pbb DEUTSCHE PFANDBRIEFBANK

Disclosure Report

In acc. with Regulation (EU) No. 575/2013 (CRR)

As of 31 Dezember 2018

Overview

Deutsche Pfandbriefbank Group (pbb Group)

All figures in € million, unless otherwise stated

Significant regulatory ratios	31.12.2018 [1) 2)]	31.12.2017 [3)]	Change
Own funds (total capital, TC)	**3,639**	**3,239**	**12%**
Tier 1 capital (T1)	2,996	2,569	17%
Common equity tier 1 capital (CET1)	2,698	2,569	5%
Additional tier 1 capital (AT1)	298	-	100%
Tier 2 capital (T2)	643	670	-4%
Risk weighted assets (RWA)	**14,587**	**14,515**	**0.5%**
Credit risk	13,488	13,244	2%
Credit risk (without counterparty credit risk)	12,963	12,583	3%
Counterparty credit risk	524	661	-21%
thereof: CVA risk	262	294	-11%
Market risk	229	370	-38%
Operational risk	870	899	-3%
Capital ratios			
Common equity tier 1 ratio ((CET1 ratio)	18.5%	17.7%	+0.8 percentage points
Tier 1 ratio (T1 ratio)	20.5%	17.7%	+2.8 percentage points
Own funds ratio (Total capital ratio)	24.9%	22.3%	+2.6 percentage points
Capital buffers			
Total capital buffer requirement	2.064%	1.355%	+0.709 percentage points
Institution-specific countercyclical capital buffer (ICCB)	0.189%	0.105%	+0.084 percentage points
Capital conservation buffer (CCB)	1.875%	1.250%	+0.625 percentage points
Available CET1 capital after complying with the minimum capital requirements	2,042	1,916	7%
Leverage ratio			
Tier 1 capital (T1)	2,996	2,569	17%
Total leverage ratio exposure	56,736	56,221	1%
Leverage Ratio	5.3%	4.6%	+0.7 percentage points
Asset encumbrance ratio			
Encumbered assets and further used received collateral (median values)	37,972	39,606	-4%
Total assets and received collateral (median values)	57,662	60,037	-4%
Asset encumbrance ratio (median values)	65.9%	66.0%	-0.1 percentage points
Non-performing exposure (NPE)			
Non-performing exposure (gross)	361	245	47%
Total exposure (gross)	57,870	57,359	1%
Non-performing exposure (NPE) ratio	0.6%	0.4%	+0.2 percentage points
Non-performing loan (NPL) ratio	0.8%	0.6%	+0.2 percentage points
Liquidity coverage ratio (LCR)			
Liquidity buffer (twelve-month average values)	5,939	6,793	-13%
Total net cash outflows (twelve-month average values)	2,317	2,795	-17%
Liquidity coverage ratio (twelve-month average values)	256.3%	243.0%	+13.3 percentage points

1) After expiry of all Basel III transitional regulations and after adoption of financial statements 2018 less the proposed dividend (subject to approval of the annual general meeting).

2) With the introduction of IFRS 9, the new rules for the classification and valuation of financial assets and for the recognition of impairments also have an impact on regulatory capital. The pbb Group does not apply the optional IFRS 9 transitional regulations.

3) Before expiry of Basel III transitional regulations, after adoption of financial statements 2017 and appropriation of profit.

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Note:

Numbers provided in the Disclosure Report are commercially rounded to millions. Due to roundings, the sums shown in the tables may slightly differ from the arithmetic total of the individual amounts shown.

With regard to the CRR/CRD 4 regulations, there continues to be uncertainty regarding how some of the regulations are to be interpreted, and some of the related mandatory technical regulation standards are not yet available in their final version. Accordingly, we will continuously adapt our assumptions and models to reflect our understanding and our interpretation of the rules and also those of the sector. Accordingly, our CRR/CRD 4 parameters may differ from our previous expectations. Our CRR/CRD 4 parameters might also not be comparable with similar parameters designated by our competitors as their assumptions and assessments may differ from ours.

Disclosure Report

1 Introduction

With the present Disclosure Report Deutsche Pfandbriefbank AG (pbb) implements the disclosure requirements under part 8 of Regulation (EU) No. 575/2013 (Capital Requirements Regulation; CRR) for pbb and its downstream affiliates (pbb Group) as of 31 December 2018. pbb is the parent company of the regulatory group as defined in section 10a of the German Banking Act (KWG) in conjunction with article 11 et seq. CRR and is thus responsible for regulatory disclosure requirements.

The disclosure requirements are set out in articles 431 to 455 CRR, additional requirements can be found in section 26a (1), sentence 1 of the German Banking Act (Kreditwesengesetz, "KWG"). In order to comply with these disclosure requirements, pbb has voluntarily applied the disclosure formats (which have been applicable since 31 December 2017) of the EBA/GL/2016/11 guidelines of the European Banking Authority (EBA) on disclosure requirements under part 8 of the CRR as well as the EBA/GL/2017/01 guidelines on LCR disclosure to complement the disclosure of liquidity risk management under article 435 CRR.

If a disclosure requirement necessitates the provision of information for the current and also for a previous reporting date (e.g. table EU OV1) or flow data for the reporting period (e.g. table EU CR8), pbb discloses this information in order to ensure better transparency and comparability of the disclosure tables as well as the uniformity of the Disclosure Report for the financial year 2018.

pbb Deutsche Pfandbriefbank

The pbb Group consists mostly of the parent company pbb. pbb has its registered offices in Munich/Unterschleißheim, and is a leading European specialist bank for financing of investments in commercial properties and public infrastructure in Europe and the USA, focusing on Pfandbrief-eligible business. The geographic focus within Europe is on Germany, France, the United Kingdom, the Nordic countries, on selected Central and Eastern European countries as well as on Spain and the Benelux countries.

In its core markets, the pbb Group has a strong local presence and know-how throughout the entire process chain: with real-estate experts, specialists in real-estate law and financing experts right through to supporting the loan exposures. The pbb Group actively utilises this local expertise in order also to support its customers in the case of international transactions.

The central refinancing instrument is the Pfandbrief (covered bond). pbb is one of the largest Pfandbrief issuers in terms of outstanding volume and is thus simultaneously a major issuer of covered bonds in Europe. It issues mortgage Pfandbriefe which are secured by property charges as well as public Pfandbriefe which are secured by public sector receivables.

The shares of pbb are listed in the Prime Standard of the regulated market of the Frankfurt Stock Exchange (Frankfurter Wertpapierbörse; FWB) and are included in the MDAX® index.

Objectives of the Disclosure Report

The Disclosure Report, together with the annual report in accordance with the German commercial code, provides a comprehensive picture of the current risk profile and risk management of the pbb Group. The Disclosure Report complements the regulatory procedures of Pillar 1 of the Basel III framework defined in CRR and CRD IV (Capital Requirements Directive, 2013/36/EU Directive), and focuses essentially on the regulatory perspective. It comprises in particular information regarding the following:

- the regulatory and commercial structure of the pbb Group (scope)
- the capital structure, base and capital requirements
- the general risk management system of the pbb Group (risk management objectives and policy)
- the risk management in relation to individual risk types
- leverage and encumbrance of assets
- governance arrangements and the remuneration policy.

According to article 431 (2) CRR, compliance with the disclosure requirements is a precondition to apply certain instruments and methodologies to calculate capital requirements, e. g. the internal ratings-based (IRB) approach for credit exposures or credit risk mitigation techniques.

In line with article 432 CRR, institutions may decide not to disclose one or more items as specified in part 8, title II/III of CRR provided that these are not significant or are classified as business secret or sensitive information. pbb however fully complies with all disclosure requirements.

Scope

According to article 13, (1) CRR, the Disclosure Report is based on the consolidated situation of the pbb Group. There are no significant subsidiaries as defined in article 13 (1) CRR. According to article 13 CRR, pbb as the parent company of the Group is not required to provide a disclosure at institution level.

This Report is based on the regulatory scope of consolidation according to articles 18 to 24 CRR. As at the reporting date, there was no difference between the regulatory scope and the commercial scope of consolidation used for pbb's consolidated financial statements (IFRS). For the disclosure based on the consolidated situation, business relationships within the consolidation scope must be set off against each other and group-internal business must be eliminated. Regulatory key figures have been determined based on IFRS. Unless expressly indicated the numbers are generally based on the legal provisions applicable at the reporting date (including transitional provisions).

Waiver regulation as per article 7 CRR

In the financial year 2018 (as was also the case in the previous year), pbb utilised the exemptions of the waiver regulation under article 7 (3) CRR. Pursuant to the decision of the European Central Bank (ECB), pbb, as the supervised parent company of the pbb Group, is permitted to take certain control requirements into account only on a consolidated group basis and not in addition to the individual institution level.

pbb also fulfils the requirements according to article 7 (3) CRR:

- Within the pbb Group, there are no major actual or legal obstacles to the immediate transfer of own funds or the repayment of liabilities to the parent company (pbb), nor are there any signs of any such obstacles. The key company (pbb) which is essential to the financial stability of the pbb Group, has its headquarter in Germany. pbb is also the only credit institution within the pbb Group. The holding of pbb in the regulatory consolidated subsidiaries is 100 % in each case. In addition, the existence of a formal internal decision-making process for transferring own funds between pbb (as the parent company and parent institution of the pbb Group) and the subsidiaries enables funds to be transferred

promptly. As in the previous year, no transfer of own funds and no repayment of liabilities as defined by article 7 (1) letter a CRR took place in the reporting year 2018.

- The pbb Group has an integrated risk management system that extends to the entire Group, including pbb and its subsidiaries which are included within the regulatory scope of consolidation of the pbb Group. The Management Board of pbb is responsible for the risk management system and decides on the strategies and the key issues of risk management and risk organisation. The principles, methods and processes of the pbb Group's risk management system are centrally defined by pbb and are applied by the pbb Group (subject to the implementation required by company law and any necessary modifications at the level of the respective Group company). All the decision-making committees of the companies of the pbb Group include employees of pbb as members of the respective companies, thereby enabling adequate involvement in all strategic decisions of the pbb Group. Furthermore, this ensures that the risk-taking and risk management are uniformly applied in all companies of the pbb Group. Moreover, pbb has a risk control unit that is responsible for the uniform application of risk management within the pbb Group. This ensures that risk measurement procedures and risk reporting are consistent and risk indicators are comparable within the pbb Group.

During the financial year 2018, pbb also utilised a waiver which was granted by the ECB with the notice of 14 August 2017 in accordance with section 2a (2) KWG. Accordingly, at the individual institution level, and for the purpose of risk management, with the exception of liquidity risk, pbb is exempted from the obligation to apply the requirements of section 25a (1) sentence 3 No. 1, 2 and 3b) and c) KWG regarding the risk-controlling function. The criteria necessary in accordance with Art. 7 (3) CRR for granting the waiver have been satisfied: There are no major actual or legal obstacles preventing the immediate transfer of own funds or the repayment of liabilities to the parent institution in a member state, nor are there any indications that such obstacles might exist in future. The risk evaluation, measurement and control procedures necessary for consolidated supervision also cover the parent institution in a member state.

Disclosure frequency

According to article 433 CRR, institutions must verify, on the basis of the relevant features of their business, whether it is necessary for them to disclose the relevant information more than once a year in full or in part. With regard to assessing the need for more frequent disclosure, pbb follows the EBA/GL/2014/14 in conjunction with EBA/GL/2016/11 of the EBA. The pbb Group meets the criterion of “the consolidated assets of the institution exceed € 30 billion” as per title V point 18 letter b of these guidelines, and it is therefore pursuant to point 26 b subject to a semi-annual disclosure, on 30 June of any financial year (abridged) and 31 December of any financial year (complete). The IFRS balance sheet total of the pbb Group amounted to approx. € 57.8 billion as of 31 December 2018 (as of 31 December 2017: € 58.0 billion according to IAS 39 or as of 1 January 2018: € 58.1 billion according to IFRS 9).

Means of disclosure

According to article 434 (1) CRR in conjunction with point 39 of the EBA/GL2016/11, the Disclosure Report is publicised as an independent report on the website of pbb (www.pfandbriefbank.com). The European Central Bank (ECB), Deutsche Bundesbank and Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin) are informed of the time and the medium of the publication. Deutsche Pfandbriefbank AG is directly supervised by the ECB.

Formal methods and regulations to comply with disclosure requirements

A major element for complying with the Pillar 3 disclosure requirements, apart from the Disclosure Report itself, is the written documentation of the regulations and procedures used in the course of the disclosure process. According to article 431 (3) CRR, the pbb Group has thus adopted formal policies which assure compliance with the disclosure requirements, and has implemented and documented them in a disclosure policy. This policy describes all material, inherent principles of disclosure as defined by Regulation (EU) 575/2013 (CRR), e. g. the kind and scope of disclosure including the use of so-called disclosure waivers, the adequacy of information, the disclosure medium and disclosure terms, the frequency of disclosure including decision criteria for the "appropriate" disclosure cycle, responsibilities as well as the integration of the disclosure process into bank-internal work processes and structures. Furthermore, the policy contains directives on the regular verification of the adequacy and practicality of disclosure practices applied at the pbb Group, as well as defined disclosure standards and processes. The disclosure policy is verified and aligned with market requirements on a regular basis.

Within the framework of the disclosure process, the pbb Group has installed various control procedures which are used for monitoring whether the disclosed data are complete, correct and adequate. The procedures and regulations implemented for disclosure are also regularly monitored by Internal Audit and audited by the auditor. The Disclosure Report itself is not audited by the auditor of the pbb Group; this is the reason why the Pillar 3 disclosures in this report are not certified. However, the Disclosure Report contains data which are also quoted in the published 2018 annual report of the pbb Group.

The Disclosure Report is approved by the central management board of pbb.

Disclosure information in accordance with part 8 of the CRR

The present report comprises the information to be disclosed in accordance with part 8 of the CRR (Basel III, Pillar 3), to the extent that such information has not in individual cases already been published in other documents of pbb. The following table provides an overview of the separate documents of pbb (and also the specific points in such documents) in which specified publications in accordance with part 8 of the CRR or corresponding additional information is to be found, if such information is not included in the present Disclosure Report. In addition, the corresponding chapters of the Disclosure Report refer to the separate positions.

Figure 1: Major disclosure information in separate documents

Disclosure issue according to part 8 of the CRR	Designation of the separate document	Web link
Article 431 CRR: Scope of disclosure requirements	-	-
Articles 432, 433 and 434 CRR: General disclosure principles	-	-
Article 435 (1) CRR: Risk management objectives and policies	Additional information concerning risk management objectives and policies: Risk and opportunity report in the annual report 2018 of the pbb Group, page 45 et seq. (break-down of credit portfolio according to business segments, etc.)	www.pfandbriefbank.com (under Investors / Financial Reports)

Disclosure issue according to part 8 of the CRR	Designation of the separate document	Web link
	Forecast report in the annual report 2018 of the pbb Group, page 96 et seq. (enterprise-wide or general company-specific risks and opportunities)	
Article 435 (2) CRR: Governance arrangements	Additional information regarding the governance arrangements described: Report of the Supervisory Board in the annual report 2018 of the pbb Group, page 2 et seq. Governance statement/Corporate Governance report in the annual report 2018 of the pbb Group, page 111 et seq. Members of the Supervisory Board and the Management Board, the annual report 2018 of the pbb Group, notes, note 82, page 214	www.pfandbriefbank.com (under Investors / Financial Reports)
	Compliance statement of the Management Board and the Supervisory Board (Corporate Governance Code) on the pbb website	www.pfandbriefbank.com (under Investors / Mandatory publications)
	Professional careers of the members of the Management Board and the Supervisory Board	www.pfandbriefbank.com (under the Company / Management Board or the Company / Supervisory Board)
Article 436 CRR: Scope of application	-	-
Article 437 CRR: Own funds	Additional information regarding balance sheet equity and IFRS 9 First-Time Adoption: Annual report 2018 of the pbb Group, page 126 (note Statement of changes of equity), page 130 (note 2 Principles: IFRS 9 Financial Instruments), page 142 et seq. (note 7 Financial instruments), page 190 et seq. (note 64 Equity)	www.pfandbriefbank.com (under Investors / Financial Reports)
Article 438 CRR: Capital requirements	Additional information concerning the adequacy of internal capital: Internal capital adequacy assessment process (ICAAP) in the annual report 2018 of the pbb Group, risk and opportunity report, page 69/70 (economic capital according to segments)	www.pfandbriefbank.com (under Investors / Financial Reports)
Article 439 CRR: Exposure to counterparty credit risk	-	-

Disclosure issue according to part 8 of the CRR	Designation of the separate document	Web link
Article 440 CRR: Capital buffers	-	-
Article 441 CRR: Indicators of global systemic importance	Not relevant for the pbb Group.	-
Article 442 CRR: Credit risk adjustments	Additional information regarding reconciliation of the impairments and provisions in lending business (IAS 39 as of 31 December 2017 versus IFRS 9 as of 1 January 2018): Annual report 2018 of the pbb Group, notes, note 7 Financial Instruments, page 154	www.pfandbriefbank.com (under Investors / Financial Reports)
Article 443 CRR: Unencumbered assets	Additional information regarding the encumbrance of assets described: Publications in accordance with section 28 Pfandbrief Act on the pbb website	www.pfandbriefbank.com (under Investors / Mandatory Publications / Publications in accordance with section 28 Pfandbrief Act)
Article 444 CRR: Use of ECAIs	-	-
Article 445 CRR: Market risk	-	-
Article 446 CRR: Operational risk	-	-
Article 447 CRR: Exposure to equities not included in the trading book	Additional information regarding shareholdings of pbb: Annual report 2018 of the pbb Group, notes, note 83 Shareholdings of pbb, page 215	www.pfandbriefbank.com (under Investors / Financial Reports)
Article 448 CRR: Exposure to interest rate risk on positions not included in the trading book	-	-
Article 449 CRR: Exposure to securitisation positions	-	-

Disclosure issue according to part 8 of the CRR	Designation of the separate document	Web link
Article 450 CRR: Remunera-tion policy	Remuneration report in the annual report 2018 of the pbb Group, page 79 et seq.	www.pfandbriefbank.com (under Investors / Financial Reports)
	In addition: remuneration report 2018 on the pbb website (publication in Q2 2019 after conclusion of the remuneration negotiations for 2018)	www.pfandbriefbank.com (under The Company / Corporate Governance / Compensation Reports)
Article 451 CRR: Leverage	-	-
Article 452 CRR: Use of the IRB approach to credit risk	-	-
Article 453 CRR: Use of credit risk mitigation tech-niques	-	-
Article 454 CRR: Use of the advanced measurement approaches to operational risk	Not relevant for the pbb Group.	-
Article 455 CRR: Use of internal market risk models	Not relevant for the pbb Group.	-

2 Scope

2.1 Organisational and legal structure

The pbb Group consists mostly of the parent company pbb. pbb is simultaneously the parent company in accordance with Art. 4 (1) CRR of the regulatory group as defined in section 10a of the German Banking Act (KWG) in conjunction with Art. 11 et seq. CRR and is thus responsible for regulatory disclosure requirements. pbb is a stock corporation under German law, registered in the commercial register of the local court of Munich, Germany (HRB 41054).

The free float is 100 % (31 December 2017: 80 %). In May 2018, the Finanzmarktstabilisierungsfonds (FMS), managed by Bundesrepublik Deutschland Finanzagentur GmbH as a special-purpose fund of the German federal government, reduced its stake in pbb held via Hypo Real Estate Holding GmbH from 20 % to 3.5 %. The shares were sold to institutional investors by way of an accelerated bookbuilding procedure. In March 2019, Hypo Real Estate Holding GmbH transferred the remaining shares of 3.5 % to the FMS. The FMS has announced that it will continue to hold an indirect stake in pbb with the remaining 3.5 % in the medium to long term.

The Company is headquartered in Munich/Unterschleißheim; the pbb Group also maintains offices at four additional locations in Germany. In its foreign core markets, it is represented at the five locations in London, Madrid, Paris, Stockholm and New York. pbb conducts a large part of its international financing activities from these locations.

Business model and strategy

The strategic business segments of pbb Group are Real Estate Finance (REF), supplemented by Public Investment Finance (PIF); the focus is on business eligible for inclusion in Pfandbrief cover. The geographic focus is on Europe. Its significant core markets are Germany, France, the United Kingdom, the Nordic countries and selected Central and Eastern European countries, as well as Spain, the Benelux countries and the US. Besides the secondary markets business conducted in the US, pbb plans to gradually expand its primary markets business, following the opening of its New York Representative Office in 2018. While pbb regularly reviews business opportunities outside the markets it serves, it remains committed to its core markets.

Lending is pbb’s core business: pbb Group plays an important role in this area, supplying credit to the real estate sector and supporting the public sector with project financings for the provision and improvement of public infrastructure. pbb Group’s focus is on primary client business. Besides traditional financing solutions tailored to clients’ needs, the Group offers its clients derivatives for hedging risks associated with lending. pbb does not maintain a trading book for securities or derivatives portfolios held to realise short-term gains.

In the lending business, pbb Group either acts as a sole lender or, particularly for large-volume transactions, cooperates with financing partners. In this regard, the Group has a wide network of banking and other partners, including insurance companies and private equity firms. In this so-called syndicate business, when acting as arranger, the Group takes over the complete coordination between the syndicate members and the borrower or, in the role of an Agent, deals with tasks in connection with the management of syndicated loans.

In addition, pbb Group acts as an underwriter, initially being the sole provider of financing and then selling parts of this loan to interested partners in the context of syndication.

In the course of its digitalisation strategy, pbb Group launched the digital platform CAPVERIANT on the German market in 2018. CAPVERIANT is designed to bring together borrowers and investors in the public investment finance sector, with a focus on the intermediation of budget financing solutions for public-sector authorities. In this context, pbb Group does not act as a lender but purely as an intermediary. Market entry in France is planned for 2019.

pbb Group intends to further advance its digital transformation: its chosen approach comprises three main thrusts, focusing on further development of client interfaces, enhancing process efficiency, as well as on new products and business models. To

further pursue pbb Group's digital transformation, both effectively and efficiently, the Group established a separate Digitalisation division in 2018.

Over the course of the past few years, pbb Group revised – and thus considerably simplified – its IT landscape. Based on this modernisation, besides ongoing professional development (including as part of the digitalisation strategy), in the future pbb Group will invest in certain sector-specific regulatory topics such as protection requirement analysis, outsourcing and user authorisation management – as well as in the move of its IT centre.

Strategic focus

pbb Group's strategy focuses on sustainable business success. Crucial success factors are the assessment and appropriate pricing of credit risk in the lending business on the one hand, and the access to funding markets at adequate terms on the other. Managing the existing portfolio – so as to identify changing risks at an early stage and mitigate them by taking appropriate measures – is another important factor.

The Management Board has committed itself to further strengthen profitability in 2019. Besides the continued expansion of sales activities in the US real estate finance market, pbb Group pursues various initiatives in order to broaden its value creation chain as well as its client groups – also within the framework of digitalisation. Furthermore, pbb Group will not only examine further digitalisation opportunities of its business – especially in the real estate financing segment – but will also constantly review the options available to increase its process and cost efficiencies.

Internal management system

pbb Group's internal management system is pursuing a sustainable enhancement in value of the Group considering aspects of risks and regulatory requirements. The key objective is to achieve a balanced risk/return ratio. Risks should be compatible with external and internal risk-bearing capacity guidelines generating an adequate return on capital.

Monitoring and steering at pbb Group are based on a consistent and integrated key performance indicator system (KPI system), which assists executives in the management of the Group. The KPI system comprises the dimensions of profitability, growth in the real estate finance portfolio, risk limitation and capital. Regular budget-actual comparisons and related analyses disclose the reasons for any variances in the key performance indicators. Current market developments, such as the change in interest rate levels, are also displayed. In addition to strategic planning for the Bank as a whole, regular medium-term projections of profitability indicator and (stress) scenario forecasts ensure the management has a comprehensive overview of the Group's future business development.

The internal management system has remained largely unchanged compared to the previous year: changes were made regarding the financial key performance indicators "notional value of financings" and "new business volume". Non-financial key performance indicators are not explicitly managed. The following financial key performance indicators have been defined:

Return on equity after tax

One key profitability indicator is the return on equity after tax. It is calculated by dividing IFRS net income/loss by the average IFRS equity available in the financial year excluding taccumulated other comprehensive income (OCI) from cash flow hedge accounting, financial assets at fair value through OCI (IAS 39: AfS reserve) and additional equity instruments (AT1 capital). Profit or loss before tax is a further financial key performance indicator. The aim is to increase it both by generating higher revenues and through strict cost discipline. Cost discipline and efficiency are monitored using the cost-income ratio, i.e. the ratio of general and administrative expenses to operating income.

Notional amount of financing

The notional amount of the funding in the Real Estate Finance (REF) segment is a significant factor influencing the future earning power and has therefore been redefined as an additional financial key performance indicator. The financing volume can be controlled, above all, by the volume of new business (including prolongations with maturities of more than one year), which also

represent a financial key performance indicator. A present value approach is used for managing and calculating new business. Given the changed focus in business activities implemented during the year under review, the nominal volume of financings extended in the Public Investment Finance (PIF) segment, and the associated volume of new business, are no longer used as financial performance indicators.

Risk management based on the risk-bearing capacity

pbb Group's capital adequacy process (ICAAP) is based on two approaches concerning risk-bearing capacity: the normative and the economic perspective. Whilst the normative perspective is aimed at the fulfilment of all capital-related legal requirements, supervisory demands and internal objectives, on an ongoing basis, the economic perspective covers all material risks which might threaten the institution's economic viability. Both perspectives are designed to supplement each other, safeguarding pbb Group's ability to survive. The prerequisites for evidencing risk-bearing capacity in the normative perspective are the ongoing compliance with minimum regulatory requirements over a medium-term horizon, plus evidence of adequate internal capital to cover material risks exceeding such minimum requirements. In the economic perspective, risk-bearing capacity is evidenced by sufficient internal capital being available to cover potential present-value losses. Details concerning the methodology used for analysing risk-bearing capacity, and the results obtained, are provided in chapter 4.3 „Economic capital and risk bearing capacity".

Common Equity Tier 1 ratio

The CET1 ratio, a key management parameter, is determined on a regular basis; it is calculated by dividing Common Equity Tier 1 (CET1) by risk-weighted assets (RWAs). The Advanced Internal Rating Based Approach (Advanced IRBA) is used to determine regulatory capital requirements for all material portfolios.

2.2 Corporate governance principles

Since its IPO in July 2015, pbb has been subject to the German Corporate Governance Code in accordance with section 161 AktG. The compliance statement concerning the German Corporate Governance Code most recently dated 15 February 2019 can be found on the Company's website under Investors / Mandatory Publications / Corporate Governance Code. Any updates of the statement filed after the reporting date can also be found on pbb's website.

Furthermore, please refer to the report of the Supervisory Board as well as the corporate governance statement including the corporate governance report, which are published in the annual report (2018) of the pbb Group and also on pbb's website. These sources are particularly relevant for disclosure requirements as per article 435 (2), letters d and e (CRR regarding the risk committee and the information provided to the Management Board and the Supervisory Board, which is also described in chapter 4.1 "General organisation and risk management principles".

Management Board and Supervisory Board executive or supervisory functions

As at the reporting date, pbb's Management Board members hold 3 and pbb's Supervisory Board members hold 27 executive or supervisory functions which are actually carried out. These are shared between the individual members of the Management Board and Supervisory Board as follows:

Figure 2: Management Board and Supervisory Board executive or supervisory functions

Name	Number of actually perceived management or supervisory mandate	Number of management or supervisory mandate in accordance with the method referred to Article 91 (3) and (4) of Directive 2013/36/EU
Supervisory Board of pbb as of 31 December 2018		
Dr. Günther Bräunig	5	3
Dagmar Kollmann	5	5
Dr. Jutta Dönges	5	5 [1)]
Dr. Thomas Duhnkrack	2	2
Dr. Christian Gebauer-Rochholz	1	1
Georg Kordick	1	1
Joachim Plesser	5	5
Oliver Puhl	2	2
Heike Theißing	1	1
Management Board of pbb as of 31 December 2018		
Andreas Arndt	1	1
Thomas Köntgen	1	1
Andreas Schenk	1	1
Marcus Schulte [2)]	-	-
Total	**30**	**28**

1) According to the KWG, there are only three mandates because, according to the regulations of section 25d (3) sentence 4 KWG, the mandates at Erste Abwicklungsanstalt AöR and FMS Wertmanagement AöR are not counted.

2) The Supervisory Board appointed Marcus Schulte (previously Senior General Manager) as member of the Management Board, with effect from 1 January 2019.

For details of the functions and mandates, please refer to note 82 "Members of the Supervisory and of the Management Board" in the pbb Group's 2018 annual report.

On 22 March 2016, the ECB approved the fifth mandate (additional mandate) of Mr. Plesser which would be inadmissible in accordance with section 25d (3) sentence 1 No. 3 KWG. No corresponding approval was necessary for the additional mandate of Ms. Kollmann as she had already taken up her mandate before the corresponding amendment of section 25d (3) KWG. On the other hand, separate approval is not required for the mandates held by Dr. Bräunig (five) and Dr. Dönges (five) because, in line with the method of counting in accordance with KWG and the "information sheet regarding the members of administrative and regulatory bodies in accordance with KWG and KAGB" of the BaFin, they each hold one management mandate and only two additional supervisory board mandates.

Selection of Management Board and Supervisory Board members

The Supervisory Board has defined specific objectives for its composition in accordance with point 5.4.1 of the German Corporate Governance Code in its rules of procedure, and adopted a competence profile for the overall body in the Supervisory Board meeting on 11 August 2017. These objectives have been extended to include a catalogue of criteria for new members to be appointed to the Supervisory Board; this catalogue specifically recognises the company-specific and specialist requirements. In 2018, there were changes in the structure of the Supervisory Board, due to the need to appoint a new person to the supervisory board mandate of Dr. Hedda von Wedel, who stepped down from the Supervisory Board on schedule at the end of the annual general meeting 2018. The annual general meeting elected Dr. Jutta Dönges to the Supervisory Board as the successor to Dr. Hedda von Wedel as representative of the shareholders effective 21 June 2018.

As to the appointment of Management Board or Supervisory Board members, pbb has also established lists of criteria which are described in the following. The bank considers that the current officeholders meet these criteria, and the knowledge, skills and expertise of the Management Board and Supervisory Board members are published in the form of CVs on pbb's website under The Company / Management and The Company / Supervisory Board respectively.

The following catalogues of criteria also form part of a "suitability policy" adopted by the Management Board and Supervisory Board in 2018; this policy implements various requirements, including requirements of the EBA/ESMA guideline 2017/12, and also describes criteria for appointing members of the Management Board and Supervisory Board and also carrying out (regular) suitability checks for such members. The following criteria have to be used for evaluating the individual suitability of a member of the Management Board/Supervisory Board:

- Time requirement: adequate time for carrying out the functions in the institute
- Compliance with the mandate restriction, in particular in accordance with Art. 91 (3) of the Directive 2013/36/EU (CRD IV) and section 25d (3) KWG (Supervisory Board) and section 25c (2) KWG (Management Board)
- Adequate knowledge, skills and experience necessary for carrying out all duties
- Good reputation, sincerity and integrity
- Impartiality and independence.

List of criteria for the Management Board

According to section 25c KWG, managers (= members of the Management Board) of an institution must display technical qualifications and reliability, and they must dedicate sufficient time to their tasks. Technical qualifications mean that managers must have sufficient theoretical and practical knowledge in the business area concerned and he or she must have managerial experience.

- Functional competences

  Candidates must have a high standard of experience in at least one business unit of pbb, e. g. public investment finance or real estate finance (front or back office), alternatively in corporate or commercial banking and ideally in selected corporate centre functions.

  Knowledge of the refinancing of bank business models is an asset.

  Potential candidates for a CFO or CRO position must have acquired professional knowledge in key areas obtained from board positions or important line management functions. This also applies to the capital market/treasury division.

- Industry competences

  Candidates must have several years of experience in the finance industry, preferably in commercial or asset based banking.

- Tenure

  Candidates must be admitted as a manager of a bank or, when they are first appointed to the Management Board, their authorisation must be available without any extended waiting time.

  They must have long-term managerial experience obtained from board positions or important line management functions including long-term and broad managerial experience as well as experience in process and restructuring management.

  They must display a strong entrepreneurial spirit as well as experience in dealing with entrepreneurial tasks including developing the business model and the strategy and/or performing business management tasks (preferably for a bank).

- Technical competences

  According to section 25c KWG, Management Board members are required to have competences in particular in the areas of strategic management, company development, loan responsibility, bank management, sales.

  Particularly with regard to lending knowledge and skills, sound judgement of loan decisions is of the essence. In this context, long-standing, qualified and responsible loan decision-making practice is required.

  As to bank management, knowledge and experience in the context of profit and risk control as well as methodological knowledge in the various bank management areas is highly relevant.

- Interpersonal skills

  High degree of persuasiveness and determination based on thoughtful argumentation.

  Respectful and team-oriented leadership approach.

  Strong ability to establish and maintain sustainable, trust-based relationships with employees, peers as well as external stakeholders of pbb.

  Strong commitment to develop the company along with the ability to identify, implement and communicate required changes.

  Credible and trustworthy representative of pbb in public, including relevant (customer) markets.

Competence profile of the Supervisory Board

In accordance with point 5.4.1 of the German Corporate Governance Code, the Supervisory Board adopted a competence profile for the Supervisory Board in August 2017. This contains the following main definitions:

- At least five members of the Supervisory Board, thereof at least three shareholder representatives, shall be independent as set out in point 5.4.2 of the German Corporate Governance Code. As recommended by this code, a member of the Supervisory Board shall not be considered to be independent if he/she has a personal or business relationship with pbb, its boards, a controlling shareholder or an affiliated company which may give rise to a material conflict of interest on a more than temporary basis. As to employee representatives, it is assumed that their independence is not affected by the fact that they hold the position of employee representatives and have an employment relationship at the same time.
- The Supervisory Board is not permitted to consist of more than two former members of the Management Board. Former members of the Management Board should not chair the Supervisory Board or chair a committee.
- The members of the Supervisory Board should in general not be more than 70 years old, and the period of office of a member of the Supervisory Board should in general end after the end of the ordinary annual general meeting which follows the 70th birthday of the member of the Supervisory Board.
- The maximum duration of service of the members of the Supervisory Board should in general not exceed three full periods of office in accordance with section 102 (1) AktG.
- Compliance with the legal requirements regarding the maximum number of mandates (see section 25d (3) and (3a) KWG and networking of the committees (see section 25d (7) sentence 4 KWG).
- The Supervisory Board should overall cover all necessary fields of competence which in particular might result from the factors described in the following. These fields of competence should where possible be covered by individual members of the Supervisory Board, whereby at least one member should have the respective competences. These include the following:
  - Corporate strategy and future strategic development
  - Business model/main areas of activity, in particular real-estate know-how
  - Experience with the US financial market
  - Experience on the European financial markets
  - Technological (digital) factors
  - Accounting and auditing in accordance with section 100 (5) AktG/section 25d (9) sentence 3 KWG
  - Risk management
  - Compliance
  - Legal/corporate governance
  - Management and monitoring of peer companies.

List of criteria for the Supervisory Board

According to section 25d KWG, the members of a Supervisory Board of an institution must be reliable, have the expertise required to control, assess and monitor the transactions carried out by the company concerned, and must dedicate sufficient time to their tasks. Candidates shall have the following competences:

- Functional competences

  Very good knowledge of the banking business as well as extensive, broad entrepreneurial experience.

  In-depth understanding of annual reports and reports provided to the Supervisory Board as well as of the regulatory environment of banks.

- Industry competences

  Long-term experience in the financial industry, financial administration or control; several years of experience in a division of pbb are an asset.

- Tenure

  Long-standing practice in managing a company or an internationally operating bank / organisation / corporation.

  Alternatively, many years of practical experience in a leading position of a large company or a leading public authority position.

- Interpersonal skills

  Very good advisory skills, persuasiveness as well as diplomatic skills.

  Ability to build confidence along with responsible performance of supervisory tasks.

- Other experience

  - Chairman of the Supervisory Board

    Candidates must be admitted as a manager of a bank as defined by KWG and must have bank management experience acquired as a chairman of the board or have long-term experience as a board member

  - Chairman of the Audit Committee

    Special expertise in auditing or annual accounts auditing as defined by section 100 (5) AktG

  - Chairman of the Risk Management and Liquidity Strategy Committee

    Special expertise in the field of loans.

Member diversity strategy

Both Supervisory Board and Management Board consider that diversity matters when filling management positions, and they aim at an appropriate representation of the underrepresented gender (as required by sections 76 (4), 111 (5) AktG). Accordingly, the Management Board and Supervisory Board in 2018 adopted a guideline regarding diversity in the Management Board and Supervisory Board. Every candidate must be reliable and must be adequately qualified. In addition to the specialist skills with regard to sector and management experience, the candidates should also be trustworthy personalities of moral integrity. The requirements regarding the independence of the mandate holders also have to be taken into consideration when selecting suitable candidates. If there are several suitable candidates, the objective of achieving maximum diversity will also be taken into consideration. Where possible, the composition of the bodies should also reflect the international activity of the pbb Group and the composition of the workforce. There are specific criteria regarding age and gender for the composition of the Supervisory Board. The members of the Management Board should in general not be more than 60 years old. For recognising the underrepresented gender, the Supervisory Board has defined the following criteria which are to be met by 30 June 2022:

- Target percentage of women in the Supervisory Board: 30 %
- Target percentage of women in the Management Board: 20 %

As of 31 December 2018, the percentage of women in the Supervisory Board was 33.3 % (compared with the previous-year reference date). After Dr. Hedda von Wedel stepped down as scheduled, Dr. Jutta Dönges was elected onto the Supervisory Board as shareholder representative. The composition of the Management Board as of 31 December 2018 was unchanged compared with the previous-year reference date, and the percentage of women serving on the Management Board was again 0 %. The Supervisory Board continues to undertake to take account of the underrepresented gender for appointing subsequent persons to the Management Board (assuming appropriate suitability and qualifications). However, in view of the durations of the

service agreements of the members of the Management Board which are due to run at least until 2020, and also in view of the fact that Marcus Schulte joined the Management Board as of 1 January 2019 following a two-year phase of familiarisation, there is not likely to be any change to the existing situation in the near future. For further details regarding the diversity strategy, please refer to the governance statement in accordance with section 289f HGB printed in the annual report 2018.

2.3 Remuneration policy

Information on the remuneration policy and remuneration practice as per article 450 CRR can be found in the section "Remuneration report" of the 2018 annual report of the pbb Group. In addition, the quantitative remuneration information regarding the employees will probably be disclosed, after the conclusion of the remuneration negotiations for 2018, in Q2 2019 in the remuneration report on the website of the pbb Group under The Company / Corporate Governance / Remuneration Reports.

