	0	87.74
2.50 to < 10.00	-	-	-	-	-	-	-
10.00 to < 100.00	-	-	-	-	-	-	-
100.00 (default)	-	-	-	-	-	-	-
Subtotal	**86**	**0.04**	**113**	**45.00**	**900**	**13**	**14.81**
Institutions							
0.00 to < 0.15	2,341	0.07	718	28.04	900	450	19.22
0.15 to < 0.25	567	0.19	365	33.10	900	213	37.60
0.25 to < 0.50	197	0.35	25	38.21	900	123	62.78
0.50 to < 0.75	273	0.50	22	12.00	900	69	25.16
0.75 to < 2.50	30	1.07	18	7.20	900	5	17.91
2.50 to < 10.00	2	3.93	5	25.44	900	2	94.60
10.00 to < 100.00	-	-	-	-	-	-	-
100.00 (default)	-	-	-	-	-	-	-
Subtotal	**3,409**	**0.15**	**1,153**	**28.01**	**900**	**862**	**25.29**

€ million (unless indicated otherwise) PD scale by exposure class	a EAD after credit risk mitigation	b Average PD (%)	c Number of borrowers	d Average LGD (%)	e Average maturity (days)	f RWAs	g RWA density (%)
Corporates							
0.00 to < 0.15	626	0.24	443	131.58	900	134	79.05
0.15 to < 0.25	297	0.60	340	135.00	900	139	132.30
0.25 to < 0.50	102	1.05	160	133.42	900	62	174.58
0.50 to < 0.75	120	1.50	199	134.42	900	87	209.74
0.75 to < 2.50	201	3.42	477	134.48	900	195	283.79
2.50 to < 10.00	43	10.00	91	134.30	900	58	391.70
10.00 to < 100.00	1	43.50	3	90.00	900	1	456.64
100.00 (default)	22	200.00	25	90.00	900	0	0.00
Subtotal	**1,412**	**9.55**	**1,738**	**132.75**	**900**	**676**	**187.72**
of which: SMEs							
0.00 to < 0.15	0	0.10	5	45.00	900	0	26.51
0.15 to < 0.25	2	0.21	43	45.00	900	1	41.31
0.25 to < 0.50	4	0.35	47	45.00	900	2	51.16
0.50 to < 0.75	7	0.50	53	45.00	900	5	62.96
0.75 to < 2.50	10	1.34	128	45.00	900	9	89.75
2.50 to < 10.00	3	4.54	44	44.30	900	4	127.07
10.00 to < 100.00	1	13.50	2	45.00	900	1	192.89
100.00 (default)	-	-	-	-	-	-	-
Subtotal	**27**	**1.45**	**322**	**44.92**	**900**	**21**	**77.99**
Corporates – of which: specialized lending							
0.00 to < 0.15	15	0.10	18	45.00	900	5	31.33
0.15 to < 0.25	61	0.18	30	45.00	900	26	43.28
0.25 to < 0.50	7	0.35	17	45.00	900	5	62.29
0.50 to < 0.75	62	0.50	46	44.90	900	46	73.62
0.75 to < 2.50	83	0.98	87	44.53	900	78	94.75
2.50 to < 10.00	6	2.60	2	45.00	900	7	130.88
10.00 to < 100.00	-	-	-	-	-	-	-
100.00 (default)	17	100.00	12	45.00	900	-	-
Subtotal	**250**	**7.36**	**212**	**44.82**	**900**	**167**	**66.70**
Corporates – of which: other							
0.00 to < 0.15	611	0.04	420	41.58	900	130	21.21
0.15 to < 0.25	234	0.21	267	45.00	900	112	47.71
0.25 to < 0.50	91	0.35	96	43.42	900	56	61.13
0.50 to < 0.75	50	0.50	100	44.52	900	37	73.15
0.75 to < 2.50	108	1.10	262	44.95	900	108	99.29
2.50 to < 10.00	35	2.86	45	45.00	900	47	133.74
10.00 to < 100.00	0	30.00	1	45.00	900	0	263.75
100.00 (default)	5	100.00	13	45.00	900	-	-
Subtotal	**1,134**	**0.73**	**1,204**	**43.00**	**900**	**488**	**43.02**
Long-term equity investments							
0.00 to < 0.15	0	0.09	1	90.00	900	0	96.45
0.15 to < 0.25	-	-	-	-	-	-	-
0.25 to < 0.50	-	-	-	-	-	-	-
0.50 to < 0.75	-	-	-	-	-	-	-
0.75 to < 2.50	-	-	-	-	-	-	-
2.50 to < 10.00	-	-	-	-	-	-	-
10.00 to < 100.00	-	-	-	-	-	-	-
100.00 (default)	-	-	-	-	-	-	-
Subtotal	**0**	**0.09**	**1**	**90.00**	**900**	**0**	**96.45**
Total (all portfolios) as at Dec. 31, 2019	**4,907**	**0.66**	**3,005**	**32.72**	**900**	**1,551**	**31.61**
Total (all portfolios) as at Jun. 30, 2019	5,039	0.69	1,415	32.57	900	1,586	31.46

The EADs decreased between the two reporting dates as a result of the reduction in business activity in the second half of the year. This led to a fall in the RWAs. The ‘institutions’ and ’corporates – other’ exposure classes continue to be significant.

FIG. 68 – EU CCR4 – AIRB APPROACH – COUNTERPARTY CREDIT RISK EXPOSURES BY PORTFOLIO AND PD SCALE

€ million (unless indicated otherwise) **PD scale by exposure class**	a **EAD after credit risk mitigation**	b **Average PD (%)**	c **Number of borrowers**	d **Average LGD (%)**	e **Average maturity (days)**	f **RWAs**	g **RWA density (%)**
Central governments and central banks							
0.00 to < 0.15	-	-	-	-	-	-	-
0.15 to < 0.25	-	-	-	-	-	-	-
0.25 to < 0.50	-	-	-	-	-	-	-
0.50 to < 0.75	-	-	-	-	-	-	-
0.75 to < 2.50	-	-	-	-	-	-	-
2.50 to < 10.00	-	-	-	-	-	-	-
10.00 to < 100.00	-	-	-	-	-	-	-
100.00 (default)	-	-	-	-	-	-	-
Subtotal	-	-	-	-	-	-	-
Institutions							
0.00 to < 0.15	-	-	-	-	-	-	-
0.15 to < 0.25	-	-	-	-	-	-	-
0.25 to < 0.50	-	-	-	-	-	-	-
0.50 to < 0.75	-	-	-	-	-	-	-
0.75 to < 2.50	-	-	-	-	-	-	-
2.50 to < 10.00	-	-	-	-	-	-	-
10.00 to < 100.00	-	-	-	-	-	-	-
100.00 (default)	-	-	-	-	-	-	-
Subtotal	-	-	-	-	-	-	-
Corporates							
0.00 to < 0.15	4	0.10	1.00	65	1,357	3	80.58
0.15 to < 0.25	1	0.18	3.00	1	1,605	0	1.83
0.25 to < 0.50	0	0.35	1.00	3	1,625	0	5.61
0.50 to < 0.75	-	-	-	-	-	-	-
0.75 to < 2.50	1	1.47	4.00	12	821	0	31.83
2.50 to < 10.00	0	4.76	3.00	23	1,132	0	81.97
10.00 to < 100.00	-	-	-	-	-	-	-
100.00 (default)	-	-	-	-	-	-	-
Subtotal	**6**	**0.59**	**12.00**	**47**	**1,298**	**4**	**64.35**
Corporates – of which: SMEs							
0.00 to < 0.15	-	-	-	-	-	-	-
0.15 to < 0.25	-	-	-	-	-	-	-
0.25 to < 0.50	-	-	-	-	-	-	-
0.50 to < 0.75	-	-	-	-	-	-	-
0.75 to < 2.50	-	-	-	-	-	-	-
2.50 to < 10.00	-	-	-	-	-	-	-
10.00 to < 100.00	-	-	-	-	-	-	-
100.00 (default)	-	-	-	-	-	-	-
Subtotal	-	-	-	-	-	-	-
Corporates – of which: specialized lending							
0.00 to < 0.15	-	-	-	-	-	-	-
0.15 to < 0.25	-	-	-	-	-	-	-
0.25 to < 0.50	-	-	-	-	-	-	-
0.50 to < 0.75	-	-	-	-	-	-	-
0.75 to < 2.50	-	-	-	-	-	-	-
2.50 to < 10.00	-	-	-	-	-	-	-
10.00 to < 100.00	-	-	-	-	-	-	-
100.00 (default)	-	-	-	-	-	-	-
Subtotal	-	-	-	-	-	-	-

€ million (unless indicated otherwise) PD scale by exposure class	a EAD after credit risk mitigation	b Average PD (%)	c Number of borrowers	d Average LGD (%)	e Average maturity (days)	f RWAs	g RWA density (%)
Corporates – of which: other							
0.00 to < 0.15	4	0.10	1.00	65	1,357	3	80.58
0.15 to < 0.25	1	0.18	3.00	1	1,605	0	1.83
0.25 to < 0.50	0	0.35	1.00	3	1,625	0	5.61
0.50 to < 0.75	-	-	-	-	-	-	-
0.75 to < 2.50	1	1.47	4.00	12	821	0	31.83
2.50 to < 10.00	0	4.76	3.00	23	1,132	0	81.97
10.00 to < 100.00	-	-	-	-	-	-	-
100.00 (default)	-	-	-	-	-	-	-
Subtotal	**6**	**0.59**	**12.00**	**47**	**1,298**	**4**	**64.35**
Retail business – SMEs, secured by mortgages on immovable property							
0.00 to < 0.15	-	-	-	-	-	-	-
0.15 to < 0.25	-	-	-	-	-	-	-
0.25 to < 0.50	-	-	-	-	-	-	-
0.50 to < 0.75	-	-	-	-	-	-	-
0.75 to < 2.50	-	-	-	-	-	-	-
2.50 to < 10.00	-	-	-	-	-	-	-
10.00 to < 100.00	-	-	-	-	-	-	-
100.00 (default)	-	-	-	-	-	-	-
Subtotal	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Retail business – non-SMEs, secured by mortgages on immovable property							
0.00 to < 0.15	-	-	-	-	-	-	-
0.15 to < 0.25	-	-	-	-	-	-	-
0.25 to < 0.50	-	-	-	-	-	-	-
0.50 to < 0.75	-	-	-	-	-	-	-
0.75 to < 2.50	-	-	-	-	-	-	-
2.50 to < 10.00	-	-	-	-	-	-	-
10.00 to < 100.00	-	-	-	-	-	-	-
100.00 (default)	-	-	-	-	-	-	-
Subtotal	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Retail business – qualified revolving							
0.00 to < 0.15	-	-	-	-	-	-	-
0.15 to < 0.25	-	-	-	-	-	-	-
0.25 to < 0.50	-	-	-	-	-	-	-
0.50 to < 0.75	-	-	-	-	-	-	-
0.75 to < 2.50	-	-	-	-	-	-	-
2.50 to < 10.00	-	-	-	-	-	-	-
10.00 to < 100.00	-	-	-	-	-	-	-
100.00 (default)	-	-	-	-	-	-	-
Subtotal	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Retail business – other SMEs							
0.00 to < 0.15	-	-	-	-	-	-	-
0.15 to < 0.25	-	-	-	-	-	-	-
0.25 to < 0.50	-	-	-	-	-	-	-
0.50 to < 0.75	-	-	-	-	-	-	-
0.75 to < 2.50	-	-	-	-	-	-	-
2.50 to < 10.00	-	-	-	-	-	-	-
10.00 to < 100.00	-	-	-	-	-	-	-
100.00 (default)	-	-	-	-	-	-	-
Subtotal	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Retail business – other non-SMEs							
0.00 to < 0.15	-	-	-	-	-	-	-
0.15 to < 0.25	-	-	-	-	-	-	-
0.25 to < 0.50	-	-	-	-	-	-	-
0.50 to < 0.75	-	-	-	-	-	-	-
0.75 to < 2.50	-	-	-	-	-	-	-
2.50 to < 10.00	-	-	-	-	-	-	-
10.00 to < 100.00	-	-	-	-	-	-	-
100.00 (default)	-	-	-	-	-	-	-

€ million (unless indicated otherwise) PD scale by exposure class	a EAD after credit risk mitigation	b Average PD (%)	c Number of borrowers	d Average LGD (%)	e Average maturity (days)	f RWAs	g RWA density (%)
Subtotal	-	-	-	-	-	-	-
Other non-credit-obligation assets							
0.00 to < 0.15	+	-	-	-	-	-	-
0.15 to < 0.25	-	-	-	-	-	-	-
0.25 to < 0.50	-	-	-	-	-	-	-
0.50 to < 0.75	-	-	-	-	-	-	-
0.75 to < 2.50	-	-	-	-	-	-	-
2.50 to < 10.00	-	-	-	-	-	-	-
10.00 to < 100.00	-	-	-	-	-	-	-
100.00 (default)	-	-	-	-	-	-	-
Subtotal	-	-	-	-	-	-	-
Total (all portfolios) as at Dec. 31, 2019	**6**	**0.59**	**12**	**47**	**1,298**	**4**	**64.35**
Total (all portfolios) as at Jun. 30, 2019	247	0.69	43	75.60	1,209	125	50.31

The changes shown in Fig. 68 in the total exposure compared with June 30, 2019 were primarily attributable to the institutions and corporates exposure classes. The institutions subportfolio was moved to FIRB owing to a regulatory requirement. Furthermore, a subportfolio of DVB was sold. The RWAs shown are attributable to the contraction of the portfolios.

6.7.5 Further information on counterparty credit risk

(ARTICLE 439 SENTENCE 1 LETTERS E, G, AND H CRR)

6.7.5.1 Impact of netting and collateral held on exposure values

(ARTICLE 439 LETTER E CRR)

Fig. 69 shows the aggregate derivative counterparty risk exposure in the banking book and trading book in the form of positive fair values before and after the offsetting of net derivatives exposures and collateral. Exposures that are processed directly via a central counterparty (clearing house) are not shown in Fig. 69. Fig. 69 therefore primarily shows listed derivatives that are traded via an intermediary, such as a broker, and OTC derivatives.

FIG. 69 – EU CCR5-A – IMPACT OF NETTING AND COLLATERAL HELD ON EXPOSURE VALUES

	€ million	a Gross positive fair value or net carrying amount	b Netting benefits	c Netted current credit exposure	d Collateral held	e Net credit exposure
1	Derivatives	49,432	40,559	8,874	4,954	3,920
2	Securities financing transactions	-	-	-	-	-
3	Cross-product netting	-	-	-	-	-
4	**Total as at Dec. 31, 2019**	**49,432**	**40,559**	**8,874**	**4,954**	**3,920**
	Total as at Jun. 30, 2019	41,803	31,958	9,845	5,382	4,464

The change in the gross positive fair value over the second half of 2019 was due to the volatile market environment, while the smaller impact of netting was attributable to normal fluctuation in the derivatives business. The table above therefore shows a decrease in the net credit exposure.

6.7.5.2 Composition of collateral for exposures subject to counterparty credit risk

(ARTICLE 439 LETTER E CRR)

Fig. 70 provides a breakdown for all types of collateral (cash collateral, sovereign debt, corporate bonds, etc.) posted or received by DZ BANK or the DZ BANK banking group in order to reduce counterparty credit risk related to derivatives transactions or securities financing transactions, including transactions cleared through a central counterparty.

FIG. 70 – EU CCR5-B – COMPOSITION OF COLLATERAL FOR EXPOSURES TO COUNTERPARTY CREDIT RISK

	a	b	c	d	e	f
	Collateral used in derivatives transactions				Collateral used in securities financing transactions	
	Fair value of collateral received		Fair value of collateral posted		Fair value of collateral received	Fair value of collateral posted
€ million	Segregated	Unsegregated	Segregated	Unsegregated		
Derivatives	-	4,727	4,122	5,634	-	-
of which: cash collateral	-	4,430	4,122	5,634	-	-
of which: bonds of domestic borrowers		50				
of which: bonds of foreign borrowers	-	16	-	-	-	-
of which: other bonds	-	87	-	-	-	-
of which: long-term equity investments	-	144	-	-	-	-
of which: other collateral	-	-	-	-	-	-
Securities financing transactions	-	-	-	-	-	-
Cross-product netting	-	-	-	-	-	-
Total as at Dec. 31, 2019	**-**	**4,727**	**4,122**	**5,634**	**-**	**-**
Total as at Jun. 30, 2019	-	5,365	-	11,231	-	-

The changes to the values presented in Fig. 70 were caused by the volatile market environment in the second half of 2019. Collaterals to LCH Ltd. und EUREX are recognized segregated as at December 31, 2019

6.7.5.3 Exposures secured by credit derivatives

(ARTICLE 439 LETTERS G AND H CRR)

Fig. 71 shows the notional amounts of credit derivatives bought and sold, broken down by type of credit derivative. As had been the case at the end of previous reporting periods, no credit derivatives from the intermediary operations of DZ BANK banking group entities were held as at December 31, 2019.

FIG. 71 – EU CCR6 – CREDIT DERIVATIVES EXPOSURES

	a	b	c	d
	Credit derivative hedges		Other credit derivatives	Intermediary operations
€ million	Protection bought	Protection sold		
Notionals				
Single-name credit default swaps	-	-	17,599	-
Index credit default swaps	-	-	-	-
Total return swaps	-	-	48	-
Credit options	-	-	-	-
Other credit derivatives	-	-	11,036	-
Total notionals as at December 31, 2019	**-**	**-**	**28,683**	**-**
Total notionals as at June 30, 2019	-	-	28,112	-
Fair values	-	-	-	-
Positive fair values (assets)	-	-	389	-
Negative fair values (equity and liabilities)	-	-	-75	-
Total fair value as at Dec. 31, 2019	**-**	**-**	**314**	**-**
Total fair value as at Jun. 30, 2019	-	-	293	-

The notionals for the exposures secured by credit derivatives increased as a result of normal business activity in the DZ BANK banking group.

7 Securitizations

7.1 Scope, objectives, and risks of securitization

(ARTICLE 449 SENTENCE 1 LETTERS A, D, E, AND I CRR)

The securitization activities of the DZ BANK banking group comprise not only funding activities in asset-backed commercial paper (ABCP) programs but also investing, trading, and funding activities involving asset-backed securities (ABSs). In the first half of 2017, DZ BANK opened up its credit risk strategy to new investments in ABSs, albeit with significant restrictions, in order to give itself greater flexibility when investing in high-quality liquid assets (HQLAs). Investing activities continue to include the legacy portfolios of investor-related exposures dating back to the period prior to the financial crisis. As before, ABSs are held as part of trading activities in order to pass on exposures within a short period of time and funding activities are still carried out for selected customers.

As a sponsor, DZ BANK uses special-purpose entities, which are funded by issuing money market-linked ABCP. The ABCP programs are made available for DZ BANK customers who then securitize assets via these companies. In these programs, the customers sell assets to a separate special-purpose entity, the consideration normally including a purchase price reduction. The purchase of the assets is funded by issuing money market-linked ABCP and using liquidity facilities of DZ BANK. The redemption of the ABCP is covered by the asset pool in the program. The contractual structure of the transactions ensures that the assets are not included in the asset seller's insolvency proceedings.

DZ BANK is deemed a sponsor of securitizations in accordance with the EU Securitization Regulation (Regulation (EU) No. 2017/2402 of the European Parliament and of the Council dated December 12, 2017).

The CORAL ABCP program has been set up to provide securitization of assets predominantly from European entities. This program is funded by liquidity facilities and by the issuance of ABCP. DZ BANK is also the sponsor of the AUTOBAHN ABCP program, which offers securitization for assets from North American customers and is funded by ABCP issues and liquidity facilities.

In addition, DZ BANK operates a program for purchasing commercial customer assets that are recognized on the balance sheet. The master agreement for this program is designed such that division of the credit risk into two or more tranches is agreed between the seller of the assets and DZ BANK at the moment that the assets are purchased.

DZ BANK's investor-related exposures are assigned to the banking book, and to a lesser extent to the trading book, and are actively managed with the aim of optimizing the portfolio, risk, and own funds.

Fig. 72 provides an overview of DZ BANK's securitization activities as sponsor in accordance with article 449 sentence 1 letter i CRR. The DZ BANK banking group no longer acts as an originator and, at the moment, does not plan to do so in the future.

FIG. 72 – SECURITIZATION EXPOSURES AS ORIGINATOR AND SPONSOR

Entity / transaction	Type of transaction	Role	Purpose of transaction	Type of assets	Volume[1]		Retained exposures		Explanatory notes
€ million					Dec. 31, 2019	Dec. 31, 2018	Dec. 31, 2019	Dec. 31, 2018	
DZ BANK									
CORAL	ABCP conduit	Sponsor	Generation of commission income	Loans and advances to European corporates	2,113	1,832	Commitments of 2,113, of which 1,310 has been utilized	Commitments of 1,832, of which 1,246 has been utilized	Provision of liquidity lines
AUTOBAHN	ABCP conduit	Sponsor	Generation of commission income	Loans and advances to North American customers	1,853	1,745	Commitments of 1,853, of which 131 has been utilized	Commitments of 1,745, of which 152 has been utilized	Provision of liquidity lines
Purchase of assets	Purchase for the bank's balance sheet	Sponsor	Generation of commission income	Loans and advances to German customers	320	127	Commitments of 320, of which 320 has been utilized	Commitments of 127, of which 127 has been utilized	Provision of credit lines

In accordance with article 449 sentence 1 letter i CRR, DZ BANK does not advise or manage any other entities that are invested in securitization exposures originated by the DZ BANK banking group or by special-purpose entities sponsored by DZ BANK.

DZ BANK also acts as a counterparty for interest-rate swaps within securitizations. To this end, DZ BANK enters into a receiver interest-rate swap with the special-purpose entity in order to protect the entity against interest-rate risk. The notional amount of the interest-rate swap is adjusted to the notional amount of the securitized assets on an ongoing basis. A (countervailing) payer interest-rate swap is entered into with the originator, whereby the risk of early repayment attaching to the securitized assets is transferred to the originator.

7.2 Risk management in respect of securitizations

(ARTICLE 449 SENTENCE 1 LETTERS B, C, F, AND G CRR)

Exposures to ABSs, which constitute investor-related exposures within the meaning of the CRR, are managed by DZ BANK and DZ HYP and are subject to the groupwide risk management standards. One of the requirements in these standards is that securitization exposures are analyzed individually and have separate limits.

The structure of transactions is analyzed and the external credit ratings awarded by the rating agencies are validated as part of a defined process. Furthermore, all ABS asset classes at DZ BANK are subjected to an annual portfolio analysis process that assesses the macroeconomic and asset-class-specific risks involved.

At sectoral level, portfolio risk exposures are included each quarter in the credit risk report submitted to the credit risk management function and to DZ BANK's Board of Managing Directors. This reporting process covers the total exposure and provides the basis for managing the risks incurred from structured products.

Securitization exposures that are not held so that they can be passed on within a short period of time are monitored regardless of whether they are assigned to the banking book or the trading book and regardless of whether DZ BANK is acting as the investor or counterparty in an interest-rate swap. Besides continuous monitoring of external credit ratings, exposures are classified on a quarterly basis using stress tests specific to each asset class. A particular feature of the tests is that factors such as payment delays, defaults, and degree of loss are balanced against the existing credit enhancements in each transaction. If an exposure does not pass a stress test, the expected loss is determined using a model particular to the asset class concerned.

The credit risk arising in connection with the transactions in the ABCP programs and senior exposures in the asset purchase program is monitored using performance reports prepared at least monthly by the asset seller. The purchased assets are generally subject to regular due diligence in the form of random sample tests.

Re-securitization exposures are monitored in much the same way as other asset classes. Expected losses on these exposures are modeled using portfolio models from rating agencies that particularly factor in the range of ratings in the securitized portfolio and the assumptions made by the agencies with regard to the extent of losses and industry correlations. When modeling the expected losses, DZ HYP looks through the securitized portfolio.

The economic stress tests encompass both the credit risk and the spread risk arising from the Bank sector's entire securitization exposure.

7.2.1 Managing credit risk arising from securitizations

Credit risk in connection with securitizations in the banking book arises primarily from investments in securitizations and the provision of liquidity facilities for ABCP and senior exposures in the asset purchase program.

The liquidity facilities provided as part of the ABCP programs and senior exposures in the asset purchase program are managed in the banking book. The resulting risk largely depends on the quality of the asset pool.

In the context of the portfolio as a whole, the re-securitization exposures and related risks are of minor significance. Re-securitizations are structures in which the securitized exposure in turn comprises one or more other securitization exposures.

7.2.2 Managing market risk arising from securitizations

For the purposes of internal management, market risk associated with securitizations (for example, interest-rate risk, spread risk, or currency risk) is included in DZ BANK and DZ HYP's internal market risk models, regardless of whether the securitizations are posted in the banking book or the trading book. The regulatory capital requirement for general price risk is also calculated for securitizations in DZ BANK's trading book using the internal model.

At DZ BANK, the risk exposure arising from securitizations in the banking book and the trading book forms an integral part of the daily market risk report and is reflected in the values used for the weekly stress scenario calculations for market risk.

In the case of securitizations, extreme scenarios are also simulated for the weighted average lifetime and recovery assumptions. DZ HYP holds all securitizations in its banking book. They are included in the daily measurement of market risk and in reporting.

7.2.3 Managing other risk arising from securitizations

In addition to credit risk and market risk, the securitization activities of the DZ BANK banking group also give rise to liquidity risk and operational risk. These risks form an integral part of the group's standard risk management system. Disclosures related to these risks have been included in the relevant sections of the opportunity and risk report, as follows:

- Liquidity risk management:
  section 2.2.2 (page 63) and section 6.3.1 (pages 92 to 93) in the opportunity and risk report
- Operational risk management:
  section 14 (pages 131 to 138) in the opportunity and risk report.

7.2.4 Risk mitigation

In ABCP programs managed exclusively in the banking book, the risk arising from some of the purchased asset portfolios is covered by credit insurance in addition to the discount on the purchase price already referred to above.

As the DZ BANK banking group has no securitization exposures where it acts as originator, which means no hedging operations are necessary, this risk report does not contain any disclosures pursuant to article 449 letter g CRR.

7.3 Accounting policies applied to securitizations

7.3.1 Recognition methods

(ARTICLE 449 SENTENCE 1 LETTER J (I), (III), (IV), AND (VI) CRR)

The accounting treatment of securitizations does not distinguish between the regulatory categories of banking book and trading book. As required by IFRS 9, the DZ BANK banking group's investor exposures are either held in the 'hold to collect' or 'hold to collect and sell' business models or held in the trading book. In general, the holding of debt instruments results in measurement at amortized cost (AC), whereas in the 'hold to collect and sell' business model it leads to measurement at fair value through other comprehensive income (FVOCI). Exercise of the fair value option and assignment to the trading book both result in measurement at fair value through profit or loss (FVTPL).

Drawn liquidity facilities are recognized as loans and advances to customers and measured at amortized cost. Purchased commercial customer assets are recognized as loans and advances to customers and measured at amortized cost. Redemptions and loss allocations during the term to maturity are recognized in accordance with the agreed division into tranches. Undrawn liquidity facilities and loan guarantees are not recognized on the balance sheet; if they give rise to any imminent risks, loss allowances are determined in accordance with IFRS 9 and recognized as provisions in the amount of the expected loss in accordance with IAS 37. Derivative instruments such as swaps that are used to hedge interest-rate or currency risks are assigned to the trading book in accordance with IFRS 9 and measured at fair value.

The special-purpose entities involved in the ABCP programs are unconsolidated structured entities. According to IFRS 10, an investor controls an entity and must consolidate the entity if the investor directs relevant activities, is exposed to variable returns from its involvement, and has the ability to affect those returns through its power over the investee. As at December 31, 2019, the DZ BANK banking group did not exercise control as defined in IFRS 10 over the special-purpose entities involved in the ABCP programs.

Legal asset sales – which are known as true-sale securitizations – are derecognized from the balance sheet to the extent that the opportunities and risks arising from the asset portfolio have been transferred to the buyer. There are currently no true-sale securitizations that have been originated by an entity in the DZ BANK banking group. Consequently, no gains on sale are recognized.

There are no liabilities arising from obligations to support securitized assets.

7.3.2 Measurement methods

(ARTICLE 449 SENTENCE 1 LETTER J (II) AND (V) CRR)

In 2019, political and economic uncertainties affected conditions in the European securitization market throughout the year. However, the slump in the volume of ABSs issued in the primary market in the first quarter was related to the introduction of the new Regulation (EU) No. 2017/2402 and was attributable to the resulting start-up delays, which had been anticipated. According to our preliminary figures, the entire volume issued in 2019 amounted to around €224 billion, down by approximately 13 percent year on year. The backlog that arose in the first quarter in connection with establishment of the STS segment, a new standard created in Regulation (EU) No. 2017/2402 for securitizations that meet certain quality criteria, was therefore not fully eliminated despite a rapid catch-up toward the end of the year. In the secondary market, ABS spreads narrowed considerably on average over the course of the year. This was the case in all asset classes except UK non-conforming residential mortgage-backed securities (RMBSs). Overall, this narrowing of spreads was concentrated in the first half of the year, which saw a contraction of around 12 basis points, compared with 4 basis points in the second half of the year. September's announcement that the ECB would be relaunching its ABS purchase program (ABSPP) on November 1, 2019 with a monthly volume of €20 billion primarily benefited the asset classes that were eligible for the program, which saw their spreads narrow in the fourth quarter. The program is to continue for as long as is necessary to strengthen the accommodative effect of interest-rate policy. The collateral performance of European securitizations was impeccable in 2019 thanks to (even) more stable and, in some cases, favorable conditions in the different EU member states. Unemployment was at a low level in most EU countries and either held steady or fell further; interest rates have fallen to historic lows, thereby providing significant relief for borrowers. Above-average collateral performance in recent years has created a certain credit rating buffer that, to some degree, will mitigate against the immediate downgrading of securitization credit ratings in the event of an economic slowdown.

