



Pillar 3 Report 2017

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Regulatory Framework

Introduction

This Report provides Pillar 3 disclosures on the consolidated level of Deutsche Bank Group as required by the global regulatory framework for capital and liquidity, established by the Basel Committee on Banking Supervision, also known as Basel 3. On European level these are implemented in the disclosure requirements as laid down in Part Eight of the “Regulation (EU) No 575/2013 on prudential requirements for credit institutions and investment firms” (Capital Requirements Regulation, or “CRR”) and the “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 4, or “CRD 4”). Germany implemented these CRD 4 requirements into national law in Section 26a of the German Banking Act (“Kreditwesengesetz” or “KWG”). Per regulation it is not required to have Pillar 3 disclosures audited. As such the information provided in this Pillar 3 Report is unaudited.

Basel 3 and CRR/CRD 4

In the European Union, the Basel 3 capital framework was implemented by the “Regulation (EU) No 575/2013 on prudential requirements for credit institutions and investment firms” (Capital Requirements Regulation, or “CRR”) published on June 26, 2013, and the “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 4, or “CRD 4”) published on June 26, 2013. As a single “rulebook”, the CRR is directly applicable to credit institutions and investment firms in the European Union and provides the grounds for the determination of regulatory own funds, regulatory capital requirements, leverage and liquidity as well as other relevant regulations. In addition, the CRD 4 was implemented into German law by means of further amendments to the German Banking Act (KWG) and the German Solvency Regulation (SolvV) and accompanying regulations. Jointly, these laws and regulations represent the new regulatory framework applicable in Germany.

The new regulatory framework became effective on January 1, 2014, subject to transitional rules. When referring to Deutsche Bank results according to transitional rules we use the term “CRR/CRD 4”. When referring to results according to full application of the final CRR/CRD 4 framework (without consideration of applicable transitional methodology) we use the term “CRR/CRD 4 fully loaded”. In some cases, CRR/CRD 4 maintains transitional rules that had been adopted in earlier capital adequacy frameworks through Basel 2 or Basel 2.5. These relate, e.g., to the risk weighting of certain categories of assets and include rules permitting the grandfathering of equity investments at a risk-weight of 100 %. In this regard, we assumed in our CRR/CRD 4 fully loaded methodology for a limited subset of equity positions that the impact of the expiration of these transitional rules will be mitigated through sales of the underlying assets or other measures prior to the expiration of the grandfathering provisions by the end of 2017. Since the fourth quarter 2017 we have not applied this grandfathering rule anymore, but instead applied a risk weight between 190 % and 370 % determined based on Article 155 CRR under the CRR/CRD 4 fully loaded rules to all our equity positions. Consequently, no transitional arrangements are considered in our fully loaded RWA numbers for December 31, 2017. Only for the comparative period, yearend 2016, are these transitional rules within the risk weighting still applied.

Since 2015 the Common Equity Tier 1 minimum capital requirement applicable to the Group is 4.5 % of risk weighted assets. The development and maintenance of a high quality capital base which should primarily consist of Common Equity Tier 1 reflects one of the core elements of the CRR/CRD 4 framework. Specific regulatory adjustments are also subject to transitional rules. For instance, deductions for deferred tax assets that rely on future profitability or deductions for indirect and synthetic holdings of own instruments and capital instruments issued by financial sector entities are phased in. The phase in percentage was in general 80 % in 2017 compared to 60 % in 2016. It will increase to 100 % in 2018.

In addition to these minimum capital requirements, various capital buffer requirements were phased-in starting 2016 and will become fully effective from 2019 onwards.

Additionally, the leverage ratio has been introduced as a non-risk based capital requirement to complement the risk-based capital requirements. The CRR/CRD 4 requires banks to calculate and disclose a regulatory leverage ratio that is generally based on the accounting value as the relevant exposure measure for assets. Specific regulatory exposure measures apply to derivatives and securities financing transactions and off-balance sheet exposures must be added to determine the total leverage exposure.

The CRR/CRD 4 framework further introduced new liquidity standards. The Liquidity Coverage Ratio (LCR) aims to measure a bank's short-term resilience to a severe liquidity stress scenario during a stress period of 30 calendar days. Detailed rules for the calculation of the LCR are set out in the delegated act adopted in October 2014. The LCR became a binding minimum requirement as of October 1, 2015 and is phased in progressively: 60 % from October 1, 2015, 70 % from 2016, 80 % from 2017 and 100 % from 2018, respectively.

The Net Stable Funding Ratio (NSFR) requires banks to maintain a stable funding profile in relation to their on- and off-balance sheet exposures. On November 23, 2016, the European Commission proposed a revision of the Capital Requirement Regulation ("CRR") to implement the NSFR into EU legislation. It is expected that a binding minimum ratio for the NSFR will apply from end of 2020.

There are still some interpretation uncertainties with regard to CRR/CRD 4 rules and some of the related binding Technical Standards are not yet available in their final version. Thus, we will continue to refine our assumptions and models in line with evolution of our as well as the industry's understanding and interpretation of the rules. Against this background, current CRR/CRD 4 measures may not be comparable to previous expectations. Also, our CRR/CRD 4 measures may not be comparable with similarly labeled measures used by our competitors as our competitors' assumptions and estimates regarding such implementation may differ from ours.

ICAAP, ILAAP and SREP

The Internal Capital Adequacy Assessment Process ("ICAAP") as stipulated in Pillar 2 of Basel 3 requires banks to identify and assess risks, maintain sufficient capital to face these risks and apply appropriate risk management techniques to maintain adequate capitalization. The Internal Liquidity Adequacy Assessment Process ("ILAAP") focuses on maintaining sufficient liquidity risk management. The Supervisory Review and Evaluation Process ("SREP") refers to the common methodology and standards used by the European Central Bank (ECB) in its role under the Single Supervisory Mechanism (SSM). In accordance with Article 97 of the Capital Requirements Directive (CRD 4), supervisors regularly review the arrangement, strategies, process and mechanisms implemented by banks and evaluate: (a) the risks to which the institution might be exposed; (b) the risks the institution might pose to the financial system in general; and (c) the risks revealed by stress testing.

MREL and TLAC

Under the Single Resolution Mechanism ("SRM") Regulation, the Bank Recovery and Resolution Directive ("BRRD") and the German Recovery and Resolution Act (Sanierungs- und Abwicklungsgesetz, "SAG") banks in the European Union ("EU") are required to meet at all times a robust Minimum Requirement for own funds and Eligible Liabilities ("MREL") which is determined on a case-by-case basis by the competent resolution authority.

The Single Resolution Board ("SRB") intends to set binding MREL targets for the majority of the largest and most complex banking groups in its remit as part of the 2017 resolution planning cycle and to communicate the MREL decision to them (via National Resolution Authorities) in the first quarter 2018.

In addition, on November 9, 2015, the Financial Stability Board ("FSB") published a standard that will require, when implemented as law, Global Systemically Important Banks ("G-SIBs") to meet a new firm-specific minimum requirement for Total Loss-Absorbing Capacity ("TLAC") starting on January 1, 2019.

On July 6, 2017, the FSB published guiding principles on internal TLAC, i.e., the loss absorbing capacity that a resolution entity has committed to material sub-groups so that losses and recapitalization needs of material sub-groups may be passed with legal certainty to the resolution entity of a G-SIB resolution group without subsidiaries within the material sub-groups entering into resolution.

Both the TLAC and MREL requirements are specifically designed to require banks to maintain a sufficient amount of instruments which are eligible to absorb losses in resolution with the aim of ensuring that failing banks can be resolved without recourse to taxpayers' money.

On November 23, 2016, the European Commission proposed a revision of the Capital Requirement Regulation ("CRR") to implement TLAC into EU legislation. In addition, it proposed amendments to the BRRD and the SRM Regulation. Under the Commission's CRR revision proposal, the loss absorbency regime for EU global systemically important institutions ("G-SIIs") would be closely aligned with the international TLAC term sheet. It introduces a minimum requirement of 16 % of Risk Weighted Assets ("RWA") or 6 % of leverage exposure by January 1, 2019; and 18 % of RWAs and 6.75 % of leverage exposure by 2022. The resolution authority would be able to request a firm-specific add-on if deemed necessary. For non-G-SIIs banks, the MREL would still be set on a case-by-case basis.

Furthermore, under the German Banking Act, as amended by the German Resolution Mechanism Act, which was published in November 2015, senior bonds rank junior to other senior liabilities, without constituting subordinated debt, in insolvency proceedings opened on or after January 1, 2017. On December 27, 2017, an EU Directive amending the ranking of unsecured debt instruments in the insolvency hierarchy for the purpose of banks' resolution and insolvency proceedings has been published which introduces a common EU approach to banks' creditor hierarchy, thereby enhancing legal certainty in the event of resolution. The Directive introduces non-preferred senior debt instruments as a separate category of senior debt. These new instruments will rank junior to all other senior liabilities but will be senior to sub-ordinated debt provided they have an original contractual maturity of at least one year, do not contain embedded derivatives or be derivatives themselves and the contractual documentation explicitly refers to their lower ranking under normal insolvency proceedings. Member States are required to transpose the amending Directive into national law by December 29, 2018. The new provisions will apply to unsecured debt instruments issued on or after the date of when the respective national law enters into force. Any senior bonds that rank junior to other senior liabilities in accordance with the German Banking Act provisions published in November 2015 will be grandfathered and represent non-preferred senior debt instruments according to the EU Directive published on December 27, 2017.

General requirements for disclosures

Article 431 (1) CRR - Pillar 3 disclosure concept

We provide our Pillar 3 disclosures in line with the disclosure requirements as laid down in Part Eight of the "Regulation (EU) No 575/2013 on prudential requirements for credit institutions and investment firms" (CRR). This report provides the respective Pillar 3 disclosures to the extent that these Pillar 3 disclosures are not included in the Deutsche Bank Annual Report 2017. Where Pillar 3 disclosure elements are located in the Annual Report of Deutsche Bank, they are generally referenced from the Pillar 3 Report to the Annual Report accordingly. Further down in this Report we provide an overview of the references into the Deutsche Bank Annual Report 2017.

In December 2016 the European Banking Authority ("EBA") provided a "Final Report on the Guidelines on Disclosure Requirements under Part Eight of Regulation (EU) No 575/2013" ("EBA Guideline", EBA/GL/2016/11, version 2*), subsequently to the Basel Committee on Banking Supervision releasing a revised version of the Basel 3 Pillar 3 framework. The EBA Guideline constitutes an own-initiative guideline to ensure the harmonized and timely implementation of the new Basel framework in the European Union. In this regard, these Guidelines do not supersede or change the substance of the regulatory disclosures regarding the requirements defined in Part Eight of the CRR. However, they provide guidance on these disclosures from a presentational aspect, in particular by introducing more specific guidance and formats through the use of tables and templates. This means that certain Pillar 3 disclosures follow a fixed format defined by EBA, including column or row labeling, whereas other disclosures are flexible and may be modified to a certain degree to present the most relevant information.

Against this background, we have decided to re-structure the content flow of the Pillar 3 Report to allow easier identification of the respective disclosure elements against its specific Pillar 3 disclosure requirements. Within the broad risk sections "credit risk", "counterparty credit risk", "market risk", "operational risk", "liquidity risk" and "remuneration" we re-designed the Pillar 3 Report to follow in principle the order of the CRR-Articles in Part Eight (relevant numberings are now also reflected in the headings of the sections). In some instances within these sections we follow the structure as provided by the EBA Guideline where it helps to present specific topics even more comprehensively at one place. The quantitative Pillar 3 requirements are presented under the relevant EBA template with respective references (e.g., EU OV1, EU CR6), also including the EBA column or row labeling. In instances where additional lines or columns have been added to certain templates for better disclosure presentation a new numbering was introduced as specified in the EBA Guideline. Please note that we still use mainly our own naming conventions within the EBA templates for the description of rows and columns which allows us to stay aligned and consistent in our disclosure presentation over time. For this year's Pillar 3 disclosures per yearend 2017 we principally make use of the transitional arrangements provided in the EBA Guideline in section 4.1, No. 20 in relation to comparative information for prior periods, where these can be omitted in their first year of adoption.

In 2012 the Enhanced Disclosure Task Force ("EDTF") was established as a private sector initiative under the auspice of the Financial Stability Board, with the primary objective to develop fundamental principles for enhanced risk disclosures and to recommend improvements to existing risk disclosures. As a member of the EDTF we adhered to the disclosure recommendations in this Pillar 3 Report to the extent applicable.

Article 431 (2) CRR - Information on operational risk methodologies

Deutsche Bank uses the Advanced Measurement Approach (AMA) to measure Operational Risk capital requirements as outlined in section "Article 446 CRR - Operational Risk Measurement" in this report on page 115.

Article 431 (3) CRR - Disclosure policy

For purposes of Article 431 CRR, we have adopted a formal Risk Disclosure Policy aiming to support a conclusion that our risk disclosures are in compliance with applicable legal, regulatory and accounting risk disclosure standards and are compiled based upon a set of internally defined principles and related processes. The Risk Disclosure Policy defines overall roles and responsibilities, sets up the disclosure production process and establishes the verification and sign off procedures. Principally senior representatives and subject matter experts from Finance and Risk assume responsibility for our risk disclosures and govern our respective risk disclosure processes. Based upon our assessment and verification we believe that our risk disclosures presented throughout this Pillar 3 Report in conjunction with the Annual Report 2017 appropriately and comprehensively convey our overall risk profile.

Article 431 (4) CRR - Explanation of rating decisions

Deutsche Bank Group provides explanations of rating decisions to small and medium entities and other corporates whose loan applications were declined.

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

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

Article 433 CRR - Frequency of disclosure

In line with the internal Risk Disclosure Policy the Group regularly assesses the need to disclose some or all information required by Titles II and III in Part Eight of Regulation (EU) No 575/2013 more frequently than annually. In accordance with Article 433 CRR the Group bases its assessment mainly on the relevant characteristics of its business such as scale of operations, range of activities, presence in different countries, involvement in different financial sectors, activity in international financial markets and considers participation in payment, settlement and clearing systems. In this regard, specific attention is laid on information on capital, capital requirements, risk and other elements that can change rapidly and therefore lead to a more frequent disclosure.

There is a formal process set up for the identification of the frequency of all Pillar 3 disclosures which is compatible with the size, the scope and the range of activities of the Group. It also considers external factors like market developments or investors and analysts' expectations as well as internal aspects like expert judgments from areas effected, process of disclosure implementation and quality assurance in the production process with the overall aim to deliver appropriate disclosures which provide a timely, complete and correct view of the Group's risk profile and risk position.

Subsequently the Group concludes, which parts of the information required under Part 8 CRR are to be disclosed more frequently than once a year. In this regard the Group principally follows the recommendations regarding frequency of disclosures as prejudiced in the CRR and the EBA Guidelines on disclosure requirements under Part Eight of Regulation (EU) No 575/2013 as of December 14, 2016, for those items specified in there, but also reaches respective conclusions for all remaining disclosure items.

The internal Risk Disclosure Policy also states that Pillar 3 disclosures have to be published in conjunction with the date of publication of the financial statements unless specified and agreed differently e.g. publication of standalone Pillar 3 Report for significant subsidiaries according to Article 13 CRR.

Article 434 CRR - Means of disclosure

The Pillar 3 Report is provided on the bank's website at www.db.com/ir/en/documents.htm

Starting yearend 2017, the Pillar 3 Report has been restructured. It now follows the structure as defined by the EBA guideline ("Final Report on the Guidelines on Disclosure Requirements under Part Eight of Regulation (EU) No 575/2013" EBA/GL/2016/11, version 2*, from 14 December 2016) and underlying Capital Requirement Regulation (CRR) related articles.

This report provides the Basel III Pillar 3 disclosures to the extent that these required Pillar 3 disclosures are not included in the Deutsche Bank Annual Report 2017. Where Pillar 3 disclosure elements are located in the Annual Report of Deutsche Bank, they are generally referenced from the Pillar 3 Report to the Annual Report accordingly. The following table provides an overview of the references into the Deutsche Bank Annual Report 2017.

Main Pillar 3 disclosures in our Annual Report

Pillar 3 disclosure topic with reference to CRR-Article	Primary location in our Annual Report
Risk management objectives and policies (Article 435)	Report of the Supervisory Board, Our business strategy, Deutsche Bank Group, Risks and Opportunities Key Risk Metrics, Overall Risk Assessment, Risk Profile, Risk and Capital Framework, Risk Management Principles, Risk Governance, Risk Appetite and Capacity, Strategic and Capital Plan, Risk Reporting and Measurement Systems, Capital Management, Resource Limit Setting, Risk Identification and Assessment, Credit Risk Management, Market Risk Management, Operational Risk Management, Liquidity Risk Management, Business (Strategic) Risk Management, Model Risk Management, Reputational Risk Management, Risk Concentration & Diversification, Capital and Leverage Ratio, Credit Risk Exposure, Asset Quality, Trading Market Risk Exposures, Nontrading Market Risk Exposures, Operational Risk Exposure, Liquidity Risk Exposure Responsibility Statement by the Management Board, Management Board, Supervisory Board, Compliance with the German Corporate Governance Code, Targets for the proportion of women in management positions/gender quota, Diversity Concept
Scope of application of the regulatory framework (Article 436)	Introduction, Shareholdings
Own Funds (Article 437)	Regulatory Capital, Capital Instruments, Minimum capital requirements and additional capital buffers, Development of regulatory capital
Capital requirements (Article 438)	Key Risk Metrics, Risk Profile, Risk Appetite and Capacity, Risk and Capital Plan, Risk and Capital Plan, Stress Testing, Risk Identification and Assessment, Capital and Leverage Ratio
Counterparty credit risk (Article 439)	Credit Risk Management, Credit Risk Exposure, Asset Quality, Liquidity Risk Exposure
Capital buffers (Article 440)	Capital and Leverage Ratio
Indicators of global systemic importance (Article 441)	Disclosed on our webpage
Credit risk (Article 442)	Asset Quality, Note 1 - Significant Accounting Policies and Critical Accounting Estimates, Note 13 - Financial Instruments carried at Fair Value, Note 14 - Fair Value of Financial Instruments not carried at Fair Value, Note 20 - Allowance for Credit Losses
Unencumbered assets (Article 443)	Liquidity Risk Exposure, Note 22 - Assets Pledged and Received as Collateral, Note 39 - Information on Subsidiaries
Exposure to market risk (Article 445)	Capital and Leverage Ratio, Trading Market Risk Exposures
Operational risk (Article 446)	Operational Risk Management, Operational Risk Exposure, Capital and Leverage Ratio, Note 29 - Provisions
Exposures in equities not included in the trading book (Article 447)	Market Risk Management, Credit Risk Exposure, Note 1 - Significant Accounting Policies and Critical Accounting Estimates, Note 13 - Financial Instruments carried at Fair Value, Note 17 - Equity Method Investments, Note 45 - Shareholdings
Exposure to interest rate risk on positions not included in the trading book (Article 448)	Nontrading Market Risk, Nontrading Market Risk Exposures
Securitization (Article 449)	Credit Risk Management, Market Risk Management, Note 1 - Significant Accounting Policies and Critical Accounting Estimates, Note 13 - Financial Instruments carried at Fair Value
Remuneration policy (Article 450)	Compensation Report
Leverage (Article 451)	Risk Management Principles, Risk Governance, Capital Management, Leverage Ratio
Use of the IRB Approach to credit risk (Article 452)	Credit Risk Management, Credit Risk Exposure
Use of credit risk mitigation techniques (Article 453)	Credit Risk Management, Credit Risk Exposure
Use of the Advanced Measurement Approaches to operational Risk (Article 454)	Operational Risk Management, Operational Risk Exposure
Use of Internal Market Risk Models (Article 455)	Market Risk Management, Trading Market Risk Exposures, Note 13 - Financial Instruments carried at Fair Value
Liquidity	Liquidity Risk Management, Liquidity Risk Exposure
Business Risk	Business (Strategic) Risk Management

Disclosure requirements according to Article 26a German Banking Act (KWG)	Note 41 – Current and Non-Current Assets and Liabilities Note 42 – Events after the Reporting Period Note 43 – Supplementary Information to the Consolidated Financial Statements according to Sections 297 (1a) / 315a HGB
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Risk Management objectives and policies

Article 435 (1)(a) CRR - Risk Management strategies and processes

Deutsche Bank Group discloses the Risk Management strategies and process in the Annual Report 2017 under sections “Risk Management Principles” on page 46 and “Risk Governance” on page 47.

Credit risk management strategies and processes

The management of Credit Risk is described in section “Credit Risk Management” on page 58 in the 2017 Annual Report.

Market risk management strategies and processes

The management of Market Risk is described in section “Market Risk Management” on page 65 in the 2017 Annual Report.

Liquidity risk management strategies and processes

The management of Liquidity is described in section “Liquidity Risk Management” on page 76 in the 2017 Annual Report, covering topics around the liquidity risk framework within Deutsche Bank, mitigation of long-term and short-term liquidity risk, structural funding risk, allocation of liquidity across the firm, external and internal stress testing and scenario analysis, liquidity reserves and asset encumbrance.

Business risk management strategies and processes

The management of business risk is described in sections “Risk Identification and Assessment” and “Business (Strategic) Risk Management” on pages 58 and 80 respectively in the 2017 Annual Report.

Operational risk management strategies and processes

The management of Operational Risk is described in section “Operational Risk Management” on page 71 in the 2017 Annual Report.

Reputational risk management strategies and processes

The management of reputational risk is described in section “Reputational Risk Management” on page 81 of the 2017 Annual Report.

Article 435 (1)(b) CRR - Risk Management structure and organization

Deutsche Bank discloses the overall risk management structure and organization in the 2017 Annual Report, chapter “Risk and Capital Framework”, section “Risk Governance” on page 47.

More detailed descriptions are provided in the following specific chapters.

Credit risk management structure and organization

The structure and organization of Credit Risk Management is described in section “Credit Risk Management” on pages 58 to 65 in the 2017 Annual Report.

Market risk management structure and organization

The structure and organization of Market Risk Management is described in section “Market Risk Management”, in the 2017 Annual Report, specifically in the chapter “Market Risk Framework” on page 65, “Trading Market Risk” on page 66 and “Non-trading Market Risk” on page 69.

Liquidity risk management structure and organization

The structure and organization of Liquidity Risk Management is described in section “Liquidity Risk Management”, in the 2017 Annual Report, specifically in the chapter “Liquidity Risk Management Framework” on page 76, “Capital Markets Issuance” on page 76 and “Short Term Liquidity and Wholesale Funding” on page 76.

Business risk management structure and organization

Business risk is managed by the Risk Strategy team within Enterprise Risk Management. Further detail is provided in section “Business (Strategic) Risk Management” on page 80 in the 2017 Annual Report.

Operational risk management structure and organization

The structure and organization is described in section “Operational Risk Management” on page 71 in the 2017 Annual Report.

Reputational risk management structure and organization

The structure and organization of Reputational Risk Management is described in the section “Reputational Risk Management” on page 81 in the 2017 Annual Report.

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

The nature of our Risk Reporting and Measurement Systems are described in the section “Risk Reporting and Measurement Systems” on page 54 of the Annual Report 2017.

Scope and nature of credit risk reporting and measurement systems

The scope and nature of our credit risk reporting and measurement systems are described in the section “Risk Reporting and Measurement Systems” on page 54 of the Annual Report 2017.

Scope and nature of market risk reporting and measurement systems

The scope and nature of our market risk reporting and measurement systems are described in the section “Risk Reporting and Measurement Systems” on page 54 of the Annual Report 2017.

Scope and nature of liquidity risk reporting and measurement systems

The scope and nature of our liquidity risk reporting and measurement systems are described in the section “Liquidity Risk Management” on page 76 and onwards of the Annual Report 2017. Specifically, the chapter “Liquidity Stress Testing and Scenario analysis” on page 77 covers the reporting of our internal liquidity stress tests, performed by the Liquidity Treasury Reporting and Analysis (LTRA) department in Group Treasury, in conjunction with the Liquidity Management (LM) team in Group Treasury and the Liquidity Risk Management (LRM) function within the Risk division. The chapter “Liquidity Risk Management Framework” on page 76 includes limit and risk appetite setting in accordance with Management Board approval, and also covers the annual review of risk appetite and Management Board reporting. The chapter “Capital Markets Issuance” on page 76 covers the reporting of planned and executed funding activities to the Management Board. The chapter “Liquidity Coverage Ratio” on page

78 covers external stress testing and the chapter "Structural Funding" on page 78 covers the funding matrix as Deutsche Bank's tool for management structural funding risk.

Scope and nature of business risk reporting and measurement systems

Please refer to the section "Capital Requirements", chapter "Business Risk Economic Capital Model" on page 30 of the Pillar 3 report.

Scope and nature of operational risk reporting and measurement systems

The risk reporting and measurement methodology are described in section "Operational Risk Management" on page 71 in the 2017 Annual Report.

Scope and nature of reputational risk reporting and measurement systems

The scope and nature of our reputational risk reporting and measurement systems are described in the section "Risk Reporting and Measurement Systems" on page 54 of the Annual Report 2017.

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

Policies for hedging and mitigating credit risk

The section "Managing and mitigation of credit risk" on pages 61 to 65 in the Annual Report 2017 provides information on how our credit risk is hedged/mitigated on both counterparty and portfolio levels and exposures are disclosed in corporate credit risk and CPSG risk mitigation under pages 105 to 107 in the same report.

Policies for hedging and mitigating market risk

The approach to hedging and managing market risk is governed by policies explicitly designed to ensure that all hedging activities are risk reducing, not proprietary in nature and are documented prior to trade execution. Hedging activities are reviewed by the relevant business control forum. For a further description of the hedging approach for specific areas in the banking book, please refer to the section "Nontrading Market Risk" of the 2017 Annual Report on page 69.

Policies for hedging and mitigating liquidity risk

The policies for mitigating risk, and the strategies and processes for monitoring the continuing effectiveness of mitigants regarding liquidity risk are described in the section 'Liquidity Risk Management' on page 76 and onwards of the Annual Report 2017. Specifically this section covers Management Board risk appetite setting and approval, stable long-term funding from Capital Markets Issuances, the mitigation of short-term Liquidity and Wholesale Funding risks, daily internal liquidity stress testing and scenario analyses, external stress tests (i.e. the Liquidity Coverage Ratio) in order to promote short-term resilience, the mitigation of structural funding risks by aligning liquidity supply and demand, Funding Diversification to mitigate concentration risks, Funds Transfer Pricing to promote the efficient allocation of liquidity across the Firm, Liquidity Reserves as a stress mitigant and the level of Asset Encumbrance to prevent an over-reliance on secured funding.

Policies for hedging and mitigating operational risk

The risk mitigating processes regarding operational risk are described in section "Operational Risk Management" on page 71 in the 2017 Annual Report. The hedging of operational risk is described in "Article 454 CRR - Use of the Advanced Measurement Approaches to operational risk" on page 117 in this report.

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

Our Management Board confirms, for the purpose of Article 435 CRR, that our risk management systems are adequate with regard to our risk profile and strategy.

Article 435 (1)(f) CRR - Concise risk statement approved by the Board

All individual information aspects of the article are addressed in the 2017 Annual Report e.g. in the following combined set of sections

Article 435 (1)(f) CRR requirements	Reference sections from Deutsche Bank's Annual Report 2017
Risk Profile	Overall Risk Assessment (page 44) Risk Profile (page 44) Risk Reporting and Measurement Systems (page 54)
Business Strategy	Our business strategy (page XV) Deutsche Bank Group (page 4) Risks and Opportunities (page 38) Strategic and Capital Plan (page 51)
Management of Risk	Risk Management Principles and Governance (pages 46 to 50) Risk Reporting and Measurement Systems (page 54) Capital Management (page 57) Resource Limit Setting (page 57) Risk Identification and Assessment (page 58) Credit Risk Management (page 58) Market Risk Management (page 65) Operational Risk Management (page 81) Liquidity Risk Management (page 76) Strategic Risk Management (page 80) Reputational Risk Management (page 81) Model Risk Management (page 80) Risk Concentration & Diversification (page 81)
Risk Tolerances	Risk Appetite and Capacity (page 50)
Key Ratios and Figures	Risk Profile (page 44) Key Risk Metrics (page 43) Regulatory Capital (page 82) Economic Capital (page 92) Leverage Ratio (page 93) Credit Risk Exposure (page 95) Asset Quality (page 111) Trading Market Risk Exposures (page 119) Nontrading Market Risk Exposures (page 123) Operational Risk Exposure (page 125) Liquidity Risk Exposure (page 126)

The “concise statement” is fulfilled by Deutsche Bank’s Management Board signatures in section “Responsibility Statement by the Management Board” in the Annual Report 2017 on page 352.

“To the best of our knowledge, and in accordance with the applicable reporting principles, the consolidated financial statements give a true and fair view of the assets, liabilities, financial position and profit or loss of the Group, and the Group management report includes a fair review of the development and performance of the business and the position of the Group, together with a description of the principal opportunities and risks associated with the expected development of the Group.”

Article 435 (2)(a) CRR - Number of directorships held by Board members

The number of directorships held by members of the management board is published in the section “Management Board” from page 354 onwards in the Annual Report 2017.

Article 435 (2)(b) CRR - Recruitment policy for Board members

Please refer to the section "Report of the supervisory board" and the sub-section therein "Nomination Committee" on page 365 in our Annual Report 2017.

Article 435 (2)(c) CRR - Policy on diversity for Board members

Please refer to the section "Diversity Concept" on Deutsche Bank's approach and processes to support diversity, including diversity objectives, targets and achievements in relation to the management bodies on page 374 in our Annual Report 2017.

Page 373 in our Annual Report 2017 refers in "Targets for the proportion of women in management positions/gender quota" to Deutsche Bank's approach to the proportion of women in Supervisory Board as well as Management Board. It also shows targets for the first and second level reporting to the Management Board.

On page 354 in our Annual Report 2017, we provide information on duties and responsibilities and procedures of the Management Board including a reference to the respective Terms of Reference (ToR) link.

The Management Board ToR §5 (9) states inter alia: "In appointing people to management functions in the Group, the Management Board takes diversity into account and strives, in particular, to achieve an appropriate representation of women". Pages 359 to 364 in our Annual Report 2017 provide similar information for the Supervisory Board with specific information on page 362 on "Objectives for the composition of the Supervisory Board and status of implementation".

Article 435 (2)(d-e) CRR - Risk Committee and information flow

Dedicated risk committees are in place both on Supervisory Board level (the Risk Committee of the Supervisory Board) as well as on Management Board level (the Group Risk Committee, "GRC").

Please refer to our Annual Report 2017, page VII, chapter "Report of the Supervisory Board", section "The Committees of the Supervisory Board", paragraph "Risk Committee" for the number of meetings the Risk Committee of the Supervisory Board held in 2017.

Please refer to the "Risk Report" in our Annual Report 2017, page 41, chapter "Risk and Capital Framework", section "Risk Governance" for the regular meeting schedule of the Group Risk Committee in 2017.

Please refer to the "Risk Report" in our Annual Report 2017, page 41, chapter "Risk and Capital Framework", section "Risk Reporting and Measurement Systems" for a description of the information flow.

Scope of application of the regulatory framework

Article 436 (a) CRR - Name of the institution

Deutsche Bank Aktiengesellschaft ("Deutsche Bank AG"), headquartered in Frankfurt am Main, Germany, is the parent institution of the Deutsche Bank Group of institutions (the "regulatory group"), which is subject to the supervisory provisions of the KWG and the SolvV, including the references to the CRR and CRD 4. Under Section 10a KWG in conjunction with Articles 11 and 18 CRR, a regulatory group of institutions consists of an institution (meaning a credit institution or an investment firm) as the parent company, and all other institutions and financial institutions (comprising inter alia financial holding companies, payment institutions, asset management companies) that are its subsidiaries within the meaning of Article 4 (16) CRR or are jointly managed together with other parties within the meaning of Article 18 (4) CRR or are included. Subsidiaries are fully consolidated, while companies which are not subsidiaries are consolidated on a pro-rata basis.

Insurance companies and companies outside the banking and financial sector are not consolidated in the regulatory group of institutions. We were designated by the BaFin as a financial conglomerate in November 2007. However, subsequent to our sale of our most material insurance entity Abbey Life Assurance Company Limited effective December 30, 2016, the ECB confirmed to us in April 2017 that we do not qualify as a financial conglomerate anymore and are no longer subject to the respective supplementary supervisions.

Article 436 (b) CRR - Difference in basis of consolidation for accounting and prudential purposes

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

The main differences between regulatory and accounting consolidation are:

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

As of year-end 2017, our regulatory group comprised 535 entities (excluding the parent Deutsche Bank AG), of which one was consolidated on a pro-rata basis. The regulatory group comprised 92 credit institutions, one payment institution, 52 financial services institutions, 262 financial enterprises, seven asset management companies and 121 ancillary services undertakings.

As of year-end 2016, our regulatory group comprised 580 entities (excluding the parent Deutsche Bank AG), of which four were consolidated on a pro-rata basis. The regulatory group comprised 95 credit institutions, one payment institution, 56 financial services institutions, 287 financial enterprises, seven asset management companies and 134 ancillary services undertakings.

74 entities were exempted from regulatory consolidation pursuant to Section 31 (3) KWG in conjunction with Article 19 CRR as per year end 2017 (year end 2016: 85 entities). These regulations allow the exclusion of small entities in the regulatory scope of application from consolidated regulatory reporting if either their total assets (including off-balance sheet items) are below € 10 million or below 1 % of our Group's total assets. None of these entities needed to be consolidated in our financial statements in accordance with IFRS.

These regulatory unconsolidated entities have to be included in the deduction treatment for significant investments in financial sector entities pursuant to Article 36 (1) (i) CRR in conjunction with Article 43 (c) CRR. The book values of our participations in their equity included in the deduction treatment amounted to in total € 10 million as per year end 2017 (year end 2016: € 12 million). We further have applied the deduction treatment to 208 regulatory unconsolidated entities in the financial sector (including three insurance entities) where we have an investment of more than 10 % of the capital of these entities as per year end 2017 (year end 2016: 220 entities). Pursuant to Article 36 (1) (i) CRR and in conjunction with Article 48 CRR, investments in the capital of financial sector entities have to be deducted from CET 1 capital if they exceed in sum 10 % of the institution's own CET 1 capital or if they exceed in aggregate with deferred tax assets that rely on future profitability and arise from temporary differences 15 % of the relevant CET 1 capital.

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

Differences between carrying values on the regulatory balance sheet in column (b) and amounts deducted from CRR/CRD 4 capital are explained further in the footnotes of the "Transitional template for regulatory capital, RWA and capital ratios" as referenced in the last column of this table.

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

	Dec 31, 2017							
	a	b	c	d	e	f	g	
	Carrying values of items:							
in € m.	Carrying values as reported in published financial statements	Carrying values under scope of regulatory consolidation	Subject to the credit risk framework	Subject to the counterparty credit risk framework	Subject to the securitization framework	Subject to the market risk framework	Not subject to capital requirements or subject to deduction from capital	References ¹
Assets:								
Cash and central bank balances	225,655	225,579	225,363	0	0	97,549	0	
Interbank balances (w/o central banks)	9,266	8,244	7,564	0	0	6,782	0	
Central bank funds sold and securities purchased under resale agreements	9,972	9,972	74	9,897	0	4,338	0	
Securities borrowed	16,732	16,732	0	16,718	0	16,258	0	
Financial assets at fair value through profit or loss								
Thereof:								
Trading assets	184,661	183,942	11,359	0	211	183,683	50	
Positive market values from derivative financial instruments	361,033	363,010	299	360,731	371	361,865	0	
Financial assets designated at fair value through profit or loss	91,276	90,259	11,936	78,138	0	85,737	0	
Total financial assets at fair value through profit or loss	636,970	637,213	23,594	438,869	582	631,286	50	
Financial assets available for sale	49,397	53,055	51,836	0	143	25,216	0	
Equity method investments	866	854	854	0	0	853	64	
Thereof: Goodwill	64	64	0	0	0	0	64	E
Loans	401,699	403,271	376,164	10,896	15,459	138,596	5	
Securities held to maturity	3,170	3,170	3,170	0	0	0	0	
Property and equipment	2,662	2,612	2,612	0	0	373	0	
Goodwill and other intangible assets	8,839	8,635	0	0	0	0	8,635	E
Other assets	101,491	102,859	8,429	61,222	56	44,946	20,377	
Thereof: Defined benefit pension fund assets	1,124	1,125	0	0	0	0	1,125	G
Assets for current tax	1,215	1,203	1,203	0	0	0	0	
Deferred tax assets	6,799	6,777	3,846	0	0	0	2,931	F
Total assets	1,474,732	1,480,174	704,708	537,603	16,241	966,198	32,063	

Dec 31, 2017

in € m.	a	b	c	d	e	f	g	References ¹
	Carrying values as reported in published financial statements	Carrying values under scope of regulatory consolidation	Subject to the credit risk framework	Subject to the counterparty credit risk framework	Subject to the securitization framework	Carrying values of items:		
						Subject to the market risk framework	Not subject to capital requirements or subject to deduction from capital	
Liabilities and equity:								
Deposits	580,812	584,998	0	9,674	48	87,637	487,639	
Central bank funds purchased and securities sold under repurchase agreements	18,105	18,105	0	18,106	0	16,465	0	
Securities loaned	6,689	6,689	0	6,689	0	6,581	0	
Financial liabilities at fair value through profit or loss								
Thereof:								
Trading liabilities	71,463	71,448	0	493	0	70,885	69	
Negative market values from derivative financial instruments	342,726	344,487	0	343,960	138	343,591	88	
Financial liabilities designated at fair value through profit or loss	63,874	63,463	0	63,030	0	63,462	0	
Investment contract liabilities	574	0	0	0	0	0	0	
Total financial liabilities at fair value through profit or loss	478,636	479,398	0	408,009	138	477,939	158	
Other short-term borrowings	18,411	18,169	0	0	0	1,549	16,620	
Other liabilities	132,207	132,102	0	84,043	0	46,526	19,950	
Provisions	5,219	5,178	0	0	0	1,105	4,074	
Liabilities for current tax	1,000	986	0	0	0	857	128	
Deferred tax liabilities	346	280	0	0	0	0	280	
Long-term debt	159,715	160,818	0	0	0	12,713	148,105	
Thereof: Subordinated long-term debt ²	8,100	8,100	0	0	0	828	7,272	I,J
Trust preferred securities ²	5,492	5,492	0	0	0	4,577	915	I,J
Obligation to purchase common shares	0	0	0	0	0	0	0	
Total liabilities	1,406,633	1,412,216	0	525,995	186	655,949	677,869	
Common shares, no par value, nominal value of € 2.56	5,291	5,291	0	0	0	0	5,291	A
Additional paid-in capital	39,918	39,913	0	0	0	0	39,913	A
Retained earnings	17,454	17,226	0	0	0	0	17,226	B
Common shares in treasury, at cost	(8)	(8)	0	0	0	0	(8)	A
Equity classified as obligation to purchase common shares	0	0	0	0	0	0	0	A
Accumulated other comprehensive income, net of tax	519	696	0	0	0	0	696	C
Total shareholders' equity	63,174	63,117	0	0	0	0	63,117	
Additional equity components	4,675	4,675	0	0	0	0	4,675	H
Noncontrolling interests	250	167	0	0	0	0	167	D
Total equity	68,099	67,959	0	0	0	0	67,959	
Total liabilities and equity	1,474,732	1,480,174	0	525,995	186	655,949	745,828	

¹ References provide the mapping of regulatory balance sheet items used to calculate regulatory capital as reflected in the column "References" in "Transitional template for Regulatory Capital, RWA and Capital Ratios". Where applicable, more detailed information are provided in the respective reference footnote section.

² Eligible Additional Tier 1 and Tier 2 instruments are reflected in these balance sheet positions with their values according to IFRS.

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

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

		Dec 31, 2017				
		a	b	c	d	e
		Items subject to:				
in € m.		Total	Credit risk framework	Counterparty credit risk framework	Securitization framework	Market risk framework
1	Asset carrying value amount under the regulatory scope of consolidation (as per template EU LI1)	1,480,174	704,708	537,603	16,241	966,198
2	Liabilities carrying value amount under the regulatory scope of consolidation (as per template EU LI1)	1,412,215	0	525,995	186	655,949
3	Total net amount under the regulatory scope of consolidation	67,959	704,708	11,608	16,056	310,248 ⁵
4	Off-balance-sheet amounts	250,252	234,145	4,362	10,228	0
5a	Differences in valuations for derivatives and SFT (incl. impact from different netting rules) ¹	–	0	190,148	337	0
5b	Differences in valuations for securitization positions ²	–	(20,507)	(2,193)	36,182	2,028
5c	Differences in valuations for off-balance sheet amounts	–	(131,833)	0	0	0
6	Differences due to financial collateral considered in standardized approach	–	(2,490)	(708)	0	0
7	Differences due to consideration of provisions ³	–	4,521	0	0	0
8	Differences due to dilution risk	–	6,066	0	0	0
9	Other differences ⁴	–	7,205	3,282	0	0
10	Exposure amounts considered for regulatory purposes	1,077,058	801,815	206,499	62,802	5,942 ⁶

¹ Includes effects due to differences in exposure modelling applying the effective expected positive exposure (EEPE) as well as the mark to market method for derivatives and financial collateral comprehensive method for SFT respectively; that also reflects differences as a result of the application of credit risk mitigation and regulatory netting rules.

² Included in the sum of € 36.2 billion are € 14.3 billion resulting from synthetic securitizations where CCF are set to a level of 1 and FX mismatches have to be considered amounting to € 1.3 billion. The amount represents the retained synthetic tranches after consideration of bought credit protection.

³ Includes credit-risk related purchase price adjustments arising in the context of asset purchases as well as business combinations.

⁴ Primarily reflects valuation differences as a result of regulatory product definition being different from the accounting product definition; moreover under the counterparty credit risk framework funded default fund contribution in form of securities are considered in the exposure amounts for regulatory purposes.

⁵ Included in the sum of € 310.3 bn are € 3.9 bn net carrying amount attributable to securitization positions in the regulatory trading book covered under the market risk standardized approach.

⁶ Exposure at default is only considered for securitization positions in the regulatory trading book as the remaining exposure is considered within the internally developed market risk models.

For table EU LI3 which provides an outline of the differences in the scopes of consolidation on an entity-by-entity-basis please refer to Note 45 "Shareholdings" in our Annual Report 2017 on the pages 322 to 343.

Article 436 (c) CRR - Impediments to fund transfers

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

Article 436 (d) CRR - Potential capital shortfalls in unconsolidated subsidiaries

Our subsidiaries which were not included in our regulatory consolidation due to their immateriality did not have to comply with own minimum capital standards in 2017.

Article 436 (e) CRR - Derogations from prudential or liquidity requirements for subsidiaries

As of December 31, 2017, Deutsche Bank AG fully applied the exemptions pursuant to Section 2a (1) KWG in conjunction with Article 7 (3) CRR, Art. 6 (5) CRR and Section 2a (2) KWG in conjunction with Section 25a (1) sentence 3 KWG (so-called "parent waiver") pursuant to which it may waive the application of provisions on own funds (Part II CRR), capital requirements (Part III CRR), large exposures (Part IV CRR), exposures to transferred credit risks (Part V CRR), leverage (Part VII CRR) and disclosure by institutions (Part VIII CRR) as well as certain risk management requirements (Section 25a (1) sentence 3 KWG) on a stand-alone basis.

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

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

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

Article 18 CRR Additional Disclosure Requirements for Significant Subsidiaries

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

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

In order to identify significant subsidiaries a catalogue of criteria has been developed, applied to all subsidiaries classified as "credit institution" or "investment firm" under the CRR and not qualifying for a waiver status pursuant to Section 2a KWG in conjunction with Article 7 CRR. A subsidiary is required to comply with the requirements in Article 13 CRR (as described above) if at least one criterion mentioned in the list below has been met. The criteria have been defined in relation to our business activities as well as the complexity and risk profile of the respective subsidiary. All figures referenced below are calculated on an IFRS basis as of December 31, 2016:

- Total Assets of € 30 billion or more (on individual or sub-consolidated basis)
- Five percent or more of our risk-weighted assets on group level
- 20 percent or more of the gross domestic product in its respective country, in which the subsidiary is located, but at least total assets of € five billion (on individual or sub-consolidated basis)
- Institutions directly supported by the European Stability Mechanism (ESM), European Financial Stability Facility (EFSF) or similar mechanisms
- Institutions belonging to the three largest institutions in their respective countries, in which the subsidiary is located (referring to the amount of total assets)
- Classification as "local systemically important institution" by the local competent authority

None of our subsidiaries have received support from any kind of stability mechanism.

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

- Deutsche Postbank AG, Germany
- Deutsche Bank Luxembourg S.A., Luxembourg
- DB USA Corporation, United States of America

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

Own funds

Capital Adequacy

The calculation of our regulatory capital incorporates the capital requirements following the “Regulation (EU) No 575/2013 on prudential requirements for credit institutions and investment firms” (Capital Requirements Regulation or “CRR”) and the “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 4 or “CRD 4”) as implemented into German law. The information in this section as well as in the section “Article 438 (c-f) CRR - Overview of capital requirements” is based on the regulatory principles of consolidation.

This section refers to the capital adequacy of the group of institutions consolidated for banking regulatory purposes pursuant to the CRR and the German Banking Act (“Kreditwesengesetz” or “KWG”). Therein not included are insurance companies or companies outside the finance sector.

The total regulatory capital pursuant to the effective regulations as of year-end 2017 comprises Tier 1 and Tier 2 (T2) capital. Tier 1 capital is subdivided into Common Equity Tier 1 (CET 1) capital and Additional Tier 1 (AT1) capital.

Common Equity Tier 1 (CET 1) capital consists primarily of common share capital (reduced by own holdings) including related share premium accounts, retained earnings (including losses for the financial year, if any) and accumulated other comprehensive income, subject to regulatory adjustments (i.e. prudential filters and deductions). Prudential filters for CET 1 capital, according to Articles 32 to 35 CRR, include (i) securitization gain on sale, (ii) cash flow hedges and changes in the value of own liabilities, and (iii) additional value adjustments. CET 1 capital deductions comprise (i) intangible assets, (ii) deferred tax assets that rely on future profitability, (iii) negative amounts resulting from the calculation of expected loss amounts, (iv) net defined benefit pension fund assets, (v) reciprocal cross holdings in the capital of financial sector entities and, (vi) significant and non-significant investments in the capital (CET 1, AT1, T2) of financial sector entities above certain thresholds. All items not deducted (i.e., amounts below the threshold) are subject to risk-weighting.

Additional Tier 1 (AT1) capital consists of AT1 capital instruments and related share premium accounts as well as noncontrolling interests qualifying for inclusion in consolidated AT1 capital, and during the transitional period grandfathered instruments eligible under earlier frameworks. To qualify as AT1 capital under CRR/CRD 4, instruments must have principal loss absorption through a conversion to common shares or a write-down mechanism allocating losses at a trigger point and must also meet further requirements (perpetual with no incentive to redeem; institution must have full dividend/coupon discretion at all times, etc.).

Tier 2 (T2) capital comprises eligible capital instruments, the related share premium accounts and subordinated long-term debt, certain loan loss provisions and noncontrolling interests that qualify for inclusion in consolidated T2 capital. To qualify as T2 capital, capital instruments or subordinated debt must have an original maturity of at least five years. Moreover, eligible capital instruments may inter alia not contain an incentive to redeem, a right of investors to accelerate repayment, or a credit sensitive dividend feature.

Capital instruments that no longer qualify as AT1 or T2 capital under the CRR/CRD 4 fully loaded rules are subject to grandfathering rules during transitional period and are phased out from 2013 to 2022 with their recognition capped at 50 % in 2017 and the cap decreasing by 10 % every year.