2.4 Regulatory and commercial consolidation

Scope of consolidation

According to part 8 of CRR, companies which form part of the Group as defined in section 10a KWG in conjunction with article 11 et seq. CRR (regulatory scope of consolidation) must be considered in the Disclosure Report. By contrast, the commercial scope of consolidation is based on international accounting standards as shown in the annual report of the pbb Group. As of 31 December 2018, there is no difference between the regulatory scope of consolidation according to articles 18 to 24 CRR and the commercial scope of consolidation for pbb's consolidated financial statements.

According to article 436, letters a and b CRR in conjunction with EU LI3 of the EBA/GL/2016/11 guidelines, the following table "Regulatory and commercial scope of consolidation according to individual companies" shows the regulatory and commercial consolidation scope of pbb's subsidiaries. The various subsidiaries are divided according to the company type in line with the definitions provided in article 4 CRR in conjunction with section 1 KWG.

Table 1: Regulatory and commercialscope of consolidation by entity (EU LI3)

	Name of the entity along with classification in acc. with KWG	Method of accounting consolidation (IFRS)	Method of regulatory consolidation				Description of the entity / Purpose of business
			Full consolidation	Proportional consolidation	Neither consolidated nor deducted	Deducted	
		a	b	c	d	e	f
Credit institutions							
1	Deutsche Pfandbriefbank AG Munich, Germany	Full consolidation	x				Credit institution
Financial enterprises							
2	IMMO Invest Real Estate GmbH Munich, Germany	Full consolidation	x				Salvage acquisition
Ancillary banking services enterprises							
3	Immo Immobilien Management Beteiligungsgesellschaft mbH in Liquidation, Munich, Germany	Full consolidation	x				Real estate company
4	CAPVERIANT GmbH Munich, Germany	Full consolidation	x				Marketplace of municipal finance
Other enterprises							
	none						

As at the reporting date, the regulatory scope of consolidation comprised pbb as the parent company of the group of institutions as well as three subordinate companies. The total regulatory capital and the consolidated exposures according to CRR are determined by the pbb Group based on the IFRS financial statements as per section 10a (5) KWG. pbb prepared its consolidated financial statements as of 31 December 2018 in line with Regulation (EC) No. 1606/2002 of the European Parliament and of the Council of 19 July 2002 based on the International Financial Reporting Standards (IFRS). The separate financial statements of consolidated German and foreign companies are included in the consolidated financial statements of pbb based on uniform accounting and valuation principles.

Changes in the financial year

In the first half of 2018, the subsidiary Immo Immobilien Management Beteiligungsgesellschaft mbH i. L., Munich, which had previously not been consolidated in view of its minor significance and which is wholly owned by pbb, was included for the first time in the regulatory scope of consolidation. Previously, the pbb Group had taken advantage of the exceptional regulation of article 19 (1) CRR in conjunction with section 31 (3) KWG for this company.

The previously consolidated Immo Immobilien Management GmbH & Co.KG, Munich, was merged in May 2018 with Immo Immobilien Management Beteiligungsgesellschaft mbH (in liquidation since October 2018).

The regulatory scope of consolidation also includes IMMO Invest Real Estate GmbH, Munich. In view of its area of activity, this company was classified as a financial company as of 30 June 2018.

Derogation provided for in article 19 (1) CRR

As of 31 December 2018, the pbb Group did not utilise the exceptional regulation of article 19 (1) CRR in conjunction with section 31 (3) KWG for any subsidiary.

Special-purpose entities

As of 31 December 2018, as was also the case on the corresponding previous-year reference date, the pbb Group did not utilise any special-purpose entity.

Subsidiaries with capital deficits

A capital deficit is the amount by which the own funds of a subsidiary which is not consolidated fall below the regulatory capital as per article 92 CRR in conjunction with article 465 CRR. As of the reporting date 31 December 2018, and as was the case in the previous year, the pbb Group did not have any subsidiaries which reported a capital deficit in accordance with article 436 letter d CRR and for which the equity participation is deducted from the liable equity of the parent company (deduction method).

Transfer of own funds or repayment of liabilities

Within the pbb Group, there are no major actual or legal obstacles to the immediate transfer of own funds or the repayment of liabilities by the parent company. pbb, which is critical for the financial stability of the group, is headquartered in Germany. As in the previous year, no transfer of own funds and no repayment of liabilities as defined by article 7 (1), letter a CRR took place in the reporting year 2018.

Exposure values and reported book values

For disclosure pursuant to part 8 of the CRR, the regulatory scope of consolidation pursuant to articles 18 to 24 CRR described above is decisive. The two following tables in accordance with article 436 (b) CRR in conjunction with EU LI1, EU LI2 and EU LIA of the EBA guidelines EBA/GL/2016/11 show (for each of the balance sheet items in the financial statements) the reconciliation of reported carrying amounts (IFRS) in accordance with the pbb consolidated financial statements as of 31 December 2018 in accordance with the commercial scope of consolidation with the regulatory exposure values (exposure at default; EAD) according to the COREP report of own funds and own funds requirements using the regulatory scope of consolidation. Details are also provided of how the individual balance sheet items are distributed over the various risk types which are relevant for regulatory capital-backing purposes.

Table 2: Regulatory and commercial consolidation and risk type reconciliation (EU LI1)

	Assets and liabilities of the consolidated balance sheet in € million	Carrying amounts (IFRS) as reported in published consolidated financial statements 31.12.2018	Carrying amounts (IFRS) under scope of regulatory consolidation 31.12.2018	Carrying amounts (IFRS) of positions subject to the underlying risk framework				
				Credit risk	Counterparty credit risk	Securitisation	Market risk	Not subject to capital requirements or subject to deduction from capital
		a	b	c	d	e	f	g
1	**Assets**							
2	Cash reserve	1,388	1,388	1,388	-	-	4	-
3	Financial assets at fair value through profit or loss	1,659	1,659	910	749	-	139	-
3a	Positive fair values of stand-alone derivatives	749	749	-	749	-	62	-
3b	Debt securities	258	258	258	-	-	-	-
3c	Loans and advances to customers	649	649	649	-	-	77	-
3d	Shares in investment funds qualified as debt instruments	3	3	3	-	-	-	-
4	Financial assets at fair value through other comprehensive income	1,984	1,984	1,984	-	-	110	-
4a	Debt securities	1,564	1,564	1,564	-	-	110	-
4b	Loans and advances to other banks	16	16	16	-	-	-	-
4c	Loans and advances to customers	404	404	404	-	-	-	-
4d	Shares in investment funds qualified as debt instruments	-	-	-	-	-	-	-
5	Financial assets at amortised cost after credit loss allowances	50,341	50,341	48,675	1,666	-	9,185	-
5a	Financial assets at amortised cost before credit loss allowances	50,453	50,453	48,787	1,666	-	9,230	-
5aa	Debt securities	8,039	8,039	8,039	-	-	889	-
5ab	Loans and advances to other banks	2,231	2,231	565	1,666	-	49	-
5ac	Loans and advances to customers	40,183	40,183	40,183	0.3	-	8,292	-
5b	Credit loss allowances on financial assets at amortised cost	-112	-112	-112	-	-	-45	-
6	Positive fair values of hedge accounting derivatives	2,207	2,207	-	2,207	-	16	-
7	Valuation adjustment from portfolio hedge accounting (assets)	2	2	2	-	-	-	-
8	Tangible assets	4	4	4	-	-	-	-
9	Intangible assets	37	37	-	-	-	-	37
10	Other assets	35	35	35	-	-	-	-
11	Current income tax assets	26	26	26	-	-	-	-
12	Deferred income tax assets	86	86	81	-	-	-	5
13	**Total assets**	**57,769**	**57,769**	**53,105**	**4,622**	**0**	**9,454**	**42**

	Assets and liabilities of the consolidated balance sheet in € million	Carrying amounts (IFRS) as reported in published consolidated financial statements 31.12.2018	Carrying amounts (IFRS) under scope of regulatory consolidation 31.12.2018	Carrying amounts (IFRS) of positions subject to the underlying risk framework				
				Credit risk	Counterparty credit risk	Securitisation	Market risk	Not subject to capital requirements or subject to deduction from capital
		a	b	c	d	e	f	g
14	**Liabilities and equity**							
15	Financial liabilities at fair value through profit or loss	881	881	-	881	-	44	-
15a	Negative fair values of stand-alone derivatives	881	881	-	881	-	44	-
16	Financial liabilities measured at amortised cost	50,714	50,714	-	1,157	-	4,493	49,557
16a	Liabilities to other banks	3,867	3,867	-	899	-	78	2,968
16b	Liabilities to customers	24,901	24,901	-	258	-	40	24,643
16c	Bearer bonds	21,237	21,237	-	-	-	4,375	21,237
16d	Subordinated liabilities	709	709	-	-	-	-	709
17	Negative fair values of hedge accounting derivatives	2,538	2,538	-	2,538	-	157	-
18	Valuation adjustment from portfolio hedge accounting (liabilities)	23	23	-	-	-	-	23
19	Provisions	268	268	7	-	-	-	261
20	Other liabilities	40	40	-	-	-	-	40
21	Current income tax liabilities	48	48	-	-	-	-	48
22	**Liabilities**	**54,512**	**54,512**	**7**	**4,576**	**0**	**4,694**	**49,929**
23	Equity	3,257	3,257	-	-	-	-	3,257
24	**Total liabilities and equity**	**57,769**	**57,769**	**7**	**4,576**	**0**	**4,694**	**53,186**

As of the reporting date, the pbb Group had exactly the same level of regulatory and commercial consolidation. There are no differences due to a different composition of the consolidation groups.

In accordance with the business model of the pbb Group, which focuses on commercial real estate financing and public investment financing, the assets are primarily subject to a capital requirement for credit risks (including counterparty credit risks). In addition, transactions concluded in foreign currency are subject to an equity requirement for market risks (risk of changes in foreign exchange rates). These assets/liabilities are accordingly allocated to more than one risk type. The pbb Group has no trading book for portfolios with short-term profit taking, which is why the transactions with regard to the market risk are exclusively subject to the capital requirement for the foreign currency risk of the banking book.

The regulations set out in part 3, title II, chapter 6 “Counterparty credit risk” of the CRR for calculating the exposure value for the counterparty credit risk are applied by the ppb Group for derivative transactions; it uses the market valuation in accordance with article 274 CRR for this purpose. On the other hand, for security financing transactions (security lending/repo transactions), the pbb Group uses the regulations for credit risk mitigation (for financial securities) in accordance with chapter 4 of the CRR (comprehensive method according to Art. 223 et seq. CRR); this is the reason why these transactions are not allocated to the counterparty credit risk (column d) in the above-mentioned table EU LI1.

In connection with its derivative transactions, the pbb Group uses the standard framework agreements (e.g. German framework agreement for financial futures (DRV) or ISDA Master Agreement) including the corresponding security agreements (e.g. German Credit Support Annex to the DRV or ISDA Credit Support Annex). These framework agreements contain a netting clause for the event of premature termination of the transactions (close-out netting), permitting the netting of mutual risks. Within the framework of the netting process, the credit risk is reduced to a single net receivable due from the relevant contracting party. As a consequence, the counterparty credit risk in the table above refers to both assets and liabilities. The netting of mutual risks in the course of the regulatory netting process relates to the asset items "Financial assets at fair value through profit or loss" (positive market values of the stand-alone derivatives), "Positive fair values of hedging derivatives" (positive fair values of hedge accounting derivatives) and "Financial assets measured at amortised cost" (loans and advances to other banks/customers, cash collateral provided) as well as the liabilities "Financial liabilities at fair values through profit or loss (negative market values of stand-alone derivatives), "Negative fair values of hedging derivatives" (negative fair values of hedge accounting derivatives) and "Financial liabilities measured at amortised cost" (liabilities to other banks/customers, cash collateral received).

Whereas the above table EU LI1 focuses on the reconciliation of the balance sheet carrying amounts (IFRS) of the financial statements prepared under commercial law with the regulatory scope of consolidation as well as the distribution over the risk types relevant for regulatory purposes, the following table EU LI2 focuses on the reconciliation of these carrying amounts (IFRS) with the regulatory risk items (EAD). The reconciliation process focuses on the main reasons for the differences between the figures.

Table 3: Differences between regulatory exposure amounts and IFRS carrying amounts (EU LI2)

All figures in € million

	Carrying amounts (IFRS) vs. regulatory risk positions	Total	Positions according to the underlying risk framework:			
			Credit risk	Counterparty credit risk	Securitisation	Market risk
		a	b	c	d	e
1	**Assets** **Carrying amounts (IFRS) under the scope of regulatory consolidation (as per template EU LI1)**	**57,769**	**53,105**	**4,622**	**-**	**9,454**
2	Liabilities and equity Carrying amounts (IFRS) under the regulatory scope of consolidation (as per template EU LI1)	57,769	7	4,576	-	4,694
3	Total net amount (IFRS) under the regulatory scope of consolidation	-	53,098	46	-	4,760
4	**Off-balance-sheet amounts** [1]	**4,807**	**3,656**	**-**	**-**	**-**
5	Differences due to the regulatory recognition of credit conversion factor (CCF) for committed open credit lines	-1,151	-	-	-	-
6	Differences due to risk-reducing recognition of approved contractual netting agreements for derivative financial instruments, taking into account premiums for potential future replacement value for derivative transactions (regulatory add-on)	-4,060	-	-4,060	-	-
7	Differences due to default risk in securities financing transactions (security lending and repo transactions) in accordance with comprehensive method for financial securities persuant to Article 223 et seq. CRR	592	592	-	-	-
8	Differences due to the consideration of credit loss allowances and provisions in lending business from the application of the internal rating-based approach (IRBA) for credit risk	94	94	-	-	-
9	Differences resulting from the calcualtion of the net foreign currency position in accordance with the market risk standard approach persuant to Article 325 et seq. CRR	-	-	-	-	-9,225
10	Differences due to "prudential filters" calculation of additional value adjustments for fair value-based financial instruments (additional value adjustments; AVA)	-	-	-	-	-
11	Other (e.g. deduction items from equity)	-16	26	-	-	-
12	**Exposure amounts considered for regulatory purposes** [2]	**58,034**	**57,472**	**562**	**-**	**229**

1) Off-balance sheet items are shown in column (a) before and in columns (b) to (e) after recognition of the credit conversion factor (CCF).

2) Regulatory exposure values (exposure at default; EAD)

The assets in accordance with the pbb consolidated financial statements (IFRS) as of 31 December 2018 amounted to € 57,769 million (line 1). The regulatory exposure parameters (exposure at default, EAD) are based on the IFRS consolidated financial statements, with due consideration being given to regulatory adjustments. The exposure parameters amounted to € 58,034 million as of 31 December 2018 (line 12).

The main reasons for the differences between the carrying amounts (IFRS) in accordance with the pbb consolidated financial statements according to the regulatory consolidation group and the regulatory exposure parameters according to the regulatory consolidation group are as follows:

- The recognition of off-balance-sheet items (lines 4 and 5) - contingent liabilities from guarantees and warranty agreements as well as other obligations arising from irrevocable loan commitments - after taking account of credit conversion factors (CCF) and also, in the credit risk standardised approach (CRSA), after taking account of credit risk adjustments (provisions).

  In the pbb Group, irrevocable loan commitments are the most significant part of off-balance-sheet items. This includes all obligations of a lender who extend a loan at a later date and can thus become a credit risk. These are mainly loans which are not fully paid out.

- The risk-mitigating recognition of accepted contractual netting agreements for derivative financial instruments (line 6), taking account of the add-ons for the potential future replacement value (regulatory add-on).

  On the balance sheet, the derivatives (with the exception of balance sheet netting of derivatives concluded with Eurex Clearing) cannot be netted because they have different conditions (e.g. different maturities or currency underlyings). The collateral agreements (collateral which is received or provided) also cannot be netted with the derivatives on the balance sheet.

- The netting of the counterparty credit risk in the case of security financing transactions (security lending and repo transactions) in accordance with the financial collateral comprehensive method as detailed in article 223 et seq. CRR (line 7). For regulatory purposes, not only the credit risk but also the counterparty credit risk are taken into consideration for the pledged securities which continue to form part of the balance sheet assets.

- The netting of impairments on financial assets (stage 1 to 3) and provisions in lending business for risk positions for which the internal ratings-based approach (IRBA) is used (line 8). In contrast to the credit risk standard approach (CRSA), credit risk adjustments are not deducted from the balance sheet carrying amount in the IRB approach, and instead are taken into account in the value adjustment comparison with the expected loss amounts (EL).

- Differences in the valuations resulting from the calculation of the net foreign currency position according to the market risk standard approach in accordance with article 325 et seq. CRR (line 9). The regulatory foreign currency risk as shown in line 12 of the table (EU) L12 is calculated on the basis of the present values of the respective assets/liabilities, whereby various nettings are applied between asset and liability positions in one currency, whereas the balance sheet carrying amounts according to lines 1 and 2 of the table show the respective assets and liabilities in foreign currency.

- Items which are deducted from equity, such as intangible assets or a portion of the deferred tax assets (deferred tax assets which are dependent on future profitability and which do not result from temporary differences) are not included in the exposure values. They are included in the previous table under the item Other (line 11).

On the other hand, additional valuation adjustments (AVA) pursuant to article 34 CRR in conjunction with article 105 CRR with regard to conservative valuation of financial instruments as well as so-called “prudential filters” pursuant to articles 32, 33 and 35 CRR do not have any impact on the carrying amounts (IFRS) or the regulatory exposure values. These regulatory adjustments settle the balance sheet equity as determined by IFRS and lead to an increase/decrease in the regulatory capital. Further information can be found in the following chapter 3.1 "Structure of own funds".

3 Own funds and assets

3.1 Structure of own funds

The regulatory own funds which are relevant for compliance with the regulatory capital requirements and thus for the capital backing for the risk types credit risk (including counterparty credit risk), market risk, operational risk, settlement risk and CVA risk are determined in accordance with the regulations of part 2 of the CRR. Regulatory own funds consist of common equity tier 1 (CET1) capital, additional tier 1 (AT1) capital as well as tier 2 (T2) capital.

For calculating its own funds, the pbb Group takes account of the requirements of prudent valuation of the assets recognised at fair value in accordance with article 34 CRR in conjunction with article 105 CRR. The pbb Group uses the simplified approach in accordance with article 4 et seq. of the Delegated Regulation (EU) 2016/101. Institutions are permitted to use this approach if the sum of the absolute value of assets and liabilities recognised at fair value in accordance with article 4 (1) less the possibility of offsetting pursuant to article (2) of the EU regulation is below the threshold value of € 15 billion. For the pbb Group, this amount was € 6.2 billion as of the reporting date (31 December 2017: € 5.2 billion).

The remainder of this chapter describes the own fund information in accordance with article 437 CRR in conjunction with the Implementing Regulation (EU) No. 1423/2013 for the pbb Group on a consolidated basis.

For the pbb Group, the following table regarding the structure of own funds in accordance with article 437 (1) letter d CRR shows the type and amounts of the elements of own funds as well as the equity ratios as of the reference date 31 December 2018 in accordance with the regulations of IFRS 9 (31 December 2017: IAS 39). They are calculated in accordance with the requirements of CRR. The amounts which are shown are based on the IFRS consolidated financial statements of the pbb Group, with due consideration being given to the regulatory adjustments. pbb is the direct or indirect main shareholder of the sharehold-ings included in the regulatory consolidation group.

Table 4: Structure of own funds

All figures in € million, unless otherwise stated

No.	Capital instruments pbb Group	31.12.2018 [1)] (IFRS 9)	31.12.2017 [2)] (IAS 39)
	Common Equity Tier 1 (CET1) capital: Instruments and reserves		
1	Capital instruments and the related share premium accounts	2,017	2,017
1a	Of which: Subscribed capital	380	380
1b	Of which: Capital reserve	1,637	1,637
2	Retained earnings	760	769
3	Accumulated other comprehensive income (and other reserves)	3	-73
3a	Funds for general banking risk	-	-
4	Amount of qualifying items referred to in Article 484 (3) and the related share premium accounts subject to phase out from CET1	-	-
5	Minority Interests (amount allowed in consolidated CET1)	-	-
5a	Independently reviewed interim profits net of any foreseeable charge or dividend	45	-
6	**Common Equity Tier 1 (CET1) capital before regulatory adjustments**	**2,825**	**2,713**
	Common Equity Tier 1 (CET1) capital: regulatory adjustments		
7	Additional value adjustments (negative amount)	-6	-5
8	Intangible assets (net of related tax liability) (negative amount)	-37	-29
9	Empty Set in the EU	-	-
10	Deferred tax assets that rely on future profitability excluding those arising from temporary differences (net of related tax liability where the conditions in Article 38 (3) are met) (negative amount)	-5	-23
11	Fair value reserves related to gains or losses on cash flow hedges	1	-22
12	Negative amounts resulting from the calculation of expected loss amounts	-53	-51
13	Any increase in equity that results from securitised assets (negative amount)	-	-
14	Gains or losses on liabilities valued at fair value resulting from changes in own credit standing	-6	-5

All figures in € million, unless otherwise stated

No.	Capital instruments pbb Group	31.12.2018 [1] (IFRS 9)	31.12.2017 [2] (IAS 39)
15	Defined-benefit pension fund assets (negative amount)	-	-
16	Direct and indirect holdings by an institution of own CET1 instruments (negative amount)	-	-
17	Direct, indirect and synthetic holdings of the CET1 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)	-	-
18	Direct and indirect holdings by the institution of the CET1 instruments of financial sector entities where the institution does not have a significant investment in those entities (not more than 10% and net of eligible short positions) (negative amount)	-	-
19	Direct, indirect and synthetic holdings by the institution of the CET1 instruments of financial sector entities where the institution has a significant investment in those entities (more than 10% and net of eligible short positions) (negative amount)	-	-
20	Empty Set in the EU	-	-
20a	Exposure amount of the following items which qualify for a risk weight of 1.250%, where the institution opts for the deduction alternative	-	-
20b	Of which: qualifying holdings outside the financial sector (negative amount)	-	-
20c	Of which: securitisation positions (negative amount)	-	-
20d	Of which: free deliveries (negative amount)	-	-
21	Deferred tax assets arising from temporary differences (amount above 10% threshold, net of related tax liability where the conditions in 38 (3) are met) (negative amount)	-	-
22	Amount exceeding the 15% threshold (negative amount)	-	-
23	Of which: direct and indirect holdings by the institution of the CET1 instruments of financial sector entities where the institution has a significant investment in those entities	-	-
24	Empty Set in the EU	-	-
25	Of which: deferred tax assets arising from temporary differences	-	-
25a	Losses for the current financial year (negative amount)	-	-
25b	Foreseeable tax charges relating to CET1 items (negative amount)	-	-
26	Security to be deducted for the Deposit Protection Fund (negative amount)	-20	-
27	Qualifying AT1 deductions that exceed the AT1 capital of the institution (negative amount)	-	-13
28	**Total regulatory adjustments to Common equity Tier 1 (CET1)**	**127**	**-144**
29	**Common Equity Tier 1 (CET1) capital**	**2,698**	**2,569**
	Additional Tier 1 (AT1) capital: Instruments and reserves		
30	Capital instruments and the related share premium accounts	298	-
31	Of which: classified as equity under applicable accounting standards	298	-
32	Of which: classified as liabilities under applicable accounting standards	-	-
33	Amount of qualifying items referred to in Article 484 (4) and the related share premium accounts subject to phase out from AT1	-	-
34	Qualifying Tier 1 capital included in consolidated AT1 capital (including minority interests not included in row 5) issued by subsidiaries and held by third parties	-	-
35	Of which: instruments issued by subsidiaries subject to phase out	-	-
36	**Additional Tier 1 (AT1) capital before regulatory adjustments**	**298**	**0**
	Additional Tier 1 (AT1) capital: regulatory adjustments		
37	Direct and indirect holdings by an institution of own AT1 Instruments (negative amount)	-	-
38	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)	-	-
39	Direct and indirect holdings of the AT1 instruments of financial sector entities where the institution does not have a significant investment in those entities (not more than 10% and net of eligible short positions) (negative amount)	-	-
40	Direct and indirect holdings by the institution of the AT1 instruments of financial sector entities where the institution has a significant investment in those entities (more than 10% and net of eligible short positions) (negative amount)	-	-
41	Empty Set in the EU	-	-
42	Qualifying T2 deductions that exceed the T2 capital of the institution (negative amount)	-	-
43	**Total regulatory adjustments to Additional Tier 1 (AT1) capital**	**0**	**0**
44	**Additional Tier 1 (AT1) capital**	**298**	**0**
45	**Tier 1 capital (T1 = CET1 + AT1)**	**2,996**	**2,569**
	Tier 2 (T2) capital: Instruments and reserves		
46	Capital instruments and the related share premium accounts	643	675
47	Amount of qualifying items referred to in Article 484 (5) and the related share premium accounts subject to phase out from T2	-	-
48	Qualifying own funds instruments included in consolidated T2 capital (including minority interests and AT1 instruments not included in rows 5 or 34) issued by subsidiaries and held by third parties	-	-
49	Of which: instruments issued by subsidiaries subject to phase out	-	-

All figures in € million, unless otherwise stated

No.	Capital instruments pbb Group	31.12.2018 1) (IFRS 9)	31.12.2017 2) (IAS 39)
50	Credit risk adjustments	-	-
51	**Tier 2 (T2) capital before regulatory adjustments**	**643**	**675**
	Tier 2 (T2) capital: regulatory adjustments		
52	Direct and indirect holdings by an institution of own T2 instruments and subordinated loans (negative amount)	-	-
53	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)	-	-
54	Direct and indirect holdings of the T2 instruments and subordinated loans of financial sector entities where the institution does not have a significant investment in those entities (not more than 10% and net of eligible short positions) (negative amount)	-	-
55	Direct and indirect 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 (more than 10% and net of eligible short positions) (negative amount)	-	-
56	Empty Set in the EU 3)	-	-5
57	**Total regulatory adjustments to Tier 2 (T2) capital**	**0**	**0**
58	**Tier 2 (T2) capital**	**643**	**670**
59	**Total capital (TC = T1 + T2)**	**3,639**	**3,239**
60	**Total risk weighted assets (RWA)**	**14,587**	**14,515**
	Capital ratios and buffers		
61	Common Tier 1 equity ratio (as a percentage of risk exposure amount)	18.5%	17.7%
62	Tier 1 capital ratio (as a percentage of risk exposure amount)	20.5%	17.7%
63	Total capital ratio (as a percentage of risk exposure amount)	24.9%	22.3%
64	Institution specific buffer requirement (CET1 requirement in accordance with article 92 (1) (a) 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 exposure amount)	2.064%	1.355%
65	Of which: capital conservation buffer requirement	1.875%	1.250%
66	Of which: countercyclical buffer requirement	0.189%	0.105%
67	Of which: systemic risk buffer requirement	-	-
67a	Of which: Global Systemically Important Institution (G-SII) or Other Systemically Important Institution (O-SII) buffer	-	-
68	Common Equity Tier 1 available to meet buffers (as a percentage of risk exposure amount)	14.0%	13.2%
69	[non relevant in EU regulation]	-	-
70	[non relevant in EU regulation]	-	-
71	[non relevant in EU regulation]	-	-
	Amounts below the thresholds for deduction (before risk weighting)		
72	Direct and indirect holdings of the capital of financial sector entities where the institution does not have a significant investment in those entities (not more than 10% and net of eligible short positions)	-	-
73	Direct and indirect holdings by the institution of the CET 1 instruments of financial sector entities where the institution has a significant investment in those entities (more than 10% and net of eligible short positions)	-	-
74	Empty Set in the EU	-	-
75	Deferred tax assets arising from temporary differences (amount below 10% threshold, net of related tax liability where the conditions in Article 38 (3) are met)	81	58
	Applicable caps on the inclusion of provisions in Tier 2		
76	Credit risk adjustments included in T2 in respect of exposures subject to standardized approach (prior to the application of the cap)	-	-
77	Cap on inclusion of credit risk adjustments in T2 under standardised approach	6	4
78	Credit risk adjustments included in T2 in respect of exposures subject to internal ratings-based approach (prior to the application of the cap)	-	-
79	Cap for inclusion of credit risk adjustments in T2 under internal ratings-based approach	77	76
	Capital instruments subject to phase-out arrangements (only applicable between 1 Jan 2014 and 1 Jan 2022)		
80	Current cap on CET1 instruments subject to phase out arrangements	-	-
81	Amount excluded from CET1 due to cap (excess over cap after redemptions and maturities)	-	-
82	Current cap on AT1 instruments subject to phase out arrangements	-	-
83	Amount excluded from AT1 due to cap (excess over cap after redemptions and maturities)	-	-
84	Current cap on T2 instruments subject to phase out arrangements	-	-
85	Amount excluded from T2 due to cap (excess over cap after redemptions and maturities)	-	-

1) After expiry of all Basel III transitional arrangements.
2) Before expiry of all Basel III transitional arrangements.
3) As of 31 December 2017 (line 56): regulatory adjustments to tier 2 capital as a result of the pre-CRR treatment or the Basel III transitional regulations.

The own funds shown in the table are based on the correct notification of own funds and own fund requirements of the pbb Group as of the reference date 31 December 2018 (incl. the cumulative profit 2018 and after deduction of the dividend of € 1.00 per eligible share proposed by the Management Board and the Supervisory Board, subject to approval by the annual general meeting).

Tier 1 capital

Regulatory tier 1 capital in accordance with article 25 CRR consists of common equity tier 1 (CET1) capital and additional tier 1 (AT1) capital. It is based on the own funds of € 3,257 million according to IFRS 9 (31 December 2017: € 2,858 million according to IAS 39), modified by regulatory adjustments. The composition of balance sheet own funds according to IFRS is explained in the annual report as of 31 December 2018 of the pbb Group, note 64 “Equity”.

Common equity tier 1 capital

As of 31 December 2018, the conditions for common equity tier 1 capital according to articles 26 to 50 CRR were applicable.

The subscribed capital of pbb amounted to approx. € 380 million as of 31 December 2018 (unchanged), and consisted of 134,475,308 no-par-value ordinary bearer shares with a computed share in the subscribed capital (share capital) of approxi-mately € 2.83 per share. pbb did not own any of its own shares during the financial year 2018.

In addition to the subscribed capital (share capital), the common equity tier 1 capital consists of the capital reserve of € 1,637 million, the retained earnings of € 760 million, the cumulative other comprehensive income of € 3 million and the consolidated profit 2018 of € 179 million. The common equity tier 1 capital before regulatory adjustments and after deduction of the dividend of € 1.00 per eligible share proposed by the Management Board and Supervisory Board (subject to the approval of the annual general meeting) amounted to € 2,825 million.

At the annual general meeting to be held on 7 June 2019, the Management Board and Supervisory Board will propose the payment of a dividend of € 134 million or € 1.00 per eligible share. In the previous year (June 2018) and pursuant to a resolution of the annual general meeting of pbb, a dividend of € 144 million or € 1.07 per eligible share was paid out to the shareholders.

Regulatory adjustments

Various deductions totalling € 127 million which are required in the CRR are deducted from the common equity tier 1 (CET1) capital before regulatory adjustments of € 2,825 million:

- Valuation adjustments based on the requirements of prudent valuation of assets recognised at fair value amounting to € 6 million are deducted in full from common equity tier 1 capital.

  The prudent valuation has to be created in accordance with article 34 CRR. In accordance with article 4 of the EBA/RTS/2014/06, institutions with fair valued items up to a limit of € 15 billion (after deducting items which are not relevant for equity) may use the simplified approach. The pbb Group utilises this option. In accordance with article 6 of this operating standard, a flat amount of 0.1 % of portfolios measured at fair value is deducted (again after deducting items which are not relevant for equity).

- In accordance with article 37 CRR, the intangible assets (such as purchased and internally generated software) of € 37 million have to be deducted in full from common equity tier 1 capital.

- As of 31 December 2018, there were deductions of € 5 million from CET1 in relation to deferred tax assets which did not result from temporary differences (after netting in the balance sheet with the deferred tax liabilities). In accordance with article 48 (4) CRR, risk weighting is applied in the standardised approach for credit risk to the deferred tax assets of € 86 million which result from temporary differences.

- In accordance with article 33 CRR, the cash flow hedge reserve of € 1 million still included in cumulative other com-prehensive income is completely eliminated. As was the case in the previous year, no derivatives were designated in

the cash flow hedge as of 31 December 2018. The cash flow hedge reserve remaining from designations is reversed through profit or loss reflecting the occurrence of the hedged cash flows of the underlyings.

- If an impairment deficit relating to the volume of impairments (stage 1 to stage 3) occurs in relation to the expected loss, article 159 CRR requires that this deficit has to be deducted from common equity tier 1 capital for banks which use the internal ratings-based approach (IRBA). The deficit as of 31 December 2018 amounted to € 53 million.
- Profits and losses of € 6 million which result from the institution's own credit risk in relation to derivative liabilities measured at fair value (debt value adjustment, DVA) are deducted from the common equity tier 1 capital. This deduction requirement is based on article 33 (1) letter c CRR.
- The collateral payments of € 20 million to be deducted from CET1 comprise the European bank levy payable to the BaFin as the national resolution authority as well as the payments made to the compensation scheme of German banks (statutory deposit protection) and the deposit protection fund of the private banks in the Bundesverband der deutschen Banken (BdB - Federal Association of German Banks).

Overall, the common equity tier 1 (CET1) capital of the pbb Group as of 31 December 2018, including the cumulative profit 2018 and after deducting the proposed dividend (subject to the approval of the annual general meeting), amounted to € 2,698 million (31 December 2017: € 2,569 million).

Additional tier 1 capital

The tier 1 capital of the pbb Group comprises the common equity tier 1 capital (CET1) as well as additional tier 1 capital (AT1) which meets the requirements set out in articles 52 to 54 CRR.

The additional tier 1 capital comprises subordinate bearer bonds with a total nominal amount of € 300 million and with an initial interest rate of 5.750 % per annum; the perpetual bonds were issued by pbb in April 2018, and are available without any repayment incentives. Whereas the pbb Group did not have any AT1 capital as of 31 December 2017, pbb with this issue has extended the regulatory capital of the pbb Group to include additional tier 1 capital, thus also strengthening its leverage ratio, which has improved to slightly more than 5 % (see chapter 3.5 "Leverage ratio"). The issue has also increased the tier 1 ratio as well as the own funds ratio by approximately two percentage points in each case.

For the balance sheet, the AT1 capital is also classified as own funds in accordance with IFRS as there is no obligation for repayment and for ongoing servicing. It is shown under the liabilities item "Additional equity instruments".

Table 5: Additional tier 1 (AT1) capital – Capital instruments

No.[1]	Issuer	Year of issue	Type	Nominal amount in € million	Interest rate in %	Maturity	First call date Issuer
2	Deutsche Pfandbriefbank AG	2018	Bearer bond	300	5.750%	perpetual	2023
Total				**300**			

1) The sequential numbering corresponds to the consecutive numbering of the capital instruments in the appendix "Disclosure Report (31.12.2018) - Main features of capital instruments".

The bonds do not have a maturity date; however they can be called in ordinarily by pbb for the first time as of 28 April 2023 and subsequently every five years and also for regulatory and tax considerations, always subject to the prior approval of the relevant regulatory authority. The obligors do not have any right to terminate the bonds.

The bond conditions also provide for a temporary write-down of the nominal amount if the CET1 ratio falls below the level of 7.0 %. The level of 7.0 % relates primarily to the pbb Group in accordance with IFRS. This figure is also applicable at the level of the individual institution in accordance with HGB if pbb is no longer exempted from the requirement to determine the regulatory parameters for the individual institution.

The bonds constitute direct, unsecured and subordinate liabilities of the issuer; they are of equal ranking with each other, but enjoy priority over liabilities of the issuer resulting from instruments of common equity tier 1 capital. In the case of work-out measures in relation to the issuer, and in the event of winding-up, liquidation or insolvency of the issuer, the liabilities arising from the bonds are serviced only after repayment of the tier 2 capital.

The additional tier 1 capital (AT1) of the pbb Group amounts to € 298 million with this issue (nominal amount of € 300 m less issue costs of € 2 million). No regulatory adjustments have been made in relation to the additional tier 1 capital.

The primary features in accordance with article 437 (1) letter b CRR of the additional tier 1 capital issued by pbb are detailed in the Appendix "Disclosure Report (31.12.2018) - Primary features of the capital instruments". The Appendix has been published, together with the Disclosure Report, on the website of pbb under Investors / Mandatory Publications.

Tier 2 capital

The tier 2 capital (T2) of the pbb Group comprises longer-term subordinate liabilities which meet the criteria in accordance with article 63 CRR. No regulatory adjustments have been made in relation to the tier 2 capital.

The issued subordinated liabilities consist of the following table of issues (listed according to maturity). The primary features in accordance with article 437 (1) letter b CRR of these tier 2 capital instruments are also detailed in the Appendix "Disclosure Report (31.12.2018) - Primary features of the capital instruments".

Table 6: Tier 2 (T2) capital – Capital instruments

No. [1]	Issuer	Year of issue	Type	Nominal amount in € million	Interest rate in %	Maturity
3	Deutsche Pfandbriefbank AG	2006	Registered Bond	5	4.520	2019
4	Deutsche Pfandbriefbank AG	2006	Registered Bond	1	4.900	2020
5	Deutsche Pfandbriefbank AG	2000	Bearer bond	15	variable	2020
6	Deutsche Pfandbriefbank AG	2006	Borrowers' note loan	10	4.350	2021
7	Deutsche Pfandbriefbank AG	2006	Registered Bond	10	4.570	2021
8	Deutsche Pfandbriefbank AG	2006	Bearer bond	7	4.560	2021
9	Deutsche Pfandbriefbank AG	2006	Borrowers' note loan	1	4.910	2021
10	Deutsche Pfandbriefbank AG	2002	Borrowers' note loan	4	6.550	2022
11	Deutsche Pfandbriefbank AG	2002	Borrowers' note loan	6	6.550	2022
12	Deutsche Pfandbriefbank AG	2002	Bearer bond	10	6.570	2022
13	Deutsche Pfandbriefbank AG	2003	Bearer bond	10	6.750	2023
14	Deutsche Pfandbriefbank AG	2008	Bearer bond	10	8.060	2023
15	Deutsche Pfandbriefbank AG	2003	Borrowers' note loan	5	6.330	2023
16	Deutsche Pfandbriefbank AG	2003	Borrowers' note loan	5	6.330	2023
17	Deutsche Pfandbriefbank AG	2005	Borrowers' note loan	10	4.650	2025
18	Deutsche Pfandbriefbank AG	2016	Borrowers' note loan	2	3.950	2026
19	Deutsche Pfandbriefbank AG	2006	Borrowers' note loan	2.5	4.530	2026
20	Deutsche Pfandbriefbank AG	2001	Bearer bond	8	6.550	2026
21	Deutsche Pfandbriefbank AG	2006	Registered Bond	5	5.125	2026
22	Deutsche Pfandbriefbank AG	2016	Borrowers' note loan	5	3.880	2026
23	Deutsche Pfandbriefbank AG	2006	Borrowers' note loan	5	5.040	2026
24	Deutsche Pfandbriefbank AG	2016	Bearer bond	35	3.250	2026
25	Deutsche Pfandbriefbank AG	2017	Bearer bond	150	4.600	2027
26	Deutsche Pfandbriefbank AG	2017	Bearer bond	60	3.375	2027
27	Deutsche Pfandbriefbank AG	2017	Bearer bond	300	2.875	2027
28	Deutsche Pfandbriefbank AG	2016	Bearer bond	5	4.120	2031
29	Deutsche Pfandbriefbank AG	2017	Registered Bond	7.5	4.550	2032
Total				**694**		

1) The sequential numbering corresponds to the consecutive numbering of the capital instruments in the appendix "Disclosure Report (31.12.2018) - Main features of capital instruments".