Securitizations are measured on the basis of externally available market data. The validity of the measurement method used can be verified by regular comparison with the external market prices offered by other market participants. This ensures that an appropriate measurement method based on level 2 input data in the fair value hierarchy is used to determine the fair value of securitizations. Cash CDOs are measured on the basis of credit spreads, which are derived from the underlying assets using a copula model. These assets largely comprise corporate loans.

There are currently no exposures at DZ BANK for which securitization is planned. The valuation methods used for this purpose are therefore not presented in this report.

7.4 Regulatory treatment of securitizations

7.4.1 Procedure for determining risk-weighted exposures

(ARTICLE 449 SENTENCE 1 LETTER H CRR)

Regulation (EU) No. 2017/2401 of the European Parliament and of the Council dated December 12, 2017 amending Regulation (EU) No. 575/2013 on prudential requirements for credit institutions and investment firms – the new securitization framework – has been in force since January 1, 2019. The main component of this regulation is the complete overhaul of Part 3 Title II Chapter 5 (articles 242 to 270) CRR. Transitional guidance applied for the duration of the reporting period that specified that

– the 'legacy portfolio' of securitization exposures held before January 1, 2019 continues to be subject to the previous CRR rules; references to articles in this context are identified in this section as 'CRR old' (short for 'old version of the CRR'), and
– 'new business' involving securitization exposures entered into on or after January 1, 2019 is subject to the new rules of Regulation (EU) No. 2017/2401; references to articles in this context are identified in this section as 'CRR (Regulation (EU) No. 2017/2401)'.

DZ BANK exercised the option pursuant to article 254 (3) CRR (Regulation (EU) No. 2017/2401) for 2019. This means that, for 2019, the Securitization External Ratings-based Approach (SEC-ERBA) – instead of the Securitization Standardized Approach (SEC-SA) – was used to calculate the risk-weighted exposures for all rated exposures and for all exposures for which a derived rating may be used. DZ BANK informed the ECB that it would stop exercising this option with effect from January 1, 2020 and would instead use the hierarchy of methods pursuant to article 254 (1) and (2) CRR (Regulation (EU) No. 2017/2401). Because DZ BANK does not apply the Securitization Internal Ratings-based Approach (SEC-IRBA) pursuant to article 258 CRR (Regulation (EU) No. 2017/2401), this hierarchy of methods specifies that first the SEC-SA must be applied, then the SEC-ERBA (or the Internal Assessment Approach pursuant to article 265 CRR (Regulation (EU) No.

2017/2401) for unrated exposures in ABCP programs), and finally the deduction from common equity Tier 1 capital must be made.

For ABCP programs whose transactions are deemed part of the legacy portfolio and for which no external credit ratings exist, the Internal Assessment Approach (IAA) pursuant to article 259 CRR old, which has been tested and approved by the supervisory authority, was used to determine the risk-weighted exposures for securitization exposures in connection with sponsor activities. To a lesser extent, the Standardized Approach to credit risk as specified in articles 251 to 258 CRR old and the IRB approach specified in article 261 CRR old were also used to determine the capital requirement for exposures forming part of the group's activities as a sponsor. Corresponding transactions deemed to be new business were subject to the IAA as specified in article 265 et seq. CRR (Regulation (EU) No. 2017/2401) or – to a lesser extent – the new standardized approaches SEC-SA pursuant to article 261 CRR (Regulation (EU) No. 2017/2401) or SEC-ERBA pursuant to article 263 CRR (Regulation (EU) No. 2017/2401). Transactions that did not meet the conditions for the aforementioned measurement approaches were deducted from common equity Tier 1 capital.

Most of the investor-related exposures in the banking book that are part of the legacy portfolio were subject to the Standardized Approach to credit risk in accordance with articles 251 to 258 CRR old, in particular the look-through approach as specified in article 253 within the context of the Standardized Approach to credit risk. To a lesser extent, the IRB approach in accordance with article 261 CRR old was also used. As a result of exercising the aforementioned option, corresponding new business was subject in the first instance to SEC-ERBA, after which SEC-SA was applied, or a deduction was made from common equity Tier 1 capital in the reporting period.

Pursuant to article 337 (1) CRR (Regulation (EU) No. 2017/2401), it is a requirement to use the aforementioned regulatory standardized approaches to assess the specific risk of investor-related securitization positions held in the trading book.

A modified Standardized Approach is available for the correlation trading portfolio (CTP) in addition to the Standardized Approach for calculating market risk exposures (recognition of net exposure). For regulatory purposes, only securitizations and nth-to-default credit derivatives must be allocated to the CTP. Under the modified Standardized Approach, the capital requirement for the CTP is always calculated on the basis of the higher of the eligible amounts for long positions or short positions. However, only nth-to-default credit derivatives are currently allocated to the CTP.

7.4.2 External ratings

(ARTICLE 449 SENTENCE 1 LETTER K CRR)

During its securitization activities, the DZ BANK banking group uses the classifications prescribed by the rating agencies Standard & Poor's, Moody's, and Fitch for rating the regulatory asset classes listed below. DZ BANK also uses the classifications prescribed by DBRS.

- Receivables from residential real estate loans Lease receivables originated or purchased (retail and commercial)
- Other receivables from retail loans
- Receivables from loans on wholly or partially commercial real estate
- Other receivables from corporates, e.g. from corporate loans.

External credit ratings awarded by these recognized rating agencies are applied to the securitization exposures of the DZ BANK banking group in accordance with the requirements of article 251 et seq. CRR old (under the Standardized Approach to credit risk) and article 259 CRR old (under the IRB approach). Competing external ratings are included in the calculation of risk-weighted exposures in accordance with article 269 CRR old. Section 8.6.1 (pages 104 to 105) and section 8.6.2, figure 23 (page 106) of the opportunity and risk report show a reconciliation of external and internal ratings and Fig. 73 below shows a reconciliation of external and internal ratings for ABSs.

FIG. 73 – RECONCILIATION OF EXTERNAL AND INTERNAL ABS RATINGS[1]

	Asset class				
External rating	**ABSs**	**US RMBSs**	**RoW RMBSs**	**CMBSs and CLOs**	**CDOs excl. CLOs**
AAA	1A	3B	1C	1C	3B
AA+	1A	3C	1E	1E	3B
AA	1B	3C	2B	2A	3C
AA-	1C	3D	2B	2A	3C
A+	1E	3D	2B	2A	3D
A	2A	3E	2C	2B	3D
A-	2C	3E	2C	2C	3E
BBB+	2D	4A	2C	2D	3E
BBB+	2E	4A	2D	2E	4A
BBB-	3A	4B	3A	3A	4A
BB+	3B	4B	3B	3B	4B
BB	3C	4C	3D	3C	4B
BB-	3E	4C	4A	3D	4C
B+	4A	4D	4B	3E	4C
B	4B	4E	4C	4A	4C
B-	4C	4E	4D	4C	4D
CCC+ or lower	4E	4E	4E	4E	4E

[1] The internal credit ratings of the exposures in DZ BANK's internal ABS portfolio are mostly reconciled using this credit rating reconciliation table. As an updated reconciliation table went live on December 19, 2019, with a transitional period that ended on March 31, 2020, it was possible to reconcile the internal credit ratings of some exposures using the new reconciliation table as at December 31, 2019.

7.4.3 Internal ratings

(ARTICLE 449 SENTENCE 1 LETTER L CRR)

The IAA (in accordance with article 259 CRR old for the legacy portfolio and article 265 CRR (Regulation (EU) No. 2017/2401) for new business), which has been tested and approved by the supervisory authority, is used to determine ratings for liquidity facilities provided for ABCP programs if such facilities have not been rated by external agencies. This arrangement relates solely to the banking book because the entities in the DZ BANK banking group do not have any such exposures in the trading book.

When used to assess risk in accordance with regulatory requirements, the IAA closely follows the models used by external rating agencies. Depending on the assets securitized in an ABCP transaction, one of a number of submodels within the IAA may be used to ensure that the measurement is appropriate to the risk. Lease receivables, trade receivables, and other items are securitized. In compliance with article 259 CRR old and article 265 CRR (Regulation (EU) No. 2017/2401), the stress factors used to measure the relevant cushions against potential loss and the resulting rating categories are at least as conservative as those used by external rating agencies. The stress factors used for determining internal ratings are used in a similar way by the rating agencies in their procedures. In addition, the IAA is used for portfolios of individually assessed loans and advances. Likewise, the resulting credit ratings in this case are no less conservative than would be expected from the use of credit portfolio models by external rating agencies. Besides being used for determining capital requirements, the IAA is also used for the purposes of internal risk management and pricing in the lending business.
The IAA is comprehensively validated each year. The employees responsible for this task receive extensive training and are familiar with current developments relating to the area of securitization. Suitable organizational structures are in place to ensure that front office, back office, model development, and model validation are segregated. Credit procedures and rating models are also subject to regular review by both internal and external auditors.

7.5 Securitization exposure and capital requirements

7.5.1 Total amount of asset securitizations

(ARTICLE 449 SENTENCE 1 LETTERS M, N (I), AND Q CRR)

There are no longer any activities with the DZ BANK banking group as originator. Furthermore, there were no true-sale securitizations in the banking book, neither were there any securitizations of assets associated with market risk exposures in the trading book. Fig. 74 therefore shows the total amount of sponsorship activities. If granted lines are drawn, exposures to the CORAL and AUTOBAHN special-purpose entities arise.

The year-on-year change in sponsor exposures was largely due to new transactions and the expansion of exposures.

FIG. 74 – TOTAL AMOUNT OF SECURITIZATIONS WITH DZ BANK BANKING GROUP AS ORIGINATOR AND SPONSOR

	Securitizations in the banking book	
€ million	Sponsor	
Exposure class	**Dec. 31, 2019**	**Dec. 31, 2018**
Liquidity facilities[1]	5,785	3,693
Derivatives (e.g. for hedging purposes)	56	70
Total	**5,841**	**3,764**

1 Total amount, with no distinction between loan facility and drawdown.

7.5.2 Impaired securitizations, Securitised loans past due, and losses realized during the reporting period

(ARTICLE 449 SENTENCE 1 LETTERS P AND M CRR)

As there are no longer any activities with the DZ BANK banking group as originator, no disclosures on the portions of the group's own asset securitizations that are past due or at risk of default are provided, nor are the losses on such exposures realized during the reporting year presented.

7.5.3 Securitizations during the reporting period

(ARTICLE 449 SENTENCE 1 LETTERS N (VI), M, AND R CRR)

No assets were effectively securitized with the DZ BANK banking group as originator during 2019. There are still no securitization structures with an early amortization approach.

In the reporting period, the DZ BANK banking group did not provide any implicit support within the meaning of article 248 CRR.

7.5.4 Retained, purchased or off-balance-sheet securitization exposures

(ARTICLE 449 SENTENCE 1 LETTERS N (II) AND M CRR)

Fig. 75 shows the securitization exposures retained, purchased, or held off balance sheet by the entities in the DZ BANK banking group in their capacity as sponsor or investor, broken down by the type of securitization. Securitization exposure is recognized at its risk-weighted carrying amount. The underlying receivables are classified according to the categories used for internal management purposes.

FIG. 75 – RETAINED, PURCHASED OR OFF-BALANCE-SHEET SECURITIZATION EXPOSURES

€ million **Securitization exposure**	**Banking book**				**Trading book**		**Total**	
	Standardized Approach to credit risk		**IRB approach**					
Exposure reported on the balance sheet	**Dec. 31, 2019**	Dec. 31, 2018	**Dec. 31, 2019**	Dec. 31, 2018	**Dec. 31, 2019**	Dec. 31, 2018	**Dec. 31, 2019**	Dec. 31, 2018
Receivables from residential real estate loans	1,275	1,488	-	-	179	159	1,454	1,647
Receivables from other retail loans	12	16	-	-	30	6	42	22
Receivables from loans on wholly or partially commercial real estate	-	-	42	64	-	-	42	64
Receivables from corporate loans	-	-	5	6	123	139	128	145
Lease receivables originated or purchased	27	46	315	139	69	41	411	226
Receivables from vehicle finance (excluding leases)	488	376	-	-	94	133	583	509
Receivables from CDOs and ABSs	-	-	6	7	-	-	6	7
Re-securitizations	-	-	0	0	-	-	0	0
Other exposure reported on the balance sheet	-	-	-	-	-	-	-	-
Receivables from special-purpose entities and other credit enhancements reported on the balance sheet	280	115	1,490	1,430	-	-	1,771	1,545
Total exposure reported on the balance sheet	**2,082**	**2,040**	**1,859**	**1,646**	**496**	**479**	**4,436**	**4,165**
Exposure not reported on the balance sheet								
Liquidity facilities	71	160	2,586	2,075	-	-	2,657	2,236
Derivatives (e.g. for hedging purposes)	29	38	26	35	-	-	56	73
Exposure specific to synthetic transactions	-	-	-	-	-	-	-	-
Re-securitizations	-	-	-	-	-	-	-	-
Other exposure not reported on the balance sheet	-	-	-	125	2	2	2	127
Total exposure not reported on the balance sheet	**100**	**198**	**2,612**	**2,235**	**2**	**2**	**2,715**	**2,435**
Sum total	**2,182**	**2,238**	**4,471**	**3,881**	**498**	**481**	**7,151**	**6,600**

7.5.5 Exposures values and capital requirements for retained or purchased securitizations broken down by the approach used to calculate the capital requirement

(ARTICLE 449 SENTENCE 1 LETTERS O (I) AND M AND ARTICLE 444 LETTER E CRR)

Fig. 76 shows the securitization exposures and the respective capital requirements for the banking book and the trading book. This includes a breakdown by the approach used to calculate the capital requirement and by the risk-weight band for regulatory purposes.

The increase in the securitization exposures consisted of two opposing effects. New business in the ABCP programs caused the level of securitization exposures to rise compared with December 31, 2018. This was partly offset by redemptions and sales, primarily in the portfolio of DZ HYP. The new business resulted in a higher capital requirement.

FIG. 76 – EXPOSURES AND CAPITAL REQUIREMENTS FOR RETAINED OR PURCHASED SECURITIZATIONS

	Banking book											
€ million	Securitizations				Re-securitizations				Total			
Regulatory approach	Exposures		Capital requirement		Exposures		Capital requirement		Exposures		Capital requirement	
Risk-weight band	Dec. 31, 2019	Dec. 31, 2018	Dec. 31, 2019	Dec. 31, 2018	Dec. 31, 2019	Dec. 31, 2018	Dec. 31, 2019	Dec. 31, 2018	Dec. 31, 2019	Dec. 31, 2018	Dec. 31, 2019	Dec. 31, 2018
Standardized Approach	1,427	1,929	12	52	-	0	-	0	1,427	1,929	12	52
20%	1,001	1,224	2	20	-	-	-	-	1,001	1,224	2	20
40%	-	-	-	-	-	-	-	-	-	-	-	-
50%	361	428	4	17	-	-	-	-	361	428	4	17
100%	55	108	3	9	-	0	-	0	55	108	3	9
225%	-	-	-	-	-	-	-	-	-	-	-	-
350%	10	23	3	6	-	-	-	-	10	23	3	6
650%	-	-	-	-	-	-	-	-	-	-	-	-
1,250%	-	146	-	-	-	-	-	-	-	146	-	-
Standardized Approach, look-through	305	149	8	9	-	-	-	-	305	149	8	9
Rating-based approach	716	870	13	28	-	0	-	0	716	870	13	28
≤ 10%	251	182	-	1	-	-	-	-	251	182	-	1
> 10% ≤ 20%	113	36	-	-	-	-	-	-	113	36	-	0
> 20% ≤ 50%	349	358	12	12	-	2	-	0	349	358	12	12
> 50% ≤ 100%	0	116	-	9	-	-	-	-	-	116	-	9
> 100% ≤ 250%	3	0	1	0	-	-	-	-	3	0	1	0
> 250% ≤ 650%	0	16	-	6	-	-	-	-	-	16	-	0
> 650% ≤ 1,250%	0	161	-	-	-	0	-	0	-	161	-	106
Supervisory Formula Method	0	-	-	-	-	-	-	-	-	-	-	-
Internal Assessment Approach	4,516	3,010	160	106	-	-	-	-	4,516	3,010	160	106
SEC-SA	0	-	-	-	-	-	-	-	-	-	-	-
SEC-ERBA	350	-	1	-	-	-	-	-	350	-	1	-
Capital deduction	227	-	-	-	-	-	-	-	227	-	-	-
Total	7,541	5,959	194	195	0	0	0	0	7,541	5,959	194	195

	Trading book															
€ million	Securitizations				Re-securitizations				Total				Total amount			
Regulatory approach	Exposures		Capital requirement		Exposures		Capital requirement		Exposures		Capital requirement		Exposures		Capital requirement	
Risk-weight band	Dec. 31, 2019	Dec. 31, 2018	Dec. 31, 2019	Dec. 31, 2018	Dec. 31, 2019	Dec. 31, 2018	Dec. 31, 2019	Dec. 31, 2018	Dec. 31, 2019	Dec. 31, 2018	Dec. 31, 2019	Dec. 31, 2018	Dec. 31, 2019	Dec. 31, 2018	Dec. 31, 2019	Dec. 31, 2018
Standardized Approach	226	311	0	5	-	-	-	-	226	311	0	5	1,653	2,240	12	57
20%	218	299	0	5	-	-	-	-	218	299	0	5	1,219	1,523	2	24
40%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50%	1	13	0	1	-	-	-	-	1	13	0	0	362	441	4	18
100%	7	-	0	-	-	-	-	-	7	-	0	-	62	108	3	9
225%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
350%	-	-	-	-	-	-	-	-	-	-	-	-	10	23	3	6
650%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,250%	-	-	-	-	-	-	-	-	-	-	-	-	-	146	-	-
Standardized Approach, look-through	-	-	-	-	-	-	-	-	-	-	-	-	305	149	8	9
Rating-based approach	89	170	-	2	-	4	-	0	89	170	0	2	805	1,040	13	31
≤ 10%	72	127	-	1	-	-	-	-	72	127	0	1	323	309	0	2
> 10% ≤ 20%	17	30	-	0	-	-	-	-	17	30	0	0	130	66	0	1
> 20% ≤ 50%	-	-	-	0	-	4	-	0	-	-	-	-	349	358	12	12
> 50% ≤ 100%	-	13	-	1	-	-	-	-	0	13	0	1	0	129	0	10
> 100% ≤ 250%	-	-	-	-	-	-	-	-	-	-	-	-	3	0	1	0

€ million	Trading book															
	Securitizations				Re-securitizations				Total				Total amount			
Regulatory approach	Exposures		Capital requirement		Exposures		Capital requirement		Exposures		Capital requirement		Exposures		Capital requirement	
Risk-weight band	Dec. 31, 2019	Dec. 31, 2018	Dec. 31, 2019	Dec. 31, 2018	Dec. 31, 2019	Dec. 31, 2018	Dec. 31, 2019	Dec. 31, 2018	Dec. 31, 2019	Dec. 31, 2018	Dec. 31, 2019	Dec. 31, 2018	Dec. 31, 2019	Dec. 31, 2018	Dec. 31, 2019	Dec. 31, 2018
> 250% ≤ 650%	-	-	-	-	-	-	-	-	-	-	-	-	-	16	-	6
> 650% ≤ 1,250%	-	-	-	-	-	-	-	-	-	-	-	-	-	161	-	-
Supervisory Formula Method	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Internal Assessment Approach	-	-	-	-	-	-	-	-	-	-	-	-	4516	3,010	160	106
SEC-SA	30	-	3	-	-	-	-		30	-	3	-	30	-	3	-
SEC-ERBA	182	-	-	-	-	-	-		182	-	0	-	532	-	1	-
Capital deduction	-	-	-	-	-	-	-	-	-	-	-	-	227	-	-	-
Total	**527**	**481**	**3**	**7**	**0**	**0**	**0**	**0**	**527**	**481**	**3**	**7**	**8,068**	**6,440**	**197**	**202**

Disclosure of the quantitative information about using the Securitization Standardized Approach is in line with article 444 letter e CRR.

7.5.6 Securitization exposures and deductions from own funds

(ARTICLE 449 SENTENCE 1 LETTERS N (V) AND M CRR)

Fig. 77 shows the securitization exposures to be deducted from own funds in accordance with article 36 (1) letter k (ii) CRR or to be attributed with a securitization risk weight of 1,250 percent in determining regulatory own funds. The figures shown are the exposure value. Market risk exposures in the trading book are factored into the table as net interest-rate exposures.

The securitization exposures with a risk weight of 1,250 percent rose compared with December 31, 2018 due to exchange-rate fluctuations and portfolio changes.

FIG. 77 – DEDUCTIONS FROM OWN FUNDS AND SECURITIZATION EXPOSURES WITH A RISK WEIGHT OF 1,250 PERCENT BY ASSET CLASS

€ million Asset class	Banking book		Trading book		Total	
	Dec. 31, 2019	Dec. 31, 2018	Dec. 31, 2019	Dec. 31, 2018	Dec. 31, 2019	Dec. 31, 2018
Exposure reported on the balance sheet						
Receivables from home loans	122	145	-	-	122	145
Receivables from loans on wholly or partially commercial real estate	2	20	-	-	2	20
Receivables from corporate loans	-	-	-	-	-	-
Lease receivables originated or purchased	-	-	-	-	-	-
Receivables from vehicle finance (excluding leases)	-	-	-	-	-	-
Receivables from CDOs and ABSs	-	-	-	-	-	-
Re-securitizations	0	0	-	-	0	0
Other exposure reported on the balance sheet		-	-	-		-
Receivables from special-purpose entities and other credit enhancements reported on the balance sheet	45	84	-	-	45	84
Total exposure reported on the balance sheet	**169**	**249**	**-**	**-**	**169**	**249**
Exposure not reported on the balance sheet						
Liquidity facilities	58	58	-	-	58	58
Derivatives (e.g. for hedging purposes)	-	-	-	-	-	-
Exposure specific to synthetic transactions	-	-	-	-	-	-
Re-securitizations	-	-	-	-	-	-
Other exposure not reported on the balance sheet	-	-	-	-	-	-
Total exposure not reported on the balance sheet	**58**	**58**	**-**	**-**	**58**	**58**
Sum total	**227**	**307**	**-**	**-**	**227**	**307**

7.5.7 Re-securitization exposures and collateralization amounts

(ARTICLE 449 SENTENCE 1 LETTERS O (II) AND M CRR)

Fig. 78 discloses the retained or purchased re-securitization exposures before and after offsetting of any collateralization or insurance, together with the extent of collateral provided by guarantors, broken down by guarantor credit rating. Again, the figures shown are the exposure values. Market risk exposures in the trading book are factored into the table as net interest-rate exposures.

The level of re-securitizations did not increase compared with December 31, 2018.

FIG. 78 – RE-SECURITIZATION EXPOSURES AND COLLATERALIZATION AMOUNTS

	Banking book		Trading book		Total	
€ million	**Dec. 31, 2019**	Dec. 31, 2018	**Dec. 31, 2019**	Dec. 31, 2018	**Dec. 31, 2019**	Dec. 31, 2018
Re-securitizations before collateralization	**0**	0	**-**	-	**0**	-
Collateralized by guarantee	**-**	-	**-**	-	**-**	-
of which: guarantor rated AAA to A	**-**	-	**-**	-	**-**	-
Guarantor rated below A	**-**	-	**-**	-	**-**	-
Other collateral	**-**	-	**-**	-	**-**	-
Re-securitizations after collateralization	**0**	0	**-**	-	**0**	-

7.5.8 Planned securitizations

(ARTICLE 449 SENTENCE 1 LETTER N (III) CRR)

As at December 31, 2019, there were no plans for any securitizations.

8 Market risk

Market risk is defined in section 2.4, figure 5 (page 66 et seq.) of the opportunity and risk report.

8.1 Market risk management

(ARTICLE 435 (1) CRR)

The principles and objectives of market risk management and the methods used to manage risk are presented in sections 10.1, 10.2, 10.5, and 10.6 (pages 123 to 127) of the opportunity and risk report. The structure and organization of the market risk management function are described in section 10.4 (page 124) of the opportunity and risk report. Information on the scope and nature of the market risk measurement systems is provided in sections 10.3.2 and 10.5.1 to 10.5.4 (pages 124 to 125) of the opportunity and risk report. Sections 10.5.5 and 10.5.6 (page 125 to 126) of the opportunity and risk report set out the strategies for hedging and mitigating market risk and strategies and processes for monitoring the ongoing effectiveness of the measures taken to hedge market risk.

8.2 Required qualitative disclosures on market risk

(ARTICLE 445 AND ARTICLE 455 CRR IN CONJUNCTION WITH ARTICLE 435 (1) LETTERS A, B, AND D AND ARTICLE 448 CRR)

For regulatory purposes, DZ BANK is classed as a trading book institution. It conducts trading activities as part of its role as the central institution in the cooperative financial network and – on this basis – as a corporate bank for customers outside the cooperative financial network.

In line with the requirements in articles 102 to 104 CRR, DZ BANK has defined clear rules on the delimitation and the running and management of the trading book. The trading book is defined using criteria relating to the intention to trade and generate returns, maturities, tradability, the ability to mitigate risk, and the characteristics of the financial instruments. A clear decision-making path for the assignment of an exposure to either the trading book or the banking book is also mandatory.

When a transaction is entered into, its purpose must be documented in a verifiable manner by recognizing it in a specific portfolio – trading book or banking book – so that it is clearly assigned. Compliance with the assignment rules is regularly monitored within a defined process. The assignment to the trading book or banking book can only be changed subsequently in accordance with defined rules as part of a reallocation process.

The handling of risk in the trading book is documented in DZ BANK's trading strategy. The rules for running and managing the trading book, the definition of the trading book, and the trading strategy are reviewed and, if necessary, updated at least once a year.

DZ BANK generally manages market risk on a decentralized, portfolio basis. The traders responsible for managing a portfolio bear responsibility for its risk and performance.

Exposures in the trading book are, where available, measured daily using liquid market prices available in active markets (mark-to-market). These exposures are mainly liquid securities (bonds and equities) and exchange-traded derivatives. If there are no liquid market prices available, the exposures are measured with market-standard valuation models using predominantly observable market data (mark-to-model). Calibration of the valuation models on the basis of observable market data ensures that measurement reflects the market. The extent of unobservable market parameters that influence value is always kept as small as possible in the measurement. Generally, unobservable market parameters are derived from similar instruments or data that is not observable on a daily basis. As a rule, they are included in the calculation of gains and losses with an adjustment to the instrument's measurement that is appropriate to the degree of imprecision in the measurement. A description of the valuation methods and measurement adjustments can be found in the notes to the financial statements in DZ BANK's Annual Report, part E 'Financial instruments and fair value disclosures' in the 'Fair value measurements within Levels 2 and 3' section.

Pursuant to articles 34 and 105 CRR and Delegated Regulation (EU) No. 2016/101, DZ BANK calculates regulatory write-downs for all exposures recognized at fair value in accordance with the core approach and deducts them from common equity Tier 1 capital. Measurement is based on the methods and models used to measure fair value under commercial law; measurement uncertainties relating to market prices, market parameters, and model selection are reflected by taking the 90 percent quantile into account. Additional write-downs for operational risk, future administrative expenses, and exposure concentrations are recognized in accordance with the prescribed methodology and deducted from Tier 1 capital.

8.3 Market risk under the Standardized Approach

(ARTICLE 445 CRR)

Fig. 79 contains the disclosures on the capital requirements for market risk according to article 92 (3) letters b and c CRR under the Standardized Approach. The capital requirement for specific interest-rate risk relating to securitization exposures pursuant to article 445 sentence 2 CRR is also disclosed here. As at December 31, 2019, the proportion of market risk-weighted assets subject to the Standardized Approach was 25.48 percent (June 30, 2019: 27.57 percent).

FIG. 79 – EU MR1 – MARKET RISK UNDER THE STANDARDIZED APPROACH

		Dec. 31, 2019		Jun. 30, 2019	
		a	b	a	b
€ million		RWAs	Capital requirements	RWAs	Capital requirements
	Outright products				
1	Interest-rate risk (general and specific)	6	0	31	3
2	Equity risk (general and specific)	-	-	0	0
3	Currency risk	1,590	127	1,753	140
4	Commodity risk	15	1	15	1
5	**Options**			-	-
6	Simplified approach	0	0	0	0
7	Delta-plus method	-	-	-	-
8	Scenario approach	-	-	-	-
9	**Securitization (specific risk)**	60	5	36	3
10	Total	1,672	134	1,835	147

Market risk under the Standardized Approach was €163 million lower than at June 30, 2019. This decrease was the result of fluctuation that was within the normal range. The dominant risk categories are currency risk and interest-rate risk.