Article 437 (1)(a) CRR - Regulatory capital composition

Transitional template for regulatory capital, RWA and capital ratios

in € m.	Dec 31, 2017		Dec 31, 2016		References ¹
	CRR/CRD 4 fully-loaded	CRR/CRD 4	CRR/CRD 4 fully loaded	CRR/CRD 4	
Common Equity Tier 1 (CET 1) capital: instruments and reserves					
Capital instruments and the related share premium accounts	45,195	45,195	37,290	37,290	A
Thereof: Ordinary shares ²	45,195	45,195	37,290	37,290	A
Retained earnings	17,977	17,977	20,113	20,113	B
Accumulated other comprehensive income (loss), net of tax	696	660	3,708	3,645	C
Funds for general banking risk	0	0	0	0	
Amount of qualifying items referred to in Art. 484 (3) CRR and the related share premium accounts subject to phase-out from CET 1	N/M	0	N/M	0	
Public sector capital injections grandfathered until January 1, 2018	N/M	N/M	N/M	N/M	
Noncontrolling Interests (amount allowed in consolidated CET 1)	0	33	0	79	D
Independently reviewed interim profits net of any foreseeable charge or dividend ³	(751)	(751)	(2,023)	(2,023)	B
Common Equity Tier 1 (CET 1) capital before regulatory adjustments	63,116	63,114	59,088	59,104	
Common Equity Tier 1 (CET 1) capital: regulatory adjustments					
Additional value adjustments (negative amount) ⁴	(1,204)	(1,204)	(1,398)	(1,398)	
Goodwill and other intangible assets (net of related tax liabilities) (negative amount)	(8,394)	(6,715)	(8,436)	(5,062)	E
Deferred tax assets that rely on future profitability excluding those arising from temporary differences (net of related tax liabilities where the conditions in Art. 38 (3) CRR are met) (negative amount)	(3,004)	(2,403)	(3,854)	(2,312)	F
Fair value reserves related to gains or losses on cash flow hedges	(28)	(28)	(195)	(195)	
Negative amounts resulting from the calculation of expected loss amounts	(502)	(408)	(297)	(188)	
Any increase in equity that results from securitized assets (negative amount)	(2)	(2)	(5)	(5)	
Gains or losses on liabilities designated at fair value resulting from changes in own credit standing ⁵	(73)	(45)	(440)	(228)	
Defined benefit pension fund assets (negative amount)	(1,125)	(900)	(945)	(567)	G
Direct, indirect and synthetic holdings by an institution of own CET 1 instruments (negative amount) ⁶	(144)	(117)	(59)	(41)	
Direct, indirect and synthetic holdings of the CET 1 instruments of financial sector entities where those entities have reciprocal cross holdings with the institution designed to inflate artificially the own funds of the institution (negative amount)	0	0	0	0	
Direct, indirect and synthetic holdings by the institution of the CET 1 instruments of financial sector entities where the institution does not have a significant investment in those entities (amount above the 10 % threshold and net of eligible short positions) (negative amount) ⁷	0	0	0	0	
Direct, indirect and synthetic holdings by the institution of the CET 1 instruments of financial sector entities where the institution has a significant investment in those entities (amount above 10 % threshold and net of eligible short positions) (negative amount)	0	0	0	0	
Exposure amount of the following items which qualify for a risk weight of 1250 %, where the institution opts for the deduction alternative	0	0	0	0	
Thereof:					
Qualifying holdings outside the financial sector (negative amount)	0	0	0	0	
Securitization positions (negative amount)	0	0	0	0	
Free deliveries (negative amount)	0	0	0	0	
Deferred tax assets arising from temporary differences (amount above 10 % threshold, net of related tax liabilities where the conditions in Art. 38 (3) CRR are met) (negative amount)	0	0	(590)	(354)	F
Amount exceeding the 15 % threshold (negative amount)	0	0	0	0	
Thereof:					
Direct, indirect and synthetic holdings by the institution of the CET 1 instruments of financial sector entities where the institution has a significant investment in those entities	0	0	0	0	
Deferred tax assets arising from temporary differences	0	0	0	0	F
Losses for the current financial year (negative amount)	0	0	0	0	
Regulatory adjustments applied to CET 1 capital in respect of amounts subject to pre-CRR treatment:	N/M	0	N/M	0	
Regulatory adjustments relating to unrealized gains and losses pursuant to Art. 467 and 468 CRR	N/M	(144)	N/M	(380)	
Amount to be deducted from or added to CET 1 capital with regard to additional filters and deductions required pre CRR ⁸	(19)	(19)	(231)	(231)	
Qualifying AT1 deductions that exceed the AT1 capital of the institution (negative amount)	0	0	0	0	
Other regulatory adjustments	(322)	(322)	(360)	(360)	

in € m.	Dec 31, 2017		Dec 31, 2016		References ¹
	CRR/CRD 4 fully-loaded	CRR/CRD 4	CRR/CRD 4 fully loaded	CRR/CRD 4	
Total regulatory adjustments to Common Equity Tier 1 (CET 1) capital	(14,816)	(12,306)	(16,810)	(11,321)	
Common Equity Tier 1 (CET 1) capital	48,300	50,808	42,279	47,782	
Additional Tier 1 (AT1) capital: instruments					
Capital instruments and the related share premium accounts	4,676	4,676	4,676	4,676	H
Thereof:					
Classified as equity under applicable accounting standards	4,676	4,676	4,676	4,676	H
Classified as liabilities under applicable accounting standards	0	0	0	0	
Amount of qualifying items referred to in Art. 484 (4) CRR and the related share premium accounts subject to phase out from AT1	N/M	3,904	N/M	6,516	I
Public sector capital injections grandfathered until January 1, 2018	N/M	N/M	N/M	N/M	
Tier 1 capital included in consolidated AT1 capital issued by subsidiaries and held by third parties	0	0	0	0	
Thereof: instruments issued by subsidiaries subject to phase out	N/M	0	N/M	0	
Additional Tier 1 (AT1) capital before regulatory adjustments	4,676	8,579	4,676	11,191	
Additional Tier 1 (AT1) capital: regulatory adjustments					
Direct, indirect and synthetic holdings by an institution of own AT1 instruments (negative amount)	(55)	(26)	(125)	(51)	H
Direct, indirect and synthetic holdings of the AT1 instruments of financial sector entities where those entities have reciprocal cross holdings with the institution designed to inflate artificially the own funds of the institution (negative amount)	0	0	0	0	
Direct, indirect and synthetic holdings of the AT1 instruments of financial sector entities where the institution does not have a significant investment in those entities (amount above the 10 % threshold and net of eligible short positions) (negative amount) ⁷	0	0	0	0	
Direct, indirect and synthetic holdings by the institution of the AT1 instruments of financial sector entities where the institution has a significant investment in those entities (amount above the 10 % threshold net of eligible short positions) (negative amount)	0	0	0	0	
Regulatory adjustments applied to AT1 capital in respect of amounts subject to pre-CRR treatment and transitional treatments subject to phase out as prescribed in CRR (i.e., residual amounts)	N/M	0	N/M	0	
Residual amounts deducted from AT1 capital with regard to deduction from CET 1 capital during the transitional period pursuant to Art. 472 CRR	N/M	(1,730)	N/M	(3,437)	
Thereof:					
Goodwill and other intangible assets (net of related tax liabilities)	N/M	(1,679)	N/M	(3,375)	E
Negative amounts resulting from the calculation of expected loss amounts	N/M	(51)	N/M	(63)	
Direct, indirect and synthetic holdings by the institution of the CET 1 instruments of financial sector entities where the institution has a significant investment in those entities	N/M	0	N/M	0	
Residual amounts deducted from AT1 capital with regard to deduction from Tier 2 (T2) capital during the transitional period pursuant to Art. 475 CRR	N/M	0	N/M	0	
Amount to be deducted from or added to AT1 capital with regard to additional filters and deductions required pre CRR	N/M	0	N/M	0	
Qualifying T2 deductions that exceed the T2 capital of the institution (negative amount)	0	0	0	0	
Total regulatory adjustments to Additional Tier 1 (AT1) capital	(55)	(1,756)	(125)	(3,488)	
Additional Tier 1 (AT1) capital	4,621	6,823	4,551	7,703	
Tier 1 capital (T1 = CET 1 + AT1)	52,921	57,631	46,829	55,486	
Tier 2 (T2) capital: instruments and provisions					
Capital instruments and the related share premium accounts ⁹	10,272	6,348	12,492	6,464	J
Amount of qualifying items referred to in Art. 484 (5) CRR and the related share premium accounts subject to phase out from T2	N/M	0	N/M	0	J
Public sector capital injections grandfathered until January 1, 2018	N/M	N/M	N/M	N/M	
Qualifying own funds instruments included in consolidated T2 capital issued by subsidiaries and held by third parties	159	187	435	524	J
Thereof: instruments issued by subsidiaries subject to phase out	N/M	0	N/M	0	
Credit risk adjustments	0	0	0	0	
Tier 2 (T2) capital before regulatory adjustments	10,432	6,536	12,927	6,988	

in € m.	Dec 31, 2017		Dec 31, 2016		References ¹
	CRR/CRD 4 fully-loaded	CRR/CRD 4	CRR/CRD 4 fully loaded	CRR/CRD 4	
Tier 2 (T2) capital: regulatory adjustments					
Direct, indirect and synthetic holdings by an institution of own T2 instruments and subordinated loans (negative amount)	(102)	(100)	(254)	(253)	J
Direct, indirect and synthetic holdings of the T2 instruments and subordinated loans of financial sector entities where those entities have reciprocal cross holdings with the institution designed to inflate artificially the own funds of the institution (negative amount)	0	0	0	0	
Direct, indirect and synthetic holdings of the T2 instruments and subordinated loans of financial sector entities where the institution does not have a significant investment in those entities (amount above 10 % threshold and net of eligible short positions) (negative amount) ⁷	0	0	0	0	
Thereof:					
New holdings not subject to transitional arrangements	N/M	N/M	N/M	N/M	
Holdings existing before January 1, 2013 and subject to transitional arrangements	N/M	N/M	N/M	N/M	
Direct, indirect and synthetic holdings by the institution of the T2 instruments and subordinated loans of financial sector entities where the institution has a significant investment in those entities (net of eligible short positions) (negative amount)	0	0	0	0	
Regulatory adjustments applied to Tier 2 in respect of amounts subject to pre-CRR treatment and transitional treatments subject to phase-out as prescribed in CRR (i.e., residual amounts)	N/M	0	N/M	0	
Residual amounts deducted from Tier 2 capital with regard to deduction from Common Equity Tier 1 capital during the transitional period pursuant to Art. 472 CRR	N/M	(51)	N/M	(63)	
Thereof:					
Negative amounts resulting from the calculation of expected loss amounts	N/M	(51)	N/M	(63)	
Direct, indirect and synthetic holdings by the institution of the CET 1 instruments of financial sector entities where the institution has a significant investment in those entities	N/M	0	N/M	0	
Residual amounts deducted from Tier 2 capital with regard to deduction from Additional Tier 1 capital during the transitional period pursuant to Art. 475 CRR	N/M	0	N/M	0	
Thereof:					
Reciprocal cross holdings in AT1 instruments	N/M	0	N/M	0	
Direct holdings of nonsignificant investments in the capital of other financial sector entities	N/M	0	N/M	0	
Amount to be deducted from or added to Tier 2 capital with regard to additional filters and deductions required pre-CRR	0	0	0	0	
Total regulatory adjustments to Tier 2 (T2) capital	(102)	(151)	(254)	(316)	
Tier 2 (T2) capital	10,329	6,384	12,673	6,672	
Total capital (TC = T1 + T2)	63,250	64,016	59,502	62,158	
Risk-weighted assets in respect of amounts subject to pre-CRR treatment and transitional treatments subject to phase-out as prescribed in CRR (i.e., residual amounts) ¹⁰	N/M	0	N/M	0	
Thereof:					
Items not deducted from CET 1 (CRR residual amounts)	N/M	0	N/M	0	
Items not deducted from AT1 items (CRR residual amounts)	N/M	0	N/M	0	
Items not deducted from T2 items (CRR residual amounts)	N/M	0	N/M	0	
Thereof:					
Indirect and synthetic holdings of own T2 instruments	N/M	0	N/M	0	
Indirect and synthetic holdings of nonsignificant investments in the capital of other financial sector entities	N/M	0	N/M	0	
Indirect and synthetic holdings of significant investments in the capital of other financial sector entities	N/M	0	N/M	0	
Total risk-weighted assets	344,212	343,316	357,518	356,235	
Thereof:					
Credit Risk (including Settlement Risk)	215,184	214,288	221,665	220,381	
Credit Valuation Adjustment (CVA)	6,451	6,451	9,416	9,416	
Market Risk	30,966	30,966	33,762	33,762	
Operational Risk	91,610	91,610	92,675	92,675	
Capital ratios and buffers					
Common Equity Tier 1 capital ratio (as a percentage of risk-weighted assets)	14.0	14.8	11.8	13.4	
Tier 1 capital ratio (as a percentage of risk-weighted assets)	15.4	16.8	13.1	15.6	
Total capital ratio (as a percentage of risk-weighted assets)	18.4	18.6	16.6	17.4	

in € m.	Dec 31, 2017		Dec 31, 2016		References ¹
	CRR/CRD 4 fully-loaded	CRR/CRD 4	CRR/CRD 4 fully loaded	CRR/CRD 4	
Institution specific buffer requirement (CET 1 requirement in accordance with Art. 92 (1) (a) CRR plus capital conservation and countercyclical buffer requirements, plus systemic risk buffer, plus the systemically important institution buffer (G-SII or O-SII buffer), expressed as a percentage of risk-weighted assets)	9.0	6.75	9.0	5.625	
Thereof:					
Capital conservation buffer requirement	2.5	1.25	2.5	0.625	
Countercyclical buffer requirement	N/M	0.02	N/M	0.01	
Systemic risk buffer requirement	0.0	0.0	0.0	0.0	
Global Systemically Important Institution (G-SII) or Other Systemically Important Institution (O-SII) buffer	2.0	1.0	2.0	0.5	
Common Equity Tier 1 capital available to meet buffers (as a percentage of risk-weighted assets) ¹¹	9.4	10.2	7.1	8.8	
Amounts below the thresholds for deduction (before risk weighting)					
Direct, indirect and synthetic holdings of the capital of financial sector entities where the institution does not have a significant investment in those entities (amount below 10 % threshold and net of eligible short positions) ⁷	3,893	3,893	3,613	3,613	
Direct, indirect and synthetic holdings by the institution of the CET 1 instruments of financial sector entities where the institution has a significant investment in those entities (amount below 10 % threshold and net of eligible short positions)	710	710	866	866	
Deferred tax assets arising from temporary differences (amount below 10 % threshold, net of related tax liability where the conditions in Art. 38 (3) CRR are met)	3,846	3,846	4,323	4,323	
Applicable caps on the inclusion of provisions in Tier 2 capital					
Credit risk adjustments included in T2 in respect of exposures subject to standardized approach (prior to the application of the cap)	0	0	0	0	
Cap on inclusion of credit risk adjustments in T2 under standardized approach	263	263	217	217	
Credit risk adjustments included in T2 in respect of exposures subject to internal ratings-based approach (prior to the application of the cap)	0	0	0	0	
Cap for inclusion of credit risk adjustments in T2 under internal ratings-based approach	1,029	1,029	1,069	1,069	
Capital instruments subject to phase-out arrangements					
Current cap on CET 1 instruments subject to phase out arrangements	N/M	0	N/M	0	
Amount excluded from CET 1 due to cap (excess over cap after redemptions and maturities)	N/M	0	N/M	0	
Current cap on AT1 instruments subject to phase out arrangements	N/M	6,263	N/M	7,516	
Amount excluded from AT1 due to cap (excess over cap after redemptions and maturities)	N/M	0	N/M	0	
Current cap on T2 instruments subject to phase out arrangements	N/M	1,688	N/M	2,026	
Amount excluded from T2 due to cap (excess over cap after redemptions and maturities)	N/M	0	N/M	0	

N/M – Not meaningful

¹ References provide the mapping of regulatory balance sheet items used to calculate regulatory capital as reflected in the column "References" in "Reconciliation of shareholders' equity to regulatory capital". Where applicable, more detailed information are provided in the respective reference footnote section.

² Based on EBA list as referred to in Article 26 (3) CRR.

³ As we do not include an interim profit in our CET 1 capital as a consequence of the negative net income in the financial year 2017, neither AT 1 coupon nor shareholder dividends are accrued in CET 1 capital in accordance with Art 26 (2) CRR.

⁴ The € 1.2 billion additional value adjustments were derived from the EBA Regulatory Technical Standard on prudent valuation and are before consideration of a benefit from the related reduction of the shortfall of provisions to expected losses of € 0.3 billion.

⁵ Gains and losses on liabilities of the institution that are valued at fair value that result from changes in the own credit standing of the institution according to Article 33 (1) (b) CRR as well as all fair value gains and losses arising from the institution's own credit risk related to derivative liabilities according to Article 33 (1) (c) CRR.

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

⁷ Based on our current interpretation no deduction amount expected.

⁸ Prudential filter for fund for home loans and savings protection ("Fonds zur baupartechnischen Absicherung").

⁹ Amortization is taken into account.

¹⁰ Excludes risk-weighted assets for positions in the trading book which are subject to phase out as prescribed in CRR (i.e. CRR residual amounts) as attributed risk-weighted assets are calculated on a portfolio basis.

¹¹ Calculated as the CET 1 capital less any CET 1 items used to meet Tier 1 and Total capital requirements; this is before consideration of Pillar 2 SREP requirements.

^A Common shares, additional paid-in capital and common shares in treasury reflect regulatory eligible CET 1 capital instruments.

^B The position retained earnings in the regulatory balance sheet includes net income (loss) attributable to Deutsche Bank shareholders and additional equity components of € (751) million (2016: € (1,402) million). This item is excluded from the position retained earnings in the transitional template for regulatory capital and shown separately along with accrual for dividend and AT1 coupons of € 0 (2016: € 621 million) in the position independently reviewed interim profits net of any foreseeable charge or dividend.

^C Difference to regulatory balance sheet position driven by prudential filters for unrealized gains and losses.

^D Phase-out of noncontrolling interests at a rate of 20 % in 2017 (40 % in 2016).

^E Regulatory applicable amount is goodwill and other intangible assets of € 8,635 million (2016: € 8,745 million) plus goodwill from equity method investments of € 64 million (2016: € 66 million) as per regulatory balance sheet reduced by deferred tax liabilities on other intangibles of € 305 million (2016: € 374 million). Total CET 1 deduction amount is phased-in at a rate of 80 % in 2017 (2016: 60 %). Residual amount is deducted from AT1 capital.

^F Differences to balance sheet position mainly driven by adjustments as set out in Article 38 (2) to (5) CRR (e.g. regulatory offsetting requirements).

^G Phase-in at a rate of 80 % in 2017 (60 % in 2016).

^H Additional equity components reflects regulatory eligible AT1 capital instruments.

^I Difference to regulatory balance sheet driven by regulatory adjustments as set out in Articles 51 to 61 CRR (e.g. current cap on AT1 instruments subject to phase-out arrangements).

^J Difference to regulatory balance sheet driven by regulatory adjustments as set out in Articles 62 to 71 CRR (e.g. maturity deduction, noncontrolling interests).

Reconciliation of shareholders' equity to regulatory capital

in € m.	Dec 31, 2017 CRR/CRD 4	Dec 31, 2016 CRR/CRD 4
Total shareholders' equity per accounting balance sheet	63,174	59,833
Deconsolidation/Consolidation of entities	(58)	(123)
Thereof:		
Additional paid-in capital	(6)	(6)
Retained earnings	(228)	(276)
Accumulated other comprehensive income (loss), net of tax	176	159
Total shareholders' equity per regulatory balance sheet	63,116	59,710
Noncontrolling interest based on transitional rules	33	79
Accrual for dividend and AT1 coupons ¹	0	(621)
Reversal of deconsolidation/consolidation of the position Accumulated other comprehensive income (loss), net of tax, during transitional period	(35)	(63)
Common Equity Tier 1 (CET 1) capital before regulatory adjustments	63,114	59,104
Prudential filters	(1,422)	(2,206)
Thereof:		
Additional value adjustments	(1,204)	(1,398)
Any increase in equity that results from securitized assets	(2)	(5)
Fair value reserves related to gains or losses on cash flow hedges and gains or losses on liabilities designated at fair value resulting from changes in own credit standing	(72)	(423)
Regulatory adjustments relating to unrealized gains and losses pursuant to Art. 467 and 468 CRR	(144)	(380)
Regulatory adjustments	(10,884)	(9,115)
Thereof:		
Goodwill and other intangible assets (net of related tax liabilities)	(6,715)	(5,062)
Deferred tax assets that rely on future profitability	(2,403)	(2,666)
Negative amounts resulting of the calculation of expected loss amounts	(408)	(188)
Defined benefit pension fund assets	(900)	(567)
Direct, indirect and synthetic holdings by the institution of the CET 1 instruments of financial sector entities where the institution has a significant investment in those entities	0	0
Securitization positions not included in risk-weighted assets	0	0
Other	(458)	(632)
Common Equity Tier 1 capital	50,808	47,782
Additional Tier 1 capital	6,823	7,703
Additional Tier 1 Notes (AT1 Notes)	4,649	4,625
Per balance sheet	4,675	4,669
Deconsolidation/Consolidation of entities	0	0
Regulatory adjustments to balance sheet position	(25)	(45)
Hybrid capital securities	3,891	6,500
Per balance sheet	5,491	6,373
Deconsolidation/Consolidation of entities	0	301
Regulatory adjustments to balance sheet position	(1,601)	(174)
Thereof:		
Amount excluded from Additional Tier 1 due to cap	0	0
Other	(1,601)	(174)
Other regulatory adjustments	13	16
Deductions from Additional Tier 1 capital	(1,730)	(3,437)
Tier 1 capital	57,631	55,486
Tier 2 capital	6,384	6,672
Subordinated debt	6,155	6,447
Per balance sheet	8,100	7,762
Deconsolidation/Consolidation of entities	0	0
Regulatory adjustments to balance sheet position	(1,944)	(1,315)
Thereof:		
Amortization according to Art. 64 CRR	(1,065)	(1,027)
Other	(880)	(288)
Other regulatory adjustments	280	288
Thereof:		
Inclusion of amount excluded from Additional Tier 1 due to cap	0	0
Other	280	288
Deductions from Tier 2 capital	(51)	(63)
Total capital	64,016	62,158

¹ As we do not include an interim profit in our CET 1 capital as a consequence of the negative net income in the financial year 2017, neither AT1 coupon nor shareholder dividends are accrued in CET 1 capital in accordance with Art 26 (2) CRR.

Article 437 (1)(b-c) CRR - Main features of capital instruments

A description of the main features of the Common Equity Tier 1, Additional Tier 1 and Tier 2 capital instruments issued by Deutsche Bank is published on Deutsche Bank's website (www.db.com/ir/capital-instruments). In addition, this website provides full terms and conditions of all Common Equity Tier 1, Additional Tier 1 and Tier 2 capital instruments.

Article 437 (1)(d-e) CRR - Prudential filters and deduction items

Development of regulatory capital

Our CRR/CRD 4 Tier 1 capital as of December 31, 2017 amounted to € 57.6 billion, consisting of CET 1 capital of € 50.8 billion and AT1 capital of € 6.8 billion. The CRR/CRD 4 Tier 1 capital was € 2.1 billion higher than at the end of 2016, primarily driven by an increase in CET 1 capital of € 3.0 billion since year end 2016 while AT1 capital decreased by € 0.9 billion in the same period.

The € 3.0 billion increase of CRR/CRD 4 CET 1 capital was largely the result of the capital issuance completed in early April 2017 with net proceeds of € 7.9 billion and the reversal of 10 % threshold-related deductions of € 0.4 billion due to the higher capital base. These positive effects were then reduced by increased regulatory adjustments due to the higher phase-in rate of 80 % in 2017 compared to 60 % in 2016 and negative effects from Currency Translation Adjustments of € 2.6 billion with partially positive foreign exchange counter-effects in capital deduction items. Further reductions were due to the net loss attributable to Deutsche Bank shareholders and additional equity components of € 0.8 billion in 2017. Since we do not include an interim profit in our CET 1 capital as a consequence of the negative net income in the financial year 2017, neither AT1 coupon nor shareholder dividends are accrued in CET 1 capital in accordance with Art 26 (2).

The € 0.9 billion decrease in CRR/CRD 4 AT1 capital was mainly the result of reduced Legacy Hybrid Tier 1 instruments, recognizable as AT1 capital during the transition period, which were € 2.6 billion lower compared to year end 2016 largely due to the call of instruments (€ 2.4 billion) and foreign exchange effects. A positive counter-effect resulted from reduced transitional adjustments (€ 1.7 billion lower than at year end 2016) that were phased out from AT1 capital. These deductions reflect the residual amount of certain CET 1 deductions that are subtracted from CET 1 capital under fully loaded rules, but are allowed to reduce AT1 capital during the transitional period. The phase-in rate for these deductions on the level of CET 1 capital increased to 80 % in 2017 (60 % in 2016) and decreased correspondingly on the level of AT1 capital to 20 % in 2017 (40 % in 2016).

Our fully loaded CRR/CRD 4 Tier 1 capital as of December 31, 2017 was € 52.9 billion, compared to € 46.8 billion at the end of 2016. Our fully loaded CRR/CRD 4 CET 1 capital amounted to € 48.3 billion as of December 31, 2017, compared to € 42.3 billion as of December 31, 2016. Our fully loaded CRR/CRD 4 AT1 capital amounted to € 4.6 billion as of December 31, 2017, unchanged compared to year end 2016.

The increase of our fully loaded CET 1 capital of € 6.0 billion compared to year end 2016 capital was largely the result of the € 7.9 billion net proceeds from our capital issuance and the reversal of 10 % threshold-related deductions of € 0.6 billion due to the higher capital base. Further positive effects of € 0.4 billion resulted from regulatory adjustments from prudential filters (Debt Valuation Adjustments). These positive effects were partially reduced by our negative net income of € 0.8 billion and negative effects from Currency Translation Adjustments of € 2.6 billion with partially positive foreign exchange counter-effects in capital deduction items.

Based on ECB guidance and following the EBA Guidelines on payment commitments, Deutsche Bank will treat irrevocable payment commitments related to the Deposit Guarantee Scheme and the Single Resolution Fund as an additional CET 1 capital deduction instead of risk weighted assets, effective from January 2018 onwards. If these were treated as a capital deduction item for the financial year 2017, then our pro-forma fully loaded CET 1 capital would have been € 0.4 billion lower along with an RWA relief of € 1.0 billion resulting in a pro-forma fully loaded CET 1 capital ratio decrease of 8 basis points.

Development of regulatory capital

in € m.

	Dec 31, 2017	Dec 31, 2016
	CRR/CRD 4	CRR/CRD 4
Common Equity Tier 1 (CET 1) capital - opening amount	47,782	52,429
Common shares, net effect	1,760	0
Thereof:		
New shares issued (+)	1,760	0
Shares retired (-)	0	0
Additional paid-in capital	6,153	192
Retained earnings	(795)	(1,826)
Thereof:		
Actuarial gains (losses) rel. to defined benefit plans, net of tax/CTA	(91)	(517)
Net income attributable to Deutsche Bank Shareholders	(751)	(1,402)
Common shares in treasury, net effect/(+) sales (-) purchase	(9)	10
Movements in accumulated other comprehensive income	(2,748)	231
Thereof:		
Foreign currency translation, net of tax	(2,646)	223
Unrealized gains and losses	6	(261)
Other	(108)	269
Accrual for dividend and Additional Tier 1 (AT1) coupons ¹	0	(621)
Thereof:		
Gross dividends (deduction)	0	(393)
Shares issued in lieu of dividends (add back)	0	0
Gross AT1 coupons (deduction)	0	(229)
Additional value adjustments	194	479
Goodwill and other intangible assets (net of related tax liabilities)	(1,653)	(1,686)
Deferred tax assets that rely on future profitability (excluding those arising from temporary differences)	(91)	(988)
Negative amounts resulting from the calculation of expected loss amounts	(219)	(130)
Removal of gains/losses resulting from changes in own credit standing in liabilities designated at fair value (net of tax)	183	(114)
Defined benefit pension fund assets	(333)	(97)
Direct, indirect and synthetic holdings by the institution of the CET 1 instruments of financial sector entities where the institution has a significant investment in those entities	0	278
Securitization positions not included in risk-weighted assets	0	0
Deferred tax assets arising from temporary differences (amount above 10 % and 15 % threshold, net of related tax liabilities where the conditions in Art. 38 (3) CRR are met)	354	(30)
Other, including regulatory adjustments	230	(343)
Common Equity Tier 1 (CET 1) capital - closing amount	50,808	47,782
Additional Tier 1 (AT1) capital - opening amount	7,703	5,793
New Additional Tier 1 eligible capital issues	0	0
Matured and called instruments	(2,376)	(76)
Transitional arrangements	1,708	1,879
Thereof:		
Amount excluded from Additional Tier 1 capital due to cap	0	0
Goodwill and other intangible assets (net of related tax liabilities)	1,696	1,689
Negative amounts resulting from the calculation of expected loss amounts	12	(19)
Direct, indirect and synthetic holdings by the institution of the CET 1 instruments of financial sector entities where the institution has a significant investment in those entities	0	209
Other, including regulatory adjustments	(212)	108
Additional Tier 1 (AT1) capital - closing amount	6,823	7,703
Tier 1 capital (T1 = CET 1 + AT1)	57,631	55,486
Tier 2 (T2) capital - opening amount	6,672	6,299
New Tier 2 eligible capital issues	801	764
Matured and called instruments	(198)	(64)
Amortization adjustments	(317)	(344)
Transitional arrangements	12	190
Thereof:		
Inclusion of amount excluded from Additional Tier 1 capital due to cap	0	0
Amount to be deducted from or added to Additional Tier 2 capital with regard to additional filters and deductions required pre-CRR	0	0
Negative amounts resulting from the calculation of expected loss amounts	12	(19)
Direct, indirect and synthetic holdings by the institution of the CET 1 instruments of financial sector entities where the institution has a significant investment in those entities	0	209
Other, including regulatory adjustments	(586)	(173)
Tier 2 (T2) capital - closing amount	6,384	6,672
Total regulatory capital (TC = T1 + T2)	64,016	62,158

¹ As we do not include an interim profit in our CET 1 capital as a consequence of the negative net income in the financial year 2017, neither AT1 coupon nor shareholder dividends are accrued in CET 1 capital in accordance with Art 26 (2) CRR.

Article 437 (1)(f) CRR - Capital ratios different to CRR

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

Capital requirements

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

Deutsche Bank's internal capital adequacy assessment process ("ICAAP") consists of several well established components which ensure that the Group maintains sufficient capital to cover the risks to which the bank is exposed on an ongoing basis:

- Risk identification and assessment: The risk identification process forms the basis of the ICAAP and results in an inventory of risks for the Group. All risks identified are assessed for their materiality.
- Capital demand/risk measurement: Risk measurement methodologies and models are applied to quantify the capital demand which is required to cover all material risks except for those which cannot be adequately limited by capital e.g. liquidity risk.
- Capital supply: Capital supply quantification refers to the definition of available capital resources to absorb unexpected losses quantified as part of the capital demand.
- Risk appetite: Deutsche Bank has established Group risk appetite thresholds which express the level of risk that we are willing to assume to achieve our strategic objectives. Threshold breaches are subject to a dedicated governance framework triggering management actions aimed to safeguard capital adequacy.
- Capital planning: The Group risk appetite thresholds for capital adequacy metrics constitute boundaries which have to be met to safeguard capital adequacy on a forward-looking basis.
- Stress testing: Capital plan figures are also considered under various stress test scenarios to prove resilience and overall viability of the bank. Capital adequacy metrics are also subject to regular stress tests throughout the year to constantly evaluate Deutsche Bank's capital position in hypothetical stress scenarios and to detect any vulnerabilities under stress.
- Capital adequacy assessment: Although capital adequacy is constantly monitored throughout the year, the ICAAP concludes with a dedicated annual capital adequacy assessment (CAS). The assessment consists of a Management Board statement about Deutsche Bank's capital adequacy, which is linked to specific conclusions and management actions to be taken to safeguard capital adequacy on a forward-looking basis.

As part of its ICAAP, Deutsche Bank distinguishes between a normative and economic internal perspective. The normative internal perspective refers to an internal process aimed at the fulfilment of all capital-related legal requirements and supervisory demands on an ongoing basis (primarily measured via the CET1 and leverage ratio). The economic internal perspective (measured via the internal capital adequacy ratio) refers to an internal process aimed at capital adequacy using internal economic capital demand models and an internal economic capital supply definition. Both perspectives focus on maintaining the viability of Deutsche Bank on an ongoing basis.

For a further description of the above ICAAP components, please refer to the Annual Report under sections "Risk Identification and Assessment" on page 58, "Risk Profile" on page 44, "Capital and Leverage Ratio" on page 82, "Risk Appetite and Capacity" on page 50, "Key Risk Metrics" on page 43, "Strategic and Capital Plan" on pages 51 to 52, and "Stress Testing" on pages 53 to 55. Additionally, the following sections below on pages 27 to 31 describe the risk measurement methodologies (economic capital models) applied by Deutsche Bank to quantify capital demand required to cover all material risks.

Credit Risk Economic Capital Model

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

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

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

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

- The factor model characteristics for the different borrowers, i.e., the weights for the systematic country and industry factors (our model uses 37 systematic factors) and the R^2 , which determines the weight for the specific factor
- The covariance matrix between the country and industry factors

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

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

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

Market Risk Economic Capital Model

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

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

Traded Market Risk Economic Capital ("TMR EC")

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

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

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

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

Traded Default Risk Economic Capital ("TDR EC")

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

- Fair value assets in the banking book;
- Unsecuritized credit products in the trading book excluding the correlation trading portfolio;
- Securitized products in the trading book excluding the correlation trading portfolio;
- Correlation trading portfolio.

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

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

Non-traded market risk Economic Capital ("NTMR EC")

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

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

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

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

Operational Risk Economic Capital Model

For the quantification of economic capital requirements the Group uses the Advanced Measurement Approach ("AMA"). The economic capital is set at a 99.9 % percentile to absorb very severe unexpected losses within one year. Since Q4 2017 we apply the same confidence levels for the calculation of regulatory and economic capital requirements as described in chapter "Capital and Leverage Ratio", section "Internal Capital Adequacy" in the 2017 Annual Report on page 92.

For detailed information on our Operational risk measurement approaches refer to our Pillar 3 report section "Article 446 CRR - Operational Risk Measurement" on page 115.

Business Risk Economic Capital Model

We measure economic capital for business risk, which includes strategic risk and tax risk.

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

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

Risk Type Diversification

The risk type diversification benefit quantifies diversification effects between credit, market, operational and strategic risk in the economic capital calculation caused by non-perfect correlations between these risk types. The calculation of the risk type diversification benefit is intended to ensure that the standalone economic capital figures for the individual risk types are aggregated in an economically meaningful way. Please refer to section "Risk Profile" on page 44 in our Annual Report 2017 for the diversification amount across credit risk, market risk, operational risk and business risk.

Stress Testing

We have a strong commitment to stress testing performed on a regular basis in order to assess the impact of a severe economic downturn on our risk profile and financial position. These exercises complement traditional risk measures and represent an integral part of our strategic and capital planning process. Our stress testing framework comprises regular Group-wide stress tests based on internally defined "Downside Planning" and more severe macroeconomic global downturn scenarios. We include all material risk types into our stress testing exercises. The time-horizon of internal stress tests is generally one year and can be extended to multi-year, if required by the scenario assumptions. Our methodologies undergo regular scrutiny from Deutsche Bank's internal validation team (Global Model Validation and Governance - GMVG) whether they correctly capture the impact of a given stress scenario. These analyses are complemented by portfolio- and country-specific stress tests as well as regulatory requirements, such as annual reverse stress tests and additional stress tests requested by our regulators on group or legal entity level. Examples of regulatory stress tests performed in 2017 is the CCAR stress test for the US entity. In 2018, Deutsche Bank will take part in the biannual EBA stress test. Moreover, capital plan stress testing is performed to assess the viability of our capital plan in adverse circumstances and to demonstrate a clear link between risk appetite, business strategy, capital plan and stress testing. An integrated procedure allows us to assess the impact of ad-hoc scenarios that simulate potential imminent financial or geopolitical shocks.

The initial phase of our internal stress tests consists of defining a macroeconomic downturn scenario by ERM Risk Research in cooperation with business specialists. ERM Risk Research monitors the political and economic development around the world and maintains a macro-economic heat map that identifies potentially harmful scenarios. Based on quantitative models and expert judgments, economic parameters such as foreign exchange rates, interest rates, GDP growth or unemployment rates are set accordingly to reflect the impact on our business. The scenario parameters are translated into specific risk drivers by subject matter experts in the risk units. Based on our internal models framework for stress testing, the following major metrics are calculated under stress: risk-weighted assets, impacts on profit and loss and economic capital by risk type. These results are aggregated at the Group level, and key metrics such as the Net Liquidity Position (NLP), the CET 1 ratio, ECA ratio and Leverage Ratio under stress are derived. Prior to the impact assessment the more scenarios are discussed and approved by the Enterprise Risk Committee (ERC) which also reviews the final stress results. After comparing these results against our defined risk appetite, the ERC also discusses specific mitigation actions to remediate the stress impact in alignment with the overall strategic and capital plan if certain limits are breached. The results also feed into the recovery planning which is crucial for the recoverability of the Bank in times of crisis. The outcome is presented to senior management up to the Management Board to raise awareness on the highest level as it provides key insights into specific business vulnerabilities and contributes to the overall risk profile assessment of the bank. The group wide stress tests performed in 2017 indicated that the bank's capitalization together with available mitigation measures allow it to reach the internally set stress exit level being well above regulatory early intervention levels. A reverse stress test is performed annually in order to challenge our business model to determine the severity of scenarios that would cause us to become unviable. Such a reverse stress test is based on a hypothetical macroeconomic scenario and idiosyncratic events and takes into account severe impacts of major risks on our results. Comparing the hypothetical scenario that would be necessary to result in our non-viability according to the reverse stress, to the current economic environment, we consider the probability of occurrence of such a hypothetical macroeconomic scenario as extremely low. Given the extremely low probability of the reverse stress test scenario, we do not believe that our business continuity is at risk.

Article 438 (b) CRR - SREP requirements

The SREP requirements are described further below in this Report in section "Article 440 CCR - Capital buffers" on page 34 as well as in the Annual Report 2017 under chapter "Capital and Leverage Ratio", section "Minimum capital requirements and additional capital buffers" on page 84.

Article 438 (c-f) CRR - Overview of capital requirements

The table below shows RWA and regulatory capital requirements broken down by risk types and model approaches compared to the previous year-end and the previous quarter-end.

EU OV1 – Overview of RWA

	Dec 31, 2017		Dec 31, 2016		Sep 30, 2017	
	a1	b1	a2	b2	a3	b3
in € m.	RWA	Minimum capital requirements	RWA	Minimum capital requirements	RWA	Minimum capital requirements
1 Credit risk (excluding CCR)	159,864	12,789	160,763	12,861	158,930	12,714
thereof:						
Art 438(c)(d) 2 The standardized approach	18,534	1,483	13,128	1,050	17,453	1,396
Art 438(c)(d) 3 The foundation IRB (FIRB) approach	3,271	262	2,015	161	3,243	259
Art 438(c)(d) 4 The advanced IRB (AIRB) approach	131,679	10,534	139,094	11,128	132,373	10,590
Art 438(d) 5 Equity IRB under the simple risk-weighted approach or the IMA	6,380	510	6,526	522	5,861	469
Article 107 Art.438(c)(d) 6 Counterparty credit risk (CCR)	40,065	3,205	43,335	3,467	37,693	3,015
thereof:						
Art 438(c)(d) 7 Mark to market	6,607	529	8,669	694	7,283	583
Art 438(c)(d) 8 Original exposure	0	0	0	0	0	0
9 The standardized approach	0	0	0	0	0	0
10 Internal model method (IMM)	23,887	1,911	22,314	1,785	20,988	1,679
Art 438(c)(d) 11 Risk exposure amount for contributions to the default fund of a CCP	419	34	308	25	253	20
Art 438(c)(d) 12 Credit Valuation Adjustment (CVA)	6,451	516	9,416	753	6,887	551
Art 438(e) 13 Settlement risk	147	12	36	3	11	1
Art 449(o)(i) 14 Securitization exposures in the banking book (after the cap)	10,170	814	13,876	1,110	10,846	868
thereof:						
15 IRB approach	9,204	736	12,388	991	9,715	777
thereof:						
16 IRB supervisory formula approach (SFA)	7,422	594	9,403	752	7,736	619
17 Internal assessment approach (IAA)	0	0	0	0	0	0
18 Standardized approach	966	77	1,488	119	1,131	90
19 Market risk	30,966	2,477	33,762	2,701	35,781	2,862
thereof:						
20 Standardized approach	5,763	461	4,599	368	5,753	460
21 IMA	25,203	2,016	29,163	2,333	30,028	2,402
Article 438(e) 22 Large exposures	0	0	0	0	0	0
Article 438(f) 23 Operational risk	91,610	7,329	92,675	7,414	99,643	7,971
thereof:						
24 Basic indicator approach	0	0	0	0	0	0
25 Standardized approach	0	0	0	0	0	0
26 Advanced measurement approach	91,610	7,329	92,675	7,414	99,643	7,971
Art 437(2), 48,60 27 Amounts below the thresholds for deduction (subject to 250 % risk weight)	11,389	911	13,071	1,046	12,209	977
Art 500 28 Floor adjustment	0	0	0	0	0	0
29 Total¹	344,212	27,537	357,518	28,601	355,113	28,409

¹ The table reflects the fully loaded RWA amounts and does not include the transitional adjustment due to the grandfathering of equity investments (Dec 2017 and Sep 2017: (0.9) billion € RWA, Dec 2016 (1.3) billion € RWA) and the respective shift of exposure from the advanced IRB to the standard approach.

The RWA according to CRR/CRD 4 fully loaded were € 344.2 billion as of December 31, 2017, compared to € 357.5 billion as of December 31, 2016. The overall decrease of € 13.3 billion mainly reflects decreases in credit risk RWA. Credit risk RWA are € 6.6 billion lower mainly resulting from foreign exchange reductions of € 10.2 billion which is partly offset by business driven increase in our Corporate & Investment Bank and Private & Commercial Bank segments. In addition book quality changes due to improved portfolio quality have contributed to the overall decrease in credit risk RWA. The decrease in RWA for market risk since December 31, 2016 was primarily driven by value-at-risk and stressed value-at-risk components, which was partly offset by an increase in the incremental risk charge and market risk standardized approach for securitizations. The € 2.9 billion reduction in RWA for CVA was mainly driven by de-risking of the portfolio. The slight decrease in operational risk RWA was mainly driven by our internal and external loss profile.

RWA calculated on CRR/CRD 4 transitional rules were € 343.3 billion as of December 31, 2017 compared to € 356.2 billion at the end of 2016. The decrease was driven by the same movements as outlined for the fully loaded rules. The transitional RWA were € 0.9 billion lower than the risk-weighted assets under the fully loaded rules due to the application of the equity investment grandfathering regulation according to Article 495 CRR, pursuant to which certain equity investments receive a 100 % risk weight instead of a risk weight between 190 % and 370 % determined based on Article 155 CRR that would apply on the CRR/CRD 4 fully loaded basis.

As of December 31, 2017, we have not applied this grandfathering rule anymore, but instead applied a risk weight between 190 % and 370 % determined based on Article 155 CRR under the CRR/CRD 4 fully loaded rules to all our equity positions. Consequently, in this regard, there are no transitional arrangements any longer considered in our fully loaded RWA numbers for December 31, 2017. Only for the comparative periods these transitional rules still have been applied within the risk weighting.

As of December 31, 2016, our portfolio of transactions for which we applied the equity investment grandfathering rule in calculating our fully loaded RWA consisted of 15 transactions amounting to € 220 million in exposures. Had we not applied the grandfathering rule for these transactions, their fully loaded RWA would have been no more than € 816 million, and thus our Group fully loaded RWA would have been no more than € 358.1 billion as of December 31, 2016, rather than the Group fully loaded RWA of € 357.5 billion that we reported on a fully loaded basis with application of the grandfathering rule. Also, had we calculated our fully loaded CET 1 capital ratio, Tier 1 capital ratio and Total capital ratio as of December 31, 2016 using fully loaded RWAs without application of the grandfathering rule, such capital ratios would have remained unchanged (due to rounding) at the 11.8 %, 13.1 % and 16.6 %, respectively, that we reported on a fully loaded basis with application of the grandfathering rule.

The movements of RWA for the specific risk types are discussed further down in this report for credit risk in section "Article 438 (d) CRR - Development of Credit Risk RWA" on page 77, for counterparty credit risk in section "Article 438 (d) CRR - Development of Counterparty Credit Risk RWA" on page 100 and for market risk in section "Article 445 CRR - Exposure to market risk" on page 103.

Article 438 CRR - Specialized lending and equity exposures in the banking book

The table below summarizes our foundation approach exposure for specialized lending on an EAD basis. For the calculation of minimum capital requirements regulatory risk weights are applied where potential risk mitigating factors are already considered in the assignment of a risk weight to a specific structure. Additional credit risk mitigation techniques have not been applied.

For specific exposures in the advanced IRBA we are required to apply regulatory defined risk weights. In the following section we summarize our IRBA exposures for equities and other non-credit obligation assets falling under this requirement. Credit risk mitigation techniques have not been applied.

EU CR10 – IRB (specialized lending and equities)

in € m. (unless stated otherwise)		Dec 31, 2017					
Specialized lending							
Regulatory categories	Remaining maturity	On-balance sheet amount	Off-balance sheet amount	Risk weight	Exposure amount	RWA	Expected losses
Category 1	Less than 2.5 years	105	37	50 %	134	67	0
	Equal to or more than 2.5 years	853	93	70 %	926	648	4
Category 2	Less than 2.5 years	17	18	70 %	28	20	0
	Equal to or more than 2.5 years	117	99	90 %	192	173	2
Category 3	Less than 2.5 years	2	0	115 %	3	4	0
	Equal to or more than 2.5 years	36	1	115 %	38	43	1
Category 4	Less than 2.5 years	8	0	250 %	7	19	1
	Equal to or more than 2.5 years	5	0	250 %	6	15	0
Category 5	Less than 2.5 years	22	0	–	42	0	21
	Equal to or more than 2.5 years	0	0	–	0	0	0
Total	Less than 2.5 years	153	55	–	215	109	22
	Equal to or more than 2.5 years	1,012	194	–	1,162	879	7
Equities under the simple risk-weighted approach							
Categories		On-balance sheet amount	Off-balance sheet amount	Risk weight	Exposure amount	RWA	Capital requirements
Private equity exposures sufficiently diversified		355	7	190 %	362	687	55
Exchange-traded equity exposures		7	261	290 %	268	776	62
All other equity exposures		1,060	91	370 %	1,329	4,916	393
Total¹		1,422	359	–	388	6,380	510

¹ The table reflects the fully loaded RWA amounts and does not include the (0.9) billion € RWA transitional adjustment due to the grandfathering of equity investments and the respective shift of exposure from the advanced IRB to the standard approach.

Article 438 CRR - Other non-credit obligation assets in the banking book

The table below presents the exposures assigned to the exposure class “other non-credit obligation assets” as outlined in Article 156 CRR. We split the table into cash positions in accordance with Article 156 (a) CRR, which receive a risk weight of 0 % as well as other positions receiving a risk weight of 100 %. Additional credit risk mitigation techniques have not been applied.

Credit risk exposures of other non-credit obligation assets

in € m.	Risk Weight	Dec 31, 2017	
		EAD	RWA
Risk Position			
Other non-credit obligation assets - cash	0 %	2,363	0
Other non-credit obligation assets - other	100 %	4,109	4,109
Total EAD other non-credit obligation assets	–	6,471	4,109

Article 441 CRR - Indicators of global systemic importance

In March 2015, Deutsche Bank was designated as a Global Systemically Important Financial Institutions (G-SII) by the German Federal Financial Supervisory Authority (BaFin) in agreement with Deutsche Bundesbank resulting in a G-SII buffer requirement of 2.00 % CET 1 capital of RWA in 2019. This is in line with the Financial Stability Board (FSB) assessment of systemic importance based on the indicators as published in 2015. The additional buffer requirement of 2.00 % for G-SIIs was phased in with 0.50 % in 2016 and in 2017 amounts to 1.00 %. We will continue to publish our indicators on our website:

<https://www.db.com/ir/en/regulatory-reporting.htm>

Article 440 CRR - Capital buffers

Minimum capital requirements and additional capital buffers

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

Failure to meet minimum capital requirements can result in supervisory measures such as restrictions of profit distributions or limitations on certain businesses such as lending. We complied with the regulatory capital adequacy requirements in 2017.

In addition to these minimum capital requirements, the following combined capital buffer requirements have been phased in since 2016 (other than the systemic risk buffer, if any, which is not subject to any phase-in) and will become fully effective from 2019 onwards. The buffer requirements must be met in addition to the Pillar 1 minimum capital requirements, but can be drawn down in times of economic stress.

Deutsche Bank continues to be designated as a global systemically important institution (G-SII) by the German Federal Financial Supervisory Authority (BaFin) in agreement with Deutsche Bundesbank, resulting in a G-SII buffer requirement of 2.00 % CET 1 capital of RWA in 2019. This is in line with the Financial Stability Board (FSB) assessment of systemic importance based on the indicators as published in 2017. The additional buffer requirement of 2.00 % for G-SIIs was phased in with 0.5% in 2016, 1.00 % in 2017 and in 2018 amounts to 1.50 %. We will continue to publish our indicators on our website.

The capital conservation buffer is implemented in Section 10c German Banking Act based on Article 129 CRD 4 and equals a requirement of 2.50 % CET 1 capital of RWA. The additional buffer requirement of 2.50 % was phased in with 0.625% in 2016, 1.25 % in 2017 and in 2018 amounts to 1.875 %.

The countercyclical capital buffer is deployed in a jurisdiction when excess credit growth is associated with an increase in system-wide risk. It may vary between 0 % and 2.50 % CET 1 capital of RWA by 2019. In exceptional cases, it could also be higher than 2.50 %. The institution specific countercyclical buffer that applies to Deutsche Bank is the weighted average of the countercyclical capital buffers that apply in the jurisdictions where our relevant credit exposures are located. As per December 31, 2017 (and currently), the institution-specific countercyclical capital buffer was at 0.02 %.

In addition to the aforementioned buffers, national authorities, such as the BaFin, may require a systemic risk buffer to prevent and mitigate long-term non-cyclical systemic or macro-prudential risks that are not covered by the CRR. They can require an additional buffer of up to 5.00 % CET 1 capital of RWA. As of the year-end 2017 (and currently), no systemic risk buffer applied to Deutsche Bank.

Additionally, Deutsche Bank AG has been classified by BaFin as other systemically important institution (O-SII) with an additional buffer requirement of 2.00 % that has to be met on a consolidated level. For Deutsche Bank, the O-SII buffer was introduced in first steps of 0.66 % in 2017 and in 2018 amounts to 1.32 %. Unless certain exceptions apply, only the higher of the systemic risk buffer, G-SII buffer and O-SII buffer must be applied. Accordingly, the O-SII buffer is not applicable as of December 31, 2017.

In addition, pursuant to the Pillar 2 Supervisory Review and Evaluation Process (SREP), the European Central Bank (ECB) may impose capital requirements on individual banks which are more stringent than statutory requirements (so-called Pillar 2 requirement). On December 8, 2016, following the results of the 2016 SREP, the ECB informed Deutsche Bank that it must maintain a phase-in CET 1 ratio of at least 9.52 % on a consolidated basis under applicable transitional rules under CRR/CRD 4 at all times, beginning on January 1, 2017. This CET 1 capital requirement comprises the Pillar 1 minimum capital requirement of 4.50 %, the Pillar 2 requirement (SREP Add-on) of 2.75 %, the phase-in capital conservation buffer of 1.25 %, the countercyclical buffer (currently 0.02 %) and the phase-in G-SII buffer of 1.00 %. Correspondingly the requirements for Deutsche Bank's Tier 1 capital ratio were at 11.02 % and total capital ratio at 13.02 % as of December 31, 2017.

On December 19, 2017, Deutsche Bank was informed by the ECB of its decision regarding prudential minimum capital requirements for 2018, following the results of the 2017 SREP. The decision requires Deutsche Bank to maintain a phase-in CET 1 ratio of at least 10.65 % on a consolidated basis, beginning on January 1, 2018. This CET 1 capital requirement comprises the Pillar 1 minimum capital requirement of 4.50 %, the Pillar 2 requirement (SREP Add-on) of 2.75 %, the phase-in capital conservation buffer of 1.875 %, the countercyclical buffer (currently 0.02 %) and the phase-in G-SII buffer of 1.50 %. The new CET 1 capital requirement of 10.65 % for 2018 is higher than the CET 1 capital requirement of 9.52 %, which was applicable to Deutsche Bank in 2017, reflecting the further phase-in of the capital conservation buffer and the G-SII buffer. Correspondingly, 2018 requirements for Deutsche Bank's Tier 1 capital ratio are at 12.15 % and for its total capital ratio at 14.15 %. Also, following the results of the 2017 SREP, the ECB communicated to us an individual expectation to hold a further "Pillar 2" CET 1 capital add-on, commonly referred to as the "Pillar 2" guidance'. The capital add-on pursuant to the "Pillar 2" guidance is separate from and in addition to the Pillar 2 requirement. The ECB has stated that it expects banks to meet the "Pillar 2" guidance although it is not legally binding, and failure to meet the "Pillar 2" guidance does not automatically trigger legal action.

The following table gives an overview of the different Pillar 1 and Pillar 2 minimum capital requirements (but excluding the "Pillar 2" guidance) as well as capital buffer requirements applicable to Deutsche Bank in the years 2017 and 2018 (articulated on a phase-in basis):

Overview total capital requirements and capital buffers

	2017	2018
Pillar 1		
Minimum CET 1 requirement	4.50 %	4.50 %
Capital Conservation Buffer	1.25 %	1.875 %
Countercyclical Buffer	0.02 %	0.02 % ¹
G-SII Buffer ³	1.00 %	1.50 %
O-SII Buffer ³	0.66 %	1.32 %
Systemic Risk Buffer ³	0.00 %	0.00 % ²
Pillar 2		
Pillar 2 SREP Add-on of CET 1 capital	2.75 %	2.75 %
SREP CET 1 Requirement	8.50 %	9.125 %
Total CET 1 requirement from Pillar 1 and 2⁴	9.52 %	10.65 %
Total Tier 1 requirement from Pillar 1 and 2	11.02 %	12.15 %
Total capital requirement from Pillar 1 and 2	13.02 %	14.15 %

¹ Deutsche Bank's countercyclical buffer requirement is subject to country-specific buffer rates decreed by EBA and the Basel Committee of Banking Supervision (BCBS) as well as Deutsche Bank's relevant credit exposures as per respective reporting date. The countercyclical buffer rate for 2018 has been assumed to be 0.02 % due to unavailability of 2018 data.

² The systemic risk buffer has been assumed to remain at 0 % for the projected year 2018, subject to changes based on further directives.

³ Unless certain exceptions apply only the higher of the systemic risk buffer, G-SII and O-SII buffer must be applied.

⁴ The total Pillar 1 and Pillar 2 CET 1 requirement (excluding the "Pillar 2" guidance) is calculated as the sum of the SREP requirement, the higher of the G-SII, O-SII and systemic risk buffer requirement as well as the countercyclical buffer requirement.

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

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

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

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

in € m.	Dec 31, 2017					
	General credit exposures		Trading book exposures		Securitization exposures	
	Exposure value for SA	Exposure value for IRB	Sum of long and short positions of trading book exposures for SA	Value of trading book exposures for Internal models	Exposure value for SA	Exposure value for IRB
Argentina	17	181	0	147	0	0
Australia	184	2,988	1,044	149	104	279
Austria	37	1,607	44	365	0	0
Belgium	150	1,726	0	0	0	0
Bermuda	26	1,145	16	49	0	31
Brazil	11	889	0	252	0	0
British Virgin Islands	68	7,554	0	31	0	0
Canada	118	3,874	1	42	0	249
Cayman Islands	395	6,642	20	26	0	960
China	29	4,719	217	1,264	0	0
Cyprus	28	308	0	123	0	0
Czech Republic	4	379	0	0	0	0
Denmark	1	1,730	0	176	0	0
Egypt	0	850	0	48	0	0
France	6	6,500	187	123	0	307
Germany	8,219	234,859	94	1,899	0	7,392
Greece	3	981	0	96	0	0
Hong Kong	76	5,725	0	165	0	0
Iceland	0	72	0	42	0	0
India	1,917	6,494	0	1,048	0	0
Indonesia	24	1,657	0	198	0	0
Ireland	624	7,068	259	3	15	2,020
Isle of Man	0	448	0	3	0	0
Israel	33	634	0	8	0	0
Italy (incl. San Marino)	1,739	22,565	94	799	10	78
Japan	148	3,804	172	0	0	142
Jersey	186	1,665	0	17	169	3
Luxembourg	2,366	14,067	2	393	0	1,749
Malaysia	67	814	0	441	0	0
Mauritius	103	339	0	0	0	0
Mexico	6	1,866	0	110	0	0
Netherlands	1,144	14,662	122	0	0	322
Norway	12	990	0	105	0	0
Pakistan	26	297	0	8	0	0
Philippines	6	529	0	144	0	0
Poland	666	7,821	0	7	0	0
Portugal	78	2,523	68	0	18	0
Russian Federation	21	1,032	0	0	0	0
Saudi Arabia	10	8,371	0	0	0	0
Singapore	91	6,611	46	455	0	87
Slovakia	0	52	0	0	0	0
South Africa	7	4,895	0	968	0	0
South Korea	33	782	0	0	0	0
Spain	393	15,126	98	1,158	2	128
Sweden	0	1,540	1	70	0	0
Switzerland	46	11,090	0	290	0	0
Taiwan	3	1,943	0	253	0	0
Thailand	19	1,587	0	150	0	0
Turkey	29	940	0	0	0	0
United Arab Emirates	33	1,185	67	66	0	0
United Kingdom	819	25,060	1,585	0	74	460
United States of America (incl. Puerto Rico)	3,029	136,099	3,313	5,592	1,206	43,479
Venezuela	0	42	0	58	0	0
Other	314	12,087	29	402	196	3,321
Total	23,363	599,408	7,478	17,740	1,794	61,008

Dec 31, 2017

in € m.	Own funds requirements				Own funds requirements weights	Countercyclical capital buffer rate (in %)
	of which: General credit exposures	of which: Trading book exposures	of which: Securitization exposures	Total		
Argentina	10	13	0	23	0.00	0.00
Australia	91	54	13	158	0.01	0.00
Austria	43	14	1	57	0.00	0.00
Belgium	40	4	1	44	0.00	0.00
Bermuda	58	8	1	68	0.00	0.00
Brazil	26	9	2	36	0.00	0.00
British Virgin Islands	45	3	0	48	0.00	0.00
Canada	100	7	5	112	0.01	0.00
Cayman Islands	388	9	20	417	0.02	0.00
China	200	63	0	263	0.02	0.00
Cyprus	14	16	0	29	0.00	0.00
Czech Republic	6	0	0	6	0.00	0.50
Denmark	27	6	1	35	0.00	0.00
Egypt	27	2	0	29	0.00	0.00
France	187	48	25	260	0.02	0.00
Germany	5,765	74	71	5,910	0.35	0.00
Greece	27	19	0	45	0.00	0.00
Hong Kong	81	5	1	87	0.01	1.25
Iceland	3	8	0	11	0.00	1.25
India	317	150	2	469	0.03	0.00
Indonesia	71	13	1	85	0.00	0.00
Ireland	259	38	64	361	0.02	0.00
Isle of Man	23	0	1	23	0.00	0.00
Israel	36	7	0	43	0.00	0.00
Italy (incl. San Marino)	934	42	7	983	0.06	0.00
Japan	102	0	1	103	0.01	0.00
Jersey	93	1	11	105	0.01	0.00
Luxembourg	350	38	14	402	0.02	0.00
Malaysia	30	0	0	30	0.00	0.00
Mauritius	43	0	1	43	0.00	0.00
Mexico	32	1	2	35	0.00	0.00
Netherlands	487	27	36	549	0.03	0.00
Norway	27	3	1	31	0.00	2.00
Pakistan	28	3	0	31	0.00	0.00
Philippines	19	4	0	24	0.00	0.00
Poland	314	0	0	314	0.02	0.00
Portugal	36	8	2	45	0.00	0.00
Russian Federation	50	0	0	50	0.00	0.00
Saudi Arabia	56	1	2	59	0.00	0.00
Singapore	119	11	9	139	0.01	0.00
Slovakia	2	0	0	2	0.00	0.50
South Africa	73	5	0	78	0.00	0.00
South Korea	47	3	0	50	0.00	0.00
Spain	513	54	11	578	0.03	0.00
Sweden	35	2	1	38	0.00	2.00
Switzerland	182	7	1	190	0.01	0.00
Taiwan	40	1	0	40	0.00	0.00
Thailand	41	3	0	44	0.00	0.00
Turkey	42	0	0	42	0.00	0.00
United Arab Emirates	25	3	0	28	0.00	0.00
United Kingdom	540	144	24	709	0.04	0.00
United States of America (incl. Puerto Rico)	2,499	253	402	3,155	0.19	0.00
Venezuela	1	27	0	28	0.00	0.00
Other	255	40	81	375	0.02	0.00
Total	14,854	1,248	814	16,915	1.00	0.02

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

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

Institution-specific countercyclical capital buffer

	Dec 31, 2017	Dec 31, 2016
Total risk exposure amount (in € m.) ¹	343,316	356,235
Institution specific countercyclical buffer rate	0.02 %	0.01 %
Institution specific countercyclical buffer requirement (in € m.)	53	40

¹ To calculate the institution specific countercyclical buffer requirement the phase-in value of the total risk exposure amount is used.