Market-oriented interest is applied to all subordinate liabilities. The issuer does not have any obligation to repay these liabilities ahead of schedule. These loans are subordinated to all claims of those obligors who are not subordinated (in the event of liquidation, insolvency or in the event of insolvency or other proceedings), but they enjoy priority over the liquidation claims of the

shareholders. No subsequent limitation of subordination, maturity or notice period can be made. Debtors termination rights are subject to defined contractual conditions. The original terms are at least five years, and are usually between ten and 20 years.

After recognition of discounts and amortisations in accordance with article 64 CRR, the tier 2 capital of the pbb Group amounted to a total of € 643 million (31 December 2017: € 670 million).

Own funds

The own funds of the pbb Group totalling € 3,639 million (31 December 2017: € 3,239 million) consist of common equity tier 1 (CET1) capital of € 2,698 million, additional tier 1 capital (AT1) of € 298 million and tier 2 (T2) capital of € 643 million.

The subordinate bearer bonds (AT1 capital) issued in April 2018 by pbb are the main factor behind the increase in the regulatory own funds of the pbb Group (involving a total increase of € 400 million compared with the end of 2017). This was opposed by repayments of subordinate liabilities which fell due in the first half of 2018 and declines in the netting of the subordinate bonds (T2 capital), due to daily amortisations in accordance with article 64 CRR.

In addition, as of 1 January 2018, there was also a positive effect of the first-time adoption of IFRS 9 in relation to regulatory tier 1 capital (of approx. € 100 million). Since 1 January 2018, the pbb Group has applied IFRS 9 “Financial Instruments” in the version adopted by the European Union, which has replaced the previously valid regulations of IAS 39 regarding the recognition of financial instruments. The first-time adoption of IFRS 9 was recognised retrospectively as of 1 January 2018. The introduction of IFRS 9 is associated with new rules regarding the classification and valuation of financial assets and regarding the recognition of impairments which also had an impact on the regulatory own funds.

Optional IFRS 9 transitional regulations

On 12 January 2018, the European Banking Authority (EBA) published the guidelines EBA/GL/2018/01 regarding uniform disclosure of the regulatory consequences resulting from the application of the optional transitional regulations in accordance with article 473 letter a CRR for mitigating the effects of the introduction of IFRS 9 after 1 January 2018. These transitional regulations provide the institutions with the possibility of spreading the regulatory impact of the simultaneous initial application of the expected credit loss – value adjustment model of IFRS 9 over a period of five years and thus to reduce the impact of the introduction of accounting standard IFRS 9 on the own funds.

The pbb Group will probably not apply these optional IFRS 9 transitional regulations. The disclosure of the table IFRS 9-FL “Comparison of own funds and the capital and leverage ratios of the institutions with and without application of the transitional regulations for IFRS 9 or equivalent expected credit losses” in accordance with the guidelines EBA/GL/2018/01 is accordingly not relevant for the pbb Group.

Further information regarding the classification and measurement of financial instruments in accordance with IFRS 9 and also regarding the first-time adoption of IFRS 9 is set out in the annual report 2018 of the pbb Group, in the notes to the financial statements under note 2 “Principles (IFRS9: Financial Instruments)” and note 7 “Financial Instruments”, published on the website of pbb.

Reconciliation of regulatory capital and balance sheet equity

In accordance with article 437 (1) letter a CRR, the following table shows the reconciliation of regulatory own funds and balance sheet equity according to IFRS for the pbb Group. The pbb Group's balance sheet equity, including additional tier 1 capital (AT1), as of 31 December 2018 amounted to € 3,257 million (as of 31 December 2017: € 2,858 million under IAS 39 or as of 1 January 2018: € 2,967 million under IFRS 9).

Table 7: Reconciliation of regulatory capital and balance sheet equity

All figures in € million, unless otherwise stated

No.	Capital instruments pbb Group	(A) Total equity according to commercial IFRS-consolidation scope 31.12.2018	(B) Total equity according to regulatory CRR-consolidation scope 31.12.2018	(C) Regulatory own funds according to CRR 31.12.2018
	Common Equity Tier 1 (CET1): Instruments and reserves			
1	Capital instruments and the ralted share premium accounts	2,017	2,017	2,017
1a	Of which: Subscribed capital	380	380	380
1b	Of which: Additional paid-in capital	1,637	1,637	1,637
2	Retained earnings	760	760	760
3	Accumulated other comprehensive income (and other reserves)	3	3	3
4	Consolidated result from 01.01. to 31.12.2018	179	179	179
5	Distribution	-	-	-134
6	**Common Equity Tier 1 (CET1) before regulatory adjustments**	**2,959**	**2,959**	**2,825**
	Common Equity Tier 1 (CET1): regulatory adjustments			
7	Additional value adjustments (negative amount)	-	-	-6
8	Intangible assets (net of related tax liability) (negative amount)	-	-	-37
9	Deferred tax assets that rely on future profitability excluding those arising from temporary differences (net of related tax liability where the conditions in Article 38 (3) are met) (negative amount)	-	-	-5
10	Fair value reserves related to gains or losses on cash flow hedges	-	-	1
11	Negative amounts resulting from the calculation of expected loss amounts	-	-	-53
12	Gains or losses on liabilities valued at fair value resulting from changes in own credit standing	-	-	-6
13	Security to be deducted for the Deposit Protection Fund (negative amount)	-	-	-20
14	Qualifying AT1 deductions that exceed the AT1 capital of the institution (negative amount)	-	-	-
15	**Total regulatory adjustments to Common equity Tier 1 (CET1)**	**-**	**-**	**-127**
16	**Common Equity Tier 1 (CET1) capital**	**2,959**	**2,959**	**2,698**
	Additional Tier 1 (AT1) capital: Instruments and reserves			
17	Capital instruments and the related share premium accounts	298	298	298
17a	Of which: classified as equity under applicable accounting standards	298	298	298
17b	Of which: classified as liabilities under applicable accounting standards	-	-	-
18	**Additional Tier 1 (AT1) capital before regulatory adjustments**	**298**	**298**	**298**
	Additional Tier 1 (AT1) capital: regulatory adjustments			
19	Direct and indirect holdings by an institution of own AT1 Instruments (negative amount)	-	-	-
20	Qualifying T2 deductions that exceed the T2 capital of the institution (negative amount)	-	-	-
21	**Total regulatory adjustments to Additional Tier 1 (AT1) capital**	-	-	**0**
22	**Additional Tier 1 (AT1) capital**	**298**	**298**	**298**
23	**Tier 1 capital (T1 = CET1 + AT1)**	**3,257**	**3,257**	**2,996**
	Tier 2 (T2) capital: Instruments and reserves			
24	Capital instruments and the related share premium accounts according to IFRS balance sheet	688	688	688
25	Deferred interests within the IFRS balance sheet	17	17	-
26	Hedge adjustments within the IFRS balance sheet	5	5	-

All figures in € million, unless otherwise stated

No.	Capital instruments pbb Group	(A) Total equity according to commercial IFRS-consolidation scope 31.12.2018	(B) Total equity according to regulatory CRR-consolidation scope 31.12.2018	(C) Regulatory own funds according to CRR 31.12.2018
27	Amortisation of Tier 2 capital instrument according to Article 64 CRR	-	-	-45
28	**Tier 2 (T2) capital before regulatory adjustments**	**710**	**710**	**643**
	Tier 2 (T2) capital: regulatory adjustments			
29	Direct and indirect holdings of the T2 instruments and subordinated loans (negative amount)	-	-	-
30	**Total regulatory adjustments to Tier 2 (T2) capital**	-	-	**0**
31	**Tier 2 (T2) capital**	**710**	**710**	**643**
32	**Total capital (TC = T1 + T2)**	**3,967**	**3,967**	**3,639**

1) For accounting purposes, the additional tier 1 capital (AT1) is classified as equity under IFRS because there is no obligation for repayment and ongoing servicing. The instruments of tier 2 capital (T2) are included in the liabilities in the IFRS balance sheet.

Further information regarding the balance sheet equity according to IRFS and related developments is set out in the annual report 2018 of the pbb Group, note “Changes in equity” and note 64 “Equity”, published on the website of pbb.

3.2 Countercyclical capital buffer

The countercyclical capital buffer (CCB) in accordance with section 10d KWG is considered to be a macroprudential instrument of banking supervision. It is designed to counter the risk of excessive credit growth in the banking sector, i.e. in times of excessive credit growth, the banks should build an additional capital buffer (using common equity tier 1 (CET1) capital), which increases the loss absorption capacity of banks in the event of a crisis.

For Germany, the value for the domestic countercyclical capital buffer (CCB) is determined by the Federal Financial Supervisory Authority (Bundesanstalt für Finanzdienstleistungsaufsicht, BaFin). With the "General order concerning the introduction of the quota for the countercyclical capital buffer in accordance with section 10d (3) sentence 2 KWG" of 28 December 2015, the BaFin has set the quota for Germany as 0 % with effect from 1 January 2016. As of 31 December 2018, the figure is unchanged at 0 %.

The pbb Group has to determine itself its own institution-specific countercyclical capital buffer (ICCB). The value of the countercyclical capital buffer relevant for Germany must be taken into account and applied to the sum of the relevant credit exposures that are located in Germany. In addition to the domestic countercyclical capital buffer, foreign countercyclical capital buffers from countries in which pbb Group receivables are held must also be included. The countercyclical capital buffers valid in such countries (see table 8, column 120) must be recognised on a pro-rata basis. The institution-specific countercyclical capital buffer for the pbb Group is thus derived from the weighted average of the domestic and foreign capital buffers of those countries in which the pbb Group holds significant credit exposures against the private sector (see table 8: as the sum of the weighted own funds requirement per country in accordance with column 110 multiplied by the country-specific CCB in % according to column 120).

The following tables in accordance with article 440 CRR in conjunction with the Delegated Regulation (EU) 2015/1555 show, for the pbb Group, the extent of the countercyclical capital buffer specific for the pbb Group as well as the geographical distribution of the credit exposures essential for the calculation of the institution-specific countercyclical capital buffer.

Table 8: Institution-specific countercyclical capital buffer

All figures in € million, unless otherwise stated

Row	Amount of institution-specific countercyclical capital buffer (ICCB)	Column 010
10	Total risk exposure amount	14,587
20	Institution-specific countercyclical buffer rate	0.189%
30	Institution-specific countercyclical buffer requirement	28

1) The institution-specific countercyclical capital buffer is limited to 1,875% in 2018 (to 2,500% in 2019).

The institution-specific countercyclical capital buffer (ICCB) for the pbb Group amounted to 0.189 % as of 31 December 2018 (31 December 2017: 0.105 %); it is thus considerably lower than the highest figure of 1.875 % valid for 2018. There is thus no capping of the countercyclical capital buffer rate which is specific for the pbb Group. The slight increase of 0.084 percentage points in the institution-specific countercyclical capital buffer compared with the previous year is mainly attributable to an increase in the domestic countercyclical capital buffer to 1 % for the United Kingdom (31 December 2017: 0.00 %), to 1 % for the Czech Republic (31 December 2017: 0.50 %) and to 1.25 % for Slovakia (31 December 2017: 0.50 %). The domestic countercyclical capital buffers for Sweden and Norway are unchanged at 2.00 %.

In accordance with section 10d (1) KWG, the capital requirement of € 28 million (0.189 % of the risk-weighted receivables) has to be maintained in common equity tier 1 (CET1) capital. For this requirement, and also for the equity requirement for the capital conservation buffer of 1.875 %, after complying with the CET1 capital ratio of 4.5 % of the total risk exposure amount, a figure of € 2,042 million of common equity tier 1 (CET1) capital is available to the pbb Group

Table 9: Countercyclical capital buffer – Geographical distribution of exposures

All figures in € million, unless otherwise stated

Row			Geographical distribution of credit exposures relevant for the calculation of the countercyclical capital buffer (CCB)													
			General credit exposures		Trading book exposures		Securitisation exposures		Others	Own funds requirements						
			Exposure value for SA	Exposure value for IRB	Sum of long and short positions of trading book	Value of tranding book exposures for internal models	Exposure value for SA	Exposure value for IRB	Other assets without credit commitments	Of which: General credit exposures	Of which: Trading book exposures	Of which: Securitisation exposures	Other assets without credit commitments	Total	Own funds requirement weights per country	Country-specific countercyclical capital buffer rate [1]
			010	020	030	040	050	060	065	070	080	090	095	100	110	120
10	**Breakdown by country [2]:**															
1	(AT)	Austria	463	757	-	-	-	-	-	9	-	-	-	9	0.01	0.00%
2	(AW)	Aruba	-	74	-	-	-	-	-	-	-	-	-	-	-	-
3	(BD)	Bangladesh	-	30	-	-	-	-	-	0.1	-	-	-	0.1	0.00	-
4	(BE)	Belgium	-	366	-	-	-	-	-	1	-	-	-	1	0.00	0.00%
5	(BM)	Bermuda	61	1	-	-	-	-	-	0.1	-	-	-	0.1	0.00	-
6	(CH)	Switzerland	57	318	-	-	-	-	-	4	-	-	-	4	0.01	0.00%
7	(CY)	Cyprus	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%
8	(CZ)	Czech Republic	-	373	-	-	-	-	-	13	-	-	-	13	0.02	1.00%
9	(DE)	Germany	45	14,133	-	-	-	-	16	254	-	-	1	255	0.38	0.00%
10	(DK)	Denmark	-	50	-	-	-	-	-	2	-	-	-	2	0.00	0.00%
11	(EG)	Egypt	-	40	-	-	-	-	-	0.3	-	-	-	0.3	0.00	-
12	(ES)	Spain	95	314	-	-	-	-	0.5	28	-	-	0.04	28	0.04	0.00%
13	(FI)	Finland	-	361	-	-	-	-	-	13	-	-	-	13	0.02	0.00%
14	(FR)	France	170	3,833	-	-	-	-	0.4	89	-	-	0.03	90	0.13	0.00%
15	(GB)	United Kingdom	-	4,369	-	-	-	-	1	76	-	-	0.1	77	0.11	1.00%
16	(GG)	Guernsey	-	1	-	-	-	-	-	0.1	-	-	-	0.1	0.00	-
17	(GH)	Ghana	-	44	-	-	-	-		1	-	-	-	1	0.00	-
18	(HU)	Hungary	-	87	-	-	-	-	-	3	-	-	-	3	0.00	0.00%
19	(IE)	Ireland	-	170	-	-	-	-	-	-	-	-	-	-	-	0.00%
20	(IM)	Isle of Man	-	0.05	-	-	-	-	-	0.003	-	-	-	0.003	0.00	-
21	(IT)	Italy	-	131	-	-	-	-	-	4	-	-	-	4	0.01	0.00%

All figures in € million, unless otherwise stated

Row		Geographical distribution of credit exposures relevant for the calculation of the countercyclical capital buffer (CCB)														
		General credit exposures		Trading book exposures		Securitisation exposures		Others	Own funds requirements						
		Exposure value for SA	Exposure value for IRB	Sum of long and short positions of trading book	Value of tranding book exposures for internal models	Exposure value for SA	Exposure value for IRB	Other assets without credit commitments	Of which: General credit exposures	Of which: Trading book exposures	Of which: Securitisation exposures	Other assets without credit commitments	Total	Own funds requirement weights per country	Country-specific countercyclical capital buffer rate [1]
		010	020	030	040	050	060	065	070	080	090	095	100	110	120
10	**Breakdown by country** [2]**:**														
22	(JE) Jersey	-	32	-	-	-	-	-	0.3	-	-	-	0.3	0.00	-
23	(KY) Cayman Islands	-	169	-	-	-	-	-	-	-	-	-	-	-	-
24	(LI) Liechtenstein	-	5	-	-	-	-	-	0.003	-	-	-	0.003	0.00	-
25	(LU) Luxemburg	3	133	-	-	-	-	-	4	-	-	-	4	0.01	0.00%
26	(MU) Mauritius	-	1	-	-	-	-	-	0.07	-	-	-	0.07	0.00	-
27	(NL) Netherlands	1	593	-	-	-	-	-	9	-	-	-	9	0.01	0.00%
28	(NO) Norway	-	25	-	-	-	-	-	0.3	-	-	-	0.3	0.00	2.00%
29	(OM) Oman	52	-	-	-	-	-	-	-	-	-	-	-	-	-
30	(PL) Poland	-	1,316	-	-	-	-	-	44	-	-	-	44	0.07	0.00%
31	(PT) Portugal	-	167	-	-	-	-	-	53	-	-	-	53	0.08	0.00%
32	(RO) Romania	-	102	-	-	-	-	-	2	-	-	-	2	0.00	0.00%
33	(SA) Saudi Arabia		50	-	-	-	-	-	0.03	-	-	-	0.03	0.00	0.00%
34	(SE) Sweden	-	1,230	-	-	-	-	0.08	17	-	-	0.007	17	0.02	2.00%
35	(SI) Slovenia	-	186	-	-	-	-	-	4	-	-	-	4	0.01	0.00%
36	(SK) Slovakia	-	88	-	-	-	-	-	3	-	-	-	3	0.00	1.25%
37	(US) United States of America	83	1,949	-	-	-	-	-	39	-	-	-	39	0.06	0.00%
38	(VG) Virgin Islands	-	1	-	-	-	-	-	0.06	-	-	-	0.06	0.00	-
20	**Total**	**1,030**	**31,497**	**0**	**0**	**0**	**0**	**18**	**677**	**0**	**0**	**1**	**679**	**1.00**	

1) CCyB rates according to European Systemic Risk Board (ESRB) or Bank for International Settlements (BIS).

2) Country: Geographical location, which means the place of residence of the obligor / debtor or the location of the assets (real estate) for specialised lending exposures.

3.3 Own funds requirements

As the parent company of the institutional group in accordance with section 10a KWG in conjunction with article 11 et seq. CRR, pbb is responsible for ensuring compliance with the own funds requirements on a consolidated basis (regulatory consolidation group).

Methods for determining the own funds requirement

Since 1 January 2014, the pbb Group has been applying the provisions of CRR, and is thus subject to the disclosure requirements of part 8 of the CRR. The regulations of CRR/CRD IV form the basis for the minimum amount of own funds as well as the calculation of own funds requirements. In order to comply with the own funds requirements, the credit risk (including counterparty credit risk), the market risk, the operational risk, the settlement risk as well as the credit value adjustment risk (CVA risk) must be backed with capital. The regulatory parameters are calculated based on the IFRS accounting standards.

Credit risk (incl. counterparty credit risk)

For determining the own funds requirements for credit risks, the pbb Group uses the advanced IRB approach based on internal rating procedures in accordance with article 142 et seq. CRR. The following table shows the coverage for IRBA exposure at default (EAD) and for risk-weighted IRBA assets (RWA) in accordance with section 11 SolvV.

Table 10: IRB-approach coverage

	Degree of coverage IRB approach	
	EAD	RWA
31 December 2014	95%	99%
31 December 2015	96%	99%
31 December 2016	97%	99%
31 December 2017	97%	99%
31 December 2018	96%	98%

The advanced IRB approach in the credit portfolio of the pbb Group as of 31 December 2018 covers 96 % of the exposure at default (EAD) and 98 % of risk-weighted assets (RWA). The remaining percentage points which are subject to the standard approach in accordance with the CRR rules relate for instance to default exposures with public-sector borrowers (amounts due from German municipalities) or the non-strategic remaining portfolio which consists of smaller retail customer real estate loans.

For calculating the own funds requirements for the counterparty credit risk in accordance with part 3, title II, chapter 6 of the CRR (i.e. for derivative transactions), the pbb Group uses the mark-to-market method in accordance with article 274 CRR.

For security financing transactions (security lending/repo transactions), the pbb Group applies the provisions for minimising credit risk in accordance with chapter 4 of the CRR, the comprehensive method for recognising financial security in accordance with article 223 et seq. CRR.

For calculating the own funds requirements for pre-financed contributions to the default fund of a qualified central counterparty, the pbb Group applies the risk-sensitive method in accordance with article 308 CRR.

Market risk

For calculating the own fund backing for market risks in accordance with part 3, title IV of the CRR, the pbb Group applies the standard approach in accordance with article 325 et seq. CRR. The bank's own internal models are not used at present.

Operational risk

The own fund backing for operational risk in accordance with part 3, title IIII of the CRR is calculated by the pbb Group using the standard approach in accordance with article 317 et seq. CRR.

Settlement risk

The own fund requirements for the settlement and delivery risk in accordance with part 3, title V of the CRR are calculated using the rules defined in the articles 378 and 379 CRR.

CVA risk

For calculating the additional own funds requirement for OTC derivatives for the risk of a credit valuation adjustment (CVA risk) in accordance with part 3, title VI of the CRR, the pbb Group applies the standard method in accordance with article 384 CRR. This is based on the effective maturity, a rating-related weighting and the EAD, whereby the EAD for the relevant transactions is determined using the mark-to-market method in accordance with article 274 CRR.

Risk-weighted receivables and own funds requirements

As was the case at the end of the previous year, the minimum own funds requirements for the specified risk types as of 31 December 2018 amounted to 8 % of the risk-weighted receivables.

The total own funds requirement is 10.064 % (31 December 2017: 9.355 %). The increase of 0.709 percentage points compared with the end of the previous year is mainly attributable to the gradual increase in the capital conservation buffer (CCB) in accordance with section 10c KWG in conjunction with the transitional regulations in accordance with section 64r KWG, to 1.875 % of the total risk amount in 2018 (2017: 1.250 %) and also to the slight increase in the institution-specific countercyclical capital buffer (ICCB) in accordance with section 10d KWG in conjunction with section 64r KWG, which amounted to 0.189 % of the total risk amount for the pbb Group as of 31 December 2018 (31 December 2017: 0.105 %).

The risk-weighted receivables (risk-weighted assets; RWA) of the pbb Group amounted to € 14,587 million as of 31 December 2018 (31 December 2017: € 14,515 million), and have thus slightly increased compared with the end of the previous year.

In accordance with article 438 letters c to f CRR in conjunction with EU OV1 of the guidelines EBA/GL/2016/11, the following table shows the risk-weighted assets as well as the regulatory capital backing, broken down according to risk types.

Table 11: Risk-weighted assets and minimum capital requirements (EU OV1)

All figures in € million

		Risk-weighted assets (RWA)		Minimum capital requirement
		31.12.2018	31.12.2017 [1)]	31.12.2018
1	**Credit risk (without counterparty credit risk)**	**12,963**	**12,583**	**1,037**
2	thereof: standardised approach (CRSA)	461	280	37
2a	Exposures to central governments or central banks	-	-	-
2b	Exposures to regional governments or local authorities	-	-	-
2c	Exposures to other public sector entities	-	-	-
2d	Exposures to multilateral development banks	-	-	-
2e	Exposures to international organisations	-	-	-
2f	Exposures to institutions	-	-	-
2g	Exposures to corporates	217	118	17
2h	Retail exposures	0.2	-	0.02
2i	Exposures secured by mortgages on immovable property	34	7	3
2j	Exposures in default	3	6	0.2
2k	Exposures associated with particularly high risk	-	-	-
2l	Exposures in the form of covered bonds	-	-	-

All figures in € million

		Risk-weighted assets (RWA)		Minimum capital requirement
		31.12.2018	31.12.2017 [1]	31.12.2018
2m	Exposures to institutions and corporates with short-term credit assessment	-	-	-
2n	Exposures in the form of units or shares in collective investment undertakings (CIUs)	3	3	0.2
2o	Equity exposures	-	0.08	-
2p	Other itmes [1]	204	147	16
3	thereof: foundation IRB (FIRB) approach	-	-	-
4	thereof: advanced IRB (AIRB) approach	12,503	12,303	1,000
4a	Exposures to central governments and central banks	2,602	2,401	208
4b	Exposures to institutions	2,513	2,414	201
4c	Exposures to corporates	7,370	7,467	590
4ca	thereof: small and medium-sized enterprises (SME)	288	318	23
4cb	thereof: spesialised lending exposures	6,532	6,587	523
4cc	thereof: other	550	562	44
4g	Retail exposures	-	-	-
4h	Other non credit-obligation assets	18	21	1
5	thereof: equity IRB exposures under the simple risk-weighted approach or the internal model approach (IMA)	0.1	0.05	0.01
5a	thereof: internal model approach (IMA)	-	-	-
5b	thereof: simple risk-weighting approach	0.1	0.05	0.01
5ba	thereof: exchange-traded equity investments	-	-	-
5bb	thereof: unlisted, but part of a sufficiently deversified portfolio	-	-	-
5bc	thereof: other investments	0.1	0.05	0.01
6	**Counterparty credit risk** [2]	**524**	**661**	**42**
7	thereof: mark-to-market method	262	366	21
8	thereof: original exposure method	-	-	-
9	thereof: standardised approach	-	-	-
10	thereof: internal model method (IMM)	-	-	-
11	thereof: risk exposure amount for contributions to the default fund of a central counterparty (CCP)	1	1	0.1
12	thereof: CVA risk [3]	262	294	21
12a	thereof: advanced method	-	-	-
12b	thereof: standardised method	262	294	21
12c	thereof: alternative method, based on the original exposure method	-	-	-
13	**Settlement risk**	**0**	**0**	**0**
13a	thereof: in the banking book	-	-	-
13b	thereof: in the trading book	-	-	-
14	**Securitisation exposures in the banking book (after the cap)**	**0**	**0**	**0**
15	thereof: IRB approach	-	-	-
16	thereof: IRB supervisory formular approach (SFA)	-	-	-
17	thereof: internal assessment approach (IAA)	-	-	-
18	thereof: standardised approach	-	-	-
19	**Market risk**	**229**	**370**	**18**
20	thereof: standardised approach	229	370	18
20a	thereof: position risk	-	-	-
20b	thereof: foreign-exchange risk	229	370	18
20c	thereof: commodity risk	-	-	-
21	thereof: internal model approach (IMA)	-	-	-
22	**Large exposures in the trading book** [4]	**0**	**0**	**0**

All figures in € million

		Risk-weighted assets (RWA)		Minimum capital requirement
		31.12.2018	31.12.2017 [1]	31.12.2018
23	**Operational risk**	**870**	**899**	**70**
24	thereof: basic indicator approach	-	-	-
25	thereof: standardised approach	870	899	70
26	thereof: advanced measurement approach (AMA)	-	-	-
27	Amounts below the thresholds for deduction (subject to 250% risk weight)	204	147	-
28	Floor adjustment	-	-	-
29	**Total**	**14,587**	**14,515**	**1,167**

1) Before the expiry of the Basel III transitional arrangements on 31 December 2017.
2) Subject to future profitability, from or not from temporary differences resulting from deferred tax assets.
3) Counterparty credit risk in accordance with Part Three, Title II, Chapter 6 of the CRR (derivative transactions).
4) Credit Value Adjustments; capital requirement for the risk of an adjustment of credit valuation for OTC derivatives.
5) pbb does not maintain a trading book for securities or derivatives portfolios held to realise short-term gains.

In addition, in accordance with article 438 CRR (last paragraph) in conjunction with EU CR10 of the guidelines EBA/GL/2016/11, the table shows the RWA, the own funds requirement and further information for equity exposures for which the simple IRBA risk weighting is used, as well as for IRBA positions for which the simple IRBA risk weighting for specialised lending is used.

The pbb Group does not use the simple IRBA risk weighting for specialised lending exposures in accordance with article 153 (5) CRR.

For its equity exposures, the pbb Group has been using the simple IRBA risk weighting for equity exposures in accordance with article 155 (2) CRR since 1 January 2018. Until the end of 2017, the pbb Group used the possibility of grandfathering for equity exposures which in accordance with article 495 (1) CRR were held before 1 January 2008. Until 31 December 2017, these equity exposures had been excluded from the IRB approach, and were treated in accordance with the rules of the standard approach.

As was the case in the previous year, disclosure of the table EU INS1 “Non-deducted insurance participations” in accordance with article 438 letters c and d CRR in conjunction with EU INS1 of the guidelines EBA/GL/2016/11 is not relevant for the pbb Group as of the reporting date. pbb does not hold a major participation in an insurer, a reinsurer or an insurance holding company, nor has any authorisation of the relevant regulatory authority in accordance with article 49 (1) CRR been provided for such holdings of own funds instruments not to be deducted.

Table 12: Simple risk weight for specialised lending and equities (EU CR10)

All figures in € million, unless otherwise stated

Specialised lending							
Regulatory categories	**Remaining maturity**	**On-balance-sheet amount**	**Off-balance-sheet amount**	**Risk weight**	**Regulatory exposure amounts (EAD)**	**Risk-weighted assets (RWA)**	**Expected losses (EL)**
Category 1	Less than 2.5 years	-	-	50%	-	-	-
	Equal to or more than 2.5 yea	-	-	70%	-	-	-
Category 2	Less than 2.5 years	-	-	70%	-	-	-
	Equal to or more than 2.5 yea	-	-	90%	-	-	-
Category 3	Less than 2.5 years	-	-	115%	-	-	-
	Equal to or more than 2.5 yea	-	-	115%	-	-	-
Category 4	Less than 2.5 years	-	-	250%	-	-	-
	Equal to or more than 2.5 yea	-	-	250%	-	-	-
Category 5	Less than 2.5 years	-	-	-	-	-	-
	Equal to or more than 2.5 yea	-	-	-	-	-	-
Total	Less than 2.5 years	**0**	**0**		**0**	**0**	**0**
	Equal to or more than 2.5 yea	**0**	**0**		**0**	**0**	**0**

Equities under the simple risk-weighted approach						
Categories	**On-balance-sheet amount**	**Off-balance-sheet amount**	**Risk weight**	**Regulatory exposure amounts (EAD)**	**Risk-weighted assets (RWA)**	**Minimum capital requirement**
Private equity exposures in sufficiently diversified portfolios	-	-	190%	-	-	-
Exchange-traded equity exposures	-	-	290%	-	-	-
Other equity exposures	0.02	-	370%	0.02	0.08	0.006
Total	**0.02**	**0**		**0.02**	**0.08**	**0.006**

The slight increase of in total € 72 billion in risk-weighted assets is attributable in particular to the volume of new business carried out in the financial year 2018 (incl. prolongations with maturities of more than one year) in the two strategic segments of Real Estate Finance (REF) and Public Investment Finance (PIF). Of the figure of € 10.5 billion for total new business, commercial Real Estate Financing accounted for € 9.5 billion and Public Investment Financing accounted for € 1.0 billion.

This was opposed by repayments of loans and bonds which fell due as well as redemptions, including the further reduction of the non-strategic portfolio in line with overall strategy. Other changes in the loss given default (LGD) for determining the risk weights as well as the decline in the volume of derivatives (counterparty credit risk) and the decline in foreign currency risk positions (market risk) also had the effect of reducing the RWA.

The minimum own funds requirement for the risk-weighted assets of the pbb Group amounted to a total of € 1,167 million as of the reporting date (31 December 2017: € 1,161 million). In line with the business model of the pbb Group, which focusses on commercial real estate financing and also public investment financing, credit risks account for 92 % of the own funds requirement (incl. counterparty credit risks and CVA risks), market risks account for 2 % and operational risks account for 6 %.

The total own funds requirement amounted to € 1,468 million (31 December 2017: € 1,358 million). The increase of € 110 million compared with the previous year is attributable not only to the slight increase of RWA and but also to the above-mentioned increase in the capital conservation buffer to 1.875 % as well as the slight increase in the institution-specific countercyclical capital buffer (ICCB), each in 2018.

In accordance with section 10c (1) KWG and section 10d (1) KWG, the capital requirement for the capital buffer must be maintained in common equity tier 1 (CET1) capital. After complying with the CET1 ratio of 4.5 % of the total risk amount, a total of € 2,042 million (31 December 2017: € 1,916 million) of common equity tier 1 (CET1) capital is available to the pbb Group for this purpose.

Surplus own resources

As of 31 December 2018, the surplus own resources (own funds less own funds requirement incl. capital buffer) – incl. the cumulative profit 2018 and after deduction of the proposed dividend (subject to the approval of the annual general meeting) – amounted to € 2,171 million for the pbb Group (31 December 2017: € 1,881 million).

3.4 Capital ratios

The regulatory requirements of the Regulation (EU) No. 575/2013 (Capital Requirements Regulation, CRR) and the Directive 2013/36/EU (Capital Requirements Directive, CRD IV) have been applicable since 1 January 2014. These regulations form the basis for determining the regulatory capital and capital ratios. According to these provisions, the common equity tier 1 ratio (CET1 ratio: common equity tier 1 divided by the risk-weighted assets) must not fall below 4.5 %, the tier 1 ratio (T1 ratio: tier 1 divided by the risk-weighted assets) must not fall below 6.0 % and the own funds ratio (own funds divided by the risk-weighted assets) must not fall below 8.0 % in the financial year 2018.

pbb, as the parent company of the institutional group in accordance with section 10a KWG in conjunction with article 11 et seq. CRR, is responsible for ensuring compliance with the capital ratios on a summarised basis. The pbb Group has a sound capital base. The provisions regarding the regulatory capital ratios were complied with at all times in the financial year 2018.

Table 13: Capital ratios

All figures in %

	Common Equity Tier 1 ratio		Tier 1 capital ratio		Total capital ratio	
	31.12.2018 1) 2)	31.12.2017 3) 4)	31.12.2018 1) 2)	31.12.2017 3) 4)	31.12.2018 1) 2)	31.12.2017 3) 4)
pbb Group	18.5	17.7	20.5	17.7	24.9	22.3

1) After approved annual financial statements 2018 less the proposed dividend (subject to approval by the Annual General Meeting).
2) After expiry of the Basel III transitional arrangements.
3) After approved annual financial statements 2017 and after result distribution 2017.
4) Before expiry of the Basel III transitional arrangements.

SREP

This is also applicable for the requirements regarding the minimum capital of the Supervisory Review and Evaluation Process (SREP) of the European Central Bank (ECB) which exceed the existing regulatory requirements. These requirements were also complied with at all times by the pbb Group during the year under review.

The aim of the supervisory review and evaluation process is to achieve a holistic analysis of the institutions supervised by the ECB. This comprises an assessment of the business model, risk and corporate governance, the risk situation as well as the capital and liquidity backing.

Minimum CET1 ratio

Based on the results of the analysis as well as using benchmark comparison, the ECB may impose minimum capitalisation or liquidity requirements, over and above existing regulatory requirements. As a key result of SREP, pbb Group has been required to maintain a minimum CET1 ratio of 9.125 % for 2018 (excluding the countercyclical capital buffer, which varies according to country, and hence, for specific portfolios – as at 31 December 2018, it stood at 0.19 %). This capital requirement is based on the Basel III transitional rules and comprises a Pillar 1 minimum capital requirement (4.5 %), a Pillar 2 capital requirement (P2R: 2.75 %) and the capital conservation buffer (CCB:1.875 % phased-in for 2018).

Total capital requirement

Furthermore, pbb Group had to fulfil a total capital requirement of 12.625 % in 2018 (excluding the countercyclical capital buffer, which varies according to country, and hence, for specific portfolios). It is based on the Basel III transitional rules and comprises a Pillar 1 minimum own funds requirement (8.0 %), a Pillar 2 capital requirement (2.75 %) and the capital conservation buffer (1.875 % phased-in for 2018).

New requirements for 2019

Towards the end of the year under review (draft) as well as in February 2019 (final), the ECB notified pbb Group of the regular annual re-determination of minimum capital requirements for 2019. With effect from 1 March 2019, pbb Group has been required to maintain a minimum CET1 ratio of 9.5 % (excluding the countercyclical capital buffer, which varies according to country, and hence, for specific portfolios – as at 31 December 2018, it stood at 0.19 %). This capital requirement is based on the final Basel III requirements (excluding transitional rules) and comprises a Pillar 1 minimum capital requirement (4.5 %), a Pillar 2 capital requirement (P2R: 2.5 %) and the capital conservation buffer (CCB: 2.5 %). The CET1 minimum capital requirement that applies for 2019 also represents the threshold for mandatory calculation of a so-called maximum distributable amount (MDA). This generally limits distributions to the CET1 capital, new performance-based remuneration, and interest payments on additional Tier 1capital.

With effect from 1 March 2019 pbb Group has been required to maintain a total capital requirement of 13.0 % (excluding the countercyclical capital buffer, which varies according to country, and hence, for specific portfolios – as at 31 December 2018, it stood at 0.19 %). It is based on the final Basel III requirements (excluding transitional rules) and comprises a Pillar 1 minimum own funds requirement (8.0 %), a Pillar 2 capital requirement (2.5 %) and the capital conservation buffer (2.5 %).

3.5 Leverage ratio

According to article 429 (2) CRR, the leverage ratio (a capital requirement which is not risk-based) is defined as the capital parameter of an institution divided by that institution's total exposure parameter, and is expressed as a percentage. This figure is not risk-sensitive, and complements the risk-based perspective of capital requirements and capital ratios. The aim is to limit the increase in leverage in the banking sector, to mitigate the risk of borrowings with a destabilising impact which can harm the financial system and the economy and to complement the risk-based requirements with a simple safety mechanism which is not risk-based.

The calculation of the ratio is based on the provisions of the Delegated Regulation (EU) 2015/62 of the European Commission for amending the Regulation (EU) No. 575/2013 of the European Parliament and Council with regard to the leverage ratio. According to these provisions, the calculation and disclosure of the regulatory leverage ratio is based on the carrying amount as the relevant measurement of assets. Specific regulatory measurements are applicable for derivatives and security financing transactions (security lending/repo transactions). Off-balance-sheet exposures are also taken into consideration in order to determine the overall risk of leverage.

The total exposure parameter of the leverage ratio for derivatives is calculated on the basis of regulatory mark-to-market method for derivatives, which comprises the current replacement costs plus a regulatory defined add-on for the potential future replacement value. If certain conditions are satisfied, variable additional cash payments (cash collateral) are deducted from the total exposure parameter: in the case of variable additional cash payments received from counterparties, they are deducted from the element which refers to the current replacement costs of derivatives and, in the case of variable additional cash payments made to counterparties, they are deducted from the total exposure parameter resulting from receivables which had been recognised as assets.

The total exposure parameter of the leverage ratio for security financing transactions (security lending/repo transactions) comprises the gross receivables from security financing transactions which are netted with liabilities from security financing transactions if certain conditions are met. In addition to the gross receivables from security financing transactions, an add-on for the counterparty credit risk of security financing transactions is included in the total exposure parameter.

The total exposure parameter of the leverage ratio for off-balance-sheet exposures takes account of the weighting factors (credit conversion factors, CCF) from the standard approach for the credit risk of 0 %, 20 %, 50 % or 100 % depending on risk category, with a lower limit of 10 %.