8.4 Internal market risk model

8.4.1 Qualitative information on the internal market risk model

(ARTICLE 455 SENTENCE 1 LETTERS A (I) AND B CRR)

The model approved by BaFin for calculating the regulatory capital requirements for general and specific market risk pursuant to the CRR is used for all portfolios of DZ BANK.

DZ BANK's internal model approved by BaFin for calculating the regulatory capital requirements for general and specific market risk pursuant to the CRR is used to calculate **value-at-risk** and **stressed value-at-risk** (crisis risk amount) on a daily basis with a unilateral confidence level of 99.00 percent over a one-year observation period and a holding period of 10 trading days. A historical simulation is used to generate market data scenarios.

Description of the crisis scenarios used, pursuant to article 455 sentence 1 letter a (iii) CRR

Risks arising from extreme market situations are primarily recorded using **stress tests**. The crisis scenarios underlying the stress tests for market risk and market liquidity risk include the simulation of significant fluctuations in risk factors and serve to highlight potential losses not generally recognized in the value-at-risk approach. Stress tests are based on extreme market fluctuations that have actually occurred in the past together with crisis scenarios that – regardless of market data history – are considered to be relevant. The crisis scenarios used in this case are constantly reviewed and updated to ensure they are appropriate. Reverse stress tests are also used to identify scenarios that could pose a potential threat to the institution.

Qualitative information about stress tests and about which portfolios undergo stress tests pursuant to article 435 sentence 1 letter a CRR

Risks arising from extreme market situations are primarily recorded using stress tests. The crisis scenarios underlying the stress tests for market risk and market liquidity risk include the simulation of significant fluctuations in risk factors and serve to highlight potential losses not generally recognized in the value-at-risk approach. Extreme market fluctuations that have actually occurred in the past as a result of crisis events (e.g. September 11, 2001, Lehman insolvency, Iceland's default) are used for historical stress test scenarios; crisis scenarios are also used in which individual risk factor groups are exposed to strong hypothetical fluctuation, regardless of market data history. All portfolios of DZ BANK are remeasured in full in respect of all scenarios, taking account of any relevant changes in the risk factors. The crisis scenarios used in this case are constantly reviewed and updated to ensure they are appropriate. Reverse stress tests are also used to identify scenarios that could pose a potential threat to the institution. Changes in the risk factors are determined that would generate losses above a previously defined threshold in the event of a DZ BANK portfolio being remeasured in full.

Additional default and migration risk (incremental risk charge)

(ARTICLE 455 SENTENCE 1 LETTER A (II) CRR)

Since December 2011, DZ BANK has been using an internal risk model approved by the supervisory authority to determine the capital requirements related to the additional default and migration risk in the trading book (incremental risk charge, IRC). In this model, sudden market changes arising from rating migrations or default by an issuer are specifically factored into the regulatory risk calculation. Potential losses from migrations and defaults are measured on the basis of a one-sided prediction interval with a confidence level of 99.90 percent and a prediction horizon of one year. A factor-based portfolio model is used. Calculations assume a constant risk position over the prediction horizon.

Measurement undertaken independently of the trading function, and model validation

(ARTICLE 455 SENTENCE 1 LETTERS A (IV) AND G CRR)

Independently of the trading function, exposures are measured daily using current market parameters. To this end, the market data is largely collected by Risk Controlling itself and the **measurement methods and models** are developed largely independently of the trading units and validated entirely independently. An independent price verification process takes place where market parameters are not used independently of the trading function. Any discrepancies identified through comparison with data from external suppliers of market data are recognized as a valuation reserve.

The internal market risk model is subject to continuous operational review as part of standard processes. The review is carried out by market risk control using analyses of the value-at-risk and evaluations of the backtesting and stress test results.

In addition, the internal market risk model is audited regularly by internal audit during annual audits. Refinements to the model are reported monthly to the Board of Managing Directors of DZ BANK.

An enhanced review of the model (appropriateness test) is carried out at least once a year. It includes a comprehensive analysis of time series, parameterization, stress test scenarios, processes, and a review of the time period for calculating the stressed value-at-risk. As part of the annual appropriateness test, statistical tests are carried out on the predictive quality of the value-at-risk model and procedural aspects are taken into account, such as delivery times and the quality of the value-at-risk figure.

Market risk model validation consists of five key components: daily risk analysis, daily backtesting, monthly validation, risk self-assessment, and the annual appropriateness test.

Validation governance stipulates that the results of the daily risk analysis and backtesting are used to compile a monthly validation report, with additional analysis and validation as required, and communicated to the Board of Managing Directors.

The annual appropriateness test also includes an assessment of the processes connected with the preparation of key risk indicators, analysis of the stress tests implemented, statistical tests to check the predictive quality of the risk model, and portfolio-level examination of anomalies (if they have not already been noted in the monthly reports).

The risk self-assessment is carried out once a year, or whenever required, with the aim of creating a standard, structured list of known failings in the market risk model, setting logical validation priorities, and defining and monitoring improvement measures.

Required disclosures on the use of VaR models and sVaR models

(ARTICLE 455 SENTENCE 1 LETTERS A (I), (III), (IV) AND B CRR)

Within the DZ BANK banking group, only DZ BANK has a **market risk model** that has been approved by the supervisory authority. The other entities use the **Standardized Approach**.

Portfolio and market data is updated each trading day. Risk is measured using a historical simulation for a 250-day, equally weighted review period. In the context of risk measurement, financial instruments are mostly remeasured in full.

The **VaR model** used for regulatory purposes is also used for internal management, largely using the same methods and processes. The only differences in the VaR model used for internal management are as follows:

- The holding period used is shorter (1 day, 99 percent quantile).
- All asset classes are taken into account, including in the banking book.
- Separate equity event risk is ignored.
- Differences may arise in relation to add-ons or buffers for risks that are not contained in the model.

Risk factor changes are directly derived from 10-day changes observed in the past.

An integrated view of the general and specific risk factors is taken in the historical scenarios.
Risk factors are generally varied on a relative basis unless it is acceptable to assume negative values. That is why all interest-rate and spread risk factors, in particular, are varied on an absolute basis.

The **sVaR model** uses the same methods and processes as the VaR model. Only the historical market data from the stress period is fed into the sVaR model. The stress period chosen was August 25, 2008 to August 7, 2009 because, in the entire historical period since October 2007, this gives the biggest value for the 99 percent quantile for DZ BANK's current portfolio. The stress period is reviewed in the first quarter of each year using a complete historical simulation from October 2007 to the review date in question.

Required disclosures on the use of an IRC model for determining the capital requirement

(ARTICLE 455 SENTENCE 1 LETTER A (II) (III), AND (IV) CRR)

To determine the additional default and migration risk (IRC), a portfolio model is used in which credit rating changes are determined depending on systematic risk factors and using credit rating transition matrices. The credit rating transition matrices, the factor weightings, and the correlations between the systematic risk factors are derived from detailed data supplied by the major rating agencies on migrations and defaults and using established procedures. A constant risk position up to the prediction horizon of one year is assumed, i.e. no individual liquidity horizon is required. The modeling covers DZ BANK's entire trading book, although securitizations and the CTP are explicitly excluded. The risk measure is the gain and loss distribution of the value-at-risk generated by the model with a confidence level of 99.9 percent.

An extensive program of stress testing is regularly conducted for the model. The stress tests include, but are not limited to, analysis of concentration risk, the correlation parameters, and credit rating transition matrices as well as macroeconomic scenarios and their impact on additional default and migration risk.

An annual appropriateness test is conducted on the model for determining the additional default and migration risk. The main aspects covered by this test are as follows:

- Adequacy of the model design and numerical procedures used
- Influence of single borrower concentrations and systematic risk concentrations
- Appropriateness of the correlation assumptions, the credit rating transition matrices, the LGD rates, and the modeling of recovery risk
- Analysis of the stress tests implemented
- Quality of the processes relating to risk reporting
- Appropriateness of the model documentation and compliance with the regulatory requirements.

Required disclosures on the use of internal models for correlation activities for determining the capital requirement

(ARTICLE 455 SENTENCE 1 LETTER A (II) CRR)

The DZ BANK banking group does not use internal models for correlation activities for determining the capital requirement.

8.4.2 Quantitative information on the internal market risk model

(ARTICLE 455 SENTENCE 1 LETTER E CRR)

The capital requirement for market risk at DZ BANK is determined using the internal market risk model described in section 8.3.1. This is based on a historical simulation with a holding period of 10 trading days and an observation period of one year; the following risk factor classes are examined for all subportfolios of DZ BANK: interest rates, spreads, equities, foreign currencies, and commodities.

Fig. 80 shows the components of the capital requirement under the internal models approach for market risk.

As at the reporting date, the proportion of market risk-weighted assets covered by the internal model was 74.51 percent (June 30, 2019: 72.43 percent). The change in the RWAs compared with June 30, 2019 was €1,857 million. This was mainly due to the increase in the average daily stressed VaR (sVaR) on each of the preceding 60 business days.

FIG. 80 – EU MR2-A – MARKET RISK UNDER THE INTERNAL MODELS APPROACH (IMA)

		Dec. 31, 2019		Jun. 30, 2019	
		a	b	a	b
€ million		RWAs	Capital requirements	RWAs	Capital requirements
1	**VaR (higher of values 1a) and 1b))**	**1,036**	**83**	**782**	**63**
(a)	Previous day's VaR (article 365 (1) CRR (VaR t-1))		16		17
(b)	Average of the daily VaR (article 365 (1) CRR) on each of the preceding 60 business days (VaRavg) x multiplication factor (mc) in accordance with article 366 CRR		83		63
2	**sVaR (higher of values 2a) and 2b))**	**4,428**	**354**	**3,121**	**250**
(a)	Latest SVaR (article 365 (2) CRR (sVaR t-1))		62		58
(b)	Average of the daily sVaR (article 365 (2) CRR) on each of the preceding 60 business days (sVaRavg) x multiplication factor (ms) in accordance with article 366 CRR		354		250
3	**IRC (higher of values a) and b))**	**1,215**	**97**	**918**	**73**

€ million		Dec. 31, 2019 a RWAs	Dec. 31, 2019 b Capital requirements	Jun. 30, 2019 a RWAs	Jun. 30, 2019 b Capital requirements
(a)	Most recent IRC value (additional default and migration risks calculated in accordance with articles 370 and 371 CRR)		97		73
(b)	Average of the IRC number over the preceding 12 weeks		95		66
4	**Internal model for correlation trading activities (higher of values a), b), and c))**	**-**	**-**	-	-
(a)	Most recent risk number for the correlation trading portfolio (article 377 CRR)		-		-
(b)	Average of the risk number for the correlation trading portfolio over the preceding 12 weeks		-		-
(c)	8% of the capital requirements in the Standardized Approach on the most recent risk number for the correlation trading portfolio (article 338 (4) CRR)		-		-
5	**Other**	**-**	**-**	**-**	-
6	**Total**	**6,678**	**534**	**4,821**	**386**

Fig. 81 is a flow statement designed to explain variations in the RWAs for market risk, which are based on internal models (e.g. VaR, sVaR) and have to be determined in accordance with Part 3 Title IV Chapter 5 CRR (IMA).

The €1,259 million increase in the RWAs compared with September 30, 2019 (column f, rows 1 and 8) was largely due to the change in the sVaR (column b) during the period under review. The sVaR rose sharply, particularly in October, and remained at this comparatively heightened level until almost the end of 2019. This increase was predominantly due to changes to the exposures.

FIG. 81 – EU MR2-B – RWA FLOW STATEMENTS OF MARKET RISK EXPOSURES UNDER THE IMA

€ million		a VaR	b sVaR	c IRC	d Internal model for correlation trading activities	e Other	f Total risk-weighted assets (RWAs)	g Total capital requirements
1	**Total RWAs as at the end of the previous quarter**	1,003	3,358	1,058	0	0	5,419	434
1(a)	Regulatory adjustment	-710	-2,568	0	0	0	-3,278	-262
1(b)	RWAs as at the end of the previous quarter (end of the day)	293	791	1,058	0	0	2,142	171
2	**Movement in risk levels**	-97	-29	157	0	0	31	2
3	Model updates/ changes	0	0	0	0	0	0	0
4	Methodology and policy	0	0	0	0	0	0	0
5	**Acquisitions and disposals**	0	0	0	0	0	0	0
6	Foreign exchange movements	0	11	0	0	0	11	1
7	Other	0	0	0	0	0	0	0
8(a)	RWAs as at the end of the reporting period (end of the day)	196	772	1,215	0	0	2,184	175
8(b)	Regulatory adjustment	839	3,655	0	0	0	4,494	360
8	**Total RWAs as at the end of the reporting period**	**1,036**	**4,428**	**1,215**	**0**	**0**	**6,678**	**534**

Further quantitative disclosures

(ARTICLE 455 SENTENCE 1 LETTERS D, G, AND F CRR)

The value-at-risk for portfolios in the trading book, for which the capital requirement is determined using the internal modeling approach in accordance with section 363 et seq. CRR, and the potential stressed value-at-risk are disclosed in Fig. 82. It therefore shows the change in the market risk figures for the trading book portfolios.

This table also shows the extent of the additional default and migration risk measured in relation to the total trading book and in relation to the relevant subportfolios as specified in articles 372 to 376 CRR. As was the case as at June 30, 2019, this calculation is based on the assumption of a constant exposure over a risk horizon of one year. This disclosure is pursuant to article 455 sentence 1 letter f CRR.

FIG. 82 – EU MR3 – IMA VALUES FOR TRADING PORTFOLIOS

		Dec. 31, 2019	Jun. 30, 2019
€ million		a	a
VaR (10 days, 99%)			
1	Maximum value	19	17
2	Average value	13	10
3	Minimum value	6	6
4	Period end	9	11
sVaR (10 days, 99%)			
1	Maximum value	113	113
2	Average value	58	57
3	Minimum value	27	27
4	Period end	45	52
IRC (99%)			
1	Maximum value	114	82
2	Average value	74	64
3	Minimum value	50	50
4	Period end	97	73
Internal model for correlation trading activities			
1	Maximum value	-	-
2	Average value	-	-
3	Minimum value	-	-
4	Period end	-	-

The value-at-risk (10 days, 99 percent) increased from €17 million to €19 million over the second half of the year. The stressed value-at-risk (10 days, 99 percent) fell slightly, from €52 million to €45 million, over the same period. The incremental risk charge (1 year, 99.9 percent) climbed from €73 million to €97 million. Both of these movements were predominantly due to changes to the exposures.

In accordance with article 455 (1) letter a CRR, the VaR and sVaR are allocated to interest-rate, currency, equity, commodity, and credit spread risk as shown below.

FIG. 83 – IMA VALUES FOR EACH SUBPORTFOLIO AS AT DECEMBER 31, 2019

	Total VaR		Interest-rate VaR		Currency VaR		Equity VaR		Commodity VaR		Credit spread VaR	
€ million	Dec. 31, 2019	Jun. 30, 2019	Dec. 31, 2019	Jun. 30, 2019	Dec. 31, 2019	Jun. 30, 2019	Dec. 31, 2019	Jun. 30, 2019	Dec. 31, 2019	Jun. 30, 2019	Dec. 31, 2019	Jun. 30, 2019
VaR (10 days, 99%)	9	11	7	2	5	5	3	2	0	0	8	11
1 Maximum value	19	17	10	5	7	7	16	5	2	1	20	18
2 Average value	13	10	4	3	4	4	3	2	0	0	12	10
3 Minimum value	6	6	2	2	3	3	1	1	0	0	6	6
4 Period end	9	11	7	2	5	5	3	2	0	0	8	11
sVaR (10 days, 99%)	45	52	16	26	43	42	28	33	2	1	67	72
1 Maximum value	113	113	66	66	43	42	115	42	5	4	85	74
2 Average value	58	57	30	48	22	17	35	16	2	2	67	58
3 Minimum value	27	27	5	26	8	8	4	5	0	0	44	44
4 Period end	45	52	16	26	43	42	28	33	2	1	67	72

The VaR, the stressed VaR (sVaR), and the incremental risk charge (IRC) are factored into the calculation of the regulatory capital requirement. The disclosures on backtesting pursuant to article 455 sentence 1 letter g CRR are shown in Fig. 84. Fig. 85 shows the comparative figures as at June 30, 2019.

FIG. 84 – EU MR4 – COMPARISON OF VAR ESTIMATES FOR MARKET RISK IN THE TRADING BOOK AND CURRENCY RISK AND COMMODITY RISK IN THE BANKING BOOK UNDER THE INTERNAL MODELING APPROACH AND HYPOTHETICAL CHANGES IN FAIR VALUE WITH GAINS/LOSSES AT DZ BANK AS AT DECEMBER 31, 2019

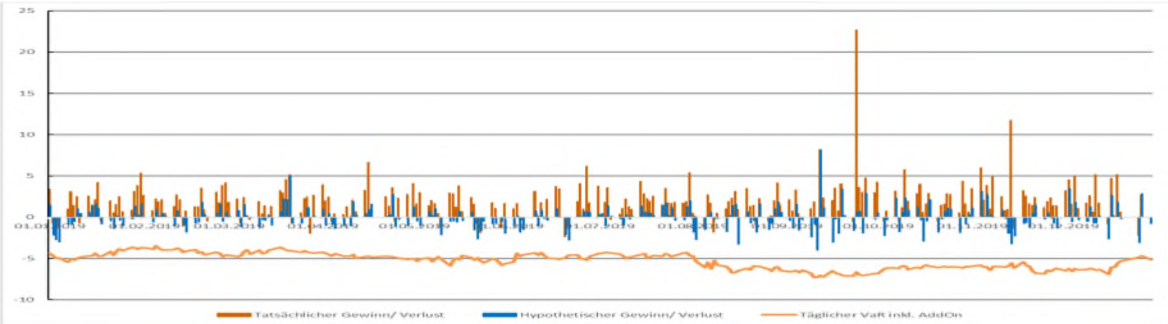
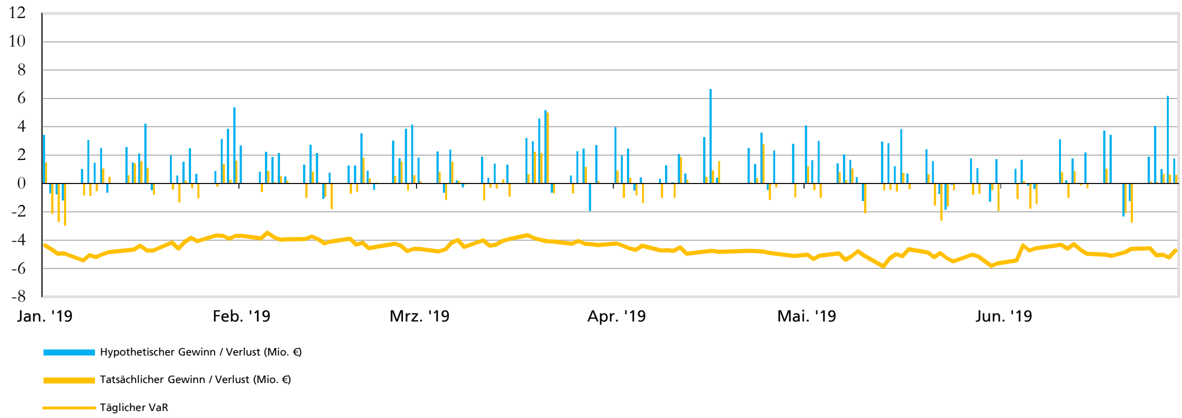


FIG. 85 – EU MR4 – COMPARISON OF VAR ESTIMATES FOR MARKET RISK IN THE TRADING BOOK AND CURRENCY RISK AND COMMODITY RISK IN THE BANKING BOOK UNDER THE INTERNAL MODELING APPROACH AND HYPOTHETICAL CHANGES IN FAIR VALUE WITH GAINS/LOSSES AT DZ BANK AS AT JUNE 30, 2019

€ million, value-at-risk with 99.00% confidence level, 1-day holding period, 1-year observation period



The hypothetical and actual changes in fair value, in which all reserves are also included, did not exceed the forecast risk value at any time.

8.5 Interest-rate risk on exposures not included in the trading book

(ARTICLE 448 SENTENCE 1 LETTERS A AND B CRR, BAFIN CIRCULAR 11/2011)

At DZ BANK, interest-rate risk in the banking book mainly arises in the cover pool, from loans eligible as cover assets, from funding and money market business, from unsecured issuance activity, the unsecured funding business, and the lending business, in the liquidity pool, in the investment book, from the ABS exposures, and from the management of the Tier 1 and Tier 2 capital of DZ BANK and the banking group.

DZ BANK does not use any approaches for modeling customer behavior – particularly assumptions about early repayment of loans and behavior relating to open-ended deposits – with an impact on interest-rate risk.

DZ BANK consciously takes on these risks, calculates them daily, and takes them into account in its risk-bearing capacity.

When calculating interest-rate risk, the DZ BANK banking group examines the overall portfolio – comprising the trading and banking books – and the banking books in isolation. Interest-rate risk is measured as part of an integrated process. Specific information on the calculation of interest-rate exposure in the trading book and banking book in conjunction with article 448 sentence 1 letter a CRR, including the type of interest-rate risk, key assumptions made, and frequency of risk measurement, is disclosed in section 10.4 (page 124) of the opportunity and risk report.

Article 448 sentence 1 letter b CRR requires disclosure of the interest-rate exposure in the banking book. DZ BANK calculates this exposure as a value-at-risk figure at banking group level as part of its internal management of market risk.

The DZ BANK banking group's interest-rate risk in the banking book and trading book as determined using the method specified by senior management is disclosed in the opportunity and risk report (see section 10.7.1, pages 127 to 128).

From a regulatory perspective, the impact of interest-rate shocks on the economic value of the banking book is simulated on a quarterly basis. The supervisory authority has set the changes in interest rates to be used at plus 200 basis points (rising interest rates) and minus 200 basis points (falling interest rates), both being a parallel shift of the interest-rate curve. A further six interest-rate changes have been specified by the supervisory authority (parallel up, parallel down, flattener, steepener, short rate shock up, and short rate shock down). The floor pursuant to the Guidelines on the management of interest-rate risk arising from non-trading book activities (EBA/GL/2018/02) dated July 19, 2018 was applied as at the reporting date. This involved setting a floor of minus 1 percent for the overnight interest rate in the down shift scenarios. The floor rises by 5 basis points per year for maturities of up to 20 years. For maturities of more than 20 years, a 0 percent floor applies. If the basic interest-rate curve is already below the floor, the interest rate of the basic interest-rate curve is used in the simulation (no shift). Positive movements in the value of currencies have been set at 50 percent since the year under review. Only material currencies are taken into account. As at December 31, 2019, these were the euro and the US dollar.

At the end of 2019, a potential loss of €463 million was calculated for the plus 200 basis points scenario (potential loss of €163 million at the end of 2018) and a potential gain of €573 million was calculated for the minus 200 basis points scenario (potential gain of €224 million at the end of 2018). These figures include the DZ BANK banking group's exposures. Fig. 86 and Fig. 87 below show the changes in present values broken down by material currency.

FIG. 86 – INTEREST-RATE RISK IN THE BANKING BOOK

Interest-rate shock on trade date				
Gain and loss € million	**Fall in interest rates (– 200bp)**		**Rise in interest rates (+ 200bp)**	
Currency	**Dec. 31, 2019**	Dec. 31, 2018	**Dec. 31, 2019**	Dec. 31, 2018
EUR	1,170	160	-471	-110
USD	-12	64	16	-54
Total	**573**	**224**	-463	**-163**

FIG. 87 – INTEREST-RATE RISK IN THE BANKING BOOK

Interest-rate shock on trade date

Gain and loss € million	Fall in interest rates (parallel down)		Rise in interest rates (parallel up)		Steepener		Flattener	
Currency	Dec. 31, 2019	Dec. 31, 2018	Dec. 31, 2019	Dec. 31, 2018	Dec. 31, 2019	Dec. 31, 2018	Dec. 31, 2019	Dec. 31, 2018
EUR	1,170	160	-471	-110	240	-	-72	-
USD	-12	64	16	-54	-26	-	31	-
Total	**573**	**224**	-463	**-163**	93	-	-57	-

Interest-rate shock on trade date

Gain and loss € million	Short rates shock down		Short rates shock up	
Currency	Dec. 31, 2019	Dec. 31, 2018	Dec. 31, 2019	Dec. 31, 2018
EUR	143	-	-360	-
USD	-31	-	34	-
Total	**41**	-	**-343**	-

Some of the entities in the DZ BANK banking group use behavior-based models to measure interest-rate risk. They help to accurately reflect the optionalities in traditional lending business and in home savings deposits business. Examples of these include options for drawing down loans or credit lines, termination options, and special repayment options and other options. Contractual and statutory termination rights are generally taken into account in the modeling of loans. A holding period of one day is assumed for open-ended deposits in DZ BANK's market risk model, while BSH uses behavior-based modeling in the context of collective simulation for home savings deposits.

9 Operational risk

(ARTICLE 435 (1) AND ARTICLE 446 CRR)

Operational risk is defined in section 14.1 (page 131) of the opportunity and risk report.

The principles for the management of operational risk and the strategies and processes in respect of operational risk management (article 435 (1) CRR) are presented in section 14.2, 14.3 and 14.4 (pages 132 to 133) of the opportunity and risk report. Information on the structure and organization of the risk management function is provided in section 14.3 (pages 132), while the scope and nature of the risk measurement systems are described in sections 14.3 and 14.4.1 to 14.4.3 (pages 132 to 133) of the opportunity and risk report. Sections 14.4.3 and 14.4.4 (page 133) of the opportunity and risk report outline the strategies for hedging and mitigating operational risk as well as details of the strategies and processes for monitoring the ongoing effectiveness of the measures taken to hedge operational risk.

For the purposes of determining regulatory capital requirements, the potential loss arising from operational risk was primarily estimated at DZ BANK as at December 31, 2019 using the Standardized Approach in accordance with article 317 CRR. As at December 31, 2019, the banking group's capital requirements for operational risk amounted to €857 million (September 30, 2019: €857 million).

Due to its definition, the 'gross income' indicator used in this approach enables only very limited risk-sensitive management of operational risk. By contrast, the operational-risk instruments 'internal and external loss data' and 'scenario-based risk self-assessments' used in the economic capital model show historical and future components of operational risk and, in conjunction with a risk-sensitive capital allocation, enable the economic measurement and management of operational risk.

In respect of the economic capital requirements, a statistical model is used for the management units that satisfies the criteria for an Advanced Measurement Approach (AMA). The results from this portfolio model, combined with the materiality limits for collation of loss data, scenario-based risk self-assessments, and risk indicators, are used to manage operational risk.

10 Reputational risk

(ARTICLE 435 (1) CRR)

Reputational risk is defined in section 13.1 (page 131) of the opportunity and risk report.

The principles for the management of reputational risk and the strategies and processes in respect of reputational risk management (article 435 (1) CRR) are presented in sections 13.3 and 13.4 (page 131) of the opportunity and risk report. The structure and organization of the reputational risk management function are described in section 13.3 (page 131) of the opportunity and risk report. Details of the scope and nature of the reputational risk measurement systems, the strategies for hedging and mitigating reputational risk, and the monitoring thereof can be found in section 13.4 (page 131) of the opportunity and risk report.

11 Risk on long-term equity investments not included in the trading book

11.1 Management of risks attaching to long-term equity investments

(ARTICLE 435 (1) CRR)

The objectives and principles and the strategies and methods underlying the management of risks attaching to long-term equity investments held in the banking book are described in section 9 (pages 122 to 123) of the opportunity and risk report. In section 9.1 (page 122) of the opportunity and risk report, equity investment risk is defined as the risk of losses arising from negative changes in the fair value of the portion of the long-term equity investments portfolio for which the risks are not included in other types of risk.

11.2 Accounting policies applied to long-term equity investments

(ARTICLE 447 (1) LETTER A CRR)

The long-term equity investments and investments in affiliated companies that fall within the scope of IFRS 9 and are deemed to be equity instruments pursuant to IAS 32 are recognized at fair value.

In this context, the general but irrevocable option set out in IFRS 9.5.7.5 can be exercised, which means that fluctuations in fair value and impairment are recognized in other comprehensive income in the FVOCI reserve. Long-term equity investments and investments in affiliated companies that are deemed to be debt instruments pursuant to IAS 32 are recognized and measured at fair value through profit or loss. The option is exercised on a one-off basis for each equity instrument by each entity individually in the DZ BANK Group.

The relevant closing share price at the reporting date is used to measure the fair value of publicly traded long-term equity investments.

Investments in associates and joint ventures that are accounted for using the equity method are initially recognized at cost and subsequently measured in accordance with the rules of IAS 28.