Credit risk and credit risk mitigation

General qualitative information on credit risk

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

For details please refer to the section "Asset Quality" in our Annual Report 2017 on page 111 as well as to the section "Article 452 (c) - Internal rating-based approaches" further down in the Pillar 3 Report on the pages 61 to 63.

Article 442 (b) CRR - Credit risk adjustments

For details please refer to the section "Asset Quality" in our Annual Report 2017 on the pages 111 to 119.

General quantitative information on credit risk

Article 442 (c) CRR - Total and average amount of credit exposure by exposure classes

The table EU CRB-B below shows the total and average net credit risk exposures based on IFRS accounting values according to the regulatory scope of consolidation. For on-balance sheet items the "Net value of exposure" is calculated by deducting credit risk adjustments from the gross amount and for off-balance sheet respective provisions have been deducted. The breakout into the exposure classes follows those as defined for the IRBA (i.e. combining the advanced and foundation IRB) as well as the for the standardized approach. The line item "central governments or central banks" includes exposures to regional governments or local authorities, public sector entities, multilateral development banks and international organizations. The exposure class "Other Items" within the standardized approach includes all exposures not covered in the other categories. The average credit exposure is calculated as on December 31, 2017 taking the averages of all four quarters of the fiscal year.

EU CRB-B – Total and average net amount of exposures

in € m.		Dec 31, 2017	
		a	b
		Net exposure at the end of the period	Average net exposure over the period
1	Central governments and central banks	116,542	113,694
2	Institutions	26,817	25,092
3	Corporates	362,630	339,094
	thereof:		
5	SMEs	16,693	14,850
4	Specialized lending	32,345	30,267
4a	Other	313,593	293,976
6	Retail	217,727	212,197
	thereof:		
8	Secured by real estate property SMEs	9,861	9,424
9	Secured by real estate property non-SMEs	156,716	155,429
10	Qualifying revolving	16,941	11,442
12	Other retail SMEs	5,739	6,454
13	Other retail non-SMEs	28,469	29,449
14	Equity	1,476	1,872
14a	Other non-credit obligation asset	7,882	6,792
15	Total IRB approach	733,073	698,741
16	Central governments or central banks	153,171	149,373
17	Regional governments or local authorities	12,208	12,584
18	Public sector entities	6,505	6,752
19	Multilateral development banks	5,234	5,543
20	International organizations	2,125	1,976
21	Institutions	1,796	1,496
22	Corporates	14,445	14,689
24	Retail	4,817	10,640
26	Secured by mortgages on immovable property	3,948	3,984
28	Exposures in default	1,014	1,312
29	Items associated with particularly high risk	254	185
30	Covered bonds	0	0
31	Claims on institutions and corporates with a short-term credit assessment	0	0

in € m.	Dec 31, 2017	
	a	b
	Net exposure at the end of the period	Average net exposure over the period
32 Collective investments undertakings (CIU)	0	0
33 Equity exposures	140	172
34 Other items	124	94
35 Total standardized approach	205,781	208,799
36 Total ¹	938,854	907,540

¹ The table reflects the fully loaded exposure view and therefore does not include the exposure shift from the advanced IRB to the standard approach of grandfathered equity investments.

Article 442 (d) CRR - Geographic distribution of credit exposure

The table EU CRB-C below shows exposures broken down by significant geographical areas and exposure classes. For on-balance sheet items the "Net value of exposure" is calculated by deducting credit risk adjustments from the gross amount and for off-balance sheet respective provisions have been deducted. Hence, credit risk exposures values are shown after accounting offsets but before credit risk mitigation. They are based on IFRS accounting values according to the regulatory scope of consolidation.

We consider a country as being significant, if it contributes to an aggregate of 90 % of our total exposure. An area is considered significant if it contains at least one significant country. The geographical distribution is based on the legal domicile of the counterparty or issuer. Exposures to geographical areas or countries that are not deemed significant are aggregated and reported in the residual column 'other geographical areas' or (within each significant area) 'other countries'.

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

EU CRB-C – Geographical breakdown of exposures

	Dec 31, 2017						
	a	b	c	d	e	f	g
	Europe						
in € m.	Europe	Germany	United Kingdom	France	Luxembourg	Italy	Netherlands
1 Central governments and central banks	12,061	3,835	0	0	441	215	0
2 Institutions	10,729	2,146	1,512	1,264	745	159	646
3 Corporates	179,873	77,046	11,698	12,333	8,711	9,839	15,536
thereof:							
3a SMEs	14,554	10,012	97	119	20	1,800	435
3b Specialized lending	14,909	3,337	968	861	1,704	632	1,137
3c Other	150,656	63,697	10,633	11,352	6,987	7,407	13,965
4 Retail	217,147	182,872	507	174	44	15,240	163
thereof:							
4a Secured by real estate property SMEs	9,855	9,406	1	3	15	139	3
4b Secured by real estate property non-SMEs	156,475	134,495	165	65	25	8,040	88
4c Qualifying revolving	16,903	16,768	6	13	1	47	6
4d Other retail SMEs	5,711	3,226	5	7	0	877	7
4e Other retail non-SMEs	28,203	18,977	330	86	2	6,138	59
5 Equity	687	106	192	1	52	43	1
5a Other non-credit obligation asset	5,110	4,743	224	0	63	0	5
6 Total IRB approach	425,852	270,749	14,134	13,772	10,056	25,496	16,351
7 Central governments or central banks	152,792	119,895	10,877	2,251	7,359	3,965	2,084
8 Regional governments or local authorities	12,135	11,846	0	0	0	0	16
9 Public sector entities	6,408	6,290	84	0	0	0	0
10 Multilateral development banks	1,067	0	0	470	597	0	0
11 International organizations	923	0	0	0	603	0	0
12 Institutions	1,382	1,230	95	3	0	9	3
13 Corporates	7,755	4,158	1	56	1,361	522	574
14 Retail	4,127	1,492	39	1	67	1,743	107
15 Secured by mortgages on immovable property	2,638	230	4	10	1,014	397	610
16 Exposures in default	830	327	10	0	5	112	116
17 Items associated with particularly high risk	235	1	1	0	0	177	9
18 Covered bonds	0	0	0	0	0	0	0
19 Claims on institutions and corporates with a short-term credit assessment	0	0	0	0	0	0	0
20 Collective investments undertakings (CIU)	0	0	0	0	0	0	0
21 Equity exposures	1	1	0	0	0	0	0
22 Other items	124	124	0	0	0	0	0
23 Total standardized approach	190,419	145,594	11,112	2,791	11,006	6,925	3,519
24 Total	616,271	416,343	25,245	16,564	21,062	32,420	19,869

		Dec 31, 2017						
		h	i	j	k	l	m	n
in € m.		Europe						North America
		Spain	Ireland	Switzerland	Poland	Belgium	Other Europe	
1	Central governments and central banks	193	0	3,299	2,056	12	2,009	87,354
2	Institutions	463	129	534	1	1,273	1,856	5,578
3	Corporates	7,333	4,909	13,114	2,597	2,566	14,192	135,609
	thereof:							
3a	SMEs	840	209	219	437	43	323	1,378
3b	Specialized lending	694	1,756	85	289	249	3,196	15,219
3c	Other	5,798	2,944	12,809	1,870	2,275	10,918	119,013
4	Retail	9,914	29	263	5,583	51	2,306	112
	thereof:							
4a	Secured by real estate property SMEs	132	0	6	101	1	49	1
4b	Secured by real estate property non-SMEs	7,072	26	186	4,883	33	1,396	76
4c	Qualifying revolving	6	0	21	2	5	25	9
4d	Other retail SMEs	1,361	1	4	135	2	87	9
4e	Other retail non-SMEs	1,342	2	48	461	9	750	16
5	Equity	4	0	56	0	13	219	583
5a	Other non-credit obligation asset	1	0	2	32	0	41	1,981
6	Total IRB approach	17,909	5,066	17,268	10,270	3,915	20,866	231,218
7	Central governments or central banks	1,925	559	0	72	1,163	2,642	237
8	Regional governments or local authorities	273	0	0	0	0	0	72
9	Public sector entities	34	0	0	0	0	0	97
10	Multilateral development banks	0	0	0	0	0	0	0
11	International organizations	0	0	0	0	320	0	0
12	Institutions	1	1	26	0	3	11	188
13	Corporates	141	531	71	55	19	267	5,266
14	Retail	60	0	6	603	1	8	0
15	Secured by mortgages on immovable property	213	1	6	0	83	69	25
16	Exposures in default	9	210	0	9	4	29	0
17	Items associated with particularly high risk	0	0	0	11	0	37	0
18	Covered bonds	0	0	0	0	0	0	0
19	Claims on institutions and corporates with a short-term credit assessment	0	0	0	0	0	0	0
20	Collective investments undertakings (CIU)	0	0	0	0	0	0	0
21	Equity exposures	0	0	0	0	0	0	124
22	Other items	0	0	0	0	0	0	0
23	Total standardized approach	2,656	1,301	110	749	1,594	3,063	6,010
24	Total	20,565	6,368	17,378	11,019	5,508	23,929	237,228

		Dec 31, 2017						
		o	p	q	r	s	t	u
		North America				Asia/Pacific		
in € m.		U.S.	Cayman Islands	Canada	Other North America	Asia/Pacific	Japan	Australia
1	Central governments and central banks	87,276	0	61	18	15,269	5,377	917
2	Institutions	4,566	0	1,012	0	9,649	319	510
3	Corporates	123,469	2,262	2,224	7,654	39,303	1,359	2,257
	thereof:							
3a	SMEs	1,252	0	5	121	633	0	3
3b	Specialized lending	14,725	113	218	163	2,140	516	257
3c	Other	107,492	2,149	2,001	7,370	36,531	843	1,997
4	Retail	93	0	19	0	235	9	13
	thereof:							
4a	Secured by real estate property SMEs	1	0	0	0	5	0	2
4b	Secured by real estate property non-SMEs	71	0	5	0	129	8	7
4c	Qualifying revolving	8	0	1	0	19	1	1
4d	Other retail SMEs	7	0	3	0	12	0	1
4e	Other retail non-SMEs	6	0	10	0	70	0	2
5	Equity	521	62	0	0	108	8	63
5a	Other non-credit obligation asset	1,970	10	1	0	791	32	0
6	Total IRB approach	217,894	2,335	3,317	7,672	65,353	7,103	3,761
7	Central governments or central banks	207	0	30	0	142	0	0
8	Regional governments or local authorities	72	0	0	0	0	0	0
9	Public sector entities	97	0	0	0	0	0	0
10	Multilateral development banks	0	0	0	0	0	0	0
11	International organizations	0	0	0	0	0	0	0
12	Institutions	184	0	4	0	147	3	14
13	Corporates	4,284	445	115	423	663	4	21
14	Retail	0	0	0	0	689	6	3
15	Secured by mortgages on immovable property	24	0	2	0	1,261	0	0
16	Exposures in default	0	0	0	0	182	134	0
17	Items associated with particularly high risk	0	0	0	0	11	0	0
18	Covered bonds	0	0	0	0	0	0	0
19	Claims on institutions and corporates with a short-term credit assessment	0	0	0	0	0	0	0
20	Collective investments undertakings (CIU)	0	0	0	0	0	0	0
21	Equity exposures	124	0	0	0	14	0	14
22	Other items	0	0	0	0	0	0	0
23	Total standardized approach	4,992	445	150	423	3,111	147	52
24	Total	222,886	2,780	3,467	8,095	68,465	7,251	3,813

		Dec 31, 2017						
		v	w	x	y	z	aa	ab
		Asia/Pacific					Other geographical areas	Total
in € m.		India	China	Singapore	Hong Kong	Other Asia/Pacific		
1	Central governments and central banks	1,869	1,088	1,426	303	4,288	1,858	116,542
2	Institutions	2,081	3,311	180	326	2,921	861	26,817
3	Corporates	6,835	3,415	5,593	5,332	14,512	7,845	362,630
	thereof:							
3a	SMEs	58	2	8	126	436	129	16,693
3b	Specialized lending	319	0	202	173	672	78	32,345
3c	Other	6,458	3,414	5,383	5,033	13,403	7,394	313,593
4	Retail	19	31	21	12	129	233	217,727
	thereof:							
4a	Secured by real estate property SMEs	0	0	0	0	3	0	9,861
4b	Secured by real estate property non-SMEs	2	21	17	10	65	36	156,716
4c	Qualifying revolving	2	3	1	1	10	10	16,941
4d	Other retail SMEs	1	3	1	1	5	7	5,739
4e	Other retail non-SMEs	13	5	3	1	46	180	28,469
5	Equity	16	10	2	8	1	98	1,476
5a	Other non-credit obligation asset	38	508	99	21	93	0	7,882
6	Total IRB approach	10,858	8,363	7,321	6,003	21,943	10,650	733,073
7	Central governments or central banks	2	23	2	3	112	0	153,171
8	Regional governments or local authorities	0	0	0	0	0	0	12,208
9	Public sector entities	0	0	0	0	0	0	6,505
10	Multilateral development banks	0	0	0	0	0	4,166	5,234
11	International organizations	0	0	0	0	0	1,202	2,125
12	Institutions	9	16	10	26	70	79	1,796
13	Corporates	171	30	1	70	364	760	14,445
14	Retail	601	0	46	0	34	0	4,817
15	Secured by mortgages on immovable property	1,251	7	0	1	1	23	3,948
16	Exposures in default	46	0	2	1	0	2	1,014
17	Items associated with particularly high risk	0	0	0	0	11	8	254
18	Covered bonds	0	0	0	0	0	0	0
19	Claims on institutions and corporates with a short-term credit assessment	0	0	0	0	0	0	0
20	Collective investments undertakings (CIU)	0	0	0	0	0	0	0
21	Equity exposures	0	0	0	0	0	0	140
22	Other items	0	0	0	0	0	0	124
23	Total standardized approach	2,080	76	61	101	593	6,240	205,781
24	Total¹	12,938	8,439	7,382	6,105	22,537	16,890	938,854

¹ The table reflects the fully loaded exposure view and therefore does not include the exposure shift from the advanced IRB to the standard approach of grandfathered equity investments.

Article 442 (e) CRR - Distribution of credit exposure by industry type

The table EU CRB-D below shows net credit exposures by industry and exposure classes. The industry sector breakdown in the columns below is consistent with table EU CR1-B. For on-balance sheet items the "net value of exposure" is calculated by deducting credit risk adjustments from the gross amount and for off-balance sheet respective provisions have been deducted. The amounts shown are based on IFRS accounting values according to the regulatory scope of consolidation. The industry sector is defined using the first level of NACE (Nomenclature des Activités Économiques dans la Communauté Européenne) codes per the descriptive headings.

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

EU CRB-D – Concentration of exposures by industry or counterparty types

		Dec 31, 2017						
		a	b	c	d	e	f	g
in € m.		Agriculture, forestry and fishing	Mining and quarrying	Manufacturing	Electricity, gas, steam and air conditioning supply	Water supply, sewerage, waste management and remediation activities	Construction	Wholesale and retail trade, repair of motor vehicles and motorcycles
1	Central governments and central banks	0	0	0	0	0	0	0
2	Institutions	0	0	38	0	0	0	30
3	Corporates	1,163	9,059	78,701	4,916	1,079	9,497	28,213
	thereof:							
3a	SMEs	182	97	4,248	33	113	689	1,897
3b	Specialized lending	1	13	341	223	0	940	121
3c	Other	980	8,950	74,112	4,659	966	7,868	26,195
4	Retail	230	16	1,883	14	52	1,166	2,440
	thereof:							
4a	Secured by real estate property SMEs	112	1	396	3	15	485	655
4b	Secured by real estate property non-SMEs	32	4	292	2	5	242	436
4c	Qualifying revolving	0	0	0	0	0	0	0
4d	Other retail SMEs	67	8	994	7	28	294	1,045
4e	Other retail non-SMEs	19	3	201	2	5	144	303
5	Equity	0	4	18	0	0	1	0
5a	Other non-credit obligation asset	0	0	0	0	0	0	0
6	Total IRB approach	1,393	9,079	80,640	4,930	1,131	10,664	30,682
7	Central governments or central banks	0	0	0	0	0	0	0
8	Regional governments or local authorities	0	0	0	0	0	0	0
9	Public sector entities	0	0	0	4	19	0	0
10	Multilateral development banks	0	0	0	0	0	0	0
11	International organizations	0	0	0	0	0	0	0
12	Institutions	0	0	0	0	0	0	0
13	Corporates	7	20	785	2	39	167	566
14	Retail	3	2	187	1	3	28	122
15	Secured by mortgages on immovable property	71	3	384	3	2	47	320
16	Exposures in default	19	0	129	0	1	4	25
17	Items associated with particularly high risk	0	0	9	0	0	92	15
18	Covered bonds	0	0	0	0	0	0	0
19	Claims on institutions and corporates with a short-term credit assessment	0	0	0	0	0	0	0
20	Collective investments undertakings (CIU)	0	0	0	0	0	0	0
21	Equity exposures	0	0	0	0	0	1	0
22	Other items	0	0	0	0	0	0	0
23	Total standardized approach	100	26	1,494	10	63	338	1,049
24	Total	1,493	9,105	82,134	4,940	1,194	11,002	31,731

		Dec 31, 2017							
		h	i	j	l	m	n	o	p
in € m.		Transportation and storage	Accommodation and food service activities	Information and communication	Financial and insurance activities	Real estate activities	Professional, scientific and technical activities	Administrative and support service activities	Public administration and defense, compulsory social security
1	Central governments and central banks	0	0	0	92,074	0	0	0	24,026
2	Institutions	0	0	0	24,747	0	0	0	2,002
3	Corporates	12,792	3,645	21,512	85,037	32,376	9,226	7,213	1,447
	thereof:								
3a	SMEs	346	512	281	2,227	2,254	1,095	510	69
3b	Specialized lending	3,363	728	0	2,680	19,542	158	710	191
3c	Other	9,082	2,405	21,231	80,130	10,579	7,973	5,994	1,186
4	Retail	393	500	489	1,053	876	4,505	1,155	2
	thereof:								
4a	Secured by real estate property SMEs	79	195	152	490	485	1,151	448	0
4b	Secured by real estate property non-SMEs	81	123	142	183	367	2,404	353	0
4c	Qualifying revolving	0	0	0	0	0	0	0	0
4d	Other retail SMEs	179	114	136	66	13	557	208	1
4e	Other retail non-SMEs	53	69	59	313	10	393	146	1
5	Equity	0	0	21	896	201	14	37	3
5a	Other non-credit obligation asset	0	0	1	1,737	0	0	2,052	0
6	Total IRB approach	13,185	4,146	22,022	205,544	33,453	13,746	10,457	27,481
7	Central governments or central banks	0	0	0	132,852	0	0	0	20,319
8	Regional governments or local authorities	0	0	0	0	12	0	0	12,194
9	Public sector entities	0	0	0	6,143	0	4	0	286
10	Multilateral development banks	0	0	0	4,637	0	0	0	0
11	International organizations	0	0	0	603	0	0	0	1,522
12	Institutions	0	0	0	1,796	0	0	0	0
13	Corporates	215	34	379	4,661	526	253	1,228	0
14	Retail	37	14	22	20	0	48	199	1
15	Secured by mortgages on immovable property	45	36	29	193	152	38	26	3
16	Exposures in default	14	2	2	69	102	160	60	3
17	Items associated with particularly high risk	0	4	1	41	12	8	1	0
18	Covered bonds	0	0	0	0	0	0	0	0
19	Claims on institutions and corporates with a short-term credit assessment	0	0	0	0	0	0	0	0
20	Collective investments undertakings (CIU)	0	0	0	0	0	0	0	0
21	Equity exposures	0	0	0	55	6	0	5	0
22	Other items	0	0	0	0	0	0	0	0
23	Total standardized approach	312	89	432	151,069	810	511	1,518	34,329
24	Total	13,497	4,234	22,455	356,613	34,263	14,256	11,975	61,810

		Dec 31, 2017						
		q	r	s	t	u	v	w
in € m.		Education	Human health and social work activities	Arts, entertainment and recreation	Other service activities	Activities of households as employers, undifferentiated goods- and services-producing activities of households for own use	Activities of extraterritorial organizations and bodies	Total
1	Central governments and central banks	0	0	0	0	0	441	116,542
2	Institutions	0	0	0	0	0	0	26,817
3	Corporates	413	3,558	2,309	31,483	18,991	0	362,630
	thereof:							
3a	SMEs	57	422	54	1,188	419	0	16,693
3b	Specialized lending	0	1	26	3,023	284	0	32,345
3c	Other	355	3,136	2,230	27,273	18,288	0	313,593
4	Retail	127	2,800	276	1,511	198,238	0	217,727
	thereof:							
4a	Secured by real estate property SMEs	41	1,042	125	552	3,434	0	9,861
4b	Secured by real estate property non-SMEs	43	440	71	331	151,166	0	156,716
4c	Qualifying revolving	0	0	0	0	16,941	0	16,941
4d	Other retail SMEs	25	748	43	311	895	0	5,739
4e	Other retail non-SMEs	19	570	38	317	25,802	0	28,469
5	Equity	0	0	0	281	0	0	1,476
5a	Other non-credit obligation asset	0	0	0	4,091	0	0	7,882
6	Total IRB approach	540	6,358	2,586	37,367	217,229	442	733,073
7	Central governments or central banks	0	0	0	0	0	0	153,171
8	Regional governments or local authorities	0	0	0	0	0	0	12,208
9	Public sector entities	0	50	0	0	0	0	6,505
10	Multilateral development banks	0	0	0	0	0	597	5,234
11	International organizations	0	0	0	0	0	0	2,125
12	Institutions	0	0	0	0	0	0	1,796
13	Corporates	3	41	6	5,181	334	0	14,445
14	Retail	2	11	4	72	4,040	0	4,817
15	Secured by mortgages on immovable property	3	17	20	460	2,097	0	3,948
16	Exposures in default	4	0	3	139	278	0	1,014
17	Items associated with particularly high risk	0	0	0	24	47	0	254
18	Covered bonds	0	0	0	0	0	0	0
19	Claims on institutions and corporates with a short-term credit assessment	0	0	0	0	0	0	0
20	Collective investments undertakings (CIU)	0	0	0	0	0	0	0
21	Equity exposures	0	0	0	73	0	0	140
22	Other items	0	0	0	124	0	0	124
23	Total standardized approach	12	120	32	6,072	6,797	597	205,781
24	Total¹	552	6,478	2,617	43,440	224,026	1,039	938,854

¹ The table reflects the fully loaded exposure view and therefore does not include the exposure shift from the advanced IRB to the standard approach of grandfathered equity investments.

Article 442 (f) CRR - Residual maturity breakdown of credit exposure

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

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

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

EU CRB-E – Maturity of exposures

		Dec 31, 2017					
		a	b	c	d	e	f
		Net exposure value					
in € m.		On demand	<= 1 year	> 1 year <= 5 years	> 5 years	No stated maturity	Total
1	Central governments and central banks	87,867	6,083	5,429	12,694	1	112,073
2	Institutions	956	13,829	3,018	3,496	33	21,331
3	Corporates	8,710	82,486	52,995	27,896	2,857	174,944
	thereof:						
3a	SMEs	470	3,364	2,311	4,433	16	10,594
3b	Specialized lending	1,969	7,923	13,502	5,871	0	29,266
3c	Other	6,271	71,198	37,182	17,591	2,842	135,084
4	Retail	2,110	6,868	18,271	157,974	2,463	187,687
	thereof:						
4a	Secured by real estate property SMEs	6	283	816	8,178	0	9,282
4b	Secured by real estate property non-SMEs	1,134	2,427	8,145	135,685	1,868	149,259
4c	Qualifying revolving	584	440	0	0	0	1,024
4d	Other retail SMEs	118	1,504	1,174	714	228	3,737
4e	Other retail non-SMEs	269	2,214	8,137	13,397	367	24,385
5	Equity	37	1,126	8	288	0	1,459
5a	Other non-credit obligation asset	877	3,554	1,071	0	2,378	7,881
6	Total IRB approach	100,557	113,946	80,793	202,348	7,732	505,375
7	Central governments or central banks	114,297	21,819	9,290	6,894	843	153,142
8	Regional governments or local authorities	64	2,684	5,599	3,449	3	11,798
9	Public sector entities	24	655	3,067	2,711	21	6,478
10	Multilateral development banks	0	701	3,274	1,260	0	5,234
11	International organizations	0	733	785	608	0	2,125
12	Institutions	53	68	370	1,207	74	1,772
13	Corporates	1,914	3,048	3,495	1,302	242	10,001
14	Retail	289	336	1,236	1,381	263	3,505
15	Secured by mortgages on immovable property	15	814	391	2,546	3	3,768
16	Exposures in default	157	499	144	199	0	999
17	Items associated with particularly high risk	62	28	31	126	0	247
18	Covered bonds	0	0	0	0	0	0
19	Claims on institutions and corporates with a short-term credit assessment	0	0	0	0	0	0
20	Collective investments undertakings (CIU)	0	0	0	0	0	0
21	Equity exposures	0	9	0	132	0	140
22	Other items	31	93	0	0	0	124
23	Total standardized approach	116,905	31,485	27,597	21,898	1,449	199,333
24	Total¹	217,462	145,430	108,389	224,246	9,181	704,708

¹ The table reflects the fully loaded exposure view and therefore does not include the exposure shift from the advanced IRB to the standard approach of grandfathered equity investments.

Article 442 (g) CRR - Defaulted exposures by regulatory exposure class and industry

Tables EU CR1-A and EU CR1-B provide asset quality information of the Group's on- and off balance sheet exposures subject to the credit risk framework broken down by regulatory exposure classes and industries respectively.

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

The amounts shown below are based on IFRS accounting values according to the regulatory scope of consolidation. An exposure is being classified as defaulted if the default criteria according to Article 178 CRR are met. Specific credit risk adjustments consist of all type of allowance for loan losses, provision for contingent liabilities and accumulated impairment against debt instruments available for sale according to IFRS accounting rules, as confirmed by EBA (EBA/OP/2017/02). The Group does not record any credit risk adjustment which qualify as general credit risk adjustment. The credit risk adjustment charges of the period are provided on a twelve month as well as six month period ending December 31, 2017, in column "f2" and "f".

EU CR1-A – Credit quality of exposures by exposure class and instrument

		Dec 31, 2017							
		a	b	c	d	e	f2	f	g
		Gross carrying values of					Credit risk adjustment charges of the period ²		
in € m.		Defaulted exposures	Non-defaulted exposures	Specific credit risk adjustment	General credit risk adjustment	Accumulated write-offs	Twelve months ended Dec 31, 2017	Six months ended Dec 31, 2017	Net values (a+b-c-d)
1	Central governments or central banks	124	116,428	11	0	0	4	7	116,542
2	Institutions	49	26,777	9	0	0	(1)	0	26,817
3	Corporates	6,342	358,457	2,169	0	265	239	179	362,630
	Thereof:								
5	SMEs	535	16,429	272	0	36	12	(38)	16,693
4	Specialized Lending	1,755	31,140	551	0	99	143	93	32,345
5a	Other	4,052	310,888	1,346	0	129	84	124	313,593
6	Retail	3,612	215,613	1,498	0	806	434	247	217,727
	Thereof:								
8	Secured by real estate property SMEs	110	9,776	25	0	7	1	0	9,861
9	Secured by real estate property Non-SMEs	1,644	155,438	366	0	105	(1)	(7)	156,716
10	Qualifying Revolving	59	16,948	66	0	64	135	57	16,941
12	Other SMEs	215	5,652	128	0	30	26	13	5,739
13	Other Non-SMEs	1,584	27,798	913	0	597	274	183	28,469
14	Equity	0	1,475	0	0	0	0	0	1,476
14a	Other non-credit obligation asset	0	7,882	0	0	0	0	0	7,882
15	Total IRB approach	10,127	726,633	3,686	0	1,071	675	434	733,073
16	Central governments or central banks	0	153,171	0	0	0	0	0	153,171
17	Regional governments or local authorities	0	12,209	1	0	0	0	0	12,208
18	Public sector entities	0	6,507	1	0	0	(3)	(3)	6,505
19	Multilateral Development Banks	0	5,234	0	0	0	0	0	5,234
20	International Organizations	0	2,125	0	0	0	0	0	2,125
21	Institutions	0	1,796	0	0	0	0	0	1,796
22	Corporates	0	14,464	19	0	169	(23)	(17)	14,445
24	Retail	0	4,837	20	0	138	21	(29)	4,817
26	Secured by mortgages on immovable property	0	3,951	4	0	0	(1)	(1)	3,948
28	Exposures in default	1,439	3	427	0	99	(27)	(11)	1,014
29	Items associated with particularly high risk	262	154	162	0	0	10	13	254
30	Covered bonds	0	0	0	0	0	0	0	0
31	Claims on institutions and corporates with a short-term credit assessment	0	0	0	0	0	0	0	0
32	Collective investments undertakings	0	0	0	0	0	0	0	0
33	Equity exposures	0	140	0	0	0	0	0	140
34	Other exposures	0	124	0	0	0	0	0	124
35	Total standardized approach	1,700	204,715	634	0	406	(23)	(49)	205,781
36	Total¹	11,827	931,347	4,321	0	1,477	652	385	938,854
	Of which:								
37	Loans	10,055	374,117	4,027	0	1,477	679	414	380,145
38	Debt Securities	42	70,237	7	0	0	(1)	0	70,273
39	Off-balance sheet exposures	1,698	232,645	287	0	0	(26)	(29)	234,056

¹ The table reflects the fully loaded exposure view and therefore does not include the exposure shift from the advanced IRB to the standard approach of grandfathered equity investments.

² Credit risk adjustment charges of the period do not include recoveries.

EU CR1-B – Credit quality of exposures by industry

		Dec 31, 2017							
		a	b	c	d	e	f2	f	g
		Gross carrying values of					Credit risk adjustment charges of the period ¹		
in € m.		Defaulted exposures	Non-defaulted exposures	Specific credit risk adjustment	General credit risk adjustment	Accumulated write-offs	Twelve months ended Dec 31, 2017	Six months ended Dec 31, 2017	Net values (a+b-c-d)
1	Agriculture, forestry and fishing	79	1,439	25	0	11	5	6	1,493
2	Mining and quarrying	719	8,468	82	0	2	34	34	9,105
3	Manufacturing	1,124	81,564	554	0	209	89	52	82,134
4	Electricity, gas, steam and air conditioning supply	17	4,929	5	0	1	1	0	4,940
5	Water supply, sewerage, waste management and remediation activities	11	1,190	8	0	2	(2)	(1)	1,194
6	Construction	545	10,787	330	0	64	11	10	11,002
7	Wholesale and retail trade, repair of motor vehicles and motorcycles	645	31,461	375	0	162	64	30	31,731
8	Transport and storage	1,048	12,891	443	0	260	100	56	13,497
9	Accommodation and food service activities	55	4,199	20	0	5	3	1	4,234
10	Information and communication	175	22,353	73	0	28	16	9	22,455
10a	Financial and insurance activities	1,369	355,552	307	0	35	20	2	356,613
11	Real estate activities	1,019	33,418	174	0	82	(51)	1	34,263
12	Professional, scientific and technical activities	456	13,922	122	0	25	2	12	14,256
13	Administrative and support service activities	180	11,828	34	0	38	7	1	11,975
14	Public administration and defense, compulsory social security	129	61,694	13	0	0	0	4	61,810
15	Education	12	547	8	0	5	1	0	552
16	Human health services and social work activities	57	6,450	30	0	4	9	4	6,478
17	Arts, entertainment and recreation	173	2,464	19	0	1	0	0	2,617
18	Other service activities	462	43,137	159	0	62	18	(21)	43,440
18a	Activities of households as employers, undifferentiated goods- and services-producing activities of households for own use	3,551	222,015	1,539	0	483	326	185	224,026
18b	Activities of extraterritorial organizations and bodies	0	1,039	0	0	0	0	0	1,039
19	Total	11,827	931,347	4,321	0	1,477	652	385	938,854

¹ Credit risk adjustment charges of the period do not include recoveries.

Article 442 (h) CRR - Defaulted exposures by geographical area, past due, non-performing and forborne exposures

Table EU CR1-C provides asset quality information of the Group's on- and off balance sheet exposures subject to the credit risk framework broken down by significant geographical regions as well as countries.

We consider a country as being significant, if it contributes to an aggregate of 90 % of our total exposure. An area is considered significant if it contains at least one significant country. The geographical distribution is based on the legal domicile of the counterparty or issuer.

The amounts shown are based on IFRS accounting values according to the regulatory scope of consolidation. An exposure is being classified as defaulted if the default criteria according to Article 178 CRR are met. Specific credit risk adjustments consist of all type of allowance for loan losses, provision for contingent liabilities and accumulated impairment against debt instruments available for sale according to IFRS accounting rules, as confirmed by EBA (EBA/OP/2017/02). The Group does not book any credit risk adjustment which qualify as general credit risk adjustment. The credit risk adjustment charges of the period are provided on a twelve month as well as six month period ending December 31, 2017, in column "f2" and "f".

EU CR1-C – Credit quality of exposures by geography

		Dec 31, 2017							
		a	b	c	d	e	f ²	f	g
		Gross carrying values of				Credit risk adjustment charges of the period ¹			
in € m.		Defaulted exposures	Non-defaulted exposures	Specific credit risk adjustment	General credit risk adjustment	Accumulated write-offs	Twelve months ended Dec 31, 2017	Six months ended Dec 31, 2017	Net values (a+b-c-d)
1	Europe	9,139	610,808	3,675	0	1,338	558	328	616,271
	Thereof:								
2	Germany	3,638	414,301	1,596	0	578	398	1,107	416,343
3	United Kingdom	521	24,764	39	0	10	15	15	25,245
4	France	7	16,565	9	0	0	1	3	16,564
5	Luxembourg	134	20,969	41	0	0	22	18	21,062
6	Italy	1,662	31,710	952	0	3	108	119	32,420
7	Netherlands	901	19,272	304	0	1	(36)	18	19,869
8	Spain	747	20,102	284	0	672	24	2	20,565
9	Ireland	561	5,822	15	0	1	(2)	(1)	6,368
10	Switzerland	90	17,328	40	0	20	(7)	(4)	17,378
11	Poland	202	10,958	141	0	37	20	11	11,019
12	Belgium	20	5,495	7	0	0	0	1	5,508
13	Other Europe	655	23,520	246	0	54	27	18	23,929
14	North America	1,774	235,782	329	0	71	56	19	237,228
	Thereof:								
15	U.S.	1,460	221,682	256	0	47	(1)	12	222,886
16	Cayman Islands	39	2,744	3	0	0	1	(3)	2,780
17	Canada	54	3,433	20	0	24	13	3	3,467
18	Other North America	221	7,924	50	0	0	43	7	8,095
19	Asia/Pacific	650	68,102	288	0	26	35	34	68,465
	Thereof:								
20	Japan	134	7,119	2	0	0	0	0	7,251
21	Australia	56	3,770	12	0	0	1	0	3,813
22	India	319	12,771	152	0	0	20	19	12,938
23	China	23	8,446	30	0	0	6	6	8,439
24	Singapore	26	7,364	8	0	25	1	(1)	7,382
25	Hong Kong	2	6,107	5	0	0	0	(1)	6,105
26	Other Asia/Pacific	90	22,525	78	0	0	8	10	22,537
27	Other geographical areas	264	16,655	29	0	43	3	3	16,890
28	Total	11,827	931,347	4,321	0	1,477	652	385	938,854

¹ Credit risk adjustment charges of the period do not include recoveries.

Table EU CR1-D provides a breakdown of the Group's loans and debt securities, where contractually agreed payments of principal or interest remain unpaid by the borrower by ageing of the overdue amounts irrespective of the impairment status of the borrower. The amounts shown are based on IFRS accounting values gross of credit risk adjustments according to the regulatory scope of consolidation.

EU CR1-D – Ageing of past-due exposures

		Dec 31, 2017		
		1	2	3
in € m.		Loans	Debt Securities	Total exposures
a	≤ 30 days	3,299	0	3,299
b	> 30 days ≤ 60 days	550	0	550
c	> 60 days ≤ 90 days	311	0	311
d	> 90 days ≤ 180 days	874	0	875
e	> 180 days ≤ 1 year	635	0	635
f	> 1 year	2,544	0	2,544

Table EU CR1-E provides an overview of the Group's non-performing and forborne exposures as per EBA definitions (Implementing Technical Standards (ITS) on Supervisory reporting on forbearance and non-performing exposures under article 99(4) of Regulation (EU) No 575/2013) as well as of the impairments booked against and collaterals/guarantees received for these exposures. Amounts in the table below reflect accounting values according to the regulatory scope of consolidation and include all debt instruments other than held for trading as per our IFRS balance sheet as well as off balance sheet exposures. For further information on the Group's treatment of forbearances, please refer to the "Asset quality" section of our Annual Report 2017 on page 111.

EU CR1-E – Non-performing and forborne exposures

in € m.		Dec 31, 2017		
		010	020	030
		Debt securities	Loans and advances	Off-balance-sheet exposures
a	Gross carrying amount of performing and non-performing exposures thereof:	59,952	806,091	251,464
b	Performing but past due >30 days and <=90 days	0	600	0
c	Performing forborne	0	1,558	103
d	Non-performing:	107	10,206	1,706
e	thereof: Defaulted	107	9,892	1,706
f	Impaired	36	6,354	0
g	Forborne	14	3,085	82
Accumulated impairment and provisions and negative fair value adjustments due to credit risk				
h	On performing exposures	14	376	159
i	thereof: Forborne	0	19	0
j	On non-performing exposures	20	3,601	150
k	thereof: Forborne	0	1,083	7
Collaterals and financial guarantees received				
l	On non-performing exposures	0	3,838	482
m	thereof: Forborne exposures	0	1,974	43

Article 442 (i) CRR - Development of credit risk adjustments and defaulted loans and debt securities

Table EU CR2-A provides information on the development of the Group's stock of specific credit risk adjustments held against loans and debt securities subject to the credit risk framework that are defaulted or impaired in the second half of 2017. Amounts are based on IFRS accounting values according to the regulatory scope of consolidation.

EU CR2-A – Changes in the stock of general and specific credit risk adjustments

in € m.		Dec 31, 2017	
		a	b
		Accumulated specific credit risk adjustment	Accumulated general credit risk adjustment
1	Opening balance	3,647	0
2	Increases due to amounts set aside for estimated loan losses during the period	677	0
3	Decreases due to amounts reversed for estimated loan losses during the period	(254)	0
4	Decreases due to amounts taken against accumulated credit risk adjustments	(407)	0
5	Transfers between credit risk adjustments	0	0
6	Impact of exchange rate differences	(11)	0
7	Business combinations, including acquisitions and disposals of subsidiaries	0	0
8	Other adjustments	(32)	0
9	Closing balance	3,621	0
10	Recoveries on credit risk adjustments recorded directly to the statement of profit or loss	(73)	0
11	Specific credit risk adjustments recorded directly to the statement of profit or loss	(12)	0

Accumulated specific credit risk adjustments held against defaulted or impaired loans and debt securities slightly decreased in the second half of 2017, driven by a reduction in CIB among others related to charge offs in the shipping portfolio and partly offset by an increase in PCB driven by Postbank.

Table EU CR2-B provides information on the development of the Group's defaulted or impaired loans and debt securities subject to the credit risk framework for the second half of 2017. Amounts are based on IFRS accounting values according to the regulatory scope of consolidation.

EU CR2-B – Changes in the stock of defaulted and impaired loans and debt securities

in € m.		Dec 31, 2017
		a
		Gross carrying value defaulted exposures
1	Opening balance	11,071
2	Loans and debt securities that have defaulted or impaired since the last reporting period	1,915
3	Returned to non-defaulted status	(2,356)
4	Amounts written off	(407)
5	Other changes	(126)
6	Closing balance	10,097

Defaulted or impaired loans and debt securities subject to the credit risk framework decreased by € 977 million or 9 % in the second half of the year 2017. This reduction was driven by charge offs in our portfolio of impaired loans driven by the shipping portfolio in CIB and PCC International along with a reduction in our defaulted but not impaired portfolio of loans available for sale held within CIB.

For IFRS-based asset quality information please refer to the section “Asset quality” in our Annual Report 2017 on page 111.

General qualitative information on credit risk mitigation

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

Please refer to the Annual Report 2017 section “Managing and Mitigation of Credit Risk” on page 61.

Article 453 (b) CRR - Collateral valuation and management

Please refer to the Annual Report 2017 section “Managing and Mitigation of Credit Risk” on page 61.

Article 453 (c) CRR - Main types of collateral

Please refer to the Annual Report 2017 section “Managing and Mitigation of Credit Risk” on page 61.

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

Please refer to the Annual Report 2017 section “Managing and Mitigation of Credit Risk” on page 61.

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

Please refer to the Annual Report 2017 section “Managing and Mitigation of Credit Risk” subsection “Concentrations within Credit Risk Mitigation” on page 64.

General quantitative information on credit risk mitigation

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

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

EU CR3 – CRM techniques – Overview

		Dec 31, 2017				
		a	b	c	d	e
		Exposures unsecured: Carrying amount	Exposures secured: Carrying amount	Exposures secured by collateral	Exposures secured by financial guarantees	Exposures secured by credit derivatives
in € m.						
1	Total Loans	111,374	268,771	224,938	18,610	815
2	Total Debt securities	70,259	14	0	0	0
3	Total exposures	181,633	268,784	224,938	18,610	815
4	thereof defaulted	2,406	4,070	3,160	474	0

Risk-weighted assets and regulatory capital requirements can be managed actively by credit risk mitigation techniques. As a prerequisite for recognition in regulatory calculations, we must adhere to certain minimum requirements as stipulated in the CRR regarding collateral management, monitoring processes and legal enforceability.

The range of collateral being eligible for regulatory recognition is dependent predominantly on the regulatory capital calculation method used for a specific risk position. The principle is that a higher degree of sophistication with regard to the underlying methodology generally leads to a wider range of admissible collateral and options to recognize protection via guarantees and credit derivatives. However, also the minimum requirements to be adhered to and the mechanism available to reflect the risk mitigation benefits are predominantly a function of the regulatory calculation method applied.

The advanced IRBA generally accepts all types of financial collateral, as well as real estate, collateral assignments and other physical collateral. In our application of the advanced IRBA, there is basically no limitation to the range of accepted collateral as long as we can demonstrate to the competent authorities that reliable estimates of the collateral values can be generated and that basic requirements are fulfilled.

The same principle holds true for taking benefits from guarantee and credit derivative arrangements. Within the advanced IRBA, again there are generally no limitations with regard to the range of eligible collateral providers as long as some basic minimum requirements are met. However, collateral providers' credit quality and other relevant factors are incorporated through our internal models.

In our advanced IRBA calculations financial and other collateral is generally considered through an adjustment to the applicable LGD as the input parameter for determining the risk weight. For recognizing protection from guarantees and credit derivatives, generally a PD substitution approach is applied, i.e., within the advanced IRBA risk-weight calculation the PD of the borrower is replaced by the protection seller's or guarantor's PD. However, for certain guaranteed exposures and certain protection providers the so-called double default treatment is applicable. The double default effect implies that for a guaranteed exposure a loss only occurs if the originator and the guarantor fail to meet their obligations at the same time.

The foundation IRBA sets stricter limitations with regard to the eligibility of credit risk mitigation compared to the advanced IRBA but allows for consideration of financial collateral, guarantees and credit derivatives as well as other foundation IRBA-eligible collateral like mortgages and security assignments.

The financial collateral recognized in the foundation IRBA essentially comprises cash, bonds and other securities related to repo lending.

In the standardized approach, collateral recognition is limited to eligible financial collateral, such as cash, gold bullion, certain debt securities, equities and CIUs, in many cases only with their volatility-adjusted collateral value. In its general structure, the standardized approach provides a preferred (lower) risk-weight for "claims secured by real estate property" while real estate asset is not considered as an explicit collateral item under the standardized approach. Further limitations must be considered with regard to eligible guarantee and credit derivative providers.

In order to reflect risk mitigation techniques in the calculation of capital requirements we apply the financial collateral comprehensive method since the higher sophistication of that method allows a broader range of eligible collateral. Within this approach, financial collateral is reflected through a reduction in the exposure value of the respective risk position, while protection taken in the form of guarantees and credit derivatives is considered by means of a substitution, i.e., the borrower's risk weight is replaced by the risk weight of the protection provider.

The table CRM techniques by exposure class below shows a breakdown of unsecured and secured credit risk exposures and credit risk exposures secured by various credit risk mitigants broken down by exposure class. Exposures unsecured (column a) represent the carrying amount of credit risk exposures (net of credit risk adjustments) that do not benefit from a credit risk mitigation (CRM) technique, regardless of whether this technique is recognized in the CRR. Exposures secured (column b) represent the carrying amount of exposures that have at least one CRM mechanism (collateral, financial guarantees, credit derivatives) associated with them. Exposure secured by various credit risk mitigants (column c-e) are the carrying amount of exposures (net of credit risk adjustments) partly or totally secured by collateral, financial guarantees and credit derivatives, whereby only the secured portion of the overall exposure is presented. The breakdown into the exposure classes follows those as defined for the IRBA (i.e. combining the advanced and foundation IRB) as well as the standardized approach. The line item "central governments or central banks" includes exposures to regional governments or local authorities, public sector entities, multilateral development banks and international organizations. The exposure class "Other Items" within the standardized approach includes all exposures not covered in the other categories.

The table CRM techniques by exposure class shows a breakdown of unsecured and secured credit risk exposures and credit risk exposures secured by various credit risk mitigants broken down by exposure class whereas table EU CR3 shows a breakdown of unsecured and secured credit risk exposures and credit risk exposures secured by various credit risk mitigants for all loans and debt securities including the carrying amounts of the total population which are in default.

CRM techniques by exposure class

	Dec 31, 2017				
	a	b	c	d	e
in € m.	Exposures unsecured: Carrying amount	Exposures secured: Carrying amount	Exposures secured by collateral	Exposures secured by financial guarantees	Exposures secured by credit derivatives
Advanced IRBA					
Central governments and central banks	114,626	1,915	45	1,465	0
Institutions	22,605	4,149	2,187	1,029	21
Corporates	229,938	126,079	77,317	20,679	5,519
thereof:					
SMEs	8,354	8,290	4,759	1,444	0
Specialized lending	4,384	26,547	22,808	814	0
Other	217,200	91,242	49,750	18,420	5,519
Retail	56,372	161,355	142,201	1,772	0
thereof:					
Secured by real estate property SMEs	951	8,910	7,255	179	0
Secured by real estate property non-SMEs	11,786	144,930	130,174	305	0
Qualifying revolving	16,886	55	27	1	0
Other retail SMEs	3,682	2,057	545	1,043	0
Other retail non-SMEs	23,066	5,402	4,199	245	0
Equity	1,476	0	0	0	0
Other non-credit obligation asset	7,817	65	65	0	0
Total advanced IRBA	432,833	293,563	221,815	24,945	5,540
Foundation IRBA					
Central governments and central banks	1	0	0	0	0
Institutions	62	1	0	1	0
Corporates	4,631	1,983	955	599	0
thereof:					
SMEs	40	9	0	7	0
Specialized lending	251	1,163	896	0	0
Other	4,340	811	59	592	0
Total foundation IRBA	4,694	1,983	955	599	0
Standardized Approach					
Central governments or central banks	152,964	208	205	1	0
Regional governments or local authorities	12,176	32	9	0	0
Public sector entities	6,505	0	0	0	0
Multilateral development banks	5,234	0	0	0	0
International organizations	2,125	0	0	0	0
Institutions	1,326	470	462	7	0
Corporates	9,405	5,040	4,248	272	9
Retail	3,372	1,445	1,232	119	0
Secured by mortgages on immovable property	139	3,809	3,529	76	0
Exposures in default	546	469	374	18	0
Items associated with particularly high risk	43	211	164	38	0
Covered bonds	0	0	0	0	0
Claims on institutions and corporates with a short-term credit assessment	0	0	0	0	0
Collective investments undertakings (CIU)	0	0	0	0	0
Equity exposures	140	0	0	0	0
Other items	124	0	0	0	0
Total standardized approach	194,098	11,682	10,224	532	9
Total¹	631,625	307,229	232,994	26,076	5,550

¹ The table reflects the fully loaded exposure view and therefore does not include the exposure shift from the advanced IRB to the standard approach of grandfathered equity investments.

Credit risk exposure in the standardized approach

Standardized Approach

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

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

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

Other credit exposures which are small in size are temporarily assigned to the standardized approach and we plan to transfer them to the IRBA over time. The prioritization and the corresponding transition plan is discussed and agreed with the competent authorities, the Bundesbank, the BaFin and the ECB.

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

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

Article 444 (c) CRR - Usage of issue ratings

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

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

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

Please refer to section "Article 452 (b)(i) CRR – Mapping of internal rating scales to external ratings" in this Pillar 3 report on page 60 for a mapping of internal ratings and probability of defaults.

Article 444 (e) CRR - Credit risk exposure and credit risk mitigation in the standardized approach

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

EU CR4 – Standardized approach – Credit Risk Exposure and Credit Risk Mitigation (CRM) effects

		Dec 31, 2017											
		a		b		c		d		e		f	
in € m.		Exposures before CCF and CRM				Exposures post-CCF and CRM				RWA and average RW			
Exposure classes		On-balance sheet amount	Off-balance sheet amount	On-balance sheet amount	Off-balance sheet amount	RWA	Average RW						
1	Central governments or central banks	152,649	931	152,727	2	27	0.02%						
2	Regional government or local authorities	11,599	410	11,615	96	20	0.17%						
3	Public sector entities	6,487	28	6,487	14	98	1.51%						
4	Multilateral development banks	5,235	0	5,235	0	0	0.00%						
5	International organizations	2,128	0	2,128	0	0	0.00%						
6	Institutions	1,704	25	1,709	5	124	7.23%						
7	Corporates	12,843	5,495	10,694	1,390	11,283	93.37%						
8	Retail	2,138	1,542	3,822	57	2,875	74.12%						
9	Secured by mortgages on immovable property	3,419	63	3,245	30	1,395	42.60%						
10	Exposures in default	718	30	1,015	5	1,181	115.78%						
11	Items associated with particularly high risk	244	9	248	2	353	141.20%						
12	Covered bonds	0	0	0	0	0	N/M						
13	Claims on institutions and corporates with a short-term credit assessment	0	0	0	0	0	N/M						
14	Collective investments undertakings (CIU)	0	0	0	0	0	N/M						
15	Equity exposures	140	0	140	0	148	105.71%						
16	Other items	124	992	124	992	1,017	91.13%						
17	Total ¹	199,428	9,524	199,190	2,593	18,521	9.18%						

¹ The table reflects the fully loaded RWA amounts and does not include the (0.9) billion € RWA transitional adjustment due to the grandfathering of equity investments and the respective shift of exposure from the advanced IRB to the standard approach.

In the following table the exposure at default values (EaD) per regulatory exposure class are assigned to their standardized risk weights. Deducted or unrated items are split out separately. The exposures are shown prior to the shift to the exposure class of the protection seller.