The total exposure parameter of the leverage ratio for other balance sheet items (excl. derivatives and security financing transactions) comprises the balance sheet value of the respective positions (excl. derivatives and security financing transactions) as well as regulatory adjustments for positions which are deducted for calculating the regulatory tier 1 capital.

In accordance with article 451 CRR in conjunction with the Implementation Regulation (EU) 2016/200 regarding the disclosure of the leverage ratio, the following table shows the leverage ratio for the pbb Group. There has so far not been a binding maximum limit in the European Union for the leverage ratio which has to be complied with by the credit institutions. However, within the framework of the Basel III regulations regarding the maximum leverage ratio, a reference value of > 3 % has been tested and observed. On 3 August 2016, the EBA published its report on the impact assessment and calibration of the leverage ratio (EBA-Op-2016-13). In this report, the EBA recommends the introduction of a binding minimum leverage ratio in the EU from 1 January 2018. The required minimum ratio should be 3 %. In this connection, the draft law published by the European Commission in November 2016 (CRR II/CRD V/BRRD II/SRM II package) - which is expected to be published in the EU Journal of Law in the first half of 2019 - also recommends the introduction of a minimum leverage ratio of 3 % for all credit institutions who fall under the CRR/CRD IV framework.

As was the case in the previous year, the leverage ratio for the pbb Group amounted to 5.3 % as of 31 December 2018, and is thus considerably higher than this minimum requirement.

Table 14: Leverage ratio (EU LRSum)

All figures in € million

	Summary reconciliation of accounting assets and leverage ratio exposures	Applicable amount 31.12.2018
1	Total assets as per published financial statements	57,769
2	Adjustment for entities which are consolidated for accounting purposes but are outside the scope of regulatory consolidation	-
3	(Adjustment for fiduciary assets recognised on the balance sheet pursuant to the applicable accounting framework but excluded from the leverage ratio exposure measure in accordance with Article 429 (13) of Regulation (EU) No 575/2013)	-
4	Adjustments for derivative financial instruments	-2,361
5	Adjustments for securities financing transactions (SFTs)	592
6	Adjustment for off-balance sheet items (i.e. conversion to credit equivalent amounts of off-balance sheet exposures)	2,360
EU-6a	(Adjustment for intragroup exposures excluded from the leverage ratio exposure measure in accordance with Article 429 (7) of Regulation (EU) No 575/2013)	-
EU-6b	(Adjustment for exposures excluded from the leverage ratio exposure measure in accordance with Article 429 (14) of Regulation (EU) No 575/2013)	-94
7	Other adjustments [1)]	-1,530
8	**Leverage ratio total exposure measure**	**56,736**

1) The other adjustments mainly include cash collateral provided by pbb in the derivatives business.

Table 15: Leverage ratio (EU LRCom)

All figures in € million, unless otherwise stated

	Leverage ratio common disclosure	CRR leverage ratio exposures 31.12.2018
	On-balance sheet exposures (excluding derivatives and SFTs)	
1	On-balance sheet items (excluding derivatives, SFTs and fiduciary assets, but including collateral)	54,930
2	(Asset amounts deducted in determining tier 1 capital)	-94
3	**Total on-balance sheet exposures (excluding derivatives, SFTs and fiduciary assets)** (sum of lines 1 and 2)	**54,836**
	Derivative exposures	
4	Replacement cost associated with all derivatives transactions (i.e. net of eligible cash variation margin)	146
5	Add-on amounts for PFE associated with all derivatives transactions (mark-to-market method)	376
EU-5a	Exposure determined under original exposure method	-
6	Gross-up for derivatives collateral provided where deducted from the balance sheet assets pursuant to the applicable accounting framework	74
7	(Deductions of receivables assets for cash variation margin provided in derivatives transactions)	-1,648
8	(Exempted CCP leg of client-cleared trade exposures)	-
9	Adjusted effective notional amount of written credit derivatives	-
10	(Adjusted effective notional offsets and add-on deductions for written credit derivatives)	-
11	**Total derivative exposures** (sum of lines 4 to 10)	**-1,052**
	Securities financing transaction exposures	
12	Gross SFT assets (with no recognition of netting), after adjusting for sales accounting transactions	-
13	(Netted amounts of cash payables and cash receivables of gross SFT assets)	-
14	Counterparty credit risk exposure for SFT assets	592
EU-14a	Derogation for SFTs: counterparty credit risk exposure in accordance with Article 429b (4) and 222 of Regulation (EU) No 575/2013	-

All figures in € million, unless otherwise stated

	Leverage ratio common disclosure	CRR leverage ratio exposures 31.12.2018
15	Agent transaction exposures	-
EU-15a	(Exempted CCP leg of client-cleared SFT exposure)	-
16	**Total securities financing transaction exposures** (sum of lines 12 to 15a)	**592**
	Other off-balance sheet exposures	
17	Off-balance sheet exposures at gross notional amount	4,875
18	(Adjustments for conversion to credit equivalent amounts)	2,515
19	**Other off-balance sheet exposures** (sum of lines 17 to 18)	**2,360**
	Exempted exposures in accordance with CRR Article 429 (7) and (14) (on and off balance sheet)	
EU-19a	(Exemption of intragroup exposures (solo basis) in accordance with Article 429(7) of Regulation (EU) No 575/2013 (on and off balance sheet))	-
EU-19b	(Exposures exempted in accordance with Article 429 (14) of Regulation (EU) No 575/2013 (on and off balance sheet))	-
	Capital and total exposures	
20	**Tier 1 capital**	**2,996**
21	**Total leverage ratio exposures** (sum of lines 3, 11, 16, 19, EU-19a and EU-19b)	**56,736**
	Leverage ratio	
22	**Leverage ratio**	**5.3%**
	Choice on transitional arrangements and amount of derecognised fiduciary items	
EU-23	Choice on transitional arrangements for the definition of the capital measure	-
EU-24	Amount of derecognised fiduciary items in accordance with Article 429(11) of Regulation (EU) NO 575/2013	-

Table 16: Leverage ratio (EU LRSpl)

All figures in € million

	Split-up of on balance sheet exposures (excluding derivatives, SFTs and exempted exposures)	CRR leverage ratio exposures 31.12.2018
EU-1	Total on-balance sheet exposures (excluding derivatives, SFTs, and exempted exposures), thereof:	53,263
EU-2	Trading book exposures	-
EU-3	Banking book exposures, thereof:	53,263
EU-4	Covered bonds	1,452
EU-5	Exposures treated as sovereigns	16,485
EU-6	Exposures to regional governments, multilateral development banks , international organisations and public sector entities not treated as sovereigns	4,718
EU-7	Institutions	1,127
EU-8	Secured by mortgages of immovable properties	25,421
EU-9	Retail exposures	-
EU-10	Corporate	3,635
EU-11	Exposures in default	262
EU-12	Other exposures (e.g. equity, securitisations, and other non-credit obligation assets)	163

The leverage ratio is part of the capital and multi-year planning of the pbb Group. The ratio is determined on a monthly basis and is integrated in the Group's risk management and risk controlling systems. The Management Board of pbb is informed of the leverage ratio on a regular basis (monthly) within the framework of the management report.

Compared with the end of 2017, the leverage ratio of the pbb Group improved to 5.3 % as of 31 December 2018 (31 December 2017: 4.6 %). The increase of € 515 million in the total exposure parameter was offset by the increase of € 427 million in tier 1 capital, mainly due to the issue of the subordinate bearer bonds (AT1 capital) in April 2018. The tier 1 capital amounted to € 2,996 million as of 31 December 2018 (31 December 2017: € 2,569 million), and the total exposure parameter amounted to € 56,736 million (31 December 2017: € 56,221 million).

3.6 Encumbered and unencumbered assets

In accordance with article 443 CRR in conjunction with the Delegated Regulation (EU) 2017/2295, the following chapter contains information concerning encumbered and unencumbered assets of the pbb Group.

The asset encumbrance of the pbb Group results mainly from its business model using Pfandbriefe as the most important refinancing instrument. The pbb Group specialises in commercial real estate and public investment finance. Most of the extended loans are refinanced on the Pfandbrief market. pbb issues mortgage Pfandbriefe which are backed with property charges and public Pfandbriefe which are backed by public-sector receivables. With an outstanding Pfandbrief volume of € 29.5 billion (nominal), pbb is one of the largest Pfandbrief issuers and is thus also a major issuer of covered bonds in Europe.

As of 31 December 2018, the assets of the pbb Group, based on the median of the quarterly data of the financial year, amounted to € 57.7 billion (31 December 2017: € 60.0 billon); of this figure, € 38.0 billion (65.9 %) are encumbered (31 December 2017: € 39.6 billion or 66.0 %). Within the pbb Group, this encumbrance relates exclusively to pbb, in which all strategic business activities of the pbb Group are pooled. The asset encumbrance of the pbb Group was essentially unchanged in the course of 2018.

As was the case in the previous year, Pfandbriefe represented the main source (84 %) of asset encumbrance for the pbb Group. In addition to the issue of mortgage Pfandbriefe and public Pfandbriefe leading to an encumbrance of loans and securities in the mortgage and public cover pools, derivative financial instruments in particular represent a further source (9 %) of asset encumbrance. The remaining percentages are accounted for by security financing transactions (security lending/repo transactions) and the participation of pbb in the ECB series of specific longer-term refinancing transactions II (GLRG-II) in 2018 (maturity until 2021).

There are no mismatches between the accounting framework applied by the pbb Group, the International Financial Reporting Standards (IFRS), assets which are deposited as collateral and transferred on the one hand and the assets which are considered to be encumbered for regulatory purposes on the other. The depositing or transfer of assets in accordance with the IFRS automatically involves the encumbrance of such assets. A distinction between the encumbered assets or collateral according to currencies other than the euro (the reporting currency) is not material for the pbb Group.

According to the EU Implementation Regulation 2015/79, Appendix III, point 1.7, an asset is considered to be encumbered if it has been deposited as collateral or if it is subject to any form of arrangement to secure, collateralise or credit enhance any transaction from which it cannot be freely withdrawn. An asset encumbrance results from the requirement to provide collateral, usually caused by a transaction on the liabilities side of the balance sheet (refinancing side).

Pfandbriefe

As a specialist bank for real estate and public investment finance, pbb issues mortgage Pfandbriefe as well as public Pfandbriefe. These are regularly issued on the international capital market in the benchmark format or as private placements. In line with its lending business on the assets side of the balance sheet, pbb offers its investors Pfandbriefe in various maturities and different currencies with a focus on the Euro, GBP, USD and SEK.

The issue of Pfandbriefe is subject to the stringent provisions of the German Pfandbrief Act (Pfandbriefgesetz, PfandBG), which places stringent requirements on investor protection. These stringent legal standards have meant that, in the past, Pfandbriefe have proved to be of above-average reliability. The guarantee mechanisms provided for by the German Pfandbrief Act work amongst other things through the so-called preferential right in insolvency granted to the Pfandbrief holders. In the event of an insolvency of a Pfandbrief bank, the cover pool used as backing for the Pfandbriefe is first of all available solely to the Pfandbrief holders for settling their claims; only when all claims of the Pfandbrief holders have been settled in full is any remainder of the cover pools available for settling the claims of the insolvency creditors.

Pfandbrief banks are required to provide quarterly reports on the composition and structure of their cover pools. The publications in accordance with the German Pfandbrief Act can be found on the website of pbb under Investors / Mandatory Publications / Publications in accordance with section 28 German Pfandbrief Act.

Overcollateralisation of Pfandbriefe

The German Pfandbrief Act (PfandBG) provides for a net present overcollateralisation of 2.0 % for Pfandbriefe; i.e. the present value of the cover pool should always be at least 2.0 % higher than the present value of all Pfandbriefe issued for this cover pool. Nominal cover must also be assured. This means that the total nominal values of all cover pools must at least cover the total nominal values of the Pfandbriefe issued for this cover pool.

The rating agencies also require additional cover, depending on the quality of the cover pool and the desired Pfandbrief rating. The mortgage Pfandbriefe and public Pfandbriefe of pbb were rated as Aa1 by Moody's as of 31 December 2018. In order to maintain this rating, pbb must provide minimum net present value surplus cover of 5.0 % for mortgage Pfandbriefe and 5.0 % for public Pfandbriefe.

The surplus cover of the mortgage Pfandbriefe as of 31 December 2018 was actually 8.8 % (nominal) and 10.4 % (present value). For the public Pfandbriefe, pbb provided surplus cover of 20.6 % (nominal) and 17.6 % (present value) as of 31 December 2018. The overcollateralisation thus exceeded the requirements of the rating agencies and the legislative authorities.

The current surplus cover and the voluntary surplus cover required by Moody's is published by pbb on its website under Investors / Mandatory Publications / Publications according to section 28 German Pfandbrief Act or Investors / Ratings/ Moody's Reports.

In order to manage the liquidity position and to optimise the quality as well as the cash flows of the cover pools, pbb can also provide more surplus cover than required by law or desired by the rating agencies.

Derivatives and security lending transactions

The pbb Group uses derivatives mainly to hedge market risks resulting for instance from changes in interest rates or exchange rates. These hedging transactions are opposed by underlyings of asset or liability positions. The hedging of interest and exchange rate risks is intended to reduce and/or avoid market risks. The counterparties in derivative transactions are mainly OECD credit institutions or Eurex Clearing. The pbb Group also provides derivatives for real estate customers and public law entities, for instance to enable them to hedge market risks of commercial real estate financing.

The purpose of using security lending/repo transactions is to assure short-term liquidity management; this is also a key source of the secured refinancing of pbb. The main counterparties are OECD credit institutions or Eurex Clearing.

In connection with its derivative and security lending/repo transactions, pbb uses standard framework agreements including the related collateral agreements. For more detailed information, please refer to chapter 5.3 "Credit risk mitigation techniques", section "Eligible netting agreements",

In accordance with article 443 CRR in conjunction with the Delegated Regulation (EU) for the disclosure of encumbered and unencumbered assets, the following tables show the asset encumbrance of the pbb Group. The figures are based on median values of the quarterly data of the financial year 2018.

The other assets shown in the table "Encumbered and unencumbered assets" (line 120) mainly comprise the derivatives (94 %), most of which are encumbered. It also shows unencumbered assets such as tax claims (4 %) as well as other tangible assets (property, plant and equipment/operating and business equipment) and intangible assets (such as purchased software and software developed in-house), which are generally not available for encumbrance purposes.

Table 17: Encumbered and unencumbered assets

All figures in € million

Encumbered and unencumbered assets		Carrying amount of encumbered assets		Fair value of encumbered assets		Carrying amount of unencumbered assets		Fair value of unencumbered assets	
			thereof: notionally eligible EHQLA and HQLA [1]		thereof: notionally eligible EHQLA and HQLA [1]		thereof: EHQLA and HQLA [1]		thereof: EHQLA and HQLA [1]
		010	030	040	050	060	080	090	100
010	**Assets of the reporting institution**	**37,972**	**2,293**	——	——	**19,690**	**3,942**	——	——
030	Equity instruments	-	-	——	——	-	-	——	——
040	Debt securities	5,887	2,293	5,887	2,293	4,232	3,942	4,232	3,942
050	thereof: covered bonds	1,444	308	1,444	-	12	-	12	-
060	thereof: asset-backed securities (ABS)	-	-	-	-	-	-	-	-
070	thereof: issued by general governments	2,634	1,635	2,634	1,635	2,982	2,767	2,982	2,767
080	thereof: issued by financial corporations	2,875	638	2,875	638	1,146	1,142	1,146	1,142
090	thereof: issued by non-financial corporations	372	-	372	-	105	50	105	50
120	Other assets	29,222	-	——	——	11,674	-	——	——
121	thereof: derivatives	2,847	-	——	——	215	-	——	——

1) The disclosure of the asset quality indicators EHQLA and HQLA is required by the Delegated Regulation (EU) 2017/2295 from 2 January 2019:
EHQLA: Assets of extremely high liquidity and credit quality, "Level 1 assets" (Extremely High Quality Liquid Assets).
HQLA: Assets of high liquidity and credit quality, "Level 2 A/B assets" (High Quality Liquid Assets).

Table 18: Collateral received

All figures in € million

	Collateral received	Fair value of encumbered collateral received or own debt securities issued		Unencumbered Fair value of collateral received or own debt securities issued available for encumbrance	
			thereof: notionally eligible EHQLA and HQLA [1]		thereof: EHQLA and HQLAA [1]
		010	030	040	060
130	**Collateral received by the reporting institution**	**0**	**0**	**0**	**0**
140	Loans on demand	-	-	-	-
150	Equity instruments	-	-	-	-
160	Debt securities	-	-	-	-
170	thereof: covered bonds	-	-	-	-
180	thereof: asset-backed securities (ABS)	-	-	-	-
190	thereof: issued by general governments	-	-	-	-
200	thereof: issued by financial corporations	-	-	-	-
210	thereof: issued by non-financial corporations	-	-	-	-
220	Loans and advances other than loans on demand	-	-	-	-
230	Other collateral received	-	-	-	-
240	**Own debt securities issued other than own covered bonds or asset-backed securities**	**0**	**0**	**0**	**0**
241	**Own covered bonds and asset-backed securities issued and not yet pledged**	———	———	**0**	**0**
250	**Total assets, collateral received and own debt securities issued**	**37,972**	**2,293**	———	———

1) Asset quality indicators EHQLA and HQLA according to the Delegated Regulation (EU) 2017/2295:
EHQLA: Assets of extremely high liquidity and credit quality, "Level 1 assets" (Extremely High Quality Liquid Assets).
HQLA: Assets of high liquidity and credit quality, "Level 2 A/B assets" (High Quality Liquid Assets).

Table 19: Sources of encumbrances

All figures in € million

	Sources of encumbrance	Matching liabilities, contingent liabilities or securities lent	Assets, collateral received and own debt securities issued other than covered bonds and asset-backed securities encumbered
		010	030
010	**Carrying amount of selected financial liabilities**	**37,638**	**37,335**
011	Derivatives	3,493	2,847
012	thereof: over the counter (OTC)	3,493	2,847
013	Deposits	2,384	2,464
014	thereof: repurchase agreements	2,384	2,464
015	thereof: collateralised deposits other than repurchase agreements	-	-
016	Debt securities issued	31,769	32,148
017	thereof: covered bonds issued	31,769	32,148
018	thereof: asset-backed securities (ABS) issued	-	-
019	Other sources of encumbrance	-	619
020	thereof: securities-lending transactions	-	619

4 Risk management and risk-oriented overall bank management

pbb Group has implemented a Group-wide risk management and risk control system, which provides for uniform risk identification, measurement and limitation in accordance with section 91 (2) of the German Stock Corporation Act (AktG) and section 25 a of the German Banking Act (Kreditwesengesetz – "KWG"). pbb, at a single-entity level, applies an exemption according to section 2a (2) of the KWG. The exemption refers to the requirements concerning the risk control function pursuant to section 25a (1) sentence 3 nos. 1, 2, 3b and 3c of the KWG.

Declarations of the Management Board

The disclosure requirements in accordance with article 435 (1) letters a to f CRR in conjunction with EU OVA, EU CRA, EU CCRA and EU MRA of the guidelines EBA/GL/2016/11 as well as EU LIQA of the guidelines EBA/GL/2017/01 concerning the risk management strategy, the risk management processes and risk management policy are implemented in this Disclosure Report and in the risk and opportunity report in the annual report 2018 of the pbb Group. The annual report is published on the website of pbb under Investors / Financial Reports.

The Disclosure Report as well as the risk and opportunity report show the risks and opportunities identified for the various risk categories within the framework of the implemented risk management and risk controlling system. With regard to enterprise-wide and general company-specific risks and opportunities, please also refer to the information set out in the forecast report of the annual report 2018 of the pbb Group.

The Management Board of pbb considers that the existing risk management system in accordance with article 435 (1) letter e CRR in conjunction with EU LIQA of the EBA/GL/2016/11 is consistent with the risk profile and the risk strategy of the pbb Group. pbb is assuming that the methods, models and processes implemented in the pbb Group are suitable at all times for assuring a risk management and risk controlling system which is consistent with the business strategy and the risk profile.

The risk declaration of the Management Board in accordance with article 435 (1) letter f CRR in conjunction with EU LIQA of the EBA/GL/2016/11, regarding the general risk profile of the pbb Group associated with the business strategy as well as corresponding key indicators and figures, are set out in this Disclosure Report and also in the risk and opportunity report in the annual report 2018 of the pbb Group. The Management Board of pbb confirms that, to the best of its knowledge, the internal risk management procedures used in the pbb Group are suitable for constantly providing a comprehensive picture of the risk profile of the pbb Group and also for sustainably assuring the bank's risk-bearing capacity.

The declarations were approved by the Central Management Board within the framework of the approval of this Disclosure Report.

4.1 General organisation and risk management principles

Organisation and committees

Management Board

The Management Board of pbb is responsible for the risk management system, and decides on the strategies and material issues of risk management and risk organisation at pbb Group.

The principles, methods and processes of pbb Group's risk management system are specified centrally by pbb's Risk Management and Controlling, and are applied throughout pbb Group, subject to any special requirements at single-entity level. The risk management system comprises the plausible and systematic identification, analysis, valuation, management, documentation, monitoring and communication of all major risks.

The following are major components of the risk management system in the responsibility of the Management Board:

- Defining, updating and communicating business and risk strategies as the basis of business activities and risk acceptance within pbb Group
- Defining and improving organisation structures within pbb Group and in particular for risk management, which ensures that all major risks of pbb Group are managed and monitored
- Adopting credit competences as a decision-making framework along the credit processes within pbb Group
- Taking decisions regarding (portfolio) management measures outside the delegated competences.

The Management Board notifies the Supervisory Board with regard to significant changes in the business and risk strategies as well as the risk profile of pbb Group. The Risk Management and Liquidity Strategy Committee (RLA) of the Supervisory Board is mainly responsible for controlling the overall risk situation and for monitoring, establishing and improving an efficient risk management system, and is also responsible for the liquidity management and assurance of pbb Group and resolves upon necessary credit approvals for credit decisions. The Management Board notifies this committee of all increases to specific allowances and the creation of new specific allowances in excess of € 5 million and also notifies this committee at regular intervals of major exposures with higher levels of risk.

The committees detailed in the following have been set up at pbb Group level with the involvement of the respective decision-makers.

Risk Committee

The Risk Committee (RC), consists of the CRO (Chairman), the CEO/CFO (Deputy Chairperson), the Chief Credit Officers REF/PIF (CCO), the head of "Projects Risk Management" as well as the Head of Risk Management & Control (RMC). In general, the committee meets on a monthly basis and discusses the risk development, adopts guidelines/policies, methods for risk measurement, the related parameters as well as methods of monitoring for all risk types. The RC is responsible for the development of standard guidelines of risk management and risk controlling across the Group and also monitors the development of the risk-bearing capacity, economic capital, available financial resources as well as the credit portfolio and the compliance with limits. The Risk Committee discusses the portfolio developments of pbb Group.

Additional sub-committees have been established below the Risk Committee, as outlined below.

Credit Committee

The Credit Committee is chaired by the CRO or a CCO. As a general rule, the committee meets at least once a week and takes credit decisions on new business, prolongations and material changes that fall within the scope of its authority. It also votes on all credit decisions which are in the responsibility of the Management Board or which have to be approved by the Risk Manage-

ment and Liquidity Strategy Committee. The responsible decision-makers ensure that the credit decisions are consistent with the prevailing business and risk strategy.

Watchlist Committee

The Watchlist Committee is chaired by the CCOs (with delegation opportunities to a Senior Credit Executive) and meets every month. All exposures identified by the early warning system are discussed and, if appropriate, individual measures are decided there; these measures have to be subsequently implemented by the relevant departments. Where necessary, the committee takes decisions regarding the need to transfer exposures to CRM REF Workout, which then takes the necessary steps for re-structuring or workout on the basis of an individual exposure strategy. All necessary credit decisions are taken by the key per-sonnel in line with the allocation of credit powers or in the Credit Committee.

Risk Provisioning Committee

If there are indicators for an impairment of an exposure's credit rating (impairment stage 3) in accordance with IFRS 9, the result – after determining the extent of any such impairment – is presented to the Risk Provisioning Committee (RPC). It is chaired by the CRO. The RPC takes decisions regarding recognition, charge-off and reversals of loan loss provisions, within the scope of a pre-defined assignment of approval powers and in accordance with IFRS and the German Commercial Code (HGB); where the RPC cannot take a final decision, it issues a recommendation. Finally, the RPC takes decisions regarding any foreclosures which may be necessary. The recommendations made by the committee form the basis of decisions to be made in line with the relevant set of rules governing powers.

New Product Process Committee

The New Product Process Committee ("NPPC") comprises representatives from the most important units reponsible for infra-structure and controls. The representatives are determined by the RC. The NPPC convenes on an event-driven basis; it ensures that, before business commences with new products or in new markets, the resulting risks as well as the related impact on processes, controls and infrastructure are systematically analysed and duly addressed. Only after approval of the new product process committee can business with new products or in new markets be started.

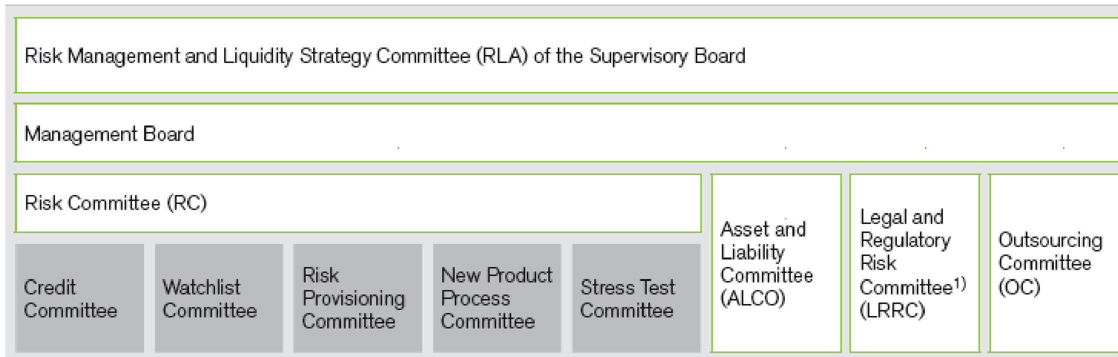
Stress Test Committee

The Stress Test Committee is responsible for the methodology, performance and monitoring of the internal stress tests. It is chaired by the CRO. The Committee also contributes to the preparation of scenarios for the Recovery Plan which every bank is required by law to prepare.

Asset and Liability Committee / Legal and Regulatory Risk Committee / Outsourcing-Committee

Besides the Risk Committee, there are the Asset and Liability Committee (ALCO) as well as the Legal and Regulatory Risk Committee (LRRC). The tasks of the ALCO are: managing liquidity as well as pbb Group's balance sheet structure, defining long-term financing strategies, managing capital, regulatory capital ratios, as well as market risk exposure. The LRRC advises on legal and regulatory requirements, and may assign responsibility for implementation to business divisions, following consulta-tion. The Outsourcing Committee deals with the implementation of regulatory and statutory requirements as well as preparation of, and compliance with, internal guidelines. Moreover, it handles the overall management and monitoring of outsourced activi-ties.

Figure 3: Risk management organisation



[1] Reporting via Compliance.

Chief Risk Officer (CRO)

Chief Risk Officer (CRO) In addition to the above-mentioned committees, the following organisation units of the CRO, form an integral part of the risk management system of pbb Group:

Figure 4: Chief Risk Officer organisation

The organisation of the CRO function comprises the following monitoring and back-office units at pbb Group level:

- The unit Risk Management & Control, which is amongst others responsible for monitoring market, credit, operational and liquidity risks as well as the risk-bearing capacity of pbb Group and which is also responsible for Group-wide uniform risk measuring methods and risk reports. The Head of RMC has changed in the reporting period.
- The units of the Chief Credit Officers REF/PIF and "Projects Risk Management" of pbb Group, which are each responsible for the analysis of new business and portfolio management. In addition, CRM REF also comprises the Workout (Real Estate) unit, which is responsible for the recovery and workout of all critical exposures in the Real Estate Finance segment, and the central unit Credit Processes, which is responsible in particular for the organisation of the Credit Committee and implementation of regulatory requirements in the credit processes.
- The unit Operations, which is responsible for the global servicing and administration of the loan portfolio (including technical implementation of loan agreements), settlement of capital markets transactions, administration and processing of the Group's securities and derivatives portfolios, as well for handling domestic and international payments.
- The unit Property Analysis & Valuation, which is responsible for the analysis and uniform valuation of properties serving as collateral, using market valuation and loan-to-value methods, as well as for the monitoring of financed developments.

In addition to the CRO function, the Compliance entity and the Group Internal Audit entity (independent) complement the risk management system of pbb Group. Compliance has established checking and reporting processes with regard to money laundering, sanctions, embargos and other criminal acts, as well as for other Compliance topics. Moreover, Compliance is responsi-

ble for the central coordination of key controls within the framework of the Internal Control System. Compliance is also represented in various committees. The area of responsibility of Group Internal Audit comprises risk-oriented regular as well as event-driven audits of processes, controls and systems. This also includes the revision of the risk management system. Regarding legal issues Risk Management is also supported by the Legal department.

Risk strategy and policies

Together with pbb's business strategy, the risk strategy forms the foundation for pbb Group's planning. The risk strategy has been defined on the basis of the Group-wide risk tolerance; it reflects pbb Group's strategic direction as a specialist for real estate finance and public investment finance with a focus on Pfandbrief funding. Moreover, the risk strategy defines the guidelines which form the basis of the risk culture for pbb Group. Subject to any special requirements at single-entity level, the risk strategy is applicable for pbb Group's operating segments and legal entities. It is reviewed and updated at least annually.

At the beginning of 2018 the risk strategy was revised during the course of the annual strategy development process 2018. Each update was adopted by the management board and approved by the supervisory board respectively. Essentially, this change involved adjustments to the ICAAP management approach, related to the normative and economic perspectives.

The risk strategy is enshrined in the operative business via risk policies for the individual operating segments, as well as frameworks, guidelines or instructions for all major risk types set out in the valid risk inventory. The individual policies are reviewed and updated regularly if necessary. They contain information on risk measurement, risk monitoring and risk management. The limit-setting process – as well as the escalation process if a limit is exceeded – are also described in the policies.

Risk reporting

Risk reporting reflects the structure of the operating segments. The Management Board of pbb receives regular risk reports which include an extensive overview as well as detailed information concerning the risk situation for each risk type as well as other management-relevant information. The supervisory bodies are also notified of risk-relevant issues at regular intervals. In addition, special reports are prepared on an ad hoc basis or at the request of the Management Board or Supervisory Board; such special reports consider specific and acute risk issues, for instance in relation to critical markets, products or counterparties.

Risk quantification, risk control and management

For the purposes of systematically identifying and analysing potential risks arising from the business model or pbb Group's external environment, the Group carries out a comprehensive risk inventory at least once a year. The objective of this risk inventory is to establish a full risk profile which identifies any and all risks, provides an assessment as to whether these risks are material for pbb Group, and scans them for the existence of potential risk concentrations. Where possible, risks are quantified using applicable risk models or other methods.

Risks which cannot be quantified (or only in part) are monitored and managed using dedicated capital buffers or separate management tools, as well as by way of regular, detailed reports and clearly-defined requirements such as the Compliance and Corporate Governance guidelines.

pbb Group's approach to managing risk, capital and liquidity is based on the Internal Capital Adequacy Assessment Process (ICAAP) and the Internal Liquidity Adequacy Assessment Process (ILAAP), each of which is seen in a normative and an economic perspective. The normative perspective is geared towards ongoing fulfilment of all of the Bank's capital- and liquidity-related legal requirements and supervisory demands, as well as to the achievement of internal objectives. The economic perspective covers all material risks which might threaten pbb Group's economic viability, with a focus on the present-value analysis of risks.

Besides the measurement, limitation and monitoring of risks, all risk management approaches also comprise regular reporting as well as escalation processes; they are supplemented by scenario analyses and stress testing. Within the framework of these

strategic management approaches, pbb Group defines its risk appetite, which sets out the scope within which pbb Group is prepared to assume risks. pbb Group uses this information to derive input for operative management, through limit systems, committee decisions, and other management decisions.

Limit and early warning systems have been implemented, in line with the risk appetite, for each type of risk as well as across risk types, at the level of capital management circuits. The strategy underlying the respective type of risk, together with the associated risk definition, risk calculation methods, and risk reporting systems are described in detail in the following chapters.

Internal Audit

The need for an Internal Audit function is based on specific legal provisions, such as section 25a (1) sentence 3 No. 3 KWG in conjunction with MaRisk (Minimum requirements for risk management according to BaFin; in particular AT 4.4.3 in conjunction with BT2) and section 91 (2) AktG.

For this purpose, the Internal Audit function is an integral part of the internal control system. The “Internal Control System” (ICS) comprises all types of control activities which are directly or indirectly integrated in the workflows to be monitored (= process-oriented control). The Internal Audit function also acts as an instrument of the Management Board for risk-based monitoring of operating and business procedures, risk management, risk controlling as well as the Internal Control System (= process-independent control).

The Management Board confers on the Internal Audit function the right of initiative including the authorisation to directly communicate with every employee so as to audit any activity or business unit and gain access to all documents, files or data of pbb, including management information and the minutes of all advisory and decision-making bodies whenever this appears to be relevant within the framework of their task. This also includes (physical) access to all premises as well as technical access to the IT systems.

In line with the Institutsvergütungsverordnung (Remuneration Ordinance for Institutions), the Internal Audit function is independently involved in monitoring the remuneration systems (in accordance with section 2 (9) in conjunction with section 3 (3) InstitutsVergV).

The Internal Audit function reports directly to the Management Board of pbb. The chairman of the Supervisory Board / Audit Committee may request information directly from the head of the Internal Audit function by involving the Management Board. In addition, the head of the Internal Audit function regularly reports audit results/planning to the Audit Committee.

The audit activities must cover all operating and business procedures, activities and processes based on a risk-oriented audit approach, taking account of the potential amount of loss and the probability of occurrence.

In particular, the following items are audited and assessed in accordance with MaRisk (Minimum requirements for risk management according to BaFin):

- The Internal Control System (ICS)
- The risk management and controlling processes
- The reporting and Information systems
- Finance and accounting
- Compliance with existing legal and regulatory requirements as well as other regulations
- Compliance with operational guidelines, ordinances and regulations
- Security of the assets.

Audits also include outsourced functions. In addition, the tasks of the Internal Audit function also comprise special audits commissioned by the Management Board. The Internal Audit function also has to become involved in major projects, whilst main-

taining its independence. It has to be informed in advance of all major projects so that it is able to define the nature and extent of project support in a timely manner.

The Internal Audit function has a complete and unlimited information right which must be guaranteed at all times. The requested information and documents must be promptly delivered to the Internal Audit function, and the Internal Audit function must be allowed to view the activities and processes as well as the IT systems.

In addition, all organisational units must automatically inform the Internal Audit function when serious defects are identified or considerable loss has occurred in their area of competence or in the event of an initial suspicion.

In particular, any significant risk-related information must also be immediately forwarded to the head of the Internal Audit function as well as to the management team and the responsible staff.

4.2 Risk types

pbb Group distinguishes the following major risk types for its business activities:

- Credit risk (including counterparty credit risk)
- Market risk
- Liquidity and Funding risk
- Operational risk (including legal risk)
- Business and strategic risk
- Property risk
- Pension risk.

In addition to the general principles of risk management described in chapter 4.1, further information is set out in chapters 5.1, 6.1, 7.1 and 8.1 of the Disclosure Report regarding the risk management objectives and policy for the risk types credit risk (incl. counterparty credit risk), market risk, liquidity and funding risk as well as operational risk (incl. legal risk).

The risk types business and strategic risk, real estate risk and pension risk are defined as follows:

Business and strategic risk

Within pbb Group, business and strategic risk is defined as the risk of negative deviations of income and expenses from the planned figures – as a result of strategic decisions, false assumptions or unexpected changes in the external framework conditions, to the extent that such deviations are not covered by other risk types, such as market risk, credit risk or operational risk. Please refer to the chapter 4.3 „Economic capital and risk bearing capacity“ for further details on the quantification as well as the calculation results of the economic capital of business and strategic risk.

Property risk

Property risk is defined as potential negative changes in the value of the Company's own property portfolio, due to a deterioration of the general real estate situation or a negative change of the specific characteristics of the individual property – caused by the property being vacant, changed usage options, building damages, investment requirements, changes to the legal framework or economic environment as well as other factors.

As at 31 December 2018, pbb did not hold any own properties.

Pensionsrisiko

Pension risk is defined as the risk of incurring additional expenses due to insufficient capitalisation of pension obligations from defined benefit plans. Please refer to the chapter 4.3 „Economic capital and risk bearing capacity“ for further details on the quantification as well as the calculation results of the economic capital of pension risk.

4.3 Economic capital and risk-bearing capacity

Internal Capital Adequacy Assessment Process (ICAAP)

Pursuant to section 91 (2) of the German Public Limited Companies Act (Aktiengesetz – "AktG") and section 25a (1) of the German Banking Act (Kreditwesengesetz – "KWG"), pbb Group is obliged to establish appropriate and effective internal procedures in order to ensure the Bank's risk-bearing capacity at all times. The Internal Capital Adequacy Assessment Process (ICAAP) is subject to regulatory review (within the framework of the Supervisory Review and Evaluation Process (SREP)); it complements the regulatory procedures under Pillar 1 of the Basel III framework, as laid down in the Capital Requirements Regulation (CRR) and the Fourth Capital Requirements Directive (CRD IV).

Pursuant to the "Multi-year plan on SSM Guides on ICAAP and ILAAP", published by the European Central Bank in February 2017, and to the „ECB Guide to the internal capital adequacy assessment process (ICAAP)", published in November 2018, regulatory authorities expect banks to apply two supplementary ICAAP perspectives: a normative and an economic perspective. Whilst the normative perspective is aimed at the fulfilment of all capital-related legal requirements, supervisory demands and internal objectives, on an ongoing basis, the economic perspective covers all material risks which might threaten the institution's economic viability.

Both perspectives are designed to safeguard the financial institution's ability to survive: they are based on internal assessments of the capital required to safeguard the institution's continued existence. Both perspectives were implemented by pbb Group when the new 2018 risk strategy came into effect.

Within the normative perspective, capital-related regulatory and legal requirements comprise the CET1 ratio, tier 1 ratio, own funds ratio, Leverage Ratio, as well as rules concerning MREL (Minimum Requirements on Own Funds and Eligible Liabilities) and large loan exposure limits. Furthermore, pbb Group maintains the going-concern approach as an additional part of the normative perspective, since this is also geared towards protecting minimum regulatory capital ratios.

Implemented in 2018, the economic perspective differs from the previous year's gone-concern approach, as safeguarding the financial institution's ability to survive is now paramount. For the economic perspective as at 31 December 2018, pbb Group therefore no longer took subordinated items into account when determining available financial resources. Within the economic perspective, risk measurement is primarily based on the approach used in the previous year. The difference is that in order to enhance comparability with regulatory capital requirements, pbb Group slightly lowered the confidence interval – from 99.91 % in 2017 to 99.9 % in 2018.