The enterprise value of long-term equity investments that are not publicly traded is generally determined by discounting their future financial surpluses as at the measurement date. The figure used to determine the discount rate is the return on a risk-free capital market investment. A risk premium is added to this base interest rate to reflect the greater uncertainty about the level of future financial surpluses associated with an investment in shares of the company being measured compared with an investment in a risk-free interest-bearing security. The relevant beta factor (multiplier that expresses company-specific and industry-specific risk in relation to general market risk) is individually determined using an appropriate benchmarking method based on listed peer companies.

The enterprise values of companies at which a transaction has recently taken place are validated on the basis of the transaction price. If, rather than pursuing any (direct) financial objectives, the company in question focuses on providing services or promoting the public good (for example in the case of guarantee banks), the net asset value of this company as a going concern should be calculated instead. Alternatively, the value of the pro-rata equity available can be used. Real-estate finance companies are subjected to a property-related measurement.

11.3 Long-term equity investment exposures held in the banking book

(ARTICLE 447 SENTENCE 1 LETTERS B TO E CRR)

The equity investment risk of exposures disclosed in Fig. 88 distinguishes the carrying amounts under commercial law from the current market value of these exposures. The recognition of unrealized gains and losses on long-term equity investments in the DZ BANK banking group’s own funds is shown in Fig. 89. With regard to the objectives and return-generating intentions of the investment portfolio, reference is made to the comments in the opportunity and risk report of DZ BANK, section 9.3, paragraphs 2 and 3.

The regulatory report on investments held in the banking book covers conventional investments as well as securities, derivatives on investment exposures, and investment funds. The DZ BANK banking group recognizes the investment funds held in its banking books using the transparency method and breaks them down into the primary exposure classes of the individual investment fund units. These exposures are therefore included in the Standardized Approach to credit risk and IRBA tables rather than the equity investment risk tables. The equity exposures in the investment funds are classified with a risk weight of 100 percent under the Standardized Approach to credit risk (see Fig. 42; under the IRB approach, they fall into the long-term equity investments exposure class (see Fig. 49 and Fig. 51)).

Fig. 88 shows the long-term equity investments in the banking book that are risk-weighted (and consequently not consolidated, either in full or on a pro-rata basis) or are subject to a capital deduction. These are broken down by groups of equity exposures. The classification of investments is based on the financial nature of the equity exposure concerned. The carrying amount is the carrying amount determined in accordance with IFRS. The exposures shown as ‘traded equity investments’ are those that are listed on a stock exchange. The market value is defined as the cash settlement price of the investment at the reporting date.

FIG. 88 – MEASUREMENT OF EQUITY EXPOSURES

€ million	IFRS carrying amount	
Category of equity exposure	**Dec. 31, 2019**	**Dec. 31, 2018**
Investments in credit institutions	98	91
of which: exchange traded	-	-
not exchange traded but part of a diversified portfolio	98	91
Other	0	0
Investments in finance companies	185	408
of which: exchange traded	0	0
not exchange traded but part of a diversified portfolio	185	408
Other	0	0
Investments in insurance companies	6,837	5,499
of which: exchange traded	-	-
not exchange traded but part of a diversified portfolio	6,829	5,495
Other	8	4
Investment funds held as investments in banking book	8	8
of which: exchange traded	-	-
not exchange traded but part of a diversified portfolio	7	7
Other	0	0
Investments in corporates	165	160
of which: exchange traded	0	0
not exchange traded but part of a diversified portfolio	137	132
Other	19	20
Total	**7,293**	**6,166**

Fig. 89 shows the realized and unrealized gains and losses arising from the long-term equity investments held in the banking book in accordance with IFRS. The table only includes equity investments that are risk-weighted and, consequently, are not fully or proportionately consolidated or are subject to a capital deduction. The capital requirement related to equity exposures is included in Fig. 18. Consequently, no separate disclosure is provided.

FIG. 89 – GAINS AND LOSSES ON EQUITY EXPOSURES IN ACCORDANCE WITH IFRS

	Realized gains and losses on disposals and Liquidation	**Unrealized gains and losses on equity exposures**	
€ million		**Total**	**of which: amounts recognized in Tier 1 capital**
Dec. 31, 2019	**-1**	**3,881**	**59**
Dec. 31, 2018	**154**	**2,703**	**-**

12 Macroprudential regulatory measures

12.1 Countercyclical capital buffer

(ARTICLE 440 CRR)

In accordance with Delegated Regulation (EU) No. 2015/1555, information about compliance with the prescribed countercyclical capital buffer has had to be disclosed since December 31, 2016.

BaFin specifies the capital buffer rate for Germany, taking account of any recommendations made by the Ausschuss für Finanzstabilität [Financial Stability Committee]. In a general administrative act dated June 28, 2019, BaFin set the domestic countercyclical capital buffer rate at 0.25 percent of the total exposure amount determined in accordance with article 92 (3) CRR with effect from July 1, 2019. This rate was originally to be used to calculate the institution-specific countercyclical capital buffer from July 1, 2020 onward. On March 18, 2020, however, BaFin decided to lower the domestic countercyclical capital buffer rate to 0 percent until December 31, 2020 as part of the relief measures introduced in connection with the coronavirus crisis.

The institution-specific countercyclical capital buffer provides an additional capital buffer consisting of common equity Tier 1 capital that is used to contain excessive growth in lending. It can be drawn on in times of crisis and is designed to stop banks limiting their lending too much. Since March 31, 2016, the capital buffer has had to be determined at the end of each quarter for each banking group individually. In accordance with section 10d (2) KWG, the banking-group-specific buffer rate is the weighted average of the ratios for the countercyclical capital buffers that apply in the following regions: Germany, other countries in the European Economic Area (EEA), and in non-EEA countries as well as European and non-European countries, territories, and legal jurisdictions belonging to them in which the banking group's significant exposures defined in accordance with section 36 SolvV are located. Fig. 91 shows the geographical distribution of the relevant credit risk exposures.

Fig. 90 shows the level of the banking-group-specific countercyclical buffer.

For the calculation of the institution-specific countercyclical capital buffer as at December 31, 2019, a country-specific buffer rate of more than 0 percent was stipulated for the following twelve countries by their supervisory authority:

- Hong Kong: 2.00 percent
- Norway: 2.50 percent
- Sweden: 2.50 percent
- Czech Republic: 1.50 percent
- Iceland: 1.75 percent
- Slovakia: 1.50 percent
- United Kingdom: 1.00 percent
- Lithuania: 1.00 percent
- Denmark: 1.00 percent
- France: 0.25 percent
- Ireland: 1.00 percent
- Bulgaria: 0.50 percent.

The calculation for all other countries was based on a country-specific buffer rate of 0 percent. As at December 31, 2019, the institution-specific buffer rate was 0.045 percent (December 31, 2018: 0.045 percent). The capital requirement for the countercyclical capital buffer, calculated as the product of the institution-specific buffer rate and the total relevant exposures, came to approximately €65 million (December 31, 2018: approximately €60 million).

FIG. 90 – LEVEL OF THE INSTITUTION-SPECIFIC COUNTERCYCLICAL BUFFER

Amount of the institution-specific countercyclical capital buffer

€ million		Dec. 31, 2019	Dec. 31, 2018
10	Total exposure	143,800	132,152
020	Institution-specific countercyclical capital buffer rate (as a percentage of total exposure)	0.05	0.045
030	Institution-specific countercyclical capital buffer requirement	**65**	60

FIG. 91 – GEOGRAPHICAL DISTRIBUTION OF THE CREDIT EXPOSURES RELEVANT TO THE CALCULATION OF THE COUNTERCYCLICAL CAPITAL BUFFER

In column 120 of this table, the dash ‘ - ’ means either ‘no figure available’ or ‘capital buffer rate of 0 percent’.

	General credit risk exposures		General credit risk exposures		Securitization exposures		Capital requirements						
	Exposure (CRSA)	Exposure (IRB)	Total long and short positions in the trading book	Value of the exposure in the trading book (internal models)	Exposure (CRSA)	Exposure (IRB)	of which: general credit risk exposures	of which: exposures in the trading book	of which: securitization exposures	Total	Weighting of capital requirements	Rate of the countercyclical capital buffer as at Dec. 31, 2019 (%)	Rate of the countercyclical capital buffer as at Dec. 31, 2018 (%)
€ million	010	020	030	040	050	060	070	080	090	100	110	120	120
010 Breakdown by country													
Germany	14,055	90,111	19	2,543	566	2,258	4,584	203	77	4,952	0.72	-	-
Egypt	124	13	-	-	-	-	1	-	-	1	0.00	-	-
Albania	-	-	-	-	-	-	-	-	-	-	-	-	-
Andorra	0	0	-	-	-	-	0	-	-	0	0.00	-	-
Angola	0	-	-	-	-	-	0	-	-	0	0.00	-	-
Argentina	6	9	-	-	-	-	2	-	-	2	0.00	-	-
Azerbaijan	45	-	-	-	-	-	3	-	-	3	0.00	-	-
Ethiopia	0	-	-	-	-	-	0	-	-	0	0.00	-	-
Australia	56	633	-	-	18	-	30	-	0	30	0.00	-	-
Bahamas	0	111	-	-	-	-	1	-	-	1	0.00	-	-
Bahrain	1	35	-	-	-	-	0	-	-	0	0.00	-	-
Bangladesh	19	-	-	-	-	-	0	-	-	0	0.00	-	-
Belgium	104	159	2	-	-	-	12	0	-	12	0.00	-	-
Bermuda	1	483	-	-	-	-	2	-	-	2	0.00	-	-
Bolivia	0	-	-	-	-	-	0	-	-	0	0.00	-	-
Brazil	5	39	-	-	-	-	0	-	-	0	0.00	-	-
British Virgin Islands	12	74	-	-	-	-	2	-	-	2	0.00	-	-
Bulgaria	0	6	-	-	-	-	0	-	-	0	0.00	-	-
Burkina Faso	0	-	-	-	-	-	-	-	-	-	-	-	-
Burundi	0	-	-	-	-	-	-	-	-	-	-	-	-
Cayman Islands	177	165	-	-	0	2	6	-	0	6	0.00	-	-
Chile	0	66	-	-	-	-	0	-	-	0	0.00	-	-
China	73	276	-	-	-	-	7	-	-	7	0.00	-	-
Costa Rica	0	-	-	-	-	-	0	-	-	0	0.00	-	-
Denmark	30	300	-	6	-	-	15	0	-	15	0.00	0.0100	-
Dominican Republic	0	-	-	-	-	-	0	-	-	0	0.00	-	-
Ecuador	0	-	-	-	-	-	0	-	-	0	0.00	-	-
El Salvador	0	-	-	-	-	-	0	-	-	0	0.00	-	-
Côte d’Ivoire	0	-	-	-	-	-	0	-	-	0	0.00	-	-
Eritrea	0	-	-	-	-	-	0	-	-	0	0.00	-	-
Estonia	0	-	-	-	-	-	0	-	-	0	0.00	-	-
Faroe Islands	0	10	-	-	-	-	-	-	-	-	-	-	-

	General credit risk exposures		General credit risk exposures		Securitization exposures		Capital requirements						
	Exposure (CRSA)	Exposure (IRB)	Total long and short positions in the trading book	Value of the exposure in the trading book (internal models)	Exposure (CRSA)	Exposure (IRB)	of which: general credit risk exposures	of which: exposures in the trading book	of which: securitization exposures	Total	Weighting of capital requirements	Rate of the countercyclical capital buffer as at Dec. 31, 2019 (%)	Rate of the countercyclical capital buffer as at Dec. 31, 2018 (%)
€ million	010	020	030	040	050	060	070	080	090	100	110	120	120
Finland	55	90	-	-	42	-	8	-	0	8	0.00	-	-
France	440	1,377	7	18	130	38	70	2	2	73	0.01	0.0025	-
Gabon	0	-	-	-	-	-	0	-	-	0	0.00	-	-
Georgia	0	-	-	-	-	-	-	-	-	-	-	-	-
Ghana	66	6	-	-	-	-	6	-	-	6	0.00	-	-
Gibraltar	0	-	-	-	-	-	-	-	-	-	-	-	-
Greece	4	70	-	-	-	-	0	-	-	0	0.00	-	-
United Kingdom	547	1,333	117	59	380	104	73	58	12	143	0.02	0.0100	0.01
Guatemala	0	-	-	-	-	-	0	-	-	0	0.00	-	-
Guernsey	13	70	-	-	-	-	3	-	-	3	0.00	-	-
Honduras	0	-	-	-	-	-	0	-	-	0	0.00	-	-
Hong Kong	57	287	-	4	-	-	9	0	-	9	0.00	0.0200	-
India	52	372	-	-	-	-	10	-	-	10	0.00	-	-
Indonesia	163	-	-	-	-	-	5	-	-	5	0.00	-	-
Iraq	0	-	-	-	-	-	0	-	-	0	0.00	-	-
Iran	0	1	-	-	-	-	-	-	77	-	-	-	-
Ireland	154	497	75	24	7	1	18	47	-	65	0.01	0.0100	-
Iceland	0	-	-	-	-	-	-	-	-	-	-	0.0175	0.0125
Isle of Man	0	158	-	-	-	-	1	-	-	1	0.00	-	-
Israel	0	27	-	-	-	-	0	-	-	0	0.00	-	-
Italy	88	111	40		24	3	13	34	-	48	0.01	-	-
Jamaica	0	-	-	-	-	-	0	-	-	0	0.00	-	-
Japan	32	353	-	-	-	-	3	-	-	3	0.00	-	-
Jersey	3	88	-	-	-	-	2	-	0	2	0.00	-	-
Jordan	0		-	-	-	-	0	-	-	0	0.00	-	-
Canada	216	547	-	-	-	-	33	-	-	33	0.00	-	-
Kazakhstan	0	-	-	-	-	-	0	-	-	0	0.00	-	-
Qatar	15	85	-	-	-	-	5	-	-	5	0.00	-	-
Kenya	0	-	-	-	-	-	0	-	-	0	0.00	-	-
Colombia	1	-	-	-	-	-	0	-	-	0	0.00	-	-
Korea	21	17	-	-	-	-	1	-	-	1	0.00	-	-
Croatia	0	1	-	-	-	-	0	-	-	0	0.00	-	-
Kuwait	70	35	-	-	-	-	1	-	-	1	0.00	-	-
Latvia	0	-	-	-	-	-	0	-	-	0	0.00	-	-
Lebanon	0	-	-	-	-	-	0	-	-	0	0.00	-	-
Liberia	0	1,090	-	-	-	-	6	-	0	6	0.00	-	-
Liechtenstein	21	14	-	-	-	-	2	-	-	2	0.00	-	-
Lithuania	0	-	-	-	-	-	-	-	-	-	-	0.0100	-
Luxembourg	919	4,713	57	-	-	-	227	27	-	254	0.04	-	-
Malaysia	6	136	-	-	-	-	6	-	-	6	0.00	-	-
Malta	25	338	-	-	-	-	5	-	-	5	0.00	-	-
Morocco	1	-	-	-	-	-	0	-	-	0	0.00	-	-
Marshall Islands	51	2,018	-	-	-	-	10	-	-	10	0.00	-	-
Mauritius	0	-	-	-	-	-	0	-	-	0	0.00	-	-
Mexico	91	101	-	-	-	-	13	-	-	13	0.00	-	-
Monaco	0	-	-	-	-	-	-	-	-	0	-	-	-
Mongolia	0	-	-	-	-	-	0	-	-	0	0.00	-	-
Montenegro	0	-	-	-	-	-	0	-	0	0	0.00	-	-
Mozambique	0	-	-	-	-	-	-	-	2	-	-	-	-
Myanmar	0	4	-	-	-	-	0	-	-	0	0.00	-	-

	General credit risk exposures		General credit risk exposures		Securitization exposures		Capital requirements						
	Exposure (CRSA)	Exposure (IRB)	Total long and short positions in the trading book	Value of the exposure in the trading book (internal models)	Exposure (CRSA)	Exposure (IRB)	of which: general credit risk exposures	of which: exposures in the trading book	of which: securitization exposures	Total	Weighting of capital requirements	Rate of the countercyclical capital buffer as at Dec. 31, 2019 (%)	Rate of the countercyclical capital buffer as at Dec. 31, 2018 (%)
€ million	010	020	030	040	050	060	070	080	090	100	110	120	120
Namibia	0	1	-	-	-	-	0	-	-	0	0.00	-	-
New Zealand	38	61	-	-	-	-	4	-	-	4	0.00	-	-
Netherlands	822	2,190	193	-	311	236	152	27	-	191	0.03	-	-
Netherlands Antilles	1	-	-	-	-	-	0	-	-	0	0.00	-	-
Nigeria	0	-	-	-	-	-	0		12	0	0.00	-	-
Norway	25	778	-	2	-	-	8	0	-	8	0.00	0.0250	0.020
Oman	0	20	-	-	-	-	2	-	-	2	0.00	-	-
Austria	329	1,043	2	-	-	-	57	-	-	57	0.01	-	-
Pakistan	0		-	-	-	-	0	-	-	0	0.00	-	-
Panama	0	272	-	-	-	-	2	-	-	2	0.00	-	-
Paraguay	4		-	-	-	-	0	-	-	0	0.00	-	-
Peru	4	26	-	-	-	-	2	-	-	2	0.00	-	-
Philippines	1	52	-	-	-	-	3	-	-	3	0.00	-	-
Poland	12	159	-	-	-	-	23	-	0	23	0.00	-	-
Portugal	11	22	-	-	65	-	2	-	-	5	0.00	-	-
Romania	0		-	-	-	-	0	-	-	0	0.00	-	-
Russia	5	277	-	-	-	-	4	-	-	4	0.00	-	-
Saudi Arabia	10	112	-	-	-	-	6	-	1	6	0.00	-	-
Sweden	20	293	-	3	-	-	9	0	-	10	0.00	0.0250	-
Switzerland	203	900	-	-	-	23	50	-	-	50	0.01	-	-
Senegal	0	-	-	-	-	-	0	-	-	0	0.00	-	-
Serbia and Kosovo	0	-	-	-	-	-	0	-	-	0	0.00	-	-
Singapore	26	1,000	-	-	-	-	24	-	-	24	0.00	-	-
Slovakia	0	-	-	-	-	-		-	-	-	-	0.0150	0.005
Slovenia	0	1	-	-	-	-	0	-	-	0	0.00	-	-
Spain	192	186	2		414	-	16	0	-	26	0.00	-	-
Sri Lanka	0	-	-	-	-	-	0	-	-	0	0.00	-	-
South Africa	2	1	-	-	-	-	0	-	-	0	0.00	-	-
Syria	0	0	-	-	-	-	0	-	-	-	-	-	-
Taiwan	3	1	-	-	-	-	0	-	-	0	0.00	-	-
Thailand	2	28	-	-	-	-	2	-	-	2	0.00	-	-
Togo	0	0	-	-	-	-		-	-			-	-
Czech Republic	1	35	-	1	-	-	1	0	-	2	0.00	0.0150	0.010
Tunisia	0	0	-	-	-	-	0	-	-	0	0.00	-	-
Turkey	148	213	-	-	-	-	3	-	-	3	0.00	-	-
Ukraine	0	0	-	-	-	-	0	-	-	0	0.00	-	-
Hungary	0	48	-	-	-	-	3	-	-	3	0.00	-	-
Uruguay	0	0	-	-	-	-	0	-	-	0	0.00	-	-
USA	674	2,809	-	-	225	1,807	158	-	-	216	0.03	-	-
Uzbekistan	0	0	-	-	-	-	0	-	-	0	0.00	-	-
Venezuela	0	0	-	-	-	-	0	-	-	0	0.00	-	-
United Arab Emirates	11	138	-	-	-	-	8	-	-	8	0.00	-	-
Vietnam	143	15	-	-	-	-	1	-	-	1	0.00	-	-
Belarus	0	-	-	-	-	-	0	-	-	0	0.00	-	-
Zambia	0	-	-	-	-	-	0	-	-	0	0.00	-	-
Cyprus	19	48	-	-	-	-	3	-	-	3	0.00	-	-
Other countries	1,717	7,529	-	-	-	-	516	-	-	521	0.08	-	-
020 Total	22,247	124,688	513	2,658	2,182	4,471	6,253	399	175	6,920	1.00	0.0450	0.0450

12.2 Indicators of global systemic importance

(ARTICLE 441 CRR)

BaFin has classified DZ BANK as an other systemically important institution (O-SII) since 2016.

As the DZ BANK banking group's total exposure measure within the meaning of article 429 (4) CRR exceeds €200.0 billion, DZ BANK is obliged, in accordance with section 10f (4) KWG, to conduct a quantitative analysis each year of the indicators for determining global systemic importance on the basis of the technical standard EBA/ITS/2016/01 and to disclose the resulting values.

Fig. 92 below shows the key figures for determining global systemic importance. They are disclosed on DZ BANK's website in the Investor Relations section under Reports/Reports 2019.

FIG. 92 – KEY FIGURES FOR GLOBAL SYSTEMIC IMPORTANCE

Indicator	Key figure
Size	Total exposure
Interconnectedness	Intra-financial system assets
	Intra-financial system liabilities
	Securities outstanding
Substitutability/financial institution infrastructure	Payments activity (financial year)
	Assets under custody
	Underwritten transactions (financial year)
Complexity	Notional amount of OTC derivatives
	Trading and available-for-sale securities
	Level 3 assets
Cross-jurisdictional activity	Cross-jurisdictional claims
	Cross-jurisdictional liabilities

13 Leverage ratio

13.1 Leverage pursuant to the CRR framework

(ARTICLE 451 (1) LETTERS A, B, C, D, AND E CRR)

The **leverage ratio** is the ratio of the banking group's Tier 1 capital to its total exposure – comprising on-balance-sheet and off-balance-sheet items (including derivatives). In contrast to risk-based capital requirements, the individual exposures are not given a credit-rating-related risk weight but are generally included in the total exposure without being weighted. The leverage ratio thus represents a risk-neutral capital ratio. A low ratio therefore indicates a high level of debt in relation to Tier 1 capital. The purpose of the leverage ratio is to prevent the build-up of unsustainable leverage in the banking industry.

Disclosure of the leverage ratio is based on the provisions of Implementing Regulation (EU) No. 2016/200 dated February 15, 2016 and is carried out at consolidated level. In accordance with article 499 (1) letter b CRR, the capital measure is based on Tier 1 capital. The total exposure measure is calculated in accordance with article 429 et seq. CRR (as amended by Delegated Regulation (EU) No. 2015/62, which came into force on January 17, 2015).

The DZ BANK banking group's leverage ratio pursuant to the CRR transitional guidance was 5.05 percent as at December 31, 2019 (June 30, 2019: 4.52 percent). Applying the CRR in full, the ratio was 4.86 percent (June 30, 2019: 4.34 percent).

Fig. 93 sets out the components and level of the leverage ratio, both applying the CRR transitional guidance (phase-in) and applying the CRR in full.

FIG. 93 – LEVERAGE RATIO ACCORDING TO THE CRR TRANSITIONAL GUIDANCE AND AFTER FULL APPLICATION OF THE CRR

	Leverage ratio according to CRR transitional guidance		Leverage ratio after full application of the CRR	
	Dec. 31, 2019	Jun. 30, 2019	**Dec. 31, 2019**	Jun. 30, 2019
Regulatory Tier 1 capital (€ million)	**23,553**	21,283	**22,699**	20,435
Total exposure measure (€ million)	**466,635**	471,049	**466,635**	471,049
Leverage ratio as at the balance sheet date (%)	**5.05**	4.52	**4.86**	4.34

Fig. 94 shows the reconciliation of the total assets of the DZ BANK Group to the leverage ratio total exposure measure of the DZ BANK banking group.

FIG. 94 – LRSUM – SUMMARY RECONCILIATION OF ASSETS ON THE BALANCE SHEET TO THE LEVERAGE RATIO TOTAL EXPOSURE MEASURE

Summary reconciliation of total assets and total exposure measure

		Applicable amounts	
€ million		Dec. 31, 2019	Jun. 30, 2019
1	Total assets as per published financial statements	559,379	560,783
2	Adjustment for entities that are consolidated for accounting purposes but are outside the scope of regulatory consolidation	-108,233	–104,258
3	Adjustment for trust assets recognized on the balance sheet pursuant to the applicable accounting framework but excluded from the leverage ratio total exposure measure in accordance with article 429 (13) of Regulation (EU) No. 575/2013	-	-
4	Adjustments for derivatives	-9,386	–12,888
5	Adjustments for securities financing transactions (SFTs)	705	606
6	Adjustment for off-balance-sheet items (i.e. conversion to credit equivalent amounts of off-balance-sheet exposures)	25,889	25,230
EU-6a	Adjustment for intragroup exposures excluded from the leverage ratio total exposure measure in accordance with article 429 (7) of Regulation (EU) No. 575/2013	-	-
EU-6b	Adjustment for exposures excluded from the leverage ratio total exposure measure in accordance with article 429 (14) of Regulation (EU) No. 575/2013	-	-
7	Other adjustments	-1,720	1,575
8	**Leverage ratio total exposure measure**	**466,635**	**471,049**

Fig. 95 shows individual components of the total exposure measure, Tier 1 capital, and the DZ BANK banking group's resulting leverage ratio as at December 31, 2019, applying the CRR transitional guidance.

FIG. 95 – LRCOM – LEVERAGE RATIO COMMON DISCLOSURE

Leverage ratio exposures

		Applicable amounts	
€ million		Dec. 31, 2019	Jun. 30, 2019
On-balance-sheet exposures (excluding derivatives and SFTs)			
1	On-balance-sheet items (excluding derivatives, SFTs, and trust assets but including collateral)	418,973	423,831
2	Asset amounts deducted in determining Tier 1 capital	-970	–959
3	Total on-balance-sheet exposures (excluding derivatives, SFTs, and trust assets) (sum of lines 1 and 2)	418,003	422,872
Derivative exposures			
4	Replacement cost associated with all derivatives transactions (i.e. net of eligible cash variation margin)	6,760	8,073
5	Add-on amounts for PFE associated with all derivatives transactions (mark-to-market method)	11,403	10,813
EU-5a	Exposure determined under Original Exposure Method	-	-
6	Gross-up for derivatives collateral provided where deducted from the balance sheet assets pursuant to the applicable accounting framework	-	-
7	Deductions of receivables assets for cash variation margin provided in derivatives transactions	-6,712	–7,904
8	Exempted CCP leg of client-cleared SFT exposure	-1,335	–1,383
9	Adjusted effective notional amount of written credit derivatives	14,921	15,069
10	Adjusted effective notional offsets and add-on deductions for written credit derivatives	-12,071	–11,654
11	Total derivatives exposures (sum of lines 4 to 10)	12,967	13,014
SFT exposures			
12	Gross SFT assets (with no recognition of netting), after adjusting for sales accounting transactions	11,921	12,741
13	Netted amounts of cash payables and cash receivables of gross SFT assets	-	-
14	Counterparty credit risk exposure for SFT assets	705	606
EU-14a	Derogation for SFTs: Counterparty credit risk exposure in accordance with articles 429b (4) and 222 of Regulation (EU) No. 575/2013	-	-
15	Agent transaction exposures	-	-
EU-15a	Exempted CCP leg of client-cleared SFT exposure	-	-
16	Total securities financing transaction exposures (sum of lines 12 to 15a)	12,626	13,347
Other off-balance-sheet exposures			
17	Off-balance-sheet exposures at gross notional amount	67,042	64,087
18	Adjustments for conversion to credit equivalent amounts	-44,003	–42,272

Leverage ratio exposures

€ million		Applicable amounts Dec. 31, 2019	Jun. 30, 2019
19	Other off-balance-sheet exposures (sum of lines 17 and 18)	23,039	21,815
EU-19a	Intragroup exposures (solo basis) exempted in accordance with article 429 (7) of Regulation (EU) No. 575/2013 (on and off balance sheet)	-	-
EU-19b	Exempted exposures in accordance with article 429 (14) of Regulation (EU) No. 575/2013 (on and off balance sheet)	-	-
Capital and total exposure measure			
20	Tier 1 capital	23,553	21,283
21	Leverage ratio total exposure measure (sum of lines 3, 11, 16, 19, EU-19a, and EU-19b)	466,635	471,049
Leverage ratio			
22	Leverage ratio according to CRR transitional guidance (%)	5.05	4.52
Choice of transitional guidance and amount of derecognized trust items			
EU-23	Choice of transitional guidance for the definition of the capital measure	CRR transitional guidance	
EU-24	Amount of derecognized trust assets in accordance with article 429 (13) of Regulation (EU) No. 575/2013	-	-

Applying the CRR transitional guidance, the DZ BANK banking group's leverage ratio rose by 0.53 percentage points to 5.05 percent as at the reporting date. This was mainly because Tier 1 capital went up by €2,270 million to €23,553 million (June 30, 2019: €21,283 million) and, at the same time, the total exposure measure decreased by €4,414 million to €466,635 million (June 30, 2019: €471,049 million).

The decrease in the total exposure measure of the DZ BANK banking group during the six-month period was mainly due to the following effects. On-balance-sheet exposures – particularly in the central governments and central banks exposure class – fell and there was an increase in off-balance sheet business. Details of the main drivers of the change in Tier 1 capital can be found in section 4.2 of this report.

Fig. 96 provides an alternative breakdown by regulatory category of the exposures reported on the balance sheet.