EU CR5 – Standardized approach

		Dec 31, 2017					
in € m.		Risk Weight					
Exposure classes		0%	2%	4%	10%	20%	35%
1	Central governments or central banks	152,616	0	0	0	107	0
2	Regional governments or local authorities	11,616	0	0	0	94	0
3	Public sector entities	6,149	0	0	0	317	0
4	Multilateral development banks	5,235	0	0	0	0	0
5	International organizations	2,128	0	0	0	0	0
6	Institutions	1,174	5	0	0	489	0
7	Corporates	451	0	0	0	90	0
8	Retail	6	0	0	0	1	0
9	Secured by mortgages on immovable property	0	0	0	0	0	2,718
10	Exposures in default	0	0	0	0	0	0
11	Items associated with particularly high risk	8	0	0	0	0	0
12	Covered bonds	0	0	0	0	0	0
13	Claims on institutions and corporates with a short-term credit assessment	0	0	0	0	0	0
14	Collective investments undertakings (CIU)	0	0	0	0	0	0
15	Equity exposures	0	0	0	0	0	0
16	Other items	0	0	0	0	124	0
17	Total	179,383	5	0	0	1,223	2,718

		Dec 31, 2017					
in € m.		Risk Weight					
Exposure classes		50%	70%	75%	100%	150%	250%
1	Central governments or central banks	0	0	0	5	1	0
2	Regional governments or local authorities	0	0	0	1	0	0
3	Public sector entities	0	0	0	34	0	0
4	Multilateral development banks	0	0	0	0	0	0
5	International organizations	0	0	0	0	0	0
6	Institutions	40	0	0	6	0	0
7	Corporates	66	0	0	11,420	56	0
8	Retail	0	0	3,873	0	0	0
9	Secured by mortgages on immovable property	557	0	0	0	0	0
10	Exposures in default	0	0	0	155	865	0
11	Items associated with particularly high risk	0	0	0	0	242	0
12	Covered bonds	0	0	0	0	0	0
13	Claims on institutions and corporates with a short-term credit assessment	0	0	0	0	0	0
14	Collective investments undertakings (CIU)	0	0	0	0	0	0
15	Equity exposures	0	0	0	132	0	0
16	Other items	0	0	0	992	0	0
17	Total	662	0	3,873	12,746	1,164	0

		Dec 31, 2017					
in € m.		Risk Weight					
Exposure classes		370%	1250%	Others	Deducted	Total	Of which: unrated
1	Central governments or central banks	0	0	0	0	152,729	143,290
2	Regional governments or local authorities	0	0	0	0	11,711	4,928
3	Public sector entities	0	0	0	0	6,500	5,465
4	Multilateral development banks	0	0	0	0	5,235	4,632
5	International organizations	0	0	0	0	2,128	1,520
6	Institutions	0	0	0	0	1,714	1,670
7	Corporates	0	0	0	0	12,084	11,299
8	Retail	0	0	0	0	3,880	3,880
9	Secured by mortgages on immovable property	0	0	0	0	3,275	3,275
10	Exposures in default	0	0	0	0	1,020	1,020
11	Items associated with particularly high risk	0	0	0	0	250	250
12	Covered bonds	0	0	0	0	0	0
13	Claims on institutions and corporates with a short-term credit assessment	0	0	0	0	0	0
14	Collective investments undertakings (CIU)	0	0	0	0	0	0
15	Equity exposures	0	0	9	0	140	140
16	Other items	0	0	0	0	1,116	1,116
17	Total¹	0	0	9	0	201,783	182,486

¹ The table reflects the fully loaded RWA amounts and does not include the (0.9) billion € RWA transitional adjustment due to the grandfathering of equity investments and the respective shift of exposure from the advanced IRB to the standard approach.

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

Qualitative information on the use of the IRB approach

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

For the majority of our credit portfolios, we are applying the advanced IRBA to calculate the regulatory capital requirements according to the CRR/CRD 4 framework, based on respective approvals received from BaFin and ECB. The regulatory approvals obtained as a result of the advanced IRBA audit processes for our regulatory credit exposures allow the usage of currently 63 internally developed rating systems for regulatory capital calculation purposes excluding for exposures in Postbank. Thereof, 37 rating systems were authorized in December 2007. Overall they cover all of our material exposures in the advanced IRBA eligible exposure classes “central governments and central banks”, “institutions”, “corporates”, and “retail”.

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

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

At Group level, we assign a few remaining advanced IRBA eligible portfolios of small size temporarily to the standardized approach. With regard to these, an implementation plan and approval schedule have been set up and agreed with the Bundesbank, the BaFin and the ECB. A portion of Postbank’s IRBA eligible portfolios is also still temporarily assigned to the standardized approach. Implementation plans for the Group excluding Postbank and for Postbank have been agreed with the BaFin, Bundesbank and the ECB. During 2017, the Integrated Roadmap with an overall Group Level implementation plan remained on hold as a consequence of the Strategy 2020 / Postbank deconsolidation, but will be reactivated in the course of 2018.

Details of the standardized approach and the standardized approach exposures are discussed in the Section “Standardized Approach” on page 56 within this report.

Our advanced IRBA coverage ratio, excluding Postbank, amounted to 96.8 % by exposure value (“EAD”) and 90.7 % by RWA as of December 31, 2017, using applicable measures according to Section 11 SolvV. It decreased from the levels at December 31, 2016, which amounted to 97.3 % by EAD and 93.4 % by RWA. In this regard, our RWA-based coverage ratio has fallen slightly below 92 %, the regulatory minimum requirements with regard to the coverage ratio thresholds. ECB as our competent authority is informed about the coverage ratio development on a continual basis and required actions (if any) will be discussed jointly; also considering potential changes in regulations. Prior to June 30, 2017, regulatory minimum requirements with regard to the respective coverage ratio thresholds have been met at all times. These ratios excluded the exposures permanently assigned to the standardized approach (according to Article 150 CRR), other IRBA exposure as well as securitization positions.

The table below shows the Group-related EAD covered by the standardized, advanced and foundation IRB and split them out into the major regulatory exposure classes. Please note: The below EAD constitutes the EAD as reported for the Group in this report and does not reflect the specific requirements for the coverage ratio calculation stipulated in Section 11 SolvV as outlined in the paragraph above.

EAD within the group covered by the standardized, FIRB and AIRB approaches by exposure class

	Dec 31, 2017			
in %	Advanced IRBA	Foundation IRBA	Standardized Approach	Total
Sovereign related exposure	13	0	18	32
Institutions	6	0	2	8
Corporates	35	1	1	37
Retail	21	0	0	21
Other items	1	0	1	2
Total	76	1	23	100

Article 452 (b)(i) CRR - Mapping of internal rating scales to external ratings

The table below sets out the mapping of internal ratings to obligor default probabilities following the internal rating process as outlined in the section “Article 452 (c) - Internal rating-based approaches” on page 61 in this report as well as chapter “Credit Risk Management”, section “Measuring Credit Risk” in our Annual Report 2017 on page 59. All internal ratings and scorings are based on a uniform master scale, which assigns each rating or scoring result to the default probability determined for that class.

Internal Ratings and Probability of Defaults

Internal rating	PD range in %
iAAA	> 0.00 ≤ 0.01
iAA+	> 0.01 ≤ 0.02
iAA	> 0.02 ≤ 0.03
iAA-	> 0.03 ≤ 0.04
iA+	> 0.04 ≤ 0.05
iA	> 0.05 ≤ 0.07
iA-	> 0.07 ≤ 0.11
iBBB+	> 0.11 ≤ 0.18
iBBB	> 0.18 ≤ 0.30
iBBB-	> 0.30 ≤ 0.50
iBB+	> 0.50 ≤ 0.83
iBB	> 0.83 ≤ 1.37
iBB-	> 1.37 ≤ 2.27
iB+	> 2.27 ≤ 3.75
iB	> 3.75 ≤ 6.19
iB-	> 6.19 ≤ 10.22
iCCC+	> 10.22 ≤ 16.87
iCCC	> 16.87 ≤ 27.84
iCCC-	> 27.84 ≤ 99.99
Default	100.00

Article 452 (b)(ii) CRR - Use of internal ratings

Please refer to the section “Article 452 (c) - Internal rating-based approaches” below on page 61.

Article 452 (b)(iii) CRR - Management and recognition of credit risk mitigation

Please refer to section “Article 453 (f-g) CRR – Overview of credit risk mitigation techniques” within this report on page 53 as well as to the Annual Report 2017, section “Managing and Mitigation of Credit Risk” on pages 61 to 65.

Article 452 (b)(iv) CRR - Controls around ratings systems

Credit Risk Advanced IRBA – Model Validation

As an important element of our risk management framework we regularly validate our rating methodologies and credit risk parameters. Whereas the rating methodology validation focuses on the discriminatory power of the models, the risk parameter validation for PD, LGD and EAD analyzes the predictive power of those parameters when compared against historical default and loss experiences as well as drawing behavior.

According to our standards, and in line with the CRR-defined minimum requirements, the parameters PD, LGD and EAD are reviewed annually. The validation process for parameters as used by Deutsche Bank excluding Postbank is coordinated and supervised by Deutsche Bank’s Model Risk function. Credit Risk parameter validations consist of quantitative analyses of internal historical data and are enriched by qualitative assessments in case data for validation is not statistically sufficient for reliable validation results. A recalibration of specific parameter settings is triggered based on validation results if required. In addition to annual validations, ad hoc reviews are performed where appropriate as a reaction to quality deterioration at an early stage due to systematic changes of input factors (e.g. changes in payment behavior) or changes in the structure of the portfolio.

Within Postbank, overall responsibility for validation of IRBA models as well as corresponding model governance lies at PB Groups Model Risk and Validation function. Analogously to Deutsche Bank the results of the estimations of the input parameters PD, CCF and LGD are reviewed annually. Postbank's model validation committee is responsible for supervising the annual validation process of all models. Via a cross committee membership Deutsche Bank senior managers join Postbank committees and vice versa, to promote joint governance.

For quantitative details of our validation results please refer to section "Article 452 (h-i) CRR - Model validation results and expected versus actual losses" of this Pillar 3 Report on the pages 77 to 84.

Article 452 (c) - Internal rating-based approaches

Advanced Internal Ratings Based Approach

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

The probability of default for customers is derived from our internal rating systems. We assign a probability of default to each relevant counterparty credit exposure as a function of a transparent and consistent 21-grade master rating scale for all of our exposure (excluding parts of Postbank).

A prerequisite for the development of rating methodologies and the determination of risk parameters is a proper definition, identification and recording of the default event of a customer. We apply a default definition in accordance with the requirements of Article 178 CRR as confirmed by the BaFin and ECB as part of the IRBA approval process. There are differences between the default concept for regulatory purposes and the accounting related impaired definition according to IAS39. We only classify defaulted loans as being impaired once we expect an economic loss and a credit risk adjustment has been recorded. As a consequence, fully collateralized defaulted loans where we do not expect an economic loss would not result in an impairment classification. Moreover, the default concept is applied to a broader range of assets.

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

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

The majority of ratings for corporate and institutions combine quantitative analysis of financial information with qualitative assessments of, inter alia, industry trends, market position and management experience. Financial analysis has a specific focus on cash flow generation and the counterparty's capability to service its debts, also in comparison to peers. We supplement the analysis of financials by an internal forecast of the counterparty's financial profile where deemed to be necessary. For purchased corporate receivables the corporate rating approach is applied.

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

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

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

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

We apply internally estimated LGD factors as part of the advanced IRBA capital requirement calculation as approved by the BaFin and ECB. LGD is defined as the likely loss intensity in case of a counterparty default. It provides an estimation of the exposure that cannot be recovered in a default event and therefore captures the severity of a loss. Conceptually, LGD estimates are independent of a customer's probability of default. The LGD models ensure that the main drivers for losses (i.e., different levels and quality of collateralization and customer or product types or seniority of facility) are reflected in specific LGD factors. In our LGD models, except Postbank, we assign collateral type specific LGD parameters to the collateralized exposure (collateral value after application of haircuts). Moreover, the LGD for uncollateralized exposure cannot be below the LGD assigned to collateralized exposure and regulatory floors (e.g. 10 % for residential mortgage loans) are applied.

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

The EAD for our derivatives and securities financing transactions ("SFT") portfolios are primarily calculated based on the IMM approach as described in the section "Counterparty credit risk" of this report on the pages 91 to 102.

Foundation Internal Ratings Based Approach

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

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

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

Assignment to Regulatory Exposure Classes

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

As an IRBA institution, we are required to treat equity investments, collective investment undertakings ("CIU") and other non-credit obligation assets generally within the IRBA. For these exposure types typically regulatory-defined IRBA risk weights are applied.

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

Exposures which are assigned to the exposure class "other non-credit obligation assets" receive an IRBA risk weight of 0 % in case of cash positions, 250 % for deferred tax assets that rely on future profitability and arise from temporary differences subject to the threshold exemptions as outlined in Article 48 CRR, or 100 %.

Quantitative information on the use of the IRB approach

Article 452 (d-g) CRR - Advanced IRB exposure

The following series of tables details the Group's advanced IRB exposure distributed on our internal rating scale, separately for all relevant regulatory exposure classes. They exclude the counterparty credit risk position from derivatives and securities financing transactions which are presented separately in the section "Counterparty credit risk" in this report from page 91 to 102.

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

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

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

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

EU CR6 – AIRB approach – Credit risk exposures by exposure class and PD range – Central governments and central banks

Dec 31, 2017						
in € m. (unless stated otherwise)	a	b	c	d	e	f
PD scale	EAD gross	Undrawn commitments	Weighted Credit Conversion Factor (CCF) (in %)	EAD net, post CRM and post-CCF	Average PD (in %)	Number of obligors (in 1,000s)
0.00 to <0.15	107,181	279	45.34	115,140	0.00	0.2
0.15 to <0.25	755	13	69.68	698	0.23	<0.1
0.25 to <0.50	2,610	104	99.91	2,760	0.39	<0.1
0.50 to <0.75	239	0	100.00	225	0.64	<0.1
0.75 to <2.50	521	121	39.07	330	1.37	<0.1
2.50 to <10.00	770	233	99.99	268	5.36	<0.1
10.00 to <100.00	480	19	100.00	29	13.00	<0.1
100.00 (Default)	103	21	100.00	12	100.00	<0.1
Sub-total	112,659	790	47.81	119,463	0.05	0.3
Dilution risk	0	0	0	0	0	0
Sub-total incl. dilution risk	112,659	790	47.81	119,463	0.05	0.3

Dec 31, 2017

in € m. (unless stated otherwise)	g	h	i	j	k	l
PD scale	Average LGD (in %)	Average maturity (in years)	RWA	Average RW (in %)	Expected Loss	Value adjustments and Provisions
0.00 to <0.15	49.51	1.1	1,718	1.49	2	–
0.15 to <0.25	47.42	1.3	262	37.48	1	–
0.25 to <0.50	50.00	1.6	1,660	60.16	5	–
0.50 to <0.75	49.80	1.4	183	81.02	1	–
0.75 to <2.50	57.90	1.7	298	90.27	3	–
2.50 to <10.00	48.70	1.9	374	139.47	5	–
10.00 to <100.00	49.82	2.2	78	269.54	2	–
100.00 (Default)	48.71	3.6	4	29.49	7	–
Sub-total	52.70	1.1	4,577	3.83	26	17
Dilution risk	0	0	0	0	0	0
Sub-total incl. dilution risk	52.70	1.1	4,577	3.83	26	17

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

Dec 31, 2017

in € m. (unless stated otherwise)	a	b	c	d	e	f
PD scale	EAD gross	Undrawn commitments	Weighted Credit Conversion Factor (CCF) (in %)	EAD net, post CRM and post-CCF	Average PD (in %)	Number of obligors (in 1,000s)
0.00 to <0.15	13,594	3,701	39.82	19,933	0.05	0.5
0.15 to <0.25	644	230	37.51	751	0.23	0.1
0.25 to <0.50	3,996	831	54.13	4,047	0.39	0.1
0.50 to <0.75	403	241	36.73	519	0.64	<0.1
0.75 to <2.50	1,211	231	52.39	1,234	1.53	0.1
2.50 to <10.00	290	541	88.22	708	4.56	<0.1
10.00 to <100.00	64	121	28.96	92	14.69	<0.1
100.00 (Default)	110	30	33.30	120	100.00	<0.1
Sub-total	20,313	5,926	41.92	27,405	0.79	0.9
Dilution risk	69	0	37.00	47	15.85	<0.1
Sub-total incl. dilution risk	20,382	5,926	41.92	27,452	0.82	0.9

Dec 31, 2017

in € m. (unless stated otherwise)	g	h	i	j	k	l
PD scale	Average LGD (in %)	Average maturity (in years)	RWA	Average RW (in %)	Expected Loss	Value adjustments and Provisions
0.00 to <0.15	46.01	2.0	2,210	11.09	3	–
0.15 to <0.25	32.21	1.7	216	28.75	1	–
0.25 to <0.50	21.17	2.3	1,489	36.80	5	–
0.50 to <0.75	44.67	1.5	394	75.84	2	–
0.75 to <2.50	14.78	1.5	371	30.02	2	–
2.50 to <10.00	32.12	3.6	1,043	147.21	11	–
10.00 to <100.00	4.99	1.2	23	24.76	1	–
100.00 (Default)	2.60	3.5	33	27.79	0	–
Sub-total	39.84	2.0	5,778	21.08	25	12
Dilution risk	3.84	1.0	9	18.89	0	0
Sub-total incl. dilution risk	39.78	2.0	5,787	21.08	25	12

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

Dec 31, 2017

in € m. (unless stated otherwise)						
	a	b	c	d	e	f
PD scale	EAD gross	Undrawn commitments	Weighted Credit Conversion Factor (CCF) (in %)	EAD net, post CRM and post-CCF	Average PD (in %)	Number of obligors (in 1,000s)
0.00 to <0.15	57,232	122,822	29.64	93,466	0.08	19.0
0.15 to <0.25	15,545	23,725	29.89	22,109	0.23	6.0
0.25 to <0.50	14,406	16,363	30.91	18,423	0.39	5.8
0.50 to <0.75	10,874	10,790	31.34	13,608	0.65	4.8
0.75 to <2.50	20,994	19,628	31.60	24,616	1.40	6.8
2.50 to <10.00	22,591	22,927	33.15	26,116	4.91	4.0
10.00 to <100.00	8,617	3,557	33.12	8,905	17.87	1.1
100.00 (Default)	6,891	1,515	36.13	6,743	100.00	1.3
Sub-total	157,150	221,327	30.48	213,985	4.79	48.7
Dilution risk	2,682	176	28.49	2,854	15.85	0.3
Sub-total incl. dilution risk	159,831	221,503	30.48	216,839	4.93	49.0

Dec 31, 2017

in € m. (unless stated otherwise)						
	g	h	i	j	k	l
PD scale	Average LGD (in %)	Average maturity (in years)	RWA	Average RW (in %)	Expected Loss	Value adjustments and Provisions
0.00 to <0.15	30.72	2.2	17,060	18.25	27	–
0.15 to <0.25	33.25	2.3	7,551	34.15	17	–
0.25 to <0.50	29.01	2.5	7,693	41.76	21	–
0.50 to <0.75	27.67	2.4	6,186	45.46	23	–
0.75 to <2.50	23.11	2.6	13,170	53.50	78	–
2.50 to <10.00	18.12	2.7	16,444	62.97	226	–
10.00 to <100.00	7.85	1.8	3,796	42.63	147	–
100.00 (Default)	27.45	2.3	1,946	28.87	1,707	–
Sub-total	27.17	2.3	73,847	34.51	2,246	2,456
Dilution risk	3.86	1.0	542	18.98	17	0
Sub-total incl. dilution risk	26.87	2.3	74,389	34.31	2,263	2,456

EU CR6 – AIRB-approach – Credit risk exposures by exposure class and PD range – Corporates, SMEs

Dec 31, 2017

in € m. (unless stated otherwise)						
	a	b	c	d	e	f
PD scale	EAD gross	Undrawn commitments	Weighted Credit Conversion Factor (CCF) (in %)	EAD net, post CRM and post-CCF	Average PD (in %)	Number of obligors (in 1,000s)
0.00 to <0.15	2,514	2,855	30.04	3,416	0.08	5.7
0.15 to <0.25	1,307	1,030	38.31	1,665	0.23	2.3
0.25 to <0.50	1,267	1,045	31.78	1,571	0.39	2.4
0.50 to <0.75	1,161	636	35.18	1,291	0.65	2.1
0.75 to <2.50	1,921	877	32.12	2,062	1.40	2.8
2.50 to <10.00	1,739	647	29.80	1,666	4.79	1.5
10.00 to <100.00	325	73	33.17	274	20.63	0.4
100.00 (Default)	465	86	31.60	455	100.00	0.3
Sub-total	10,699	7,249	32.19	12,400	5.17	17.4
Dilution risk	26	0	0	27	15.85	<0.1
Sub-total incl. dilution risk	10,725	7,249	32.19	12,427	5.19	17.4

Dec 31, 2017

in € m. (unless stated otherwise)	g	h	i	j	k	l
PD scale	Average LGD (in %)	Average maturity (in years)	RWA	Average RW (in %)	Expected Loss	Value adjustments and Provisions
0.00 to <0.15	31.19	2.7	511	14.97	1	–
0.15 to <0.25	36.07	3.3	552	33.13	1	–
0.25 to <0.50	35.60	3.1	649	41.34	2	–
0.50 to <0.75	37.74	3.0	722	55.90	3	–
0.75 to <2.50	33.85	2.9	1,295	62.83	10	–
2.50 to <10.00	27.74	2.5	1,182	70.97	20	–
10.00 to <100.00	37.20	2.7	432	157.72	21	–
100.00 (Default)	48.44	2.4	171	37.68	207	–
Sub-total	33.83	2.8	5,515	44.48	266	258
Dilution risk	3.81	1.0	5	18.73	0	0
Sub-total incl. dilution risk	33.76	2.8	5,520	44.42	266	258

EU CR6 – AIRB approach – Credit risk exposures by exposure class and PD range – Corporates, specialized lending

Dec 31, 2017

in € m. (unless stated otherwise)	a	b	c	d	e	f
PD scale	EAD gross	Undrawn commitments	Weighted Credit Conversion Factor (CCF) (in %)	EAD net, post CRM and post-CCF	Average PD (in %)	Number of obligors (in 1,000s)
0.00 to <0.15	1,404	24	36.93	1,347	0.10	0.1
0.15 to <0.25	1,528	127	35.15	1,531	0.22	0.1
0.25 to <0.50	2,099	39	93.54	1,931	0.39	0.1
0.50 to <0.75	1,916	108	43.65	1,963	0.67	0.1
0.75 to <2.50	5,152	449	72.42	5,195	1.39	0.2
2.50 to <10.00	8,417	922	28.85	8,369	5.25	0.3
10.00 to <100.00	6,526	989	25.01	6,716	17.48	0.2
100.00 (Default)	2,454	98	25.47	2,437	100.00	0.1
Sub-total	29,497	2,756	36.12	29,488	14.06	1.2
Dilution risk	2	0	0	2	15.85	<0.1
Sub-total incl. dilution risk	29,499	2,756	36.12	29,490	14.06	1.2

Dec 31, 2017

in € m. (unless stated otherwise)	g	h	i	j	k	l
PD scale	Average LGD (in %)	Average maturity (in years)	RWA	Average RW (in %)	Expected Loss	Value adjustments and Provisions
0.00 to <0.15	8.67	3.1	118	8.76	0	–
0.15 to <0.25	8.65	3.0	174	11.34	0	–
0.25 to <0.50	15.14	3.7	529	27.40	1	–
0.50 to <0.75	10.95	2.9	444	22.62	1	–
0.75 to <2.50	10.96	2.3	1,474	28.38	8	–
2.50 to <10.00	8.56	2.4	2,669	31.89	40	–
10.00 to <100.00	5.07	1.7	1,800	26.80	64	–
100.00 (Default)	16.99	2.2	715	29.35	365	–
Sub-total	9.49	2.4	7,923	26.87	481	470
Dilution risk	4.03	1.0	0	19.83	0	0
Sub-total incl. dilution risk	9.49	2.4	7,923	26.87	481	470

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

Dec 31, 2017

in € m. (unless stated otherwise)						
	a	b	c	d	e	f
PD scale	EAD gross	Undrawn commitments	Weighted Credit Conversion Factor (CCF) (in %)	EAD net, post CRM and post-CCF	Average PD (in %)	Number of obligors (in 1,000s)
0.00 to <0.15	53,314	119,943	29.64	88,703	0.08	13.2
0.15 to <0.25	12,710	22,568	29.52	18,913	0.23	3.7
0.25 to <0.50	11,039	15,279	30.73	14,921	0.39	3.4
0.50 to <0.75	7,798	10,047	31.04	10,354	0.64	2.6
0.75 to <2.50	13,921	18,302	30.57	17,360	1.41	3.8
2.50 to <10.00	12,434	21,358	33.43	16,080	4.73	2.2
10.00 to <100.00	1,766	2,495	36.59	1,916	18.86	0.5
100.00 (Default)	3,972	1,331	37.78	3,851	100.00	0.8
Sub-total	116,954	211,322	30.38	172,098	3.17	30.2
Dilution risk	2,653	176	28.49	2,824	15.85	0.3
Sub-total incl. dilution risk	119,607	211,498	30.38	174,922	3.37	30.5

Dec 31, 2017

in € m. (unless stated otherwise)						
	g	h	i	j	k	l
PD scale	Average LGD (in %)	Average maturity (in years)	RWA	Average RW (in %)	Expected Loss	Value adjustments and Provisions
0.00 to <0.15	31.04	2.2	16,431	18.52	26	–
0.15 to <0.25	34.99	2.2	6,826	36.09	15	–
0.25 to <0.50	30.12	2.2	6,514	43.66	18	–
0.50 to <0.75	29.58	2.3	5,021	48.49	18	–
0.75 to <2.50	25.46	2.6	10,401	59.91	60	–
2.50 to <10.00	22.10	2.9	12,593	78.31	165	–
10.00 to <100.00	13.38	1.9	1,564	81.66	62	–
100.00 (Default)	31.60	2.3	1,060	27.52	1,134	–
Sub-total	29.73	2.3	60,410	35.10	1,499	1,728
Dilution risk	3.86	1.0	536	18.98	17	0
Sub-total incl. dilution risk	29.31	2.3	60,946	34.84	1,516	1,728

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

Dec 31, 2017

in € m. (unless stated otherwise)						
	a	b	c	d	e	f
PD scale	EAD gross	Undrawn commitments	Weighted Credit Conversion Factor (CCF) (in %)	EAD net, post CRM and post-CCF	Average PD (in %)	Number of obligors (in 1,000s)
0.00 to <0.15	23,798	12,869	81.04	33,374	0.09	1,375.9
0.15 to <0.25	30,256	6,124	79.65	34,593	0.21	651.8
0.25 to <0.50	34,535	3,776	69.18	37,183	0.38	648.7
0.50 to <0.75	35,369	3,228	69.48	37,632	0.67	737.2
0.75 to <2.50	37,744	3,863	68.96	40,409	1.43	1,291.4
2.50 to <10.00	18,630	2,073	78.01	20,159	4.51	630.8
10.00 to <100.00	4,619	216	65.49	4,645	20.50	166.9
100.00 (Default)	3,899	65	58.34	3,766	100.00	154.9
Sub-total	188,851	32,213	76.28	211,761	3.17	5,657.4
Dilution risk	0	0	0	0	0	0
Sub-total incl. dilution risk	188,851	32,213	76.28	211,761	3.17	5,657.4

Dec 31, 2017

in € m. (unless stated otherwise)	g	h	i	j	k	l
PD scale	Average LGD (in %)	Average maturity (in years)	RWA	Average RW (in %)	Expected Loss	Value adjustments and Provisions
0.00 to <0.15	14.45	9.9	1,227	3.68	8	–
0.15 to <0.25	14.91	6.6	2,430	7.02	14	–
0.25 to <0.50	15.96	8.1	4,035	10.85	24	–
0.50 to <0.75	17.70	8.0	6,510	17.30	46	–
0.75 to <2.50	22.14	9.4	12,704	31.44	133	–
2.50 to <10.00	23.78	7.7	10,304	51.12	223	–
10.00 to <100.00	26.59	7.2	4,246	91.40	260	–
100.00 (Default)	37.74	4.7	724	19.23	1,409	–
Sub-total	18.40	8.2	42,181	19.92	2,118	1,759
Dilution risk	0	0	0	0	0	0
Sub-total incl. dilution risk	18.40	8.2	42,181	19.92	2,118	1,759

EU CR6 – AIRB approach – Credit risk exposures by exposure class and PD range – Retail, secured by real estate property SMEs

Dec 31, 2017

in € m. (unless stated otherwise)	a	b	c	d	e	f
PD scale	EAD gross	Undrawn commitments	Weighted Credit Conversion Factor (CCF) (in %)	EAD net, post CRM and post-CCF	Average PD (in %)	Number of obligors (in 1,000s)
0.00 to <0.15	826	116	58.10	893	0.12	5.0
0.15 to <0.25	1,333	112	59.86	1,398	0.23	7.0
0.25 to <0.50	1,841	116	57.55	1,900	0.39	9.0
0.50 to <0.75	1,680	91	55.21	1,715	0.64	8.3
0.75 to <2.50	2,184	100	52.65	2,216	1.34	11.1
2.50 to <10.00	1,102	37	51.48	1,102	4.31	5.5
10.00 to <100.00	220	6	52.16	216	19.94	1.3
100.00 (Default)	109	1	21.83	97	100.00	0.4
Sub-total	9,296	579	56.42	9,538	2.52	47.5
Dilution risk	0	0	0	0	0	0
Sub-total incl. dilution risk	9,296	579	56.42	9,538	2.52	47.5

Dec 31, 2017

in € m. (unless stated otherwise)	g	h	i	j	k	l
PD scale	Average LGD (in %)	Average maturity (in years)	RWA	Average RW (in %)	Expected Loss	Value adjustments and Provisions
0.00 to <0.15	11.22	14.4	26	2.86	0	–
0.15 to <0.25	10.78	14.9	62	4.44	0	–
0.25 to <0.50	10.53	15.8	120	6.30	1	–
0.50 to <0.75	10.63	15.7	154	8.96	1	–
0.75 to <2.50	10.64	15.8	323	14.59	3	–
2.50 to <10.00	10.39	15.4	307	27.86	5	–
10.00 to <100.00	11.61	14.9	121	56.18	5	–
100.00 (Default)	24.92	10.3	16	16.72	24	–
Sub-total	10.83	15.4	1,129	11.83	39	24
Dilution risk	0	0	0	0	0	0
Sub-total incl. dilution risk	10.83	15.4	1,129	11.83	39	24

EU CR6 – AIRB approach – Credit risk exposures by exposure class and PD range – Retail, secured by real estate property non-SMEs

Dec 31, 2017

in € m.
(unless stated otherwise)

	a	b	c	d	e	f
PD scale	EAD gross	Undrawn commitments	Weighted Credit Conversion Factor (CCF) (in %)	EAD net, post CRM and post-CCF	Average PD (in %)	Number of obligors (in 1,000s)
0.00 to <0.15	21,069	450	72.96	21,393	0.10	245.7
0.15 to <0.25	26,841	1,049	87.31	27,751	0.22	254.9
0.25 to <0.50	29,990	1,166	82.91	30,942	0.38	256.7
0.50 to <0.75	29,827	1,353	83.45	30,931	0.67	235.2
0.75 to <2.50	26,064	2,020	86.10	27,764	1.42	216.2
2.50 to <10.00	11,132	1,315	93.79	12,342	4.51	101.1
10.00 to <100.00	2,662	88	90.43	2,720	21.03	21.5
100.00 (Default)	1,699	20	83.12	1,691	100.00	15.2
Sub-total	149,283	7,459	85.90	155,533	2.33	1,346.6
Dilution risk	0	0	0	0	0	0
Sub-total incl. dilution risk	149,283	7,459	85.90	155,533	2.33	1,346.6

Dec 31, 2017

in € m.
(unless stated otherwise)

	g	h	i	j	k	l
PD scale	Average LGD (in %)	Average maturity (in years)	RWA	Average RW (in %)	Expected Loss	Value adjustments and Provisions
0.00 to <0.15	12.10	14.2	674	3.15	3	–
0.15 to <0.25	13.53	7.0	1,707	6.15	8	–
0.25 to <0.50	13.48	8.2	2,916	9.42	16	–
0.50 to <0.75	14.29	8.3	4,582	14.81	30	–
0.75 to <2.50	13.15	11.0	6,222	22.41	52	–
2.50 to <10.00	12.40	9.5	5,106	41.37	70	–
10.00 to <100.00	14.37	9.6	2,239	82.33	87	–
100.00 (Default)	19.63	6.0	255	15.08	330	–
Sub-total	13.40	9.4	23,702	15.24	595	378
Dilution risk	0	0	0	0	0	0
Sub-total incl. dilution risk	13.40	9.4	23,702	15.24	595	378

EU CR6 – AIRB approach – Credit risk exposures by exposure class and PD range – Retail, qualifying revolving

Dec 31, 2017

in € m.
(unless stated otherwise)

	a	b	c	d	e	f
PD scale	EAD gross	Undrawn commitments	Weighted Credit Conversion Factor (CCF) (in %)	EAD net, post CRM and post-CCF	Average PD (in %)	Number of obligors (in 1,000s)
0.00 to <0.15	37	10,102	89.18	7,157	0.08	881.2
0.15 to <0.25	98	3,461	92.32	2,595	0.19	181.5
0.25 to <0.50	143	1,135	80.16	917	0.38	164.0
0.50 to <0.75	179	726	74.47	654	0.67	191.0
0.75 to <2.50	301	599	71.13	684	1.48	298.7
2.50 to <10.00	210	214	74.75	351	4.67	132.6
10.00 to <100.00	59	20	77.56	72	19.75	26.1
100.00 (Default)	57	2	61.45	58	100.00	28.2
Sub-total	1,084	16,260	87.48	12,489	0.94	1,903.2
Dilution risk	0	0	0	0	0	0
Sub-total incl. dilution risk	1,084	16,260	87.48	12,489	0.94	1,903.2

Dec 31, 2017

in € m. (unless stated otherwise)	g	h	i	j	k	l
PD scale	Average LGD (in %)	Average maturity (in years)	RWA	Average RW (in %)	Expected Loss	Value adjustments and Provisions
0.00 to <0.15	10.63	0.0	219	3.05	4	–
0.15 to <0.25	6.13	0.0	178	6.87	3	–
0.25 to <0.50	14.77	0.0	99	10.77	2	–
0.50 to <0.75	17.91	0.0	111	16.95	2	–
0.75 to <2.50	21.59	0.0	206	30.11	6	–
2.50 to <10.00	21.07	0.0	238	67.85	9	–
10.00 to <100.00	24.33	0.0	103	143.81	8	–
100.00 (Default)	59.12	0.0	39	66.41	34	–
Sub-total	11.58	0.0	1,193	9.55	68	66
Dilution risk	0	0	0	0	0	0
Sub-total incl. dilution risk	11.58	0.0	1,193	9.55	68	66

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

Dec 31, 2017

in € m. (unless stated otherwise)	a	b	c	d	e	f
PD scale	EAD gross	Undrawn commitments	Weighted Credit Conversion Factor (CCF) (in %)	EAD net, post CRM and post-CCF	Average PD (in %)	Number of obligors (in 1,000s)
0.00 to <0.15	282	566	43.48	690	0.11	27.8
0.15 to <0.25	361	749	35.28	711	0.23	33.9
0.25 to <0.50	522	660	33.72	877	0.39	33.6
0.50 to <0.75	570	500	33.21	835	0.64	24.7
0.75 to <2.50	939	567	33.93	1,206	1.38	25.6
2.50 to <10.00	733	309	33.56	794	4.49	15.9
10.00 to <100.00	243	60	32.15	172	21.36	4.9
100.00 (Default)	209	13	42.47	133	100.00	2.9
Sub-total	3,858	3,423	35.83	5,417	4.30	169.3
Dilution risk	0	0	0	0	0	0
Sub-total incl. dilution risk	3,858	3,423	35.83	5,417	4.30	169.3

Dec 31, 2017

in € m. (unless stated otherwise)	g	h	i	j	k	l
PD scale	Average LGD (in %)	Average maturity (in years)	RWA	Average RW (in %)	Expected Loss	Value adjustments and Provisions
0.00 to <0.15	42.49	4.6	67	9.65	0	–
0.15 to <0.25	41.68	4.2	110	15.45	1	–
0.25 to <0.50	46.24	3.8	214	24.33	2	–
0.50 to <0.75	52.46	3.3	300	35.99	3	–
0.75 to <2.50	54.61	3.2	624	51.73	9	–
2.50 to <10.00	56.63	2.8	542	68.34	20	–
10.00 to <100.00	55.51	2.9	171	99.49	21	–
100.00 (Default)	60.47	3.1	52	39.46	80	–
Sub-total	50.15	3.6	2,080	38.39	135	128
Dilution risk	0	0	0	0	0	0
Sub-total incl. dilution risk	50.15	3.6	2,080	38.39	135	128

EU CR6 – AIRB approach – Credit risk exposures by exposure class and PD range – Other retail non-SMEs

Dec 31, 2017

in € m. (unless stated otherwise)						
	a	b	c	d	e	f
PD scale	EAD gross	Undrawn commitments	Weighted Credit Conversion Factor (CCF) (in %)	EAD net, post CRM and post-CCF	Average PD (in %)	Number of obligors (in 1,000s)
0.00 to <0.15	1,583	1,635	49.84	3,240	0.08	391.2
0.15 to <0.25	1,624	753	63.55	2,138	0.22	255.3
0.25 to <0.50	2,038	699	64.55	2,547	0.39	271.5
0.50 to <0.75	3,113	559	62.77	3,498	0.66	359.5
0.75 to <2.50	8,255	577	42.06	8,539	1.48	849.6
2.50 to <10.00	5,452	197	47.27	5,571	4.55	430.2
10.00 to <100.00	1,437	42	53.25	1,466	19.54	125.6
100.00 (Default)	1,826	29	49.65	1,786	100.00	116.6
Sub-total	25,329	4,491	55.13	28,784	8.66	2,799.6
Dilution risk	0	0	0	0	0	0
Sub-total incl. dilution risk	25,329	4,491	55.13	28,784	8.66	2,799.6

Dec 31, 2017

in € m. (unless stated otherwise)						
	g	h	i	j	k	l
PD scale	Average LGD (in %)	Average maturity (in years)	RWA	Average RW (in %)	Expected Loss	Value adjustments and Provisions
0.00 to <0.15	33.35	2.7	242	7.48	1	–
0.15 to <0.25	37.39	4.1	372	17.42	2	–
0.25 to <0.50	40.04	4.9	687	26.99	4	–
0.50 to <0.75	43.05	4.5	1,363	38.98	10	–
0.75 to <2.50	49.82	4.2	5,329	62.41	63	–
2.50 to <10.00	47.13	3.6	4,110	73.79	118	–
10.00 to <100.00	48.19	2.6	1,611	109.91	140	–
100.00 (Default)	53.20	3.5	362	20.26	942	–
Sub-total	44.96	3.9	14,078	48.91	1,280	1,163
Dilution risk	0	0	0	0	0	0
Sub-total incl. dilution risk	44.96	3.9	14,078	48.91	1,280	1,163

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

Dec 31, 2017

in € m. (unless stated otherwise)						
	a	b	c	d	e	f
	EAD gross	Undrawn commitments	Weighted Credit Conversion Factor (CCF) (in %)	EAD net, post CRM and post-CCF	Average PD (in %)	Number of obligors (in 1,000s)
Dilution risk	2,751	176	28.49	2,901	15.85	0.3
Total (all portfolios), incl. dilution risk	481,723	260,432	36.51	575,515	3.07	5,752.0

Dec 31, 2017

in € m. (unless stated otherwise)						
	g	h	i	j	k	l
	Average LGD (in %)	Average maturity (in years)	RWA	Average RW (in %)	Expected Loss	Value adjustments and Provisions
Dilution risk	3.86	1.0	550	18.97	18	0
Total (all portfolios), incl. dilution risk	29.58	4.2	126,933	22.06	4,432	4,243

Article 452 (d-g) CRR - Foundation IRB exposure

The following series of tables details the Group's foundation IRB exposure distributed on our internal rating scale, separately for all relevant regulatory exposure classes. They exclude the counterparty credit risk position from derivatives and securities financing transactions which are presented separately in the section "Counterparty credit risk" in this report from page 91 to 102.

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

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

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

EU CR6 – FIRB approach – Credit risk exposures by exposure class and PD range – Central governments and central banks

							Dec 31, 2017
in € m. (unless stated otherwise)							
	a	b	c	d	e	f	
PD scale	EAD gross	Undrawn commitments	Weighted Credit Conversion Factor (CCF) (in %)	EAD net, post CRM and post-CCF	Average PD (in %)	Number of obligors (in 1,000s)	
0.00 to <0.15	0	0	0	0	0	0	
0.15 to <0.25	0	0	0	0	0	0	
0.25 to <0.50	0	0	0	0	0	0	
0.50 to <0.75	0	0	0	0	0	0	
0.75 to <2.50	0	0	0	0	0	0	
2.50 to <10.00	0	0	0	0	0	0	
10.00 to <100.00	0	0	0	0	0	0	
100.00 (Default)	0	0	0	0	0	0	
Sub-total	0	0	0	0	0	0	
Dilution risk	0	0	0	0	0	0	
Sub-total incl. dilution risk	0	0	0	0	0	0	

							Dec 31, 2017
in € m. (unless stated otherwise)							
	g	h	i	j	k	l	
PD scale	Average LGD (in %)	Average maturity (in years)	RWA	Average RW (in %)	Expected Loss	Value adjustments and Provisions	
0.00 to <0.15	0	0	0	0	0	–	
0.15 to <0.25	0	0	0	0	0	–	
0.25 to <0.50	0	0	0	0	0	–	
0.50 to <0.75	0	0	0	0	0	–	
0.75 to <2.50	0	0	0	0	0	–	
2.50 to <10.00	0	0	0	0	0	–	
10.00 to <100.00	0	0	0	0	0	–	
100.00 (Default)	0	0	0	0	0	–	
Sub-total	0	0	0	0	0	0	
Dilution risk	0	0	0	0	0	0	
Sub-total incl. dilution risk	0	0	0	0	0	0	

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

							Dec 31, 2017
in € m. (unless stated otherwise)							
	a	b	c	d	e	f	
PD scale	EAD gross	Undrawn commitments	Weighted Credit Conversion Factor (CCF) (in %)	EAD net, post CRM and post-CCF	Average PD (in %)	Number of obligors (in 1,000s)	
0.00 to <0.15	0	0	0	0	0.11	<0.1	
0.15 to <0.25	2	0	0	1	0.20	<0.1	
0.25 to <0.50	0	0	0	0	0.38	<0.1	
0.50 to <0.75	0	0	0	0	0.68	<0.1	
0.75 to <2.50	0	0	0	0	0	0	
2.50 to <10.00	0	0	0	0	0	0	
10.00 to <100.00	0	0	0	0	20.00	<0.1	
100.00 (Default)	0	0	0	0	0	0	
Sub-total	2	0	0	1	0.20	<0.1	
Dilution risk	0	0	0	0	0	0	
Sub-total incl. dilution risk	2	0	0	1	0.20	<0.1	

Dec 31, 2017

in € m. (unless stated otherwise)	g	h	i	j	k	l
PD scale	Average LGD (in %)	Average maturity (in years)	RWA	Average RW (in %)	Expected Loss	Value adjustments and Provisions
0.00 to <0.15	42.69	2.5	0	40.79	0	–
0.15 to <0.25	42.69	2.5	1	59.23	0	–
0.25 to <0.50	42.69	2.5	0	61.52	0	–
0.50 to <0.75	42.68	2.5	0	80.53	0	–
0.75 to <2.50	0	0	0	0	0	–
2.50 to <10.00	0	0	0	0	0	–
10.00 to <100.00	45.00	2.5	0	286.59	0	–
100.00 (Default)	0	0	0	0	0	–
Sub-total	42.69	2.5	1	58.07	0	0
Dilution risk	0	0	0	0	0	0
Sub-total incl. dilution risk	42.69	2.5	1	58.07	0	0

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

Dec 31, 2017

in € m. (unless stated otherwise)	a	b	c	d	e	f
PD scale	EAD gross	Undrawn commitments	Weighted Credit Conversion Factor (CCF) (in %)	EAD net, post CRM and post-CCF	Average PD (in %)	Number of obligors (in 1,000s)
0.00 to <0.15	258	74	0	864	0.05	7.8
0.15 to <0.25	1,850	1,034	74.76	1,949	0.19	2.1
0.25 to <0.50	1,027	531	75.00	888	0.38	2.4
0.50 to <0.75	849	320	73.36	677	0.69	1.4
0.75 to <2.50	408	160	75.00	298	1.38	0.6
2.50 to <10.00	54	31	75.00	57	5.48	<0.1
10.00 to <100.00	29	8	69.27	24	19.84	0.1
100.00 (Default)	43	1	76.11	44	100.00	0.1
Sub-total	4,519	2,159	74.75	4,800	1.43	14.5
Dilution risk	3,143	1,811	7.52	3,165	0.09	46.3
Sub-total incl. dilution risk	7,662	3,971	43.26	7,965	0.90	55.6

Dec 31, 2017

in € m. (unless stated otherwise)	g	h	i	j	k	l
PD scale	Average LGD (in %)	Average maturity (in years)	RWA	Average RW (in %)	Expected Loss	Value adjustments and Provisions
0.00 to <0.15	21.17	2.5	89	10.36	0	–
0.15 to <0.25	33.72	2.5	665	34.10	1	–
0.25 to <0.50	31.23	2.5	402	45.32	1	–
0.50 to <0.75	21.32	2.5	274	40.53	1	–
0.75 to <2.50	20.94	2.5	148	49.65	1	–
2.50 to <10.00	32.81	2.5	69	121.34	1	–
10.00 to <100.00	40.50	2.5	54	226.51	2	–
100.00 (Default)	41.17	2.5	0	0	18	–
Sub-total	28.55	2.5	1,701	35.45	26	32
Dilution risk	59.69	1.0	496	15.67	2	0
Sub-total incl. dilution risk	40.92	1.9	2,197	27.59	27	32

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

Dec 31, 2017

in € m. (unless stated otherwise)						
	a	b	c	d	e	f
PD scale	EAD gross	Undrawn commitments	Weighted Credit Conversion Factor (CCF) (in %)	EAD net, post CRM and post-CCF	Average PD (in %)	Number of obligors (in 1,000s)
0.00 to <0.15	0	0	0	0	0	0
0.15 to <0.25	21	8	0	17	0.23	<0.1
0.25 to <0.50	8	3	75.00	7	0.38	<0.1
0.50 to <0.75	3	5	0	3	0.69	<0.1
0.75 to <2.50	6	1	0	6	1.28	<0.1
2.50 to <10.00	1	0	0	0	3.79	<0.1
10.00 to <100.00	0	1	0	0	19.14	<0.1
100.00 (Default)	0	0	0	0	100.00	<0.1
Sub-total	40	18	75.00	34	0.70	0.1
Dilution risk	242	301	7.53	264	0.11	34.3
Sub-total incl. dilution risk	282	320	7.69	298	0.18	34.7

Dec 31, 2017

in € m. (unless stated otherwise)						
	g	h	i	j	k	l
PD scale	Average LGD (in %)	Average maturity (in years)	RWA	Average RW (in %)	Expected Loss	Value adjustments and Provisions
0.00 to <0.15	0	0	0	0	0	–
0.15 to <0.25	42.87	2.5	8	47.11	0	–
0.25 to <0.50	21.50	2.5	1	21.26	0	–
0.50 to <0.75	25.29	2.5	1	32.59	0	–
0.75 to <2.50	41.17	2.5	5	81.99	0	–
2.50 to <10.00	19.33	2.5	0	39.32	0	–
10.00 to <100.00	39.60	2.5	0	165.56	0	–
100.00 (Default)	12.33	2.5	0	0	0	–
Sub-total	36.49	2.5	16	48.00	0	0
Dilution risk	59.69	1.0	36	13.82	0	0
Sub-total incl. dilution risk	57.04	1.2	53	17.72	0	0

EU CR6 – FIRB approach – Credit risk exposures by exposure class and PD range – Corporates, specialized lending

Dec 31, 2017

in € m. (unless stated otherwise)						
	a	b	c	d	e	f
PD scale	EAD gross	Undrawn commitments	Weighted Credit Conversion Factor (CCF) (in %)	EAD net, post CRM and post-CCF	Average PD (in %)	Number of obligors (in 1,000s)
0.00 to <0.15	0	0	0	0	0	0
0.15 to <0.25	0	0	0	0	0	0
0.25 to <0.50	0	0	0	0	0	0
0.50 to <0.75	0	0	0	0	0	0
0.75 to <2.50	0	0	0	0	0	0
2.50 to <10.00	0	0	0	0	0	0
10.00 to <100.00	0	0	0	0	0	0
100.00 (Default)	0	0	0	0	0	0
Sub-total	0	0	0	0	0	0
Dilution risk	0	0	0	0	0	0
Sub-total incl. dilution risk	0	0	0	0	0	0

Dec 31, 2017

in € m. (unless stated otherwise)	g	h	i	j	k	l
PD scale	Average LGD (in %)	Average maturity (in years)	RWA	Average RW (in %)	Expected Loss	Value adjustments and Provisions
0.00 to <0.15	0	0	0	0	0	–
0.15 to <0.25	0	0	0	0	0	–
0.25 to <0.50	0	0	0	0	0	–
0.50 to <0.75	0	0	0	0	0	–
0.75 to <2.50	0	0	0	0	0	–
2.50 to <10.00	0	0	0	0	0	–
10.00 to <100.00	0	0	0	0	0	–
100.00 (Default)	0	0	0	0	0	–
Sub-total	0	0	0	0	0	0
Dilution risk	0	0	0	0	0	0
Sub-total incl. dilution risk	0	0	0	0	0	0

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

Dec 31, 2017

in € m. (unless stated otherwise)	a	b	c	d	e	f
PD scale	EAD gross	Undrawn commitments	Weighted Credit Conversion Factor (CCF) (in %)	EAD net, post CRM and post-CCF	Average PD (in %)	Number of obligors (in 1,000s)
0.00 to <0.15	258	74	0	864	0.05	7.8
0.15 to <0.25	1,830	1,026	74.76	1,931	0.19	2.1
0.25 to <0.50	1,019	528	75.00	881	0.38	2.4
0.50 to <0.75	846	315	73.36	674	0.69	1.4
0.75 to <2.50	402	158	75.00	292	1.39	0.6
2.50 to <10.00	52	31	75.00	56	5.50	<0.1
10.00 to <100.00	29	7	69.27	24	19.84	0.1
100.00 (Default)	43	1	76.11	44	100.00	0.1
Sub-total	4,479	2,141	74.75	4,766	1.43	14.4
Dilution risk	2,901	1,510	7.37	2,901	0.09	12.0
Sub-total incl. dilution risk	7,380	3,651	73.69	7,667	0.93	24.1

Dec 31, 2017

in € m. (unless stated otherwise)	g	h	i	j	k	l
PD scale	Average LGD (in %)	Average maturity (in years)	RWA	Average RW (in %)	Expected Loss	Value adjustments and Provisions
0.00 to <0.15	21.17	2.5	89	10.36	0	–
0.15 to <0.25	33.64	2.5	656	33.99	1	–
0.25 to <0.50	31.30	2.5	401	45.51	1	–
0.50 to <0.75	21.30	2.5	273	40.57	1	–
0.75 to <2.50	20.50	2.5	143	48.95	1	–
2.50 to <10.00	32.90	2.5	69	121.90	1	–
10.00 to <100.00	40.51	2.5	54	227.17	2	–
100.00 (Default)	41.17	2.5	0	0	18	–
Sub-total	28.49	2.5	1,685	35.36	25	32
Dilution risk	59.69	1.0	459	15.84	2	0
Sub-total incl. dilution risk	40.30	1.9	2,145	27.97	27	32

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

						Dec 31, 2017
in € m. (unless stated otherwise)						
	a	b	c	d	e	f
	EAD gross	Undrawn commitments	Weighted Credit Conversion Factor (CCF) (in %)	EAD net, post CRM and post-CCF	Average PD (in %)	Number of obligors (in 1,000s)
Dilution risk	3,143	1,811	7.52	3,165	0.09	46.3
Total (all portfolios), incl. dilution risk	7,663	3,971	43.26	7,966	0.90	55.6

						Dec 31, 2017
in € m. (unless stated otherwise)						
	g	h	i	j	k	l
	Average LGD (in %)	Average maturity (in years)	RWA	Average RW (in %)	Expected Loss	Value adjustments and Provisions
Dilution risk	59.69	1.0	496	15.67	2	0
Total (all portfolios), incl. dilution risk	40.92	1.9	2,198	27.59	27	32

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

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

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

		Dec 31, 2017	
		a	b
in € m.		pre-credit derivatives RWA	Actual RWA
7	Exposures under AIRB		
8	Central governments and central banks	14,162	14,162
9	Institutions	5,816	5,918
9a	Corporates	75,922	74,409
	thereof:		
10	SMEs	5,520	5,520
11	Specialized lending	7,923	7,923
12	Other	62,479	60,966
12a	Retail	42,180	42,180
	thereof:		
13	Secured by real estate property SMEs	1,129	1,129
14	Secured by real estate property non-SMEs	23,702	23,702
15	Qualifying revolving	1,193	1,193
16	Other retail SMEs	2,080	2,080
17	Other retail non-SMEs	14,078	14,078
18	Equity	8,151	8,151
19	Other non-credit obligation asset	4,109	4,109
19a	Sub-total AIRB	150,980	149,566
1	Exposures under FIRB		
2	Central governments and central banks	0	0
3	Institutions	1	1
3a	Corporates	3,270	3,270
	thereof:		
4	SMEs	53	53
5	Specialized lending	1,073	1,073
6	Other	2,145	2,145
6a	Sub-total FIRB	3,271	3,271
20	Total	154,251	152,837

Article 438 (d) CRR - Development of Credit Risk RWA

The following table provides an analysis of key drivers for RWA movements observed for credit risk, excluding counterparty credit risk, to the extent covered in IRB approaches in the fourth quarter of 2017.