It has implemented a risk-bearing capacity analysis for both perspectives which, in addition to determining key regulatory indicators, also applies the concept of economic capital for risk quantification in both the going-concern approach and the economic perspective. Economic capital is defined as the capital required to cover the financial risks with a predefined probability (the confidence interval) over a one-year horizon. It is calculated for all relevant types of risk, and aggregated to form total economic capital (after diversification effects). The capital available to cover total risk is calculated in both approaches, and compared to economic capital.

The risk inventory identified market risk, credit risk, business and strategic risk, operational risk and property risk as higher-level risks for 2018 having an impact on capital and income; accordingly, these five types of risk were included in the ICAAP, and the economic capital of these risk types is quantified using models or other methods. Within these types of risk, there are additional sub-risks on a granular level which were taken into account in the ICAAP during the period under review. Certain material types of risk, such as extension risk, settlement risk, realisation risk for defaulted loans, or pension risk, are integrated into the ICAAP in the form of buffers which are validated on a regular basis. Funding risk is included in business and strategic risk.

Over and above the risk-bearing capacity analysis, the ICAAP comprises additional management tools, including a system of limits and early-warning thresholds, as well as a comprehensive monthly monitoring and reporting process. Moreover, key indicators selected within the scope of base and stress scenarios are projected over a period of up to three years, with limits and

early-warning thresholds also assigned to these figures. Limit compliance, in combination with an effective escalation process, supports the continuous safeguarding of an appropriate capitalisation for pbb Group.

The results of the ICAAP and of the stress tests are regularly presented to the Management Board and the Risk Committee. The content of the risk-bearing capacity analysis are discussed there – if necessary, management measures are defined. The methods of calculating economic capital for the individual risk types, as well as risk indicators as at the reporting date, are described in greater detail in the following sections “Quantification of economic capital for individual risk types” and „Result of risk-bearing capacity analysis“.

Quantification of economic capital for individual risk types

For internal assessment of the Internal Capital Adequacy Assessment Process in line with the economic perspective, and the going-concern approach of the normative perspective, economic capital for quantifiable risks is determined using models or scenario analyses, and aggregated into overall bank risk using a mathematical/statistical approach, taking specific correlations between market and counterparty credit risks into account. Thereby risks are calculated for a one-year period, using a confidence level of 99.9 % for the economic perspective and 95 % for the going-concern approach.

The methods of calculating economic capital for the individual material risk types for 2018 are explained below.

Economic capital for credit risk

For calculating the credit risk at the portfolio level, pbb Group uses a credit portfolio model which is based on the approach of a so-called asset value model. The fundamental concept used involves the repeated simulation of correlated rating migrations for borrowers, whereby the associated portfolio revaluation is used to derive a statistical distribution of losses – which is in turn used to derive economic capital in terms of unexpected losses. Economic capital quantifies the maximum unexpected loss, given a pre-defined confidence level, which may be incurred due to rating migrations (including defaults) in the lending business within a single year. Besides the loss distribution of the credit portfolio, as a significant result of this process, credit risk capital can be assigned to individual borrower units in line with the risks involved, using the so-called expected shortfall principle. This ensures a risk-adequate allocation to borrowers, and thus constitutes a major cornerstone in the risk-oriented management of the credit portfolio. During the observation period, correlations between borrowers, borrower groups and regions were reviewed during the course of the regular validation process; updated correlations were applied during the fourth quarter of 2018.

Credit risk reported comprises default and migration risk, transfer and conversion risk, as well as concentration risk. Certain elements of credit risk, such as the realisation risk for defaulted clients, settlement risk, and extension risk are not reported directly as part of credit risk, but are instead taken into account as deductions in the available financial resources. The credit portfolio model is used to examine the appropriateness of these deductions on a regular basis. Furthermore, tenant risk is backed by capital using a buffer for risks which can only be partially quantified, or which cannot be quantified at all.

Economic capital for market risk (including pension risk)

The purpose of calculating economic capital for market risk is to identify potential financial losses resulting from price changes affecting all positions. In this process, the potential non-systematic losses are derived from an analysis of historical time series of specific influencing factors (risk factors), including interest rates, exchange rates and credit spreads, over the preceding ten years. The historical observation period for risk factors underlying market risk calculations was extended from seven to ten years in 2018, to ensure that adverse economic phases for the Bank also continue to be adequately taken into account, and captured by the model. Ultimately, using a simulation procedure and applying sensitivities of financial instruments to risk factors, the annual loss distribution of portfolio market value is determined, which allows economic capital at the set confidence level to be determined.

Besides the risk types described in chapter 6 “Market Risk”, the ICAAP also encompasses pension risk, which is not disclosed directly under market risk; instead, it is deducted from available financial resources in the form of a buffer, which is validated on a regular basis.

Economic capital for operational risk

Within the framework of the ICAAP, operational risk is quantified using the so-called loss distribution approach (LDA), whereby distributions for damage amounts and frequency are determined individually, using internal loss data from the loss database. External and scenario-based data is also included in the modelling approach. The full loss distribution is generated using Monte Carlo simulation techniques; diversification effects between the various sub-types of risk and modelling categories are not being considered. Furthermore, care is taken to ensure that the economic capital figure calculated does not fall short of a floor defined at 90 % of adjusted regulatory capital determined in accordance with the standardised approach pursuant to the EU Capital Requirements Regulation (575/2013 (EU) – "CRR"). Sub-types of operational risk which can only be partially quantified, or which cannot be quantified at all, such as for instance model risk, are covered by way of a capital buffer.

Economic capital for business and strategic risk

The quantification of business and strategic risk in the ICAAP is based on a mixed approach, consisting of a Monte Carlo simulation of net interest income and a scenario analysis for other items in the income statement. When deriving available financial resources, pbb Group does not consider any planned profits. This way, a buffer at least equivalent to the amount of positive projected results is reserved for business and strategic risk, since this type of risk is defined as the risk of potential negative deviations from planned income and expenses. In case higher than planned gains are calculated within the scope of quantifying business and strategic risk, the value of business and strategic risk exceeding the planned annual profit of pbb Group is reported as a risk amount.

The methodology newly developed in the year under review was first applied as at 31 December 2018. Material changes compared with the previous methodology mainly comprise the re-design of the sub-risk types included in business and strategic risk, which allows for a more accurate modelling of risk causes, as well as the new development of the quantification methodology via Monte Carlo simulation of net interest income, plus a scenario analysis for remaining items in the income statement. The result is an improved methodology in terms of completeness, and accuracy of the measuring method for business and strategic risks.

Liquidity risk in the ICAAP

Capital backing of liquidity risk in the narrower sense is not possible. Liquidity risk in the broader sense – i.e. the risk of higher funding costs for unexpected potential funding requirements, is mapped in economic capital for business and strategic risk.

Result of risk-bearing capacity analysis

Normative perspective

The normative perspective is geared towards ongoing fulfilment of all of the Bank's capital-related supervisory demands, as well as to the achievement of internal objectives. For a detailed description of the regulatory indicators measured as at the reporting date (CET1 ratio, tier 1 ratio, own funds ratio, MREL and Leverage Ratio), please refer to the chapter 3 "Own funds and assets". The readings for these indicators were non-critical at the reporting date. The future-oriented medium-term analysis of key capital ratios – as required by regulators –did not show any critical values, neither in the base scenario nor in the stress scenarios.

The internal goal of the normative perspective is to provide evidence of the Bank's risk-bearing capacity in accordance with the going-concern approach. This management approach, which also aims to safeguard the minimum regulatory capital ratios, showed the following results:

Table 20: Risk-bearing capacity based on a going-concern approach

All figures in € million

Risk types	Going concern		
	31.12.2018	31.12.2017	Change
Credit risk	189	238	-49
Market risk	133	175	-42
Operational risk	24	25	-1
Business and strategic risk	-	-	-
Total before diversification effects	**346**	**438**	**-93**
Total after diversification effects	**320**	**403**	**-84**
Available financial resources (free capital)	1,419	987	432
Excess capital (+) / capital shortfall (-)	+1,099	+584	516

With the first-time application of IFRS 9, the Group has replaced the previous mark-to-market of financial assets with a measurement at amortised cost. As a result, these positions no longer comprise credit spread risks for 2018, which led to a decline in total market risk. The changed measurement approach also reduced credit risk, as rating migration risk of the instruments concerned was no longer relevant, only their default risk. Shorter maturities (compared to the 2017 financial statements) and the repayment of maturing securities additionally contributed to a reduction in credit risk during the period under review. In addition, the enhanced inclusion of lower default correlations of small and medium-sized enterprises in the credit portfolio model had a positive effect during the first quarter of 2018. Operational risk, which is regularly determined once a year, decreased slightly. Since pbb did not hold any properties during the period under review, no details were provided on real estate risk. The declines in market and credit risk were therefore the main reasons for the reduction in total risk after diversification effects.

Available financial resources (so-called 'free capital') is compared to aggregate risk (after diversification effects). Available financial resources increased during the reporting period. Alongside the first-time application of IFRS 9 – which increased CET1 capital, thanks to higher carrying amounts of financial investments – the issue of a subordinated (AT 1) bond as well as the adjustments of the minimum regulatory SREP capital ratios were mainly responsible for the increase.

The reduction in economic capital (after diversification effects) and the simultaneous increase in available financial resources together led to higher excess coverage. Overall, the Bank's risk-bearing capacity at the reporting date was evidenced under this approach.

Economic perspective

At the beginning of 2018, the "gone-concern" management approach (which was implemented until 2017) was replaced by the economic perspective, which is primarily aimed at safeguarding the Bank's ability to survive. Besides a minor adjustment to the confidence interval (from 99.91 % to 99.9 %), the changes also included the omission of some of the components of available financial resources. The following table compares the 2017 year-end figures (under the gone-concern approach) with the figures of the economic perspective as at the reporting date:

Table 21: Risk-bearing capacity economic perspective

All figures in € million

Risk types	Economic perspective		
	31.12.2018	31.12.2017	Change
Credit risk	1,245	1,213	33
Market risk	658	883	-225
Operational risk	85	78	7
Business and strategic risk	-	21	-21
Total before diversification effects	**1,988**	**2,195**	**-207**
Total after diversification effects	**1,814**	**1,990**	**-176**
Available financial resources before net hidden losses	2,909	3,179	-270
Net hidden losses	-8	-	-8
Available financial resources	**2,901**	**3,179**	**-278**
Excess capital (+) / capital shortfall (-)	+1.087	+1.189	-102

Aggregate risk (after diversification effects) decreased in the economic perspective during the period under review – predominantly due to lower market risk, business risk, and strategic risk. The reduction in market risk (credit spread risk) partly resulted from lower market values and shorter maturities. However, this development was significantly reinforced by the extension of the historical observation period for calculating market risk – which continues to incorporate unfavourable economic phases, albeit using a lower weighting. The adjustment of the confidence interval only had a minor effect on market risk (€ -9 million). Due to the newly-developed method, business and strategic risk dropped to zero, as planned gains exceeded the risk from unexpected losses in this risk category. The rise in credit risk was predominantly driven by internal rating downgrades of some Southern European public-sector debtors. This was partly offset by maturities of financial investments as well as by an improved valuation of securities in the credit portfolio model and the described adjustment to the confidence interval (€ -33 million). Operational risk rose, due to the incorporation of new data and analyses. Since the Bank did not hold any properties on the reporting date, no details regarding property risk need to be disclosed.

In contrast, available financial resources declined significantly during the period under review, on account of adjustments in order to comply with the requirements related to the economic perspective in accordance with the ECB's ICAAP Guideline. Essentially, this includes the non-inclusion of tier 2 instruments in the calculation of available financial resources. This effect was only partly offset by the higher level of capital (in accordance with IFRS), reflecting the issue of an AT1 instrument and the first-time application of IFRS 9. Hence, excess coverage increased compared to the 2017 year-end; evidence of the risk-bearing capacity in the economic perspective was thus provided as at the reporting date as well.

Should the European sovereign debt crisis intensify further, with credit spreads widening and credit ratings of European public debtors worsening as a consequence, both a corresponding increase in credit risk as well as a reduction in available financial resources (given an increase in net hidden losses) is to be expected, notwithstanding any countermeasures taken.

Opportunities

pbb Group observed an increase of credit spreads on the bond markets of some Southern European countries during the course of 2018 and internal credit assessments were partially adapted. If confidence in European sovereign budgets were to be restored, narrowing credit spreads and systematic rating improvements for public-sector issuers might reduce risks, thus strengthening again available financial resources and hence, excess coverage in the ICAAP.

Stress testing

Stress tests play an important role, both from a supervisory perspective and for the Bank's internal management. All activities, developments and decisions relating to stress tests are brought together within the Stress Test Committee, which reports directly to the Risk Committee.

As part of an integrated approach, the impact of macroeconomic stress scenarios on all material risks – and on available financial resources under stressed market parameters – was calculated for a horizon of several years during the period under review. These scenarios focus on the impact of protectionism and trade barriers, as well as on an unfavourable development on the real estate markets.

Furthermore, stress tests relating to economic capital and available financial resources are used to obtain a deeper understanding of the sensitivity of risk-bearing capacity to adverse changes in economic factors. In addition, inverse stress tests are conducted regularly. The results of these tests describe specific constellations of parameters under which the risk-bearing capacity would be at risk.

5 Credit risk

5.1 Management of credit risk (including counterparty credit risk)

Definitions

The credit risk in general is defined as the risk due to an unexpected default or decline in the market value of a receivable (loan or bond) or a derivative (alternatively of an entire portfolio of claims/derivatives). The reason for this can be either a deterioration in a country's or counterparty's creditworthiness or a deterioration in collateralisation.

The credit risk comprises the default risk, migration risk, realisation risk of defaulted positions, transfer and conversion risk, tenant risk, settlement risk, extension risk as well as concentration risk which are defined as follows in pbb Group's risk strategy.

Default risk

Default risk denotes the risk of a default occurring on receivables. This includes defaults of loans or other credit products (lending risk), or bonds and other securities (issuer risk), as well as the risk of default on receivables under derivatives contracts (counterparty risk/replacement risk) or money market transactions (repayment risk). The possible default of sovereign or regional governments is included as a special case (sovereign default risk).

Migration risk

Migration risk is the risk of a loss in value of a receivable caused by rating migration. This includes both the risk of rating migrations of traditional borrowers as well as rating migration of bonds and other securities and receivables from derivatives and money market transactions. The impact of a rating migration concerning sovereign or regional governments as a special case is included, too.

Realisation risk

Realisation risk related to defaulted clients is the risk that the risk provisioning recognised changes over the analysis period, or the risk of actual amounts realised differing from the risk provisioning.

Transfer risk

Transfer risk is the risk that a government or central bank restricts the use of the currency to their own country. This includes the conversion risk, which is the risk that a government or central bank declares its own currency as non-convertible. Together with the sovereign risk, the transfer and the conversion risk form the country risk.

Tenant risk

Tenant risk describes the risk that losses in rental income for properties will negatively influence the respective borrowers' debt service capacity. In addition, it includes the secondary concentration risk (tenant cluster risk), which arises when one and the same tenant is involved in multipleproperties funded by the bank.

Fulfilment risk

Fulfilment risk is defined as the risk that the Bank makes a payment or delivers an asset which has been sold to a counterparty but does not receive a payment for the purchased asset.

Extension risk

Extension risk is the risk of an unexpected extension of the holding period of a credit risk related asset.

Concentration risk

Concentration risk is defined as the risk of cluster formation in relation to a risk factor or counterparty, or a strongly correlated group of risk factors or counterparties.

Risk strategy and principles

pbb Group has broken down the overall credit portfolio into the segments Real Estate Finance (REF), Public Investment Finance (PIF), Value Portfolio (VP) and "Consolidation & Adjustments" (C&A). The strategic business is attributable to commercial Real Estate Finance (REF) and Public Investment Finance (PIF). The risk strategy of pbb Group also reflects this structure.

Please refer to the information in the chapter 2.1 "Organisational and legal structure" for a description of the business focus with regard to strategic portfolios, and for statements outlining the strategy adopted for the run-down portfolio.

Risk reporting

The credit risk reports of pbb Group provide information about the following main components:

Group risk report

The pbb Group Risk Report contains the development in volumes as well as relevant credit risk management indicators such as the development of the expected loss as well as the unexpected loss via value at risk (VaR). The report shows the credit risk at the level of pbb Group in the context of the overall bank risk and the risk-bearing capacity, it reports limit utilisations and violations of existing limits, and also identifies risk concentrations. Key indicators, such as the development of the exposure at default (EaD), the expected loss (EL), the credit value at risk (Credit VaR) as well as problem loans are integrated in this report and are discussed by the Management Board; the report is also submitted to the RLA of the Supervisory Board to be noted.

Neu business

For decisions to be made regarding new business, or regarding material changes to the credit quality of existing financings (such as a maturity extension), key financial indicators, content and analysis are presented to, and discussed by the Credit Committee.

Active business

In the active business, further regular reports support operational management with regard to the management and timely recognition of risks at the sub-portfolio level.

Unusual developments

Unusual developments which might result in a major deterioration in the risk position of an individual exposure are reported on an ad-hoc basis to a wider group up to the CRO by way of so-called "Credit Issue Notes".

Risk quantification via economic capital and risk-weighted assets according to CRR

Credit portfolio model

For calculating the economic capital for credit risk pbb Group uses a credit portfolio model. For details concerning this model and economic credit risk quantification, please refer to the chapter 4.3 "Economic capital and risk-bearing capacity" (ICAAP).

Stress testing

The stress tests for economic capital in credit risk are described in greater detail in the chapter 4.3 "Economic capital and risk-bearing capacity" (ICAAP).

In addition to the stress tests for economic capital, there are also RWA reverse stress tests. They investigate the extent to which a certain risk parameter (e.g. rating, loss given default (LGD), currency) can change before a minimum common equity tier 1ratio (CET1) is no longer met. The minimum level for the common equity tier 1 (CET1) ratio is derived from the bank's individual SREP CET1 ratio. Tolerance change levels have been defined for all tested risk parameters; these levels must not be violated if the test of pbb Group is to be successfully completed.

Risk quantification according to CRR

The Basel III Framework Agreement of the Basel Committee was implemented in the European context by means of the Capital Requirements Regulation ("CRR"). pbb Group applies the so-called Advanced Internal Rating-Based Approach (Advanced IRBA) for determining the regulatory capital backing.

Risk management and monitoring

Risk management

At the portfolio level, the intended portfolio structure is defined in the risk strategy by means of structure components. The limits are also based on the available financial resources, and include for pbb Group for example:

- Limiting of country risks
- Definition of strategic risk parameters (e.g. regions, financing duration).

The following reports and measures are key elements for monitoring compliance with the defined limits and the intended risk and return parameters at the portfolio level and also at the level of individual transactions:

- Analysis of portfolio developments in the Risk Committee
- Determining the credit-VaR at the portfolio level by way of a credit portfolio model and partly limiting at the segment level; analysis of concentration risks and various stress tests
- Central Group-wide monitoring of risk concentrations by way of special, regular and ad hoc evaluations, such as regional or product-specific evaluations
- Continuous analysis of the portfolio and the relevant markets by the local Credit Risk Management units
- Regular evaluation of the collateral
- Special reports for exposures which are potentially at risk (e.g. "credit issue notes")
- Calculation of a risk-adjusted margin using the economic return after tax.

Depending upon the counterparty group, Expected Loss class or exposure size at GCC (Group of Connected Clients) level, the lending authority regulations determine the approval powers for new as well as existing exposures. Approval powers are assigned to individual employees in line with their individual experience and qualification.

Risk management and monitoring

At the level of individual transactions, the credit process guidelines define the necessary steps of assessing risk for new business as well as for substantial changes such as prolongations or increase of credit limit and the procedures for transferring exposures to the watchlist or workout.

Core processes of credit risk management and monitoring as well as the relevant areas of the CRO function which are involved are described in the following:

The CRM entities carry out the initial risk analysis for new business and annual risk analysis for existing business. Probability of default (PD) and loss given default (LGD) rating tools, which are developed by Credit Risk as part of RMC and annually validat-

ed and calibrated, are used for valuation purposes and for preparing the credit decision in new and prolongation business. Property Analysis & Valuation (PAV) provides support for analysing and valuing collateralised properties.

The Legal department, where appropriate together with external lawyers/lawyers' offices, is responsible for the contract and collateral organisation.

Defined early warning indicators are constantly monitored by CRM. If essential problems are identified, an exceptional test is performed on the credit default risk (including a review of the value of collateral) and appropriate alternative actions are identified. Such cases are also included in a monthly, at least quarterly monitoring cycle and presented in the Watchlist Committee.

If there are indicators for a deterioration of credit quality, the level of the stage 3 impairment is calculated in accordance with IFRS or, in the case of specific allowances, in accordance with the HGB. In the Risk Provisioning Committee, the results are discussed and, where necessary, decisions are taken with regard to creating or reversing stage 3 impairments/specific allowances.

Where an individual decision is taken as to whether a critical exposure – in the form of a stage 3 impairment (IFRS) or a specific allowance (HGB) – is to be restructured or liquidated, scenario analyses outlining the potential development of the borrower, of collateral and/or the relevant market, are taken into account. These analyses are presented to the Credit Committee, which approves them or issues a recommendation for approval to holders of higher lending authority.

Critical exposures (watchlist) as well as restructuring and workout cases (non-performing loans) are reported on an aggregate basis monthly in the Group Risk Report and in the Risk Committee and also, upon request, in special analyses to the Management Board and Supervisory Board.

Risk hedging and risk mitigation

Real Estate Finance

In the REF segment, financing arrangements are normally backed by property charges. On the occasion of the regular credit reports for existing financing arrangements or as part of the decisionmaking process in the case of new financing, the LTVs (loan-to-value) as well as the property (including micro and macro location, rental situation, condition of property) and market circumstances are discussed and are also taken into consideration as part of the assessment process for individual loans.

In addition to the property charge, the financing security in the REF segment also generally comprises various factors, including rent assignation as well as the assignation of insurance claims, accompanied by extensive notification and consultation obligations of the borrowers. Apart from the property charges, only a few more selected securities are considered to be of value in the credit assessment process or in the calculation of LGD, and in particular this is applicable for cash security, furthermore under certain circumstances bank guarantees, other credit protections as well as guarantees of public-sector institutions. Corresponding haircuts are recognised in relation to foreign currency collateral, i.e. in a currency differing from the loan currency, in order to take account of potential exchange rate risks.

Properties in the REF business are valued using strict quality criteria. Property collateral values are determined when the loan is initially granted, and reviewed on an annual basis. pbb maintains a separate department of real estate analysts and surveyors (PAV; reporting directly to the CRO): All staff members in the PAV department who are involved in real estate analysis are certified in accordance with ISO 17024 (HypZert standard), and have usually gained additional qualifications (such as RICS certification). This department is always involved in the initial valuation (when a new loan is granted) or regular revaluations, as well as in the valuation reviews which are carried out at least once a year. Depending on the type and location of the property involved, market developments and other risk indicators, valuation reviews may also be carried out, in some cases, by credit department staff, based on defined parameters and processes.

For development financings, regular monitoring comprises the monitoring of planning progress, budget, procurements, construction schedule, sales/letting progress and construction stage, amongst other factors. As a rule, for complex developments, such monitoring is carried out by renowned external project monitors on the bank's behalf, coordinated and supervised by PAV –

usually on a monthly, but at least on a quarterly basis. For less complex residential real estate developments, construction progress is monitored at least every three months, by experienced and specialised internal property analysts. CRM always monitors costs, thus facilitating a current overview of actual costs, as well as a cost projection for development projects, which is reconciled against the results of internal monitoring (as well as external monitoring, if applicable). This allows for recognition of any divergence from project planning (and hence, project risks during construction) as early as possible.

Public Sector Finance

In the PIF segment, guarantees are often accepted as collateral (including contractual guarantees from public-sector authorities, export credit guarantees). Moreover, Public Investment Finance exposures often involve a specific legal framework, such as the maintenance obligation (Anstaltslast) of public-sector entities, or other (direct and indirect) cover mechanisms which allow for recourse to a public-sector institution in the case of borrowers organised under public law. For some exposures in PIF, guarantees and indemnities or the legal framework are supplemented by additional loan collateral, as well as borrowers' disclosure or consultation duties. However, such additional loan collateral is generally not considered as valuable in assessing the exposure, or for the purposes of calculating LGD.

Treasury

In Treasury, mainly cash contributions and securities are made available or accepted as collateral when trading with other banks. The collateralisation is based on standard agreements, which can be amended in individual cases if required or which can be subjected to individual review by the legal department.

Opportunities

The parameters for the risk dimensions for the credit risk are defined using statistical methods on the basis of numerous historical observations. The risk measures also depend on assumptions relating to future developments of macro-economic factors as well as developments on the credit markets. These economic conditions may turn out to be more positive than anticipated; in which case, potential losses from counterparty credit risk may theoretically be lower than quantified by the risk measures. Such potentially positive developments then represent opportunities for the pbb Group which can be utilised for reducing risk.

In specific terms, there are opportunities if fewer loans in future are affected by a default in performance than is assumed as part of the risk quantification process.

There are also opportunities if there are in future fewer migrations to less positive rating categories than assumed.

There are also opportunities if the loss ratios of non-performing loans in future are lower than was assumed as part of the risk quantification process. Lower loss ratios may be triggered by various positive developments. Firstly, it is possible that the process of disposing of collateral might generate higher proceeds than was originally assumed in the risk quantification process. Secondly, it is possible that a higher percentage of non-performing loans subsequently become performing loans again without any losses than had been the case in the past.

Besides positive developments in default rates or loss ratios, opportunities may arise in connection with counterparty credit risk – theoretically, and regardless of other corporate objectives – in the event of declining portfolio exposure. For instance, this may occur if borrowers redeem or repay their loans faster than anticipated, given contractual agreements or historical data. Exposure values in the derivatives portfolio may decline where the market values of positions associated with replacement risk decrease, due to changes in certain market parameters such as interest rates or exchange rates.

5.2 General information concerning the credit risk

In accordance with article 442 CRR in conjunction with the guidelines EBA/GL/2016/11, the following sections contain information concerning the credit risk, for exposures for which the pbb Group calculates the risk-weighted receivables using the standard approach (CRSA) or the advanced IRB approach (IRBA) based on the bank's internal rating procedures.

This is not applicable for exposures for which the value of the receivable is calculated in accordance with part 3, title II, chapter 6 "Counterparty credit risk" or part 3, title II, chapter 5 "Securitisation" of the CRR. These derivative transactions and securitisations are described in the chapters 5.6 "Counterparty credit risk" and 5.8 "Securitisations".

Credit portfolio

The net value of the on-balance-sheet and off-balance-sheet exposures amounted to a total of € 58,528 million as of 31 December 2018 (31 December 2017: € 57,856 million); of this figure, € 56,234 million (96 %) is attributable to the IRB approach and € 2,294 million (4 %) is attributable to the standard approach. The net value of an exposure is defined as the gross carrying amount after deduction of impairments on financial assets (stage 1 to 3) and provisions in lending business as well as after depreciation, but before the application of credit risk mitigation techniques and before credit conversion factors (CCF) for off-balance-sheet receivables.

The first table in accordance with article 442 letter c CRR in conjunction with EU CRB-B of the EBA/GL/2016/11 shows the net value of exposures as well as the average amount of the exposures in the course of the reporting period, broken down in each case according to the IRB approach and the standard approach and also broken down according to IRBA and CRSA exposure categories.

The following three tables in accordance with article 442 letters d, e and f CRR in conjunction with EU CRB-C, EU CRB-D and EU CRB-E of the EBA/GL/2016/11 show the net value of the exposures according to major geographical regions, economic sectors (NACE code) as well as remaining maturities. Due to considerations of materiality, the pbb Group does not disclose the individual CRSA exposure categories for these three tables, and summarises them in a line "Total amount in the standard approach".

Table 22: Total and average amount of exposures (EU CRB-B)

All figures in € million

	Exposure classes IRB approach and standardised approach	Net value of exposures [1] 31.12.2018	Average net exposures [2] over the period 01.01. to 31.12.2018
		a	b
1	Central governments and central banks	17,136	17,470
2	Institutions	6,838	6,698
3	Corporates	32,242	31,445
4	thereof: specialised lending	25,462	24,377
5	thereof: small and medium-sized enterprises (SME)	2,252	2,451
6	Retail	-	-
7	thereof: secured by real estate property	-	-
8	thereof: small and medium-sized enterprises (SME)	-	-
9	thereof: non small and medium-sized enterprises (Non-SME)	-	-
10	thereof: qualifying revolving	-	-
11	thereof: other retail	-	-
12	thereof: small and medium-sized enterprises (SME)	-	-
13	thereof: non small and medium-sized enterprises (Non-SME)	-	-
14	Equity	0.02	0.03
14a	Other non credit-obligation assets	18	18
15	**Total IRB approach**	**56,234**	**55,632**
16	Central governments or central banks	-	-
17	Regional governments or local authorities	57	67
18	Public sector entities	0.4	3
19	Multilateral development banks	965	1,018
20	International organisations	-	-
21	Institutions	-	-
22	Corporates	1,081	1,008
23	thereof: small and medium-sized enterprises (SME)	3	3
24	Retail	0.3	0.4
25	thereof: small and medium-sized enterprises (SME)	-	-
26	Secured by mortgages on immovable property	98	59
27	thereof: small and medium-sized enterprises (SME)	6	8
28	Exposures in default	3	3
29	Exposures associated with particularly high risk	-	-
30	Covered bonds	-	-
31	Exposures to institutions and corporates with short-term credit assessment	-	-
32	Exposures in the form of units or shares in collective investment undertakings (CIUs)	3	3
33	Equity exposures	-	-
34	Other itmes	86	81
35	**Total standardised approach**	**2,294**	**2,242**
36	**Total**	**58,528**	**57,874**

1) Net value of the exposure: Gross carrying value after deduction of credit losses allowances on financial assets and provisions in the lending business as well as write-offs, but before considering any credit risk mitigation (CRM) techniques and before credit conversion factors (CCF).

2) The average is based on a quarterly determination of the net exposure values, calculated at the end of each quarter during the reporting period.

Table 23: Exposures by geographical area (EU CRB-C)

All figures in € million

	Significant geographical areas [1]	Net value of exposures [2]																		
		Euro area countries							Other EU countries				Rest of Europe	Africa	America		Asia	Oceania	Other areas [3]	Total
		thereof:	Germany	France	Austria	Luxem-burg	Spain	Italy	thereof:	United Kingdom	Poland	Sweden			thereof:	USA				
		a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s
1	Central governments and central banks	16,080	5,951	1,717	4,796	-	1,169	1,486	497	4	275	43	57	48	-	-	307	-	146	17,136
2	Institutions	6,372	1,075	2,890	294	2	1,291	538	438	436	-	-	-	-	28	6	0.1	-	-	6,838
3	Corporates	22,932	11,429	3,787	753	4,302	308	111	4,719	1,578	1,321	1,224	1,657	164	2,688	2,092	81	-	-	32,242
3a	thereof: specialised lending	16,930	6,741	3,495	408	4,295	279	79	4,486	1,346	1,321	1,224	1,622	80	2,344	1,992	-	-	-	25,462
3b	thereof: SMEs	2,130	2,019	89	16	7	-	-	122	121	-	-	-	-	-	-	-	-	-	2,252
4	Retail	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	Equity	0.02	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.02
5a	Other non credit-obligation assets	18	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17.83
6	**Total IRB approach**	**45,402**	**18,473**	**8,394**	**5,843**	**4,304**	**2,768**	**2,134**	**5,654**	**2,019**	**1,596**	**1,267**	**1,714**	**213**	**2,716**	**2,099**	**388**	**0**	**146**	**56,234**
23	**Total standardised approach**	**1,071**	**191**	**319**	**463**	**3**	**95**	**0**	**0**	**0**	**0**	**0**	**57**	**0**	**144**	**83**	**57**	**0**	**965**	**2,294**
24	**Total**	**46,474**	**18,665**	**8,713**	**6,306**	**4,307**	**2,863**	**2,134**	**5,654**	**2,019**	**1,596**	**1,267**	**1,771**	**213**	**2,860**	**2,182**	**444**	**0**	**1,112**	**58,528**

1) The regional allocation depends on the country of residence of the immediate borrower, counterparty or issuer and corresponds to the "Nomenclature of countries" of the German Central Bank.
2) Net value of the exposure: Gross carrying value after deduction of credit losses allowances on financial assets and provisions in the lending business as well as write-offs, but before considering any credit risk mitigation (CRM) techniques and before credit conversion factors (CCF).
3) Includes supranational organisations, which, according to EBA/GL/2016/11, are not to be assigned to the country where the Institute has its headquarters, but under "Other (geographical) areas".

Table 24: Exposures by industry (EU CRB-D)

All figures in € million

	Significant industries according to NACE Code [2]	Net value of exposures [1]																				
		Agriculture, forestry and fishing	Mining and quarrying	Manufacturing	Electricity, gas, steam and air conditioning supply	Water supply	Construction	Wholesale and retail trade	Transport 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 defence, compulsory social security	Education	Human health services and social work activities	Arts, entertainment and recreation	Other services	Activities of households as employers	Total
		a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u
1	Central governments and central banks	-	-	-	-	-	-	-	-	-	-	1,931	81	-	-	14,540	-	585	-	-	-	17,136
2	Institutions	-	-	-	-	190	-	-	10	5	-	3,170	132	-	-	3,128	80	123	-	-	-	6,838
3	Corporates	-	-	0.2	90	4	706	6	151	227	33	1,454	28,615	116	184	618	0.4	8	1	0.3	27	32,242
3a	thereof: specialised lending	-	-	-	-	-	393	1	-	40	-	742	24,283	1	1	-	-	-	-	-	-	25,462
3b	thereof: SMEs	-	-	-	-	-	76	-	-	5	-	199	1,947	12	3	0	-	6	-	-	3	2,252
4	Retail	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	Equity	-	-	-	-	-	-	-	-	-	-	0.01	0.01	-	-	-	-	-	-	-	-	0.02
5a	Other non credit-obligation assets	-	-	-	-	-	-	-	-	-	-	18	-	-	-	-	-	-	-	-	-	18
6	**Total IRB approach**	**0**	**0**	**0.2**	**90**	**194**	**706**	**6**	**161**	**232**	**33**	**6,573**	**28,828**	**116**	**184**	**18,285**	**80**	**716**	**1**	**0.3**	**27**	**56,234**
23	**Total standardised approach**	**0**	**0**	**57**	**4**	**0**	**21**	**0**	**57**	**0**	**0**	**1,030**	**340**	**37**	**1**	**607**	**0**	**0**	**133**	**0**	**7**	**2,294**
24	**Total**	**0**	**0**	**57**	**94**	**194**	**728**	**6**	**218**	**232**	**33**	**7,603**	**29,168**	**152**	**185**	**18,892**	**80**	**716**	**134**	**0.3**	**33**	**58,528**

1) Net value of the exposure: Gross carrying value after deduction of credit losses allowances on financial assets and provisions in the lending business as well as write-offs, but before considering any credit risk mitigation (CRM) techniques and before credit conversion factors (CCF).

2) NACE Regulation; Statistical classification of economic activities in the European Community. The allocation depends on the basis of the principal activity of the immediate counterparty.

Table 25: Exposures by residual maturity (EU CRB-E)

All figures in € million

	Residual maturity	Net value of exposures [1)					
		On demand	≤ 1 year	> 1 year to ≤ 5 years	> 5 years	No stated maturity	Total
		a	b	c	d	e	f
1	Central governments and central banks	0.03	2,304	2,770	12,063	-	17,136
2	Institutions	-	992	1,132	4,714	-	6,838
3	Corporates	13	3,615	20,024	8,589	-	32,242
3a	thereof: specialised lending	13	3,336	17,447	4,666	-	25,462
3b	thereof: SMEs	0.2	132	795	1,324	-	2,252
4	Retail	-	-	-	-	-	-
5	Equity	-	-	-	-	0.02	0.02
5a	Other non credit-obligation assets	-	-	-	-	18	18
6	**Total IRB approach**	**13**	**6,911**	**23,927**	**25,365**	**18**	**56,234**
23	**Total standardised approach**	**0.2**	**159**	**803**	**1,246**	**86**	**2,294**
24	**Total**	**13**	**7,070**	**24,730**	**26,611**	**104**	**58,528**

1) Net value of the exposure: Gross carrying value after deduction of credit losses allowances on financial assets and provisions in the lending business as well as write-offs, but before considering any credit risk mitigation (CRM) techniques and before credit conversion factors (CCF).

The increase of € 672 million in total of risk-weighted receivables (excl. counterparty default risks) is attributable in particular to the volume of new business carried out in the financial year 2018 (incl. prolongations with maturities of more than one year) particularly in real estate finance (REF). This increase is mainly attributable to new business in the USA, Germany and France. The main opposite effects were repayments of due loans and redemptions, including the further reduction in the non-strategic portfolio in line with overall strategy, as well as other changes in the loss given default (LGD) for determining the risk weightings.

The regional focus of the exposures of the pbb Group was Western Europe (unchanged as of the reporting date). With approx. € 18.7 billion, Germany continues to account for the main percentage of exposures (32 %). The other countries of the European Monetary Union (excl. Germany) account for € 27.8 billion (48 %), and other EU countries account for € 5.7 billion (10 %). In the USA, the net value of the exposures increased to approx. € 2.2 billion compared with the previous year (+4 %). The considerable increase of approx. € 1.1 billion is attributable to the new business in commercial Real Estate Financing.

As was the case in the previous year, the main focus of the sectors using the NACE codes (based on the main business activity of the counterparty) continues to comprise the sectors “Real estate and renting” with a volume of € 29.2 billion (50 %), “Public administration, defence, compulsory social security” with € 18.9 billion (32 %) and “Rendering of financial and insurance services” with € 7.6 billion (13 %). The other economic sectors in accordance with the NACE code together account for approximately 5 %; when considered individually, they generally account for max. 1 % of the exposures.

Credit quality

The following tables in accordance with article 442 letters g and h CRR in conjunction with EU CR1-A, EU CR1-B, EU CR1-C, EU CR1-D, EU CR1-E and CRB-A of the EBA/GL/2016/11 contain information regarding the credit quality of the on-balance-sheet and off-balance-sheet exposures. They also show the defaulted and non-defaulted exposures, the non-performing and forborne exposures, the past-due on-balance-sheet exposures as well as credit risk adjustments and write-downs in the course of the reporting period. These tables also show a break-down according to exposure categories, based on major geographical regions or economic sectors (NACE code), past-due ranges or the type of the exposure. For the table EU CR1-A, the pbb Group does not disclose the individual CRSA exposure categories due to considerations of materiality, and summarises them in a line "Total amount in the standard approach".