FIG. 96 – LRSPL – BREAKDOWN OF ON-BALANCE-SHEET EXPOSURES (EXCLUDING DERIVATIVES, SFTS AND EXEMPTED EXPOSURES)

Leverage ratio exposures

€ million		Applicable amounts Dec. 31, 2019	Jun. 30, 2019
EU-1	**Total on-balance-sheet exposures (excluding derivatives, SFTs, and exempted exposures)**	**411,916**	**415,526**
EU-2	**of which: Trading book exposures**	**14,907**	**13,976**
EU-3	**Banking book exposures, of which:**	**397,009**	**401,550**
EU-4	Covered bonds	11,824	9,497
EU-5	Exposures treated as sovereigns	101,597	114,869
EU-6	Exposures to regional governments, multilateral development banks, international organizations, and public-sector entities not treated as sovereigns	2,049	1,898
EU-7	Institutions	92,689	88,876
EU-8	Secured by mortgages on immovable property	80,836	79,607
EU-9	Retail exposures	19,295	19,396
EU-10	Corporates	67,482	66,632
EU-11	Exposures in default	2,262	2,543
EU-12	Other exposures (e.g. long-term equity investments, securitizations, and other non-credit-obligation assets)	18,977	18,232

13.2 Description of the process for monitoring the risk of excessive leverage

(ARTICLE 451 SENTENCE 1 LETTER D CRR)

In the strategic planning process, the Board of Managing Directors sets out the bank's overall strategy and the allocation of resources for the individual management units. The risk of excessive leverage is taken into consideration by reflecting the leverage ratio in the planning and management process pursuant to section 6b

KWG in conjunction with article 429 CRR. This involves monitoring compliance with internally defined thresholds on a quarterly basis. Within these guidelines, the Treasury and Capital Committee operates with the aim of optimizing the overall portfolio over the course of the year. Detailed plan-versus-actual analysis is carried out for all relevant management units on the basis of the bank's internal target to determine where the actual resource situation has deviated from the original projection. This process also highlights the factors driving these deviations. The latest changes to the leverage ratio and details of its influencing factors are reported on as part of DZ BANK's internal management reporting, which is an integral element of the bank's internal planning and management process. In its management role, the Treasury and Capital Committee also identifies the action required and instigates mitigation steps or optimization measures. In this capacity, the Treasury and Capital Committee makes decisions directly, issues recommendations or, if necessary, submits proposals on specific management actions to the Board of Managing Directors for adoption of a resolution.

13.3 Other factors influencing the leverage ratio

(ARTICLE 451 SENTENCE 1 LETTER E CRR)

Under CRR II, the calculation of the total exposure measure will have to be adjusted with effect from the reporting date June 30, 2021. This adjustment should cause the leverage ratio to rise, in particular because exposures within the cooperative financial network will no longer have to be included, which will lead to a significant reduction in the total exposure measure. With this exemption, lawmakers are establishing a correlation between the leverage ratio and the risk-weighted equity ratio, in which exposures within the cooperative financial network have long been excluded from the calculation in accordance with the conditions in article 113 (7) CRR. These exposures within the cooperative financial network amounted to around €88,000 million as at the reporting date (June 30, 2019: €82,000 million). New exemptions for export loans supported by public subsidy and for preliminary and bridging loans in building society operations also have a positive impact. By contrast, the introduction of the new Standardized Approach for measuring counterparty credit risk attaching to derivatives (SA-CCR) and the broader ban on netting assets with liabilities on the balance sheet, in particular, have a negative impact on the total exposure measure.

Our estimate of the overall effects of CRR II as at December 31, 2019 is as follows: The total exposure measure would be reduced by around €80,000 million, which would cause the leverage ratio to rise by around 1 percentage point to 5.87 percent applying the CRR in full.

14 Asset encumbrance

(ARTICLE 443 CRR)

According to the regulatory disclosure requirements in article 443 CRR in conjunction with Delegated Regulation (EU) No. 2017/2295 dated December 13, 2017, which is based on EBA/GL/2014/03 and replaced the requirements therein when it came into effect, information on encumbered and unencumbered assets (asset encumbrance) has to be disclosed. These disclosure requirements are defined in more detail and expanded in Delegated Regulation (EU) No. 2017/2295. The following disclosure of asset encumbrance is based on the requirements in this Delegated Regulation.

The encumbered and unencumbered assets are disclosed for the companies consolidated for regulatory purposes pursuant to article 18 CRR.

However, the disclosure of the quality of the encumbered and unencumbered assets ((E)HQLA) is based on the scope of consolidation used for liquidity purposes pursuant to article 18 (1) CRR. The differences between the scopes of consolidation are set out in section 3 of this report.

For the purposes of the DZ BANK banking group's reporting and disclosure, the carrying amounts of encumbered and unencumbered assets are calculated according to the provisions of International Financial Reporting Standards (IFRS). There are no significant differences between the calculation methods applied to the encumbered assets for the asset encumbrance reporting and to the assets presented in accordance with IFRS in the notes to the financial statements in the Annual Report that have been pledged or transferred.

Accordingly, assets that have been pledged as collateral or are the subject of any agreement to collateralize or credit enhance any on-balance-sheet or off-balance-sheet transaction must be treated as encumbered. In addition to the disclosures in the notes to the consolidated financial statements in the Annual Report, the DZ BANK banking group's cover pools held in trust and the derivative receivables in netting master agreements, for which there are equivalent derivative liabilities, are included as encumbered assets in the asset encumbrance reporting.

FINREP validation also takes place as part of asset encumbrance reporting. This ensures that the totals of the unencumbered and encumbered assets in the asset encumbrance reporting match those of the assets in the FINREP reporting.

The following disclosures are based on the DZ BANK banking group's asset encumbrance reporting in 2019. The carrying amounts and fair values of the encumbered and unencumbered assets are disclosed. The fair value of the (repledged) collateral received is disclosed. The median values at the end of each of the four past quarters (reporting dates in 2019: March 31, June 30, September 30, and December 31) are presented for each line item. The totals are calculated from the median values at the end of the four past quarters in the asset encumbrance reporting. Consequently, the totals disclosed may vary from the totals calculated from the individual values.

The DZ BANK banking group's asset encumbrance ratio for 2019 was 38.31 percent. This is the ratio of the median values shown for the totals of the encumbered assets recognized on the balance sheet plus collateral received and re-used to the median values for the total assets plus collateral received.

FIG. 97 – ASSET ENCUMBRANCE AS AT DECEMBER 31, 2019

€ million		Carrying amount of encumbered assets		Fair value of encumbered assets		Carrying amount of unencumbered assets		Fair value of unencumbered assets	
			of which: notionally eligible as EHQLAs and HQLAs		of which: notionally eligible as EHQLAs and HQLAs		of which: EHQLAs and HQLAs		of which: EHQLAs and HQLAs
		010	030	040	050	060	080	090	100
010	Assets of the reporting institution	171,579	14,146			284,923	92,345		
030	Equity instruments	427	0			2,382	0		
040	Debt securities	17,975	14,146	18,184	14,301	41,400	27,152	42,674	27,543
050	of which: covered bonds	1,438	1,022	1,498	1,044	9,108	7,775	9,341	7,916
060	of which: asset-backed securities	0	0	0	0	1,804	276	1,705	222
070	of which: issued by general governments	12,409	11,755	12,374	11,867	13,157	12,608	13,719	12,787
080	of which: issued by financial corporations	5,082	2,228	5,195	2,284	23,975	12,394	24,546	12,526
090	of which: issued by non-financial corporations	698	333	718	335	4,524	1,977	4,820	2,006
120	Other assets	154,125	0			244,072	65,738		
121	of which: loans that can be terminated on demand	6,032	0			69,382	65,679		
122	of which: loans and advances other than loans that can be terminated on demand	132,638	0			149,150	0		

€ million		010 Carrying amount of encumbered assets	040 Fair value of encumbered assets	060 Carrying amount of unencumbered assets	090 Fair value of unencumbered assets
		Dec. 31, 2018			
010	Assets of the reporting institution	164,810		266,618	
030	Equity instruments	223		2,655	
040	Debt securities	17,574	18,094	39,353	39,877
050	of which: covered bonds	1,231	1,265	6,640	6,499
060	of which: asset-backed securities	-	-	2,055	1,964
070	of which: issued by general governments	12,252	12,846	14,774	15,177
080	of which: issued by financial corporations	4,655	4,811	20,704	20,530
090	of which: issued by non-financial corporations	806	826	3,777	3,796
120	Other assets	147,316		224,248	
121	of which: loans that can be terminated on demand	6,008		61,309	
122	of which: loans and advances other than loans that can be terminated on demand	129,801		143,499	

FIG. 98 – COLLATERAL RECEIVED

€ million	Fair value of encumbered collateral received or own debt securities issued	of which: notionally eligible as EHQLAs and HQLAs	Fair value of collateral received or own debt securities issued available for encumbrance	of which: EHQLAs and HQLAs	Fair value of encumbered collateral received or own debt securities issued	Fair value of collateral received or own debt securities issued available for encumbrance
	Dec. 31, 2019				Dec. 31, 2018	
	010	030	040	060	010	040
130 Collateral received by the reporting institution	**10,915**	**10,246**	**8,948**	**3,706**	**9,930**	**8,680**
140 Loans that can be terminated on demand	0	0	0	0	-	-
150 Equity instruments	18	0	1,459	0	18	1,752
160 Debt securities	10,890	10,246	7,320	3,706	9,903	6,677
170 of which: covered bonds	314	279	1,866	1,404	303	1,840
180 of which: asset-backed securities	0	0	0	0	-	-
190 of which: issued by general governments	7,911	7,891	1,943	1,520	7,607	2,384
200 of which: issued by financial corporations	2,438	1,931	4,862	2,075	1,989	4,490
210 of which: issued by non-financial corporations	101	58	299	140	110	205
220 Loans and advances other than loans that can be terminated on demand	0	0	0	0	-	-
230 Other collateral received	0	0	8	0	-	12
240 Own debt securities issued other than own covered bonds or asset-backed securities	**0**	**0**	**7,127**	**0**	**-**	**9,038**
241 Own covered bonds and asset-backed securities issued and not yet pledged			**1,186**	**0**		**1,104**
250 Total assets, collateral received, and own debt securities issued	**182,495**	**24,783**			**175,644**	

The total of encumbered assets and collateral received (particularly bonds) increased at a slightly lesser rate than the rise in total assets (particularly other assets). This was also reflected in the asset encumbrance ratio, which fell from 38.83 percent as at December 31, 2018 to 38.31 percent as at the reporting date.

FIG. 99 – SOURCES OF ENCUMBRANCE

		Matching liabilities, contingent liabilities, or securities lent	Assets, collateral received, and own debt securities issued other than covered bonds and ABSs encumbered	Matching liabilities, contingent liabilities, or securities lent	Assets, collateral received, and own debt securities issued other than covered bonds and ABSs encumbered
		Dec. 31, 2019		Dec. 31, 2018	
		010	030	010	030
010	**Carrying amount of selected financial liabilities**	**155,278**	**169,718**	**148,287**	**162,010**
011	of which: derivatives	18,555	21,276	15,333	18,306
012	of which: deposits	110,921	115,091	109,561	115,671
012 a	of which: sale and repurchase agreements	12,508	12,721	11,416	11,911
012 b	of which: collateralized deposits excluding repurchase agreements	99,868	102,248	98,145	103,004
013	of which: bonds issued	26,690	31,198	23,912	28,185

The business model's influence on the degree of encumbrance and the importance of encumbrance to the DZ BANK banking group's funding model are explained below. The DZ BANK banking group's main sources of encumbrance result from the following business activities:

- DZ BANK, DZ HYP, and DVB obtain some of their funding by issuing covered bonds. The corresponding cover pools of these institutions led to encumbrance of €72,051 million in 2019. The average weighted overcollateralization ratio for the DZ BANK banking group's cover pools was 36.51 percent in 2019. This overcollateralization comprised the excess cover required by law, the excess cover required by the rating agencies, and the voluntary excess cover; it contributed €19,269 million to the aforementioned total encumbrance.

- The entities in the DZ BANK banking group hold covered bonds issued by other group entities, for which there is a corresponding cover pool volume of €7,942 million. From a consolidated group perspective, these assets do not result in asset encumbrance.

- After the cover pools, development lending business with cooperative banks and end customers represents the second biggest factor in the DZ BANK banking group's encumbrance ratio, with pass-through loan receivables of €57,896 million assigned to development banks. This volume of encumbrance is mainly attributable to business at DZ BANK and DZ HYP.

- Securities lending transactions and funding via sale and repurchase agreements are further major sources of encumbrance for the DZ BANK banking group and predominantly result from transactions of DZ BANK, DZ PRIVATBANK, and DZ HYP.

- Both unsecured derivative transactions with netting master agreements (International Swaps and Derivatives Association (ISDA) and Deutscher Rahmenvertrag (DRV) [German Master Agreement]) and derivative transactions backed by collateral agreements (Credit Support Annex to the ISDA Master Agreement and Collateralization Annex to the German Master Agreement for Financial Futures) are considered to be encumbrances.

- The longer-term funding of DZ BANK and DZ HYP in the form of open-market operations via central banks results in additional encumbrance of assets-side business.

There are also assets that are encumbered because they are pledged to entities in the DZ BANK banking group. In particular, they arise from sale and repurchase agreements, derivative transactions backed by collateral agreements, and covered bonds held within the group. The main reason for conducting these transactions is the centralized provision of funding to the individual subsidiaries by DZ BANK (group funding). All transactions between entities in the DZ BANK banking group are recognized on a consolidated basis at group level.

The DZ BANK banking group's own securitizations (asset-backed securities, ABSs) were not relevant to the entities consolidated for regulatory purposes in 2019 and therefore do not represent a source of encumbrance for the purpose of asset encumbrance reporting.

The majority of the DZ BANK banking group's encumbered assets are denominated in euros. There are also encumbered assets denominated in US dollars, which is also deemed a significant currency for the DZ BANK banking group. The encumbered assets denominated in US dollars mainly result from derivatives business and from the issuance of covered bonds. The volume of encumbered assets denominated in US dollars stood at €3,740 million as at December 31, 2019. US-dollar-denominated collateral received and re-used amounted to €43 million. The sources of encumbrance denominated in US dollars came to €3,666 million.

The majority of the unencumbered securities in the portfolios of the DZ BANK banking group are eligible for central bank borrowing and are available in the normal course of business as collateral for potential encumbrance. The unencumbered other assets line item includes assets such as property, plant and equipment, long-term equity investments and investments in other entities, intangible assets, deferred tax assets, and unencumbered derivatives that are not available in the normal course of business for potential encumbrance.

Within the total encumbered loans and advances, the volume of encumbered mortgages amounted to €45,558 million in 2019. Encumbrance predominantly results from the issuance of covered bonds by DZ BANK and DZ HYP.

15 Remuneration policy

15.1 General disclosures

(ARTICLE 450 CRR)

Pursuant to section 16 of the German Regulation Governing Remuneration at Institutions (InstitutsVergV, new version dated July 25, 2017), DZ BANK is required to disclose information about its remuneration policy and practices. As an (EU) parent institution, DZ BANK must disclose information at consolidated level. As an institution subject to the CRR, DZ BANK is subject to the disclosure requirements specified by article 450 CRR in conjunction with section 16 InstitutsVergV.

Pursuant to article 450 CRR, DZ BANK must disclose certain qualitative and quantitative information for categories of employees whose activities have a material impact on its risk profile (risk takers).

In 2019, DZ BANK and the subordinated management units BSH, DZ HYP, DVB, DZ PRIVATBANK, TeamBank, and VR Smart Finanz identified the employees whose activities have a material impact on the risk profile. Risk takers were identified based on Commission Delegated Regulation (EU) No. 604/2014 of March 4, 2014 supplementing CRD IV with regard to regulatory technical standards with respect to qualitative and appropriate quantitative criteria to identify categories of staff whose professional activities have a material impact on an institution's risk profile.

This risk report contains detailed information on remuneration in the DZ BANK banking group for the 2019 financial year.

The quantitative information pursuant to article 450 (1) letters g to j CRR is published after all bonus payments have been calculated. The information disclosed for 2019 pursuant to article 450 CRR for the DZ BANK banking group will therefore be updated in a separate report in the second quarter. This report disclosing the remuneration policy can be found on DZ BANK's website in the Investor Relations section under Reports.

15.2 Remuneration governance in the DZ BANK banking group

15.2.1 Remuneration strategy of the DZ BANK banking group

Section 27 InstitutsVergV dated December 16, 2013, in the version that came into force on August 4, 2017, requires the senior management of the parent company to define a banking group-wide **remuneration strategy**. The Board of Managing Directors of DZ BANK must define a remuneration strategy both for DZ BANK and for the entities in the DZ BANK banking group that implements the requirements of the InstitutsVergV in the banking group.

The remuneration strategy sets out uniform rules for managing remuneration that apply to the remuneration systems of the entities in the DZ BANK banking group. On the basis of this framework, each subordinated entity is obliged to document its subgroup's compliance with the agreed principles and to present this for inspection by DZ BANK.

Decentralized decision-making powers are one of the features of the balanced management approach taken within the DZ BANK banking group. Systematic coordination between all entities in the DZ BANK Group is necessary to ensure compliance with the InstitutsVergV. Company-law provisions and local rules – especially in relation to the independence of the institutions – are also taken into account.

The remuneration strategy is reviewed and, if necessary, amended at least once a year. The following material changes to the remuneration strategy were made during the year under review.
In 2019, the remuneration system for employees in the non-collectively-negotiated (NCN) wage sector at DZ BANK AG was harmonized. At DZ HYP, the remuneration systems for all employee groups were harmonized.

15.2.2 Remuneration structure

The remuneration of employees in the DZ BANK banking group comprises fixed remuneration and, as a rule, variable remuneration. The level of fixed remuneration is determined by the importance of the employee's role, market conditions, and the employee's personal qualities. The level of variable remuneration reflects the employee's personal performance and, depending on the remuneration system, the entity's success, and the success of the division in which the employee works.

Measures are in place to ensure that variable remuneration does not exceed fixed remuneration at the entities in the DZ BANK banking group. In some cases, variable remuneration has been capped at well below fixed remuneration. The variable remuneration of employees in control units may not exceed 50 percent of their fixed remuneration.

For DVB, a resolution adopted by the Annual General Meeting in 2014 capped the variable remuneration for a strictly limited group of employees at 200 percent of their fixed remuneration.

Variable remuneration is guaranteed for no more than the first twelve months after an employee has joined the DZ BANK banking group.

15.2.3 Remuneration decision-making processes

Various committees and functions in the DZ BANK Group are involved in designing and monitoring the remuneration systems.

The design and implementation of the remuneration system for the Boards of Managing Directors in the DZ BANK Group are decided upon by the Supervisory Board of the entity in question. The Supervisory Boards also check that the employee remuneration systems are appropriate.

Each Supervisory Board is assisted in its work by its Remuneration Control Committee, in particular with regard to the appropriate design and monitoring of the remuneration strategies and their conformity with the business and risk strategies, remuneration strategy, and corporate culture of the DZ BANK banking group.

Each Board of Managing Directors decides on the design and implementation of the employee remuneration systems. The individual members of the Boards of Managing Directors contribute to the implementation of and compliance with the InstitutsVergV in the DZ BANK banking group through their membership of the Supervisory Boards of the subsidiaries.

In each entity, a remuneration officer assists the Remuneration Control Committee and Supervisory Board with their monitoring activities and is involved in deployment of the remuneration systems, the development of new systems, and the refinement of existing systems on a regular basis.

In each entity, the HR division carries out HR-related preparations for the design of the remuneration systems and the decisions of the Board of Managing Directors, which it also puts into practice. As part of their leadership and management role, managers deploy the performance management and remuneration tools provided to them.

The **control units** as defined by section 2 (11) InstitutsVergV are involved in the design and monitoring of the remuneration systems on an ongoing basis. Each entity in the DZ BANK banking group has defined the control units in its institution.

At DZ BANK, the following divisions are defined as the control units: Group Human Resources, Credit/Credit Services, Group Risk Controlling, Group Audit, and Compliance.

At BSH, it is the Human Resources, Internal Audit, Risk Controlling, and Compliance divisions.
DVB has defined its control units as follows: all Credit and Research units, Group Audit, Group Compliance Office, Group Controlling, Group Risk Management, Group Human Resources, and Operational Services & Information Technology.

DZ HYP defines the following divisions as control units: Internal Audit, Risk Controlling, Compliance, Finance, all back-office units, and Human Resources.

At DZ PRIVATBANK, it is the Risk Controlling, Internal Audit/Data Protection/Information Security, Legal/Compliance/Anti-Money Laundering, and Human Resources divisions.

15.2.4 Remuneration Control Committee

The **Remuneration Control Committee** (RCC) checks that the remuneration systems for members of the Board of Managing Directors and for employees are designed appropriately. In particular, it checks that remuneration is designed appropriately for the heads of the risk control and compliance functions and for those employees who have a material influence on the institution's overall risk profile. The RCC also assists the Supervisory Board with checking that the remuneration systems for the entity's employees are designed appropriately and it evaluates the impact of the remuneration systems on the management of risk, capital, and liquidity.

The RCC prepares the Supervisory Board's resolutions on the remuneration of the members of the Board of Managing Directors, taking particular account of the impact of the resolutions on the entity's risks and risk management. It also considers the long-term interests of shareholders, investors, and other stakeholders as well as the wider public interest.

The RCC helps the Supervisory Board to check that the internal control divisions and all other relevant divisions are duly involved in designing the remuneration systems.

The RCC is required to cooperate with the Risk Committee.

The Supervisory Board's RCC, in cooperation with the remuneration officer, verifies that the remuneration systems are appropriate.

In 2019, the RCC at DZ BANK held three meetings. The Supervisory Board was notified of the findings. The RCC is made up of members of the Supervisory Board. DZ BANK's RCC comprises a chairman, deputy chairman, and four other members.

The RCC at BSH met twice in 2019. BSH's RCC comprises a chairman and five other members.

The RCC at DVB met five times in 2019. It comprises a chairman, deputy chairman, and one other member.

In 2019, the RCC at DZ HYP held four meetings. It comprises a chairman and three other members.

At DZ PRIVATBANK, the role of the RCC is performed by the Chairman's Committee. In the reporting year, the Chairman's Committee held three meetings, with RCC matters being discussed at two of them. The Chairman's Committee at DZ PRIVATBANK comprises a chairman, deputy chairman, and two other members.

15.2.5 Remuneration officer

In accordance with the requirements of section 23 InstitutsVergV, a **remuneration officer** has been appointed by the Board of Managing Directors in all entities in the DZ BANK banking group that are deemed major pursuant to section 17 InstitutsVergV.

The main tasks of these remuneration officers include the ongoing verification and monitoring of the appropriateness of the remuneration systems, regular and close coordination with the chairman of the Remuneration Control Committee, and preparation of an annual remuneration control report. To this end, they work closely with the other control and monitoring functions.

15.2.6 Relevant stakeholders

When it comes to defining remuneration policy, the **relevant stakeholders** are the owners and the central employees' council. The owners are represented on the Supervisory Board by the shareholders elected by the Annual General Meeting. This ensures that the owners are involved in the design of the remuneration systems and receive information about employee remuneration annually. The central employees' council is involved in the design of the remuneration systems within the framework of the rights of participation that exist under the German Works Council Constitution Act (BetrVG).

15.2.7 External consultancy

In 2019, all entities in the DZ BANK banking group that are deemed major pursuant to section 17 InstitutsVergV engaged external consultants to examine how the remuneration of the Board of Managing Directors compared with the market standard.

DZ BANK did not engage any other external consultants.

BSH did not engage any other external consultants regarding remuneration matters.

DVB worked with an external law firm on implementing individual InstitutsVergV requirements.

DZ HYP brought in external support for the legal and other aspects of implementing individual requirements arising from the InstitutsVergV. These requirements are also currently arising in connection with the harmonization of the remuneration systems at DZ HYP that was planned for 2019.

DZ PRIVATBANK also engaged an external consultancy to deal with unresolved questions regarding the implementation of individual InstitutsVergV requirements.

15.2.8 Appropriateness of the remuneration systems

According to section 12 InstitutsVergV, DZ BANK must review the **appropriateness of the remuneration systems** at least once a year. The related internal audit reports, the audit report from the auditor of the annual financial statements, and the remuneration officer's remuneration control report have to be used as the basis for this review. DZ BANK's Board of Managing Directors confirmed the appropriateness of the remuneration systems in a written resolution adopted in November 2019.

Overall, DZ BANK AG's remuneration systems are deemed appropriate in accordance with the requirements in the InstitutsVergV and are consistent with the business and risk strategies. The design, application and, in particular, the outcome of the remuneration systems show that there are no incentives for employees to take on disproportionately high risks. The remuneration systems do not run counter to the control units' monitoring function. There are no further remarks to be made regarding objections raised by the internal and external auditors. Moreover, the remuneration systems of DZ BANK AG are consistent with the group remuneration strategy.

The last audit report from the auditor of the annual financial statements for 2019 found that DZ BANK's remuneration systems and their focus on the institution's long-term performance were appropriate and transparent. The ratio of variable to fixed remuneration was deemed appropriate. The report confirmed that DZ BANK's remuneration systems, including the remuneration strategy, supported the achievement of the institution's strategic objectives. The remuneration parameters are aligned with the business strategy and risk strategy.

The internal audit function reviewed the remuneration systems in 2018. The bank rectified the deficiencies identified during the audit in a timely manner. The measures taken to rectify such deficiencies were documented.

The 2019 remuneration control reports of the remuneration officer for the DZ BANK banking group also found that the remuneration systems were designed appropriately.

In 2019, the auditor of the annual financial statements reviewed BSH's remuneration systems. No deficiencies were identified.

The report from the auditor of DVB's annual financial statements for 2019 and the remuneration control report of the remuneration officers found that the remuneration systems were designed appropriately.

DZ HYP's predecessor institutions had differing remuneration systems, which were harmonized in 2019. The appropriateness of the remuneration systems, which are based on the system established at the Hamburg office (formerly DG HYP), was confirmed by the auditor of the annual financial statements in the context of the regulatory control mechanisms. The remuneration systems are aligned with the business and risk strategies.

At DZ PRIVATBANK, the appropriateness of the remuneration systems was verified by the institution's remuneration officer in preparation for the annual remuneration control report to the Supervisory Board. This examination found that DZ PRIVATBANK's updated remuneration systems complied with the revised requirements of the InstitutsVergV in the version of August 2017. The obligation to ensure rapid implementation of the requirements in policies and contractual arrangements was fulfilled in 2019. The remuneration systems were also included in an audit by the Group Audit division in the second half of 2018. Suitable measures were defined in respect of the audit's findings and were implemented during the reporting period.

15.3 Design of the remuneration systems at DZ BANK

DZ BANK's remuneration systems are aimed at providing appropriate rewards and additional performance incentives in the form of fixed salaries and, in the case of employees in the NCN wage sector, an additional variable remuneration component. The idea is that good performance should pay off.

15.3.1 Remuneration system for employees in the collectively-negotiated wage sector

The **remuneration system for employees in the collectively-negotiated (CN) wage sector** generally applies to any employee in the CN wage sector who is in an active employment relationship at any of DZ BANK's offices in Germany. The remuneration for such employees is governed by a company agreement.

Remuneration structure

The annual salary of employees in the CN wage sector consists of the following:

- Twelve monthly salaries (plus any CN or NCN allowances)
- Bonus equal to one month's salary in April
- Bonus equal to one month's salary in November.

Monthly salary and bonuses

The monthly salary is determined by the applicable salary bracket (1 to 9) and the number of years worked. Under the wage settlement for the local cooperative banks and the cooperative central institution dated August 7, 2019, employees joining the company in or after 2020 will be assigned to remuneration groups and categorized according to years of service. The amount of remuneration for these employees will be based on the newly negotiated remuneration tables. The monthly salary is paid twelve times a year. It may also include CN and/or NCN allowances.

The level of the bonuses in April and November is determined by the monthly salary in the month of payment according to the CN remuneration table.

15.3.2 Remuneration system for employees in the non-collectively-negotiated wage sector

The remuneration systems for employees in the NCN wage sector are described below. There are differences between regular NCN remuneration (see section 15.3.2.1), the remuneration of risk takers below the level of head of division (see section 15.3.2.2), and the remuneration system for heads of division (see section 15.3.2.3). The remuneration systems for the foreign branches are presented in section 15.3.2.4.

15.3.2.1 Remuneration system for employees in the non-collectively-negotiated wage sector

The remuneration system for employees in the NCN wage sector is governed by a company agreement and applies to all such employees at DZ BANK in Germany (excluding senior managers). The majority (75.2 percent) of employees are in the NCN wage sector.

In addition to the fixed salary paid as twelve monthly salaries, the remuneration structure for employees in the NCN wage sector includes a contractually agreed performance- and results-based remuneration component (bonus) and a process for rating role importance (responsibility levels).

There are also non-financial remuneration components that are designed to promote staff loyalty, such as a subsidy for childcare costs.