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

in € m.	Three months ended Dec 31, 2017	
	a	b
	RWA	Capital requirements
1 Credit risk RWA opening balance	135,616	10,849
2 Book size	0	0
3 Book quality	(38)	(3)
4 Model updates	0	0
5 Methodology and Policy	0	0
6 Acquisitions and Disposals	0	0
7 Foreign exchange movements	(629)	(50)
8 Other	0	0
9 Credit risk RWA closing balance	134,950	10,796

Organic changes in our portfolio size and composition are considered in the category “Book size”. The category “Book quality” mainly represents the effects from portfolio rating migrations, loss given default, model parameter recalibrations as well as collateral coverage and netting activities. “Model updates” include model refinements and advanced model roll out. RWA movements resulting from externally, regulatory-driven changes, e.g. applying new regulations, are considered in the “Methodology and Policy” section. “Acquisition and Disposals” is reserved to show significant exposure movements which can be clearly assigned to new businesses or disposal-related activities. Changes that cannot be attributed to the above categories are reflected in the category “Other”.

The decrease in RWA for credit risk exposures under the IRB approach by 0.5 % or € 0.7 billion since September 2017 is predominantly driven by reductions in “Foreign exchange movements” and “Book Quality”. “Book Quality” largely reflects the impact from recalibrations of our risk parameters as well as process enhancements.

Article 452 (h-i) CRR - Model validation results and expected versus actual losses

Advanced IRBA – Model validation results

The validation reviews conducted in 2017 for advanced IRBA rating systems (including Postbank) triggered recalibrations as shown in the table below. Changes in overall counts of parameters compared to previous year are due to changes in granularity in existing risk parameter assignment. For PD parameters, the counting in 2017 was amended now covering parameters calibrated jointly only once. This leads to a reduction in overall count compared to 2016. None of the triggered recalibrations individually nor the impact of all recalibrations in the aggregate impacted or are indicated to impact our regulatory capital requirements materially.

Validation results for risk parameters used in our advanced IRBA

	PD		LGD		2017 EAD	
	Count	EAD in %	Count	EAD in %	Count	EAD in %
Appropriate	95	87.1	107	86.1	74	92.2
Overly conservative	10	7.5	34	3.9	7	2.6
Progressive	17	5.5	45	10.1	9	5.2
Total	122	100.0	186	100.0	90	100.0

Thereof already recalibrated and introduced in 2017

Overly conservative	0	0.0	3	1.2	0	0.0
Progressive	2	0.6	0	0.0	1	0.3
Total	2	0.6	3	1.2	1	0.3

	2016					
	PD		LGD		EAD	
	Count	EAD in %	Count	EAD in %	Count	EAD in %
Appropriate	124	85.8	115	79.3	67	95.2
Overly conservative	11	2.8	27	7.9	16	4.2
Progressive	56	11.5	36	12.8	6	0.5
Total	191	100.0	178	100.0	89	100.0

Thereof already recalibrated and introduced in 2016

Overly conservative	2	0.1	1	4.0	10	3.9
Progressive	41	9.6	4	1.0	0	0.0
Total	43	9.7	5	5.0	10	3.9

Individual risk parameter settings are classified as appropriate if no recalibration was triggered by the validation and thus the application of the current parameter setting is continued since still sufficiently conservative. A parameter classifies as overly conservative or progressive if the validation triggers a recalibration analysis leading to a potential downward or upward change of the current setting, respectively. The breakdown for PD, LGD and EAD is presented by number as well as by the relative EAD attached to the respective parameter as of December 31, 2017 and December 31, 2016.

The validations during 2017 largely confirmed our parameter settings. Negatively validated PD parameters with high materiality were caused by four rating systems. For one Deutsche Bank rating system contributing around 2.0 % of EAD and one Postbank rating system contributing around 5.1 % of EAD the PD parameter was classified as overly conservative and the recalibration is scheduled for 2018. The PD parameter of one Deutsche Bank rating system contributing around 1.1 % of EAD was classified as too progressive and the recalibration will get introduced in Q1 2018. For one additional Deutsche Bank rating system which contributed to 2.6 % EAD and for which the PD was classified as too progressive, reratings were already performed in 2017 based on sharpened rating guidelines to remediate the underestimation. Validations furthermore classified eight LGD parameters of Deutsche Bank contributing around 5.9 % of EAD as too progressive. The recalibrations were already performed and are scheduled for implementation in Q1 2018. Two LGD parameters of Deutsche Bank contributing around 1.3 % of EAD were classified as overly conservative and recalibration is scheduled for Q2 2018 pending regulatory approval. Recalibrations of 26 negatively validated LGD parameters of Deutsche Bank will be introduced with a single LGD methodology overhaul for the common underlying portfolio. On portfolio level, current settings of these parameters are evenly classified as either too progressive or overly conservative, thereby cancelling out the impact of the estimation error. Three LGD parameters of Postbank which contribute around 1.2 % of EAD and which have been classified as overly conservative have already been amended in 2017. Eight inappropriate EAD parameters contributing 1.3 % of EAD were either already amended in 2017 (one parameter) or are scheduled for implementation in Q1 2018 (seven parameters). One EAD parameter of Postbank contributing 4.0 % of EAD was classified as too progressive and recalibration is scheduled for 2018. All other negatively validated parameters are only applied to smaller portfolios. Overall, out of the 122 risk parameters, where a recalibration was triggered during 2017 validation, six were already amended in 2017.

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

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

a/b	c	d	e	f		g	h	Dec 31, 2017
				Number of obligors				i
Exposure class/ PD Range	External rating equivalent	Weighted average PD (in %)	Arithmetic average PD by obligors (in %)	End of previous year (in 1,000s)	End of the year (in 1,000s)	Defaulted obligors in the year	thereof new obligors in the year	Average historical annual default rate (in %)
Central governments and central banks								
0.00 to <0.15	AAA to BBB+	0.00	0.03	0.2	0.3	0	0	0.00
0.15 to <0.25	BBB+ to BBB	0.23	0.23	<0.1	<0.1	0	0	0.00
0.25 to <0.50	BBB to BBB-	0.39	0.39	<0.1	<0.1	0	0	0.61
0.50 to <0.75	BBB- to BB+	0.64	0.64	<0.1	<0.1	0	0	0.71
0.75 to <2.50	BB+ to BB-	1.49	1.37	<0.1	<0.1	0	0	0.82
2.50 to <10.00	BB- to B-	3.99	4.18	<0.1	<0.1	0	0	0.49
10.00 to <100.00	B- to CCC-	13.00	13.00	<0.1	<0.1	3	0	11.04
100.00 (Default)	CCC- to D	100.00	N/M	0	0	0	0	N/M
Sub-total	N/M	0.08	1.64	0.4	0.4	3	0	0.46
Institutions								
0.00 to <0.15	AAA to BBB+	0.05	0.07	0.8	0.8	0	0	0.00
0.15 to <0.25	BBB+ to BBB	0.23	0.23	0.1	0.1	0	0	0.00
0.25 to <0.50	BBB to BBB-	0.39	0.39	0.1	0.1	0	0	0.00
0.50 to <0.75	BBB- to BB+	0.64	0.64	0.1	0.1	0	0	0.00
0.75 to <2.50	BB+ to BB-	1.53	1.34	0.1	0.1	0	0	0.46
2.50 to <10.00	BB- to B-	4.14	4.54	0.1	<0.1	2	1	1.77
10.00 to <100.00	B- to CCC-	15.23	22.19	<0.1	<0.1	2	0	7.55
100.00 (Default)	CCC- to D	100.00	N/M	0	0	0	0	0.00
Sub-total	N/M	0.61	1.78	1.3	1.2	4	1	0.35
Corporates								
0.00 to <0.15	AAA to BBB+	0.06	0.06	28.4	28.5	8	0	0.03
0.15 to <0.25	BBB+ to BBB	0.23	0.23	6.1	6.1	4	0	0.10
0.25 to <0.50	BBB to BBB-	0.39	0.39	6.1	6.1	19	0	0.23
0.50 to <0.75	BBB- to BB+	0.64	0.64	5.2	5.3	19	2	0.38
0.75 to <2.50	BB+ to BB-	1.39	1.37	7.8	7.5	141	62	0.86
2.50 to <10.00	BB- to B-	4.87	4.65	4.1	3.9	83	3	2.51
10.00 to <100.00	B- to CCC-	18.15	20.74	1.0	0.9	91	6	10.29
100.00 (Default)	CCC- to D	100.00	100.00	0.1	0.1	0	0	18.29
Sub-total	N/M	3.06	3.12	58.7	58.3	365	73	0.53
thereof:								
SMEs								
0.00 to <0.15	AAA to BBB+	0.08	0.08	4.3	5.4	2	0	0.11
0.15 to <0.25	BBB+ to BBB	0.23	0.23	1.8	2.0	4	0	0.17
0.25 to <0.50	BBB to BBB-	0.39	0.39	1.9	2.1	8	0	0.43
0.50 to <0.75	BBB- to BB+	0.65	0.65	1.6	1.8	10	0	0.66
0.75 to <2.50	BB+ to BB-	1.41	1.38	2.1	2.4	34	0	1.15
2.50 to <10.00	BB- to B-	4.80	4.54	1.1	1.3	30	0	3.20
10.00 to <100.00	B- to CCC-	20.74	21.50	0.3	0.3	30	1	12.01
100.00 (Default)	CCC- to D	100.00	100.00	<0.1	<0.1	0	0	50.00
Sub-total	N/M	4.72	2.91	13.0	15.3	118	1	1.37
Specialized lending								
0.00 to <0.15	AAA to BBB+	0.07	0.06	0.1	<0.1	0	0	0.00
0.15 to <0.25	BBB+ to BBB	0.20	0.20	0.1	0.1	0	0	0.42
0.25 to <0.50	BBB to BBB-	0.39	0.38	0.1	0.1	0	0	0.00
0.50 to <0.75	BBB- to BB+	0.66	0.67	<0.1	<0.1	0	0	0.00
0.75 to <2.50	BB+ to BB-	1.39	1.53	0.1	0.1	0	0	1.21
2.50 to <10.00	BB- to B-	5.19	4.99	<0.1	<0.1	0	0	3.33
10.00 to <100.00	B- to CCC-	17.52	17.68	<0.1	<0.1	1	0	11.11
100.00 (Default)	CCC- to D	100.00	100.00	<0.1	<0.1	0	0	N/M
Sub-total	N/M	12.97	7.21	0.4	0.3	1	0	0.72

								Dec 31, 2017
a/b	c	d	e	f		g	h	i
				Number of obligors				
Exposure class/ PD Range	External rating equivalent	Weighted average PD (in %)	Arithmetic average PD by obligors (in %)	End of previous year (in 1,000s)	End of the year (in 1,000s)	Defaulted obligors in the year	thereof new obligors in the year	Average historical annual default rate (in %)
Other								
0.00 to <0.15	AAA to BBB+	0.05	0.06	24.1	23.1	6	0	0.03
0.15 to <0.25	BBB+ to BBB	0.23	0.23	4.2	4.0	0	0	0.07
0.25 to <0.50	BBB to BBB-	0.39	0.39	4.2	3.9	11	0	0.21
0.50 to <0.75	BBB- to BB+	0.64	0.64	3.5	3.4	9	2	0.33
0.75 to <2.50	BB+ to BB-	1.39	1.36	5.6	5.0	107	62	0.79
2.50 to <10.00	BB- to B-	4.72	4.65	3.0	2.6	53	3	2.41
10.00 to <100.00	B- to CCC-	19.56	20.86	0.7	0.6	60	5	10.09
100.00 (Default)	CCC- to D	100.00	100.00	0.1	0.1	0	0	10.67
Sub-total	N/M	1.93	2.83	45.3	42.7	246	72	0.47
Retail								
0.00 to <0.15	AAA to BBB+	0.10	0.09	1,352.3	1,338.1	649	30	0.04
0.15 to <0.25	BBB+ to BBB	0.22	0.22	666.8	651.2	799	49	0.12
0.25 to <0.50	BBB to BBB-	0.39	0.39	664.5	645.0	1,609	271	0.22
0.50 to <0.75	BBB- to BB+	0.66	0.66	711.4	741.1	3,141	529	0.38
0.75 to <2.50	BB+ to BB-	1.42	1.41	1,263.6	1,290.3	13,278	2,150	1.00
2.50 to <10.00	BB- to B-	4.53	4.51	642.7	629.0	20,969	2,598	2.77
10.00 to <100.00	B- to CCC-	20.49	20.59	156.1	159.1	29,846	965	17.58
100.00 (Default)	CCC- to D	100.00	100.00	39.1	70.6	4,799	575	23.87
Sub-total	N/M	3.33	3.71	5,496.3	5,524.3	75,090	7,167	1.31
thereof:								
Secured by real estate property								
0.00 to <0.15	AAA to BBB+	0.10	0.09	236.8	205.7	76	0	0.06
0.15 to <0.25	BBB+ to BBB	0.22	0.21	268.8	255.5	131	1	0.12
0.25 to <0.50	BBB to BBB-	0.38	0.38	270.5	262.4	279	1	0.20
0.50 to <0.75	BBB- to BB+	0.67	0.67	248.8	242.2	423	8	0.29
0.75 to <2.50	BB+ to BB-	1.41	1.42	229.2	226.5	784	11	0.44
2.50 to <10.00	BB- to B-	4.51	4.48	107.1	105.6	1,046	7	1.54
10.00 to <100.00	B- to CCC-	20.86	21.08	25.2	20.5	2,708	8	12.41
100.00 (Default)	CCC- to D	100.00	100.00	10.8	9.7	551	0	35.49
Sub-total	N/M	2.46	2.37	1,397.2	1,328.0	5,998	36	0.65
Qualifying revolving								
0.00 to <0.15	AAA to BBB+	0.08	0.08	848.8	849.8	282	17	0.02
0.15 to <0.25	BBB+ to BBB	0.23	0.23	149.5	146.6	252	13	0.09
0.25 to <0.50	BBB to BBB-	0.39	0.39	119.7	121.0	418	31	0.18
0.50 to <0.75	BBB- to BB+	0.65	0.65	108.7	148.8	705	101	0.35
0.75 to <2.50	BB+ to BB-	1.39	1.31	156.6	230.3	2,047	419	1.22
2.50 to <10.00	BB- to B-	4.45	4.50	88.7	94.7	3,573	433	2.99
10.00 to <100.00	B- to CCC-	20.73	19.65	16.6	18.2	3,070	159	15.03
100.00 (Default)	CCC- to D	100.00	100.00	0.8	19.2	58	0	0.00
Sub-total	N/M	1.16	1.47	1,489.3	1,628.7	10,405	1,173	0.68
Other								
0.00 to <0.15	AAA to BBB+	0.08	0.09	266.7	282.7	291	13	0.09
0.15 to <0.25	BBB+ to BBB	0.22	0.22	248.5	249.1	416	35	0.15
0.25 to <0.50	BBB to BBB-	0.39	0.39	274.2	261.6	912	239	0.25
0.50 to <0.75	BBB- to BB+	0.65	0.65	353.9	350.1	2,013	420	0.44
0.75 to <2.50	BB+ to BB-	1.47	1.43	877.8	833.5	10,447	1,720	1.15
2.50 to <10.00	BB- to B-	4.57	4.50	446.8	428.7	16,350	2,158	3.01
10.00 to <100.00	B- to CCC-	19.74	20.78	114.3	120.4	24,068	798	19.47
100.00 (Default)	CCC- to D	100.00	100.00	27.5	41.6	4,190	575	20.58
Sub-total	N/M	7.80	5.77	2,609.8	2,567.6	58,687	5,958	2.01

Foundation IRBA – Model validation results

The below table summarizes the outcome of the model validations for the risk parameter PD used in our foundation IRBA for Postbank. If individual risk parameter settings are classified as appropriate, no recalibration was triggered by the validation. The breakdown is presented by number as well as by the relative EAD attached to the respective parameter as of December 31, 2017 and as of December 31, 2016.

Validation results of risk parameters used in our Foundation IRBA at Postbank

	2017		2016	
	Count	EAD in %	Count	EAD in %
Appropriate	1	100.0	1	100.0
Overly conservative	0	0.0	0	0.0
Progressive	0	0.0	0	0.0
Total	1	100.0	1	100.0

	in 2017		in 2016	
	Count	EAD in %	Count	EAD in %
Overly conservative	0	0.0	0	0.0
Progressive	0	0.0	0	0.0
Total	0	0.0	0	0.0

The validation classifies the PD parameter settings for the foundation IRBA relevant rating system of Postbank as appropriate.

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

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

a/b	c	d	e	f		g	h	i
				Number of obligors				
Exposure class/ PD Range	External rating equivalent	Weighted average PD (in %)	Arithmetic average PD by obligors (in %)	End of previous year (in 1,000s)	End of the year (in 1,000s)	Defaulted obligors in the year	thereof new obligors in the year	Average historical annual default rate (in %)
Central governments and central banks								
0.00 to <0.15	AAA to BBB+	0.00	0.00	0	0	0	0	0.00
0.15 to <0.25	BBB+ to BBB	0.00	0.00	0	0	0	0	0.00
0.25 to <0.50	BBB to BBB-	0.00	0.00	0	0	0	0	0.00
0.50 to <0.75	BBB- to BB+	0.00	0.00	0	0	0	0	0.00
0.75 to <2.50	BB+ to BB-	0.00	0.00	0	0	0	0	0.00
2.50 to <10.00	BB- to B-	0.00	0.00	0	0	0	0	0.00
10.00 to <100.00	B- to CCC-	0.00	0.00	0	0	0	0	0.00
100.00 (Default)	CCC- to D	100.00	100.00	<0.1	<0.1	0	0	0.00
Sub-total	N/M	100.00	100.00	<0.1	<0.1	0	0	0.00
Institutions								
0.00 to <0.15	AAA to BBB+	0.06	0.06	<0.1	<0.1	0	0	0.00
0.15 to <0.25	BBB+ to BBB	0.14	0.22	<0.1	<0.1	0	0	0.00
0.25 to <0.50	BBB to BBB-	0.39	0.38	<0.1	<0.1	0	0	0.00
0.50 to <0.75	BBB- to BB+	0.55	0.69	<0.1	<0.1	0	0	0.00
0.75 to <2.50	BB+ to BB-	2.17	2.17	<0.1	0	0	0	0.00
2.50 to <10.00	BB- to B-	3.14	4.83	<0.1	0	0	0	0.00
10.00 to <100.00	B- to CCC-	11.53	18.31	<0.1	<0.1	0	0	0.00
100.00 (Default)	CCC- to D	0.00	0.00	0	0	0	0	0.00
Sub-total	N/M	3.83	4.46	0.1	<0.1	0	0	0.00
Corporates								
0.00 to <0.15	AAA to BBB+	0.09	0.10	0.3	0.4	0	0	0.73
0.15 to <0.25	BBB+ to BBB	0.18	0.21	1.9	2.2	2	0	0.26
0.25 to <0.50	BBB to BBB-	0.32	0.38	2.2	2.5	0	0	0.23
0.50 to <0.75	BBB- to BB+	0.56	0.69	1.4	1.5	1	0	0.27
0.75 to <2.50	BB+ to BB-	0.96	1.37	0.6	0.6	6	0	1.22
2.50 to <10.00	BB- to B-	5.45	6.01	<0.1	<0.1	2	0	3.01
10.00 to <100.00	B- to CCC-	19.03	19.07	0.1	0.1	1	0	2.11
100.00 (Default)	CCC- to D	100.00	100.00	0.1	0.1	0	0	0.00
Sub-total	N/M	1.70	2.42	6.6	7.4	12	0	0.64

		Dec 31, 2017							
a/b	c	d	e	f			g	h	i
		Number of obligors							
Exposure class/ PD Range	External rating equivalent	Weighted average PD (in %)	Arithmetic average PD by obligors (in %)	End of previous year (in 1,000s)	End of the year (in 1,000s)	Defaulted obligors in the year	thereof new obligors in the year	Average historical annual default rate (in %)	
thereof:									
SMEs									
0.00 to <0.15	AAA to BBB+	0.00	0.00	0	0	0	0	0.00	
0.15 to <0.25	BBB+ to BBB	0.21	0.22	<0.1	0.1	0	0	0.08	
0.25 to <0.50	BBB to BBB-	0.38	0.38	<0.1	<0.1	0	0	0.62	
0.50 to <0.75	BBB- to BB+	0.58	0.69	<0.1	<0.1	1	0	0.85	
0.75 to <2.50	BB+ to BB-	1.75	1.60	<0.1	<0.1	3	0	4.07	
2.50 to <10.00	BB- to B-	3.87	5.27	<0.1	<0.1	1	0	8.68	
10.00 to <100.00	B- to CCC-	14.44	18.89	<0.1	<0.1	0	0	7.38	
100.00 (Default)	CCC- to D	100.00	100.00	<0.1	<0.1	0	0	0.00	
Sub-total	N/M	2.11	5.84	0.2	0.2	5	0	1.82	
Specialized lending									
0.00 to <0.15	AAA to BBB+	0.00	0.00	0	0	0	0	0.00	
0.15 to <0.25	BBB+ to BBB	0.00	0.00	0	0	0	0	0.00	
0.25 to <0.50	BBB to BBB-	0.00	0.00	0	0	0	0	0.00	
0.50 to <0.75	BBB- to BB+	0.00	0.00	0	0	0	0	0.00	
0.75 to <2.50	BB+ to BB-	0.00	0.00	0	0	0	0	0.00	
2.50 to <10.00	BB- to B-	0.00	0.00	0	0	0	0	0.00	
10.00 to <100.00	B- to CCC-	0.00	0.00	0	0	0	0	0.00	
100.00 (Default)	CCC- to D	0.00	0.00	0	0	0	0	0.00	
Sub-total	N/M	0.00	0.00	0	0	0	0	0.00	
Other									
0.00 to <0.15	AAA to BBB+	0.09	0.10	0.3	0.4	0	0	0.73	
0.15 to <0.25	BBB+ to BBB	0.18	0.21	1.8	2.2	2	0	0.25	
0.25 to <0.50	BBB to BBB-	0.32	0.38	2.1	2.4	0	0	0.15	
0.50 to <0.75	BBB- to BB+	0.56	0.69	1.4	1.5	0	0	0.15	
0.75 to <2.50	BB+ to BB-	0.95	1.36	0.5	0.6	3	0	0.90	
2.50 to <10.00	BB- to B-	5.47	6.22	<0.1	<0.1	1	0	1.68	
10.00 to <100.00	B- to CCC-	19.03	18.95	0.1	0.1	1	0	0.87	
100.00 (Default)	CCC- to D	100.00	100.00	0.1	0.1	0	0	0.00	
Sub-total	N/M	1.70	2.30	6.4	7.2	7	0	0.42	

Comparison of expected loss estimates with actual losses

In addition to the above, the comparison of regulatory expected loss ("EL") estimates with actual losses recorded also provides some insight into the predictive power of our parameter estimations and, therefore, EL calculations.

The EL used in this comparison is the forecast credit loss from counterparty defaults of our exposures over a one year period and is computed as the product of PD, LGD and EAD for performing exposures as of December 31 of the preceding year. The actual loss measure is defined by us as new provisions on newly impaired exposures recorded in our financial statements through profit and loss during the respective reported years.

While we believe that this approach provides some insight, the comparison has limitations as the two measures are not directly comparable. In particular, the parameter LGD underlying the EL calculation represents the loss expectation until finalization of the workout period while the actual loss as defined above represents the accounting information recorded for one particular financial year. Furthermore, EL is a measure of expected credit losses for a snapshot of our credit exposure at a certain balance sheet date while the actual loss is recorded for a fluctuating credit portfolio over the course of a financial year, i.e., including losses in relation to new loans entered into during the year.

According to the methodology described above, the following table provides a comparison of EL estimates for loans, commitments and contingent liabilities as of year-end 2016 through 2012, with actual losses recorded for the financial years 2017 through 2013, by regulatory exposure class for advanced IRBA exposures.

Comparison of expected loss estimates for loans, commitments and contingent liabilities with actual losses recorded by regulatory exposure class for advanced IRBA exposures

in € m.	Dec 31, 2016	2017	Dec 31, 2015	2016	Dec 31, 2014	2015	Dec 31, 2013	2014	Dec 31, 2012	2013
	Expected loss	Actual loss	Expected loss ¹	Actual loss	Expected loss	Actual loss	Expected loss	Actual loss	Expected loss	Actual loss
Central governments and central banks	3	4	2	3	3	0	3	0	3	18
Institutions	16	0	12	0	12	0	13	4	10	1
Corporates	512	198	369	697	300	334	355	229	351	717
Retail exposures secured by real estate property	285	98	305	177	306	207	324	212	284	223
Qualifying revolving retail exposures	14	15	13	4	17	4	21	8	23	7
Other retail exposures	405	349	339	704	334	354	378	355	404	370
Total expected loss and actual loss in the advanced IRBA	1,236	665	1,041	1,584	971	900	1,095	808	1,075	1,336

Actual loss in 2017 was lower than expected, driven by Corporates as well as Retail exposures, mainly reflecting the strong reduction in actual loss compared to prior year in the respective exposure classes, as further discussed below.

The actual loss in 2016 exceeded the expected loss by € 543 million or 52 % mainly driven by exposures in Corporates as well as in Other Retail, where we faced higher than expected increases in actual loss, as discussed below.

Actual loss in 2015 was lower than expected, mainly driven by Retail exposures secured by real estate property.

Actual loss in 2014 was below expectations mainly driven by a significant outperformance in corporate exposures as well as in Retail exposures secured by real estate property.

The actual loss in 2013 exceeded the expected loss by € 261 million or 24 %. This was primarily due to higher than expected level of provisions in our corporate portfolio driven by a large single client credit event in a usually low risk portfolio of GTB as well as one large charge within NCOU. Additionally, actual loss for central governments was higher than expected driven by one single client. Better than expected performance in all retail exposure classes as well as in institutions partly offset the overall excess of actual compared to expected loss.

The decrease in expected loss as of December 31, 2014 in comparison to December 31, 2013 is mainly driven by lower volumes and to less extent by partially lower LGD parameters.

The following table provides a year-to-year comparison of the actual loss by regulatory exposure class.

Year-to-year comparison of the actual loss by IRBA exposure class

in € m.	2017	2016	2015	2014	2013
Central governments and central banks	4	3	0	0	18
Institutions	0	0	0	4	1
Corporates	198	697	334	229	717
Retail exposures secured by real estate property	98	177	207	212	223
Qualifying revolving retail exposures	15	4	4	8	7
Other retail exposures	349	704	354	355	370
Total actual loss by IRBA in the advanced IRBA	665	1,584	900	808	1,336

The strong reduction in actual loss in fiscal year 2017 was driven by both, CIB and PCB. The decline in CIB resulted from lower actual losses amount others against shipping companies, while the reduction in PCB was mainly caused by our retail portfolios in Italy and Spain.

In 2016 the actual loss increased by € 684 million or 76 % driven by our corporate and other retail portfolios. The increase in corporates was caused by higher actual losses for shipping- and metals & mining companies recorded in CIB, while the increase in other retail was caused by higher charges for our retail portfolios in Italy and Spain among others related to the sale of non-performing loans.

Actual loss increased by € 92 million or 11 % in 2015 compared to prior year driven by our shipping and leveraged finance portfolios recorded in CIB.

Actual loss materially declined in 2014 compared to prior year due to the low level of new impairments across all businesses.

Article 452 (j) CRR - IRB exposure by country where Deutsche Bank operates

Advanced IRBA

The table below shows our Advanced IRBA exposure for credit risk distributed based on the corresponding exposure classes for each relevant geographical location. As geographical location we show countries where the Group maintains a branch or subsidiary. Exposure which does not meet these criteria is shown in "Other", which also comprises exposure to international organizations. Exposures are assigned to the specific geographical location based on the country of domicile of the respective counterparty. The EAD net is presented in conjunction with exposures-weighted average LGD and PD in percentage. It excludes the following exposure classes: securitization positions in the regulatory banking book, specific equity positions and non-credit obligation assets.

EAD net, average LGD and average PD of Advanced IRBA credit exposures by geographical location

Dec 31, 2017

in € m. (unless stated otherwise)	Central governments and central banks	Institutions	Corporates	Retail secured by real estate SME	Retail secured by real estate non-SME	Retail qualifying revolving	Retail other SME	Retail other non-SME	Total
Australia									
EAD net	782	353	1,633	2	7	1	0	2	2,778
Average LGD in %	35.78	45.83	28.13	29.89	17.24	22.48	N/M	25.84	32.50
Average PD in %	0.02	0.05	16.63	0.39	3.76	0.45	N/M	3.95	9.80
Austria									
EAD net	118	105	689	7	44	8	3	9	983
Average LGD in %	50.00	16.13	33.66	8.59	12.88	12.35	42.62	25.25	32.43
Average PD in %	0.00	0.11	2.44	0.61	2.12	0.74	0.65	5.34	1.88
Belgium									
EAD net	632	938	1,397	1	33	4	2	8	3,015
Average LGD in %	50.53	47.89	28.37	10.90	16.78	12.45	42.53	30.06	38.95
Average PD in %	0.00	0.04	11.47	1.47	3.50	0.83	0.59	3.88	5.38
Brazil									
EAD net	223	396	530	0	7	1	1	11	1,168
Average LGD in %	50.00	30.18	41.74	N/M	14.43	25.12	42.04	7.48	38.90
Average PD in %	0.64	1.16	5.38	N/M	2.35	0.75	0.61	1.09	2.98
Canada									
EAD net	35	1,028	1,150	0	5	1	2	10	2,229
Average LGD in %	41.07	35.29	34.21	N/M	13.50	23.17	42.68	10.37	34.66
Average PD in %	0.02	0.09	5.85	N/M	2.26	0.95	0.46	11.44	3.11
China									
EAD net	1,921	3,005	3,688	0	20	2	3	5	8,643
Average LGD in %	50.90	39.89	39.99	N/M	14.36	23.35	46.51	36.24	42.32
Average PD in %	0.00	0.16	1.01	N/M	1.21	0.62	0.54	2.98	0.50
Czech Republic									
EAD net	687	194	113	0	4	1	2	3	1,005
Average LGD in %	50.00	44.60	45.89	N/M	18.18	12.93	42.69	50.05	48.30
Average PD in %	0.00	0.08	0.43	N/M	0.72	1.64	0.51	22.02	0.13
France									
EAD net	815	921	4,845	3	65	10	6	80	6,745
Average LGD in %	50.76	31.71	37.75	7.17	14.35	14.82	42.89	16.34	37.97
Average PD in %	0.00	0.21	0.90	1.82	4.90	1.29	0.63	6.11	0.80
Germany									
EAD net	5,818	2,624	38,107	9,131	133,460	12,341	2,618	18,751	222,849
Average LGD in %	82.85	23.40	35.81	10.33	13.27	11.29	31.63	41.29	21.54
Average PD in %	1.16	1.01	3.59	2.07	2.10	0.92	2.02	6.22	2.60
Greece									
EAD net	0	4	893	0	4	1	0	3	905
Average LGD in %	N/M	20.87	11.20	N/M	15.93	22.57	25.72	21.15	11.31
Average PD in %	N/M	31.00	34.25	N/M	1.15	2.59	0.24	2.86	33.93
Hong Kong									
EAD net	304	317	5,179	0	10	1	0	1	5,811
Average LGD in %	30.00	40.95	33.50	3.66	27.12	27.77	31.90	21.86	33.71
Average PD in %	0.02	0.06	1.04	0.39	1.02	0.27	0.39	0.43	0.93

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in € m. (unless stated otherwise)	Central governments and central banks	Institutions	Corporates	Retail secured by real estate SME	Retail secured by real estate non-SME	Retail qualifying revolving	Retail other SME	Retail other non-SME	Total
Hungary									
EAD net	197	2	84	0	3	1	0	3	290
Average LGD in %	50.00	0.84	47.62	N/M	20.92	14.82	31.90	45.28	48.43
Average PD in %	0.14	0.39	0.18	N/M	1.31	4.71	0.23	13.74	0.31
India									
EAD net	1,977	1,833	5,472	0	2	1	0	13	9,299
Average LGD in %	49.37	31.66	41.09	N/M	18.04	31.17	1.27	38.83	40.98
Average PD in %	0.40	0.51	5.14	N/M	0.44	1.80	0.63	1.97	3.21
Indonesia									
EAD net	718	0	1,303	0	0	0	0	1	2,023
Average LGD in %	56.86	N/M	41.12	N/M	15.22	25.70	N/M	48.68	46.70
Average PD in %	0.44	N/M	2.79	N/M	0.87	2.47	N/M	1.63	1.95
Ireland									
EAD net	0	154	4,188	0	26	0	0	2	4,369
Average LGD in %	N/M	27.72	15.60	N/M	17.41	24.44	32.93	13.86	16.03
Average PD in %	N/M	42.38	21.72	N/M	8.06	1.82	2.16	3.86	22.36
Israel									
EAD net	0	0	214	3	13	1	0	0	231
Average LGD in %	N/M	N/M	38.71	42.00	27.38	24.31	31.90	17.80	38.05
Average PD in %	N/M	N/M	1.15	0.23	8.56	1.12	0.23	3.60	1.56
Italy (incl. San Marino)									
EAD net	732	192	6,418	107	7,987	51	1,201	6,062	22,750
Average LGD in %	50.06	28.90	40.52	26.62	12.14	66.65	62.12	57.84	36.52
Average PD in %	0.09	5.95	9.56	18.62	4.57	4.86	7.38	12.16	8.08
Japan									
EAD net	5,728	251	1,018	0	8	1	0	0	7,006
Average LGD in %	50.00	38.62	26.24	N/M	18.54	22.01	42.69	35.16	46.10
Average PD in %	0.00	0.29	1.35	N/M	0.58	0.22	0.81	2.27	0.21
Jersey									
EAD net	0	0	1,096	0	0	0	0	0	1,096
Average LGD in %	N/M	N/M	18.63	N/M	N/M	N/M	N/M	23.62	18.63
Average PD in %	N/M	N/M	6.79	N/M	N/M	N/M	N/M	57.12	6.79
Luxembourg									
EAD net	467	700	6,243	15	25	1	0	2	7,453
Average LGD in %	50.00	49.37	18.04	17.80	13.66	16.16	48.51	36.29	22.97
Average PD in %	0.00	0.04	3.83	0.84	3.39	0.20	0.34	3.49	3.22
Malaysia									
EAD net	656	0	712	0	1	0	0	1	1,370
Average LGD in %	50.00	N/M	44.92	N/M	19.15	23.15	N/M	47.12	47.33
Average PD in %	0.07	N/M	0.35	N/M	0.55	0.25	N/M	1.15	0.22
Malta									
EAD net	4	13	139	0	1	0	0	0	157
Average LGD in %	50.00	33.89	5.32	N/M	26.14	25.30	N/M	70.82	8.94
Average PD in %	0.05	0.33	4.25	N/M	2.32	1.59	N/M	45.28	3.84
Mauritius									
EAD net	0	0	274	0	1	0	0	0	274
Average LGD in %	N/M	N/M	44.53	N/M	17.42	29.86	N/M	47.26	44.47
Average PD in %	N/M	N/M	18.02	N/M	2.57	2.04	N/M	1.20	17.98
Mexico									
EAD net	151	43	509	0	4	1	0	8	716
Average LGD in %	50.00	25.29	43.26	N/M	14.54	27.34	42.73	19.34	43.18
Average PD in %	0.09	0.28	0.73	N/M	1.95	0.64	3.64	1.15	0.58
Netherlands									
EAD net	90	563	10,358	3	88	4	6	38	11,151
Average LGD in %	49.94	36.05	23.43	9.01	14.96	17.24	40.96	7.72	24.16
Average PD in %	0.00	0.15	6.36	1.24	2.50	1.40	3.96	1.51	5.94
New Zealand									
EAD net	0	8	87	0	2	0	0	0	97
Average LGD in %	N/M	45.00	43.81	N/M	10.48	23.29	31.90	23.36	43.22
Average PD in %	N/M	0.04	0.92	N/M	0.37	0.14	98.21	0.50	0.85
Pakistan									
EAD net	43	0	104	0	1	0	0	1	149
Average LGD in %	50.00	N/M	39.11	N/M	12.70	32.86	N/M	46.77	42.19
Average PD in %	7.95	N/M	2.68	N/M	0.45	3.32	N/M	3.26	4.20

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in € m. (unless stated otherwise)	Central governments and central banks	Institutions	Corporates	Retail secured by real estate SME	Retail secured by real estate non-SME	Retail qualifying revolving	Retail other SME	Retail other non-SME	Total
Philippines									
EAD net	126	0	458	0	1	0	0	0	585
Average LGD in %	50.00	N/M	41.24	N/M	10.43	16.67	43.58	45.39	43.08
Average PD in %	0.14	N/M	0.29	N/M	0.25	1.29	0.66	3.61	0.26
Poland									
EAD net	2,060	1	1,978	92	4,842	2	104	414	9,494
Average LGD in %	50.00	36.18	38.80	20.58	21.31	15.89	71.26	67.57	33.74
Average PD in %	0.05	0.39	4.70	3.25	2.02	8.53	13.19	11.45	2.70
Portugal									
EAD net	0	17	415	37	1,252	1	72	711	2,503
Average LGD in %	N/M	14.20	28.80	7.64	7.65	18.33	33.18	11.91	13.14
Average PD in %	N/M	8.52	6.74	5.51	4.43	1.42	9.55	8.40	6.13
Romania									
EAD net	0	16	27	0	1	0	1	2	46
Average LGD in %	N/M	45.15	51.03	N/M	5.70	24.37	42.69	58.09	48.37
Average PD in %	N/M	2.16	0.12	N/M	0.25	7.63	0.57	33.35	2.03
Russian Federation									
EAD net	602	0	632	0	29	1	1	7	1,272
Average LGD in %	50.00	N/M	45.55	N/M	20.76	30.82	43.33	20.15	46.94
Average PD in %	0.39	N/M	0.50	N/M	2.87	2.77	0.26	5.91	0.53
Saudi Arabia									
EAD net	315	1,023	940	0	3	0	0	1	2,283
Average LGD in %	50.00	19.44	32.62	N/M	28.40	28.83	42.69	37.90	29.11
Average PD in %	0.05	0.10	1.30	N/M	0.77	1.83	0.53	1.53	0.59
Singapore									
EAD net	1,443	181	5,868	0	17	1	1	3	7,513
Average LGD in %	50.00	42.41	18.08	N/M	15.09	22.36	42.56	17.75	24.79
Average PD in %	0.00	0.04	1.08	N/M	0.47	0.30	0.33	0.30	0.85
South Africa									
EAD net	43	222	174	0	5	1	0	5	449
Average LGD in %	50.00	49.48	46.20	N/M	15.94	23.04	42.69	29.10	47.65
Average PD in %	0.14	0.22	2.95	N/M	1.85	0.86	0.67	0.87	1.29
South Korea									
EAD net	1,529	0	1,621	0	4	0	0	0	3,154
Average LGD in %	50.18	N/M	43.68	N/M	32.75	24.93	N/M	45.10	46.81
Average PD in %	0.00	N/M	0.33	N/M	0.51	0.69	N/M	1.47	0.17
Spain									
EAD net	235	382	4,926	126	7,011	6	1,357	1,284	15,327
Average LGD in %	47.41	31.36	41.39	26.29	12.36	29.86	74.80	65.24	32.78
Average PD in %	2.78	0.19	10.63	20.52	3.67	1.79	5.17	7.52	6.40
Sri Lanka									
EAD net	95	0	102	0	0	0	0	0	197
Average LGD in %	50.00	N/M	46.37	N/M	26.20	22.38	N/M	46.64	48.11
Average PD in %	2.92	N/M	1.82	N/M	0.23	7.90	N/M	6.17	2.35
Sweden									
EAD net	0	417	682	0	17	1	1	1	1,120
Average LGD in %	N/M	26.19	33.75	N/M	24.72	16.11	48.40	49.82	30.81
Average PD in %	N/M	0.07	0.64	N/M	1.80	1.00	0.50	6.95	0.45
Switzerland									
EAD net	3,306	507	9,151	6	184	16	5	36	13,209
Average LGD in %	49.98	32.65	22.22	6.32	13.75	17.41	39.69	16.71	29.43
Average PD in %	0.00	0.06	4.32	0.63	3.64	0.84	0.51	4.54	3.06
Taiwan									
EAD net	600	0	809	0	2	0	0	8	1,420
Average LGD in %	50.00	N/M	33.70	N/M	5.78	24.89	42.69	49.50	40.63
Average PD in %	0.00	N/M	0.13	N/M	0.99	0.34	0.30	0.52	0.08
Thailand									
EAD net	729	0	1,022	0	1	1	0	1	1,755
Average LGD in %	50.00	N/M	42.29	N/M	16.11	15.82	42.65	31.37	45.46
Average PD in %	0.09	N/M	0.42	N/M	0.91	0.87	0.41	4.18	0.28
Turkey									
EAD net	111	1,405	510	0	4	1	0	2	2,033
Average LGD in %	50.00	12.28	47.02	N/M	18.42	24.89	42.03	34.82	23.09
Average PD in %	0.39	0.41	4.90	N/M	12.17	3.09	0.19	6.42	1.57

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in € m. (unless stated otherwise)	Central governments and central banks	Institutions	Corporates	Retail secured by real estate SME	Retail secured by real estate non-SME	Retail qualifying revolving	Retail other SME	Retail other non-SME	Total
Ukraine									
EAD net	34	0	59	0	5	0	0	0	98
Average LGD in %	50.00	N/M	25.88	N/M	9.77	31.32	N/M	46.94	33.50
Average PD in %	7.95	N/M	65.02	N/M	0.37	0.96	N/M	0.00	41.83
United Arab Emirates									
EAD net	122	0	980	0	14	1	0	14	1,131
Average LGD in %	50.00	N/M	27.76	25.60	19.80	26.00	N/M	38.48	30.19
Average PD in %	0.00	N/M	4.12	0.23	2.99	1.28	N/M	0.65	3.62
United Kingdom									
EAD net	394	4,614	7,854	1	165	5	5	399	13,436
Average LGD in %	50.00	75.87	34.75	7.23	15.06	23.85	44.50	15.83	48.51
Average PD in %	0.00	0.12	8.89	0.49	5.09	0.71	0.53	90.39	7.99
United States of America									
EAD net	88,458	4,901	65,862	1	71	6	7	711	160,017
Average LGD in %	49.86	41.26	22.63	13.96	25.84	20.24	40.21	48.26	38.37
Average PD in %	0.00	0.59	3.47	0.43	2.88	0.34	0.79	0.12	1.45
Vietnam									
EAD net	95	0	128	0	1	0	0	0	225
Average LGD in %	50.00	N/M	40.07	N/M	19.84	27.79	N/M	26.11	44.13
Average PD in %	1.07	N/M	1.55	N/M	5.68	1.07	N/M	2.47	1.37
Other									
EAD net	906	386	16,098	4	83	11	13	174	17,675
Average LGD in %	49.59	29.54	16.19	5.32	16.83	25.71	54.91	14.47	23.16
Average PD in %	1.90	11.42	4.90	3.02	4.91	2.08	1.14	6.08	6.74
thereof:									
International Organizations									
EAD net	328	0	0	0	0	0	0	0	328
Average LGD in %	51.77	N/M	56.01	N/M	N/M	N/M	N/M	N/M	51.78
Average PD in %	0.00	N/M	0.88	N/M	N/M	N/M	N/M	N/M	0.00
Total	123,297	27,714	216,737	9,538	155,533	12,489	5,417	28,784	579,509

¹ Includes exposures subject to deferred tax assets that rely on future profitability and arise from temporary differences which are subject to the threshold exemptions as outlined in Article 48 CRR.

Foundation IRBA

The table below shows our Foundation IRBA exposure for credit risk distributed based on the corresponding exposure classes for each relevant geographical location. As geographical location we show countries where the Bank maintains a branch or subsidiary. Exposure which does not meet these criteria is shown in "Other", which also comprises exposure to international organizations. Exposures are assigned to the specific geographical location based on the country of domicile of the respective counterparty. The EAD net is presented in conjunction with exposures-weighted average PD in percentage.

EAD net and average PD of Foundation IRBA credit exposures by geographical location (including derivatives and SFTs)

Dec 31, 2017

in € m. (unless stated otherwise)	Central governments and central banks	Institutions	Corporates	Total
Australia				
EAD net	0	0	4	4
Average PD in %	N/M	N/M	0.25	0.25
Austria				
EAD net	0	0	367	367
Average PD in %	N/M	0.23	0.17	0.17
Belgium				
EAD net	0	0	98	98
Average PD in %	N/M	N/M	0.11	0.11
Brazil				
EAD net	0	0	13	13
Average PD in %	N/M	N/M	0.24	0.24
Canada				
EAD net	0	0	14	14
Average PD in %	N/M	N/M	0.14	0.14

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in € m. (unless stated otherwise)	Central governments and central banks	Institutions	Corporates	Total
China				
EAD net	0	0	12	12
Average PD in %	N/M	N/M	0.19	0.19
Czech Republic				
EAD net	0	0	36	36
Average PD in %	N/M	N/M	0.19	0.19
France				
EAD net	0	0	225	225
Average PD in %	N/M	N/M	0.20	0.20
Germany				
EAD net	0	1	5,878	5,879
Average PD in %	N/M	0.20	1.05	1.05
Greece				
EAD net	0	0	0	0
Average PD in %	N/M	N/M	N/M	N/M
Hong Kong				
EAD net	0	0	4	4
Average PD in %	N/M	N/M	0.15	0.15
Hungary				
EAD net	0	0	46	46
Average PD in %	N/M	N/M	0.14	0.14
India				
EAD net	0	0	21	21
Average PD in %	N/M	N/M	5.14	5.14
Indonesia				
EAD net	0	0	1	1
Average PD in %	N/M	N/M	0.42	0.42
Ireland				
EAD net	0	0	16	16
Average PD in %	N/M	N/M	0.53	0.53
Israel				
EAD net	0	0	2	2
Average PD in %	N/M	N/M	0.14	0.14
Italy				
EAD net	0	0	186	186
Average PD in %	N/M	N/M	0.24	0.24
Japan				
EAD net	0	0	8	8
Average PD in %	N/M	N/M	0.39	0.39
Jersey				
EAD net	0	0	0	0
Average PD in %	N/M	N/M	N/M	N/M
Luxembourg				
EAD net	0	0	46	46
Average PD in %	N/M	N/M	0.20	0.20
Malaysia				
EAD net	0	0	5	5
Average PD in %	N/M	N/M	0.24	0.24
Malta				
EAD net	0	0	0	0
Average PD in %	N/M	N/M	0.10	0.10
Mauritius				
EAD net	0	0	0	0
Average PD in %	N/M	N/M	N/M	N/M
Mexico				
EAD net	0	0	5	5
Average PD in %	N/M	N/M	0.14	0.14
Netherlands				
EAD net	0	0	174	174
Average PD in %	N/M	N/M	0.27	0.27
New Zealand				
EAD net	0	0	2	2
Average PD in %	N/M	N/M	0.21	0.21
Pakistan				
EAD net	0	0	0	0
Average PD in %	N/M	N/M	N/M	N/M

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in € m. (unless stated otherwise)	Central governments and central banks	Institutions	Corporates	Total
Philippines				
EAD net	0	0	0	0
Average PD in %	N/M	N/M	0.03	0.03
Poland				
EAD net	0	0	55	55
Average PD in %	N/M	N/M	0.15	0.15
Portugal				
EAD net	0	0	17	17
Average PD in %	N/M	N/M	0.17	0.17
Romania				
EAD net	0	0	11	11
Average PD in %	N/M	N/M	0.20	0.20
Russian Federation				
EAD net	0	0	8	8
Average PD in %	N/M	N/M	2.68	2.68
Saudi Arabia				
EAD net	0	0	0	0
Average PD in %	N/M	N/M	0.12	0.12
Singapore				
EAD net	0	0	4	4
Average PD in %	N/M	N/M	0.18	0.18
South Africa				
EAD net	0	0	4	4
Average PD in %	N/M	N/M	0.16	0.16
South Korea				
EAD net	0	0	5	5
Average PD in %	N/M	N/M	0.31	0.31
Spain				
EAD net	0	0	115	115
Average PD in %	N/M	N/M	0.19	0.19
Sri-Lanka				
EAD net	0	0	0	0
Average PD in %	N/M	N/M	N/M	N/M
Sweden				
EAD net	0	0	28	28
Average PD in %	N/M	N/M	0.14	0.14
Switzerland				
EAD net	0	0	159	159
Average PD in %	N/M	N/M	0.50	0.50
Taiwan				
EAD net	0	0	5	5
Average PD in %	N/M	N/M	0.17	0.17
Thailand				
EAD net	0	0	3	3
Average PD in %	N/M	N/M	0.16	0.16
Turkey				
EAD net	0	0	10	10
Average PD in %	N/M	N/M	0.26	0.26
Ukraine				
EAD net	0	0	3	3
Average PD in %	N/M	N/M	5.88	5.88
United Arab Emirates				
EAD net	0	0	3	3
Average PD in %	N/M	N/M	0.27	0.27
United Kingdom				
EAD net	0	0	253	253
Average PD in %	N/M	N/M	0.52	0.52
United States of America				
EAD net	0	0	104	104
Average PD in %	N/M	N/M	0.42	0.42
Vietnam				
EAD net	0	0	0	0
Average PD in %	N/M	N/M	0.36	0.36

Dec 31, 2017				
in € m. (unless stated otherwise)	Central governments and central banks	Institutions	Corporates	Total
Other				
EAD	0	0	146	146
Average PD in %	N/M	N/M	2.32	2.32
thereof:				
International Organizations				
EAD	0	0	0	0
Average PD in %	N/M	N/M	N/M	N/M
Total	0	1	8,095	8,096

Counterparty credit risk (CCR)

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

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

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

Limits for CCR exposures are established on the basis of the principles for assigning credit limits as described in the sections "Credit Risk Framework" and "Measuring Credit Risk" in the Annual Report 2017 on pages 58 to 60. For the purpose of limit setting, CCR exposures are also considered in the context of the overall credit exposure to the obligor and the group of borrowers under the one obligor principle.

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

For the majority of derivative counterparty exposures as well as for SFT, we (without Postbank) make use of the internal model method in accordance with Article 283 et seq. CRR. In this respect SFT encompass repurchase transactions, securities or commodities lending and borrowing as well as margin lending transactions (including prime brokerage). By applying this approach, we build our EAD calculations on a Monte Carlo simulation of the transactions' future market values. Within this simulation process, interest and foreign exchange rates, credit spreads, equity and commodity prices are modeled by stochastic processes and each derivative and securities financing transaction is revalued at each point of a pre-defined time grid. As a result of this process, a distribution of future market values for each transaction at each time grid point is generated. From these distributions, by considering the appropriate netting and collateral agreements, we derive the exposure measures potential future exposure ("PFE"), average expected exposure ("AEE"), expected positive exposure ("EPE") and effective expected positive exposure ("EEPE").

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

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

For our derivative counterparty credit risk resulting from Postbank we also apply the Mark-to-Market method according to Article 274 CRR, i.e., we calculate the EAD as the sum of the net positive fair value of the derivative transactions and the regulatory add-ons. As the EAD derivative position resulting from Postbank is less than 2 % in relation to our overall counterparty credit risk position from derivatives we consider Postbank's derivative position to be immaterial.

For further details on our counterparty credit risk, please refer to the Annual Report 2017 under sections: "Netting and Collateral Arrangements for Derivatives and Securities Financing Transactions", pages 62 to 64, "Derivatives - Credit Valuation Adjustment", and "Treatment of Default Situations under Derivatives", on pages 118 to 119 as well as "Credit Exposure from Derivatives", on page 108.

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

For details regarding collateral and reserve for counterparty credit risk please refer to our Annual Report 2017 section “Managing and Mitigation of Credit Risk” in the sub-section “Netting and Collateral Arrangements for Derivatives and Securities Financing Transactions”, on page 62, “Derivatives – Credit Valuation Adjustment”, page 118 as well as “Credit Exposure from Derivatives”, on page 108.

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

For information regarding the management of wrong-way risk exposures please refer to the Annual Report 2017, section “Mitigation of Credit Risk on Counterparty Level” on page 61, “Treatment of Default Situations under Derivatives” on page 118 and “Country Risk Management” on page 64.

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

For details please refer to the Annual Report 2017, section “Managing and Mitigation of Credit Risk” in the sub-section “Netting and Collateral Arrangements for Derivatives and Securities Financing Transactions” on page 62. Additionally please refer to our Annual Report 2017 to the section “Liquidity Risk Exposure”, sub-section “Stress Testing and Scenario Analysis” on page 130.