Table 26: Credit quality of exposures by exposure class and instrument (EU CR1-A)

All figures in € million

	Exposure classes and instruments	Gross carrying values of		Specific credit risk adjustment	General credit risk adjustment	Accumulated write-offs in the year 2018	Credit risk adjustment charges in the year 2018 [1]	Net values [2]
		Defaulted exposures	Non-defaulted exposures					(a + b - c - d)
		a	b	c	d	e	f	g
1	Central governments and central banks	-	17,141	5	-	-	-	17,136
2	Institutions	-	6,840	2	-	-	-	6,838
3	Corporates	218	32,112	88	-	0.7	14	32,242
4	thereof: specialised lending	206	25,308	52	-	0.3	14	25,462
5	thereof: SMEs	8	2,245	2	-	0.4	-	2,252
6	Retail	-	-	-	-	-	-	-
14a	Other non credit-obligation assets	-	18	-	-	-	-	18
15	**Total IRB approach**	**218**	**56,111**	**95**	**0**	**0.7**	**14**	**56,234**
35	**Total standardised approach**	**3**	**2,292**	**1**	**0**	**0**	**0**	**2,294**
36	**Total**	**221**	**58,403**	**95**	**0**	**0.7**	**14**	**58,528**
37	thereof: loans	220	42,981	89	-	0.7	14	43,111
38	thereof: debt securities	-	9,863	6	-	-	-	9,857
39	thereof: off-balance-sheet exposures	0.4	4,806	0.04	-	-	-	4,806

1) Additions less reversals of credit losses allowances on financial assets and provisions in the lending business and less income from recoveries from written-off financial assets.
2) Net value of the exposure: Gross carrying value after deduction of credit losses allowances on financial assets and provisions in the lending business as well as write-offs, but before considering any credit risk mitigation (CRM) techniques and before credit conversion factors (CCF).

Table 27: Credit quality of exposures by industry (EU CR1-B)

All figures in € million

	Significant industries [1]	Gross carrying values of		Specific credit risk adjustment	General credit risk adjustment	Accumulated write-offs in the year 2018	Credit risk adjustment charges in the year 2018 [2]	Net values [3]
		Defaulted exposures	Non-defaulted exposures					(a + b - c - d)
		a	b	c	d	e	f	g
1	Agriculture, forestry and fishing	-	-	-	-	-	-	-
2	Mining and quarrying	-	-	-	-	-	-	-
3	Manufacturing	-	57	-	-	-	-	57
4	Electricity, gas, steam and air conditioning supply	-	94	-	-	-	-	94
5	Water supply	-	194	-	-	-	-	194
6	Construction	0.3	729	1	-	-	-	728
7	Wholesale and retail trade	4	5	2	-	0.4	1	6

All figures in € million

	Significant industries [1]	Gross carrying values of Defaulted exposures	Gross carrying values of Non-defaulted exposures	Specific credit risk adjustment	General credit risk adjustment	Accumulated write-offs in the year 2018	Credit risk adjustment charges in the year 2018 [2]	Net values [3] (a + b - c - d)
		a	b	c	d	e	f	g
8	Transport and storage	-	218	0.1	-	-	-	218
9	Accommodation and food service activities	-	232	0.02	-	-	-	232
10	Information and communication	-	33	-	-	-	-	33
10a	Financial and insurance activities	-	7,587	2	-	-	-	7,586
11	Real estate activities	214	29,025	52	-	0.3	13	29,186
12	Professional, scientific and technical activities	-	152	0.03	-	-	-	152
13	Administrative and support service activities	1	185	1	-	-	-	185
14	Public administration and defence, compulsory social security	-	18,928	36	-	-	-	18,892
15	Education	-	80	-	-	-	-	80
16	Human health services and social work activities	-	717	0.5	-	-	-	716
17	Arts, entertainment and recreation	-	134	0.02	-	-	-	134
18	Other services	-	0.4	-	-	-	-	0.4
18a	Activities of households as employers	2	32	0.3	-	-	-	33
19	**Total**	**221**	**58,403**	**95**	**0**	**0.7**	**14**	**58,528**

1) According to NACE Regulation; Statistical classification of economic activities in the European Community. The allocation depends on the basis of the principal activity of the immediate counterparty.
2) Additions less reversals of credit losses allowances on financial assets and provisions in the lending business and less income from recoveries from written-off financial assets.
3) Net value of the exposure: Gross carrying value after deduction of credit losses allowances on financial assets and provisions in the lending business as well as write-offs, but before considering any credit risk mitigation (CRM) techniques and before credit conversion factors (CCF).

Table 28: Credit quality of exposures by geographical areas (EU CR1-C)

All figures in € million

	Significant geographical areas [1]	Gross carrying values of Defaulted exposures	Gross carrying values of Non-defaulted exposures	Specific credit risk adjustment	General credit risk adjustment	Accumulated write-offs in the year 2018	Credit risk adjustment charges in the year 2018 [2]	Net values [3] (a + b - c - d)
		a	b	c	d	e	f	g
1	Euro area countries	44	46,500	71	-	0.7	1	46,474
2	thereof: Germany	30	18,650	16	-	0.4	1	18,665
3	thereof: France	-	8,715	3	-	-	-	8,713
4	thereof: Austria	-	6,307	0.1	-	-	-	6,306
5	thereof: Luxembourg	-	4,311	4	-	-	-	4,307
6	thereof: Spain	0.4	2,864	1	-	-	-	2,863
7	thereof: Italy	14	2,132	11	-	0.3	-	2,134
8	Other EU countries	20	5,638	5	-	-	13	5,654
9	thereof: United Kingdom	-	2,019	0.2	-	-	13	2,019
10	thereof: Poland	-	1,599	3	-	-	-	1,596
11	thereof: Sweden	-	1,267	0.1	-	-	-	1,267
12	Rest of Europe	156	1,634	18	-	-	-	1,771
13	Africa	-	213	0.5	-	-	-	213
14	America	-	2,861	1	-	-	-	2,860
15	thereof: United States of America	-	2,184	1	-	-	-	2,182
16	Asia	-	444	-	-	-	-	444
17	Oceania	-	-	-	-	-	-	-
18	Other geographical areas [4]	-	1,112	-	-	-	-	1,112
19	**Total**	**221**	**58,403**	**95**	**0**	**0.7**	**14**	**58,528**

1) The regional allocation depends on the country of residence of the immediate borrower, counterparty or issuer and corresponds to the "Nomenclature of countries" of the German Central Bank.
2) Additions less reversals of credit losses allowances on financial assets and provisions in the lending business and less income from recoveries from written-off financial assets.
3) Net value of the exposure: Gross carrying value after deduction of credit losses allowances on financial assets and provisions in the lending business as well as write-offs, but before considering any credit risk mitigation (CRM) techniques and before credit conversion factors (CCF).
4) Includes supranational organisations, which, according to EBA/GL/2016/11, are not to be assigned to the country where the Institute has its headquarters, but under "Other geographical areas".

Table 29: Maturity structure of past-due exposures (EU CR1-D)

All figures in € million

	Past-due bands	Gross carrying values [1]					
		≤ 30 days	> 30 days to ≤ 60 days	> 60 days to ≤ 90 days	> 90 days to ≤ 180 days	> 180 days to ≤ 1 year	> 1 year
		a	b	c	d	e	f
1	Loans	19	0.3	0.01	1	0.04	146
2	Debt securities	-	-	-	-	-	-
3	**Total**	**19**	**0.3**	**0.01**	**1**	**0.04**	**146**

1) Gross carrying value before deduction of credit losses allowances on financial assets and provisions in the lending business, but after write-offs.

Table 30: Non-performing and forborne exposures (EU CR1-E)

All figures in € million

		Gross carrying values [1] of performing and non-performing exposures							Accumulated impairment and provisions and negative fair value adjustments due to credit risk				Collaterals and financial guarantees received [3]	
			thereof performing but past due > 30 days and ≤ 90 days	thereof performing forborne	thereof non-performing [2]				On performing exposures		On non-performing exposures		On non-performing exposures	On forborne exposures
						thereof defaulted	thereof impaired	thereof forborne		thereof forborne		thereof forborne		
		a	b	c	d	e	f	g	h	i	j	k	l	m
1	Debt securities	9,863	-	-	-	-	-	-	6	-	-	-	-	-
2	Loans and advances	43,201	1	-	361	361	316	184	51	-	70	42	291	143
3	Off-balance-sheet exposures	4,806	-	-	0.4	0.4	-	-	7	-	0.1	-	0.4	-

1) Gross carrying value before deduction of credit losses allowances on financial assets and provisions in the lending business, but after write-offs.
2) Unlike the tables EU CR1-A, B und C including the defaulted single loan of the underlying loan portfolio of the synthetic securitisation transaction Estate UK-3.
3) The value of the collateral/guarantees provided is limited to the carrying value of the collateralised/guaranteed exposures.

Defaulted and non-defaulted exposures

The non-defaulted exposures amounted to € 58.4 billion as of the reporting date (99.6 %) on the basis of gross carrying amount (31 December 2017: € 57.8 million or 99.8 %).

The gross value of the defaulted exposures amounted to a total of € 221 million as of 31 December 2018 (31 December 2017: € 117 million); of this figure, € 218 million is attributable to the IRB approach and € 3 million is attributable to the standard approach. An impairment of € 70 million was created in relation to the defaulted exposures.

An exposure in the IRB approach and in the standard approach is considered to be "defaulted" if there is a default as defined in article 178 CRR or if another contractual or regulatory trigger is applicable. The pbb Group assumes a default if for instance a borrower is more than 90 days past due with significant arrears/overdrawn facilities or if it is not likely that the borrower will fully meet his payment obligations. The exposures of a borrower which satisfy one or more default criteria are given a PD category to which a probability of default (PD) of 100 % is allocated. The default definition used under IFRS 9 is the same as that used for regulatory purposes.

Non-defaulted exposures are receivables which, in accordance with article 178 CRR, are not considered to be defaulted; i.e. for which none of the default events specified at that point has occurred.

Non-performing exposure

All exposures for which a default is considered to exist in accordance with article 178 CRR are also considered to be "non-performing" by the pbb Group. Accordingly, the defaulted receivables of € 221 million specified above are also considered to be "non-performing" exposures.

The Implementing Regulation (EU) 2015/227 considers an exposure to be "non-performing" if one of the following criteria is satisfied: It is a major exposure which is more than 90 days past due, or it is an exposure for which it is unlikely that the obligor will settle his liabilities in full without using collateral, irrespective of whether payments are already past due and irrespective of the number of days of any delay in payment.

An exposure is classified as "non-performing" irrespective of whether the exposure is classified as "defaulted" for regulatory purposes in accordance with article 178 CRR or is classified as impaired for accounting purposes in accordance with the relevant IFRS accounting regulations.

For the pbb Group, the NPE (non-performing exposure) ratio amounted to 0.6 % as of the reporting date (31 December 2017: 0.4 %); the non-performing loan (NPL) ratio, which recognises only non-performing receivables (loans and exposures), but does not recognise any bonds and off-balance-sheet exposures (such as loan commitments) amounted to 0.8 % (31 December 2017: 0.6 %).

Impaired exposures

An exposure is considered to be "impaired" if an individual stage 3 impairment has been created in accordance with the International Financial Reporting Standards (IFRS) - the accounting regulations applied by the pbb Group. The volume of stage 3 impairments amounted to € 56 million as of 31 December 2018 (1 January 2018: € 39 million according to IFRS 9) and the gross carrying amount of the impaired exposures was € 316 million (31 December 2017: € 208 million). The criteria for stage 3 impairments according to IFRS 9 do not differ significantly from the objective criteria according to IAS 39 which resulted in the creation of an individual allowance. The rules and methods regarding impairment in accordance with IFRS 9 are explained in greater detail in the following section "Credit risk adjustments".

All exposures for which a stage 3 impairment has been identified in accordance with the IFRS accounting regulations are also considered by the pbb Group to be "non-performing" in accordance with the Implementing Regulation (EU) 2015/227 specified above.

Past-due exposures

An exposure is classified as "past due" (for accounting and also for regulatory purposes), for past-due receivables if the obligor has failed to meet his contractually agreed payments of interest or principal on time. The gross carrying amount of the partially or entirely past-due exposures was € 166 million as of the reporting date (31 December 2017: € 162 million).

Forborne (restructured) exposures

Receivables at risk of default are restructured / rescheduled by the pbb Group if the financial position of the borrower has deteriorated but if there is still a positive going-concern forecast for the respective loan exposure. This is achieved by modifying the terms and conditions or ancillary agreements by means of a unilateral or mutual declaration(s) of intent. Restructuring agreements should maximise the opportunities for the pbb Group to realise its outstanding receivables or at least minimise the risk of default of the loan exposure. These generally include standstill agreements, lifetime extensions, changed interest payment/repayment terms, interest/repayment reductions or the suspension of contractual agreements (for instance financial covenants) so that the borrower is again able to meet his contractual payment obligations. The credit risk associated with restructured loans is the responsibility of the credit risk management units of the Group.

The gross carrying amount of the rescheduled (loans) and off-blance-sheet (loan commitments) receivables was stated as € 184 million as of the reporting date (31 December 2017: € 221 million); these mostly consist of standstill agreements and the suspension of contractual agreements. An impairment of € 42 million was created in relation to the rescheduled exposures. The rescheduled receivables accounted for 0.3 % of the total gross carrying amounts (31 December 2017: 0.4 %).

Credit risk adjustments

Impairment

Since 1 January 2018, the pbb Group has been applying the standard IFRS 9 (Financial Instruments) in the version which has been adopted by the European Union and which has replaced the previously valid regulations of IAS 39 regarding the recognition of financial instruments. Compared with IAS 39, there has also been a fundamental change in the regulations regarding impairment in IFRS 9. Under IFRS 9, these are relevant for financial assets measured "at amortised cost" or "fair value through other comprehensive income" as well as for off-balance-sheet obligations, such as loan commitments and financial guarantees.

The rules do not have to be applied for equity instruments. An impairment is implied for financial assets measured at fair value through profit or loss at subsequent measurement. For derivatives measured at fair value through profit or loss the maximum risk of default is reflected in the nominal value, whereas for non-derivative financial instruments measured at fair value through profit or loss it is reflected in the book value.

While the IAS 39 impairment model required the recognition of loss allowances if a triggering event occurred, IFRS 9 introduces a model according to which provisions for credit losses may be created upon initial recognition of the financial asset (or on the date when the Group becomes a contracting party of the loan commitment or financial guarantee) on the basis of credit losses expected at that time. According to IFRS 9 this is an unbiased and probability-weighted amount that is determined by evaluation of a range of possible outcomes and scenarios. IFRS 9 clarifies that this is a probability weighted average and not the most probable amount.

Impairments and provisions in the lending business

Upon initial recognition, the impairments in lending business are based on expected credit losses within the following twelve months (so-called stage 1). The 12-months expected credit loss is part of the lifetime expected credit losses and corresponds to the expected credit losses from defaults that may occur for the financial instrument within twelve months after balance sheet date. In case of a significant increase in the financial asset's credit risk within the context of subsequent measurement (stage 2) or in case of a credit impairment (stage 3), the impairment has to reflect the lifetime expected credit losses. pbb Group does not apply the simplified approach for loans from lease agreements but also differentiates these into the impairment stage 1 and 2.

The same definition of default is used for IFRS 9 as for regulatory purposes. For this a default is defined if

- it is unlikely that the borrower can fully fulfil its payment obligations, or
- the borrower has material past dues of more than 90 days.

pbb Group determines the expected credit losses on an individual basis.

pbb Group developed check criteria for the allocation to the three impairment stages of IFRS 9 which is very closely linked to the methods and instruments for credit and risk monitoring. In addition, the practice of credit risk management leads to an intensification of supervision with increasing impairment stage. Each financial asset which does not have to be measured at fair value through profit or loss has to be allocated to stage 1 at initial recognition if it is not credit-impaired. A financial asset moves to stage 2 if the credit risk has increased significantly but is not credit-impaired. This is the case if

- as rebuttable presumption there is a past due of more than 30 days; or
- the financial asset is non-investment grade and the multi-year probability of default at balance sheet date exceeds the multi-year probability of default at initial recognition of the financial asset by a factor of at least 2.5.

The criterion of 30 days past due can be rebutted for example in the case of so called technical past dues. This can be the case if the borrower transfers the amount owed to a wrong account and corrects this at short notice.

Counterparties of loans and securities which credit has deteriorated compared with the date of initial recognition but which still have an investment grade rating and which do not have a payment past due of more than 30 days are assessed as very low-risk in the allocation to the impairment stages.

If the credit risk of a financial assets with a significantly increased credit risk has not significantly increased any further at balance sheet date compared to the date of initial recognition the financial asset will move back to stage 1.

The criteria for a move from stage 2 to stage 3 do not differ significantly from the objective evidence according to IAS 39 leading to specific loan loss provisions. A financial asset will have to be moved to stage 3 if it is credit-impaired. A deal will be credit-impaired if one or more events that have detrimental impact on the estimated future cash flows of that financial asset have occurred. Evidence that a financial asset is credit-impaired include observable data about the following events:

- significant financial difficulty of the issuer or the borrower
- a breach of contract, such as a default or past due event
- pbb Group, for economic reasons or contractual reasons relating to the borrower's financial difficulty, having granted to the borrower concessions that pbb Group would not otherwise consider
- it is becoming probable that the borrower will enter bankruptcy or other financial reorganization
- the disappearance of an active market for that financial asset because of financial difficulties, or
- the purchase or origination of a financial asset at a deep discount that reflects the incurred credit losses.

For purchased or originated credit-impaired financial assets (POCI) only the cumulative changes in lifetime expected credit losses since initial recognition have to be recognised as a loss allowance at balance sheet date. For such financial assets expected credit losses shall be discounted using the credit-adjusted effective interest rate determined at initial recognition. The credit-adjusted effective interest rate has to be applied to the amortised cost from initial recognition. The recognition of interest income will also have to be determined this way for the entire maturity if the borrower recovers. The interest income is attributed to the POCI-asset, received repayments have to be recognised as repayments. pbb Group did not purchase or originate credit-impaired financial assets as of 31 December 2018 and as of 1 January 2018.

Eexpected credit loss

pbb Group principally uses a model-based approach for determining the amount of expected credit losses. Regulatory risk parameters (probability of default/PD, loss given default/LGD) and contract information, for example the contractually agreed cash flows, are used as a basis for determining the amount of credit losses of the stage 1 and stage 2 financial instruments. The exposure size results from the comparison of the contractually agreed cash flows and the expected cash flows. The risk parameters listed above are linked to the exposure size to determine the expected losses. In addition expectations about prepayments (so called prepayment rates), expected prolongations of loans (so called prolongation rates) and expected drawings of undrawn parts of a commitment (so called credit conversion factor/CCF) are considered in the expected cash flows. The risk parameter PD is determined for each borrower with the aid of customer specific rating methods. Several customer specific risk factor for example the debt ratio, return indicators and similar quantitative indicators are input factors of the rating methods. The risk parameter LGD is determined with the aid of specific LGD models in which especially expected recovery ratios from the disposal of collaterals or other parts of the asset, the transaction specific ratio of current collaterals and the current book value of the loan as well as the expected time till receipt of payments are material input factors. These PD rating methods and LGD models are also methods which pbb Group uses as a standard approach for risk assessment and risk controlling. The regulatory risk parameters are transformed adequately so that the requirements of IFRS 9 are fulfilled. These include the deduction of conservative adjustments which are used for regulatory purposes, the consideration of macro-economic factors for the purpose of the so called point in time transformation and the transition from the regulatory discount rate to the effective interest rate required by IFRS 9. Particularly the transformations ensure that the risk parameters are unbiased. Historic data about rating migration together with forecasts of macro-economic developments (for example the economic growth per country and – for real estate financings – the development of collateral market values differentiated by object types and regions) are used for the determination of multi-year probabilities of default. For this information according to the type of customer are used. pbb Group forecasts relevant indicators for example market value developments or the economic growth on the basis of internal analyses and externally available data. Possible non-linearity effects are considered in the determination of the expected credit loss. The interest income is calculated by applying the effective interest rate to the gross book value (book value before risk provision) of the financial asset.

pbb Group uses forecasts of the gross domestic product (GDP) of the International Monetary Fund (IMF) for the determination of point in time probabilities of default. Only the GDP for the year 2019 is used for deals of the impairment stage 1. The IMF forecasts until the year 2023 are used for deals of the impairment stage 2. A convergence to the long-term GDP average is modelled starting from the year 2024.

The expected credit losses of impairment stage 3 are determined on the basis of individual cash flows with several probability-weighted scenarios. The amount of risk provision equals the difference between the carrying amount of the asset and the present value of the expected future cash flows. The latter is calculated on the basis of the initial effective interest rate. The expected future cash flows take into account the marketability of collaterals for example charges on the land/mortgages. The interest income is calculated by applying the effective interest rate to the amortised cost of the financial asset.

Write-offs

A financial asset has to be written off by using the existing booked impairment if a recovery is not feasible based on adequate judgement. This is generally the case if in the process of a realization of the collateral a residual claim remains and if it is foreseeable that no further amounts are expected from the borrower (for example due to insolvency/lack of funds). pbb Group attempts to collect the remaining claim completely or at least partly by enforcement activities for written-off loans in justified exceptions.

Balance sheet disclosure

Impairments on financial assets of the measurement category amortised cost are disclosed in the statement of financial position under “credit loss allowances on financial assets at amortised cost” instead of a deduction of the book value of the asset. Im-

pairments on financial assets of the measurement category at fair value through other comprehensive income are shown in the equity component “accumulated other comprehensive income”.

The provisions for off-balance-sheet lending business, such as irrevocable loan commitments and financial guarantees, are shown on the liabilities side of the balance sheet, under “Provisions”.

Note 7 “Financial Instruments” in the notes to the annual report 2018 shows the reconciliation of impairments on financial assets according to IAS 39 and provisions according to IAS 37 as of 31 December 2017 with the impairments of financial assets as of 1 January 2018 according to IFRS 9. Under the former disclosure structure, the impairments in relation to loans and advances to other banks/customers were shown as a gross amount, whereas the impairments relating to the securities (financial assets) were deducted directly from the carrying amount.

In accordance with article 442 letter i CRR in conjunction with EU CR2-A and EU CR2-B of the EBA/GL/2016/11, the following tables contain information concerning the credit risk adjustments for the on-balance-sheet and off-balance-sheet exposures. They also show a reconciliation for the specific credit risk adjustments (general credit risk adjustments are not relevant for the pbb Group) as well as, additionally, a reconciliation of the defaulted exposures.

Table 31: Changes in the stock of credit risk adjustments (EU CR2-A)

All figures in € million

	Loan loss provision [1] (IFRS 9)	**Accumulated specific credit risk adjustment** [2) 3)]	**Accumulated general credit risk adjustment**
		a	b
1	**Opening balance 01.01.2018 (IFRS 9)**	**107**	**0**
1a	thereof: stage 1	13	-
1b	thereof: stage 2	53	-
1c	thereof: stage 3	39	-
1d	thereof: provisions in the lending business (off-balance sheet business)	2	-
2	Increases due to new business and acquisition	10	
3	Decreases due to repayments and disposals	-5	
4	Changes due to changed credit risk (net, additions less reversals)	10	-
5	Changes due to adjustments without derecognition (net, modification of contractual cash flows)	-	
6	Changes due to model or methodological changes or their calibration	-	
7	Decreases due to write-offs (consumption/utilisation of value adjustments)	-1	-
8	Transfers between credit risk adjustments	-	-
9	Impact of exchange rate differences	-	
10	Business combinations, including acquisitions and disposals of subsidiaries	-	-
11	Other adjustments (e.g. Unwinding)	-1	-
12	**Closing balance 31.12.2018 (IFRS 9)**	**120**	**0**
12a	thereof: stage 1	14	-
12b	thereof: stage 2	43	-
12c	thereof: stage 3	56	-
12d	thereof: provisions in the lending business (off-balance sheet business)	7	-
13	Recoveries on credit risk adjustments recorded directly to the statement of profit or loss	1	-
14	Specific credit risk adjustments directly recorded to the statement of profit or loss	-	-

1) The regulations regarding the creation of impairments under IFRS 9 have been changed compared with IAS 39, and new lines have accordingly been inserted in the table EU CR2-A. In this connection, the numbering of lines specified in accordance with EBA/GL/2016/11 has been changed - in order to achieve improved transparency.

2) Credit losses allowances on financial assets (both loans and advances and securities) measured at amortised cost or at fair value through other comprehensive income as well as provisions in the lending business for (off-balance) loan commitments and financial guarantees.

3) Including the impairment of € 24 million for the defaulted single loan of the underlying credit portfolio of the synthetic securitisation transaction Estate UK-3. On the other hand, the loan is not recognised in the tables EU CR1-A, B and C because, as a result of the synthetic protection provided by the securitisation transaction, it is not considered to be an exposure for regulatory purposes.

Table 32: Changes in the stock of defaulted and impaired exposures (EU CR2-B)

All figures in € million

	Defaulted loans and debt securities	Gross carrying value [1] defaulted exposures [2]
		a
1	**Opening balance 01.01.2018**	**117**
2	Loans and debt securities that have defaulted or impaired since the last reporting period	156
3	Returned to non-defaulted status	-
4	Amounts written off	-1
5	Other changes [3]	-51
6	**Closing balance 31.12.2018**	**221**

1) Gross carrying value before deduction of credit losses allowances on financial assets and provisions in the lending business, but after write-offs.

2) The defaulted single loan of the underlying loan portfolio of the synthetic securitisation transaction Estate UK-3 is not included because this is not considered as risk position for regulatory purposes due to the synthetic hedging by the securitisation transaction.

3) This includes in particular repayments/redemption payments.

In the financial year 2018, net payments of € 14 million (additions less reversals according to IFRS 9) were made to the impairments for financial assets (receivables and securities), measured at amortised cost or fair value, and to the provisions for off-balance-sheet credit business (such as irrevocable loan commitments) (2017: € 7 million net additions according to IAS 39). The write-downs or consumptions of impairments amounted to € 1 million in 2018 (2017: € 65 million). An incoming payment of € 1 million to be recognised through comprehensive income was recorded in relation to financial assets which had previously been written down (2017: € 1 million).

The risk provisioning of € 14 million is mainly attributable to net additions of stage 3 impairments totalling € 19 million, mainly due to impairments recognised in relation to real estate financing for shopping malls in the United Kingdom. These expenses were partially offset by net reversals of stage 2 impairments in the amount of € 9 million, which were attributable to expiring holdings or shorter remaining terms.

Total impairments recognised in relation to financial assets amounted to € 113 million as of 31 December 2018 (1 January 2018: € 105 million according to IFRS 9); of this figure, stage 3 impairments account for € 56 million (1 January 2018: € 39 million according to IFRS 9). Total provisions for off-balance-sheet lending business amounted to € 7 million (1 January 2018: € 2 million according to IFRS 9).

Total defaulted exposures (on the basis of gross carrying amounts) increased by € 104 million) as of 31 December 2018 compared with the end of the previous year, namely to € 221 million (31 December 2017: € 117 million). This increase is attributable to two exposures in commercial real estate finance (REF) in the United Kingdom (with a total of € 156 million), which were transferred to non-performing loans in 2018. This was opposed by successful work-out/restructurings or repayments/redemptions of other exposures. Impairments of € 70 million were created in relation to the defaulted exposures. The percentage of defaulted exposures as of the reporting date amounted to 0.4 % of the credit portfolio on the basis of gross carrying amounts.

Early warning system

The early warning system of the pbb Group has defined criteria and threshold values (triggers) for including loans in the watchlist and for being classified as workout loans (e.g. past due payments, failure to meet financial ratios – e.g. loan-to-value [LTV], interest service coverage [ISC]). The system constantly monitors whether a trigger has been set off. In the event of any problems being identified, the credit exposure is analysed and, where appropriate, promptly transferred to restructuring or workout loans. In this context an assessment is made to determine whether there is an objective indication of an impairment. Watchlist and non-performing loans (restructuring and workout loans) are defined as follows:

Watchlist Loans

Payments past due by more than 60 days or another defined early warning signal is triggered (for instance insolvency of a main tenant in the REF segment).

Restructuring Loans

A default has occurred (for example, due to payments past due by more than 90 days, or the borrower's insolvency), or another contractual or regulatory trigger is applicable. The focus with restructuring is on active implementation of a restructuring concept – with the objective of either returning the exposure to regular coverage, or realising collateral on the market, without enforcement measures. A SLLP test is always performed, and stage 3 impairments (in accordance with IFRS) or specific allowances (in accordance with the HGB) are recognised if necessary.

Workout Loans

There are no indications that the loan can be restructured. Stage 3 impairments (in accordance with IFRS) or specific allowances (in accordance with the HGB) were recognised if necessary.

CRM REF Workout is also responsible for carrying out an impairment test in line with the relevant accounting regulations (HGB and IFRS).

5.3 Credit risk mitigation techniques

In accordance with article 453 CRR in conjunction with the guidelines EBA/GL/2016/11, the information in this chapter shows the credit risk mitigation techniques employed in the pbb Group.

The strategic business units of the pbb Group are Commercial Real Estate Finance (REF) and also Public Investment Finance (PIF); the focus is on Pfandbrief-eligible business. Within the framework of credit risk mitigation, the pbb Group accepts the following collateral:

- Real estate (property charges)
- Warranties and guarantees.
- Financial collateral.

In this context, property charges (real estate) are particularly important for real estate financing operations. The pbb Group also accepts warranties and guarantees as well as financial collateral (mainly cash collateral and securities in certain cases) as collateral. The pbb Group uses financial securities as collateral within the framework of netting agreements in the context of derivative or security lending/repo transactions. The main counterparties are OECD credit institutions or Eurex Clearing. The main guarantors are financial institutions and public-sector customers. The guarantors and the credit derivative counterparties have a very good credit rating. The main guarantors are addressed in the pbb Group's risk reporting on a regular basis.

Non-cash collateral is taken into consideration with the effect of reducing credit risk for the purpose of estimating the loss given default (LGD). For the purpose of calculating the EAD (of the exposure values), financial collateral is taken into consideration with the effect of reducing credit risk. Warranties and guarantees are taken into consideration for mitigating credit risk by way of regular PD substitution. This ensures that the lower risk weighting of the guarantor is attributed to the secured portion of an exposure.

In real estate financing, the financing collateral generally comprises not only the property charges but also rental concessions and the assignment of insurance payments, which however are not recognised as mitigating credit risk in accordance with CRR.

In the pbb Group, the procedures for accepting collateral are governed in internal processing guidelines for every type of collateral. In order to enable legal enforceability, standard contracts are generally used; these are constantly monitored in view of changing legal environments. For this purpose, a group-wide process has been implemented to ensure that the enforceability of all CRR-relevant collateral is constantly subjected to legal monitoring. The calculation and fixing of the collateral values is documented transparently. Expert opinions used to estimate a liquidation value contain information regarding the marketability of the collateral.

In accordance with article 453 letter f and g CRR in conjunction with EU CR3 of the EBA/GL/2016/11, the following table shows the receivables secured by means of eligible collateral, separately for each exposure category of the approaches used by the pbb Group for determining the own funds requirements for the credit risk, the advanced IRB approach based on internal rating procedures of the bank and the standard approach.

Table 33: Credit risk mitigation techniques – Overview (EU CR3)

All figures in € million

	Exposure classes and instruments	Net value of exposures [1]				
		Exposures unsecured	Exposures secured [2]	Exposures secured by collateral [3]	Exposures secured by financial guarantees	Exposures secured by credit derivatives
		a	b	c	d	e
1	Total loans	14,050	29,061	25,641	2,325	-
1a	Total off-balance-sheet	909	3,898	3,710	183	-
2	Total debt securities	8,137	1,720	-	1,720	-
3	**Total exposures**	**23,096**	**34,678**	**29,351**	**4,227**	**0**
4	thereof: defaulted	0.3	188	184	-	-
5	Central governments and central banks	16,733	403	-	401	-
6	Institutions	5,605	1,233	20	1,191	-
7	Corporates	255	31,987	29,233	1,797	-
8	thereof: specialised lending	116	25,346	24,607	-	-
9	thereof: small and medium-sized enterprises (SME)	10	2,242	2,109	44	-
10	Retail	-	-	-	-	-
18	Equity	0.02	-	-	-	-
18a	Other non credit-obligation assets	18	-	-	-	-
19	**Total IRB approach**	**22,611**	**33,623**	**29,253**	**3,388**	**0**
20	Central governments or central banks	-	-	-	-	-
21	Regional governments or local authorities	57	-	-	-	-
22	Public sector entities	0.4	-	-	-	-
23	Multilateral development banks	912	53	-	53	-
24	International organisations	-	-	-	-	-
25	Institutions	-	-	-	-	-
26	Corporates	180	902	-	786	-
27	thereof: small and medium-sized enterprises (SME)	3	0.1	-	0.1	-
28	Retail	-	0.3	-	-	-
29	thereof: small and medium-sized enterprises (SME)	-	-	-	-	-
30	Secured by mortgages on immovable property	-	98	98	-	-
31	thereof: small and medium-sized enterprises (SME)	-	6	6	-	-
32	Exposures in default	-	3	-	-	-
33	Exposures associated with particularly high risk	-	-	-	-	-
34	Covered bonds	-	-	-	-	-
35	Exposures to institutions and corporates with short-term credit assessment	-	-	-	-	-
36	Exposures in the form of units or shares in collective investment undertakings (CIUs)	3	-	-	-	-
37	Equity exposures	-	-	-	-	-
38	Other itmes	86	-	-	-	-
39	**Total standardised approach**	**1,239**	**1,055**	**98**	**839**	**0**
40	**Total**	**23,850**	**34,678**	**29,351**	**4,227**	**0**

1) Net value of the exposure: Gross carrying value after deduction of credit losses allowances on financial assets and provisions in the lending business as well as write-offs, but before considering any credit risk mitigation (CRM) techniques and before credit conversion factors (CCF).

2) Contains only risk positions secured by eligible credit collateral. This means collaterals which pursuant to Part Three, Title II, Chapter 4 of the CRR can be used to reduce the capital requirement under Pillar 1. In addition to physical collaterals / guarantees, assignments of rental claims or of insurance benefits are generally used. But these are not taken into account in order to mitigate the credit risk pursuant to CRR and are therefore not shown in the table.

3) Risk positions secured by eligible credit collateral on real estate property/mortgages.

Valuation and administration of collateral

Depending on the type of collateral, the pbb Group uses different valuation, control and verification methods. These procedures are a major component of the above-mentioned ad-hoc and annual loan exposure review or the procedure for approving new loans.

For the valuation of the various types of collateral, the pbb Group has established processing principles. The recoverability of collateral which is provided is reviewed within the framework of the credit approval process or the regular annual review of borrowers or in the event of material changes. Collateral which is subject to major fluctuations in value is monitored more frequently (in accordance with the contractual conditions); they are monitored at least on a quarterly basis.

The measurement of property charges is based on a written valuation appraisal and is documented in writing. Fluctuations in value are monitored constantly by the pbb Group on the basis of defined parameters (e.g. loan to value).

Real estate

Each property used as collateral is subject to a written market value opinion prepared by a property valuer or an independent expert. For real estate collateral intended for the Pfandbrief cover pool (for refinancing using Pfandbrief issues), an additional loan value report is prepared. Third-party opinions are subject to a plausibility check carried out by an internal real estate expert.

The regular monitoring and review of real estate collateral is based on the market value of the property:

- The aim of monitoring is to identify types of properties and/or markets (or combinations of types of properties and markets) which might be affected by a potential loss in value on the basis of documentary and general information. For this purpose, a rough analysis is sufficient without taking into consideration individual properties.
- Reviews are carried out in order to further check properties identified within the framework of the monitoring process. Irrespective of the result of monitoring, real estate collateral with a loan amount of more than € 3 million is reviewed at least every three years.
- Revaluations apply to properties which have seen a market price decline of over 10 % as well as for properties which, in accordance with article 208 (3) letter b CRR, are subject to a mandatory revaluation at least every three years. In these cases, the current market value and, where appropriate, the current loan-to-value ratio are determined by an independent property valuer.

For more information concerning quality aspects in connection with the valuation of real estate in the pbb Group, please refer to the previous section “Risk hedging and risk mitigation” of chapter 5.1 “Management of credit risk (including counterparty credit risk)”.

Warranties/guarantees

The pbb Group accepts warranties and guarantees as collateral for the purpose of risk management as well as for risk mitigation in accordance with article 213 to 215 CRR. In order to be recognised for credit risk mitigation purposes, the warranties/guarantees as well as the guarantors must comply with the regulatory requirements. Warranties and guarantees are recognised for credit risk mitigation purposes by way of regular PD substitution.

Financial collateral

The pbb Group uses financial collateral (mainly cash collateral and securities in certain cases) within the framework of netting agreements in the context of derivative or security lending/repo transactions. For further information regarding the use of netting within the framework of credit risk mitigation, the netting regulations and financial collateral used by the pbb Group, please refer to the following section “Eligible netting agreements” and also the chapter 5.6 “Counterparty credit risk”.

Eligible netting agreements

Within the framework of credit risk mitigation, the pbb Group uses the regulatory regulations of off-balance-sheet netting for derivative financial instruments as well as for security lending/repo transactions if the contractual agreements meet the requirements for being recognised for risk mitigation purposes in accordance with article 296 CRR or article 206 CRR. As of 31 December 2018, the pbb Group had utilised the possibility of derivative netting in the amount of € 1.7 billion (31 December 2017: € 2.2 billion). As was the case in the previous year, the pbb Group had not utilised any netting possibilities within the framework of security lending/repo transactions as of 31 December 2018.

For balance sheet purposes, derivatives are not permitted to be netted as they are subject to different conditions (for instance different maturities or currency underlyings). The collateral agreements also cannot be netted with the derivatives on the balance sheet. Derivatives cleared via Eurex Clearing form an exception in this respect. Within the framework of the European Market Infrastructure Regulation (EMIR), there is a clearing obligation for standard Over-The-Counter (OTC) derivatives. Eurex Clearing is the central counterparty (CCP) used by pbb for the clearing of OTC derivatives. On-balance-sheet netting is applied in the cases of derivatives concluded with Eurex Clearing if the criteria for on-balance-sheet netting (IFRS) are satisfied. On-balance-sheet netting is carried out for each currency and comprises not only the carrying amounts of derivatives but also the margins which are calculated and paid or received by Eurex Clearing in this connection. As of 31 December 2018, there was a reduction totalling € 1.7 billion in the balance sheet total for these derivatives (31 December 2017: € 1.6 billion). For further information concerning on-balance-sheet netting, please refer to the notes of the annual report 2018, note 76 “Netting of financial instruments”.

For documentation of its derivative and security lending/repo transactions, the pbb Group uses the standard framework agreements (e.g. German Framework Agreement for Financial Futures (DRV), ISDA Master Agreement or Global Master Repurchase Agreement (GMRA)) incl. the respective collateral agreements (e.g. German Collateral Annex for the DRV or ISDA Credit Support Annex). The framework agreements which are used for derivatives and also for security lending/repo transactions contain a netting agreement according to which, e.g. in the event of insolvency, a netting arrangement of all transactions concluded under the terms of the framework agreement is used to establish a uniform receivable (in the event of the default of the contractual partner) pbb is only entitled to the balance of the positive and negative market values of the recognised individual transactions or is obliged to make a corresponding payment (so-called “close-out netting”). This reduces the credit risk in relation to the respective contractual partner. One of the criteria applicable for recognition for risk mitigation purposes is that a review has to be carried out regarding the validity and enforceability of the contractual netting agreement in the respective legal system. This is carried out on a regular basis and also on an ad-hoc basis, using legal appraisals which are obtained.