System of responsibility levels

Each role at DZ BANK that is not covered by a CN pay agreement is rated according to knowledge/ability, problem-solving, responsibility, and strategic importance and then assigned to one of five responsibility levels. The percentage share represented by the target bonus and the lower and upper limits for the employee's remuneration depend on the responsibility level to which his or her role is assigned. The upper limits for variable remuneration are derived from the contractually agreed target bonuses and the upper limits for the bonus factors. Reflecting the market situation, DZ BANK may define special markets (e.g. the capital markets) for specific divisions, departments, groups, or roles. In these special markets, the target bonus may be agreed as a larger percentage share relative to the fixed salary. Under no circumstances may variable remuneration exceed fixed remuneration. The salary bands for each responsibility level are reviewed annually and adjusted if necessary. The adjustments are based on the bank's market position and financial performance as well as on the wider economic situation.

The following terms are used with regard to the NCN remuneration system at DZ BANK:

Fixed salary:
The contractually agreed basic salary and any existing special allowances

Target bonus:
Amount agreed by the employee and his or her manager that provides the basis of calculation for the bonus

Reference salary:
Fixed salary plus target bonus

Fixed allowance:
The fixed allowance is derived from the lower limits of the bonus factors (AG factor of 0.8, divisional factor of 0.8, IPF of 0.8). When deducted from the target bonus, it equates to 51.2 percent of the target bonus (0.8 x 0.8 x 0.8 = 0.512). This share of the target bonus is fixed and is paid monthly with the fixed salary.

Fixed remuneration:
Total of fixed salary plus fixed allowance

Bonus factors:
The AG factor and divisional factors reflect the results of the bank/group and divisions. The IPF indicates the employee's rate of target achievement.

Bonus:
Variable remuneration component calculated from the performance factors and the target bonus less the fixed allowance

The factors fall to below 1.0 if performance and success targets of the DZ BANK Group, DZ BANK AG, or the divisions and/or individual performance and success targets are not achieved. This reduces the amount of variable remuneration.

Target agreement and target achievement
The basis for a transparent and clearly documented performance appraisal, and thus for determination of the IPF, is a target agreement process that is applied throughout the bank. 'Management by objectives' is the target agreement system used at DZ BANK and constitutes a key element of the variable remuneration system. The employee and his or her manager together agree on three to five specific, challenging, and measurable individual targets by March 1 of the respective year. These targets are given weighting factors and deadlines. They consist of qualitative targets and quantitative targets based on profitability KPIs.

When calculating the bonus, the aim is to both recognize employees' high level of dedication and enable them to share in the success of their division and of DZ BANK as a company. That is why the bonus is determined using further performance factors in addition to the divisional and entity factors.

The IPF ranges from 0.8 to 1.8 and is set on the basis of the employee's personal target achievement during the annual performance review with his or her manager. The divisional factor ranges from 0.8 to 1.2 and is set by the responsible member of the Board of Managing Directors in consultation with the rest of the Board of Managing Directors on the basis of the head of division's suggestion and the division's results. The AG factor also ranges from 0.8 to 1.2 and is set by the Board of Managing Directors on the basis of the bank's and group's results.

The breadth of the IPF range enables employees to have a direct influence on their bonus.

Calculation of the variable component
The IPF is set during the annual performance review by no later than March 1 of the following year on the basis of target achievement. The divisional factor and AG factor are determined by no later than March 31 of the following year. The following formula is used to calculate the bonus:

VARIABLE REMUNERATION = TARGET BONUS X IPF X DIVISIONAL FACTOR X AG FACTOR LESS FIXED ALLOWANCE (51.2 PERCENT OF THE TARGET BONUS)

The variable remuneration (less the fixed allowance) is paid with the April salary in the year following the year to which it applies. The fixed salary and the fixed allowance are paid in twelve equal monthly installments.

The variable remuneration may be paid only if the risk-bearing capacity, the multi-year capital planning, and the financial performance of DZ BANK AG and the DZ BANK Group permit.

At some foreign branches, non-cash benefits that are typical for the particular market are paid, for example housing allowances and healthcare contributions.

15.3.2.2 Remuneration system for risk takers below the level of head of division

As in previous years, risk takers were identified for 2019 on the basis of Commission Delegated Regulation (EU) No. 604/2014 of March 4, 2014 supplementing CRD IV with regard to regulatory technical standards with respect to qualitative and appropriate quantitative criteria to identify categories of staff whose professional activities have a material impact on an institution's risk profile. These define binding qualitative and quantitative criteria that must be used to identify risk takers.

Using these criteria, 218 risk takers were identified at DZ BANK AG for the reporting period. A further 120 group risk takers from subordinate entities were identified for the DZ BANK Group. The remuneration structure and, in particular, the bonus calculation for all employees below the level of head of division who have been identified as risk takers are governed by the remuneration system for employees in the NCN wage sector (see section 15.3.2.1).

In accordance with the provisions of the InstitutsVergV, some of a risk taker's variable remuneration is deferred and subject to a retention period if the variable remuneration exceeds €50 thousand. Of the total variable remuneration, 30 percent of the calculated bonus amount is paid to the employee with the April salary. A further 30 percent is subject to a retention period of one calendar year. The other 40 percent of the calculated bonus is deferred over a period of three calendar years. This sum is split into three pro-rata deferrals (each amounting to a third of the 40 percent). 50 percent of the deferral is subject to a retention period. During the deferral period, 50 percent of the level of deferred variable remuneration depends on the bank's long-term performance. During the subsequent retention period, this percentage rises to 100 percent. The change in the value of the bank's shares is used to measure long-term performance. The deferred variable remuneration decreases if there is an adverse change in the value of the shares.

None of DZ BANK AG's shares are traded on the market. DZ BANK's share price is determined annually on the basis of the results of the strategic planning process at DZ BANK AG and the DZ BANK Group. To this end, a valuation using the income capitalization approach is carried out that is based on the principles for conducting enterprise valuations pursuant to standard 1 (IDW S1) of the Institut der Wirtschaftsprüfer in Deutschland e.V. (IDW) [Institute of Public Auditors in Germany] and on 'Application of the principles of IDW S1 in the valuation of equity investments and other company shares for the purposes of financial statements prepared in accordance with German commercial law (HGB)' (IDW AcP HFA 10). The enterprise valuation process is typically completed in December.

Above a certain bonus amount, 40 percent of the variable remuneration is paid to the employee and 60 percent is deferred and subject to retention periods.

If the contribution to profits of an employee, his or her division, or DZ BANK falls short of the agreed targets, the employee's variable remuneration is reduced. In these cases, the IPF, divisional factor, or AG factor is set at a lower level. If all factors are set at 0.8, the variable remuneration is cancelled. Before it becomes vested, deferred variable remuneration can be reduced or cancelled if the bonus factors that were originally set no longer appear appropriate when reviewed (backtesting).

Variable remuneration is forfeited in full if the risk taker has played a significant part in, or was responsible for, conduct that led to substantial losses or material regulatory sanctions for the institution, or if the risk taker was in serious (grossly negligent or intentional) breach of relevant external or internal rules regarding suitability and conduct. If, in exercising his or her role, the risk taker exhibits conduct that is immoral or in breach of duty, the IPF is reduced. The IPF can be lowered to zero in individual cases where a reduction of the IPF to 0.8 appears insufficient in view of the significance of the conduct that is immoral or in breach of duty. It is not possible to compensate for conduct that is immoral or in breach of duty by making a positive contribution to profits. Conduct that is immoral or in breach of duty must always lead to a reduction in the employee's variable remuneration. In cases where the variable remuneration is forfeited in full, the bank is also entitled to claw back any variable remuneration already paid to the risk taker.

15.3.2.3 Remuneration system for heads of division

All heads of division at DZ BANK are senior managers and have been identified as risk takers. Because they are senior managers, they are not covered by the company agreement.

Each head of division's variable remuneration is based on the achievement of group, entity, divisional, and individual targets. Achievement of the group and entity targets may account for no more than 55 percent of the maximum bonus amount, achievement of the divisional targets for no more than 35 percent, and achievement of the individual targets for no more than 10 percent.

Only 20 percent of the bonus achieved is paid immediately in the year after target achievement has been determined. Payment of the remaining 80 percent of the bonus set for the previous year is spread out over a period of up to six years in total, taking into account deferral and retention periods. All amounts earmarked for deferred payment are linked to the long-term performance of DZ BANK because they are pegged to the share price. If the share price falls below certain thresholds in percentage terms, the deferred amounts are reduced or cancelled. An increase in the share price does not result in higher variable remuneration.
None of DZ BANK AG's shares are traded on the market. DZ BANK's share price is determined annually on the basis of the results of the strategic planning process at DZ BANK AG and the DZ BANK Group. To this end, a valuation using the income capitalization approach is carried out that is based on the principles for conducting enterprise valuations pursuant to standard 1 (IDW S1) of the Institut der Wirtschaftsprüfer in Deutschland e.V. (IDW) [Institute of Public Auditors in Germany] and on 'Application of the principles of IDW S1 in the valuation of equity investments and other company shares for the purposes of financial statements prepared in accordance with German commercial law (HGB)' (IDW AcP HFA 10). The enterprise valuation process is typically completed in December. Unlike in the system for risk takers below the level of head of division, the greater responsibility of heads of divisions means that 100 percent rather than 50 percent of their variable remuneration is pegged to the value of DZ BANK's shares during the retention period.

Negative contributions to profits are taken into account when setting bonuses and pro-rata deferred bonuses, which may cause the variable remuneration to be reduced or cancelled. Variable remuneration is not vested during the deferral and retention periods. For a period of seven years after the initial payment, all bonus installments that are already subject to a retention or deferral period can be cancelled, and those that have already been paid can be clawed back, if the head of division has played a significant part in, or was responsible for, conduct that led to substantial losses or material regulatory sanctions for the institution, or if the head of division was in serious breach of relevant external or internal rules regarding suitability and conduct. The DZ BANK Board of Managing Directors is responsible for determining the remuneration system.

Negative contributions to profits are determined using a list of criteria in the following categories:

- Personal conduct
- Significant deterioration in DZ BANK's financial situation during the deferral period
- Missed targets that are ascertained only subsequently.

15.3.2.4 Remuneration systems for foreign branches

At DZ BANK's offices outside Germany, various variable components that differ from the systems used in Germany are paid along with a fixed salary in accordance with local custom and additional benefits.

The heads of the foreign branches were identified as risk takers for the reporting year. The remuneration system described above for heads of division is also used for the heads of the four foreign branches.

The individual bonus amounts for employees at the offices outside Germany are calculated on the basis of the local systems.

FIG. 100 – OVERVIEW OF CURRENT BONUS ARRANGEMENTS IN THE FOREIGN BRANCHES

New York	For Group Treasury: target bonus system; calculated in the same way as in the German system on the basis of individual performance and the results of the division and bank For all other divisions: discretionary bonus payment; proposed bonuses reflect not only individual performance but also the bonuses paid in the market, seniority, and area of work (risk unit, business unit, or support unit)
London	For Group Treasury: target bonus system; calculated in the same way as in the German system on the basis of individual performance and the results of the division and bank For all other divisions: discretionary bonus payment; proposed bonuses reflect the following criteria: Local market conditions Internal and external salary comparisons Results of the bank Results of the branch Results of the department/group Individual target achievement
Singapore	For Group Treasury and for capital markets divisions: target bonus system; calculated in the same way as in the German system on the basis of individual performance and the results of the division and bank For all other divisions: discretionary bonus payment; proposed bonuses reflect not only individual performance but also the bonuses paid in the market
Hong Kong	For Group Treasury and for capital markets divisions: target bonus system; calculated in the same way as in the German system on the basis of individual performance and the results of the division and bank For all other divisions: discretionary bonus payment; proposed bonuses reflect not only individual performance but also the bonuses paid in the market

15.3.3 Remuneration system for members of the Board of Managing Directors

As well as a fixed salary, the remuneration system for the members of the Board of Managing Directors includes variable remuneration (bonus) that makes up no more than 20 percent of the total salary. The variable remuneration of the Board of Managing Directors is set with reference to a maximum achievable bonus. Quantitative and qualitative targets derived from the corporate strategy in the form of group, bank, area of board responsibility, and individual targets are used to determine the bonus level. The basis of measurement for the bonus covers a period of several years. The maximum bonus is set in the event of full achievement of each individual target. Only 20 percent of the bonus achieved is paid immediately in the following year after the annual financial statements have been adopted and the bonus has been set by the Supervisory Board. Payment of the remaining 80 percent of the bonus set for the previous year is spread out over a period of up to six years in total, taking into account deferral and retention periods. All amounts earmarked for deferred payment are linked to the long-term performance of DZ BANK because they are pegged to the share price. If the share price falls below certain thresholds in percentage terms, the deferred amounts are reduced or cancelled. An increase in the share price does not result in higher variable remuneration.

Unlike in the system for risk takers below the level of head of division, the greater responsibility of heads of divisions means that 100 percent rather than 50 percent of their variable remuneration is pegged to the value of DZ BANK's shares.

Negative contributions to profits are taken into account when setting bonuses and pro-rata deferred bonuses, which may cause the variable remuneration to be reduced or cancelled. Variable remuneration is not vested during the deferral and retention periods. For a period of seven years after the initial payment, all bonus installments that are already subject to a retention or deferral period can be cancelled, and those that have already been paid can be clawed back, if the member of the Board of Managing Directors has played a significant part in, or was responsible for, conduct that led to substantial losses or material regulatory sanctions for the institution, or if the member was in serious breach of relevant external or internal rules regarding suitability and conduct. The Supervisory Board of DZ BANK is responsible for determining the remuneration system for the members of the Board of Managing Directors.

Negative contributions to profits are determined using a list of criteria in the following categories:

– Personal conduct
– Significant deterioration in DZ BANK's financial situation during the deferral period
– Missed targets that are ascertained only subsequently.

15.3.4 Remuneration system for members of the Supervisory Board

The Annual General Meeting of DZ BANK approved the adjustment of the remuneration and attendance fees for its Supervisory Board with effect from June 1, 2018. Each member of the Supervisory Board receives fixed annual remuneration, the level of which varies depending on whether they are a chairperson, a deputy chairperson, or member of a committee. The members of the Supervisory Board committees also receive an attendance fee for each committee meeting that they attend. There is no variable remuneration.

15.3.5 Determination of the total amount of variable remuneration at DZ BANK

In accordance with section 7 InstitutsVergV, the total amount of variable remuneration at DZ BANK and in the DZ BANK banking group is determined in such a way that takes due regard of risk-bearing capacity, multi-year capital planning, and financial performance and, moreover, ensures that the adequacy of own funds and liquidity along with the combined capital buffer requirements pursuant to section 10i KWG are permanently maintained or restored.

A detailed process has been adopted for this process and the various documents required have been submitted to the relevant decision-making bodies (Board of Managing Directors, Remuneration Control Committee, and Supervisory Board) for approval.

The performance-based variable remuneration is set at individual level in accordance with the company agreements concerning the remuneration systems or, where these agreements do not apply, on the basis of individual contracts.

15.4 Remuneration systems of the management units regarded as major pursuant to section 17 InstitutsVergV

15.4.1 Relevant subsidiaries according to section 27 in conjunction with section 16 InstitutsVergV

DZ BANK, BSH, DZ HYP, DVB, and DZ PRIVATBANK are major institutions according to section 17 InstitutsVergV. They must fulfill the disclosure requirements pursuant to section 16 (1) InstitutsVergV.

The following basic principles apply to them in the context of the remuneration strategy of the DZ BANK banking group:
Under the current business model of DZ BANK and the DZ BANK Group, earnings are broadly diversified across various customer groups and products. This is thanks to the combination of different customer groups (retail customers, corporate customers, institutional customers), a broad customer base (around 875 cooperative banks and their more than 30 million customers), a nationwide branch network (approximately 11,000 branches), and a comprehensive range of services (including asset management, retail and private banking, insurance, real estate finance/home savings, corporate banking, capital markets business). The overarching concept of a network-oriented central institution/financial services group shapes the actions and core business of the DZ BANK Group and is thus a central pillar of the remuneration strategy as well.

Remuneration is one of the DZ BANK Group's key HR management tools. The aims of the DZ BANK Group's remuneration structure are to

- give each employee an incentive to contribute personally to the sustainable implementation of the strategic objectives of the DZ BANK Group and the individual divisions on the basis of targets that are derived from the corporate strategy and cascaded down through the organization.
- reward performance without encouraging employees to take unwanted risks.
- attract talented employees, motivate them, and encourage them to remain in the DZ BANK Group.

To achieve these aims, the DZ BANK Group pays not only a fixed salary but also variable remuneration.

The variable salary component is reasonable in relation to the fixed remuneration and must not exceed the fixed remuneration. Regular performance reviews with their manager ensure that employees know where they are in terms of achieving their targets.

Depending on local custom, the DZ BANK Group offers additional non-cash benefits besides the salary payments. The DZ BANK Group is committed to the principles of sustainable, incentivizing, and risk-oriented remuneration. The remuneration systems also take account of statutory and regulatory requirements.

The remuneration systems of DZ BANK's subordinated entities that are deemed major pursuant to section 17 InstitutsVergV are described below.

15.4.2 Remuneration systems at BSH

Remuneration system for employees in the non-collectively-negotiated wage sector

The remuneration of employees in the NCN wage sector comprises a pensionable basic salary plus a fixed remuneration component (not pensionable) and a target achievement bonus. The level of remuneration is oriented to external benchmarks that are collated for BSH regularly. Variable remuneration – at 100 percent target achievement – may not make up more than 25 percent of the total remuneration.
The target achievement bonus is determined as follows:
Amount paid as a target achievement bonus = target achievement x (target achievement bonus + fixed remuneration)/100 – fixed remuneration

Risk takers

For 2019, the following were defined as risk takers: the members of the Board of Managing Directors of BSH (managing directors of BSH), the managing directors of Schwäbisch Hall Kreditservice GmbH (SHK), Schwäbisch Hall, the managing directors of Fundamenta-Lakáskassza, Budapest, and selected managers at BSH and SHK. The remuneration systems for the managing directors of BSH and Fundamenta-Lakáskassza and the remuneration systems of the other risk takers are described below.
Target achievement ranges from 0 percent to 120 percent and is based on group, entity, organizational unit, and individual targets.

Remuneration of risk takers below the level of managing director

The remuneration of risk takers at BSH and SHK comprises a pensionable basic salary, a fixed non-pensionable remuneration component, and a target achievement bonus. Variable remuneration – at 100 percent target achievement – is not more than 25 percent of the total remuneration.

Target achievement ranges from 0 percent to 120 percent. Target achievement, which is used to determine the level of variable remuneration, is broken down as follows: 75 percent entity targets, 5 percent DZ BANK Group target, 10 percent targets for the organizational unit, and 10 percent individual targets. The breakdown for the managing directors of SHK is the same as for the members of the Board of Managing Directors of BSH.

The parameters factored into the remuneration are also management-related key performance indicators (KPIs) that are important to a building society. By taking return on risk-adjusted capital, profit before taxes, and administrative expenses into account, the remuneration is linked to earnings figures, key risk indicators, and the liquidity situation.

Because the target system, which reflects the change in enterprise value, is combined with the deferral and retention of some of the remuneration, the remuneration is also linked to the entity's long-term performance.

Where the currently applicable exemption threshold of €50 thousand is exceeded, the arrangements regarding deferrals, retention periods, and malus criteria are the same as in the system for the managing directors. For a period of two years after the end of its deferral period, a bonus installment already paid can be clawed back, and the entitlement to bonus payments can be cancelled if the risk taker has played a significant part in, or was responsible for, conduct that led to substantial losses or material regulatory sanctions for the institution, or if the risk taker was in serious breach of relevant external or internal rules regarding suitability and conduct.

The Board of Managing Directors is responsible for determining the remuneration system for risk takers below the level of the Board of Managing Directors. The control units (Human Resources, Internal Audit, Risk Controlling, Compliance) and the remuneration officer were involved in designing the remuneration systems.

Remuneration of managing directors
The remuneration of the BSH Board of Managing Directors consists of a basic salary, a non-pensionable basic salary, and a bonus. Variable remuneration – at 100 percent target achievement – is not more than 25 percent of the total remuneration.

Target achievement ranges from 0 percent to 150 percent. Target achievement, which is used to determine the level of variable remuneration, is broken down as follows: 70 percent entity targets, 10 percent HR targets, and 20 percent individual targets, factoring in the contribution to profits of the managing director's area of responsibility and group targets. The entity targets, HR targets, and individual targets are measured over a period of several years and include the main targets in the corporate strategy. The parameters factored into the remuneration are management-related KPIs that are important to a building society.

20 percent of the bonus is paid immediately in the following year and 20 percent after a one-year retention period. 60 percent of the bonus is deferred over a period of up to five years, with each payment made after a subsequent retention period of one year. All amounts earmarked for deferred payment are pegged to the change in the notional share price of the building society.

Negative contributions to profits are taken into account when setting bonuses and pro-rata deferrals and at the end of the retention period, which may cause the variable remuneration to be reduced or not be paid. Variable remuneration is not vested during the deferral period. The Supervisory Board is responsible for determining the remuneration system for the members of the Board of Managing Directors.

For a period of two years after the end of its deferral period, a bonus installment already paid can be clawed back, and the entitlement to bonus payments can be cancelled if the managing director has played a significant part in, or was responsible for, conduct that led to substantial losses or material regulatory sanctions for the institution, or if the managing director was in serious breach of relevant external or internal rules regarding suitability and conduct.

The remuneration systems were designed in consultation with DZ BANK; the legal affairs division was involved in drafting the employment contracts for the members of the Board of Managing Directors. The Remuneration Control Committee of the Supervisory Board monitors the appropriateness of the remuneration systems.

The remuneration of the Board of Managing Directors of Fundamenta-Lakáskassza in Hungary consists of basic remuneration and a bonus. Variable remuneration accounts for 33 percent of the basic remuneration.

Target achievement ranges from 0 percent to 150 percent. Target achievement, which is used to determine the level of variable remuneration, is broken down as follows: 80 percent entity targets, 10 percent targets for the area of responsibility of the member of the Board of Managing Directors, and 10 percent individual targets. Some of the entity targets are measured over a period of several years. The criteria for target achievement are derived from the rules specified in a regulation of the Hungarian government.

20 percent of the bonus is paid immediately in the following year and 20 percent after a one-year retention period. 60 percent of the bonus is deferred over a period of up to five years. Half of each deferred amount is subject to a subsequent retention period of one year. All amounts earmarked for deferred payment are pegged to the change in the average profit before taxes for the last five financial years. Negative contributions to profits are taken into account when setting bonuses and amounts earmarked for deferred payment and at the end of the retention period, which may cause the variable remuneration to be reduced or forfeited in full. In cases where the variable remuneration is forfeited in full, the bank is also entitled to claw back any variable remuneration already paid to risk takers.

Variable remuneration is not vested during the deferral period.

The Supervisory Board is responsible for determining the remuneration system for the members of the Board of Managing Directors. The remuneration systems were designed in consultation with Bausparkasse Schwäbisch Hall. The Remuneration Committee of the Supervisory Board monitors the appropriateness of the remuneration systems.

15.4.3 Remuneration systems at DZ HYP

Following the merger of DG HYP and WL BANK to form DZ HYP in 2018, two different remuneration systems were in place that were initially continued within the two companies after the merger. These remuneration systems were largely harmonized in 2019 and so the harmonization applies to the year under review.
The employees in the CN wage sector at the two offices (Hamburg and Münster) receive 13 monthly salaries in accordance with the relevant collective pay agreement plus variable remuneration that is based on the 'Principles of variable performance-based remuneration' company agreement. Each December, these employees also receive half of a relevant gross monthly salary as a bonus. The variable remuneration of employees in the CN wage sector amounts to a maximum of 0.8 x a relevant gross monthly salary.

Remuneration system for employees in the non-collectively-negotiated wage sector

The employees in the NCN wage sector receive 12 monthly salaries plus variable remuneration that is based on the 'Principles of variable performance-based remuneration' company agreement.

Each December, the employees in the NCN wage sector at the Hamburg office also receive half of a gross monthly salary as a bonus. The aforementioned company agreement on variable remuneration distinguishes between employees in the NCN wage sector 'with' a target bonus and those 'without' a target bonus. Managers, employees with quantitative sales targets, and risk takers are eligible for a target bonus. The target bonus equates to a maximum of three gross monthly salaries. Each year, target agreements are reached with the employees eligible for a target bonus. These agreements set out qualitative and quantitative criteria as well as divisional and individual targets. The level of variable remuneration paid depends on the individual's performance and target achievement, on the success of his or her division, and the entity's results (measured on the basis of return on equity (ROE), the cost/income ratio (CIR) and, since 2015, RWAs. The variable remuneration of employees without a target bonus amounts to a maximum of 1.5 x the gross monthly salary. Employees with a target bonus can receive a maximum of 1.5 x the contractually agreed target bonus as variable remuneration. The variable remuneration may account for a maximum of 27 percent of the total annual remuneration. The Board of Managing Directors is responsible for determining the remuneration system for employees in the NCN wage sector.

Remuneration system for risk takers below the level of head of division
Risk takers were identified for 2019 on the basis of Commission Delegated Regulation (EU) No. 604/2014 of March 4, 2014 supplementing CRD IV with regard to regulatory technical standards with respect to qualitative and appropriate quantitative criteria to identify categories of staff whose professional activities have a material impact on an institution's risk profile. The regulatory technical standards define binding qualitative and quantitative criteria that must be used to identify risk takers.

Using these criteria, 88 risk takers were identified at DZ HYP for the reporting year, of whom 45 were below the level of head of division. The remuneration structure and, in particular, the bonus calculation for all employees below the level of head of division who have been identified as risk takers are governed by the remuneration system for employees in the NCN wage sector.

As is the case in the remuneration system for all employees in the NCN wage sector, risk takers below the level of head of division receive twelve (Hamburg office: twelve and a half) monthly salaries plus a variable remuneration component that is based on the company agreement setting out the principles of variable performance-based remuneration.
The variable remuneration for risk takers below the level of head of division is set by the Board of Managing Directors on the basis of the head of division's suggestion with reference to a contractually agreed target bonus. The level of the contractually agreed target bonus is limited to a maximum of three gross monthly salaries. Quantitative and qualitative targets derived from the corporate strategy in the form of overall bank, divisional, and individual targets are used to determine the actual bonus level. Target achievement, and thus the variable remuneration, depends on the entity's success (derived from ROE, CIR, and RWAs; target/actual comparison = success of the bank), on the contribution made by the division, and on the individual target achievement of the employee. New divisional and individual targets are agreed upon and set during a target agreement meeting each year between the employee and head of division. In the ideal scenario, the variable remuneration to be paid to employees eligible for a target bonus equates to 1.5 x the contractually agreed target bonus, which means that the variable remuneration may account for a maximum of 27 percent of the total annual remuneration. Besides the aforementioned overall bank, divisional, and individual targets, group targets are agreed with any risk takers at DZ HYP who are also group risk takers.

The variable remuneration for a particular year is paid in April of the following year. If the variable remuneration amounts to €50 thousand or more, the same arrangements as for the heads of divisions apply with regard to retention, entitlement requirements, and payment requirements.

Remuneration system for risk takers at the level of head of division
The heads of division are classified as risk takers and receive twelve monthly salaries plus a variable performance-based remuneration component. Individual contractual agreements on variable performance-based remuneration were reached with the heads of division in 2019. They take into account the requirements of the InstitutsVergV, particularly those regarding deferral, entitlement requirements, and payment requirements, and came into force in 2019.

The Board of Managing Directors sets the variable performance-based remuneration for the heads of division with reference to a contractually agreed target bonus. During the employee's annual performance review, quantitative and qualitative targets are derived from the corporate strategy in the form of group, overall bank, divisional, and individual targets; target achievement is also ascertained in these meetings and used to determine the actual bonus level. Target achievement, which is calculated on the basis of ROE, CIR, and RWAs, ranges from 0 percent to 130 percent for group and overall bank targets and from 0 percent to 150 percent for divisional and individual targets. The group and overall bank targets are given a 40 percent weighting and the divisional and individual targets 60 percent, which means that the variable performance-based remuneration may account for a maximum of 142 percent of the target bonus. The variable performance-based remuneration for a particular year is paid in April of the following year. If the variable performance-based remuneration amounts to €50 thousand or more, some of it is paid immediately, some is deferred, and some is subject to a retention period. Under this arrangement, 20 percent of the variable performance-based remuneration is paid immediately in cash in April of the following year. The other 80 percent of the calculated bonus is deferred over a period of up to six years. Of this deferred amount, 50 percent is pegged to the long-term performance of DZ HYP, which is calculated on the basis of the enterprise value. Negative contributions to profits are taken into account when setting bonuses and pro-rata deferrals. These are determined using a list of criteria in the following categories:

- Personal conduct
- Significant deterioration in the bank's or the DZ BANK Group's financial situation during the deferral period
- Missed targets that are ascertained only subsequently.

Variable remuneration is not vested during the deferral and retention periods.

Remuneration system for members of the Board of Managing Directors
The members of the Board of Managing Directors receive twelve monthly salaries plus a variable performance-based remuneration component that is based on individual contractual arrangements. The requirements of the relevant provisions in the InstitutsVergV have been taken into account.

The variable performance-based remuneration of the members of the Board of Managing Directors is set by the Supervisory Board and measured with reference to a maximum achievable bonus.