Article 439 (f) CRR - Counterparty credit risk exposures by model approach

The following table shows the methods used for calculating the regulatory requirements for CCR exposure including the main parameters for each method. Exposures relevant for credit valuation adjustment (CVA) charges and exposures cleared through a central counterparty (CCP) are presented separately in table CCR2 and CCR 8, respectively. Deutsche Bank does not make use of the original exposure method or the standardized approach for derivatives nor the financial collateral simple method for SFTs. Under the mark to market method the positive market values before netting and collateral, the potential future exposure and the exposure at default for derivatives are shown, taking credit risk mitigation techniques into account. Under the internal model method (IMM) only the effective expected positive exposure (EEPE) and the exposure at default are presented. Given the nature of the internal model the simulation process of futures market values across all asset classes also includes the impact from regulatory netting and collateralization. For details regarding the calculation method under IMM including the estimation of the alpha factor please refer to introductory section on Counterparty Credit Risk.

EU CCR1 – Analysis of CCR exposure by approach

		Dec 31, 2017						
		a	b	c	d	e	f	g
in € mn		Notional	Replacement cost/ Current market value	Potential future credit exposure	EEPE	Multiplier	EAD post CRM	RWA
1	Mark to market	–	2,809	11,328	–	–	14,132	5,951
2	Original exposure	0	–	–	–	–	0	0
3	Standardized approach	–	0	–	–	0	0	0
4	IMM (for derivatives and SFTs) thereof:	–	–	–	121,389	1.2	151,434	23,887
5	Securities Financing Transactions	–	–	–	89,386	1.2	109,085	7,531
6	Derivatives & Long Settlement Transactions	–	–	–	32,003	1.2	42,349	16,356
7	from Contractual Cross Product Netting	–	–	–	0	0	0	0
8	Financial collateral simple method (for SFTs)	–	–	–	–	–	0	0
9	Financial collateral comprehensive method (for SFTs)	–	–	–	–	–	20,637	2,818
10	VaR for SFTs	–	–	–	–	–	0	0
11	Total	–	–	–	–	–	–	32,656

The table below provides a breakdown of the credit valuation adjustment (CVA) RWA into advanced and standardized approaches. Furthermore the incremental contributions from the VaR and stressed VaR components are highlighted. We calculate the majority of the CVA based on our own internal model as approved by the BaFin, which is consistent with the advanced method, driving the reported CVA RWA of € 6.4 billion (99 %), whilst the standardized method covers only € 52 million (1 %) of the total CVA RWA. Stressed VaR component is the main driver of advanced CVA RWA, which results from the stressed period volatilities considered.

EU CCR2 – CVA capital charge

		Dec 31, 2017	
		a	b
in € m.		Exposure value	RWA
1	Total portfolios subject to the Advanced Method	26,064	6,399
2	(i) VaR component (including the 3× multiplier)	–	423
3	(ii) Stressed VaR component (including the 3× multiplier)	–	5,975
4	All portfolios subject to the Standardized Method	173	52
EU4	Based on Original Exposure Method	0	0
5	Total subject to the CVA capital charge	26,237	6,451

The table below presents an overview of our exposures and capital requirements to central counterparties arising from transactions, margins and contributions to default funds. As of December 31, 2017 we only report exposures to qualifying central counterparties (QCCP) as defined in Article 4 (88) CRR.

EU CCR8 – Exposures to CCPs

		Dec 31, 2017	
		a	b
in € m.		EAD post CRM	RWA
1	Exposures to QCCPs (total)	–	828
2	Exposures for trades at QCCPs (excluding initial margin and default fund contributions) thereof:	11,481	230
3	(i) OTC derivatives	2,872	57
4	(ii) Exchange-traded derivatives	4,085	82
5	(iii) Securities financing transactions	4,524	90
6	(iv) Netting sets where cross-product netting has been approved	0	0
7	Segregated initial margin	5,261	–
8	Non-segregated initial margin	8,932	179
9	Pre-funded default fund contributions	1,169	419
10	Alternative calculation of own funds requirements for exposures	–	0
11	Exposures to non-QCCPs (total)	–	0
12	Exposures for trades at non-QCCPs (excluding initial margin and default fund contributions) thereof:	0	0
13	(i) OTC derivatives	0	0
14	(ii) Exchange-traded derivatives	0	0
15	(iii) Securities financing transactions	0	0
16	(iv) Netting sets where cross-product netting has been approved	0	0
17	Segregated initial margin	0	–
18	Non-segregated initial margin	0	0
19	Prefunded default fund contributions	0	0
20	Unfunded default fund contributions	0	0

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

The following table provides the counterparty credit risk exposures in the standardized approach broken down by risk weights and regulatory exposure classes. "Unrated" includes all exposures for which a credit assessment by a nominated ECAI is not available and they therefore receive the standard risk weight according to their exposure classes as described in the CRR.

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

in € m.								Dec 31, 2017
		Risk Weight						
Exposure classes		0%	2%	4%	10%	20%	50%	70%
1	Central governments or central banks	0	0	0	0	0	0	0
2	Regional governments or local authorities	0	0	0	0	16	0	0
3	Public sector entities	0	3	0	0	78	0	0
4	Multilateral development banks	0	0	0	0	0	0	0
5	International organizations	0	0	0	0	0	0	0
6	Institutions	0	738	0	0	5	0	0
7	Corporates	0	0	0	0	21	1	0
8	Retail	0	0	0	0	0	0	0
8a	Secured by mortgages on immovable property	0	0	0	0	0	0	0
8b	Exposures in default	0	0	0	0	0	0	0
8c	Items associated with particularly high risk	0	0	0	0	0	0	0
8d	Covered bonds	0	0	0	0	0	0	0
9	Claims on institutions and corporates with a short-term credit assessment	0	0	0	0	0	0	0
9a	Collective investments undertakings (CIU)	0	0	0	0	0	0	0
9b	Equity exposures	0	0	0	0	0	0	0
10	Other items	0	15	0	0	0	0	0
11	Total	0	755	0	0	120	1	0

in € m.							Dec 31, 2017	
		Risk Weight					Total	Of which: unrated
Exposure classes		75%	100%	150%	Others			
1	Central governments or central banks	0	0	0	0	0	0	
2	Regional governments or local authorities	0	0	0	0	16	16	
3	Public sector entities	0	0	0	0	80	78	
4	Multilateral development banks	0	0	0	0	0	0	
5	International organizations	0	0	0	0	0	0	
6	Institutions	0	157	0	0	901	901	
7	Corporates	0	1,439	2	0	1,463	1,452	
8	Retail	5	0	0	0	5	5	
8a	Secured by mortgages on immovable property	0	0	0	0	0	0	
8b	Exposures in default	0	0	2	0	2	2	
8c	Items associated with particularly high risk	0	0	0	0	0	0	
8d	Covered bonds	0	0	0	0	0	0	
9	Claims on institutions and corporates with a short-term credit assessment	0	0	0	0	0	0	
9a	Collective investments undertakings (CIU)	0	0	0	0	0	0	
9b	Equity exposures	0	0	0	0	0	0	
10	Other items	0	0	0	0	15	15	
11	Total	5	1,596	4	0	2,481	2,468	

Article 452 (e) CRR - CCR exposures within the advanced IRBA

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

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

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

EU CCR4 – AIRB approach – CCR exposures by portfolio and PD scale – Central governments and central banks

Dec 31, 2017

in € m. (unless stated otherwise)							
	a	b	c	d	e	f	g
PD scale	EAD net	Average PD (in %)	Number of obligors (in 1,000)	Average LGD (in %)	Average maturity (in years)	RWA	Average RW (in %)
0.00 to <0.15	8,484	0.02	0.1	44.18	0.9	475	5.60
0.15 to <0.25	68	0.23	<0.1	21.34	5.0	24	35.66
0.25 to <0.50	492	0.39	<0.1	49.66	0.7	239	48.51
0.50 to <0.75	9	0.64	<0.1	30.00	5.0	7	76.21
0.75 to <2.50	26	1.73	<0.1	30.23	4.9	25	99.48
2.50 to <10.00	884	3.57	<0.1	15.85	1.1	428	48.43
10.00 to <100.00	0	0	0	0	0	0	0
100.00 (Default)	20	100.00	<0.1	4.40	5.0	13	62.50
Sub-total	9,983	0.56	0.1	41.66	1.0	1,211	12.14

EU CCR4 – AIRB approach – CCR exposures by portfolio and PD scale – Institutions

Dec 31, 2017

in € m. (unless stated otherwise)							
	a	b	c	d	e	f	g
PD scale	EAD net	Average PD (in %)	Number of obligors (in 1,000)	Average LGD (in %)	Average maturity (in years)	RWA	Average RW (in %)
0.00 to <0.15	27,045	0.05	0.5	40.72	1.5	4,881	18.05
0.15 to <0.25	310	0.23	<0.1	44.82	3.7	234	75.74
0.25 to <0.50	1,300	0.39	0.1	42.76	0.9	794	61.08
0.50 to <0.75	1,175	0.64	<0.1	27.24	0.8	548	46.65
0.75 to <2.50	464	1.51	0.1	49.77	1.3	578	124.37
2.50 to <10.00	299	3.13	<0.1	6.51	1.3	72	23.97
10.00 to <100.00	20	30.13	<0.1	49.71	3.8	65	319.58
100.00 (Default)	85	100.00	<0.1	2.00	4.4	21	25.00
Sub-total	30,698	0.44	0.7	40.04	1.5	7,193	23.43

EU CCR4 – AIRB approach – CCR exposures by portfolio and PD scale – Corporates, total

Dec 31, 2017

in € m. (unless stated otherwise)							
	a	b	c	d	e	f	g
PD scale	EAD net	Average PD (in %)	Number of obligors (in 1,000)	Average LGD (in %)	Average maturity (in years)	RWA	Average RW (in %)
0.00 to <0.15	115,996	0.04	11.6	32.57	0.6	8,626	7.44
0.15 to <0.25	3,453	0.23	0.7	30.89	2.5	1,268	36.73
0.25 to <0.50	4,702	0.39	0.9	37.28	1.2	2,175	46.25
0.50 to <0.75	4,984	0.64	0.9	35.60	1.2	3,021	60.61
0.75 to <2.50	4,076	1.30	1.3	50.27	2.4	4,563	111.96
2.50 to <10.00	2,324	4.71	0.6	28.18	2.6	2,380	102.42
10.00 to <100.00	633	21.70	0.1	12.17	0.6	433	68.41
100.00 (Default)	27	100.00	<0.1	11.90	2.3	25	92.60
Sub-total	136,194	0.31	16.1	33.15	0.8	22,491	16.51

EU CCR4 – AIRB approach – CCR exposures by portfolio and PD scale – Corporates, SME

Dec 31, 2017

in € m. (unless stated otherwise)		a	b	c	d	e	f	g
PD scale	EAD net	Average PD (in %)	Number of obligors (in 1,000)	Average LGD (in %)	Average maturity (in years)	RWA	Average RW (in %)	
0.00 to <0.15	533	0.06	0.2	52.58	2.5	148	27.80	
0.15 to <0.25	199	0.23	0.1	62.12	1.0	86	43.26	
0.25 to <0.50	306	0.39	0.1	49.59	0.3	132	43.32	
0.50 to <0.75	108	0.64	0.1	50.17	0.9	59	54.24	
0.75 to <2.50	50	1.47	0.1	52.50	2.1	51	100.69	
2.50 to <10.00	91	4.97	0.1	52.53	1.6	96	104.95	
10.00 to <100.00	1	23.85	<0.1	42.00	3.9	2	181.88	
100.00 (Default)	0	100.00	<0.1	97.91	2.0	0	0.41	
Sub-total	1,290	0.68	0.7	53.14	1.5	574	44.53	

EU CCR4 – AIRB approach – CCR exposures by portfolio and PD scale – Corporates, specialized lending

Dec 31, 2017

in € m. (unless stated otherwise)		a	b	c	d	e	f	g
PD scale	EAD net	Average PD (in %)	Number of obligors (in 1,000)	Average LGD (in %)	Average maturity (in years)	RWA	Average RW (in %)	
0.00 to <0.15	92	0.09	<0.1	56.08	3.4	38	40.70	
0.15 to <0.25	38	0.23	<0.1	45.39	4.6	28	72.92	
0.25 to <0.50	52	0.39	<0.1	41.19	4.5	42	80.34	
0.50 to <0.75	23	0.64	<0.1	34.35	4.3	17	74.09	
0.75 to <2.50	96	1.29	0.1	48.15	3.7	127	132.72	
2.50 to <10.00	476	4.77	0.1	17.27	4.0	316	66.47	
10.00 to <100.00	9	19.16	<0.1	48.83	2.5	24	263.40	
100.00 (Default)	0	100.00	<0.1	5.00	1.1	0	62.50	
Sub-total	788	3.34	0.2	29.40	3.9	593	75.26	

EU CCR4 – AIRB approach – CCR exposures by portfolio and PD scale – Corporates, other

Dec 31, 2017

in € m. (unless stated otherwise)		a	b	c	d	e	f	g
PD scale	EAD net	Average PD (in %)	Number of obligors (in 1,000)	Average LGD (in %)	Average maturity (in years)	RWA	Average RW (in %)	
0.00 to <0.15	115,371	0.04	11.4	32.46	0.6	8,441	7.32	
0.15 to <0.25	3,215	0.23	0.6	28.78	2.6	1,154	35.89	
0.25 to <0.50	4,344	0.39	0.8	36.36	1.2	2,000	46.05	
0.50 to <0.75	4,853	0.64	0.8	35.28	1.2	2,945	60.68	
0.75 to <2.50	3,930	1.30	1.1	50.29	2.4	4,385	111.59	
2.50 to <10.00	1,756	4.67	0.4	29.87	2.2	1,967	112.04	
10.00 to <100.00	623	21.73	<0.1	11.58	0.5	407	65.35	
100.00 (Default)	26	100.00	<0.1	10.31	2.3	25	94.45	
Sub-total	134,117	0.29	15.3	32.98	0.7	21,324	15.90	

EU CCR4 – AIRB approach – CCR exposures by portfolio and PD scale – Retail, total

Dec 31, 2017

in € m. (unless stated otherwise)		a	b	c	d	e	f	g
PD scale	EAD net	Average PD (in %)	Number of obligors (in 1,000)	Average LGD (in %)	Average maturity (in years)	RWA	Average RW (in %)	
0.00 to <0.15	16	0.06	0.2	55.75	1.7	2	10.65	
0.15 to <0.25	3	0.23	<0.1	55.27	1.1	1	22.26	
0.25 to <0.50	8	0.39	0.1	56.55	1.3	3	32.15	
0.50 to <0.75	12	0.64	0.1	55.68	1.2	5	42.47	
0.75 to <2.50	16	1.39	0.2	55.04	1.2	10	59.32	
2.50 to <10.00	25	4.53	0.2	56.01	1.1	20	78.76	
10.00 to <100.00	3	17.05	<0.1	56.17	1.2	3	102.25	
100.00 (Default)	0	100.00	<0.1	5.00	5.0	0	62.50	
Sub-total	84	2.48	0.8	55.73	1.3	43	51.13	

EU CCR4 – AIRB approach – CCR exposures by portfolio and PD scale – Retail, secured by real estate property SMEs

Dec 31, 2017

in € m. (unless stated otherwise)		a	b	c	d	e	f	g
PD scale	EAD net	Average PD (in %)	Number of obligors (in 1,000)	Average LGD (in %)	Average maturity (in years)	RWA	Average RW (in %)	
0.00 to <0.15	0	0	0	0	0	0	0	0
0.15 to <0.25	0	0	0	0	0	0	0	0
0.25 to <0.50	0	0	0	0	0	0	0	0
0.50 to <0.75	0	0	0	0	0	0	0	0
0.75 to <2.50	0	0	0	0	0	0	0	0
2.50 to <10.00	0	0	0	0	0	0	0	0
10.00 to <100.00	0	0	0	0	0	0	0	0
100.00 (Default)	0	0	0	0	0	0	0	0
Sub-total	0	0	0	0	0	0	0	0

EU CCR4 – AIRB approach – CCR exposures by portfolio and PD scale – Retail, secured by real estate property non-SMEs

Dec 31, 2017

in € m. (unless stated otherwise)		a	b	c	d	e	f	g
PD scale	EAD net	Average PD (in %)	Number of obligors (in 1,000)	Average LGD (in %)	Average maturity (in years)	RWA	Average RW (in %)	
0.00 to <0.15	0	0	0	0	0	0	0	0
0.15 to <0.25	0	0	0	0	0	0	0	0
0.25 to <0.50	0	0	0	0	0	0	0	0
0.50 to <0.75	0	0	0	0	0	0	0	0
0.75 to <2.50	0	0	0	0	0	0	0	0
2.50 to <10.00	0	0	0	0	0	0	0	0
10.00 to <100.00	0	0	0	0	0	0	0	0
100.00 (Default)	0	0	0	0	0	0	0	0
Sub-total	0	0	0	0	0	0	0	0

EU CCR4 – AIRB approach – CCR exposures by portfolio and PD scale – Retail qualifying revolving

Dec 31, 2017

in € m. (unless stated otherwise)		a	b	c	d	e	f	g
PD scale	EAD net	Average PD (in %)	Number of obligors (in 1,000)	Average LGD (in %)	Average maturity (in years)	RWA	Average RW (in %)	
0.00 to <0.15	0	0	0	0	0	0	0	0
0.15 to <0.25	0	0	0	0	0	0	0	0
0.25 to <0.50	0	0	0	0	0	0	0	0
0.50 to <0.75	0	0	0	0	0	0	0	0
0.75 to <2.50	0	0	0	0	0	0	0	0
2.50 to <10.00	0	0	0	0	0	0	0	0
10.00 to <100.00	0	0	0	0	0	0	0	0
100.00 (Default)	0	0	0	0	0	0	0	0
Sub-total	0	0	0	0	0	0	0	0

EU CCR4 – AIRB approach – CCR exposures by portfolio and PD scale – Other retail SME

Dec 31, 2017

in € m. (unless stated otherwise)		a	b	c	d	e	f	g
PD scale	EAD net	Average PD (in %)	Number of obligors (in 1,000)	Average LGD (in %)	Average maturity (in years)	RWA	Average RW (in %)	
0.00 to <0.15	2	0.12	<0.1	50.40	1.1	0	12.25	
0.15 to <0.25	2	0.23	<0.1	56.40	1.1	0	20.27	
0.25 to <0.50	5	0.39	0.1	56.43	1.1	1	28.47	
0.50 to <0.75	7	0.64	0.1	55.81	1.1	3	37.14	
0.75 to <2.50	8	1.40	0.1	54.19	1.1	4	50.88	
2.50 to <10.00	9	4.34	0.1	55.81	1.1	6	65.23	
10.00 to <100.00	2	16.33	<0.1	56.32	1.3	2	90.39	
100.00 (Default)	0	100.00	<0.1	5.00	5.0	0	62.50	
Sub-total	35	2.69	0.4	55.30	1.1	17	47.58	

EU CCR4 – AIRB approach – CCR exposures by portfolio and PD scale – Other retail non-SME

Dec 31, 2017

in € m. (unless stated otherwise)							
	a	b	c	d	e	f	g
PD scale	EAD net	Average PD (in %)	Number of obligors (in 1,000)	Average LGD (in %)	Average maturity (in years)	RWA	Average RW (in %)
0.00 to <0.15	14	0.06	0.2	56.34	1.7	2	10.47
0.15 to <0.25	1	0.23	<0.1	53.52	1.0	0	25.31
0.25 to <0.50	3	0.39	<0.1	56.72	1.7	1	37.89
0.50 to <0.75	5	0.64	<0.1	55.50	1.4	2	49.86
0.75 to <2.50	8	1.37	0.1	55.86	1.3	5	67.62
2.50 to <10.00	16	4.63	0.1	56.15	1.1	14	86.87
10.00 to <100.00	1	18.10	<0.1	55.94	1.0	2	119.42
100.00 (Default)	0	0	0	0	0	0	0
Sub-total	49	2.33	0.4	56.05	1.4	26	53.64

EU CCR4 – AIRB approach – CCR exposures by portfolio and PD scale – Total

Dec 31, 2017

in € m. (unless stated otherwise)							
	a	b	c	d	e	f	g
	EAD net	Average PD (in %)	Number of obligors (in 1,000)	Average LGD (in %)	Average maturity (in years)	RWA	Average RW (in %)
Total (all portfolio)	176,958	0.34	17.8	34.84	0.9	30,938	17.48

Article 452 (e) CRR - CCR exposures within the foundation IRBA

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

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

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

EU CCR4 – FIRB approach – CCR exposures by portfolio and PD scale – Central governments and central banks

Dec 31, 2017

in € m. (unless stated otherwise)							
	a	b	c	d	e	f	g
PD scale	EAD net	Average PD (in %)	Number of obligors (in 1,000)	Average LGD (in %)	Average maturity (in years)	RWA	Average RW (in %)
0.00 to <0.15	0	0	0	0	0	0	0
0.15 to <0.25	0	0	0	0	0	0	0
0.25 to <0.50	0	0	0	0	0	0	0
0.50 to <0.75	0	0	0	0	0	0	0
0.75 to <2.50	0	0	0	0	0	0	0
2.50 to <10.00	0	0	0	0	0	0	0
10.00 to <100.00	0	0	0	0	0	0	0
100.00 (Default)	0	0	0	0	0	0	0
Sub-total	0	0	0	0	0	0	0

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

Dec 31, 2017

in € m. (unless stated otherwise)		a	b	c	d	e	f	g
PD scale	EAD net	Average PD (in %)	Number of obligors (in 1,000)	Average LGD (in %)	Average maturity (in years)	RWA	Average RW (in %)	
0.00 to <0.15	0	0	0	0	0	0	0	0
0.15 to <0.25	0	0	0	0	0	0	0	0
0.25 to <0.50	0	0	0	0	0	0	0	0
0.50 to <0.75	0	0	0	0	0	0	0	0
0.75 to <2.50	0	0	0	0	0	0	0	0
2.50 to <10.00	0	0	0	0	0	0	0	0
10.00 to <100.00	0	0	0	0	0	0	0	0
100.00 (Default)	0	0	0	0	0	0	0	0
Sub-total	0	0	0	0	0	0	0	0

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

Dec 31, 2017

in € m. (unless stated otherwise)		a	b	c	d	e	f	g
PD scale	EAD net	Average PD (in %)	Number of obligors (in 1,000)	Average LGD (in %)	Average maturity (in years)	RWA	Average RW (in %)	
0.00 to <0.15	2	0.09	<0.1	45.00	2.5	1	30.82	
0.15 to <0.25	75	0.21	0.1	45.00	2.5	35	47.13	
0.25 to <0.50	41	0.38	0.1	45.00	2.5	26	63.67	
0.50 to <0.75	10	0.69	<0.1	45.00	2.5	8	82.49	
0.75 to <2.50	2	1.53	<0.1	45.00	2.5	2	92.96	
2.50 to <10.00	2	4.93	<0.1	45.00	2.5	2	143.83	
10.00 to <100.00	1	20.00	<0.1	45.00	2.5	2	252.53	
100.00 (Default)	0	100.00	<0.1	45.00	2.5	0	0	
Sub-total	133	0.66	0.3	45.00	2.5	76	57.56	

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

Dec 31, 2017

in € m. (unless stated otherwise)		a	b	c	d	e	f	g
PD scale	EAD net	Average PD (in %)	Number of obligors (in 1,000)	Average LGD (in %)	Average maturity (in years)	RWA	Average RW (in %)	
0.00 to <0.15	0	0	0	0	0	0	0	0
0.15 to <0.25	3	0.22	<0.1	45.00	2.5	1	33.87	
0.25 to <0.50	3	0.38	<0.1	45.00	2.5	2	50.53	
0.50 to <0.75	2	0.69	<0.1	45.00	2.5	1	70.80	
0.75 to <2.50	1	1.67	<0.1	45.00	2.5	1	81.49	
2.50 to <10.00	0	4.53	<0.1	45.00	2.5	0	99.71	
10.00 to <100.00	0	0	0	0	0	0	0	0
100.00 (Default)	0	0	0	0	0	0	0	0
Sub-total	10	0.69	0.1	45.00	2.5	5	53.67	

EU CCR4 – FIRB approach – CCR exposures by portfolio and PD scale – Corporates, specialized lending

Dec 31, 2017

in € m. (unless stated otherwise)		a	b	c	d	e	f	g
PD scale	EAD net	Average PD (in %)	Number of obligors (in 1,000)	Average LGD (in %)	Average maturity (in years)	RWA	Average RW (in %)	
0.00 to <0.15	0	0	0	0	0	0	0	0
0.15 to <0.25	0	0	0	0	0	0	0	0
0.25 to <0.50	0	0	0	0	0	0	0	0
0.50 to <0.75	0	0	0	0	0	0	0	0
0.75 to <2.50	0	0	0	0	0	0	0	0
2.50 to <10.00	0	0	0	0	0	0	0	0
10.00 to <100.00	0	0	0	0	0	0	0	0
100.00 (Default)	0	0	0	0	0	0	0	0
Sub-total	0	0	0	0	0	0	0	0

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

Dec 31, 2017

in € m. (unless stated otherwise)							
	a	b	c	d	e	f	g
PD scale	EAD net	Average PD (in %)	Number of obligors (in 1,000)	Average LGD (in %)	Average maturity (in years)	RWA	Average RW (in %)
0.00 to <0.15	2	0.09	<0.1	45.00	2.5	1	30.82
0.15 to <0.25	72	0.21	0.1	45.00	2.5	34	47.75
0.25 to <0.50	38	0.38	<0.1	45.00	2.5	24	64.85
0.50 to <0.75	8	0.69	<0.1	45.00	2.5	7	84.83
0.75 to <2.50	1	1.34	<0.1	45.00	2.5	1	107.99
2.50 to <10.00	1	5.06	<0.1	45.00	2.5	2	158.66
10.00 to <100.00	1	20.00	<0.1	45.00	2.5	2	252.53
100.00 (Default)	0	100.00	<0.1	45.00	2.5	0	0
Sub-total	123	0.66	0.2	45.00	2.5	71	57.87

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

Dec 31, 2017

in € m. (unless stated otherwise)							
	a	b	c	d	e	f	g
	EAD net	Average PD (in %)	Number of obligors (in 1,000)	Average LGD (in %)	Average maturity (in years)	RWA	Average RW (in %)
Total (all portfolio)	133	0.66	0.3	45.00	2.5	76	57.56

Article 438 (d) CRR - Development of Counterparty Credit Risk RWA

The following tables provide an analysis of key drivers for RWA movements observed for counterparty credit risk exposures calculated under the internal model method (IMM) in the fourth quarter of 2017.

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

			Three months ended Dec 31, 2017	
			a	b
in € m.			RWA	Capital requirements
1	Counterparty credit risk RWA under the IMM opening balance		20,988	1,679
2	Book size		1,732	139
3	Book quality		1,630	130
4	Model updates		(215)	(17)
5	Methodology and Policy		0	0
6	Acquisitions and Disposals		0	0
7	Foreign exchange movements		(248)	(20)
8	Other		0	0
9	Counterparty credit risk RWA under the IMM closing balance		23,887	1,911

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

The increase in RWA for counterparty credit risk exposures under the IMM by 13.8 % or € 2.9 billion since September 2017 is predominantly driven by growth in “Book size” and changes in “Book Quality”. The increase in “Book size” is predominantly driven by business growth in securities financing products. The increase in “Book quality” is predominantly driven by the revised treatment of netting application of our security financing products which is partly offset by reductions from recalibrations of our risk parameters as well as process enhancements. Foreign exchange movements had minor impacts to the RWA movements.

Article 439 (e) CRR - CCR exposures after credit risk mitigation

The following tables present information on our counterparty credit risk (CCR) exposure and the impact of netting and collateral held as well as the composition of collateral used in both derivatives transactions and securities financing transactions (SFT).

Table EU CCR5-A below provides the gross positive fair values before any credit risk mitigation, the impact of legally enforceable master netting agreements as well as further reduction of our CCR exposure due to eligible collateral we have received. Given the nature of the internal model method (IMM) that we use for the measurement of the majority of our derivatives and SFT, the simulation process of future market values across all asset classes includes, if applicable, the impact from regulatory netting and collateralization. Therefore the net credit exposure disclosed below differs from the regulatory exposure value at default (EaD).

EU CCR5-A – Impact of netting and collateral held on exposure values

		Dec 31, 2017				
		a	b	c	d	e
in € m.		Gross positive fair value or net carrying amount	Netting benefits	Netted current credit exposure	Collateral held	Net credit exposure
1	Derivatives	490,611	402,084	88,590	81,312	7,278
2	Securities Financing Transactions	589,621	479,088	110,533	7,534	102,999
3	Cross-product netting	0	0	0	0	0
4	Total	1,080,232	881,172	199,123	88,846	110,277

Table EU CCR5-B discloses a breakdown of all types of collateral posted or received to support or reduce CCR exposures related to derivatives and SFT. For SFT collateral refers to both legs of the transaction as collateral received and collateral posted.

EU CCR5-B – Composition of collateral for exposures to CCR

		Dec 31, 2017					
		a	b	c	d	e	f
		Collateral used in derivative transactions				Collateral used in SFTs	
		Fair value of collateral received		Fair value of posted collateral			
in € m.		Segregated	Unsegregated	Segregated	Unsegregated	Fair value of collateral received	Fair value of posted collateral
	Cash	0	106,092	0	59,511	186,088	229,726
	Bonds	0	32,039	4,250	19,035	177,739	173,498
	Equity securities	0	14,516	1,011	11	201,108	179,642
	Other collateral	0	5,413	0	4,108	10,263	6,754
	Total	0	158,060	5,261	82,665	575,198	589,621

For further details on derivative exposure please also refer to our Annual Report 2017 table “Maximum Exposure to Credit Risk” and chapter “Credit Exposure from Derivatives” on pages 96 and 109 .

Article 439 (g-h) CRR - Credit derivatives exposures

The table below discloses the exposure of the credit derivative transactions split into the part held in the regulatory banking book, which is shown under the heading “credit derivative hedges” and the part held in the regulatory trading book, referred to as “other credit derivatives” as well as a split into product types.

EU CCR6 – Credit derivatives exposures

in € m.	Dec 31, 2017		
	a	b	c
	Credit derivative hedges		Other credit derivatives
Protection bought	Protection sold		
Notionals			
Single-name credit default swaps	10,085	344	407,841
Index credit default swaps	0	0	1,229,299
Total return swaps	0	37	5,982
Credit options	0	0	28,898
Total notionals	10,085	381	1,672,021
Fair values	(162)	(67)	808
Positive fair value (asset)	109	38	28,365
Negative fair value (liability)	272	105	27,558

Article 439 (i) CRR - Estimate of alpha factor

Under the internal model method (IMM) approach EAD is then finally calculated as the product of EPE and a multiplier 'Alpha' (α). The scaling factor alpha is applied in order to correct for amongst others correlations between parties, concentration risk and to account for the level of volatility/correlation that might coincide with a downturn. Deutsche Bank received regulatory approval to use its own calibrated alpha factor, however, for our regulatory capital calculation the regulatory minimum level of 1.2 has to be applied. For the small population of transactions for which a simulation cannot be computed or is subject to regulatory restrictions (such as for those with risk factors not approved by BaFin or for specific wrong-way risk), the EAD used is derived from the Mark-to-Market method according to Article 274 CRR.

Economic capital usage for credit risk

The table below provides the economic capital usage for credit risk based on a quantile of 99.9 % broken down by business areas.

Economic Capital Usage for Credit Risk per Business Area

in € m.	Dec 31, 2017	Dec 31, 2016	2017 increase (decrease) from 2016	
			in € m.	in %
Corporate & Investment Bank	6,519	8,185	(1,666)	(20)
Private & Commercial Bank	3,596	4,308	(712)	(17)
Deutsche Asset Management	62	62	0	0
Non-Core Operations Unit	0	108	(108)	(100)
Consolidation & Adjustments and Other	591	442	149	34
Total	10,769	13,105	(2,336)	(18)

The economic capital usage for credit risk decreased to € 13.1 billion as of December 31, 2017, € 2.34 billion or 18 % lower compared to year-end 2016. The decrease was mainly driven by the change in the quantile from 99.98 % to 99.9 %.

Market risk

Article 445 CRR - Exposure to market risk

Market Risk Standardized Approach

As of December 31, 2017, the securitization positions, for which the specific interest rate risk is calculated using the market risk standardized approach, generated capital requirements of € 379.5 million corresponding to risk weighted-assets of € 4.7 billion. As of December 31, 2016 these positions generated capital requirements of € 278.4 million corresponding to risk weighted-assets of € 3.5 billion.

For nth-to-default credit default swaps the capital requirement decreased to € 2.8 million corresponding to risk weighted-assets of € 35 million compared with € 6.4 million and € 80 million as of December 31, 2016.

The capital requirement for collective investment undertakings under the market risk standardized approach was € 45 million corresponding to risk weighted-assets of € 556 million as of December 31, 2017, compared with € 39 million and € 487 million as of December 31, 2016.

The capital requirement for longevity risk under the market risk standardized approach was € 32 million corresponding to risk-weighted assets of € 395 million as of December 31, 2017, compared with € 46 million and € 570 million as of December 31, 2016.

EU MR1 – Market risk under the standardized approach

in € m.	Dec 31, 2017	
	a	b
	RWA	Capital requirements
Outright products		
1 Interest rate risk (general and specific)	0	0
2 Equity risk (general and specific) ¹	537	43
3 Foreign exchange risk ²	87	7
4 Commodity risk	0	0
4a Longevity risk	395	32
Options		
5 Simplified approach	0	0
6 Delta-plus method	0	0
7 Scenario approach	0	0
8 Securitization (specific risk) ³	4,744	380
9 Total	5,763	462

¹ Equity risk RWA of € 537 million is from collective investment undertakings

² Foreign Exchange risk RWA includes € 68 million from Postbank and € 19 million from collective investment undertakings

³ Securitization RWA of € 4,744 million includes the nth to default component

Market Risk internal models approach (IMA)

The table below presents all internal model-related components relevant for the capital requirement calculation for market risk.

EU MR2-A – Market Risk under the internal models approach (IMA)

		Dec 31, 2017	
		a	b
in € m.		RWA	Capital requirements
1	VaR (higher of values a and b)	4,378	350
a)	Previous day's VaR (Article 365(1) (VaRt-1))	–	101
b)	Average of the daily VaR (Article 365(1)) on each of the preceding sixty business days (VaRavg) x multiplication factor ((mc) in accordance with Article 366)	–	350
2	SVaR (higher of values a and b)	10,896	872
a)	Latest SVaR (Article 365(2) (sVaRt-1))	–	253
b)	Average of the SVaR (Article 365(2) during the preceding sixty business days (sVaRavg) x multiplication factor (ms) (Article 366)	–	872
3	Incremental risk charge -IRC (higher of values a and b)	9,871	790
a)	Most recent IRC value (incremental default and migration risks calculated in accordance with Article 370 and Article 371 of the CRR)	–	631
b)	Average of the IRC number over the preceding 12 weeks	–	790
4	Comprehensive Risk Measure – CRM (higher of values a, b and c)	56	5
a)	Most recent risk number for the correlation trading portfolio (article 377 of the CRR)	–	4
b)	Average of the risk number for the correlation trading portfolio over the preceding 12-weeks	–	5
c)	8 % of the own funds requirement in SA on most recent risk number for the correlation trading portfolio (Article 338(4) of the CRR)	–	1
5	Other	0	0
6	Total	25,203	2,016

The following table EU MR2-B provides an analysis of key drivers for movements observed for market risk RWA covered by internal models (i.e. value-at-risk, stressed value-at-risk, incremental risk charge and comprehensive risk measure) in the fourth quarter of 2017.

EU MR2-B – RWA flow statements of market risk exposures under the IMA

		Dec 31, 2017						
		a	b	c	d	e	f	g
in € m.		VaR	SVaR	IRC	Comprehensive risk measure	Other	Total RWAs	Total capital requirements
1	Market Risk RWA at previous quarter end ¹	5,678	13,833	10,431	86	0	30,028	2,402
1a	Regulatory adjustment ²	(4,242)	(11,244)	0	(27)	0	(15,512)	(1,241)
1b	RWAs at the previous quarter-end (end of the day) ³	1,437	2,589	10,431	59	0	14,515	1,161
2	Movement in risk levels	(55)	579	(2,545)	(4)	0	(2,025)	(162)
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	0	0	0	0	0	0
6a	Market data changes and recalibrations	(113)	0	0	0	0	(113)	(9)
7	Other	0	0	0	0	0	0	0
8a	RWAs at the end of the reporting period (end of the day) ³	1,268	3,168	7,886	55	0	12,378	990
8b	Regulatory adjustment ²	3,112	7,728	1,984	1	0	12,825	1,026
8	Market Risk RWAs at end of reporting period¹	4,380	10,896	9,871	56	0	25,203	2,016

¹ Represents RWA at previous and current reporting period quarter end.

² Indicates the difference between RWA and RWA (end of day) at the beginning and end of period.

³ For a given component (e.g. VaR) it refers to the RWA that would be computed if the previous or current quarter end snapshot figure of the component determines the quarter end RWA, as opposed to a 60-day average for regulatory.

The market risk RWA movements due to position changes are represented in line "Movement in risk levels". Changes to our market risk RWA internal models, such as methodology enhancements or risk scope extensions, are included in the category of "Model updates/changes". In the "Methodology and policy" category we reflect regulatory driven changes to our market risk RWA models and calculations. Significant new businesses and disposals would be assigned to the line item "Acquisition and disposals". The impacts of "Foreign exchange movements" are only calculated for comprehensive risk measure. For the other measures this is captured in "Movements in risk levels". Changes in market data levels, volatilities, correlations, liquidity and ratings are included under the "Market data changes and recalibrations" category.

As of December 31, 2017 the RWA for market risk was € 31.0 billion. The IMA (Internal Models Approach) components of this totaled € 25.2 billion.

Economic Capital Usage for our Trading Market Risk

The economic capital usage for trading market risk decreased to € 3.8 billion as of December 31, 2017, compared to € 4.2 billion at year-end 2016. The decrease was primarily driven by the change of the quantile, which led to a reduction in trading market risk by € 600 million, partially offset by increase in traded default risk component exposure.

Postbank's contribution to the economic capital usage for our trading market risk was minimal.

Economic Capital Usage for our Nontrading Market Risk Portfolios per Business Area

Economic Capital Usage of Nontrading Portfolios by Business Division

in € m.	Dec 31, 2017	Dec 31, 2016	2017 increase (decrease) from 2016	
			in € m.	in %
Corporate & Investment Bank	828	1,035	(207)	(20)
Private & Commercial Bank	1,430	1,852	(422)	(23)
Deutsche Asset Management	309	2,005	(1,696)	(85)
Non-Core Operations Unit	0	148	(148)	N/M
Consolidation & Adjustments and Other	4,061	5,324	(1,263)	(24)
Total	6,628	10,364	(3,736)	(36)

Nontrading market risk economic capital usage totaled € 6.6 billion as of December 31, 2017, which is € 3.7 billion, or 36 %, below our economic capital usage at year-end 2016. The quantile change led to a decrease in nontrading market risk EC as of November 2017 by € 1.8 billion.

The decrease in economic capital usage in Deutsche Asset Management was largely driven by a considerable decrease in the Guaranteed Funds risk from the application of a new methodology. The decrease in economic capital usage in Consolidation & Adjustments and Other was mainly driven by lower structural foreign exchange risk exposure resulting from the new capital requirement "Going-Concern" and the quantile change from 99.98 % to 99.9 %. The decrease of economic capital usage for Corporate & Investment Bank and Private & Commercial Bank was mainly driven by the quantile change.

Article 455 CRR - Use of Internal Market Risk Models

Article 455 (a)(i) CRR - Characteristics of the market risk models

Market Risk Measurement

Market Risk Management aims to accurately measure all types of market risks by a comprehensive set of risk metrics reflecting economic and regulatory requirements.

In accordance with economic and regulatory requirements, we measure market and related risks using several key risk metrics:

Internally developed market risk models

- Value-at-risk ("VaR") and stressed value-at-risk ("SVaR"), including CVA VaR and SVaR
- Incremental risk charge
- Comprehensive risk measure

Market Risk Standardized approaches

- Market risk standardized approach (“MRSA”), applied to investment funds with no look through, MRSA-eligible securitizations and positions subject to longevity risk

Stress Testing Measures

- Portfolio stress testing
- Business-level stress testing
- Event risk scenarios

Economic Capital Measures

- Market Risk economic capital, including traded default risk

Other model derived and market observable metrics

- Sensitivities
- Market value/notional (concentration risk)
- Loss given default

These measures are viewed as complementary to each other and in aggregate define the market risk framework, by which all businesses can be measured and monitored.

Internally developed market risk models

Value-at-Risk (VaR) at Deutsche Bank Group

VaR is a quantitative measure of the potential loss (in value) of Fair Value positions due to market movements that will not be exceeded in a defined period of time and with a defined confidence level.

We calculate VaR using a 99 % confidence level and a one day holding period. This means we estimate there is a 1 in 100 chance that a mark-to-market loss from our trading positions will be at least as large as the reported VaR. For regulatory purposes, which include the calculation of our risk-weighted assets, the holding period is ten days.

We use one year of historical market data as input to calculate VaR. The calculation employs a Monte Carlo Simulation technique, and we assume that changes in risk factors follow a well-defined distribution, e.g. normal or non-normal (t, skew-t, Skew-Normal). To determine our aggregated VaR, we use observed correlations between the risk factors during this one year period.

Our VaR model is designed to take into account a comprehensive set of risk factors across all asset classes. Key risk factors are swap/government curves, index and issuer-specific credit curves, funding spreads, single equity and index prices, foreign exchange rates, commodity prices as well as their implied volatilities. To help ensure completeness in the risk coverage, second order risk factors, e.g. CDS index vs. constituent basis, money market basis, implied dividends, option-adjusted spreads and precious metals lease rates are considered in the VaR calculation.

For each business unit a separate VaR is calculated for each risk type, e.g. interest rate risk, credit spread risk, equity risk, foreign exchange risk and commodity risk. For each risk type this is achieved by deriving the sensitivities to the relevant risk type and then simulating changes in the associated risk drivers. “Diversification effect” reflects the fact that the total VaR on a given day will be lower than the sum of the VaR relating to the individual risk types. Simply adding the VaR figures of the individual risk types to arrive at an aggregate VaR would imply the assumption that the losses in all risk types occur simultaneously.

The model incorporates both linear and, especially for derivatives, nonlinear effects through a combination of sensitivity-based and revaluation approaches.

The VaR measure enables us to apply a consistent measure across all of our fair value businesses and products. It allows a comparison of risk in different businesses, and also provides a means of aggregating and netting positions within a portfolio to reflect correlations and offsets between different asset classes. Furthermore, it facilitates comparisons of our market risk both over time and against our daily trading results.

When using VaR estimates a number of considerations should be taken into account. These include:

- The use of historical market data may not be a good indicator of potential future events, particularly those that are extreme in nature. This “backward-looking” limitation can cause VaR to understate future potential losses (as in 2008), but can also cause it to be overstated.
- Assumptions concerning the distribution of changes in risk factors, and the correlation between different risk factors, may not hold true, particularly during market events that are extreme in nature. The one day holding period does not fully capture the market risk arising during periods of illiquidity, when positions cannot be closed out or hedged within one day.
- VaR does not indicate the potential loss beyond the 99th quantile.
- Intra-day risk is not captured.
- There may be risks in the trading or banking book that are partially or not captured by the VaR model.

We are committed to the ongoing development of our internal risk models, and we allocate substantial resources to reviewing, validating and improving them. Additionally, we have further developed and improved our process of systematically capturing and evaluating risks currently not captured in our value-at-risk model. An assessment is made to determine the level of materiality of these risks and material risks are prioritized for inclusion in our internal model. Risks not in value-at-risk are monitored and assessed on a regular basis through our Risk Not In VaR (RNIV) framework.

Stressed Value-at-Risk (SvaR)

We calculate a stressed value-at-risk measure using a 99 % confidence level and a holding period of one day. For regulatory purposes, the holding period is ten days.

Our stressed value-at-risk calculation utilizes the same systems, trade information and processes as those used for the calculation of value-at-risk. The only difference is that historical market data from a period of significant financial stress (i.e., characterized by high volatilities) is used as an input for the Monte Carlo Simulation. The time window selection process for the stressed value-at-risk calculation is based on the identification of a time window characterized by high levels of volatility in the top value-at-risk contributors. The identified window is then further validated by comparing the SvaR results to neighboring windows using the complete DB Group portfolio.

CVA Value-at-Risk/ Stressed Value-at-Risk

The advanced approach CVA risk capital charge is determined by applying the VaR model. First, the exposure profiles are determined based on the internal model method (IMM) or the Mark-to-Market method. The next step consists in determining the synthetic CVA position based on the exposure profile and other risk parameters such as credit spreads. Based on this information the credit spread sensitivity is then calculated. Eligible CVA hedges are also incorporated and the CVA risk capital charge is determined based on the internal market risk models VaR and Stressed VaR using a 99 % confidence level and a 10-day holding period.

Article 455 (a)(ii) CRR - Incremental risk charge and comprehensive risk measure

Incremental Risk Charge

The incremental risk charge is based on our own internal model and is intended to complement the value-at-risk modeling framework. It represents an estimate of the default and rating migration risks of unsecuritized credit products over a one-year capital horizon at a 99.9 % confidence level, employing a constant position approach. We use a Monte Carlo Simulation for calculating incremental risk charge as the 99.9 % quantile of the portfolio loss distribution and for allocating contributory incremental risk charge to individual positions. The model captures the default and migration risk in an accurate and consistent quantitative approach for all portfolios. Important parameters for the incremental risk charge calculation are exposures, recovery rates, maturity, ratings with corresponding default and migration probabilities and parameters specifying issuer correlations.

We calculate the incremental risk charge on a weekly basis. For regulatory reporting purposes, the charge is determined as the higher of the most recent 12 week average of incremental risk charge and the most recent incremental risk charge.

The contributory incremental risk charge of individual positions, which is calculated by expected shortfall allocation, provides the basis for identifying risk concentrations in the portfolio.

Default and rating migration probabilities are defined by rating migration matrices which are calibrated on historical external rating data. Taking into account the trade-off between granularity of matrices and their stability we apply a global corporate matrix and a sovereign matrix comprising the seven main rating non-default states and one default state. Accordingly, issue or issuer ratings from the rating agencies Moody's, S&P and Fitch are assigned to each position.

To quantify a loss due to rating migration, a revaluation of a position is performed under the new rating. The probability of joint rating downgrades and defaults is determined by the migration and rating correlations of the incremental risk charge model. These correlations are specified through systematic factors that represent geographical regions and industries and are calibrated on historical rating migration and equity time series. The simulation is based on the assumption of a constant position approach where differences in maturities of long and short positions are taken into account.

The revaluation approach was further improved in 2016 by employing refined valuation methodologies for a large set of products, in particular covering trades with non-linear features.

As the default state is absorbing, defaulted positions do not generate any further losses from rating migrations. The price risk of defaulted debt is modeled by stochastic recoveries.

Direct validation of the incremental risk charge through back-testing methods is not possible. The charge is subject to validation principles such as the evaluation of conceptual soundness, ongoing monitoring and process and outcome analysis. Model validation relies more on indirect methods including stress tests and sensitivity analyses. Relevant parameters are included in the annual validation cycle established in the current regulatory framework. The incremental risk charge is part of the regular group-wide stress test using the stress testing functionality within our credit engine. Stressed incremental risk charge figures are reported on group level and submitted to the Stress Test Council (STC) and the Enterprise Risk Committee (ERC).

Comprehensive Risk Measure

The comprehensive risk measure for the corporate correlation trading portfolio is based on our own internal model. We calculate the comprehensive risk measure based on a Monte Carlo Simulation technique to a 99.9 % confidence level and a capital horizon of one year. Our model is applied to the eligible correlation trading positions where typical products include collateralized debt obligations, nth-to-default credit default swaps, and commonly traded index- and single-name credit default swaps. Re-securitizations or products which reference retail claims or real estate exposures are not eligible. Furthermore, trades subject to the comprehensive risk measure have to meet minimum liquidity standards to be eligible. The model incorporates concentrations of the portfolio and nonlinear effects via a full revaluation approach.

Comprehensive risk measure is designed to capture defaults as well as the following risk drivers: interest rates, credit spreads, recovery rates, foreign exchange rates and base correlations, index-to-constituent and base correlation basis risks.

Comprehensive risk measure is calculated on a weekly basis. Initially, the eligible trade population within the correlation trading portfolio is identified. Secondly, the risk drivers of the P&L are simulated over a one year time horizon. The trade population is then re-valued under the various Monte Carlo Simulation scenarios and the 99.9 % quantile of the loss distribution is extracted.

The market and position data are collected from front office systems and are subject to quality control. The comprehensive risk measure figures are closely monitored and play a significant role in the management of the correlation trading portfolio. We use three years of historical market data to estimate the risk drivers to the comprehensive risk measure.

In our comprehensive risk measure model the liquidity horizon is set to 12 months, which equals the capital horizon.

In order to maintain the quality of our comprehensive risk measure model we continually monitor the potential weaknesses of this model. Backtesting of the trade valuations and the propagation of single risk factors are carried out on a monthly basis and a quarterly recalibration of parameters is performed. In addition, a series of stress tests have been defined on the correlation trading portfolio where the shock sizes link into historical distressed market conditions.

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

For regulatory reporting purposes, the comprehensive risk measure represents the higher of the internal model spot value at the reporting dates, their preceding 12-week average calculation, and the floor, where the floor is equal to 8 % of the equivalent capital charge under the standardized approach securitization framework. Since the first quarter of 2016, the CRM RWA calculations include two regulatory-prescribed add-ons which cater for: (a) stressing the implied correlation within nth-to-default baskets and (b) any stress test loss in excess of the internal model spot value.

We have received approval for the use in the calculation of regulatory capital, of all internally-developed models described above; VaR, SvaR (including CVA VaR and SvaR), Incremental Risk Charge and Comprehensive Risk Measure.

Market Risk Standardized Approach

Market Risk Management monitors exposures and addresses risk issues and concentrations for certain exposures under the specific Market Risk Standardized Approach (“MRSA”). We use the MRSA to determine the regulatory capital charge for the specific market risk of trading book securitizations (see section “Article 449 (h) CRR - RWA calculation approaches for securitization positions” and therein section “Calculation of Regulatory Capital Requirements for Trading Book Securitizations” on page 125).

We also use the MRSA to determine the regulatory capital charge for longevity risk as set out in CRR/CRD 4 regulations. Longevity risk is the risk of adverse changes in life expectancies resulting in a loss in value on longevity linked policies and transactions. For risk management purposes, stress testing and economic capital allocations are also used to monitor and manage longevity risk.

Furthermore, certain types of investment funds require a capital charge under the MRSA. For risk management purposes, these positions are also included in our internal reporting framework.

Article 455 (a)(iii) CRR - Market risk stress testing

Stress testing is a key risk management technique, which evaluates the potential effects of extreme market events and extreme movements in individual risk factors. It is one of the core quantitative tools used to assess the market risk of Deutsche Bank’s positions and complements VaR and Economic Capital. Market Risk Management performs several types of stress testing to capture the variety of risks: Portfolio Stress Testing, individual specific stress tests, Event Risk Scenarios, and also contributes to Group-wide stress testing. These are also set at varying severities ranging from extreme for capital adequacy assessment to mild for earnings stability purposes.

Portfolio Stress Testing measures the profit and loss impact of potential market events based on a broad range of historical or hypothetical macroeconomic scenarios considered to be severe and plausible. It is used to manage systemic tail risk and informs on earnings stability and capital resilience. Ad hoc stress tests are regularly designed to manage risk in advance of and during key events or to focus on a particular area of interest.

For individual specific stress tests, market risk managers identify relevant risk factors and develop stress scenarios relating either to macro-economic or business-specific developments. Specific stress tests capture idiosyncratic and basis risks.

Event risk scenario measures the profit and loss impact of historically observable events or hypothetical situations on trading positions for specific emerging market countries and regions. The bank’s trading book exposure to an individual country is stressed under a single scenario, which replicates market movements across that country in times of significant market crisis and reduced liquidity.

In addition, Market Risk Management participates in the Group-wide stress test process, where macro-economic scenarios are defined by ERM Risk Research and each risk department translates that same scenario to the relevant shocks required to apply to their portfolio. This includes credit, market and operational risks.

Tail risk or the potential for extreme loss events beyond reported value-at risk is captured via stress testing, stressed value-at-risk, economic capital, incremental risk charge and comprehensive risk measure.

Article 455 (a)(iv) CRR - Methodology for backtesting and model validation

Regulatory Backtesting of Trading Market Risk

We continually analyze potential weaknesses of our value-at-risk model using statistical techniques, such as backtesting, and also rely on risk management experience.

Backtesting is a procedure used to assess the predictive accuracy of the value-at-risk calculations involving the comparison of hypothetical daily profits and losses under the buy-and-hold assumption ('daily buy-and hold income') to the daily value-at-risk. Under this assumption we estimate the P&L impact that would have resulted on a portfolio for a trading day valued with current market prices and parameters assuming it had been left untouched for that day and compare it with the estimates from the value-at-risk model from the preceding day. Our calculation of hypothetical daily profits and losses (buy & hold income) excludes gains and losses from intraday trading, fees and commissions, carry (including net interest margins), reserves and other miscellaneous revenues. An outlier is a hypothetical buy-and-hold trading loss that exceeds our value-at-risk from the preceding day. On average, we would expect a 99 % confidence level to give rise to two to three outliers representing 1 % of approximately 260 trading days in any one year. We analyze and document underlying reasons for outliers and classify them either as due to market movements, risks not included in our value-at-risk model, model or process shortcomings. We use the results for further enhancement of our value-at-risk methodology. Formal communications explaining the reasons behind any outlier on Group level are provided to the BaFin and the ECB.