Financial collateral, mainly cash collateral and securities in certain cases, is received as collateral within the framework of these transactions. This is performed on the basis of standard collateral agreements (e.g. Collateral Appendix to the DRV). The collateral is provided by way of the transfer of full ownership; in the case of securities, collateral is also provided by way of pledging. pbb provides or receives cash collateral, usually in euros. If derivatives are cleared by a central counterparty, collateral is provided either by way of pledging securities or by way of transferring cash collateral. Whereas cash collateral is usually provided for bilateral repo transactions, collateral in the form of securities is generally exchanged for repo transactions cleared via a central counterparty. The collateral which is provided must meet the regulatory requirements if it is to be recognised for the purpose of credit risk mitigation purposes in accordance with CRR. The validity and enforceability of the collateral must also be assessed on the basis of legal appraisals.

Transactions are valued on a daily basis. Collateral agreements normally do not provide for an allowance threshold; there are only so-called minimum transfer amounts.

Risk concentrations which are taken on

Within the eligible collateral instruments which are used, there may be major risk concentrations in terms of the real estate property charges due to the natural correlation between such collateral and the general development in the real estate market of a particular country. The break-down of the loan portfolio according to regions and according to loan and property types is

shown in the risk and opportunity report of the annual report 2017. The pbb Group limits risk concentrations of this type by means of country limit management.

Maximum limits in certain rating ranges are allocated to each individual country or group of countries (depending on the results of the internal rating procedure); these limit the business activities of the pbb Group. All country ratings and country limits are reviewed by credit risk management at least once every year.

5.4 Standard approach

The following chapter in accordance with article 444 CRR in conjunction with the guidelines EBA/GL/2016/11 (incl. EU CRD) contains information concerning default exposures for which the pbb Group calculates the risk-weighted receivable amounts using the standard approach (CRSA). The net value of the on-balance-sheet and off-balance-sheet exposures amounted to a total of € 58,528 million as of 31 December 2018 (31 December 2017: € 57,856 million); of this figure, € 2,294 million (4 %) was attributable to the standard approach (31 December 2017: € 2,129 million or 4 %).

This is not applicable for exposures for which the value of the receivable is calculated in accordance with part 3, title II, chapter 6 “Counterparty credit risk” or part 3, title II, chapter 5 “Securitisation” of the CRR. These derivative transactions and securitisations are described in the chapters 5.6 “Counterparty credit risk” and 5.8 “Securitisations”.

Application of partial use in accordance with article 150 CRR

For determining the own funds requirements for credit risks, the pbb Group uses the advanced IRB approach based on internal rating methods (IRBA) as well as the standard approach (CRSA). Some clearly defined sub-portfolios are not covered by the IRB approach and are subject to the standard approach instead. These are as follows:

- Default exposures associated with German municipalities in accordance with article 150 letter d CRR
- Default exposures which belong to an area which is being phased out in accordance with article 150 letter c CRR in conjunction with section 14 SolvV (e.g. small-volume retail loans, credit standing assessed by means of retail scoring)
- Receivables due from central counterparties (Eurex Clearing)
- Other default exposures which are not subject to any rating procedure according to the IRB approach approved by the German banking regulator.

Impact of credit risk mitigation

The following tables in accordance with article 453 letters f and g CRR as well as article 444 letter e CRR in conjunction with EU CR4 and EU CR5 of the guidelines EBA/GL/2016/11 show the impact of eligible collateral for these exposures which are treated under the standard approach (CRSA). Table EU CR4 shows, for each CRSA exposure category, the receivables before and after the application of credit risk mitigation techniques and credit conversion factors CCF, and also contains information concerning the risk-weighted receivables (RWA) and the RWA density. Table EU CR5 shows the break-down of the CRSA receivables (before and after credit risk mitigation; each according to CCF) according to individual rating categories (risk weightings) for each CRSA exposure category.

Table 34: CRSA exposures and credit risk mitigation effects (EU CR4)

All figures in € million, unless otherwise stated

	Exposure classes Standardised approach	Exposures before CCF and CRM [1]		Exposures post CCF and CRM [2]		RWAs and RWA density	
		On-balance-sheet amount	Off-balance-sheet amount	On-balance-sheet amount	Off-balance-sheet amount	Risk-weighted assets (RWA)	RWA-density [3] in %
		a	b	c	d	e	f
1	Central governments or central banks	-	-	214	79	-	-
2	Regional governments or local authorities	57	-	669	-	-	-
3	Public sector entities	0.4	-	0.4	-	-	-
4	Multilateral development banks	965	-	912	-	-	-
5	International organisations	-	-	-	-	-	-
6	Institutions	-	-	-	-	-	-
7	Corporates	765	317	135	83	217	99%
8	Retail	0.3	-	0.3	-	0.2	75%
9	Secured by mortgages on immovable property	98	-	98	-	34	35%
10	Exposures in default	3	-	3	-	3	101%
11	Exposures associated with particularly high risk	-	-	-	-	-	-
12	Covered bonds	-	-	-	-	-	-
13	Exposures to institutions and corporates with short-term credit assessment	-	-	-	-	-	-
14	Exposures in the form of units or shares in collective investment undertakings (CIUs)	3	-	3	-	3	100%
15	Equity exposures	-	-	-	-	-	-
16	Other items	86	-	86	-	203	236%
17	**Total**	**1,977**	**317**	**2,121**	**162**	**461**	**20%**

1) Exposure value after deduction of allowances/impairments, provisions and write-offs, but before considering any credit risk mitigation (CRM) techniques and credit conversion factors (CCF).
2) Exposure value after deduction of allowances/impairments, provisions and write-offs as well as after considering any credit risk mitigation (CRM) techniques and credit conversion factors (CCF).
3) Risk-weighted assets (RWA) divided by the exposure after considering any credit risk mitigation (CRM) techniques and credit conversion factors (CCF).

Table 35a: CRSA exposures before credit risk mitigation (EU CR5)

All figures in € million, unless otherwise stated

	Exposure classes Standardised approach	Risk weight																	
		0%	2%	4%	10%	20%	35%	50%	70%	75%	100%	150%	250%	370%	1.250%	Others	Deducted	Total [1]	Of which unrated [2]
		a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r
1	Central governments or central banks	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	Regional governments or local authorities	57	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	57	57
3	Public sector entities	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4	0.4
4	Multilateral development banks	912	-	-	-	-	-	-	-	-	53	-	-	-	-	-	-	965	-
5	International organisations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	Institutions	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	Corporates	-	-	-	-	2	-	-	-	-	925	-	-	-	-	-	-	926	925
8	Retail	-	-	-	-	-	-	-	-	0.3	-	-	-	-	-	-	-	0.3	0.3
9	Secured by mortgages on immovable property	-	-	-	-	-	97	0.3	-	-	-	-	-	-	-	-	-	98	98
10	Exposures in default	-	-	-	-	-	-	-	-	-	3	0.1	-	-	-	-	-	3	3
11	Exposures associated with particularly high risk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	Covered bonds	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	Exposures to institutions and corporates with short-term credit assessment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	Exposures in the form of units or shares in collective investment undertakings (CIUs)	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	3	3
15	Equity exposures	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	Other items	5	-	-	-	-	-	-	-	-	-	-	81	-	-	-	-	86	-
17	**Total**	**975**	**0**	**0**	**0**	**2**	**97**	**0.3**	**0**	**0.3**	**983**	**0.1**	**81**	**0**	**0**	**0**	**0**	**2,139**	**1,086**

1) Exposure value after deduction of allowances/impairments, provisions and write-offs, but before considering any credit risk mitigation (CRM) techniques and after credit conversion factors (CCF).
2) A credit assessment by a nominated ECAI (External Credit Assessment Institution) is not available.

Table 35b: CRSA exposures after credit risk mitigation (EU CR5)

All figures in € million, unless otherwise stated

	Exposure classes Standardised approach	Risk weight																Total [1]	Of which unrated [2]
		0%	2%	4%	10%	20%	35%	50%	70%	75%	100%	150%	250%	370%	1.250%	Others	Deducted		
		a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r
1	Central governments or central banks	293	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	293	-
2	Regional governments or local authorities	669	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	669	206
3	Public sector entities	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4	0.4
4	Multilateral development banks	912	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	912	-
5	International organisations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	Institutions	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	Corporates	-	-	-	-	2	-	-	-	-	217	-	-	-	-	-	-	219	217
8	Retail	-	-	-	-	-	-	-	-	0.3	-	-	-	-	-	-	-	0.3	0.3
9	Secured by mortgages on immovable property	-	-	-	-	-	97	0.3	-	-	-	-	-	-	-	-	-	98	98
10	Exposures in default	-	-	-	-	-	-	-	-	-	3	0.1	-	-	-	-	-	3	3
11	Exposures associated with particularly high risk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	Covered bonds	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	Exposures to institutions and corporates with short-term credit assessment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	Exposures in the form of units or shares in collective investment undertakings (CIUs)	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	3	3
15	Equity exposures	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	Other items	5	-	-	-	-	-	-	-	-	-	-	81	-	-	-	-	86	-
17	**Total**	**1,879**	**0**	**0**	**0**	**2**	**97**	**0.3**	**0**	**0.3**	**222**	**0.1**	**81**	**0**	**0**	**0**	**0**	**2,283**	**527**

1) Exposure value after deduction of allowances/impairments, provisions and write-offs as well as after considering any credit risk mitigation (CRM) techniques and after credit conversion factors (CCF).
2) A credit assessment by a nominated ECAI (External Credit Assessment Institution) is not available.

The increase of € 144 million (in total) in the exposures after credit risk mitigation is mainly due to the netting of warranties/guarantees (substitution approach). The guarantors are mainly financial institutions and public-sector customers. The substitution effects resulting from warranties/guarantees mean that the secured portion of an IRBA receivable (e.g. of a company) is shown with the lower risk weighting of the guarantor (for instance a public body) in the standard approach or, that guaranteed CRSA receivables are assigned to the lower risk weighting of the guarantor. In the pbb Group, default exposures with regard to German municipalities are treated in the standard approach.

Use of rating agencies

External rating agencies

For assessing credit ratings using the standard approach, the pbb Group only uses external ratings provided by Standard & Poor's and Moody's. These rating agencies are nominated for all CRSA receivable categories.

Transfer of credit ratings

Issue ratings are not transferred to comparable receivables of equal or higher rank.

Assignment of external credit ratings

For assigning the external ratings of the rating agencies to the rating categories of the standard approach, the pbb Group uses the method provided by the European Banking Authority (EBA) in accordance with CRR.

5.5 IRB approach

In accordance with the articles 452 and 453 CRR in conjunction with the guidelines EBA/GL/2016/11 (incl. EU CRE), the following chapter contains information concerning default exposures for which the pbb Group calculates the risk-weighted receivables amounts using the advanced IRB approach based on internal rating methods (IRBA). The net value of the on-balance-sheet and off-balance-sheet exposures amounted to a total of € 58,528 million as of 31 December 2018 (31 December 2017: € 57,856 million); of this figure, € 56,234 million (96 %) was attributable to the IRB approach (31 December 2017: € 55,727 million or 96 %).

This is not applicable for exposures for which the value of the receivable is calculated in accordance with part 3, title II, chapter 6 “Counterparty credit risk” or part 3, title II, chapter 5 “Securitisation” of the CRR. These derivative transactions and securitisations are described in the chapters 5.6 “Counterparty credit risk” and 5.8 “Securitisations”. However, the following descriptions for the IRBA rating systems and the IRBA parameters which are used are applicable for the entire loan portfolio.

Approved IRB approaches

The pbb Group has received approval for applying the advanced IRB approach for the rating systems set out in the following. The rating systems have been accepted by the regulator.

With these IRBA rating systems, and as of 31 December 2017, the pbb Group achieves coverage of 96 % with regard to the exposure values (exposure at default, EAD) and 98 % regarding the risk-weighted assets (RWA).

There are currently no plans for expanding the IRBA coverage to new exposure categories in the form of an implementation plan. Otherwise, the pbb Group continues to use the standard approach only for segments which are to a large extent immaterial.

Figure 5: Rating systems in the IRB approach

No.	Parameter	Model	Exposure classes [1)]	Scope [2)]	Modelling approach [3)]
PD rating systems					
1	PD	Sovereigns	Central governments and central banks	The obligor is a state	Mainly shadow rating models
2	PD	Regional governments	Central governments and central banks Institutions	The obligor is a regional government	
3	PD	Public-sector entities	Central governments and central banks Institutions Corporates	The obligor is a public-sector entity, i.e. the company does not have any rights to raise its own taxes; however, the company is supported by a central, regional or local body which has these rights (in general central, regional or local public-sector authorities)	
4	PD	Banks	Central governments and central banks Institutions	The obligor is a commercial or investment bank, securities bank, a specialist state financing institution or a holding company of banks and other holding companies	
5	PD	Large corporates	Central governments and central banks Institutions	The obligor is a company	
6	PD	SPV developer	Corporates/ Specialised financing	The obligor is an SPV (special-purpose vehicle), whereby the financed property/property portfolio is the sole business purpose and asset of the SPV and the liability is limited to the SPV (non-recourse financing)	Based on statistical default models
7	PD	SPV investors	Corporates/ Specialised financing		
8	PD	Housing associations	Corporates	Real estate customers whose main business comprises management of their own housing stock and whose credit standing is essentially related to this aspect	
9	PD	Developers who prepare balance sheets	Corporates	Customers who prepare balance sheets, main business activity comprising the acquisition, planning, building, refurbishment projects with the aim of selling property	

No.	Para-meter	Model	Exposure classes [1)]	Scope [2)]	Modelling approach [3)]
10	PD	Investors who prepare balance sheets	Corporates	Customers who prepare balance sheets and whose main income is derived from real estate assets	Based on statistical default models
11	PD	Investors who do not prepare balance sheets	Corporates	Customers who do not prepare balance sheets, whose main income is derived from real estate assets	
12	PD	Civil-law partnerships (Gesellschaften bürgerlichen Rechts)	Corporates	The customer is a civil law partnership (Gesellschaft bürgerlichen Rechts; GbR) and certain criteria for the existing rating documents are satisfied	
13	PD	Small and medium-sized enterprises	Corporates	The customer prepares balance sheets and generates most of his income from the production or service sector, income not generated with property transactions or property management, balance sheet total € < 10 billion	
14	PD	Retail clients	Corporates	Customers who derive most of their income from non-property sources (e.g. employment, self-employment)	
LGD rating systems					
15	LGD	Sovereigns	Central governments and central banks	The obligor is a state	Structure models
16	LGD	Regional governments	Central governments and central banks Institutions	The obligor is a regional government	
17	LGD	Banks	Central governments and central banks Institutions Corporates	The obligor is a commercial or investment bank, securities bank, a specialist state financial institution or a holding company of banks and other holding companies	
18	LGD	Corporates	Central governments and central banks Institutions Corporates	The obligor is a company	
19	LGD	International real estate financing (defaulted and non-defaulted obligors)	Corporates incl. specialised lending	Secured property financing, with main emphasis outside Germany	Stochastic simulation methods
20	LGD	National real estate financing (defaulted and non-defaulted obligors)	Corporates incl. specialised lending	Secured property financing, with main emphasis within Germany	Structure model
21	LGD	Defaulted obligors for non-property financing	-	Obligor with non-property financing after default	Structure model
CCF rating system					
22	CCF	Credit conversion factor	Corporates incl. specialised lending	Mortgage loans	Historical mean

1) IRBA risk position classes relevant as of 31 December 2018, for line 21 there is no volume of receivables as of the reporting date.
2) Simplified presentation of the scopes of the rating methods. The precise scopes are defined in the relevant work instructions.
3) Method underlying the rating procedure.

Internal rating systems must meet the minimum requirements regarding the use of the IRB approach in accordance with the articles 143 and 144 CRR. In addition to requirements regarding methods and process organisation, the rating systems must have demonstrated their suitability for risk classification for existing business as well as new business. In accordance with article 142 CRR, rating or appraisal systems are considered to be the totality of all methods, procedures, controls, data collation and IT systems which are used for assessing credit risks, for allocating exposures to rating classes or categories as well as for quantifying default and loss assessments for a certain exposure type.

PD, LGD and CCF rating systems

In the pbb Group, the defined application scopes of the rating systems are used for allocating a debtor of an IRBA default exposure to the PD, LGD and CCF rating systems. Compliance with the scopes of application is assessed in the rating process or is assured by technical means in the system.

The PD, LGD and CCF rating systems of the pbb Group essentially follow a through-the-cycle philosophy, whereby the form of this philosophy can distinguish between the various models due to various factors, including the risk factors recognised in the

model. Current default rates, loss rates and CCF ratios may thus differ from the through-the-cycle forecasts depending on the current position in the economic cycle.

PD rating systems

The PD rating systems for commercial real estate financing are based on logistic regression models which have been developed and calibrated on the basis of historical internal obligor data (default information and qualitative as well as quantitative risk factors) as well as expert assessments. The calibration is based on data for a period of min. seven years. The risk factors are weighted and aggregated to form a score which is transformed to an individual probability of default. This is subsequently translated to a PD category with the aid of a uniform PD master scale. The PD rating systems for commercial real estate financing take account of traditional parameters such as the ratio between the amount of the loan and the market value of a property or the capital service coverage but also, in general, information concerning the property or property portfolio of the obligor (for instance quality of the location, vacancy rate, regional information) as well as information concerning the obligor himself (e.g. commercial/technical skills, information concerning the client/bank relationship).

Most of the other PD rating systems are based on a statistical method, the aim of which is to achieve maximum correlation with external rating assessments. These shadow rating model approaches are a wide-spread modelling method for low-default portfolios, i.e. portfolios with a low number of internal defaults, but for which external rating assessments are available, so that the long-standing historical default rates observed by rating agencies (min. since 1981) can be used for calibrating such shadow rating models. The models derived with the aid of this method can then also be transferred to obligors without an external rating for the purpose of determining the PD. In shadow rating models, the first step is to determine a score by means of weighting qualitative and quantitative risk factors; this is then translated into a rating based on letters. In a second stage, this rating based on letters is translated into a PD category with the aid of a mapping table and using historical default information of Standard & Poor's. The risk factors recognised in the models may differ depending on the application scope of the model, and generally cover information relating to assets, liquidity and income. For public-sector obligors, a further relevant consideration is the strength and probability of possible support, for instance provided by a state or a central, regional or local authority. The pbb Group currently uses three different tables for mapping ratings based on letters to PD categories, depending on particular segments.

In addition to quantitative and qualitative risk factors, the PD rating systems of the pbb Group also take account of varying degrees of warning signals. Warning signals generally identify rare events; for instance, a negative feature which has a negative impact on the rating but which, if it occurs, has a significant influence on the rating of the obligor. In addition, the PD rating systems of the pbb Group ensure that the PD of an obligor cannot be better than the PD of the country which is relevant for the obligor. This so-called sovereign ceiling takes account of state-related additional risks, for instance transfer risks, for creating a rating for a customer.

The pbb Group uses a uniform PD master scale of 27 PD categories for obligors who have not yet defaulted; this is identical for all rating systems and across all exposure classes, meaning that the rating classification is equivalent for all default exposures. Unique probabilities of default as PD estimates as well as upper and lower limits of probabilities of default are allocated to the 27 PD categories of the PD master scale.

LGD rating systems

The LGD rating systems of the pbb Group result in estimated loss percentages relating to the exposure at default (EAD).

The LGD rating system for international commercial real estate financing is based on a stochastic simulation method which, in addition to future macro-economic developments, also simulates future developments which are specific to the real estate market and which calculates the impact on the cash flows and the real estate market value of the specific financing arrangement. Historical defaults since 2008 have been taken into consideration for calibrating the model.

The LGD rating system for real estate financing in Germany is based on a structural approach, in which the market value of the real estate collateral plays a key role in the LGD estimate. Individual parameters of the model (for instance revenue ratios,

processing durations) are determined for differentiated segments (incl. property types) on the basis of historical data of the pbb Group as well as the data pooling initiative of the Verband deutscher Pfandbriefbanken (VdP). Data at least since 2008 are generally used for this purpose.

The other LGD rating systems for non-defaulted obligors are structure models in which model components, such as revenue ratios and processing durations, are determined using historical data mainly from external data sources. The historical data extend at least back to the year 1998.

For the individual LGD rating systems, downturn analyses and statistical significance tests ensure that the models are suitable for forecasting downturn LGDs.

CCF rating system

In the pbb Group, there is a model for predicting a credit conversion factor (CCF) for mortgage loans. This is based on the observed drawing pattern of historical internal defaults since 2008 in the period of twelve months before the actual default. A CCF of 100 % is used for all other products (for instance guarantees).

Further use of internal estimates

The internal estimations of probability of default (PD) and loss given default (LGD) are important parameters for risk management and credit decisions. Within the framework of the lending decision-making process, the risk and capital costs, which form the basis for risk-adjusted pricing and the lending decision, are determined with due consideration being given to these risk parameters.

The PD and LGD risk parameters are used to derive expected loss (EL) categories which form the basis for the allocation of competences in the pbb Group within the framework of loan approvals and loan processing.

The results of the internal rating systems are also included in the internal capital adequacy assessment process (ICAAP), and are taken into consideration for determining on-balance-sheet risk provisioning.

Recognition of credit risk mitigation techniques

Within the framework of credit risk mitigation, the pbb Group recognises the following as collateral:

- Real estate (property charges)
- Financial collateral
- Warranties and guarantees.

The main types of physical collateral used for the purpose of mitigating credit risk in the LGD models for estimating loss given default are property charges (real estate) for commercial real estate mortgages. Financial collateral (mainly cash collateral), such as is used mainly for derivative default exposures by means of collateral agreements with the counterparties, are recognised in EAD as a credit risk mitigating factor. In addition to the above-mentioned collateral, warranties and guarantees are also taken into consideration as a risk-mitigating factor.

The value of collateral is verified on an ad-hoc basis and also within the framework of the regular annual credit rating assessment of borrowers by the loan officers; external or internal appraisals are also used in the case of real estate collateral. For further information regarding the allowable collateral, the corresponding valuation and administration, please refer to chapter 5.3 “Credit risk mitigation techniques”.

Implemented control mechanisms for rating systems

The Group Risk Committee (GRC) is responsible for developing and validating the rating systems in the pbb Group. The GRC is a sub-committee of the Management Board, and is the decision-making committee with regard to issues relating to the risk method, the definition of risk parameters or risk monitoring and relevant related guidelines.

The GRC commissions work on developing new models or extending existing models, drawing up validation concepts and carrying out validations in Risk Management & Control (RMC). The RMC function is independent of areas which are responsible for initiating and concluding transactions. The credit risk monitoring unit in this particular area has group-wide responsibility for the development, introduction, maintenance, monitoring and further development of all rating systems. The resultant results are presented to the GRC and must be approved by the GRC.

All PD and LGD rating systems are subject to an annual validation process. The calibration, selectivity and stability of the procedures, the data quality as well as the model design are assessed on the basis of statistical and qualitative analyses as well as on the basis of user feedback.

For the German real estate financing LGD rating system, the pbb Group is additionally part of the pool validation by the association of German Pfandbrief banks (VdP).

Technical control mechanisms have been implemented for the purpose of checking the completeness and validating the input data for the rating systems; these include a release process based on a dual control principle.

The Internal Audit function acts as a process-independent organisation and is responsible for regularly checking whether the internal rating systems are appropriate and comply with the minimum requirements for rating systems as well as implemented process changes.

Types of receivables per IRBA exposure category

The pbb Group attributes obligors to the PD and LGD rating systems based on the defined scope of application; this has to be assessed in the rating process.

Exposures to central governments and central banks, institutions, companies

Rating systems which consist of statistical model cores and which have been extended to include expert model components in risk classification are used for the exposure categories Central governments and central banks, institutions and companies (incl. specialised lending). With all rating systems which are used, the initial rating is followed by a subsequent rating at least once every year. In the event of information with a major impact on the credit rating, a re-rating process is carried out in the course of the year.

For the purpose of data processing, all relevant input values and the rating results are stored in order to ensure a complete rating history for every obligor and every guarantor as well as every transaction which is prone to credit risks.

Obligors are allocated to PD categories on the basis of probabilities of default in accordance with a 27-stage PD master scale or by means of tables which map letter ratings to PD categories depending on the particular segment.

Retail exposures

The IRBA exposure category Retail Business does not exist in the pbb Group.

Equity exposures

Since 1 January 2018, the pbb Group has been using the simple IRBA risk weight for its equity exposures in accordance with article 155 (2) CRR. Until the end of 2017, the pbb Group used the possibility of grandfathering for equity exposures which in accordance with article 495 (1) CRR were held before 1 January 2008. Until 31 December 2017, these equity exposures had been temporarily excluded from the IRB approach, and were treated in accordance with the standard approach rules.

Definition of default

The definition of a default used in the pbb Group is set out in article 178 CRR.

IRBA parameters

The exposure at default (EAD) is the relevant regulatory parameter used for determining the risk-weighted assets (RWA) and for calculating the own funds requirements.

The EAD for IRBA positions in line with CRR shows the outstanding receivable in the event of a default. For most products, this is the IFRS carrying amount shown in the balance sheet, incl. cumulative interest. In the event of a committed credit line, this is multiplied by the product-specific credit conversion factor (CCF) and forms a further part of the EAD. The credit conversion factor (CCF) expresses the expected utilisation (in percent) of an existing undrawn credit line within one year until the event of a default. The CCF is currently 50 % for mortgage loans and 100 % for all other products (e.g. guarantee loans and public investment finance).

Derivatives and security financing transactions (security lending/repo transactions) form an exception in this respect; for these transactions, the EAD does not correspond to the carrying amount, and instead has to be established with a different method in accordance with CRR (e.g. for derivatives in accordance with the mark-to-market method: market value plus regulatory add-on for potential future increases in market value, taking account of any effects of netting and collateral which is provided).

The EAD is established for all receivables, irrespective of whether or not a default has occurred.

The following table in accordance with article 452 letters d to f CRR in conjunction with EU CR6 of the guidelines EBA/GL/2016/11 shows (broken down according to PD areas and IRBA exposure categories) the (on-balance-sheet and off-balance-sheet) original receivable amounts as well as the corresponding IRBA exposure amounts (EAD) as well as the risk-weighted receivable amounts (RWA) together with the RWA density, in conjunction with the main parameters which are used for calculating the own funds requirements with the rating systems described above: These include the weighted average IRBA parameters probability of default (PD), loss given default (LGD), product-specific credit conversion factor (CCF) and maturity (in years) as well as the amounts of the expected loss (EL) and the impairments/provisions which have been created.

In accordance with article 452 letter j (i) CRR, the information is shown altogether and additionally for the region of the credit exposures (i.e. the accounting office of the transaction). Accordingly, for credit exposures in Germany where pbb is authorised as well as in the countries in which the pbb Group carries out its transactions by way of a branch or subsidiary. pbb has branches in London, Madrid, Paris and Stockholm. The IRBA exposures (EAD) totalling € 56,329 million are spread over the corresponding countries as follows:

- Germany € 50,083 million or 89 %
- France € 3,647 million or 6 %
- United Kingdom € 1,929 million or 3 %
- Sweden € 387 million or < 1 %
- Spain € 282 million or < 1 %

Due to considerations of materiality, the pbb Group does not disclose the transactions recorded in Sweden and Spain in the tables; the percentage of these transactions in relation to the credit risk exposures is less than 1 % in each case.

Table 36a: IRBA exposures and PD ranges (EU CR6) – Total

All figures in € million, unless otherwise stated

	Exposure classes according to PD ranges IRB approach	Original on-balance-sheet gross exposures [1]	Off-balance-sheet exposures pre-CCF [2]	Average CCF [3] in %	Exposure at default (EAD) post CRM and post CCF [4]	Average PD [5] in %	Number of obligors	Average LGD [6] in %	Average maturity in years	Risk-weighted assets (RWA)	RWA density [7] in %	Expected loss (EL)	Value adjustments (allowances) and provisions
		a	b	c	d	e	f	g	h	i	j	k	l
1	Central governments and central banks												
2	0,00 to < 0,15	14,858	75	100%	17,567	0.00%	84	20%	4	343	2%	0.3	—
3	0,15 to < 0,25	1,486	-	-	1,486	0.20%	1	69%	5	1,624	109%	2	—
4	0,25 to < 0,50	637	-	-	637	0.45%	5	51%	3	573	90%	1	—
5	0,50 to < 0,75	-	-	-	-	-	-	-	-	-	-	-	—
6	0,75 to < 2,50	30	-	-	30	2.00%	1	48%	5	49	165%	0.3	—
7	2,50 to < 10,00	42	6	100%	2	5.00%	1	11%	5	1	47%	0.01	—
8	10,00 to < 100,00	6	-	-	6	10.00%	1	45%	1	11	186%	0.3	—
9	100,00 (Default)	-	-	-	-	-	-	-	-	-	-	-	—
10	Subtotal	17,059	82	100%	19,729	0.04%	93	25%	4	2,602	13%	4	5
11	Institutions												
12	0,00 to < 0,15	2,931	545	100%	3,098	0.03%	106	43%	5	811	26%	0.4	—
13	0,15 to < 0,25	1,907	-	-	1,133	0.20%	34	39%	2	571	50%	1	—
14	0,25 to < 0,50	1,210	-	-	1,210	0.39%	7	14%	3	361	30%	1	—
15	0,50 to < 0,75	-	-	-	-	-	-	-	-	-	-	-	—
16	0,75 to < 2,50	248	-	-	248	1.50%	1	12%	3	108	43%	0.5	—
17	2,50 to < 10,00	-	-	-	-	-	-	-	-	-	-	-	—
18	10,00 to < 100,00	-	-	-	167	21.50%	-	63%	5	661	397%	23	—
19	100,00 (Default)	-	-	-	-	-	-	-	-	-	-	-	—
20	Subtotal	6,295	545	100%	5,856	0.81%	148	36%	4	2,513	43%	25	2

All figures in € million, unless otherwise stated

Exposure classes according to PD ranges IRB approach	**Original on-balance-sheet gross exposures** [1]	**Off-balance-sheet exposures pre-CCF** [2]	**Average CCF** [3] in %	**Exposure at default (EAD) post CRM and post CCF** [4]	**Average PD** [5] in %	**Number of obligors**	**Average LGD** [6] in %	**Average maturity** in years	**Risk-weighted assets (RWA)**	**RWA density** [7] in %	**Expected loss (EL)**	**Value adjustments (allowances) and provisions**
	a	b	c	d	e	f	g	h	i	j	k	l
21 Corporates												
22 0,00 to < 0,15	1,784	15	50%	1,142	0.09%	91	8%	4	64	6%	0.1	—
23 0,15 to < 0,25	2,622	76	78%	2,450	0.20%	115	8%	4	242	10%	0.4	—
24 0,25 to < 0,50	8,029	553	70%	8,248	0.39%	295	9%	4	1,284	16%	3	—
25 0,50 to < 0,75	-	-	-	-	-	-	-	-	-	-	-	—
26 0,75 to < 2,50	10,576	1,111	82%	10,994	1.29%	311	12%	3	3,224	29%	17	—
27 2,50 to < 10,00	4,525	2,061	86%	6,098	3.64%	157	11%	3	2,195	36%	27	—
28 10,00 to < 100,00	714	47	50%	436	11.28%	19	12%	2	224	51%	6	—
29 100,00 (Default)	217	0.4	99%	218	100%	14	34%	2	136	62.5%	63	—
30 Subtotal	28,467	3,863	83%	29,587	2.26%	1,002	11%	3	7,370	25%	116	88
31 thereof: specialised lending												
32 0,00 to < 0,15	298	15	50%	305	0.10%	16	7%	3	19	6%	0.02	—
33 0,15 to < 0,25	1,742	3	50%	1,744	0.20%	41	8%	4	162	9%	0.3	—
34 0,25 to < 0,50	6,177	333	51%	6,346	0.39%	145	10%	3	1,013	16%	2	—
35 0,50 to < 0,75	-	-	-	-	-	-	-	-	-	-	-	—
36 0,75 to < 2,50	9,305	750	71%	9,780	1.30%	187	12%	3	2,880	29%	15	—
37 2,50 to < 10,00	4,256	1,984	85%	5,791	3.70%	109	11%	3	2,115	37%	26	—
38 10,00 to < 100,00	417	28	50%	431	11.28%	6	12%	2	214	50%	6	—
39 100,00 (Default)	206	-	-	206	100%	8	34%	2	129	62%	60	—
40 Subtotal	22,401	3,113	79%	24,602	2.54%	512	11%	3	6,532	27%	110	52
41 thereof: SMEs												
42 0,00 to < 0,15	76	-	-	-	0.08%	31	3%	5	2	3%	0.002	—
43 0,15 to < 0,25	91	-	-	91	0.20%	49	7%	4	7	8%	0.01	—
44 0,25 to < 0,50	1,260	184	92%	1,393	0.41%	85	8%	4	196	14%	0.5	—
45 0,50 to < 0,75	-	-	-	-	-	-	-	-	-	-	-	—
46 0,75 to < 2,50	477	38	97%	513	1.07%	57	4%	4	49	10%	0.2	—
47 2,50 to < 10,00	81	38	100%	120	2.73%	23	9%	4	29	25%	0.3	—
48 10,00 to < 100,00	-	-	-	-	-	-	-	-	-	-	-	—
49 100,00 (Default)	8	-	-	8	100%	3	29%	5	5	62%	2	—
50 Subtotal	1,992	261	94%	2,180	1.06%	248	7%	4	288	13%	3	2

All figures in € million, unless otherwise stated

	Exposure classes according to PD ranges IRB approach	Original on-balance-sheet gross exposures [1]	Off-balance-sheet exposures pre-CCF [2]	Average CCF [3] in %	Exposure at default (EAD) post CRM and post CCF [4]	Average PD [5] in %	Number of obligors	Average LGD [6] in %	Average maturity in years	Risk-weighted assets (RWA)	RWA density [7] in %	Expected loss (EL)	Value adjustments (allowances) and provisions
		a	b	c	d	e	f	g	h	i	j	k	l
51	thereof: purchased receivables												
52	0,00 to < 0,15	-	-	-	-	-	-	-	-	-	-	-	
53	0,15 to < 0,25	-	-	-	-	-	-	-	-	-	-	-	
54	0,25 to < 0,50	-	-	-	-	-	-	-	-	-	-	-	
55	0,50 to < 0,75	-	-	-	-	-	-	-	-	-	-	-	
56	0,75 to < 2,50	-	-	-	-	-	-	-	-	-	-	-	
57	2,50 to < 10,00	-	-	-	-	-	-	-	-	-	-	-	
58	10,00 to < 100,00	-	-	-	-	-	-	-	-	-	-	-	
59	100,00 (Default)	-	-	-	-	-	-	-	-	-	-	-	
60	Subtotal	-	-	-	-	-	-	-	-	-	-	-	-
61	Retail	-	-	-	-	-	-	-	-	-	-	-	-
62	Equity	0.02	-	-	0.02	-	3	-	-	0.1	370%	-	
63	thereof: internal model approach (IMA)	-	-	-	-	-	-	-	-	-	-	-	
64	thereof: PD-/LGD approach	-	-	-	-	-	-	-	-	-	-	-	
65	thereof: simple risk-weighting approach	0.02	-	-	0.02	-	3	-	-	0.1	370%	-	
66	Other non credit-obligation assets	18	-	-	18	-	1	-	-	18	1	-	-
67	**Total IRB approach**	**51,839**	**4,489**	**86%**	**55,190**	**1.31%**	**1,247**	**18%**	**4**	**12,503**	**23%**	**146**	**95**

1) Gross carrying value before deduction of allowances (but after write-offs) as well as before considering any credit risk mitigation (CRM) techniques.
2) Nominal value before deduction of provisions as well as before considering any credit risk mitigation (CRM) techniques and before Credit Conversion Factors (CCF).
3) Relationship between column (d) and column (b) for off-balance-sheet exposures.
4) IRBA regulatory exposure value (Exposure at Default, EAD), i.e. after considering any credit risk mitigation (CRM) techniques and Credit Conversion Factors (CCF), but before credit risk adjustment (allowances and provisions).
5) Average probability of default (PD) weighted by the EAD.
6) Average loss given default (LGD) weighted by the EAD.
7) Relationship between column (i) and column (d).