Quantitative and qualitative targets derived from the corporate strategy in the form of group, bank, area of board responsibility, and individual targets are used to determine the bonus level. The basis of measurement for the bonus covers a period of several years. The maximum bonus is set in the event of full achievement of each individual target. Only 20 percent of the bonus achieved is paid immediately in the following year after the annual financial statements have been adopted and the bonus has been set by the Supervisory Board. Payment of the remaining 80 percent of the bonus set for the previous year is spread out over a period of up to six years in total, taking into account deferral and retention periods. All amounts earmarked for deferred payment are linked to the long-term performance of DZ HYP because they are pegged to the value of its shares. Negative contributions to profits are taken into account when setting bonuses and pro-rata deferrals, which may cause the variable remuneration to be reduced or cancelled. Variable remuneration is not vested during the deferral and retention periods. For a period of seven years after the initial payment, all bonus installments that are already subject to a retention period or have already been paid can be clawed back if the member of the Board of Managing Directors has played a significant part in, or was responsible for, conduct that led to substantial losses or material regulatory sanctions for the institution, or if the member was in serious breach of relevant external or internal rules regarding suitability and conduct.

15.4.4 Remuneration systems at DVB

Remuneration system for employees in the non-collectively-negotiated wage sector
Employees covered by this remuneration system receive a fixed salary paid in regular installments plus a contractually agreed performance- and results-based remuneration component (target bonus).

The fixed salary installments vary depending on location and local custom.
The variable remuneration component can be tailored to the individual on the basis of a target bonus agreement. The target bonus is set by the Board of Managing Directors and the HR division and is oriented to external benchmarks that are collated regularly.

The proportion of target income (basic salary + target bonus) accounted for by variable remuneration is kept to a level at which the employee does not become financially dependent on it. The fixed component has an even higher weighting in the control units.

The bonus calculation reflects not only entity and divisional targets but also individual performance. Employees' individual targets do not consist of just financial metrics. They also include non-financial factors, such as process-oriented targets, involvement in projects, and conduct. The individual targets can be given different weightings and, like the entity and divisional targets, are documented in writing.

These target levels can vary in terms of weighting. They are currently weighted as follows:

- Bank: 30 percent
- Division, department, team: 35 percent
- Individual: 35 percent.

The performance factors at bank, divisional, and departmental level are determined on the basis of management reporting. The individual factor and any qualitative departmental and team targets are calculated on the basis of target achievement during the annual performance review.

Target achievement is calculated independently for each level. The individual results are aggregated and then multiplied by the target bonus to give the payment amount.
The Board of Managing Directors has a number of options at its disposal for adjusting the formula-based bonus calculation in the event of exceptional circumstances and/or performance or if achievements have not yet been reflected in the targets.

- Adjustment of target achievement at group level using a modifier of plus or minus 20 percentage points (prerequisite: unforeseeable events outside the bank's sphere of influence)
- Granting of an additional discretionary bonus pool at departmental or team level
- Granting of a discretionary bonus to individual employees
- Adjustments due to personal misconduct.

Remuneration system for risk takers (below the level of head of division)
The remuneration system for risk takers is the same as the remuneration system for employees in the NCN wage sector.
However, the bonus is paid as follows in accordance with the InstitutsVergV:
The risk taker becomes entitled immediately (in the following year) to 40 percent of the achieved bonus, once it has been set by the Board of Managing Directors (immediate bonus). Only 50 percent of this amount is paid immediately; the remaining 50 percent is subject to a one-year retention period.

60 percent of the achieved bonus is deferred (deferred bonus) and allocated in five tranches (each equating to 12 percent) over a period of five years. 50 percent of each tranche is subject to a further retention period of one year.

After each deferral period and after the individual tranche's additional retention period, the risk taker becomes entitled to payment of the particular bonus installment.

During the retention periods, the earmarked amounts are pegged to the change in enterprise value.
Negative contributions to profits are taken into account when setting bonuses and pro-rata deferrals.

Each deferred bonus tranche undergoes a malus process before payment, which involves reviewing the relevant risk situation and financial performance, compliance with internal policies (e.g. compliance policies, lending policies), and personal conduct. However, the malus process cannot increase an individual deferred bonus tranche; it can merely reduce or cancel it.

In the event of serious misconduct on the part of an employee, the Board of Managing Directors will initiate a clawback process, leading to the variable remuneration being forfeited in full (not only outstanding installments but also installments already paid).

The DVB Board of Managing Directors is responsible for determining the remuneration system.

Remuneration system for heads of division (below the level of the Board of Managing Directors)
The remuneration system for heads of division is the same as the remuneration system for risk takers below the level of head of division.

Remuneration system for the Board of Managing Directors
In addition to a fixed salary, the remuneration system for the Board of Managing Directors includes a variable remuneration component (bonus).
The variable remuneration of the Board of Managing Directors is set with reference to a maximum achievable bonus. Quantitative and qualitative targets derived from the corporate strategy and strategic planning are used to determine the bonus. Targets are set at group, bank, divisional, and individual level and are all measured over a period of several years. The maximum bonus is set in the event of full achievement of each individual target.
The member of the Board of Managing Directors becomes entitled immediately (in the following year) to 40 percent of the achieved bonus, once it has been set by the Supervisory Board (immediate bonus). Only 50 percent of this amount is paid immediately; the remaining 50 percent is subject to a one-year retention period.

60 percent of the achieved bonus is deferred (deferred bonus) and allocated in five tranches (each equating to 12 percent) over a period of five years. After the deferral period, 50 percent of each tranche is subject to a further retention period of one year.

After each deferral period and after the individual tranche's additional retention period, the member of the Board of Managing Directors becomes entitled to payment of the particular bonus installment.

During the retention periods, the earmarked amounts are pegged to the change in DVB's enterprise value.

Negative contributions to profits are taken into account when setting bonuses and pro-rata deferrals, which may cause the variable remuneration to be reduced or cancelled. Variable remuneration is not vested during the deferral period.

Each deferred bonus tranche undergoes a malus process before payment, which involves reviewing the relevant risk situation and financial performance, compliance with internal policies (e.g. compliance policies, lending policies), and personal conduct. However, the malus process cannot increase an individual deferred bonus tranche; it can merely reduce or cancel it. For a period of two years after the end of its deferral period, a bonus installment already paid can be clawed back, and the entitlement to bonus payments can be cancelled if the member of the Board of Managing Directors has played a significant part in, or was responsible for, conduct that led to substantial losses or material regulatory sanctions for the institution, or if the member was in serious breach of relevant external or internal rules regarding suitability and conduct.

The full DVB Supervisory Board is responsible for determining the remuneration system for the members of the Board of Managing Directors. Since 2014, the appropriateness of the remuneration systems has been ensured, primarily by the Remuneration Control Committee of the Supervisory Board.

Retention bonuses
Extensive restructuring took place in 2019. To avoid the risk of a workforce exodus, the Board of Managing Directors and Supervisory Board decided to launch the Retention 2019 program and to grant retention bonuses to employees in key functions. These retention bonuses were designed as an incentive that would encourage these employees to remain with the bank. The bonuses were paid after the end of the relevant waiting period

(December 31, 2019), provided that the employee was still employed by DVB. In the case of risk takers, the necessary deferral periods for variable remuneration were applied.

15.4.5 Remuneration systems at DZ PRIVATBANK

At DZ PRIVATBANK, the remuneration of employees in the CN wage sector is governed by the prevailing collective pay agreement. There is also a remuneration system for employees in the NCN wage sector and a remuneration system for risk takers. The Supervisory Board of DZ PRIVATBANK decides on the remuneration of the members of the Board of Managing Directors of DZ PRIVATBANK on the basis of individual contractual arrangements.

The remuneration systems generally apply at all locations while taking country-specific aspects into consideration, for example provisions in a collective pay agreement.

A new collective pay agreement for employees in the financial sector was signed in Luxembourg in 2018. It expires in 2020. Among other arrangements, the new agreement includes a new scheme in which job profiles are assigned to one of four pay brackets (previously six). Assignment is based on five categorization criteria, each of which is divided into four levels. As well as a 13th monthly salary payment at the end of the year, employees in the CN wage sector receive a loyalty bonus linked to their length of service that is paid in June. It ranges from 20 percent to 85 percent of the basic monthly salary and is capped at a maximum amount. All employees covered by the collective pay agreement had to be assigned to the new salary brackets by January 1, 2020. Implementation of the requirements of the new collective pay agreement was used as an opportunity to conduct a systematic assessment of role importance – with support from an external consultancy – not only for employees in the CN wage sector in Luxembourg but also for those in the NCN wage sector in Luxembourg and other countries.

Remuneration system for employees in the non-collectively-negotiated wage sector

The Board of Managing Directors is responsible for determining the remuneration system for employees in the NCN wage sector.
In accordance with the provisions of the InstitutsVergV, the remuneration system for employees in the NCN wage sector includes a ban on hedging, rules on the 1:1 ratio of fixed to variable remuneration, an explicit ban on guaranteed bonuses, and specific rules on remuneration arrangements for employees in control units.

The remuneration system for employees in the NCN wage sector includes not only a fixed salary paid in the form of 12, 12.5, or 13 monthly salaries (depending on the arrangements at the local office) but also a performance- and results-based remuneration component (reference bonus).

System of responsibility levels

Each role at DZ PRIVATBANK that is not covered by a CN pay agreement is rated according to knowledge/ability, problem-solving, responsibility, and strategic importance and then assigned to one of four responsibility levels. The percentage share represented by the reference bonus and the lower and upper limits for the employee's remuneration depend on the responsibility level to which his or her role is assigned. This share ranges from 5 percent to a maximum of 40 percent of the annual fixed salary. The remuneration of employees in control units is more oriented toward annual fixed salary. Their possible reference bonus therefore ranges from 5 percent to a maximum of 20 percent of the annual fixed salary. The total variable remuneration of employees in control departments must not exceed 1/3 of their total annual remuneration.

Calculation of the variable component

The following formula is used to calculate the variable component as part of the annual bonus process:
Bonus = (reference bonus x IPF x segment factor x location factor)
When calculating the bonus, the aim is to both recognize employees' high level of dedication and enable them to actively share in the success of their segment and of DZ PRIVATBANK as a company. That is why the bonus is determined using further performance factors in addition to the segment and overall bank targets. The level of these factors is as follows:

- Individual performance factor: 0.5 to 1.8
- Segment factor: 0.8 to 1.2
- Location factor: 0.8 to 1.2.

The Board of Managing Directors sets the segment factors and the location factor. The bank can set an individual performance factor and the location factor in a particular country (so that it differs from the location factor in other countries) at zero, if required under local regulatory and statutory provisions. This ensures that it is possible to cancel an employee's bonus. The segment factors for the variable remuneration of employees in control units are not based on the same remuneration parameters as for the employees in the segments overseen by the control units.

Remuneration system for risk takers (maximum bonus scheme)
The Board of Managing Directors is responsible for determining the remuneration system for risk takers. The remuneration system for risk takers is fundamentally derived from the remuneration system for employees in the NCN wage sector.

The remuneration system for risk takers also includes a ban on hedging, rules on the 1:1 ratio of fixed to variable remuneration, an explicit ban on guaranteed bonuses, and specific rules on remuneration arrangements for employees in control units.

As is the case in the remuneration system for all employees in the NCN wage sector, risk takers are assigned to salary brackets. They are generally assigned to responsibility levels 1 and 2. This is because the categorization is based on Commission Delegated Regulation (EU) No. 604/2014 of March 4, 2014 supplementing CRD IV with regard to regulatory technical standards with respect to qualitative and appropriate quantitative criteria to identify categories of staff whose professional activities have a material impact on an institution's risk profile. In the remuneration system for risk takers, variable remuneration is designed as a maximum bonus scheme. The target agreement system includes quantitative and qualitative targets. The quantitative targets are derived from the operational planning of DZ PRIVATBANK (e.g. IFRS profit before taxes, CIR) and of the relevant segment. There are also additional individual quantitative and qualitative targets. 60 percent of the targets are measured over a period of three years; the other targets are measured over a one-year period. Because the maximum bonus scheme is based on aggregation, target achievement for the individual targets ranges from 0 percent to 180 percent, whereas overall target achievement is limited to 100 percent of the maximum bonus. If target achievement for a particular target is below 50 percent, the share of the bonus for this target is zero percent.

Deferral and retention rules have also been established for risk takers whose bonus exceeds €50 thousand. If the variable remuneration exceeds this threshold, 20 percent of the bonus achieved is paid immediately in the following year. Payment of the remaining 80 percent of the bonus set for the previous year is spread out over a period of at least four years, taking into account deferral and retention periods for risk takers below the level of head of segment. For employees at the level of the Board of Managing Directors at subsidiaries of DZ PRIVATBANK and for managers below the Board of Managing Directors at DZ PRIVATBANK (heads of segment, risk takers required to report directly to the Board of Managing Directors, and defined high earners) whose bonus exceeds the threshold of €50 thousand, the deferral period is at least 6 years (including retention periods). The deferred bonus is split into three or five pro-rata deferrals (each amounting to 1/3 or 1/5 of the 60 percent). All amounts earmarked for deferred payment are linked to the long-term performance of DZ PRIVATBANK because they are pegged to the value of its shares. Negative contributions to profits are taken into account when setting bonuses and pro-rata deferrals, which may cause the variable remuneration to be cancelled or clawed back in a period lasting no more than two years after payment of the final deferred installment. Variable remuneration is not vested during the deferral and retention periods.

Remuneration system of the Board of Managing Directors
The Supervisory Board of DZ PRIVATBANK is responsible for determining the remuneration system for the members of the Board of Managing Directors. The remuneration of the Board of Managing Directors is set on the basis of individual contractual arrangements. As well as a pensionable fixed salary, the remuneration includes a bonus and contributions to an occupational pension.
Depending on target achievement, the bonus for the Board of Managing Directors of DZ PRIVATBANK ranges from 0 percent to a maximum of 150 percent of the reference bonus. Quantitative and qualitative targets derived from the corporate strategy in the form of group, bank, area of board responsibility, and individual targets are used to determine the bonus level. All targets for the Board of Managing Directors have a historical multi-year measurement period of three years. Only 20 percent of the bonus achieved is paid immediately in the following year after the annual financial statements have been adopted and the bonus has been set by the Supervisory Board. Another 20 percent is subject to a retention period of one calendar year and depends on the long-term changes in the enterprise value of DZ PRIVATBANK. 60 percent of the bonus set by the Supervisory Board for the previous financial year is deferred over a period of five calendar years. To this end, the deferred bonus is divided into five equal installments. They are paid after taking into account deferral and

retention periods. All amounts earmarked for deferred payment are linked to the long-term performance of DZ PRIVATBANK because they are pegged to the change in its enterprise value. Negative contributions to profits are taken into account when setting bonuses and pro-rata deferrals by means of backtesting, which may cause the variable remuneration to be reduced or cancelled. Variable remuneration is not vested during the deferral and retention periods. For a period of two years after the end of its deferral period, a bonus installment already paid can be clawed back, and the entitlement to bonus payments can be cancelled if the member of the Board of Managing Directors has played a significant part in, or was responsible for, conduct that led to substantial losses or material regulatory sanctions for the institution, or if the member was in serious breach of relevant external or internal rules regarding suitability and conduct.

16 Annexes

Annex 1: Geographical breakdown of exposures

FIG. 101 – ANNEX 2: SUPPLEMENT TO FIG. 28 – EU CRB-C – GEOGRAPHICAL BREAKDOWN OF EXPOSURES IN DETAIL

		a	b	c	d	e	f	g
€ million		Germany	Other industrialized countries	France	Netherlands	Italy	United Kingdom	Luxembourg
1	Central governments and central banks		9,914					
2	Institutions	10,264	25,510	5,340	1,556	149	6,042	321
3	Corporates	77,895	19,764	1,365	2,231	80	1,492	4,745
3a	of which: specialized lending	22,340	8,606	673	873	0	629	4,141
3b	of which: SMEs	6,481	4	-	-	-	1	-
4	Retail business	78,226	455	42	46	1	20	54
4a	Exposures secured by mortgages on immovable property	63,745	324	33	42	1	9	45
	of which: SMEs		0	-	-	-	-	-
	of which: non-SMEs	63,745	324	33	42	1	9	45
4b	Qualified revolving		0	-	-	-	-	-
4c	Other retail business	14,481	131	9	4	0	11	10
	of which: SMEs	362	8	0	-	-	-	2
	of which: non-SMEs	14,119	123	8	4	0	11	8
5	Equity exposures	7,033	119	0	-	31	-	8
	Other non-credit-obligation assets	472	88		2	2	12	3
6	**Total amount under IRB approach**	**173,890**	**55,851**	**6,746**	**3,835**	**262**	**7,567**	**5,132**
7	Central governments and central banks	42,450	7,526	990	0	2,506	366	406
8	Regional governments or local authorities	28,786	3,470	22	-	395	-	-
9	Public-sector entities	8,314	1,017	199	-	-	-	-
10	Multilateral development banks	-	13	-	-	-	-	-
11	International organizations	-	0	-	-	-	-	-
12	Institutions	98,968	236	-	23	-	8	7
13	Corporates	12,284	4,395	199	906	41	926	502
13a	of which: SMEs	1,822	63	-	3	-	-	0
14	Retail business	6,854	1,060	2	1	0	1	1
14a	of which: SMEs	1,915	3	-	-	-	0	-
15	Secured by mortgages on immovable property	1,114	81	-	-	-	-	9
15a	of which: SMEs	12	0	-	-	-	-	-
16	Exposures in default	354	53	19	7	0	0	0
17	Exposures associated with particularly high risk	272	61	-	-	-	-	10
18	Covered bonds	709	138	-	-	-	26	20
19	Exposures to institutions and corporates with a short-term credit assessment	-	0	-	-	-	-	-
20	CIUs	397	2,195	617	265	0	347	139
21	Equity exposures	96	477	-	-	-	-	0
22	Other items	61	33	-	-	-	-	8
23	**Total amount under Standardized Approach**	**200,660**	**20,755**	**2,049**	**1,201**	**2,941**	**1,674**	**1,103**
24	**Total as at Dec. 31, 2019**	**374,550**	**76,606**	**8,795**	**5,036**	**3,203**	**9,241**	**6,234**
25	Total as at Dec. 31, 2018	355,187	65,072	5,313	3,930	3,058	7,643	7,109

€ million		Austria	Switzerl and	United States	Other countries	Advanced economies	Malta	Czech Republic
1	Central governments and central banks	-	7,702	2,212	-	1	-	-
2	Institutions	895	1,368	1,563	8,276	685		9
3	Corporates	1,189	1,255	3,142	4,265	1,846	335	32
3a	of which: specialized lending	154	152	552	1,433	132	26	-
3b	of which: SMEs	-	-	-	4	0	-	-
4	Retail business	67	163	18	44	13	1	1
4a	Exposures secured by mortgages on immovable property	58	90	16	32	11	1	-
	of which: SMEs	-	-	-	-	0	-	-
-	of which: non-SMEs	58	90	16	32	11	1	-
4b	Qualified revolving	-	-	-	-	0	-	-
4c	Other retail business	9	73	2	12	2	0	1
	of which: SMEs	0	2	1	3	1	-	1
	of which: non-SMEs	9	71	2	9	2	0	0
5	Equity exposures	0	2	78	0	0	-	-
	Other non-credit-obligation assets	-	0	0	69	5	-	-
6	**Total amount under IRB approach**	**2,151**	**10,491**	**7,013**	**12,654**	**2,551**	**337**	**42**
7	Central governments and central banks	969	156	408	1,725	586	-	16
8	Regional governments or local authorities	39	451	210	2,353	0	-	-
9	Public-sector entities	-	-	-	818	0	-	-
10	Multilateral development banks	-	-	13	-	0	-	-
11	International organizations	-	-	-	-	0	-	-
12	Institutions	4	48	89	57	65	-	0
13	Corporates	368	196	434	822	173	25	
13 a	of which: SMEs	4	4	4	48	12	-	-
14	Retail business	1,050	4	1	1	664	-	-
14 a	of which: SMEs	3	-	-	-	1	-	-
15	Secured by mortgages on immovable property	17	-	-	55	52	-	-
15 a	of which: SMEs	-	-	-	-	0	-	-
16	Exposures in default	8	0	19	1	54	0	0
17	Exposures associated with particularly high risk	-	50	-	-	0	-	-
18	Covered bonds	-	65	-	27	36	-	-
19	Exposures to institutions and corporates with a short-term credit assessment	0				0	-	-
20	CIUs	70	31	304	421	14	0	
21	Equity exposures	0	-	-	477	5	-	-
22	Other items	-	25	0		14	-	-
23	**Total amount under Standardized Approach**	**2,524**	**1,027**	**1,478**	**6,757**	**1,662**	**25**	**17**
24	**Total as at Dec. 31, 2019**	**4,676**	**11,518**	**8,491**	**19,411**	**4,213**	**362**	**59**
25	Total as at Dec. 31, 2018	3,755	8,710	8,288	17,124	7,603	455	2,736

€ million		Singapore	Korea	Hong Kong	Other countries	Slovakia	Emerging markets	Turkey
1	Central governments and central banks	1	-	-	-	-	11	-
2	Institutions	75	465		65	11	2,241	376
3	Corporates	1,048	17		141	-	5,885	229
3a	of which: specialized lending	104	-	-	2	-	736	49
3b	of which: SMEs	-	-	-	-	-	0	-
4	Retail business	2	0		7	0	17	1
4a	Exposures secured by mortgages on immovable property	2	-	-	6	-	14	1
	of which: SMEs		-	-		-	0	-
	of which: non-SMEs	2	-	-	6	-	14	1
4b	Qualified revolving	-	-	-	-	-	0	-
4c	Other retail business	0	0		1	0	3	0
	of which: SMEs	-	-	-	-	-	0	-
	of which: non-SMEs	0	0		1	0	3	0
5	Equity exposures	-	-	-	0	-	61	-
	Other non-credit-obligation assets	-	-	-	0	-	124	-
6	**Total amount under IRB approach**	**1,132**	**482**		**213**	**11**	**8,339**	**605**
7	Central governments and central banks	295	0	-	24	250	1,035	0
8	Regional governments or local authorities	-	-	-			1	0
9	Public-sector entities	-	-	-			0	
10	Multilateral development banks	-	-	-			0	
11	International organizations	-	-	-			0	
12	Institutions	-	-	-	21	16	55	
13	Corporates	79	16	-	7		1,234	179
13a	of which: SMEs	3	-	-	4		16	2
14	Retail business	0	-	-	0	662	410	0
14a	of which: SMEs	-	-	-	-	-	0	-
15	Secured by mortgages on immovable property	-	-	-	-	52	1,600	-
15a	of which: SMEs	-	-	-	-	-	0	-
16	Exposures in default	1	-	-	0	22	72	0
17	Exposures associated with particularly high risk	-	-	-	-	-	0	-
18	Covered bonds	-	-	-	-	36	0	-
19	Exposures to institutions and corporates with a short-term credit assessment	-	-	-	-	-	0	-
20	CIUs	1	5	-	4	-	130	1
21	Equity exposures	5	-	-	-	-	0	-
22	Other items	-	-	-	-	14	43	-
23	**Total amount under Standardized Approach**	**380**	**22**	**-**	**56**	**1,051**	**4,580**	**180**
24	**Total as at Dec. 31, 2019**	**1,512**	**503**	**-**	**268**	**1,062**	**12,919**	**785**
25	**Total as at Dec. 31, 2018**	**1,771**	**607**	**606**	**373**	**1,055**	**16,523**	**966**

€ million		Hungary	India	Liberia	Bermuda	China	Marshall Islands	Other countries
1	Central governments and central banks	-	-	-	-	-	-	11
2	Institutions	1	26	0		515		1,323
3	Corporates	32	375	1,088	516	300	1,998	1,347
3a	of which: specialized lending	31	-	-	-	-	-	656
3b	of which: SMEs	-	-	-	-	-	-	0
4	Retail business	1	-	-	-	3	-	12
4a	Exposures secured by mortgages on immovable property	0	-	-	-	3	-	10
	of which: SMEs	-	-	-	-	-	-	-
	of which: non-SMEs	0	-	-	-	3	-	10
4b	Qualified revolving	-	-	-	-	-	-	-
4c	Other retail business	1	-	-	-	-	-	2
	of which: SMEs	-	-	-	-	-	-	-
	of which: non-SMEs	1	-	-	-	-	-	2
5	Equity exposures	-	-	-	-	-	-	61
	Other non-credit-obligation assets	-	-	-	-	-	124	-
6	**Total amount under IRB approach**	**34**	**401**	**1,089**	**516**	**818**	**2,122**	**2,755**
7	Central governments and central banks	503	-	-	-	125	-	407
8	Regional governments or local authorities	0	-	-	-	-	-	-
9	Public-sector entities	-	-	-	-	-	-	-
10	Multilateral development banks	-	-	-	-	-	-	-
11	International organizations	-	-	-	-	-	-	-
12	Institutions	36	-	-	-	19	-	0
13	Corporates	30	21	0	0	50	51	902
13 a	of which: SMEs	-	-	-	-	-	-	14
14	Retail business	303	-	-	-	108	-	0
14 a	of which: SMEs	-	-	-	-	-	-	0
15	Secured by mortgages on immovable property	1,058	-	-	-	542	-	-
15 a	of which: SMEs	-	-	-	-	-	-	-
16	Exposures in default	16	29	-	-	1	0	26
17	Exposures associated with particularly high risk	-	-	-	-	-	-	-
18	Covered bonds	-	-	-	-	-	-	-
19	Exposures to institutions and corporates with a short-term credit assessment	-	-	-	-	-	-	-
20	CIUs	0	-	-	-	32	-	98
21	Equity exposures	-	-	-	-	-	-	0
22	Other items	33	-	-	-	11	-	-
23	**Total amount under Standardized Approach**	**1,979**	**50**	**0**	**0**	**886**	**51**	**1,434**
24	**Total as at Dec. 31, 2019**	**2,012**	**451**	**1,089**	**516**	**1,704**	**2,173**	**4,189**
25	**Total as at Dec. 31, 2018**	**1,793**	**715**	**1,470**	**659**	**1,741**	**2,826**	**6,353**

€ million		Supranational organizations	Other European institutions, governing bodies, and organizations	European Investment Bank	European Financial Stability Facility	European Broadcasting Union	Other countries	Not allocated to a geographical area
1	Central governments and central banks	249	-	61	-	-	188	0
2	Institutions	0	-	-	-	-	-	0
3	Corporates	0	-	-	-	-	-	0
3a	of which: specialized lending	0	-	-	-	-	-	0
3b	of which: SMEs	0	-	-	-	-	-	0
4	Retail business	0	-	-	-	-	-	0
4a	Exposures secured by mortgages on immovable property	0	-	-	-	-	-	0
	of which: SMEs	0	-	-	-	-	-	0
	of which: non-SMEs	0	-	-	-	-	-	0
4b	Qualified revolving	0	-	-	-	-	-	0
4c	Other retail business	0	-	-	-	-	-	0
	of which: SMEs	0	-	-	-	-	-	0
	of which: non-SMEs	0	-	-	-	-	-	0
5	Equity exposures	0	-	-	-	-	-	0
	Other non-credit-obligation assets	0	-	-	-	-	-	947
6	**Total amount under IRB approach**	**249**	**-**	**61**	**-**	**-**	**188**	**947**
7	Central governments and central banks	0	-	-	-	-	-	15
8	Regional governments or local authorities	0	-	-	-	-	-	0
9	Public-sector entities	0	-	-	-	-	-	0
10	Multilateral development banks	0	-	-	-	-	-	0
11	International organizations	65	-	-	62	-	3	0
12	Institutions	0	-	-	-	-	-	0
13	Corporates	0	-	-	-	-	-	32
13a	of which: SMEs	0	-	-	-	-	-	0
14	Retail business	0	-	-	-	-	-	0
14a	of which: SMEs	0	-	-	-	-	-	0
15	Secured by mortgages on immovable property	0	-	-	-	-	-	0
15a	of which: SMEs	0	-	-	-	-	-	0
16	Exposures in default	0	-	-	-	-	-	0
17	Exposures associated with particularly high risk	0	-	-	-	-	-	0
18	Covered bonds	0	-	-	-	-	-	0
19	Exposures to institutions and corporates with a short-term credit assessment	0	-	-	-	-	-	0
20	CIUs	1	1	-	-	-	0	0
21	Equity exposures	0	-	-	-	-	-	0
22	Other items	0	-	-	-	-	-	134
23	**Total amount under Standardized Approach**	**66**	**1**	**-**	**62**	**-**	**3**	**182**
24	**Total as at Dec. 31, 2019**	**316**	**1**	**61**	**62**	**-**	**191**	**1,129**
25	Total as at Dec. 31, 2018	1,432	390	732	48	-	1,181	-

Annex 2: Materiality threshold for tables EU CRBC and EU CR1-C and for the list of immaterial countries

THE MATERIALITY THRESHOLD IS USED AS FOLLOWS FOR FIG. 28 (EU CRB-C) AND FIG. 34 (EU CR1-C).

The individual countries are assigned to regions in accordance with the disclosures in the opportunity and risk report. Within a region, the countries whose net exposure makes up at least 5 percent of the total exposure are shown individually. All other countries in that region are aggregated under ‘Other’.