In addition to the standard backtesting analysis at the value-at-risk quantile, the value-at-risk model performance is further verified by analyzing the distributional fit across the whole of the distribution (full distribution backtesting). Regular backtesting is also undertaken on hypothetical portfolios to test value-at-risk performance of particular products and their hedges.

There are various Backtesting forums, with participation from Market Risk Management, Market Risk Analysis, Model Validation, and Finance, that regularly review backtesting results as a whole and of individual businesses. They analyze performance fluctuations and assess the predictive power of our value-at-risk model, which allows us to improve and adjust the risk estimation process accordingly.

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

Holistic Validation process

The Holistic Validation ("HV") process provides a comprehensive assessment of the market risk management framework across four key control areas: Backtesting, Process, Model Validation, and Risks not in Model (e.g. Risks not in VaR). The HV process is run on a quarterly basis and consists of preparing detailed reports (HV Control Packs & Dashboards) that include both quantitative and qualitative Key Performance Indicator ("KPI") based assessments across these four key control areas. Reports are produced for VaR, EC and PST across asset classes / global business areas (e.g. Core Rates, Global Credit Trading, Global Markets-Equities), capital & risk measures (CRM, CVA, IMM and IRC) and as regional cuts (APAC, Americas / US-IHC). The associated formal quarterly HV governance framework is as follows:

- Level 1: A series of asset-class level HV Control Pack Review meetings (chaired by the respective Market Risk Management Asset Class Head or delegate), at which the respective HV Control Pack is reviewed and the HV Dashboard KPI status and associated commentary / "path-to-green" agreed across all key control areas.
- Level 2: The HV Governance Council (HVGC) chaired by the Global Head of Market Risk Management (with the MRM ExCo in attendance) at which HV dashboards and key themes are presented by the respective Market Risk Management Asset Class Heads. Key decisions and outputs from the HVGC include finalizing the overall HV Dashboard status, executive summaries and overall themes, and prioritizing issues for remediation and agreeing escalations, if any.
- Level 3: Top-level HV governance is achieved via the Global Head of MRM summarizing key themes to the Group Risk Committee (GRC) on a case-by-case basis. The CRO may optionally present to the Management Board themes and results deemed of sufficient importance. The Supervisory Board may also be kept informed by Office of the Chief Risk Officer (OCRO) via summarized briefings.

At yearend 2017, our value-at-risk and stressed value-at-risk multiplier was at 4.0 versus the regulatory floor of three.

Article 455 (b) CRR - Regulatory approval for market risk models

Our value-at-risk for the trading businesses is based on our own internal model. In October 1998, the German Banking Supervisory Authority (now the BaFin) approved our internal model for calculating the regulatory market risk capital for our general and specific market risks. Since then the model has been continually refined and approval has been maintained.

Article 455 (c) CRR - Trading book allocation and prudent valuation

Allocation of Positions to the Regulatory Trading book

For European regulatory purposes all our positions must be assigned to either the trading book or the banking book. This classification of a position impacts its regulatory treatment, in particular the calculation of the regulatory capital charges for the position. We define the criteria for the allocation of positions to either the trading book or banking book in internal policy documents, which were based on the respective requirements applicable to the Group contained in Articles 102 to 106 of the CRR.

A central function in Finance is responsible for the policy guidance and is the center of competence with regard to questions concerning its application. The Finance functions for the individual business areas are responsible for the classification of positions in line with the policy requirements.

We include positions in the trading book that are financial instruments or commodities which are held with trading intent or which are held for the purpose of hedging other trading book positions.

Positions included in the trading book must be free of any restrictive covenants regarding their transferability or able to be hedged.

Moreover, positions assigned to the trading book must be valued daily. Further information on the valuation methodology that we used is provided in our Annual Report 2017, Note 13 "Financial Instruments carried at Fair Value", page 235.

As part of the ongoing procedures to confirm that the inclusion of positions in the trading book continues to be in line with the above referenced internal policy guidance, the Finance functions for our trading businesses carry out a global review of the classification of positions on a quarterly basis. The results of the review are documented and presented to the Trading Book Review Forum with representatives from Finance and Legal.

Re-allocations of positions between the trading book and the banking book may only be carried out in line with the internal policy guidance. They must be documented and are subject to approval by the heads of the Finance functions for the respective business areas.

Regulatory prudent valuation of assets carried at fair value

Pursuant to Article 34 CRR institutions shall apply the prudent valuation requirements of Article 105 CRR to all assets measured at fair value and shall deduct from CET 1 capital the amount of any additional value adjustments necessary.

We determined the amount of the additional value adjustments based on the methodology defined in the Commission Delegated Regulation (EU) 2016/101.

At December 31, 2017 the amount of the additional value adjustments was € 1.2 billion.

Based on Article 159 CRR the total amount of general and specific credit risk adjustments and additional value adjustments for exposures that are treated under the Internal Ratings Based Approach for credit risk and that are in scope of the expected loss calculation may be subtracted from the total expected loss amount related to these exposures. Any remaining positive difference must be deducted from CET 1 capital pursuant to Article 36 (1) lit. d. CRR.

At December 31, 2017 the reduction of the expected loss from subtracting the additional value adjustments was € 0.3 billion, which partly mitigated the negative impact of the additional value adjustments on our CET 1 capital.

Article 455 (d) CRR - Overview of Value-at-Risk Metrics

Value-at-Risk Metrics of Trading Units of Deutsche Bank Group (excluding Postbank)

The table below presents the value-at-risk metrics calculated with a 99 % confidence level and a one-day holding period for our trading units. They exclude contributions from Postbank trading book which are calculated on a stand-alone basis.

Value-at-Risk of our Trading Units by Risk Type

in € m.	Total		Diversification effect		Interest rate risk		Credit spread risk		Equity price risk		Foreign exchange risk ¹		Commodity price risk	
	2017	2016	2017	2016	2017	2016	2017	2016	2017	2016	2017	2016	2017	2016
Average	<u>29.8</u>	32.0	<u>(28.1)</u>	(35.0)	<u>20.2</u>	19.7	<u>19.7</u>	26.6	<u>8.7</u>	9.3	<u>8.4</u>	10.7	<u>0.8</u>	0.7
Maximum	<u>38.4</u>	59.4	<u>(37.6)</u>	(57.6)	<u>26.0</u>	29.5	<u>25.1</u>	32.5	<u>12.5</u>	52.4	<u>16.5</u>	16.7	<u>3.0</u>	3.3
Minimum	<u>20.1</u>	20.4	<u>(21.4)</u>	(25.6)	<u>13.5</u>	14.8	<u>13.5</u>	22.3	<u>4.4</u>	4.4	<u>4.2</u>	3.6	<u>0.1</u>	0.2
Period-end	<u>29.1</u>	30.1	<u>(22.5)</u>	(36.9)	<u>21.4</u>	19.9	<u>14.4</u>	24.3	<u>10.1</u>	10.0	<u>4.9</u>	12.6	<u>0.7</u>	0.2

¹ Includes value-at-risk from gold and other precious metal positions.

The average value-at-risk over 2017 was € 29.8 million, which is a decrease of € 2.2 million compared with the full year 2016. The average credit spread value-at-risk decreased due to a reduction in idiosyncratic risk.

The period end value-at-risk reduction was driven by reductions across the credit spread and foreign exchange asset classes.

Regulatory Trading Market Risk Measures (excluding Postbank)

The table below presents the stressed value-at-risk metrics calculated with a 99 % confidence level and a one-day holding period for our trading units. It excludes contributions from Postbank's trading book which are calculated on a stand-alone basis

Average, Maximum and Minimum Stressed Value-at-Risk by Risk Type

in € m.	Total		Diversification effect		Interest rate risk		Credit spread risk		Equity price risk		Foreign exchange risk ¹		Commodity price risk	
	2017	2016	2017	2016	2017	2016	2017	2016	2017	2016	2017	2016	2017	2016
Average	<u>76.7</u>	85.2	<u>(88.4)</u>	(78.2)	<u>69.8</u>	51.9	<u>62.1</u>	74.9	<u>18.8</u>	20.6	<u>12.6</u>	14.8	<u>1.8</u>	1.3
Maximum	<u>125.0</u>	143.7	<u>(115.8)</u>	(150.0)	<u>92.0</u>	82.5	<u>73.2</u>	99.3	<u>66.8</u>	144.5	<u>28.0</u>	30.4	<u>6.1</u>	3.9
Minimum	<u>42.0</u>	60.4	<u>(73.0)</u>	(53.4)	<u>48.3</u>	37.4	<u>54.3</u>	59.0	<u>1.5</u>	2.4	<u>6.9</u>	3.4	<u>0.3</u>	0.4
Period-end	<u>85.6</u>	75.8	<u>(81.0)</u>	(91.3)	<u>67.8</u>	51.9	<u>64.3</u>	63.0	<u>19.9</u>	29.6	<u>12.6</u>	22.1	<u>1.9</u>	0.5

¹ Includes value-at-risk from gold and other precious metal positions.

The average stressed value-at-risk was € 76.7 million over 2017, a decrease of € 8.5 million compared with the full year 2016. The reduction in the average was driven by a decrease in credit spread stressed value-at-risk due to a reduction in idiosyncratic risk as well as a small reduction coming from a model enhancement to the credit spread component. This has been partly offset by an increase in interest rate stressed value-at-risk due to a change in directional exposure on average over 2017.

For regulatory reporting purposes, the incremental risk charge for the respective reporting dates represents the higher of the spot value at the reporting dates, and their preceding 12-week average calculation. The incremental risk charge presented for the reporting dates below is the spot value and the average, maximum and minimum values calculated for the 12-week period preceding these reporting dates.

Average, Maximum and Minimum Incremental Risk Charge of Trading Units (with a 99.9 % confidence level and one-year capital horizon)^{1,2,3}

in € m.	Total		Non-Core Operations Unit		Global Credit Trading		Core Rates		Fixed Income & Currencies APAC		Emerging Markets - Debt		Other	
	2017	2016	2017	2016	2017	2016	2017	2016	2017	2016	2017	2016	2017	2016
Average	<u>802.1</u>	840.2	<u>0.0</u>	52.0	<u>544.6</u>	393.0	<u>107.1</u>	200.4	<u>168.1</u>	188.6	<u>37.2</u>	116.8	<u>(54.8)</u>	(110.5)
Maximum	<u>899.3</u>	944.4	<u>0.0</u>	57.3	<u>597.4</u>	405.8	<u>172.5</u>	229.6	<u>229.0</u>	243.0	<u>62.9</u>	128.0	<u>(20.4)</u>	(65.6)
Minimum	<u>754.8</u>	693.0	<u>0.0</u>	44.5	<u>503.7</u>	368.0	<u>48.7</u>	173.7	<u>92.4</u>	119.6	<u>(1.4)</u>	111.6	<u>(90.0)</u>	(141.8)
Period-end	<u>789.6</u>	693.0	<u>0.0</u>	51.8	<u>540.1</u>	368.0	<u>133.2</u>	173.7	<u>142.3</u>	119.6	<u>19.9</u>	121.8	<u>(45.9)</u>	(141.8)

¹ Amounts show the bands within which the values fluctuated during the 12-weeks preceding December 31, 2017 and December 31, 2016, respectively.

² Business line breakdowns have been updated for 2017 reporting to better reflect the current business structure.

³ All liquidity horizons are set to 12 months.

The incremental risk charge as at the end of 2017 was € 790 million an increase of € 97 million (14 %) compared with year end 2016. The 12-week average of the incremental risk charge as at the end of 2017 was € 802 million and thus € 38 million (5 %) lower compared with the average for the 12-week period ended December 31, 2016. The decreased average incremental risk charge is driven by a decrease in credit exposures in the Core Rates and Emerging Markets Debt business areas when compared to the full year 2016.

For regulatory reporting purposes, the comprehensive risk measure for the respective reporting dates represents the higher of the internal spot value at the reporting dates, their preceding 12-week average calculation, and the floor, where the floor is equal to 8 % of the equivalent capital charge under the standardized approach securitization framework.

Average, Maximum and Minimum Comprehensive Risk Measure of Trading Units (with a 99.9 % confidence level and one-year capital horizon)^{1,2,3}

in € m.	2017	2016
Average	5.4	31.3
Maximum	6.3	39.8
Minimum	4.5	21.9
Period-end	4.4	17.9

¹ Regulatory Comprehensive Risk Measure calculated for the 12-week period ending December 29.

² Period end is based on the internal model spot value.

³ All liquidity horizons are set to 12 months.

The internal model comprehensive risk measure as at the end 2017 was € 4.4 million a decrease of € 13.5 million (-75 %) compared with year end 2016. The 12-week average of our regulatory comprehensive risk measure as at the end of 2017 was € 5.4 million and thus € 25.8 million (83 %) lower compared with the average for the 12-week period ending December 31, 2016. The reduction was due to continued de-risking on this portfolio.

The following table, EU MR3, displays the maximum, minimum, average and the ending for the reporting period values resulting from the different types of models. This table is based on the spot values of the metrics as opposed to the regulatory defined calculation (e.g. not considering any comparisons between spot and average values used in the actual RWA calculations). The VaR and SVaR are both ten day values and this has been calculated using a square root of ten conversion from the one day value.

EU MR3 – IMA values for trading portfolios

in € m.	Dec 31, 2017	Jun 30, 2017
	a	a
VaR (10 day 99%)		
1 Maximum value	111.9	121.5
2 Average value	88.1	100.5
3 Minimum value	63.7	76.6
4 Period end	92.1	105.4
SVaR (10 day 99%)		
5 Maximum value	348.3	395.2
6 Average value	233.5	251.6
7 Minimum value	132.7	159.6
8 Period end	270.7	254.4
IRC (99.9%)		
9 Maximum value	899.3	768.2
10 Average value	750.6	643.2
11 Minimum value	630.9	535.1
12 Period end	630.9	715.8
Comprehensive risk capital charge (99.9%)		
13 Maximum value	9.0	23.3
14 Average value	5.7	14.9
15 Minimum value	3.0	5.8
16 Period end	4.4	6.1

Article 455 (e) CRR - Regulatory capital requirements for market risk

For details on the capital requirements for market risk please refer to section “Article 438 (c-f) CRR - Overview of capital requirements” on page 32 and section “Article 445 CRR- Exposure to market risk” on page 103 of this Pillar 3 report.

Article 455 (f) CRR - Weighted average liquidity horizons in market risk models

For information on the weighted average liquidity/capital horizons within our internal market risk models please refer to the section “Article 455 (a)(ii) CRR - Incremental risk charge and comprehensive risk measure” in this report on the pages 107 to 109.

Article 455 (g) CRR - Comparison of end-of-day VaR measures with one-day changes in portfolio's value

Please refer to our Annual Report 2017, section “Results of Regulatory Backtesting of Trading Market Risk” on page 122 for further insights into Deutsche Bank’s market risk backtesting results – in particular explanations and background on the observed outliers and the related graph EU MR4 – Comparison of VaR estimates with gains/losses.

Operational Risk

Article 446 CRR - Operational Risk Measurement

We calculate and measure the regulatory and economic capital requirements for operational risk using the advanced measurement approach (“AMA”) methodology. Our AMA capital calculation is based upon the loss distribution approach. Gross losses from historical internal and external loss data (Operational Riskdata eXchange Association consortium data) and external scenarios from a public database (IBM OpData) complemented by internal scenario data are used to estimate the risk profile (i.e., a loss frequency and a loss severity distribution). Our loss distribution approach model includes conservatism by recognizing losses on events that arise over multiple years as single events in our historical loss profile.

Within the Loss Distribution Approach (LDA) model, the frequency and severity distributions are combined in a monte carlo simulation to generate potential losses over a one year time horizon. Finally, the risk mitigating benefits of insurance are applied to each loss generated in the monte carlo simulation. Correlation and diversification benefits are applied to the net losses in a manner compatible with regulatory requirements to arrive at a net loss distribution at Group level, covering expected and unexpected losses. Capital is then allocated to each of the business divisions after considering qualitative adjustments and expected loss.

The regulatory capital requirement for operational risk is derived from the 99.9 % percentile. Since Q4 2017, the economic capital is also set at 99.9 % percentile, see the section “Internal Capital Adequacy” of the Annual Report on page 92. Both regulatory and economic capital requirements are calculated for a time horizon of one year.

The regulatory and economic capital demand calculations are performed on a quarterly basis. Non-Financial risk management (NFRM) aims to ensure that for the approach for capital demand quantification appropriate development, validation and change governance processes are in place, whereby the validation is performed by an independent validation function and in line with the Group’s model risk management process.

Drivers for Operational Risk Capital Development

In 2017, our operational risk losses have been predominantly driven by losses and provisions arising from civil litigation and regulatory enforcement. Such losses account for 70 % of operational risk losses and account for the majority of operational risk regulatory and economic capital demand. For a description of our current legal and regulatory proceedings, please see section “Current Individual Proceedings” in Note 29 “Provisions” to our consolidated financial statements on page 276. The operational risk losses from civil litigation and regulatory enforcement decreased by € 2.5 billion or 85 % while our non-legal operational risk losses were € 29 million or 19% higher compared to 2016.

In view of the relevance of legal risks within our operational risk profile, we dedicate specific attention to the management and measurement of our open civil litigation and regulatory enforcement matters where the Group relies both on information from internal as well as external data sources to consider developments in legal matters that affect the Group specifically but also the banking industry as a whole. Reflecting the multi-year nature of legal proceedings the measurement of these risks furthermore takes into account changing levels of certainty by capturing the risks at various stages throughout the lifecycle of a legal matter.

Conceptually, the Group measures operational risk including legal risk by determining the maximum loss that will not be exceeded with a given probability. This maximum loss amount includes a component that due to the IFRS criteria is reflected in our financial statements and a component that is expressed as regulatory or economic capital demand that is above the amount reflected as provisions within our financial statements.

The legal losses which the Group expects with a likelihood of more than 50 % are already reflected in our IFRS group financial statements. These losses include net changes in provisions for existing and new cases in a specific period where the loss is deemed probable and is reliably measurable in accordance with IAS 37. The development of our legal provisions for civil litigations and regulatory enforcement is outlined in detail in Note 29 “Provisions” of the Annual Report 2017 on page 273.

Uncertain legal losses which are not reflected in our financial statements as provisions because they do not meet the recognition criteria under IAS 37 are expressed as “regulatory or economic capital demand” reflecting our risk exposure that consumes regulatory and economic capital.

To quantify the litigation losses in the AMA model the Group takes into account historic losses, provisions, contingent liabilities and legal forecasts. Legal forecasts are generally comprised of ranges of potential losses from legal matters that are not deemed probable but are reasonably possible. Reasonably possible losses may result from ongoing and new legal matters which are reviewed at least quarterly by the attorneys handling the legal matters.

We include the legal forecasts in the “Relevant Loss Data” used in our AMA model. Hereby the projection range of the legal forecasts is not restricted to the one year capital time horizon but goes beyond and conservatively assumes early settlement of the underlying losses in the reporting period - thus considering the multi-year nature of legal matters.

Our AMA Model Validation and Quality Assurance Review Concept

We independently validate all our AMA model components including but not limited to scenarios, Key Risk Indicators (KRI) and self-assessments, expected loss and relevant loss data individually. The results of the validation are summarized in validation reports and identified issues are followed up for resolution. For example, the validation activities in the past years detected areas of improvement required in our AMA model regarding the estimation of the loss frequency and the use of legal forecasts; these are now included in our AMA model. Quality assurance reviews are performed for the AMA components requiring data input provided by business divisions and result in capital impact. The AMA components and documentation are challenged and compared across business divisions to help us maintain consistency and adequacy for our capital metrics.

Our Operational Risk Management Stress Testing Concept

We conduct stress testing on a regular basis to complement our AMA methodology, to analyze the impact of extreme macro scenarios on our capital and the profit-and-loss account. It also contains reputational impacts. In 2017, NFRM took part in all firm-wide stress test scenarios and assessed and contributed the impact of operational risk to the various stress levels of the scenarios. The impact of operational risk on macro stress test scenarios has been moderate and remained in the expected range in regards to capital, which is due to the fact that our AMA model already applies a conservative multi-year view on loss sizes (including legal forecasts) even in non-stress mode.

Article 446 CRR - Operational Risk Exposure

Operational Risk – Risk Profile

Operational Risk Losses by Event Type (Profit and Loss view)

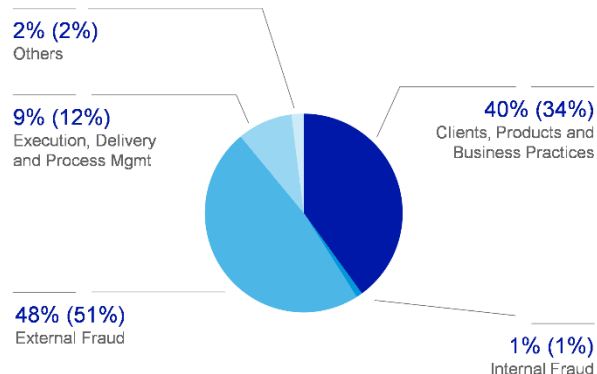
in € m.	2017	2016 ¹
Clients, Products and Business Practices	309	2,512
Internal Fraud	38	397
External Fraud	15	18
Execution, Delivery and Process Management	223	119
Others	30	25
Group	615	3,072

¹ Changed 2016 loss figures due to subsequent capture of losses and reclassification.

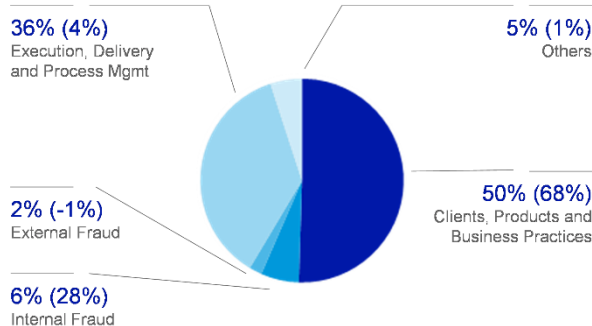
As of December 31, 2017, profit and loss based operational losses decreased by € 2.5 billion or 80 % compared to year-end 2016. The decrease was driven by the event types “Clients, Products and Business Practices” and “Internal Fraud”, due to settlements reached and increased litigation reserves for unsettled cases in 2016.

Operational Losses by Event Type occurred in the period 2017 (2012-2016)

Frequency of Operational Losses (first posting date)



Distribution of Operational Losses (posting date)



¹ Percentages in brackets correspond to loss frequency respectively to loss amount for losses occurred in 2012-2016 period. Frequency and amounts can change subsequently.

The above left chart “Frequency of Operational Losses” summarizes operational risk events which occurred in 2017 compared to the five-year period 2012-2016 in brackets based on the period in which a loss was first recognized for that event. For example, for a loss event that was first recognized in 2010 with an additional profit/loss event recognized in 2017, the frequency chart would not include the loss event, but the loss distribution chart would include the profit/loss recognized in the respective period.

Frequencies are driven by the event types “External Fraud” with a frequency of 48 % and the event type “Clients, Product and Business Practices” with 40 % of all observed loss events. “Execution, Delivery and Process Management” contributes 9 %. Others are stable at 2 %. The event type “Internal Fraud” has a low frequency, resulting in less than 1 % of the loss events in the period 2017.

The above right chart “Distribution of Operational Losses” summarizes operational risk loss postings recognized in the profit/loss in 2017 compared to the five-year period 2012-2016. The event type “Clients, Product and Business Practices” dominates the operational loss distribution with a share of 50 % and is determined by outflows related to litigation, investigations and enforcement actions. “Execution, Delivery and Process Management” has the second highest share (36 %) which is related to one large event in 2017. The absolute loss amount of this event type only shows a small increase, but the relative increase is high, given the smaller basis of the total operational risk Losses. Finally, the event types “Internal Fraud” (6 %), “Others” (5 %) and “External Fraud” (2 %) are minor, compared to other event types.

Economic Capital usage for Operational Risks

Economic Capital Usage for Operational Risk by Business Division

in € m.	Dec 31, 2017	Dec 31, 2016	2017 increase (decrease) from 2016	
			in € m.	in %
Corporate & Investment Bank	5,995	8,330	(2,335)	(28)
Private & Commercial Bank	932	1,437	(504)	(35)
Deutsche Asset Management	402	561	(159)	(28)
Non-Core Operations Unit	0	160	(160)	(100)
Consolidation & Adjustments and Other	0	0	0	N/M
Total economic capital usage for operational risk	7,329	10,488	(3,159)	(30)

As mentioned in section “Internal Capital Adequacy” of our Annual Report 2017 on page 92, the Group has changed its reference confidence level for its economic capital metric from 99.98 % to the 99.9 % from November 2017. The operational risk economic capital usage totaled € 7.3 billion, as of December 31, 2017, which is € 3.2 billion or 30 % lower than the € 10.5 billion economic capital usage as of December 31, 2016. The decrease was almost exclusively driven by the impact from the change in the reference confidence level, which was only marginally offset by the effects that also led to the small increase in regulatory capital for operational risk as outlined in section “Operational Risk Management” on page 71 of our Annual Report 2017.

Article 454 CRR - Use of the Advanced Measurement Approaches to operational risk

Description of the use of insurances and other risk transfer mechanisms for the purpose of mitigation of this risk

The definition of our insurance strategy and supporting insurance policy and guidelines is the responsibility of our specialized unit Corporate Insurance/Deukona (“CI/D”). CI/D is responsible for our global corporate insurance policy which is approved by our Management Board.

CI/D is responsible for acquiring insurance coverage and for negotiating contract terms and premiums. CI/D also has a role in the allocation of insurance premiums to the businesses. CI/D specialists assist in devising the method for reflecting insurance in the capital calculations and in arriving at parameters to reflect the regulatory requirements. They validate the settings of insurance parameters used in the AMA model and provide respective updates. CI/D is actively involved in industry efforts to reflect the effect of insurance in the results of the capital calculations.

We buy insurance in order to protect ourselves against unexpected and substantial unforeseeable losses. The identification, definition of magnitude and estimation procedures used are based on the recognized insurance principles and methods. The maximum limit per insured risk takes into account the reliability of the insurer and a cost/benefit ratio, especially in cases in which the insurance market tries to reduce coverage by restricted/limited policy wordings and specific exclusions.

We maintain two insurance companies. However, insurance contracts provided are only considered in the modeling/calculation of insurance-related reductions of operational risk capital requirements where the risk is re-insured in the external insurance market.

The regulatory capital figure includes a deduction for insurance coverage amounting to € 311 million as of December 31, 2017 compared with € 330 million as of December 31, 2016. Currently, no other risk transfer techniques beyond insurance are recognized in the AMA model.

CI/D selects insurance partners in strict compliance with the regulatory requirements specified in the CRR and based on recommendations of the respective subject matter experts on the recognition of insurance in advanced measurement approaches. The insurance portfolio, as well as CI/D activities, is audited by Group Audit on a risk-based approach.

Exposures in equities in the banking book

Article 447 (a) CRR - Accounting and valuation of equity investments

Outside of trading, equity investments which are neither consolidated for regulatory purposes nor deducted from our regulatory capital are held as equity positions in the regulatory banking book. In our consolidated balance sheet, these equity investments are classified as financial assets Available for Sale (AFS), Equity method investments or financial assets designated at fair value through profit or loss.

For details on our accounting and valuation policies related to AFS equity instruments and investments in associates and joint ventures please refer to Note 1 "Significant Accounting Policies and Critical Accounting Estimates" on page 202, Note 13 "Financial Instruments carried at Fair Value" on page 235 and Note 17 "Equity Method Investments" on page 251 of our Annual Report 2017.

Article 447 (b) CRR - Equity investment exposure

Equity Investments According to IFRS Classification

in € m.	Carrying value	
	Dec 31, 2017	Dec 31, 2016
Financial assets available for sale – equity instruments	1,019	1,405
Exchange-traded positions	83	405
Non-exchange-traded positions	936	1,000
Equity method investments	865	1,026
Exchange-traded positions	0	12
Non-exchange-traded positions	865	1,014
Financial assets designated at fair value through profit or loss – equity instruments	0	0
Exchange-traded positions	0	0
Non-exchange-traded positions	0	0
Total equity investments	1,885	2,431

For AFS equity investments, the components considered are realized gains and losses from sales and liquidations as well as unrealized revaluation gains (losses) and impairments. For equity method investments, the gain and loss elements consist of realized gains and losses from sales and liquidations, pro-rata share of net income (loss), impairments and unrealized revaluation gains (losses) in form of the differences between carrying amounts and fair values. As of December 31, 2017 all investment positions with exchange-traded equity method investments were sold, a slight difference between the carrying value of these investment positions and their fair value was only observed in the period of December 31, 2016, which had a carrying value of € 12 million and a fair value of € 18 million as of December 31, 2016.

Article 447 (c) CRR - Types and nature of equity exposures

Equity Investments Held

The tables above and below present IFRS classifications and the gains (losses) for equity investments held. These equity investments principally constitute equity positions in the regulatory banking book or capital deductions according to CRR. However, the following aspects need to be considered when comparing the equity investments held – presented below – with the equity position in the regulatory banking book:

- Equity investments held by entities, which are consolidated for IFRS purposes but not consolidated for regulatory purposes, are included in the tables.
- Collective investment undertakings, which are shown as equity instruments under IFRS, are treated differently for regulatory purposes and are not included in the tables.
- Entities holding equity investments which are considered for regulatory purposes but not consolidated according to IFRS, do not provide IFRS balance sheet and profit or loss information, and are excluded from these tables. The regulatory exposure value (“EAD”) of these excluded equity investments has been accounted as nil for December 31, 2017 similar to December 31, 2016.
- Other positions like equity underlings’ resulting from derivative transactions or certain subordinated bonds which from a regulatory point of view are also assigned to the exposure class “Equity in the banking book” are excluded from the tables. Their EAD amounted to € 140 million as of December 31, 2017, and € 314 million as of December 31, 2016.
- The regulatory equity position includes € 435 million EAD as of December 31, 2017, and € 530 million EAD as of December 31, 2016, in respect of equity investments which are Group-internal from an IFRS perspective.
- “Non-exchange-traded positions” combine private equity exposures in sufficiently diversified portfolios and other exposures according to Article 447 (c) CRR.

For further information on types and nature of these equity investments please refer to our Annual Report 2017, chapter “Market Risk Management”, section “Equity and Investment Risk” on page 71.

Article 447 (d-e) CRR - Gains and losses from equity investments

Realized Gains (Losses) in the Reporting Period and Unrealized Gains (Losses) at Year-end from Equity Investments

in € m.	2017	2016
Gains and losses on disposal	361	691
Impairments	(13)	(2)
Pro-rata share of net income (loss)	141	183
Total realized gains (losses) from equity investments	489	873
	Dec 31, 2017	Dec 31, 2016
Unrealized revaluation gains (losses)	426	647
Difference between carrying value and fair value	0	5
Total unrealized gains (losses) from equity investments	426	652

The realized gains (losses) on disposals, the impairments and the pro-rata share of net income (loss) are referring to the reporting period 2017 and 2016 whereas the unrealized revaluation gains (losses) as well as the difference between the carrying values and the fair values for the equity investments represent the amounts as of December 31, 2017, and December 31, 2016.

Exposure to interest rate risk in the banking book (Article 448 CRR)

Please refer to our Annual Report 2017 chapter “Risk and Capital Management”, section “Nontrading Market Risk” with its sub-section “Interest Rate Risk in the Banking Book” on page 69 as well as to the section “Nontrading Market Risk Exposures” and therein the sub-section “Interest Rate Risk in the Banking Book” on page 124.

Exposure to securitization positions

Article 449 (a) CRR - Objectives in relation to securitization activity

We engage in various business activities that use securitization structures. The main purposes are to provide investor clients with access to risk and returns related to specific portfolios of assets, to provide borrowing clients with access to funding and to manage our own credit risk exposure. In order to achieve our business objectives, we act as originator, sponsor and investor on the securitization markets.

Article 4(1)(61) CRR defines which types of transactions and positions must be classified as securitization transactions and securitization positions for regulatory reporting.

Securitization transactions are basically defined as transactions in which the credit risk of a securitized portfolio is divided into at least two securitization tranches and where the payments to the holders of the tranches depend on the performance of the securitized portfolio. The different tranches are in a subordinate relationship that determines the order and the amount of payments or losses assigned to the holders of the tranches (waterfall). Loss allocations to a junior tranche will not already lead to a termination of the entire securitization transaction, i.e., senior tranches survive loss allocations to subordinate tranches.

Securitization positions can be acquired in various forms including investments in securitization tranches, derivative transactions for hedging interest rate and currency risks included in the waterfall, liquidity facilities, credit enhancements, unfunded credit protection or collateral for securitization tranches.

Assets originated or acquired with the intent to securitize follow the general approach for the assignment to the regulatory banking or trading book. Further details are described in chapter "Article 455 (c) CRR - Trading book allocation and prudent valuation", section "Allocation of Positions to the Regulatory Trading book" on page 111 in this report.

Article 449 (b) CRR - Nature of other risks in securitized assets

Similar to other fixed income and credit assets, securitized trading volume is linked to global growth and geopolitical events which affect liquidity and can lead to lower trading volumes, as observed during the crisis. Current changes to regulation and uncertainty over final implementation may lead to increased volatility and decreased liquidity/trading volumes across securitized products. Other potential risks that exist in securitized assets are prepayment, default, loss severity and servicer performance. Note that trading book assets are marked to market and the previous mentioned risks are reflected in the position's price.

Securitization activities have an impact on our liquidity activity. On the one hand, we have entered into securitization transactions as part of an active liquidity risk management strategy during 2008 and 2009, some of which we replaced in 2015 and 2017 with new securitization transactions. On the other hand, we are exposed to potential drawdown under the revolving commitments provided under some of our securitization facilities. This liquidity risk is monitored by our Treasury department and is included in our liquidity planning and regular stress testing.

Article 449 (d-e) CRR - The roles played in the securitization process

In the banking book positions, we act as originator, sponsor and investor. As an originator we use securitizations primarily as a strategy to reduce credit risk, mainly through the Credit Portfolio Strategies Group ("CPSG"). CPSG uses, among other means, synthetic securitizations to manage the credit risk of loans and lending-related commitments of the Institutional Corporate Credit portfolio (primarily unsecured, investment grade corporates), Leveraged Debt Capital Markets portfolio (primarily secured, non-investment grade corporates), and the German and Dutch MidCap portfolio within the corporate divisions of CIB. In addition CIB, through the Global Transaction Banking division, manages their trade finance exposures separately through synthetic securitizations. For all of the above portfolios, the credit risk is predominantly transferred to counterparties through synthetic securitizations mainly through the issuance of Credit Linked Notes providing first loss protection.

On a limited basis we have entered into securitization transactions as part of an active liquidity risk management strategy during 2008 and 2009, some of which we replaced in 2015 and 2017 with new securitization transactions. These transactions do not transfer credit risk and are therefore not included in the quantitative part of this section

Within our existing role as sponsor, we continue to establish and manage securitization schemes in which special purpose entities purchase exposures from third-party entities on behalf of investors. In these transactions, we have substantial influence on the selection of the purchased exposures and ultimate composition of the securitized portfolios.

Furthermore, we act as an investor in third party securitizations through the purchase of tranches from third party-issued securitizations, or by providing liquidity, credit support or other form of financing. Additionally, we assist third party securitizations by providing derivatives related to securitization structures. These include currency, interest rate, equity and credit derivatives.

Overall, the securitization positions are exposed to the performance of diverse asset classes, including primarily corporate senior secured loans or unsecured debt, consumer debt such as auto loans or student loans, as well as residential or commercial first and second lien mortgages. We are active across the entire capital structure with an emphasis on the more senior tranches. The subset of re-securitization is predominantly backed by securitizations with corporate obligations in the underlying pools.

In the trading book, we act as originator, sponsor and investor. In the role of investor, our main objective is to serve as a market maker in the secondary market. The market making function consists of providing liquidity for our customers and providing two way markets (buy and sell) to generate flow trading revenues. In the role of originator, we finance loans to be securitized, predominantly in the commercial real estate business. Trading book activities where we have the role of a sponsor (excluding activities derived from multi-seller originator transactions) as described above are minimal.

Our securitization desks trade assets across all capital structures, from senior bonds with large subordination to first loss subordinate tranches, across both securitizations and re-securitizations. Securitization positions consist mostly of residential mortgage backed securities ("RMBS") and commercial mortgage backed securities ("CMBS") backed by first and second lien loans, collateralized loan obligations ("CLOs") backed by corporate senior loans and unsecured debt and consumer ABS backed by secured and unsecured credit.

For further details about the extent of involvement in securitization roles, please also see section "Article 449 (n) CRR - Banking and trading book securitization exposures" and tables from section "(i) - Amount of outstanding exposures securitized" on page 127 of this Pillar 3 report.

Article 449 (f) and (c) CRR - Management of securitization positions, and risks in re-securitization activities

Management of Banking Book Securitizations

Primary recourse for securitization exposures lies with the underlying assets. The related risk is mitigated by credit enhancement typically in the form of overcollateralization, subordination, reserve accounts, excess interest, or other support arrangements. Additional protection features include performance triggers, financial covenants and events of default stipulated in the legal documentation which, when breached, provide for the acceleration of repayment, rights of foreclosure and/or other remediation.

The initial due diligence for new banking book exposures usually includes any or all of the following, depending on the specifics of the transaction: (a) the review of the relevant documents including term sheets, servicer reports or other historical performance data, third-party assessment reports such as rating agency analysis (if externally rated), etc., (b) modeling of base and downside scenarios through asset-class specific cash-flow models, (c) servicer reviews to assess the robustness of the servicer's processes and financial strength. The result of this due diligence is summarized in a credit and rating review which requires approval by an appropriate level of credit authority, depending on the size of exposure and internal rating assigned.

Compliance with the regulatory requirements for risk retention, due diligence and monitoring according to the applicable regulatory requirements is part of our credit review process and the relevant data is gathered for reporting purposes with the support of the IT systems used for the credit review process and the process for financial reporting

Ongoing regular performance reviews include checks of the periodic servicer reports against any performance triggers/covenants in the loan documentation, as well as the overall performance trend in the context of economic, geographic, sector and servicer developments. Monitoring of the re-securitization subset takes into consideration the performance of the securitized tranches' underlying assets, to the extent available.

For longer-term lending-related commitments an internal rating review is required at least annually. Significant negative or positive changes in asset performance can trigger an earlier review date. Full credit reviews are also required annually, or, for highly rated exposures, every other year. Furthermore, there is a separate, usually quarterly, watch list process for exposures identified to be at a higher risk of loss, which requires a separate assessment of asset and servicer performance. It includes a review of the exposure strategy and identifies next steps to be taken to mitigate loss potential. There is no difference in approach for re-securitization transactions.

Evaluation of structural integrity is another important component of risk management for securitization, focusing on the structural protection of a securitization as defined in the legal documentation (i.e., perfection of security interest, segregation of payment flows, and rights to audit). The evaluation for each securitization is performed by a dedicated team who engages third-party auditors, determines audit scopes, and reviews the results of such external audits. The results of these risk reviews and assessments complement the credit and rating review process performed by Credit Risk Management.

Management of Trading Book Securitizations

Our Market Risk Management Governance Framework applies to all securitization positions held within the trading book. The Risk Governance Framework applied to securitization includes policies and procedures with respect to new product approvals, new transaction approvals, risk models and measurements, as well as inventory management systems and trade entry. All securitization positions held within the trading book are captured, reported and limited within the Risk Governance Framework at the global, regional and product levels. Any changes in credit and market risks are also reported.

The limit structure includes value-at-risk and product specific thresholds. Asset class market value limits are based on seniority/rating and liquidity, where lower rated positions or positions in less liquid asset class are given a lower trading threshold. The limit monitoring system captures exposures and flags any threshold breaches. Market Risk Management approval is required for any trades over the limit or threshold.

The Market Risk Management Governance Framework also captures issuer (credit) risk for securitization positions in the trading book. MRM's process manages concentration risks and sets thresholds at the position level. The limit structure is based on asset class and rating where less liquid positions and those with lower ratings are assigned lower trading thresholds. When the limit monitoring system captures positions that exceed their respective market value thresholds on a global basis, MRM approval is required. Further due diligence is performed on positions that require trade approval; this includes analyzing the credit performance of the security and evaluating risks of the trade. In addition collateral level stress testing and performance monitoring is incorporated into the risk management process. The process covers both securitizations and re-securitizations.

Compliance with the CRR rules, as applicable requires that pre-trade due diligence is performed on all relevant positions. It is the responsibility of the respective trading desk to perform the pre-trade due diligence and then record the appropriate data records at trade execution to indicate whether relevant due diligence items have been performed. The pre-trade due diligence items include confirmations of deal structural features, performance monitoring of the underlying portfolio, and any related retention disclosures.

Product Control group within Finance then reviews trade inputs for errors or flag changes, distributes regulatory control reports and serves as the subject matter escalation contact. Upon validation of flag changes or trading desk errors, the Product Control group within Finance will then communicate and action the changes accordingly. Further pre-trade due diligence is performed by Market Risk Management for CRR, as applicable for relevant positions exceeding predefined limits (process as described above). Please refer to section "Market Risk Management" on page 65 in our Annual Report 2017 for detailed information on the market risk management framework.

Article 449 (g) CRR - Policies with respect to hedging and unfunded protection

Management of Banking Book Securitizations

Management of credit risk for securitization exposures is conducted primarily through avoidance of undue risk concentration on borrower, servicer and asset class levels. Any higher initial underwritings are de-risked to a final hold mandated in the credit approval mainly through syndication, or sales in the secondary market. Success of de-risking is monitored and reported regularly to senior management. Credit hedging requirements, if any, are mandated in the context of the individual credit approval. There is only very limited credit hedging activity in the banking book.

Furthermore, in the context of structuring securitization transactions, hedging usually takes place to insulate the SPE from interest rate and cross-currency risk – as far as required depending on the assets being included. When this hedging is provided by us, the related counterparty risk to the securitization structure is included in the Credit Risk Management review process and reported as part of the banking book exposure. If this hedging is not provided by us, it is largely conducted with large international financial institutions with strong financial condition. Please refer to the section “Credit Risk Management” in our Annual Report 2017 on pages 58 to 59 for detailed information on the credit risk management framework.

Management of Trading Book Securitizations

The securitization desks incorporate hedges to mitigate credit and interest rate risks on the entire securitization portfolio. Duration and credit sensitivities (DV01s and CS01s) are the primary risk sensitivity measures used to calculate appropriate hedges. Some of the hedging products utilized include plain vanilla interest rate swaps, US Treasury bonds and product specific liquid indices. The market risks of the hedges (both funded and unfunded) are incorporated and managed within our Market Risk Management Governance Framework as described above; and, the counterparty risks of the hedges (both funded and unfunded), which are comprised primarily of major global financial institutions, are managed and approved through a formalized risk management process performed by Credit Risk Management.

For further details, please refer to section “Article 449 (f) and (c) CRR - Management of securitization positions, and risks in re-securitization activities” above in this Pillar 3 Report on page 122.

Article 449 (h) CRR - RWA calculation approaches for securitization positions

The approach for the calculation of the regulatory capital requirements for banking book and trading book securitization positions is prescribed by the European Capital Requirements Regulation (“CRR”).

Calculation of Regulatory Capital Requirements for Banking Book Securitizations

The regulatory capital requirements for the credit risk of banking book securitizations are determined based on the securitization framework pursuant to Articles 242 to 270 CRR, which distinguishes between credit risk standardized approach (“CRSA”)–securitization positions and internal ratings based approach (“IRBA”)–securitization positions. The classification of securitization positions as either CRSA- or IRBA-securitization positions depends on the nature of the securitized portfolio. Basically, CRSA-securitization positions are those where the securitized portfolio predominantly includes credit risk exposures, which would qualify as CRSA-exposures under the credit risk framework if they would be held by us directly. Otherwise, if the majority of the securitized portfolio would qualify as IRBA-exposures, the securitization positions qualify as IRBA-securitization positions.

The risk weights of CRSA-securitization positions are derived from their relevant external ratings, when applicable. External ratings must satisfy certain eligibility criteria for being used in the risk weight calculation. Eligible external ratings are taken from Standard & Poor’s, Moody’s, Fitch Ratings, DBRS and Kroll. If more than one eligible rating is available for a specific securitization position, the relevant external rating is determined as the second best eligible rating in accordance with the provisions set forth in Article 269 CRR.

CRSA-securitization positions with no eligible external rating receive a risk weight of 1,250 % unless they qualify for the application of:

- the Internal Assessment Approach according to Article 109 (1) CRR in conjunction with Article 259 (3) and (4) CRR. The Internal Assessment Approach applies to unrated IRBA-securitization positions related to ABCP programs. As we ceased the use of ABCP programs in 2015, there are no securitization positions subject to the Internal Assessment Approach as of December 31, 2017.
- the risk concentration approach pursuant to Article 253 CRR which might lead to a risk weight below 1,250 %. The risk concentration approach is applied to a few CRSA-securitization exposures that are small compared with the total amount of our banking book securitization exposures.

The risk weight of IRBA-securitization positions is determined according to the following hierarchy:

- If one or more eligible external ratings exist for the IRBA-securitization position, or if an external rating can be inferred from an eligible external rating of a benchmark securitization position, the risk weight is derived from the relevant external rating (ratings based approach).
- Otherwise, if no eligible external rating exists or can be inferred, the risk weight of the IRBA-securitization position will generally be determined based on the supervisory formula approach pursuant to Section 262 CRR or the internal assessment approach pursuant to Article 259 (3) and (4) CRR.
- If neither of the aforementioned approaches can be applied, the position receives a risk weight of 1,250 %.

The ratings based approach applies to approximately 8 % of our IRBA- and CRSA-securitization exposure, largely in the lower (better) risk weight bands. The majority of securitization positions with an eligible external or inferred external credit assessment are securitization positions held as investor.

Approximately 92 % of the total banking book securitization exposure is subject to the supervisory formula approach (“SFA”). This approach is predominantly used to rate positions backed by corporate loans, auto-related receivables and commercial real estate loans. The risk weight of securitization positions subject to the SFA is determined based on a formula which takes as input the capital requirement of the securitized portfolio and the seniority of the securitization position in the waterfall, amongst others. When applying the SFA, we estimate the risk parameters PD and LGD for the assets included in the securitized portfolio, by using internally developed rating systems approved for such assets. We continue to develop new rating systems for homogeneous pools of assets to be applied to assets that have not been originated by us. The rating systems are based on historical default and loss information from comparable assets. The risk parameters PD and LGD are derived on risk pool level.

There is no securitization position for which we have applied the special provisions for originators of securitization transactions which include an investor’s interest to be recognized by the originator pursuant to Article 256 CRR respectively Article 265 CRR.

Calculation of Regulatory Capital Requirements for Trading Book Securitizations

The regulatory capital requirements for the market risk of trading book securitizations are determined based on a combination of internal models and regulatory standard approaches pursuant to Article 337 CRR.

The capital requirement for the general market risk of trading book securitization positions is determined as the sum of (i) the value-at-risk based capital requirement for market risk and (ii) the stressed value-at-risk based capital requirement for market risk.

The capital requirement for the specific market risk of trading book securitization positions depends on whether the positions are assigned to the regulatory correlation trading portfolio (“CTP”) or not.

For securitization positions that are not assigned to the CTP, the capital requirement for specific market risk is calculated based on the market risk standardized approach (“MRSA”). The MRSA risk weight for trading book securitization positions is generally calculated by using the same methodologies which apply to banking book securitization positions. The only difference relates to the use of the SFA for a small portion of trading book securitization positions, where the capital requirement of the securitized portfolio is determined by making use of risk parameters (probability of default and loss given default) that are based on the incremental risk charge model. The MRSA based capital requirement for specific risk is determined as the sum of the capital requirements for all net long and all net short securitization positions outside of the CTP. The securitization positions included in the MRSA calculations for specific risk are additionally included in the value-at-risk and stressed value-at-risk calculations for specific risk.

Trading book securitizations subject to MRSA treatment include various asset classes differentiated by the respective underlying collateral types:

- Residential mortgage backed securities (“RMBS”);
- Commercial mortgage backed securities (“CMBS”);
- Collateralized loan obligations (“CLO”);
- Collateralized debt obligations (“CDO”); and
- Asset backed securities (incl. credit cards, auto loans and leases, student loans, equipment loans and leases, dealer floor-plan loans, etc.).

They also include synthetic credit derivatives and commonly-traded indices based on the above listed instruments.

Conversely, the capital requirement for the specific market risk of securitization positions which are assigned to the CTP is determined as the sum of (i) the value-at-risk based capital requirement for specific risk, (ii) the stressed value-at-risk based capital requirement for specific risk and (iii) the capital requirement for specific risk as derived from the comprehensive risk measurement (“CRM”) model. The CRM based capital requirement is subject to a floor equal to 8 % of the higher of the specific risk capital requirements for all net long and all net short CTP positions under the MRSA.

The CTP includes securitization positions and nth-to-default credit derivatives principally held for the purpose of trading correlation that satisfy the following requirements:

- all reference instruments are either single-name instruments, including single-name credit derivatives for which a liquid two-way market exists, or commonly-traded indices based on those reference entities;
 - the positions are neither re-securitization positions, nor options on a securitization tranche, nor any other derivatives of securitization exposures that do not provide a pro-rata share in the proceeds of a securitization tranche; and
 - the positions do not reference a claim on a special purpose entity, claims or contingent claims on real estate property or retail.
- The CTP also comprises hedges to the securitization and nth-to-default positions in the portfolio, provided a liquid two-way market exists for the instrument or its underlying. Typical products assigned to the CTP are synthetic CDOs, nth-to-default credit default swaps (“CDS”), and index and single name CDS.

Please refer to section “Article 455 (a)(i) CRR - Characteristics of the market risk models” on page 105 of this report for general information on our market risk quantification approaches.

Article 449 (i) CRR - SSPEs in sponsoring activities

We occasionally use securitization SPEs to securitize third-party exposures in which we act as sponsor. In certain cases we also retain some of the securitized exposure. The majority (79 %) of our € 1.3 billion sponsor positions consist of senior securitization facilities backed by corporate loans.

When we act as originator or sponsor of a securitization transaction, we sell securitization tranches (or arrange for such sale through mandated market making institutions) solely on an “execution only” basis and only to sophisticated operative corporate clients that rely on their own risk assessment. In the ordinary course of business, we do not offer such tranches to operative corporate clients to which, at the same time, we offer investment advisory services.

Our division Deutsche Asset Management (“Deutsche AM”) provides asset management services to undertakings for collective investments, including mutual funds and alternative investment funds, and private individuals offering access to traditional and alternative investments across all major asset classes, including securitization positions. Less than 3 % of those positions consist of tranches in securitization transactions where Deutsche Bank acted as originator or sponsor.

Article 449 (j) CRR - Accounting policies for securitizations

Our accounting policies are included in our Annual Report 2017, specifically Note 1 “Significant Accounting Policies and Critical Accounting Estimates” on page 202. The most relevant accounting policies for the securitization programs originated by us, and where we hold assets purchased with the intent to securitize, are “Principles of Consolidation” on page 203, “Financial Assets and Financial Liabilities” on page 206 and “Derecognition of Financial Assets and Financial Liabilities” on page 214, see also Note 13 “Financial Instruments carried at Fair Value” on page 235. For measurement and quantification of both our banking and trading book securitizations, please refer to section “Article 449 (n) CRR - Banking and trading book securitization exposure” further below in this report on page 127.

Article 449 (k) CRR - External rating agencies used for securitizations

Please refer for all the used External rating agencies (ECAIs) to the section “Article 449 (h) CRR - RWA calculation approaches for securitization positions” in this Pillar 3 report on page 124.

Article 449 (l) CRR - Internal Assessment Approach

Please refer for a full description of the Internal Assessment Approach to the section “Article 449 (h) CRR - RWA calculation approaches for securitization positions” on page 124 in this Pillar 3 report.

Article 449 (m) CRR - Explanation of changes in quantitative disclosures

Explanations of changes in quantitative disclosures can be found above and below of every quantitative table in the securitization section.

Article 449 (n) CRR - Banking and trading book securitization exposures

(i) - Amount of outstanding exposures securitized

The amounts reported in the following tables provide details of our securitization exposures separately for the regulatory banking and trading book. The details of our trading book securitization positions subject to the market risk standardized approach (MRSA) are included in this chapter, while details of the trading book securitization positions covered under the Comprehensive Risk Measure (“CRM”) are described in the section “Article 455 (d) CRR - Overview of Value-at-Risk Metrics” on page 112 in this report.

We are only exposed to credit or market risks related to the exposures securitized, as shown below, to the extent that we have retained or purchased any of the related securitization positions. The risk of the retained or purchased positions depends on the relative position in the payment waterfall structure of the securitization transaction. For disclosure purposes, we are deemed to be originator and additionally sponsor in case of multi-seller securitizations, which is reflected in the disclosure of the total outstanding exposures securitized in the sponsor column and our share of those exposures in the originator column.

The following table details the total banking book outstanding exposure split by exposure type, i.e., the overall pool size, we have securitized in our capacity as either originator or sponsor through traditional or synthetic securitization transactions. Within the originator columns the table provides information of the underlying securitized asset pool which was either originated from our balance sheet or acquired from third parties. The amounts reported are the principal notional amounts with the exception of on-balance sheet synthetic securitizations for which the carrying values as reported in our consolidated financial statements are shown. Of the € 44.8 billion total outstanding securitized exposure reported as of December 31, 2017 in the table below as originator, the amount retained was € 36.1 billion reflecting a decrease in both outstanding securitized as well as retained exposures due to a positive FX impact and lower business volume in our synthetic banking book positions. For December 31, 2016 these exposures amounted to € 59.3 billion and € 43.9 billion respectively.