Region	Country	Share of total exposure (%)
Other industrialized countries	France	16.72
	United Kingdom	13.12
	Luxembourg	7.78
	Netherlands	5.57
	Austria	5.01
	Switzerland	15.35
	United States	8.00
	Other countries	28.45
Advanced economies	Hong Kong	12.82
	Korea	11.05
	Malta	8.88
	Singapore	34.78
	Slovakia	22.36
	Other countries	10.11
Emerging markets	Russia	5.89
	China	12.02
	Croatia	5.06
	Liberia	7.49
	Marshall Islands	15.04
	Turkey	5.62
	Hungary	12.16
	Other countries	36.72
Supranational organizations	Other European institutions, governing bodies, and organizations	21.78
	European Financial Stability Facility	6.44
	European Investment Bank	50.76
	Inter-American Development Bank	6.60
	International Bank for Reconstruction and Development	7.67
	Other	8.16

Below is a list of the insignificant countries included in the rows "other".

Region	Country
Other industrialized countries: Other countries	Italy
	Spain
	Canada
	Ireland
	Japan
	Norway
	Sweden
	Australia
	Belgium
	Finland
	Portugal
	Denmark
	Cayman Islands
	New Zealand
	Isle of Man
	British Virgin Islands

	Jersey
	Guernsey
	Liechtenstein
	Faroe Islands
	Gibraltar
	Andorra
	Netherlands Antilles
	Latvia
	Curaçao
	Lithuania
Advanced economies: Other countries	Taiwan
	Israel
	Greece
	Cyprus
	Slovenia
	Estonia
	Iceland
	Bermuda
	India
	Poland
	Brazil
	Panama
	Vietnam
	Indonesia
	United Arab Emirates
	Mexico
	South Africa
	Qatar
	Ghana
	Egypt
	Bahamas
	Saudi Arabia
	Chile
	Philippines
	Kuwait
	Oman
	Peru
	Belarus
	Malaysia
	Jordan
	Cuba
	Azerbaijan
	Bahrain
	Ethiopia
	Argentina
	Bangladesh
	Thailand
	Turkmenistan
	Angola
	Paraguay
	Sudan
	Bulgaria
	Myanmar
	Ukraine
	Kazakhstan
	Namibia
	Morocco
	Rwanda
	Iran
	Togo
	Colombia
	Romania
	Costa Rica
	Mongolia

	Serbia
	Senegal
	Tanzania
	Benin
	Tunisia
	Mauritius
	Barbados
	Nigeria
	Niger
	Uzbekistan
	El Salvador
	Bolivia
	Côte d'Ivoire
	Lebanon
	Mali
	Bosnia and Herzegovina
	Montenegro
	Zimbabwe
	Algeria
	Papua New Guinea
	Sri Lanka
	Jamaica
	Ecuador
	Dominican Republic
	Venezuela
	Uruguay
	Botswana
	Eritrea
	Cameroon
	Kenya
	Guatemala
	Cambodia
	Zambia
	Brunei
	Iraq
	Pakistan
	Saint Lucia
	Gabon
	North Macedonia
	Honduras
	Moldova
	Albania
Supranational organizations: Other	International Finance Corporation, Washington, USA
	African Development Bank, Abidjan, Côte d'Ivoire
	Asian Development Bank, Manila, Philippines
	Council of Europe Development Bank
	Nordic Investment Bank, Helsinki, Finland
	Single Resolution Board
	European Stability Mechanism
	Andean Development Corporation, Caracas, Venezuela

17 Overview of quantitative and qualitative requirements pursuant to the CRR, EBA/GL/2016/11, and other sources

Legal basis	Table name	Source	Description	Relevance	Format	Disclosure frequency			Reference to the regulatory risk report	Reference
						Quarterly	Half-yearly	Annually		
		CRR EBA/GL/2016/11 paragraph 4.2 section A	Overview of quantitative and qualitative requirements pursuant to the CRR and EBA/GL/2016/11	x	Flexible	x	x	x	Section 17	
Article 431 (3)		CRR	Scope of disclosure requirements – disclosure policy	x	Flexible	-	-	x	Section 1.2	
Article 432	Inclusion of entities in the DZ BANK banking group in quantitative regulatory disclosures	CRR EBA/GL/2014/14	Non-material, proprietary, or confidential information	x	Flexible	x	x	x	Section 3.1	
Article 433		CRR EBA/GL/2014/14	Frequency of disclosure	x	Flexible	x	x	x	Section 1.2	
Article 434		CRR EBA/GL/2014/14	Means of disclosure	x	Flexible	x	x	x	Section 1.1	
Article 435 (1)	EU OVA, EU CRA, EU CCRA, EU MRA, and EU LIA	CRR EBA/GL/2016/11 paragraph 4.3 sections A and B	– Institution's risk management approach – General qualitative information about credit risk, counterparty credit risk, and market risk	x	Flexible	-	-	x	Sections 1.2, 2.1, 2.1.1, 2.1.2, 2.1.3, 5.1, 6.1, 8.2, 9, 10, 11.1	Combined opportunity and risk report ('opportunity and risk report') contained in the DZ BANK Annual Report
Article 435 (2) letter a	Number of executive or supervisory directorships held by members of the management body	CRR EBA/GL/2016/11 paragraph 57 EBA/GL/2017/12	Number of executive or supervisory directorships held by members of the management body	x	Flexible	-	-	x	Section 2.2.1	
Article 435 (2) letter b		CRR EBA/GL/2016/11 paragraph 58 EBA/GL/2017/12	Recruitment policy for the selection of members of the management body and their actual knowledge, skills and expertise	x	Flexible	-	-	x	Section 2.2.2	
Article 435 (2) letter c		CRR EBA/GL/2016/11 paragraph 59 EBA/GL/2017/12	Diversity policy for selecting members of the management body, its objectives, relevant targets and achievement of targets	x	Flexible	-	-	x	Section 2.2.3	

Legal basis	Table name	Source	Description	Relevance	Format	Disclosure frequency			Reference to the regulatory risk report	Reference
						Quarterly	Half-yearly	Annually		
Article 435 (2) letter d		CRR	Disclosures regarding the formation of a risk committee and the number of times it has met	x	Flexible	-	-	x	Section 2.3	Combined opportunity and risk report ('opportunity and risk report') contained in the DZ BANK Annual Report
Article 435 (2) letter e	EU OVA	CRR EBA/GL/2016/11 paragraphs 49 and 60 EBA/GL/2017/12	Information flow to the Supervisory Board	x	Flexible	-	-	x	Section 2.4	Combined opportunity and risk report ('opportunity and risk report') contained in the DZ BANK Annual Report
Article 436 sentence 1 letter a		CRR	Name of the institution to which the requirements of the CRR apply	x	Flexible	-	-	x	Section 1.1	
Article 436 sentence 1 letter b	EU LIA, EU LI1, EU LI2, and EU LI3	CRR EBA/GL/2016/11 paragraph 4.4	– Consolidation matrix – differences in the scopes of consolidation (entity by entity), – Differences between accounting and regulatory scopes of consolidation and – Reconciliation of financial statements categories to regulatory risk categories, – Sources of differences between regulatory exposure amounts and carrying amounts on the balance sheet and – Explanation of the differences between the carrying amounts for accounting purposes and the regulatory exposures.	x	Flexible	-	-	x	Section 3	
Article 436 sentence 1 letter c		CRR	Current or foreseen material practical or legal impediment to the prompt transfer of own funds or repayment of liabilities among the parent company and its subsidiaries	Not relevant	Flexible	-	-	x	Section 3.1	
Article 436 sentence 1 letter d		CRR	Aggregate amount by which actual own funds are less than required in all subsidiaries not included in the consolidation, and the name or names of such subsidiaries	Not relevant	Flexible	-	-	x	-	

Legal basis	Table name	Source	Description	Relevance	Format	Disclosure frequency			Reference to the regulatory risk report	Reference
						Quarterly	Half-yearly	Annually		
Article 436 sentence 1 letter e		CRR	Use of the waiver	x	Flexible	-	-	x	Section 3.1	
Article 437 (1) letter a	Reconciliation of equity reported on the balance sheet with regulatory own funds	CRR Implementing Regulation (EU) No. 1423/2013, Annex II	Full reconciliation of own funds items to the financial statements	x	Flexible	-	x	x	Section 4.2.2	
Article 437 (1) letter b	Main features of capital instruments	CRR Implementing Regulation (EU) No. 1423/2013, Annex I	Description of the main features of the common equity Tier 1, additional Tier 1, and Tier 2 instruments issued by institutions	x	Fixed	-	x	x	Section 4.2.1	DZ BANK's website in the Investor Relations section under Bondholder Information, subsection Capital Instruments
Article 437 (1) letter c		CRR	Full terms and conditions of capital instruments	x	Flexible	-	x	x	Section 4.2.1	DZ BANK's website in the Investor Relations section under Bondholder Information, subsection Capital Instruments
Article 437 (1) letters d and e	Structure of own funds	CRR Implementing Regulation (EU) No. 1423/2013, Annex IV	Disclosure of the nature and amounts of specific elements of own funds	x	Fixed	x	x	x	Section 4.2.1	
Article 437 (1) letter f		CRR	Explanation of the basis on which capital ratios are calculated, if determined on a basis other than that laid down in the CRR	Not relevant	Flexible	-	x	x	-	
Article 438 sentence 1 letter a		CRR	Qualitative disclosure requirements regarding the approach to assessing the adequacy of internal capital	x	Flexible	-	-	x	Section 4.1	
Article 438 sentence 1 letter b		CRR	The result of the institution's internal capital adequacy assessment process, if requested by the relevant competent authority	x	Flexible	-	-	x	Section 4.2.6	
Article 438 sentence 1 letters c to f	EU OV1 and capital requirements	CRR EBA/GL/2016/11 paragraph 69	Overview of risk-weighted assets (RWAs) and capital requirements	x	Fixed	x	x	x	Section 4.2.3	
Article 438 sentence 1 letter d	EU CR8	CRR EBA/GL/2016/11 paragraph 109	RWA flow statement for credit risk under the IRB approach	x	Fixed	x	x	x	Section 6.6.4.4	

Legal basis	Table name	Source	Description	Relevance	Format	Disclosure frequency			Reference to the regulatory risk report	Reference
						Quarterly	Half-yearly	Annually		
Article 438 sentence 1 letters c to d	EU INS1	CRR EBA/GL/2016/11 paragraph 71	Non-deducted participations in insurance undertakings	x	Fixed	-	x	x	Section 4.2.4	
Article 438 sentence 2	EU CR10	CRR EBA/GL/2016/11 paragraph 70	IRB (specialized lending and long-term equity investments)	x	Flexible	-	x	x	Section 4.2.4	
Article 439 sentence 1 letters a to d	EU CCRA	CRR EBA/GL/2016/11 paragraph 53	Qualitative disclosure requirements regarding counterparty credit risk	x	Flexible	-	-	x	Section 6.7.1	Opportunity and risk report
Article 439 sentence 1 letters e, f, and i	EU CCR1, EU CCR2, EU CCR8, EU CCR5-A, EU CCR5-B	CRR EBA/GL/2016/11 paragraphs 114, 115, 116, 120, 122	– Analysis of counterparty credit risk by approach; – Capital requirement for adjustment of the credit valuation; – Exposures to central counterparties; – Impact of netting and collateral held on exposure values; – Composition of collateral for exposures subject to counterparty credit risk	x	Fixed & flexible	-	x	x	Sections 1.2, 6.7.2, 6.7.2.1, 6.7.2.2, 6.7.2.3 , 6.7.5.1, 6.7.5.2	
Article 439 sentence 1 letters g to h	EU CCR6	CRR EBA/GL/2016/11 paragraph 123	Exposures secured by credit derivatives	x	Flexible	-	x	x	Section 6.7.5.3	
Article 440		CRR Delegated Regulation (EU) No. 2015/1555	Countercyclical capital buffer	x	Flexible	-	-	x	Section 12.1	
Article 441		CRR Implementing Regulation (EU) No. 2016/818	Indicators of global systemic importance	x	Flexible	-	-	x	Section 12.2	DZ BANK's website in the Investor Relations section under Reports
Article 442 sentence 1 letters a and b	EU CRB-A	CRR EBA/GL/2016/11 paragraph 76	Additional disclosure related to the credit quality of assets	x	Flexible	-	-	x	Section 6.2.1	Combined opportunity and risk report ('opportunity and risk report') contained in the DZ BANK Annual Report
Article 442 sentence 1 letter c	EU CRB-B	CRR EBA/GL/2016/11 paragraph 77	Total and average net amount of exposures	x	Flexible	-	-	x	Section 6.2.2.1	
Article 442 sentence 1 letter d	EU CRB-C	CRR EBA/GL/2016/11 paragraph 78	Geographical breakdown of exposures	x	Flexible	-	-	x	Section 6.2.2.2	

Legal basis	Table name	Source	Description	Relevance	Format	Disclosure frequency			Reference to the regulatory risk report	Reference
						Quarterly	Half-yearly	Annually		
Article 442 sentence 1 letter e	EU CRB-D	CRR EBA/GL/2016/11 paragraph 81	Concentration of exposures by industry or counterparty type	x	Flexible	-	-	x	Section 6.2.2.3	
Article 442 sentence 1 letter f	EU CRB-E (only on-balance-sheet exposures) and CRB-E (on-balance-sheet exposures, off-balance-sheet exposures, and SFTs)	CRR EBA/GL/2016/11 paragraph 83	Residual maturity of exposures	x	Flexible	-	-	x	Section 6.2.2.4	
Article 442 sentence 1 letters g and h	EU CR1-A	CRR EBA/GL/2016/11 paragraph 88	Credit quality of exposures by exposure class and instrument	x	Fixed	-	x	x	Section 6.2.2.5	
Article 442 sentence 1 letter g	EU CR1-B	CRR EBA/GL/2016/11 paragraph 89	Credit quality of exposures by industry or counterparty type	x	Fixed	-	x	x	Section 6.2.2.6	
Article 442 sentence 1 letter h	EU CR1-C	CRR EBA/GL/2016/11 paragraph 89	Credit quality of exposures by geography	x	Fixed	-	x	x	Section 6.2.2.7	
Article 442 sentence 1 letters g and h	EU CR1-D	CRR EBA/GL/2016/11 paragraph 89	Maturity structure of past-due exposures	x	Fixed	-	x	x	Section 6.3	
Article 442 sentence 1 letters g and i	EU CR1-E	CRR EBA/GL/2016/11 paragraph 90	Non-performing and forborne exposures	x	Flexible	-	x	x	Section 6.3	
Article 442 sentence 1 letter i	EU CR2-A and EU CR2-B	CRR EBA/GL/2016/11 paragraph 92	Changes in the stock of general and specific credit risk adjustments and changes in the stock of defaulted and impaired loans and debt securities	x	Fixed	-	x	x	Section 6.2.2.8	
Article 443	Disclosure template A – encumbered and unencumbered assets Disclosure template B – collateral received Disclosure template C – sources of encumbrance Disclosure template D – accompanying narrative information	CRR Delegated Regulation (EU) No. 2017/2295	Asset encumbrance	x	Fixed	-	-	x	Section 14	

Legal basis	Table name	Source	Description	Relevance	Format	Disclosure frequency			Reference to the regulatory risk report	Reference
						Quarterly	Half-yearly	Annually		
Article 444 sentence 1 letters a to d	EU CRD	CRR EBA/GL/2016/11 paragraph 97	Qualitative disclosure requirements regarding institutions' use of external credit ratings under the Standardized Approach to credit risk	x	Flexible	-	-	x	Sections 6.5.1, 6.5.1.1, 6.7.3	
Article 444 sentence 1 letter e	EU CR5, EU CCR3, and CRSA exposures before credit risk mitigation by rating category	CRR EBA/GL/2016/11 paragraphs 100 and 117	Standardized Approach exposures before and after credit risk mitigation by rating category	x	Fixed	-	x	x	Sections 6.5.2, 6.5.2.2, 6.7.3	
Article 445	EU MR1	CRR EBA/GL/2016/11 paragraph 127	Market risk under the Standardized Approach	x	Fixed	-	x	x	Section 8.3	
Article 446		CRR	Operational risk	x	Fixed	-	x	x	Section 9	Combined opportunity and risk report ('opportunity and risk report') contained in the DZ BANK Annual Report
Article 447 sentence 1 letter a		CRR	Accounting policies applied to long-term equity investments	x	Flexible	-	-	x	Section 11.2	
Article 447 sentence 1 letters b and c	Measurement of equity exposures	CRR	Disclosure of equity investment risk: carrying amounts under commercial law and current market value	x	Flexible	-	-	x	Section 11.3	
Article 447 sentence 1 letters d and e	Realized and unrealized gains and losses on equity exposures in accordance with IFRS	CRR	Inclusion of unrealized gains and losses on long-term equity investments in own funds	x	Flexible	-	-	x	Section 11.3	
Article 448 sentence 1 letter a		CRR BaFin Circular 11/2011	Nature of interest-rate risk, key assumptions made, and frequency of risk measurement	x	Flexible	-	-	x	Section 8.5	
Article 448 sentence 1 letter b	Interest-rate risk in the banking book	CRR BaFin Circular 11/2011	Interest-rate risk in the banking book	x	Flexible	-	-	x	Section 8.5	
Article 449 sentence 1 letters a, d, e, and i	Securitization exposures as originator and sponsor	CRR	Scope, objectives, and risks of securitization	x	Flexible	-	-	x	Section 7.1	

Legal basis	Table name	Source	Description	Relevance	Format	Disclosure frequency			Reference to the regulatory risk report	Reference
						Quarterly	Half-yearly	Annually		
Article 449 sentence 1 letters b, c, f, and g		CRR	Risk management in respect of securitizations	x	Flexible	-	-	x	Section 7.2	Combined opportunity and risk report ('opportunity and risk report') contained in the DZ BANK Annual Report
Article 449 sentence 1 letter h		CRR	Procedure for determining risk-weighted exposures	x	Flexible	-	-	x	Section 7.4.1	
Article 449 sentence 1 letter j (i), (ii), (iii), (iv), (v), and (vi)		CRR	Accounting policies applied to securitizations	x	Flexible	-	-	x	Section 7.3	
Article 449 sentence 1 letter l		CRR	Internal ratings	x	Flexible	-	-	x	Section 7.4.3	
Article 449 sentence 1 letter k	Reconciliation of external and internal ABS ratings	CRR	External ratings	x	Flexible	-	-	x	Section 7.4.2	
Article 449 sentence 1 letter m		CRR	Explanation of significant changes to any of the quantitative disclosures in letters n to q since the last reporting period	x	Flexible	-	-	x	Section 7.5	
Article 449 sentence 1 letters n (i) and q	Total amount of securitizations with DZ BANK banking group as originator and sponsor	CRR	Total amount of asset securitizations	x	Flexible	-	-	x	Section 7.5.1	
Article 449 sentence 1 letters n (iii), (vi) and r		CRR	Total amount of planned securitizations; securitizations during the reporting period	x	Flexible	-	-	x	Sections 1.2, 7.5.3, 7.5.8	
Article 449 sentence 1 letter n (ii)	Retained, purchased or off-balance-sheet securitization exposures	CRR	Retained, purchased or off-balance-sheet securitization exposures	x	Flexible	-	-	x	Section 7.5.4	

Legal basis	Table name	Source	Description	Relevance	Format	Disclosure frequency			Reference to the regulatory risk report	Reference
						Quarterly	Half-yearly	Annually		
Article 449 sentence 1 letter n (iv)		CRR	For securitized facilities subject to early amortization treatment, the aggregate drawn exposures attributed to the originator's and investor's interests respectively, the aggregate capital requirements incurred by the institution against the originator's interest and the aggregate capital requirements incurred by the institution against the investor's shares of drawn balances and undrawn lines	Not relevant	Flexible	-	-	x	Section 1.2	
Article 449 sentence 1 letter o (i)	EU OV1 and exposures and capital requirements for retained or purchased securitizations	CRR EBA/GL/2016/11 paragraph 69	Exposures and capital requirements for retained or purchased securitizations broken down by the approach used to calculate the capital requirement	x	Fixed	x	x	x	Sections 4.2.3, 7.5.4	
Article 449 sentence 1 letter n (v)	Deductions from own funds and securitization exposures with a risk weight of 1,250 percent by asset class	CRR	Securitization exposures and deductions from own funds	x	Flexible	-	-	x	Section 7.5.6	
Article 449 sentence 1 letter o (ii)	Re-securitization exposures and collateralization amounts	CRR	Re-securitization exposures and collateralization amounts	x	Flexible	-	-	x	Section 7.5.7	
Article 449 sentence 1 letter p	Impaired securitizations, securitizations in arrears, and losses realized during the reporting period	CRR	Impaired securitizations, securitizations in arrears, and losses realized during the reporting period	x	Flexible	-	-	x	Section 7.5.2	
Article 450		CRR EBA/GL/2015/22	Remuneration policy	x	Flexible	-	-	x	Section 15	DZ BANK's website in the Investor Relations section under Reports, 'Remuneration policy disclosures'

Legal basis	Table name	Source	Description	Relevance	Format	Disclosure frequency			Reference to the regulatory risk report	Reference
						Quarterly	Half-yearly	Annually		
Article 451 (1) letter a	Summary reconciliation of assets on the balance sheet to the leverage ratio total exposure measure	CRR Implementing Regulation (EU) No. 2016/200, Annex I (LRSum)	Reconciliation of the total assets of the DZ BANK Group to the leverage ratio total exposure measure	x	Fixed	-	x	x	Section 13.1	
Article 451 (1) letter a	Leverage ratio according to the CRR transitional guidance and after full application of the CRR	CRR	Components for calculating the leverage ratio in accordance with the CRR transitional guidance and after application of the CRR in full	x	Flexible	x	x	x	Section 13.1	
Article 451 (1) letter b	Leverage ratio common disclosure	CRR Implementing Regulation (EU) No. 2016/200, Annex I (LRCom)	Individual components of the total exposure measure, Tier 1 capital, and the resulting leverage ratio	x	Fixed	-	x	x	Section 13.1	
Article 451 (1) letter c	Breakdown of on-balance-sheet exposures (excluding derivatives, SFTs and exempted exposures)	CRR Implementing Regulation (EU) No. 2016/200, Annex I (LRSpl)	Breakdown by regulatory category of the exposures reported on the balance sheet	x	Fixed	-	x	x	Section 13.1	
Article 451 (1) letters d and e	Change to the leverage ratio: – If pass-through development loans are excluded – If exposures within the cooperative financial network are excluded – If the exclusions in the tables above are applied cumulatively	CRR Implementing Regulation (EU) No. 2016/200, Annex I (LRQua)	Description of the processes for monitoring the risk of excessive leverage and factors influencing the leverage ratio during the reporting period	x	Flexible	x	x	x	Sections 13.2, 13.3	

Legal basis	Table name	Source	Description	Relevance	Format	Disclosure frequency			Reference to the regulatory risk report	Reference
						Quarterly	Half-yearly	Annually		
Article 452 sentence 1 letters a, b, and c	EU CRE and distribution of the exposure classes and their percentage of coverage under the Standardized Approach to credit risk, FIRB approach, and AIRB approach (share of total EAD)	CRR EBA/GL/2016/11 paragraph 103	Qualitative disclosure requirements regarding IRB models	x	Flexible	-	-	x	Sections 6.2.1, 6.6.1, 6.6.3	Combined opportunity and risk report ('opportunity and risk report') contained in the DZ BANK Annual Report
Article 452 sentence 1 letters d, e, f, and g	EU CR6 and EU CCR4	CRR EBA/GL/2016/11 paragraphs 107 and 118	IRB approach – credit risk exposures by exposure class and PD range and counterparty credit risk exposures by portfolio and PD scale	x	Fixed	-	x	x	Section 6.6.4	
Article 452 sentence 1 letter g	Year-on-year change in the actual losses in the total credit portfolio under the IRB approach by exposure class	CRR	Year-on-year change in the actual losses in the total credit portfolio under the IRB approach by exposure class	x	Flexible	-	-	x	Section 6.6.4.5	
Article 452 sentence 1 letter h		CRR	Description of the factors that impacted on the loss experience in the preceding period	x	Flexible	-	-	x	Section 6.6.4.5	
Article 452 sentence 1 letter i	EU CR9 and comparison of loss estimates and actual losses in non-defaulting exposure classes under the IRB approach	CRR EBA/GL/2016/11 paragraph 111	IRB approach – backtesting of the probability of default (PD) per exposure class Comparison of loss estimates and actual losses in non-defaulting exposure classes under the IRB approach	x	Flexible	-	-	x	Section 6.6.4.6	
Article 452 sentence 1 letter j (ii)	Average PD by country and exposure class under the foundation IRB approach	CRR	Average risk parameters by country of domicile of borrowing entity and exposure class under the foundation IRB approach	x	Flexible	-	-	x	Section 6.6.4.7	
Article 452 sentence 1 letter j (i)	Average PD and LGD by country and exposure class under the advanced IRB approach	CRR	Average risk parameters by country of domicile of borrowing entity and exposure class under the advanced IRB approach	x	Flexible	-	-	x	Section 6.6.4.7	

Legal basis	Table name	Source	Description	Relevance	Format	Disclosure frequency			Reference to the regulatory risk report	Reference
						Quarterly	Half-yearly	Annually		
Article 453 sentence 1 letters a to e	EU CRC	CRR EBA/GL/2016/11 paragraph 93	Qualitative disclosure requirements regarding credit risk mitigation techniques	x	Flexible	-	-	x	Section 6.5.2.1	Combined opportunity and risk report ('opportunity and risk report') contained in the DZ BANK Annual Report
Article 453 sentence 1 letters f and g	EU CR3 and EU CR4	CRR EBA/GL/2016/11 paragraphs 94 and 99	Credit risk mitigation techniques – overview; Standardized Approach – credit risk exposure and credit risk mitigation effects	x	Fixed	-	x	x	Sections 6.4.2, 6.5.2	
Article 453 sentence 1 letter g	EU CR7	CRR EBA/GL/2016/11 paragraph 108	IRB approach – effect on the RWAs of credit derivatives used as credit risk mitigation techniques	x	Fixed	-	x	x	Section 6.6.4	
Article 454		CRR	Use of Advanced Measurement Approaches for operational risk	Not relevant	Flexible	-	-	x	Section 1.2	
Article 455 sentence 1 letters a and b	EU MRB	CRR EBA/GL/2016/11 paragraphs 54 and 66	Qualitative disclosure requirements for institutions using the IMA	x	Flexible	-	-	x	Sections 8.4.1, 8.4.2	
Article 455 sentence 1 letter c	EU MRA and EU LIA	CRR EBA/GL/2016/11 paragraphs 54 and 66	EU MR2-A – Market risk under the internal models approach	x	Fixed	-	x	x	Section 8.4.2	
Article 455 sentence 1 letter e	EU MR2-A	CRR EBA/GL/2016/11 paragraph 129	EU MR2-A – Market risk under the internal models approach	x	Fixed	-	x	x	Section 8.4.2	
Article 455 sentence 1 letter e	EU MR2-B	CRR EBA/GL/2016/11 paragraph 129	EU MR2-B – RWA flow statements of market risk exposures under the IMA	x	Fixed	x	x	x	Section 8.4.2	
Article 455 sentence 1 letter d	EU MR3	CRR EBA/GL/2016/11 paragraph 130	EU MR3 – IMA values for trading portfolios	x	Fixed	-	x	x	Section 8.4.2	
Article 455 sentence 1 letter f	IMA values for each subportfolio	CRR	Additional default and migration risk measured in relation to the total trading book and in relation to the relevant subportfolios	x	Flexible	-	-	x	Section 8.4.2	
Article 455 sentence 1 letter g	EU MR4	CRR EBA/GL/2016/11 paragraph 132	EU MR4 – Comparison of VaR estimates with gains/losses	x	Flexible	-	x	x	Section 8.4.2	

Legal basis	Table name	Source	Description	Relevance	Format	Disclosure frequency			Reference to the regulatory risk report	Reference
						Quarterly	Half-yearly	Annually		
LCR in conjunction with article 435 (1)	EU LIQA	CRR EBA/GL/2017/01	Qualitative information on the LCR	x	Flexible	-	-	x	Section 5.2	Combined opportunity and risk report ('opportunity and risk report') contained in the DZ BANK Annual Report
LCR in conjunction with article 435 (1)	EU LIQ1 and liquidity coverage ratio of the banking group	CRR EBA/GL/2017/01	Levels and components of the LCR of the banking group	x	Fixed	x	x	x	Section 5.2	
Section 26a		KWG	Legal basis	x	Flexible	-	-	x	Sections 1.1, 1.2	DZ BANK's website in the Investor Relations section under Reports
-	Capital ratios	-	Capital ratios	x	Flexible	x	x	x	Section 4.2.5	
Pillar I and Pillar II requirements		Pillar I and Pillar II requirements	Regulatory minimum requirements	x	Flexible	x	x	x	Section 4.2.6	
Section 35		German Bank Recovery and Resolution Act (SAG)	Legal basis	x	Flexible	-	-	x	Section 1.1	
Sections 17 and 18		FKAG and Delegated Regulation (EU) No. 342/2014	Financial conglomerate solvency	x	Flexible	-	-	x	Section 4.2.7	

18 List of figures

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