For sponsor relationships, the total outstanding exposure securitized reported in the table below represents the principal notional amount of outstanding exposures of the entities issuing the securities and other receivables. As of December 31, 2017, our retained or re-purchased exposure of the € 9.7 billion total outstanding exposure securitized shown in the sponsor columns including multi-seller transactions was € 1.3 billion. The remaining exposure is held by third parties. As of December 31, 2016, our total outstanding exposure securitized resulting from sponsoring activities amounted to € 9.0 billion. This included the retained or re-purchased exposure from multi-seller transactions in the amount of € 910 million.

Outstanding Exposures Securitized by Exposure Type (Overall Pool Size) within the Banking Book

in € m.	Dec 31, 2017				Dec 31, 2016			
	Originator		Sponsor ¹		Originator		Sponsor ¹	
	Traditional	Synthetic	Traditional	Synthetic	Traditional	Synthetic	Traditional	Synthetic
Residential mortgages	2,457	0	2,359	0	4,940	0	680	0
Commercial mortgages	4,081	0	5,616	0	6,930	0	6,816	0
Credit card receivables	0	0	0	0	0	0	0	0
Leasing	121	0	0	0	123	0	349	0
Loans to corporates or SMEs (treated as corporates) ²	33	35,900	1,741	0	40	47,280	1,118	0
Consumer loans	0	0	0	0	0	0	0	0
Trade receivables	0	0	0	0	0	0	0	0
Covered bonds	0	0	0	0	0	0	0	0
Other liabilities	0	0	0	0	0	0	0	0
Other assets	0	2,193	0	0	0	0	0	0
Total outstanding exposures securitized³	6,692	38,093	9,717	0	12,032	47,280	8,963	0

¹ As of December 31, 2017 included under sponsor is the amount € 5.2 billion of multi-seller related securitized exposures, of which we have originated € 2.4 billion, and therefore have also included this amount under originator. For December 31, 2016 the amounts were € 6.8 billion and € 3.5 billion respectively.

² SMEs are small- or medium-sized enterprises.

³ For a regulatory assessment of our exposure to credit risk in relation to securitization activity in the banking book see table "Banking Book Securitization Positions Retained or Purchased by Risk Weight Band".

The table below provides the total outstanding exposure securitized in relation to securitization positions held in our regulatory trading book separately for originator and sponsor activities and further broken down into traditional and synthetic transactions. Short synthetic single tranche CDOs have been reflected as originator positions for which the synthetic pool size was determined as the maximum pool size of the position-sets referencing a given synthetic pool. The total outstanding exposure securitized as shown in the table below does not reflect our risk as it includes exposures not retained by us, does not consider the different positioning in the waterfall of related positions and – most notably – does not reflect hedging.

The € 7.2 billion outstanding exposure decrease of originator synthetic transactions was driven by the wind down of short synthetic single tranche CDOs, while the 28 % reduction in the overall pool size of traditional securitizations is the combined effect of the overall regulatory exposure decrease and the decline of our securitization activity within the trading book 2017.

Outstanding Exposures Securitized by Exposure Type (Overall Pool Size) within the Trading Book

in € m.	Dec 31, 2017				Dec 31, 2016			
	Originator		Sponsor ¹		Originator		Sponsor ¹	
	Traditional	Synthetic	Traditional	Synthetic	Traditional	Synthetic	Traditional	Synthetic
Residential mortgages	3,798	0	4,296	0	1,478	0	6,124	0
Commercial mortgages	34,680	0	49,338	0	48,942	0	62,414	0
Credit card receivables	0	0	0	0	0	0	0	0
Leasing	0	0	0	0	0	0	0	0
Loans to corporates or SMEs (treated as corporates) ²	0	29	0	0	56	7,231	0	0
Consumer loans	1,102	0	0	0	0	0	0	0
Trade receivables	0	0	0	0	0	0	0	0
Covered bonds	0	0	0	0	0	0	0	0
Other liabilities	0	0	0	0	0	0	0	0
Other assets	727	0	0	0	838	0	0	0
Total outstanding exposures securitized³	40,307	29	53,634	0	51,313	7,231	68,538	0

¹ As of December 31, 2017 included under sponsor is the amount € 49.3 billion of multi-seller related securitized exposures, of which we have originated € 20.2 billion, and therefore have also included this amount under originator. For December 31, 2016 the amounts were € 62.4 billion and € 26.5 billion respectively.

² SMEs are small- or medium-sized enterprises.

³ For a regulatory assessment of our exposure to market risk in relation to securitization activity in the trading book see table "Trading Book Securitization Positions Retained or Purchased by Risk Weight Band subject to the MRSA". Additionally the table includes securitized exposure as originator amounting to € 3.7 billion and as sponsor amounting to € 5.3 billion already reflected in table "Outstanding Exposures Securitized by Exposure Type (Overall Pool Size) within the Banking Book".

(ii) - On balance sheet securitization retained or purchased, and off-balance sheet exposures

The table below shows the amount of the securitization positions retained or purchased in the banking and trading book. The reported amounts in the banking book are based on the regulatory exposure values after financial collateral usage and hedging but prior to the application of other credit risk mitigation techniques. The securitization positions in the regulatory trading book are reported based on the exposure definition in Articles 327 to 332 CRR which states that identical or closely matched securities and derivatives shall be offset to a net position. The capital requirements for securitization positions within the regulatory banking and trading book are additionally reported by the underlying exposure type.

Securitization Positions Retained or Purchased by Exposure Type

in € m.	Banking Book					Trading Book				
	On-balance securitization positions	Off-balance, derivative and SFT securitization positions	Regulatory exposure value	thereof \geq 1,250% risk weighted	Capital requirements	On-balance securitization positions	Off-balance, derivative and SFT securitization positions	Regulatory exposure value	thereof 1,250% risk weighted	Capital requirements
Residential mortgages	2,914	82	2,996	89	113	1,613	42	1,655	71	97
Commercial mortgages	737	421	1,159	15	45	669	1,933	2,603	10	43
Credit card receivables	398	416	814	0	21	39	0	39	0	1
Leasing	3,055	606	3,661	6	38	57	0	57	0	2
Loans to corporates or SMEs (treated as corporates) ¹	45,428	1,241	46,670	24	512	1,216	17	1,233	166	207
Consumer loans	5,374	452	5,826	2	60	270	0	270	1	8
Trade receivables	0	0	0	0	0	35	0	35	0	5
Covered bonds	0	0	0	0	0	6	0	6	0	0
Other liabilities	0	0	0	0	0	0	0	0	0	0
Other assets	1,620	56	1,676	7	25	311	1	312	4	14
Total securitization positions retained or purchased²	59,526	3,275	62,802	143	814	4,215	1,993	6,209	253	377

¹ SMEs are small- or medium-sized enterprises.

² For a regulatory assessment of our exposure to credit risk in relation to securitization activities see table "Banking Book Securitization Positions Retained or Purchased by Risk Weight Band" and for our exposure to market risk in relation to securitization activities see table "Trading Book Securitization Positions Retained or Purchased by Risk Weight Band subject to MRSA".

in € m.	Banking Book					Trading Book				
	On-balance securitization positions	Off-balance, derivative and SFT securitization positions	Regulatory exposure value	thereof $\geq 1,250\%$ risk weighted	Capital requirements	On-balance securitization positions	Off-balance, derivative and SFT securitization positions	Regulatory exposure value	thereof $1,250\%$ risk weighted	Capital requirements
	Residential mortgages	5,812	631	6,443	104	184	1,552	209	1,761	194
Commercial mortgages	1,190	725	1,915	60	98	975	1,676	2,650	46	75
Credit card receivables	175	662	838	0	18	51	44	95	0	1
Leasing	3,994	692	4,687	7	54	21	0	21	0	1
Loans to corporates or SMEs (treated as corporates) ¹	49,733	1,922	51,655	10	587	1,135	206	1,342	231	95
Consumer loans	7,610	1,114	8,724	0	134	484	0	484	1	14
Trade receivables	0	0	0	0	0	7	0	7	0	0
Covered bonds	0	0	0	0	0	13	0	13	0	0
Other liabilities	0	0	0	0	0	0	0	0	0	0
Other assets	2,140	234	2,374	10	35	190	11	201	20	15
Total securitization positions retained or purchased²	70,655	5,981	76,636	192	1,110	4,428	2,146	6,574	491	272

¹ SMEs are small- or medium-sized enterprises.

² For a regulatory assessment of our exposure to credit risk in relation to securitization activities see table "Banking Book Securitization Positions Retained or Purchased by Risk Weight Band" and for our exposure to market risk in relation to securitization activities see table "Trading Book Securitization Positions Retained or Purchased by Risk Weight Band subject to MRSA".

Total retained or purchased securitization positions in the banking book decreased by € 13.8 billion or 18 % throughout the year 2017. The decrease was mainly driven by the positive FX effect of € 6.9 billion, affecting all exposures types. Additionally, the termination of banking book securitization positions in the exposure class "Consumer Loans" and a lower business volume in our synthetic securitization positions related to the exposure class "Loans to corporates or SMEs" caused the decrease of banking book securitization exposure.

Within the trading book, the securitization exposure decreased by € 365 million or 6 % mainly in the exposure type "Consumer Loans" predominantly due to reduced book volume. Despite the overall exposure decrease the capital requirement increased by € 105 million in 2017. This was mainly driven by the 120 % growth of long credit exposure within the exposure type "Loans to corporates or SMEs", which does not benefit from the cap on own funds requirement for specific risk according to Article 335 CRR.

Securitization Positions Retained or Purchased by Region (Exposure Amount)

in € m.	Dec 31, 2017		Dec 31, 2016	
	Banking Book	Trading Book	Banking Book	Trading Book
Europe	21,464	1,048	25,492	1,438
Americas	35,924	3,411	45,241	3,827
Asia/Pacific	5,411	1,049	5,756	701
Other	3	701	147	608
Total securitization positions retained or purchased¹	62,802	6,209	76,636	6,574

¹ For a regulatory assessment of our exposure to credit risk in relation to securitization activities see table "Banking Book Securitization Positions Retained or Purchased by Risk Weight Band" and for our exposure to market risk in relation to securitization activities see table "Trading Book Securitization Positions Retained or Purchased by Risk Weight Band subject to MRSA".

The amounts shown in the table above are based on the country of domicile of the obligors of the exposures securitized. The exposure decrease in the banking book for the regions "Americas" was a result of the positive FX effect, disposals and lower business activities. The exposure reduction in the trading book within the regions "Europe" and "Americas" was driven by the aforementioned regulatory exposure decline in the exposure class "Consumer Loans".

(iii) - Amount of assets awaiting securitization

The following table provides details of existing banking and trading book outstanding exposures split by exposure type for which there is a management intention to securitize them in either an existing or new securitization transaction in the near future. Outstanding exposures awaiting securitization do not include assets due for securitization without risk transfer, e.g. those securitizations where we will keep all tranches.

Outstanding Exposures Awaiting Securitization (Exposure Amount)

in € m.	Dec 31, 2017		Dec 31, 2016	
	Banking Book	Trading Book	Banking Book	Trading Book
Residential mortgages	0	0	0	0
Commercial mortgages	0	1,551	76	1,273
Credit card receivables	0	0	0	0
Leasing	0	0	0	0
Loans to corporates or SMEs (treated as corporates) ¹	2,498	0	0	0
Consumer loans	0	0	0	0
Trade receivables	0	0	0	0
Covered bonds	0	0	0	0
Other liabilities	0	0	0	0
Other assets	0	0	0	2,500
Outstanding exposures awaiting securitization	2,498	1,551	76	3,773

¹ SMEs are small- or medium-sized enterprises.

As of December 31, 2017 we held commercial mortgages in the amount of € 1.6 billion in the trading book and extended loans to corporates or SMEs amounting to € 2.5 billion in the banking book with the intention to securitize them.

(iv) - Early amortization treatment

There is no securitization position for which we have applied the special provisions for originators of securitization transactions which include an investor's interest to be recognized by the originator pursuant to Article 256 CRR respectively Article 265 CRR.

(v) - Deducted or 1,250%-weighted securitization positions

Please refer for deducted or 1,250 % weighted securitization positions to the section "449 (n) (ii) – On balance sheet securitization retained or purchased, and off-balance sheet exposures" within this Pillar 3 report on pages 129 to 130.

(vi) - Amount of exposures securitized and recognized gains or losses on sales

The 2017 year-end amounts in the tables below show an increase of our securitization activity in the banking book compared with 2016. This increased activity predominately concerned the exposure type "Other assets" dominated by the synthetic transactions executed by the Corporate and Investment Bank. Securitization activities in the trading book declined by 10 % to € 9.3 billion driven by the weakening demand for CMBS.

Securitization Activity – Total Outstanding Exposures Securitized (i.e., the underlying pools) by Exposure Type within the Banking Book

in € m.	Originator		Realized gains (losses) from sales/ liquidations	Sponsor	
	Dec 31, 2017	2017		Dec 31, 2017	
	Traditional	Synthetic		Traditional	Synthetic
Residential mortgages	0	0	0	362	0
Commercial mortgages	310	0	0	0	0
Credit card receivables	0	0	0	0	0
Leasing	0	0	0	0	0
Loans to corporates or SMEs (treated as corporates) ¹	0	7,970	0	450	0
Consumer loans	0	0	0	0	0
Trade receivables	0	0	0	0	0
Covered Bonds	0	0	0	0	0
Other liabilities	0	0	0	0	0
Other assets	0	2,193	0	0	0
Total Outstanding Exposures Securitized²	310	10,163	0	812	0

¹ SMEs are small- or medium-sized enterprises.

² For a regulatory assessment of our exposure to credit risk in relation to securitization activity in the banking book see table "Banking Book Securitization Positions Retained or Purchased by Risk Weight Band".

	Originator			Sponsor	
	Dec 31, 2016		2016	Dec 31, 2016	
in € m.	Traditional	Synthetic	Realized gains (losses) from sales/ liquidations	Traditional	Synthetic
Residential mortgages	0	0	0	0	0
Commercial mortgages	0	0	0	0	0
Credit card receivables	0	0	0	0	0
Leasing	88	0	0	0	0
Loans to corporates or SMEs (treated as corporates) ¹	0	7,610	0	95	0
Consumer loans	0	0	0	0	0
Trade receivables	0	0	0	0	0
Covered Bonds	0	0	0	0	0
Other liabilities	0	0	0	0	0
Other assets	0	0	0	0	0
Total Outstanding Exposures Securitized²	88	7,610	0	95	0

¹ SMEs are small- or medium-sized enterprises.

² For a regulatory assessment of our exposure to credit risk in relation to securitization activity in the banking book see table "Banking Book Securitization Positions Retained or Purchased by Risk Weight Band".

The higher exposure originated via synthetic securitizations in 2017 compared to 2016 in the banking book was mainly driven by a new synthetic securitization position with derivative exposures securitized.

Securitization Activity – Total Outstanding Exposures Securitized by Exposure Type within the Trading Book

	Originator			Sponsor ¹	
	Dec 31, 2017		2017	Dec 31, 2017	
in € m.	Traditional	Synthetic	Realized gains (losses) from sales/ liquidations	Traditional	Synthetic
Residential mortgages	3,005	0	12	0	0
Commercial mortgages	5,170	0	27	6,990	0
Credit card receivables	0	0	0	0	0
Leasing	0	0	0	0	0
Loans to corporates or SMEs (treated as corporates) ²	0	0	0	0	0
Consumer loans	1,102	0	0	0	0
Trade receivables	0	0	0	0	0
Covered Bonds	0	0	0	0	0
Other liabilities	0	0	0	0	0
Other assets	0	0	0	0	0
Total Outstanding Exposures Securitized³	9,277	0	39	6,990	0

¹ Included under sponsor is the amount € 6.9 billion exposures securitized, of which we originated € 2.8 billion, also included under originator.

² SMEs are small- or medium-sized enterprises.

³ For a regulatory assessment of our exposure to market risk in relation to securitization activity in the trading book see table "Trading Book Securitization Positions Retained or Purchased by Risk Weight Band subject to the MRSA".

	Originator			Sponsor ¹	
	Dec 31, 2016		2016	Dec 31, 2016	
in € m.	Traditional	Synthetic	Realized gains (losses) from sales/ liquidations	Traditional	Synthetic
Residential mortgages	0	0	0	811	0
Commercial mortgages	10,272	0	98	15,286	0
Credit card receivables	0	0	0	0	0
Leasing	0	0	0	0	0
Loans to corporates or SMEs (treated as corporates) ²	0	0	0	0	0
Consumer loans	0	0	0	0	0
Trade receivables	0	0	0	0	0
Covered Bonds	0	0	0	0	0
Other liabilities	0	0	0	0	0
Other assets	0	0	0	0	0
Total Outstanding Exposures Securitized³	10,272	0	98	16,097	0

¹ Included under sponsor is the amount € 15.3 billion exposures securitized, of which we originated € 7.5 billion, also included under originator.

² SMEs are small- or medium-sized enterprises.

³ For a regulatory assessment of our exposure to market risk in relation to securitization activity in the trading book see table "Trading Book Securitization Positions Retained or Purchased by Risk Weight Band subject to the MRSA".

Article 449 (o)(i) CRR - Retained or purchased banking and trading book securitizations broken down by risk-weight bands

Banking Book Securitization Exposure

The following tables present the retained or purchased banking book securitizations by their regulatory calculation approach and further broken down by risk-weight bands.

Banking Book Securitization Positions Retained or Purchased by Risk Weight Band

in € m.	Dec 31, 2017			Dec 31, 2016		
	Exposure amount	Capital requirements IRBA ¹	Capital requirements standardized approach	Exposure amount	Capital requirements IRBA ¹	Capital requirements standardized approach
≤ 10 %	57,833	497	0	68,693	631	0
> 10 ≤ 20 %	2,220	13	14	3,069	24	12
> 20 ≤ 50 %	1,309	23	16	1,807	28	25
> 50 ≤ 100 %	1,059	35	31	2,184	46	77
> 100 ≤ 350 %	140	17	1	496	15	1
> 350 ≤ 650 %	7	2	0	126	52	0
> 650 < 1,250 %	91	66	0	68	54	0
≥ 1,250% ≤ 1,325 %	143	83	16	192	141	4
Total securitization positions retained or purchased	62,802	736	77	76,636	991	119

¹ After considering value adjustments according to Article 266 (1,2) CRR. Including capital requirements for maturity mismatch of synthetic securitizations by risk weight band defined as notional weighted average risk weight of the underlying pool.

Due to the overall banking book exposure decrease of 18 % to € 62.8 billion, the capital requirements decreased by 27 % to € 0.8 billion. This was due to the fact that older synthetic securitization positions early terminated in 2017. These were fully replaced with new synthetic securitization positions, which received a lower risk weight. Additionally there was an overall decrease of book values and termination of banking book securitization positions.

The largest portion (94 %) of IRBA eligible banking book securitization exposures were treated according to the Supervisory Formula Approach ("SFA"). For the remaining IRBA eligible banking book exposures (6 %) we used the Ratings Based Approach ("RBA").

Banking Book Securitization Positions Retained or Purchased by Risk Weight Bands subject to the IRBA-Rating Based Approach (RBA)

in € m.	Dec 31, 2017				Dec 31, 2016			
	Exposure amount		Capital requirements, IRBA-RBA ¹		Exposure amount		Capital requirements, IRBA-RBA ¹	
	Securitization	Re-Securitization	Securitization	Re-Securitization	Securitization	Re-Securitization	Securitization	Re-Securitization
≤ 10 %	1,347	0	12	0	2,299	0	14	0
> 10 ≤ 20 %	965	0	10	0	1,873	0	19	0
> 20 ≤ 50 %	478	12	10	0	634	46	12	1
> 50 ≤ 100 %	495	16	31	1	961	0	44	0
> 100 ≤ 350 %	10	0	1	0	454	7	12	1
> 350 ≤ 650 %	7	0	2	0	6	0	2	0
> 650 < 1,250 %	2	0	2	0	7	0	4	0
≥ 1,250% ≤ 1,325 %	110	9	65	9	180	6	132	6
Total securitization positions retained or purchased	3,414	37	133	11	6,414	59	239	9

¹ After considering value adjustments according to Article 266 (1,2) CRR.

Exposures subject to the securitization IRBA-RBA decreased by € 3.0 billion mainly driven by a decline of book values and disposals of securitization positions. Due to value adjustments on securitization positions the capital requirement in the risk bucket ≥ 1,250% ≤ 1,325 % was significantly lower than the exposure amount. Our re-securitization exposure reduced by € 22 million, predominantly due to sales of re-securitization positions.

Banking Book Securitization Positions Retained or Purchased by Risk Weight Band subject to the IRBA-Supervisory Formula Approach (SFA)

in € m.	Dec 31, 2017				Dec 31, 2016			
	Exposure amount		Capital requirements, IRBA-SFA ¹		Exposure amount		Capital requirements, IRBA-SFA ¹	
	Securiti- zation	Re- Securitization	Securiti- zation ²	Re- Securitization	Securiti- zation	Re- Securitization	Securiti- zation ²	Re- Securitization
≤ 10 %	56,485	0	485	0	66,394	0	617	0
> 10 ≤ 20 %	359	0	4	0	415	0	5	0
> 20 ≤ 50 %	425	0	13	0	509	0	15	0
> 50 ≤ 100 %	68	0	3	0	47	0	2	0
> 100 ≤ 350 %	121	0	16	0	26	0	3	0
> 350 ≤ 650 %	0	0	0	0	120	0	49	0
> 650 < 1,250 %	89	0	64	0	61	0	50	0
1,250 %	8	0	8	0	2	0	2	0
Total securitization positions retained or purchased	57,556	0	593	0	67,575	0	743	0

¹ After considering value adjustments according to Article 266 (1,2) CRR.

² Including capital requirements for maturity mismatch of synthetic securitizations by risk weight band defined as notional weighted average risk weight of the underlying pool.

Banking Book exposure subject to the IRBA-Supervisory Formula Approach overall decreased to € 57.6 billion in 2017, mainly driven by the positive FX effect and the termination of synthetic securitizations positions.

The Credit Risk Standardized Approach ("CRSA") is used for securitization positions where the underlying portfolio predominantly consists of credit risk exposures, which would qualify for application of the CRSA if these exposures would be directly held by us.

Banking Book Securitization Positions Retained or Purchased by Risk Weight Band subject to the Credit Risk Standardized Approach (CRSA)

in € m.	Dec 31, 2017				Dec 31, 2016			
	Exposure amount		Capital requirements, SA		Exposure amount		Capital requirements, SA	
	Securiti- zation	Re- Securitization	Securiti- zation	Re- Securitization	Securiti- zation	Re- Securitization	Securiti- zation	Re- Securitization
≤ 10 %	0	0	0	0	0	0	0	0
> 10 ≤ 20 %	896	0	14	0	781	0	12	0
> 20 ≤ 50 %	394	0	16	0	619	0	25	0
> 50 ≤ 100 %	479	0	31	0	1,176	0	77	0
> 100 ≤ 350 %	9	0	1	0	9	0	1	0
> 350 ≤ 650 %	0	0	0	0	0	0	0	0
> 650 < 1,250 %	0	0	0	0	0	0	0	0
1,250 %	16	0	16	0	4	0	4	0
Total securitization positions retained or purchased	1,794	0	77	0	2,588	0	119	0

Exposure subject to CRSA decreased by € 794 million as a result of the termination of securitization positions.

Trading Book Securitization Exposure

The following table presents the retained or purchased trading book securitizations by their regulatory calculation approach and further broken down by risk-weight bands.

For trading book securitization positions not covered under the Comprehensive Risk Measure (“CRM”), the capital requirement for specific market risk is calculated based on the MRSA. The MRSA risk weight calculation for trading book securitization positions is generally based on the same methodologies which apply to banking book securitization positions. More details on the approaches are provided in section “Article 449 (h) CRR - RWA calculation approaches for securitization positions” on page 124.

Trading Book Securitization Positions Retained or Purchased by Risk Weight Band subject to the Market Risk Standardized Approach (MRSA)

in € m.	Dec 31, 2017				Dec 31, 2016			
	Exposure amount		Capital requirements, MRSA		Exposure amount		Capital requirements, MRSA	
	Securiti- zation	Re- Securitization	Securiti- zation	Re- Securitization	Securiti- zation	Re- Securitization	Securiti- zation	Re- Securitization
≤ 10 %	501	0	3	0	618	0	3	0
> 10 ≤ 20 %	4,413	0	43	0	3,977	0	40	0
> 20 ≤ 50 %	397	28	13	1	651	155	20	5
> 50 ≤ 100 %	443	24	33	2	480	31	33	2
> 100 ≤ 350 %	56	12	11	2	45	26	7	5
> 350 ≤ 650 %	82	0	17	0	92	6	23	3
> 650 < 1,250 %	0	0	0	0	0	0	0	0
1,250 %	245	8	244	8	461	31	111	20
Total securitization positions retained or purchased	6,138	71	364	13	6,325	249	238	34

On a year to year comparison the capital requirement of trading book securitization positions increased mainly in the risk weight bucket 1,250 % due to the aforementioned elevated share of long credit regulatory exposure compared to short credit, which is not benefiting from the own funds requirement cap of Article 335 CRR. Positions contributing to the exposure amount but subject to this cap were present in all risk weight bands above 10 %.

Article 449 (o)(ii) CRR - Retained or purchased re-securitization exposures for banking and trading book

In 2017 we reduced our activity in re-securitization positions.

Trading book re-securitization exposure was reduced by 16 % as a result of hedging being recognized according to Articles 327-332 CRR. Banking book re-securitization exposure declined by 37 %, due to disposals.

Re-Securitization Positions Retained or Purchased (Exposure Amount)

in € m.	Dec 31, 2017				Dec 31, 2016			
	Banking Book		Trading Book		Banking Book		Trading Book	
	Before hedging/ insurances	After hedging/ insurances	Before hedging/ insurances	After hedging/ insurances	Before hedging/ insurances	After hedging/ insurances	Before hedging/ insurances	After hedging/ insurances
Re-Securitization Positions	37	37	84	71	59	59	356	249

Risk mitigation in the form of financial guarantees has not been applied to our re-securitization positions in neither the banking nor the trading book.

Article 449 (p) CRR - Impaired assets and recognized losses related to banking book securitizations

The following table provides details of the quality of the underlying asset pool of outstanding exposures securitized for which we are an originator and hold positions in the regulatory banking book. An exposure is reported as past due when it has the status past due for 30 days or more and has not already been included as impaired. For our originated synthetic securitizations, impaired and past due exposure amounts are determined through our internal administration, while for our originated traditional securitizations, impaired and past due exposure amounts are primarily derived from investor reports of underlying exposures.

Separately, the table details losses we recognized in 2017 and 2016 for retained or purchased securitization positions as originator by exposure type. The losses are those reported in the consolidated statement of income. The amounts are the actual losses in the underlying asset pool to the extent that these losses are allocated to the retained or purchased securitization positions held by us after considering any eligible credit protection. This applies to both traditional and synthetic transactions.

Impaired and Past Due Exposures Securitized and Losses Recognized by Exposure Type (Overall Pool Size) as Originator

in € m.	Dec 31, 2017	2017	Dec 31, 2016	2016
	Impaired/ past due ¹	Losses	Impaired/ past due ¹	Losses
Residential mortgages	0	0	1,085	3
Commercial mortgages	0	0	5	10
Credit card receivables	0	0	0	0
Leasing	0	0	0	0
Loans to corporates or SMEs (treated as corporates) ²	33	2	46	0
Consumer loans	0	0	0	0
Trade receivables	0	0	0	0
Covered bonds	0	0	0	0
Other liabilities	0	0	0	0
Other assets	0	0	0	0
Total impaired and past due exposures securitized and losses recognized³	33	2	1,136	13

¹ Includes the impaired and past due exposures in relation to the overall pool of multi-seller securitizations which could reflect more than our own originated portion.

² SMEs are small- or medium-sized entities.

³ For a regulatory assessment of our exposure to credit risk in relation to securitization activity in the banking book see table "Banking Book Securitization Positions Retained or Purchased by Risk Weight Band".

The total impaired or past due exposure securitized decreased by € 1.1 billion in 2017. The reduction was mainly attributed to the exposure types "Residential mortgages". Losses recorded by us in 2017 decreased to € 2 million compared to € 13 million in 2016.

Article 449 (q) CRR - Trading book securitization positions

Please refer for details about the trading book exposures to the section "Article 449 (n) CRR - Banking and trading book securitization exposures" in this Pillar 3 report on page 127.

Article 449 (r) CRR - Financial support to securitization vehicles

We have not provided any implicit support to our securitization vehicles.

Remuneration policy (Article 450 CRR)

For details please refer to the section "Compensation Report" in our Annual Report 2017 on the pages 137-186.

Leverage (Article 451 CRR)

We manage our balance sheet on a Group level and, where applicable, locally in each region. In the allocation of financial resources we favor business portfolios with the highest positive impact on our profitability and shareholder value. We monitor and analyze balance sheet developments and track certain market-observed balance sheet ratios. Based on this we trigger discussion and management action by the Group Risk Committee (GRC). Following the publication of the CRR/CRD 4 framework, we established a leverage ratio calculation according to that framework.

Leverage Ratio according to revised CRR/CRD 4 framework

The CRR/CRD 4 framework introduced a non-risk based leverage ratio that is intended to act as a supplementary measure to the risk based capital requirements. Its objectives are to constrain the build-up of leverage in the banking sector, helping avoid destabilizing deleveraging processes which can damage the broader financial system and the economy, and to reinforce the risk based requirements with a simple, non-risk based "backstop" measure. While the CRR/CRD 4 framework currently does not provide for a mandatory minimum leverage ratio to be complied with by the relevant financial institutions, a legislative proposal published by the European Commission on November 23, 2016 suggests introducing a minimum leverage ratio of 3 %. The legislative proposal provides that the leverage ratio would apply two years after the proposal's entry into force and remains subject to political discussion among EU institutions.

We calculate our leverage ratio exposure on a fully loaded basis in accordance with Article 429 of the CRR as per Delegated Regulation (EU) 2015/62 of October 10, 2014 published in the Official Journal of the European Union on January 17, 2015 amending Regulation (EU) No 575/2013. In addition, we provide the leverage ratio on a phase-in basis as displayed below in the tables.

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

The leverage exposure for derivatives is calculated by using the regulatory mark-to-market method for derivatives comprising the current replacement cost plus a regulatory defined add-on for the potential future exposure. Variation margin received in cash from counterparties is deducted from the current replacement cost portion of the leverage ratio exposure measure and variation margin paid to counterparties is deducted from the leverage ratio exposure measure related to receivables recognized as an asset on the balance sheet, provided certain conditions are met. Deductions of receivables for cash variation margin provided in derivatives transactions are shown under derivative exposure in the table "Leverage ratio common disclosure" below. The effective notional amount of written credit derivatives, i.e., the notional reduced by any negative fair value changes that have been incorporated in Tier 1 capital, is included in the leverage ratio exposure measure; the resulting exposure measure is further reduced by the effective notional amount of a purchased credit derivative on the same reference name provided certain conditions are met.

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

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

The other on-balance sheet exposure component (excluding derivatives and SFTs) reflects the accounting values of the assets (excluding derivatives and SFTs) as well as regulatory adjustments for asset amounts deducted in determining Tier 1 capital.

The following tables show the leverage ratio exposure and the leverage ratio, both on a fully loaded basis, in accordance with the disclosure tables of the implementing technical standards (ITS) which were adopted by the European Commission via Commission Implementing Regulation (EU) 2016/200 published in the Official Journal of the European Union on February 16, 2016. For additional information, they also contain the phase-in figures.

Summary reconciliation of accounting assets and leverage ratio exposures

in € bn.

(unless stated otherwise)

	Dec 31, 2017	Dec 31, 2016
Total assets as per published financial statements	1,475	1,591
Adjustment for entities which are consolidated for accounting purposes but are outside the scope of regulatory consolidation	5	0
(Adjustment for fiduciary 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)	N/M	N/M
Adjustments for derivative financial instruments	(172)	(276)
Adjustment for securities financing transactions (SFTs)	41	20
Adjustment for off-balance sheet items (i.e. conversion to credit equivalent amounts of off-balance sheet exposures)	95	102
(Adjustment for intragroup exposures excluded from the leverage ratio total exposure measure in accordance with Article 429(7) of Regulation (EU) No 575/2013)	N/M	N/M
(Adjustment for exposures excluded from the leverage ratio total exposure measure in accordance with Article 429(14) of Regulation (EU) No 575/2013)	N/M	N/M
Other adjustments	(50)	(90)
Leverage ratio total exposure measure (fully loaded)	1,395	1,348
Leverage ratio total exposure measure (phase-in)	1,396	1,350

N/M – Not meaningful

Leverage ratio common disclosure

in € bn.

(unless stated otherwise)

	Dec 31, 2017	Dec 31, 2016
On-balance sheet exposures (excluding derivatives and SFTs)		
On-balance sheet items (excluding derivatives, SFTs and fiduciary assets, but including collateral) (Asset amounts deducted in determining Tier 1 capital) ¹	990 (14)	948 (15)
Total on-balance sheet exposures (excluding derivatives, SFTs and fiduciary assets)	976	933
Derivative exposures		
Replacement cost associated with all derivatives transactions (i.e. net of eligible cash variation margin)	37	53
Add-on amounts for PFE associated with all derivatives transactions (mark-to-market method)	154	154
Exposure determined under Original Exposure Method	N/M	N/M
Gross-up for derivatives collateral provided where deducted from the balance sheet assets pursuant to the applicable accounting framework	0	0
(Deductions of receivables assets for cash variation margin provided in derivatives transactions)	(29)	(37)
(Exempted CCP leg of client-cleared trade exposures)	(13)	(10)
Adjusted effective notional amount of written credit derivatives	812	750
(Adjusted effective notional offsets and add-on deductions for written credit derivatives)	(795)	(733)
Total derivatives exposures	166	177
SFT exposures		
Gross SFT assets (with no recognition of netting), after adjusting for sales accounting transactions (Netted amounts of cash payables and cash receivables of gross SFT assets)	183 (61)	159 (42)
Counterparty credit risk exposure for SFT assets	35	18
Derogation for SFTs: Counterparty credit risk exposure in accordance with Articles 429b(4) and 222 of Regulation (EU) No 575/2013	N/M	N/M
Agent transaction exposures (Exempted CCP leg of client-cleared SFT exposure)	1 0	0 0
Total securities financing transaction exposures	158	135
Other off-balance sheet exposures		
Off-balance sheet exposures at gross notional amount (Adjustments for conversion to credit equivalent amounts)	265 (170)	277 (174)
Other off-balance sheet exposures	95	102
Exempted exposures in accordance with Article 429 (7) and (14) of Regulation (EU) No 575/2013 (on and off balance sheet)		
(Intragroup exposures (solo basis) exempted in accordance with Article 429(7) of Regulation (EU) No 575/2013 (on and off balance sheet))	N/M	N/M
(Exposures exempted in accordance with Article 429 (14) of Regulation (EU) No 575/2013 (on and off balance sheet))	N/M	N/M

in € bn. (unless stated otherwise)	Dec 31, 2017	Dec 31, 2016
Capital and total exposure measure		
Tier 1 capital (fully loaded)	52.9	46.8
Leverage ratio total exposure measure (fully loaded)	1,395	1,348
Leverage ratio (fully loaded, in %)	3.8	3.5
Tier 1 capital (phase-in)	57.6	55.5
Leverage ratio total exposure measure (phase-in)	1,396	1,350
Leverage ratio (phase-in, in %)	4.1	4.1

N/M – Not meaningful

¹ Using a fully loaded definition of Tier 1 capital. The amount using a transitional definition of Tier 1 capital is € (13) billion and € (13) billion as of December 31, 2017 and December 31, 2016, respectively.

Breakdown of on-balance sheet exposures (excluding derivatives and SFTs)

in € bn. (unless stated otherwise)	Dec 31, 2017	Dec 31, 2016
Total on-balance sheet exposures (excluding derivatives, SFTs, and exempted exposures)	990	948
thereof:		
Trading book exposures	231	225
Banking book exposures	759	723
thereof:		
Covered bonds	2	2
Exposures treated as sovereigns	288	259
Exposures to regional governments, MDB, international organizations and PSE not treated as sovereigns	2	2
Institutions	18	16
Secured by mortgages of immovable properties	186	164
Retail exposures	34	35
Corporate	156	179
Exposures in default	7	9
Other exposures (e.g. equity, securitizations, and other non-credit obligation assets)	66	57

Process used to manage the risk of excessive leverage

As described in the section “Risk Management Principles” and “Risk Governance” on pages 46-50 of our Annual Report 2017, the Group Risk Committee (GRC) is mandated to oversee, control and monitor integrated planning our risk profile and capital capacity. The GRC actively manages leverage exposure capacity via a limit setting process

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

In the case of limit excess the respective business is charged. The limit excess charges are calculated in accordance with the Group-wide limit-setting framework for leverage.

For further details please also refer to the “Capital Management” section contained in chapter “Risk and Capital Management” on page 57 of our Annual Report 2017.

Factors that had an impact on the leverage ratio in 2017

As of December 31, 2017, our fully loaded CRR/CRD 4 leverage ratio was 3.8 % compared to 3.5 % as of December 31, 2016, taking into account as of December 31, 2017 a fully loaded Tier 1 capital of € 52.9 billion over an applicable exposure measure of € 1,395 billion (€ 46.8 billion and € 1,348 billion as of December 31, 2016, respectively).

Our CRR/CRD 4 leverage ratio according to transitional provisions was 4.1 % as of December 31, 2017 (4.1 % as of December 31, 2016), calculated as Tier 1 capital according to transitional rules of € 57.6 billion over an applicable exposure measure of € 1,396 billion (€ 55.5 billion and € 1,350 billion as of December 31, 2016, respectively). The exposure measure under transitional rules is € 1 billion (€ 2 billion as of December 31, 2016) higher compared to the fully loaded exposure measure as the asset amounts deducted in determining Tier 1 capital are lower under transitional rules.

Based on recent ECB guidance, we have included pending settlements in the calculation of the leverage exposure since the second quarter 2017 based on the asset values as recorded for financial accounting purposes, i.e., for Deutsche Bank Group under IFRS, trade date accounting. The application of trade date accounting leads to a temporary increase of the leverage exposure between trade date and settlement date for regular way asset purchases. The size of the reported increase was € 17 billion at December 31, 2017. It should be noted that under the proposed revision of the Capital Requirement Regulation ("CRR") as currently drafted this increase would materially reverse out once the revision becomes effective given it allows for the offsetting of pending settlement cash payables and cash receivables for regular way purchases and sales that are settled on a delivery-versus-payment basis.

Following a clarification by the EBA published on January 19, 2018 we have changed the treatment of sold options which form part of a regulatory netting set starting with the fourth quarter 2017. We no longer apply a cap at the maximum possible exposure increase of the netting set that may result from the option and this leads to an increase of the add-ons for potential future exposure for derivatives by € 15 billion.

Over the year 2017, our leverage ratio exposure increased by € 47 billion to € 1,395 billion. This is primarily driven by the € 41 billion increase in Other Assets which in addition to the above mentioned pending settlements also reflects the development on our balance sheet, in particular increases in cash and central bank balances and non-derivative trading assets, partly offset by a decrease in loans. Furthermore, there was an increase of € 23 billion in SFT exposures reflecting higher add-ons for counterparty credit risk and the overall growth on the balance sheet in the SFT related items (securities purchased under resale agreements and securities borrowed, under accrual and fair value accounting as well as receivables from prime brokerage). Derivative exposures decreased by € 11 billion mainly driven by lower replacement costs; the above-mentioned increase of the potential future exposure add-ons for sold options was largely offset by the change from the previous collateral model to a settlement model for the interest rate swaps transacted with the London Clearing House and other reductions. In addition, off-balance sheet exposures decreased by € 7 billion corresponding to lower notional amounts for irrevocable lending commitments and contingent liabilities.

The increase of the leverage ratio exposure in 2017 includes a negative foreign exchange impact of € 82 billion mainly due to the appreciation of the Euro against the U.S. dollar.

Our leverage ratio calculated as the ratio of total assets under IFRS to total equity under IFRS was 22 as of December 31, 2017 compared to 25 as of December 31, 2016.

For main drivers of the Tier 1 capital development please refer to section "Own Funds" on page 19 in this report.

Unencumbered Assets (Article 443 CRR)

On June 27, 2014 the EBA published guidelines on the disclosure of encumbered and unencumbered assets as mandated by Article 443 CRR.

Year-end spot data values were used for the purpose of this disclosure instead of the median average of quarterly data points as a result of the unavailability of updated quarterly data points following implementation of a refined approach to determine assets pledged and collateral received and collateral re-pledged. This refined approach was used to restate 2016 year end results and to calculate the 2017 year end disclosures.

Encumbered assets primarily comprise those on- and off-balance sheet assets that are pledged as collateral against secured funding, collateral swaps, and other collateralized obligations. Additionally, in line with the EBA technical standards on regulatory asset encumbrance reporting, we consider assets placed with settlement systems, including default funds and initial margins as encumbered, as well as other assets pledged which cannot be freely withdrawn such as mandatory minimum reserves at central banks. We also include derivative margin receivable assets as encumbered under these EBA guidelines.

This section refers to asset encumbrance in the group of institutions consolidated for banking regulatory purposes pursuant to the German Banking Act. There under not included are insurance companies or companies outside the finance sector. Assets pledged by our insurance subsidiaries are included in the Annual Report 2017 in Note 22 "Assets Pledged and Received as Collateral" on page 258 of the Consolidated Financial Statements, and restricted assets held to satisfy obligations to insurance companies' policy holders are included within Note 39 "Information on Subsidiaries" on page 311.

Encumbered and unencumbered assets

in € bn. On-balance sheet	Dec 31, 2017			
			Unencumbered assets	
	Carrying amount of encumbered assets	Fair value of encumbered assets	Carrying amount of unencumbered assets	Fair value of unencumbered assets
Debt securities	65.4	65.4	89.3	89.3
Equity instruments	63.4	63.4	20.1	20.1
Other assets:	122.2		1,182.7	
Total	251.0		1,292.0	

in € bn. On-balance sheet	Dec 31, 2016			
			Unencumbered assets	
	Carrying amount of encumbered assets	Fair value of encumbered assets	Carrying amount of unencumbered assets	Fair value of unencumbered assets
Debt securities	76.9	76.9	74.1	74.1
Equity instruments	54.4	54.4	20.6	20.6
Other assets:	139.2		1,225.9	
Total	270.4		1,320.6	

Collateral received

in € bn. Off-balance sheet	Dec 31, 2017	
	Fair value of collateral received	
	Encumbered	Available for encumbrance
Collateral received:	308.4	57.9
Debt securities	191.0	40.8
Equity instruments	117.3	16.9
Other collateral received	0	0.2
Own debt securities issued other than covered bonds and asset backed securities	0	0

in € bn. Off-balance sheet	Dec 31, 2016	
	Fair value of collateral received	
	Encumbered	Available for encumbrance
Collateral received:	260.4	61.7
Debt securities	168.1	50.1
Equity instruments	92.1	11.6
Other collateral received	0.1	0
Own debt securities issued other than covered bonds and asset backed securities	0	0

The above tables set out a breakdown of on- and off-balance sheet items, broken down between encumbered and unencumbered. Any securities borrowed or purchased under resale agreements are shown based on the fair value of collateral received.

For December 2017, € 251 billion of the Group's on-balance sheet assets were encumbered. These assets primarily related to firm financing of trading inventory and other securities, to funding (i.e., Pfandbriefe and covered bonds) secured against loan collateral and to cash collateral for derivative margin requirements.

For December 2017, the Group had received securities as collateral with a fair value of € 557.7 billion, of which € 513,3 billion were sold or on pledged. These pledges typically relate to trades to facilitate client activity, including prime brokerage, collateral posted in respect of Exchange Traded Funds and derivative margin requirements.

The above tables of encumbered assets include assets that are not encumbered at an individual entity level, but which may be subject to restrictions in terms of their transferability within the group. Such restrictions may be due to local connected lending requirements or similar regulatory restrictions.

'Own debt securities issued other than covered bonds and asset backed securities' refers to those own bond holdings that are not derecognized from the balance sheet by a non-IFRS institution. This is not applicable for Deutsche Bank Group.

Encumbered assets/collateral received and associated liabilities

		Dec 31, 2017
		Carrying value of encumbered assets, fair value of encumbered collateral received and own debt securities issued
	Matching liabilities, contingent liabilities, securities lent	
in € bn.		
On-balance/off-balance sheet amount of selected financial liabilities and financial assets	513.3	557.7

		Dec 31, 2016
		Carrying value of encumbered assets, fair value of encumbered collateral received and own debt securities issued
	Matching liabilities, contingent liabilities, securities lent	
in € bn.		
On-balance/off-balance sheet amount of selected financial liabilities and financial assets	484.8	530.8

The above table shows the total amount of encumbered on- and off-balance sheet assets against the corresponding liabilities, contingent liabilities or securities lent that have given rise to the encumbrance.

Liquidity

As part of the Basel 3 rules, the Basel Committee on Banking Supervision specified two minimum liquidity standards for banks:

The Liquidity Coverage Ratio (LCR):

The LCR is intended to promote the short-term resilience of a bank's liquidity risk profile over a 30 day stress scenario. The ratio is defined as the amount of High Quality Liquid Assets ("HQLA") that could be used to raise liquidity, measured against the total volume of net cash outflows, arising from both actual and contingent exposures, in a stressed scenario.

This requirement has been implemented into European law, via the Commission Delegated Regulation (EU) 2015/61, adopted in October 2014. Compliance with the LCR was required in the EU from October 1, 2015.

The final EBA guidelines on LCR disclosure released on the March 8, 2017 (EBA/GL/2017/01) requires us to disclose the average of month-end observations over twelve months preceding the end of each quarter instead of the year-end LCR. Therefore, this year's disclosed LCR for 2016 will slightly differ from the disclosed LCR in the previous year. For reference, we have additionally included the year-end LCR numbers below.

Our average LCR of 144 % (twelve months average) has been calculated in accordance with the Commission Delegated Regulation (EU) 2015/61 and the EBA Guidelines on LCR disclosure to complement the disclosure of liquidity risk management under Article 435 CRR. Due to changes of the calculation method in October 2016, the December 2016 average LCR of 121 % includes 3 data points (October – December 2016) whereas the December 2017 LCR includes 12 data points (January – December 2017).

The year-end LCR as of December 31, 2017 stands at 140 % compared to 128 % as of December 31, 2016.

Concentration of funding and liquidity sources:

For an overview of the concentration of funding and liquidity sources please refer to the section "Liquidity Risk Exposure" in the Annual Report 2017 on page 126. The information is outlined in the sub-section "Funding Diversification", "Composition of External Funding Sources".

Derivative exposures and potential collateral calls:

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

Other significant outflows relate to the impact of an adverse market scenario on derivatives based on the 24 month historical look back approach, and the posting of additional collateral as a result of a 3 notch downgrade of DB's credit rating.

There are also some smaller outflows assumed in relation to callable excess margin collateral and to margin collateral posted that might need to be upgraded to level 1 collateral under an LCR scenario.

Currency mismatch in the LCR:

The LCR is calculated in all major currencies that make up at least 5% of the total Balance Sheet (EUR, USD, GBP and aggregated in EUR). No explicit LCR risk appetite is set for specific currencies, however, all results are monitored.

Approach to centralized group liquidity management and individual legal entity liquidity management:

Please refer to the "Liquidity Risk Management" section on page 76 in the Annual Report 2017.

Other items in the LCR calculation that are not captured in the LCR disclosure template but that the institution considers relevant for its liquidity profile:

The Pillar 3 disclosure obligations require Banks to disclose the 12 months rolling averages for each quarter. Due to changes of the calculation method in October 2016, the March 2017 LCR in the below table includes six data points (October 2016 – March 2017, the June 2017 LCR includes nine data points (October 2016 – June 2017) and the September 2017 and December 2017 LCR calculation includes twelve data points respectively. We do not consider anything else relevant for disclosure.

EU LIQ1 - LCR disclosure template

	in € m.	Total unweighted value (average)				Total weighted value (average)			
		Dec 31,2017	Sep 30,2017	Jun 30,2017	Mar 31,2017	Dec 31,2017	Sep 30,2017	Jun 30,2017	Mar 31,2017
	Quarter ending on								
	Number of data points used in the calculation of averages	12	12	9	6	12	12	9	6
High-quality liquid assets									
1	Total high-quality liquid assets (HQLA)	247	229	219	202				
Cash-outflows									
2	Retail deposits and deposits from small business costumers	169	165	164	161	16	16	16	15
	thereof:								
3	Stable deposits	90	89	89	89	5	4	4	4
4	Less stable deposits	78	75	74	72	12	11	11	11
5	Unsecured wholesale funding	224	219	219	216	92	88	86	84
	thereof:								
6	Operational deposits (all counterparties) and deposits in network of cooperative banks	111	115	121	125	27	29	30	31
7	Non-operational deposits (all counterparties)	112	102	96	90	63	57	54	51
8	Unsecured debt	2	2	2	2	2	2	2	2
9	Secured wholesale funding	51	51	49	47	51	51	49	47
10	Additional requirements	208	210	215	216	89	89	91	91
	thereof:								
11	Outflows related to derivative exposures and other collateral requirements	49	48	49	50	48	47	48	48
12	Outflows related to loss of funding on debt products	0	0	0	0	0	0	0	0
13	Credit and liquidity facilities	159	162	165	166	41	41	42	42
14	Other contractual funding obligations	105	109	105	101	7	5	4	1
15	Other contingent funding obligations	264	262	264	263	17	15	15	14
16	Total cash outflows	273	264	260	253				
Cash - inflows									
17	Secured lending (e.g. reverse repos)	299	295	290	281	50	51	50	48
18	Inflows from fully performing exposures	42	42	43	43	31	31	32	32
19	Other cash inflows	32	30	30	30	32	30	30	30
EU	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					11	12	12	12
EU	Excess inflows from a related specialized credit institution	0	0	0	0	0	0	0	0
19b	Total cash inflows	372	367	364	354	101	100	100	98
	thereof:								
EU	Fully exempt inflows	0	0	0	0	0	0	0	0
20a	Inflows subject to 90 % cap	0	0	0	0	0	0	0	0
20b	Inflows subject to 75 % cap	328	327	325	354	101	100	100	98
20c									
Total adjusted value									
21	Liquidity buffer	247	229	219	202				
22	Total net cash outflows	172	164	160	154				
23	Liquidity coverage ratio (%)	144	140	137	131				

The Net Stable Funding Ratio (NSFR):

Basel 3 also contains a proposal to introduce a net stable funding ratio (NSFR) to reduce medium to long-term funding risks by requiring banks to fund their activities with sufficiently stable sources of funding. The NSFR requires banks to maintain a stable funding profile in relation to their on- and off-balance sheet activities. The ratio is defined as the amount of Available Stable Funding (the portion of capital and liabilities expected to be a stable source of funding), relative to the amount of Required Stable Funding (a function of the liquidity characteristics of various assets held).

In the EU, on November 23, 2016, the Commission published a legislative proposal to amend the CRR. The proposal defines, inter alia, a mandatory quantitative NSFR requirement and which would apply two years after the proposal comes into force. The proposal remains subject to change in the EU legislative process. Therefore, for banks domiciled in the EU, the final definition of the ratio and associated implementation timeframe has not yet been confirmed.

Business Risk

Business risk economic capital methodology captures a tax risk component, a capital charge for deferred tax on temporary differences and strategic risk, which also implicitly includes elements of non-standard risks including refinancing and reputational risk.

Economic Capital Usage for Business Risk by Business Division

in € m.	Dec 31, 2017	Dec 31, 2016	2017 increase (decrease) from 2016	
			in € m.	in %
Corporate & Investment Bank	4,435	4,753	(318)	(7)
Private & Commercial Bank	10	32	(22)	(70)
Deutsche Asset Management	99	100	(1)	(1)
Non-Core Operations Unit	0	245	(245)	(100)
Consolidation & Adjustments and Other	1,140	(32)	1,172	N/M
Total	5,683	5,098	585	11

Economic capital usage for business risk as of December 31, 2017 was € 5.68 billion, representing a € 585 million (11 %) increase compared to December 31, 2016. This increase reflected a higher economic capital usage for the tax risk component and the inclusion of a deferred tax capital charge, which were partially offset by the lower EC percentile (99.9 % vs 99.98 %) used since November, 2017. Further details can be found in the section “Article 438 (a) CRR - Summary of Deutsche Bank’s ICAAP approach” on page 27 of this report. As of December 31, 2017, the economic capital usage for the tax risk and deferred tax components was € 512 million and € 685 million respectively. The strategic risk economic capital of € 4.48 billion was down from € 4.85 billion in 2016, with the decrease being driven by the change to the EC definition, and was almost entirely allocated to Corporate & Investment Banking (€ 4.38 billion).

The strategic risk economic capital model calculates potential unexpected operating losses under extreme adverse scenarios due to decreases in operating revenues that cannot be compensated by cost reductions. To avoid double-counting, revenue or cost fluctuations related to market risk, credit risk or operational risk are not considered. The model reflects business-specific, historical revenue volatilities as well as the business 12-month earnings forecasts. Key macro-economic or financial revenue drivers are included to model dependencies between business units.

Strategic risk economic capital is managed via the Strategic and Capital plan, which is developed annually and presented to the Management Board for discussion and approval. The final plan is then presented to the Supervisory Board. During the year, execution of business strategies is regularly monitored to assess the performance against strategic objectives and to ensure we remain on track to achieve targets.

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