Table 36b: IRBA exposures and PD ranges (EU CR6) – Germany

All figures in € million, unless otherwise stated

	Exposure classes according to PD ranges IRB approach	Original on-balance-sheet gross exposures [1]	Off-balance-sheet exposures pre-CCF [2]	Average CCF [3] in %	Exposure at default (EAD) post CRM and post CCF [4]	Average PD [5] in %	Number of obligors	Average LGD [6] in %	Average maturity in years	Risk-weighted assets (RWA)	RWA density [7] in %	Expected loss (EL)	Value adjustments (allowances) and provisions
		a	b	c	d	e	f	g	h	i	j	k	l
1	Central governments and central banks												
2	0,00 to < 0,15	13,794	75	100%	16,125	0.00%	55	19%	4	266	2%	0.2	—
3	0,15 to < 0,25	1,486	-	-	1,486	0.20%	1	69%	5	1,624	109%	2	—
4	0,25 to < 0,50	637	-	-	637	0.45%	5	51%	3	573	90%	1	—
5	0,50 to < 0,75	-	-	-	-	-	-	-	-	-	-	-	—
6	0,75 to < 2,50	-	-	-	-	-	-	-	-	-	-	-	—
7	2,50 to < 10,00	42	6	100%	2	5.00%	1	11%	5	1	47%	0.01	—
8	10,00 to < 100,00	6	-	-	6	10.00%	1	45%	1	11	186%	0.3	—
9	100,00 (Default)	-	-	-	-	-	-	-	-	-	-	-	—
10	Subtotal	15,966	82	100%	18,257	0.04%	63	24%	4	2,475	14%	4	4
11	Institutions												
12	0,00 to < 0,15	1,534	541	100%	1,660	0.03%	59	42%	5	420	25%	0.2	—
13	0,15 to < 0,25	1,902	-	-	1,129	0.20%	33	40%	2	571	51%	1	—
14	0,25 to < 0,50	1,210	-	-	1,210	0.39%	7	14%	3	361	30%	1	—
15	0,50 to < 0,75	-	-	-	-	-	-	-	-	-	-	-	—
16	0,75 to < 2,50	248	-	-	248	1.50%	1	12%	3	108	43%	0.5	—
17	2,50 to < 10,00	-	-	-	-	-	-	-	-	-	-	-	—
18	10,00 to < 100,00	-	-	-	167	21.50%	-	63%	5	661	397%	23	—
19	100,00 (Default)	-	-	-	-	-	-	-	-	-	-	-	—
20	Subtotal	4,894	541	100%	4,413	1.07%	100	33%	4	2,121	48%	25	2

All figures in € million, unless otherwise stated

	Exposure classes according to PD ranges IRB approach	**Original on-balance-sheet gross exposures** [1]	**Off-balance-sheet exposures pre-CCF** [2]	**Average CCF** [3] in %	**Exposure at default (EAD) post CRM and post CCF** [4]	**Average PD** [5] in %	**Number of obligors**	**Average LGD** [6] in %	**Average maturity** in years	**Risk-weighted assets (RWA)**	**RWA density** [7] in %	**Expected loss (EL)**	**Value adjustments (allowances) and provisions**
		a	b	c	d	e	f	g	h	i	j	k	l
21	Corporates												
22	0,00 to < 0,15	1,710	15	50%	1,069	0.09%	88	6%	4	54	5%	0.1	—
23	0,15 to < 0,25	2,238	76	78%	2,180	0.20%	106	8%	4	216	10%	0.4	—
24	0,25 to < 0,50	7,126	552	70%	7,448	0.40%	275	9%	4	1,208	16%	3	—
25	0,50 to < 0,75	-	-	-	-	-	-	-	-	-	-	-	—
26	0,75 to < 2,50	9,317	1,102	82%	9,894	1.28%	276	12%	4	3,068	31%	16	—
27	2,50 to < 10,00	3,742	2,060	86%	5,314	3.71%	146	12%	4	2,027	38%	25	—
28	10,00 to < 100,00	542	43	50%	299	11.87%	16	13%	2	151	51%	4	—
29	100,00 (Default)	62	0.02	50%	62	100%	11	49%	2	39	62.5%	27	—
30	Subtotal	24,737	3,848	83%	26,266	1.73%	918	11%	4	6,762	26%	75	70
31	thereof: specialised lending												
32	0,00 to < 0,15	298	15	50%	305	0.10%	16	7%	3	19	6%	0.02	—
33	0,15 to < 0,25	1,472	3	50%	1,473	0.20%	36	8%	4	136	9%	0.2	—
34	0,25 to < 0,50	5,384	332	51%	5,552	0.39%	128	10%	4	944	17%	2	—
35	0,50 to < 0,75	-	-	-	-	-	-	-	-	-	-	-	—
36	0,75 to < 2,50	8,209	741	71%	8,680	1.29%	163	13%	4	2,723	31%	14	—
37	2,50 to < 10,00	3,584	1,984	85%	5,118	3.75%	99	12%	4	1,976	39%	24	—
38	10,00 to < 100,00	282	24	50%	294	11.88%	5	12%	1	141	48%	4	—
39	100,00 (Default)	51	-	-	51	100%	6	52%	2	32	62%	24	—
40	Subtotal	19,279	3,098	79%	21,473	1.93%	453	11%	4	5,971	28%	69	34
41	thereof: SMEs												
42	0,00 to < 0,15	76	-	-	56	0.08%	31	3%	5	2	3%	0.002	—
43	0,15 to < 0,25	91	-	-	91	0.20%	49	7%	4	7	8%	0.01	—
44	0,25 to < 0,50	1,260	184	92%	1,393	0.41%	85	8%	4	196	14%	0.5	—
45	0,50 to < 0,75	-	-	-	-	-	-	-	-	-	-	-	—
46	0,75 to < 2,50	477	38	97%	513	1.07%	57	4%	4	49	10%	0.2	—
47	2,50 to < 10,00	81	38	100%	120	2.73%	23	9%	4	29	25%	0.3	—
48	10,00 to < 100,00	-	-	-	-	-	-	-	-	-	-	-	—
49	100,00 (Default)	8	-	-	8	100%	3	29%	5	5	62%	2	—
50	Subtotal	1,992	261	94%	2,180	1.06%	248	7%	4	288	13%	3	2

All figures in € million, unless otherwise stated

	Exposure classes according to PD ranges IRB approach	Original on-balance-sheet gross exposures [1]	Off-balance-sheet exposures pre-CCF [2]	Average CCF [3] in %	Exposure at default (EAD) post CRM and post CCF [4]	Average PD [5] in %	Number of obligors	Average LGD [6] in %	Average maturity in years	Risk-weighted assets (RWA)	RWA density [7] in %	Expected loss (EL)	Value adjustments (allowances) and provisions
		a	b	c	d	e	f	g	h	i	j	k	l
51	thereof: purchased receivables												
52	0,00 to < 0,15	-	-	-	-	-	-	-	-	-	-	-	
53	0,15 to < 0,25	-	-	-	-	-	-	-	-	-	-	-	
54	0,25 to < 0,50	-	-	-	-	-	-	-	-	-	-	-	
55	0,50 to < 0,75	-	-	-	-	-	-	-	-	-	-	-	
56	0,75 to < 2,50	-	-	-	-	-	-	-	-	-	-	-	
57	2,50 to < 10,00	-	-	-	-	-	-	-	-	-	-	-	
58	10,00 to < 100,00	-	-	-	-	-	-	-	-	-	-	-	
59	100,00 (Default)	-	-	-	-	-	-	-	-	-	-	-	
60	Subtotal	-	-	-	-	-	-	-	-	-	-	-	-
61	Retail	-	-	-	-	-	-	-	-	-	-	-	-
62	Equity	0.02	-	-	0.02	-	3	-	-	0.1	370%	-	
63	thereof: internal model approach (IMA)	-	-	-	-	-	-	-	-	-	-	-	
64	thereof: PD-/LGD approach	-	-	-	-	-	-	-	-	-	-	-	
65	thereof: simple risk-weighting approach	0.02	-	-	0.02	-	3	-	-	0.1	370%	-	
66	Other non credit-obligation assets	16	-	-	16	-	1	-	-	16	1	-	-
67	**Total IRB approach**	**45,612**	**4,470**	**86%**	**48,951**	**1.04%**	**1,085**	**18%**	**4**	**11,374**	**23%**	**104**	**76**

1) Gross carrying value before deduction of allowances (but after write-offs) as well as before considering any credit risk mitigation (CRM) techniques.
2) Nominal value before deduction of provisions as well as before considering any credit risk mitigation (CRM) techniques and before Credit Conversion Factors (CCF).
3) Relationship between column (d) and column (b) for off-balance-sheet exposures.
4) IRBA regulatory exposure value (Exposure at Default, EAD), i.e. after considering any credit risk mitigation (CRM) techniques and Credit Conversion Factors (CCF), but before credit risk adjustment (allowances and provisions).
5) Average probability of default (PD) weighted by the EAD.
6) Average loss given default (LGD) weighted by the EAD.
7) Relationship between column (i) and column (d).

Table 36c: IRBA exposures and PD ranges (EU CR6) – France

All figures in € million, unless otherwise stated

	Exposure classes according to PD ranges IRB approach	**Original on-balance-sheet gross exposures** [1]	**Off-balance-sheet exposures pre-CCF** [2]	**Average CCF** [3] in %	**Exposure at default (EAD) post CRM and post CCF** [4]	**Average PD** [5] in %	**Number of obligors**	**Average LGD** [6] in %	**Average maturity** in years	**Risk-weighted assets (RWA)**	**RWA density** [7] in %	**Expected loss (EL)**	**Value adjustments (allowances) and provisions**
		a	b	c	d	e	f	g	h	i	j	k	l
1	Central governments and central banks												
2	0,00 to < 0,15	731	-	-	914	0.00%	24	33%	5	2	0%	0.002	————
3	0,15 to < 0,25	-	-	-	-	-	-	-	-	-	-	-	————
4	0,25 to < 0,50	-	-	-	-	-	-	-	-	-	-	-	————
5	0,50 to < 0,75	-	-	-	-	-	-	-	-	-	-	-	————
6	0,75 to < 2,50	30	-	-	30	2.00%	1	48%	5	49	165%	0.3	————
7	2,50 to < 10,00	-	-	-	-	-	-	-	-	-	-	-	————
8	10,00 to < 100,00	-	-	-	-	-	-	-	-	-	-	-	————
9	100,00 (Default)	-	-	-	-	-	-	-	-	-	-	-	————
10	Subtotal	761	-	-	944	0.06%	25	33%	5	52	5%	0.3	-
11	Institutions												
12	0,00 to < 0,15	1,374	4	100%	1,415	0.03%	61	45%	5	387	27%	0.2	————
13	0,15 to < 0,25	4	-	-	4	0.20%	1	15%	1	1	15%	0.001	————
14	0,25 to < 0,50	-	-	-	-	-	-	-	-	-	-	-	————
15	0,50 to < 0,75	-	-	-	-	-	-	-	-	-	-	-	————
16	0,75 to < 2,50	-	-	-	-	-	-	-	-	-	-	-	————
17	2,50 to < 10,00	-	-	-	-	-	-	-	-	-	-	-	————
18	10,00 to < 100,00	-	-	-	-	-	-	-	-	-	-	-	————
19	100,00 (Default)	-	-	-	-	-	-	-	-	-	-	-	————
20	Subtotal	1,378	4	100%	1,419	0.03%	62	45%	5	388	27%	0.2	-

All figures in € million, unless otherwise stated

Exposure classes according to PD ranges IRB approach		Original on-balance-sheet gross exposures [1]	Off-balance-sheet exposures pre-CCF [2]	Average CCF [3] in %	Exposure at default (EAD) post CRM and post CCF [4]	Average PD [5] in %	Number of obligors	Average LGD [6] in %	Average maturity in years	Risk-weighted assets (RWA)	RWA density [7] in %	Expected loss (EL)	Value adjustments (allowances) and provisions
		a	b	c	d	e	f	g	h	i	j	k	l
21	Corporates												
22	0,00 to < 0,15	73	-	-	73	0.03%	3	38%	3	10	13%	0.01	—
23	0,15 to < 0,25	262	-	-	234	0.20%	6	8%	4	24	10%	0.04	—
24	0,25 to < 0,50	170	-	-	123	0.34%	7	10%	2	16	13%	0.04	—
25	0,50 to < 0,75	-	-	-	-	-	-	-	-	-	-	-	—
26	0,75 to < 2,50	517	4	50%	400	1.50%	18	8%	2	59	15%	0.5	—
27	2,50 to < 10,00	313	-	-	313	2.68%	4	8%	3	67	22%	1	—
28	10,00 to < 100,00	161	4	50%	137	10.00%	2	12%	2	73	53%	2	—
29	100,00 (Default)	-	-	-	-	-	-	-	-	-	-	-	—
30	Subtotal	1,496	8	50%	1,280	2.27%	40	10%	2	250	20%	3	1
31	thereof: specialised lending												
32	0,00 to < 0,15	-	-	-	-	-	-	-	-	-	-	-	—
33	0,15 to < 0,25	234	-	-	234	0.20%	4	8%	4	24	10%	0.04	—
34	0,25 to < 0,50	115	-	-	115	0.33%	5	7%	2	8	7%	0.03	—
35	0,50 to < 0,75	-	-	-	-	-	-	-	-	-	-	-	—
36	0,75 to < 2,50	398	4	50%	400	1.50%	11	8%	2	59	15%	0.5	—
37	2,50 to < 10,00	201	-	-	201	2.78%	3	8%	1	38	19%	0.4	—
38	10,00 to < 100,00	135	4	50%	137	10.00%	1	12%	2	73	53%	2	—
39	100,00 (Default)	-	-	-	-	-	-	-	-	-	-	-	—
40	Subtotal	1,084	8	50%	1,088	2.41%	24	8%	2	203	19%	3	1
41	thereof: SMEs												
42	0,00 to < 0,15	-	-	-	-	-	-	-	-	-	-	-	—
43	0,15 to < 0,25	-	-	-	-	-	-	-	-	-	-	-	—
44	0,25 to < 0,50	-	-	-	-	-	-	-	-	-	-	-	—
45	0,50 to < 0,75	-	-	-	-	-	-	-	-	-	-	-	—
46	0,75 to < 2,50	-	-	-	-	-	-	-	-	-	-	-	—
47	2,50 to < 10,00	-	-	-	-	-	-	-	-	-	-	-	—
48	10,00 to < 100,00	-	-	-	-	-	-	-	-	-	-	-	—
49	100,00 (Default)	-	-	-	-	-	-	-	-	-	-	-	—
50	Subtotal	-	-	-	-	-	-	-	-	-	-	-	-

All figures in € million, unless otherwise stated

	Exposure classes according to PD ranges IRB approach	Original on-balance-sheet gross exposures [1]	Off-balance-sheet exposures pre-CCF [2]	Average CCF [3] in %	Exposure at default (EAD) post CRM and post CCF [4]	Average PD [5] in %	Number of obligors	Average LGD [6] in %	Average maturity in years	Risk-weighted assets (RWA)	RWA density [7] in %	Expected loss (EL)	Value adjustments (allowances) and provisions
		a	b	c	d	e	f	g	h	i	j	k	l
51	thereof: purchased receivables												
52	0,00 to < 0,15	-	-	-	-	-	-	-	-	-	-	-	
53	0,15 to < 0,25	-	-	-	-	-	-	-	-	-	-	-	
54	0,25 to < 0,50	-	-	-	-	-	-	-	-	-	-	-	
55	0,50 to < 0,75	-	-	-	-	-	-	-	-	-	-	-	
56	0,75 to < 2,50	-	-	-	-	-	-	-	-	-	-	-	
57	2,50 to < 10,00	-	-	-	-	-	-	-	-	-	-	-	
58	10,00 to < 100,00	-	-	-	-	-	-	-	-	-	-	-	
59	100,00 (Default)	-	-	-	-	-	-	-	-	-	-	-	
60	Subtotal	-	-	-	-	-	-	-	-	-	-	-	-
61	Retail	-	-	-	-	-	-	-	-	-	-	-	-
62	Equity	-	-	-	-	-	-	-	-	-	-	-	
63	thereof: internal model approach (IMA)	-	-	-	-	-	-	-	-	-	-	-	
64	thereof: PD-/LGD approach	-	-	-	-	-	-	-	-	-	-	-	
65	thereof: simple risk-weighting approach	-	-	-	-	-	-	-	-	-	-	-	
66	Other non credit-obligation assets	0.4	-	-	0.4	-	1	-	-	0.4	1	-	-
67	**Total IRB approach**	**3,635**	**12**	**75%**	**3,643**	**0.83%**	**128**	**30%**	**4**	**690**	**19%**	**3**	**1**

1) Gross carrying value before deduction of allowances (but after write-offs) as well as before considering any credit risk mitigation (CRM) techniques.
2) Nominal value before deduction of provisions as well as before considering any credit risk mitigation (CRM) techniques and before Credit Conversion Factors (CCF).
3) Relationship between column (d) and column (b) for off-balance-sheet exposures.
4) IRBA regulatory exposure value (Exposure at Default, EAD), i.e. after considering any credit risk mitigation (CRM) techniques and Credit Conversion Factors (CCF), but before credit risk adjustment (allowances and provisions).
5) Average probability of default (PD) weighted by the EAD.
6) Average loss given default (LGD) weighted by the EAD.
7) Relationship between column (i) and column (d).

Table 36d: IRBA exposures and PD ranges (EU CR6) – United Kingdom

All figures in € million, unless otherwise stated

	Exposure classes according to PD ranges IRB approach	Original on-balance-sheet gross exposures [1]	Off-balance-sheet exposures pre-CCF [2]	Average CCF [3] in %	Exposure at default (EAD) post CRM and post CCF [4]	Average PD [5] in %	Number of obligors	Average LGD [6] in %	Average maturity in years	Risk-weighted assets (RWA)	RWA density [7] in %	Expected loss (EL)	Value adjustments (allowances) and provisions
		a	b	c	d	e	f	g	h	i	j	k	l
1	Central governments and central banks												
2	0,00 to < 0,15	4	-	-	201	0.00%	1	12%	5	-	-	-	—
3	0,15 to < 0,25	-	-	-	-	-	-	-	-	-	-	-	—
4	0,25 to < 0,50	-	-	-	-	-	-	-	-	-	-	-	—
5	0,50 to < 0,75	-	-	-	-	-	-	-	-	-	-	-	—
6	0,75 to < 2,50	-	-	-	-	-	-	-	-	-	-	-	—
7	2,50 to < 10,00	-	-	-	-	-	-	-	-	-	-	-	—
8	10,00 to < 100,00	-	-	-	-	-	-	-	-	-	-	-	—
9	100,00 (Default)	-	-	-	-	-	-	-	-	-	-	-	—
10	Subtotal	4	-	-	201	0.00%	1	12%	5	-	-	-	-
11	Institutions												
12	0,00 to < 0,15	22	-	-	22	0.03%	1	29%	5	4	17%	0.002	—
13	0,15 to < 0,25	1	-	-	1	0.20%	1	15%	1	0.1	15%	0.0002	—
14	0,25 to < 0,50	-	-	-	-	-	-	-	-	-	-	-	—
15	0,50 to < 0,75	-	-	-	-	-	-	-	-	-	-	-	—
16	0,75 to < 2,50	-	-	-	-	-	-	-	-	-	-	-	—
17	2,50 to < 10,00	-	-	-	-	-	-	-	-	-	-	-	—
18	10,00 to < 100,00	-	-	-	-	-	-	-	-	-	-	-	—
19	100,00 (Default)	-	-	-	-	-	-	-	-	-	-	-	—
20	Subtotal	23	-	-	5,856	0.04%	2	28%	5	4	17%	0.002	-

All figures in € million, unless otherwise stated

	Exposure classes according to PD ranges IRB approach	Original on-balance-sheet gross exposures [1]	Off-balance-sheet exposures pre-CCF [2]	Average CCF [3] in %	Exposure at default (EAD) post CRM and post CCF [4]	Average PD [5] in %	Number of obligors	Average LGD [6] in %	Average maturity in years	Risk-weighted assets (RWA)	RWA density [7] in %	Expected loss (EL)	Value adjustments (allowances) and provisions
		a	b	c	d	e	f	g	h	i	j	k	l
21	Corporates												
22	0,00 to < 0,15	-	-	-	-	-	-	-	-	-	-	-	
23	0,15 to < 0,25	121	-	-	36	0.20%	3	7%	2	2	6%	0.01	
24	0,25 to < 0,50	706	2	50%	651	0.38%	12	8%	2	58	9%	0.2	
25	0,50 to < 0,75	-	-	-	-	-	-	-	-	-	-	-	
26	0,75 to < 2,50	582	-	-	538	1.41%	15	7%	1	74	14%	1	
27	2,50 to < 10,00	322	0.4	50%	322	3.99%	6	9%	2	75	23%	1	
28	10,00 to < 100,00	11	-	-	-	-	1	-	-	-	-	-	
29	100,00 (Default)	156	-	-	156	100%	2	28%	1	97	62.5%	36	
30	Subtotal	1,899	2	50%	1,704	10.48%	39	10%	2	306	18%	38	17
31	thereof: specialised lending												
32	0,00 to < 0,15	-	-	-	-	-	-	-	-	-	-	-	
33	0,15 to < 0,25	36	-	-	36	0.20%	1	7%	2	2	6%	0.01	
34	0,25 to < 0,50	650	2	50%	651	0.38%	11	8%	2	58	9%	0.2	
35	0,50 to < 0,75	-	-	-	-	-	-	-	-	-	-	-	
36	0,75 to < 2,50	538	-	-	538	1.41%	11	7%	1	74	14%	1	
37	2,50 to < 10,00	322	0.4	50%	322	3.99%	6	9%	2	75	23%	1	
38	10,00 to < 100,00	-	-	-	-	-	-	-	-	-	-	-	
39	100,00 (Default)	156	-	-	156	100%	2	28%	1	97	62%	36	
40	Subtotal	1,702	2	50%	1,704	10.48%	31	10%	2	306	18%	38	17
41	thereof: SMEs												
42	0,00 to < 0,15	-	-	-	-	-	-	-	-	-	-	-	
43	0,15 to < 0,25	-	-	-	-	-	-	-	-	-	-	-	
44	0,25 to < 0,50	-	-	-	-	-	-	-	-	-	-	-	
45	0,50 to < 0,75	-	-	-	-	-	-	-	-	-	-	-	
46	0,75 to < 2,50	-	-	-	-	-	-	-	-	-	-	-	
47	2,50 to < 10,00	-	-	-	-	-	-	-	-	-	-	-	
48	10,00 to < 100,00	-	-	-	-	-	-	-	-	-	-	-	
49	100,00 (Default)	-	-	-	-	-	-	-	-	-	-	-	
50	Subtotal	-	-	-	-	-	-	-	-	-	-	-	-

All figures in € million, unless otherwise stated

	Exposure classes according to PD ranges IRB approach	Original on-balance-sheet gross exposures [1]	Off-balance-sheet exposures pre-CCF [2]	Average CCF [3] in %	Exposure at default (EAD) post CRM and post CCF [4]	Average PD [5] in %	Number of obligors	Average LGD [6] in %	Average maturity in years	Risk-weighted assets (RWA)	RWA density [7] in %	Expected loss (EL)	Value adjustments (allowances) and provisions
		a	b	c	d	e	f	g	h	i	j	k	l
51	thereof: purchased receivables												
52	0,00 to < 0,15	-	-	-	-	-	-	-	-	-	-	-	
53	0,15 to < 0,25	-	-	-	-	-	-	-	-	-	-	-	
54	0,25 to < 0,50	-	-	-	-	-	-	-	-	-	-	-	
55	0,50 to < 0,75	-	-	-	-	-	-	-	-	-	-	-	
56	0,75 to < 2,50	-	-	-	-	-	-	-	-	-	-	-	
57	2,50 to < 10,00	-	-	-	-	-	-	-	-	-	-	-	
58	10,00 to < 100,00	-	-	-	-	-	-	-	-	-	-	-	
59	100,00 (Default)	-	-	-	-	-	-	-	-	-	-	-	
60	Subtotal	-	-	-	-	-	-	-	-	-	-	-	-
61	Retail	-	-	-	-	-	-	-	-	-	-	-	-
62	Equity	-	-	-	-	-	-	-	-	-	-	-	
63	thereof: internal model approach (IMA)	-	-	-	-	-	-	-	-	-	-	-	
64	thereof: PD-/LGD approach	-	-	-	-	-	-	-	-	-	-	-	
65	thereof: simple risk-weighting approach	-	-	-	-	-	-	-	-	-	-	-	
66	Other non credit-obligation assets	1	-	-	1	-	1	-	-	1	1	-	-
67	**Total IRB approach**	**1,927**	**2**	**50%**	**1,928**	**9.26%**	**43**	**10%**	**2**	**312**	**16%**	**38**	**17**

1) Gross carrying value before deduction of allowances (but after write-offs) as well as before considering any credit risk mitigation (CRM) techniques.
2) Nominal value before deduction of provisions as well as before considering any credit risk mitigation (CRM) techniques and before Credit Conversion Factors (CCF).
3) Relationship between column (d) and column (b) for off-balance-sheet exposures.
4) IRBA regulatory exposure value (Exposure at Default, EAD), i.e. after considering any credit risk mitigation (CRM) techniques and Credit Conversion Factors (CCF), but before credit risk adjustment (allowances and provisions).
5) Average probability of default (PD) weighted by the EAD.
6) Average loss given default (LGD) weighted by the EAD.
7) Relationship between column (i) and column (d).

For IRBA positions (excl. counterparty default exposures), the EAD amounted to € 55,190 million as of 31 December 2018 (31 December 2017: € 54,520 million), and the RWA amounted to € 12,503 million (31 December 2017: € 12,283 million).

The average RWA density for the IRBA loan receivables is 23 % across all IRBA exposure classes (31 December 2017: 23 %). Risk weights are important factors when determining risk-weighted assets which must be backed with own funds in a risk-oriented manner; the RWAs are calculated by multiplying the risk weight with the IRBA exposure at default (EAD).

The loss given default (LGD) indicates the expected loss suffered by the pbb Group if a customer fails to pay. In the IRB approach, this is 18 % on average for the loan receivables (excluding counterparty credit risk exposures) (31 December 2017: 18 %).

The probability of default (PD) indicates the probability that a borrower/counterparty will be unable over a period of one year to service their contractual loan obligations (irrespective of the amount of the exposure and the collateral provided). The PD (excluding counterparty credit risk exposures) on average is 1.31 % (31 December 2017: 1.17 %).

The unutilised IRBA loan commitments amounted to a total of € 4,489 million (31 December 2017: € 4,683million). The average credit conversion factor (CCF) which expresses the expected utilisation (in percent) of an existing undrawn credit line within one year until the event of a default amounts to 86 % (31 December 2017: 83 %).

Model estimates for PD, LGD and CCF contain conservative adjustments which cover estimation uncertainties associated with the models. Estimates for LGD and CCF are also designed as so-called downturn estimates, i.e. the aim is to achieve a forecast of figures which are also appropriate in periods affected by an economic downturn.

Retail business (e.g. small-volume loans where the private customer rating is determined based on a retail scoring but which are phased out in the pbb Group as set out in article 150 letter c CRR in conjunction with section 14 SolvV), customer groups with only very small unit volumes (e.g. project financing, multilateral financial institutions) are exempt from the IRB approach.

The following table in accordance with article 438 letter d CRR in conjunction with EU CR8 of the EBA/GL/2016/11 shows the changes in the risk-weighted position amounts (RWA) shown in table EU CR6 (as in EU CR6 without derivatives) during the reporting period as well as the major reasons for such changes. The RWA in the IRB approach amounted to € 12,503 million as of the reporting date (31 December 2017: € 12,303 million), and have increased by € 200 million compared with the end of the previous year.

Table 37: RWA flow statements of credit risk exposures under the IRB approach (EU CR8)

All figures in € million

	IRB approach [1]	Risk-weighted assets (RWA)	Minimum capital requirement
		a	b
1	**RWA on 31.12.2017**	**12,303**	**984**
2	Asset size	1,218	97
3	Asset quality	-866	-69
4	Model updates	136	11
5	Methodology and policy	-	-
6	Acquisitions and disposals	-	-
7	Foreign exchange movements	-	-
8	Other	-288	-23
9	**RWA on 31.12.2018**	**12,503**	**1,000**

1) Without counterparty credit risk (derivative transactions) in accordance with Part Three, Title II, Chapter 6 of the CRR.

The increase of approx. € 200 million in the risk-weighted assets is attributable mainly to the volume of new business carried out in the financial year 2018 (incl. prolongations with maturities of more than one year) in the two strategic segments of Real Estate Finance (REF) and Public Investment Finance (PIF) which is reflected in line 2 of the table. The opposite effects were in particular repayments of due loans and bonds as well as redemptions and also other changes in the loss given default (LGD) for determining the risk weightings (line 3).

Disclosure of the table EU CR7 in accordance with article 453 letter g CRR in conjunction with EU CR7 of the guidelines EBA/GL/2016/11, regarding the impact on the RWA of credit derivatives used for credit risk mitigation purposes, is not relevant for the pbb Group. As was the case in the previous year, the pbb Group does not have any credit derivatives in its portfolio.

Backtesting IRBA parameters

The following tables in accordance with article 452 letter i CRR in conjunction with EU CR9 as well as points 110 and 111 of the EBA/GL/2016/11 contain information regarding backtesting of the model parameters Probability of default (PD), loss given default (LGD), credit conversion factor (CCF) and expected loss (EL) for the advanced IRB approach based on internal rating methods of the bank. This is based on all IRBA models used in the pbb Group. Details in text form are used for the credit conversion factor (CCF).

Table 38: Backtesting of probability of default per exposure class (EU CR9)

	Exposure classes according to PD ranges [1) IRB approach	External rating equivalent [2)	Average PD [3)	Arithmetic average PD by obligors [4)	Number of obligors		Defaulted obligors in the reporting year [7)		Average historical annual default rate [9)
					End of previous year [5)	End of reporting year [6)		thereof new obligors [8)	
		S&P	31.12.2017	31.12.2017	31.12.2017	31.12.2018			
		a	b	c	d	e	f	g	h
1	Central governments and central banks								
2	0,00 to < 0,15	AAA to BBB+	0.01%	0.02%	90	85	-	-	0.00%
3	0,15 to < 0,25	BBB to BBB	-	-	-	1	-	-	0.00%
4	0,25 to < 0,50	BBB- to BB+	0.45%	0.45%	5	5	-	-	0.00%
5	0,50 to < 0,75	-	-	-	-	-	-	-	-
6	0,75 to < 2,50	BB to B+	2.00%	2.00%	1	1	-	-	0.00%
7	2,50 to < 10,00	B to B-	5.00%	5.00%	1	1	-	-	0.00%
8	10,00 to < 100,00	CCC+ to CCC-	10.00%	10.00%	1	1	-	-	0.00%
9	Subtotal (without default)		0.12%	0.21%	98	94	0	0	0.00%
10	100,00 (Default)		-	-	-	-	-	-	-
11	Institutions								
12	0,00 to < 0,15	AAA to BBB+	0.04%	0.05%	123	112	-	-	0.00%
13	0,15 to < 0,25	BBB to BBB	0.20%	0.20%	17	41	-	-	0.00%
14	0,25 to < 0,50	BBB- to BB+	0.42%	0.39%	19	13	-	-	1.18%
15	0,50 to < 0,75	-	-	-	-	-	-	-	-
16	0,75 to < 2,50	BB to B+	1.50%	1.50%	1	1	-	-	0.00%
17	2,50 to < 10,00	B to B-	-	-	-	-	-	-	0.00%
18	10,00 to < 100,00	CCC+ to CCC-	21.51%	43.17%	3	1	-	-	0.00%
19	Subtotal (without default)		0.99%	0.91%	163	168	0	0	0.09%
20	100,00 (Default)		-	-	-	-	-	-	-
21	Corporates								
22	0,00 to < 0,15	AAA to BBB+	0.08%	0.09%	71	71	-	-	0.00%
23	0,15 to < 0,25	BBB to BBB	0.20%	0.20%	106	108	-	-	0.00%
24	0,25 to < 0,50	BBB- to BB+	0.38%	0.38%	282	289	-	-	0.00%

	Exposure classes according to PD ranges [1] IRB approach	External rating equivalent [2]	Average PD [3]	Arithmetic average PD by obligors [4]	Number of obligors		Defaulted obligors in the reporting year [7]		Average historical annual default rate [9]
					End of previous year [5]	End of reporting year [6]		thereof new obligors [8]	
		S&P	31.12.2017	31.12.2017	31.12.2017	31.12.2018			
		a	b	c	d	e	f	g	h
25	0,50 to < 0,75	-	-	-	-	-	-	-	-
26	0,75 to < 2,50	BB to B+	1.27%	1.30%	338	285	2	-	0.35%
27	2,50 to < 10,00	B to B-	3.93%	3.82%	159	153	1	-	1.65%
28	10,00 to < 100,00	CCC+ to CCC-	13.45%	13.13%	8	9	-	-	4.59%
29	Subtotal (without default)		1.58%	1.33%	964	915	3	0	0.44%
30	100,00 (Default)		100%	100%	16	13	-	-	-
31	thereof: specialised lending								
32	0,00 to < 0,15	AAA to BBB+	0.10%	0.10%	16	16	-	-	0.00%
33	0,15 to < 0,25	BBB to BBB	0.20%	0.20%	38	41	-	-	0.00%
34	0,25 to < 0,50	BBB- to BB+	0.37%	0.38%	134	141	-	-	0.00%
35	0,50 to < 0,75	-	-	-	-	-	-	-	-
36	0,75 to < 2,50	BB to B+	1.28%	1.31%	174	175	2	-	0.78%
37	2,50 to < 10,00	B to B-	3.97%	4.00%	113	105	1	-	3.52%
38	10,00 to < 100,00	CCC+ to CCC-	13.54%	12.50%	4	6	-	-	0.00%
39	Subtotal (without default)		1.76%	1.65%	479	484	3	0	0.78%
40	100,00 (Default)		100%	100%	7	7	-	-	-
41	thereof: SMEs								
42	0,00 to < 0,15	AAA to BBB+	0.08%	0.09%	24	28	-	-	0.00%
43	0,15 to < 0,25	BBB to BBB	0.20%	0.20%	53	49	-	-	0.00%
44	0,25 to < 0,50	BBB- to BB+	0.40%	0.38%	89	85	-	-	0.00%
45	0,50 to < 0,75	-	-	-	-	-	-	-	-
46	0,75 to < 2,50	BB to B+	1.13%	1.27%	83	57	-	-	0.00%
47	2,50 to < 10,00	B to B-	3.31%	3.78%	18	24	-	-	1.40%
48	10,00 to < 100,00	CCC+ to CCC-	-	-	-	-	-	-	8.33%
49	Subtotal (without default)		0.74%	0.82%	267	243	0	0	0.19%
50	100,00 (Default)		100%	100%	4	3	-	-	-

Exposure classes according to PD ranges [1] IRB approach		External rating equivalent [2]	Average PD [3]	Arithmetic average PD by obligors [4]	Number of obligors		Defaulted obligors in the reporting year [7]		Average historical annual default rate [9]
					End of previous year [5]	End of reporting year [6]		thereof new obligors [8]	
		S&P	31.12.2017	31.12.2017	31.12.2017	31.12.2018			
		a	b	c	d	e	f	g	h
51	Retail	-	-	-	-	-	-	-	-
52	Equity	-	-	-	-	-	-	-	-
53	thereof: internal model approach (IMA)	-	-	-	-	-	-	-	-
54	thereof: PD-/LGD approach	-	-	-	-	-	-	-	-
55	thereof: simple risk-weighting approach	-	-	-	-	-	-	-	-
56	**Total IRB approach**								
57	**thereof: default**		**100%**	**100%**	**16**	**13**	——	——	——
58	**thereof: non-default**		**0.97%**	**1.19%**	**1,225**	**1,177**	**3**	**0**	**0.36%**

1) PD range at the beginning of the reporting period. Counterparty credit risk exposures (derivatives) in accordance with Part Three, Title II, Chapter 6 of the CRR are included in the table.
2) External rating of Standard & Poor's corresponding to the PD ranges.
3) Average probability of default (PD) weighted by the EAD, at the beginning of the reporting period.
4) Average probability of default (PD) weighted by obligors, at the beginning of the reporting period.
5) Number of obligors at the beginning of the reporting period.
6) Number of obligors at the end of the reporting period.
7) Number of obligors defaulted during the reporting year.
8) Number of the new obligors having defaulted during the reporting period and that were not funded at the end of the previous financial year.
9) The 5-year average of the annual default rate, i.e. the relationship between the obligors at the beginning of each year that have defaulted during that year and the total obligor holdings at the beginning of the year.
10) The pbb Group applies the simple IRBA risk weight for equity exposures in accordance with article 155 (2) CRR, so there is no breakdown by PD ranges.

Table 39: Backtesting of loss given default per exposure class (EU CR9)

	Exposure classes IRB approach	Actual LGD	Number of obligors		Estimation of LGD	
		Defaulted obligors [1] All defaults completed in the reporting year 31.12.2018	Non-defaulted obligors [2] Not in Default 31.12.2017	Defaulted obligors [3] In Default 31.12.2017	Non-defaulted obligors [4] Not in Default 31.12.2017	Defaulted obligors [5] In Default 31.12.2017
		a	b	c	d	e
1	Central governments and central banks	-	98	-	33.19%	-
2	Institutions	-	163	-	36.46%	-
3	Corporates	18.74%	964	16	11.98%	44.82%
4	thereof: specialised lending	0.00%	479	7	12.26%	58.60%
5	thereof: SMEs	39.21%	267	4	9.09%	27.40%
6	Retail	-	-	-	-	-
7	Equity	-	-	-	-	-
8	thereof: Internal model approach (IMA)	-	-	-	-	-
9	thereof: PD-/LGD approach	-	-	-	-	-
10	thereof: simple risk-weighting approach	-	-	-	-	-
11	**Total IRB approach**	**18.74%**	**1,225**	**16**	**16.93%**	**44.82%**

1) Realised loss given default (LGD) of all completed defaults in the reporting year.
2) Number of obligors who were not in default at the beginning of the reporting period.
3) Number of obligors who were in default at the beginning of the reporting period.
4) Average loss given default (LGD) of obligors who were not in default at the beginning of the reporting period.
5) Average loss given default (LGD) of obligors who were in default at the beginning of the reporting period.

There were only three defaults in the reporting period. One new obligor, whose financing had not yet been established at the end of 2017, is not included in this group. In view of the low quantities in certain cases (particularly with regard to the defaults in recent years) and also in view of the calibration of rating models to long-term average default rates, the average historical default rate may differ from the forecast average PD. No observations are ascribed to the PD range 0.50 to 0.75 in view of the uniform PD master scale of the pbb Group which is used. The IRBA exposure category Retail business does not exist in the pbb Group.

The forecast credit conversion factor (CCF) for mortgage loans is 50 %. No customer for whom this CCF was applied defaulted in the reporting period. For this reason, it is not possible to provide any details regarding backtesting of the credit conversion factor in relation to the reporting period.

The expected loss (EL) for a period of one year is determined for all exposures except for non-performing loans for which a stage 3 impairment has already been recognised. The EL is calculated based on the parameters defined by the CRR, i.e. the one-year probability of default (PD), multiplied by the loss given default (LGD) and the exposure at default (EAD): EL = EAD x PD x LGD.

The following table in accordance with article 452 letter i CRR in conjunction with EU CR9 as well as points 110 and 111 of the EBA/GL/2016/11 (in addition to the above backtesting tables for PD and LGD) compares the expected losses (EL) for the commercial real estate financing loans in the IRB approach (excluding defaulted and impaired loans of the IFRS 9 impairment stage 3) with the losses which actually occurred in the financial year.

Incurred losses are defined as the sum of additions and reversals of stage 3 impairments in lending business, additions and reversals of provisions in lending business, direct write-downs and recoveries relating to loans which had previously been written off.

The comparison between the expected losses and actually incurred losses must take account of the fact that the figures, due to considerations of methodology, are only comparable with each other to a limited extent. Moreover, the expected losses refer to

a static portfolio of exposures, whereas the actually incurred losses result from a credit portfolio which is subject to changes in the course of a year.

Table 40: Expected and incurred losses in the lending business per exposure class (EU CR9)

All figures in € million

	Exposure classes IRB approach	Expected loss [1] 31.12.2017	Incurred loss [2] 2018	Expected loss [1] 31.12.2016	Incurred loss [2] 2017	Expected loss [1] 31.12.2015	Incurred loss [2] 2016
		a	b	c	d	e	f
1	Central governments and central banks	-	-	-	-	-	-
2	Institutions	-	-	-	-	-	-
3	Corporates	59	24	38	1	45	5
4	thereof: specialised lending	53	23	26	1	34	3
5	thereof: small and medium-sized enterprises (SME)	4	1	-	-	-	-
6	Retail	-	-	-	-	-	-
7	Equity	-	-	-	-	-	-
8	**Total**	**59**	**24**	**38**	**1**	**45**	**5**

1) Expected credit loss (for a period of 1 year) for real estate financing loans (mortgage loans and current account loans) in the IRB approach; excluded are already defaulted and impaired non-performing loans in the impairment level 3 of IFRS 9.

2) Additions less reversals of level 3 impairments in accordance with IFRS 9 (individual allowances in accordance with IAS 39) and provisions in the real estate financing business, plus direct write-offs less income from recoveries from written-off financial assets.

The incurred loss for real estate financing loans in the IRB approach amounted to € 24 million. There were net additions of € 19 million for the stage 3 impairments, and there were net additions of € 5 million for the provisions in lending business. The actually incurred loss in the financial year 2018 is thus lower than the expected figure of € 59 million at the end of 2017.

The expected loss for real estate financing loans as of 31 December 2018 for a period of one year - excluding defaulted and impaired non-perofrming loans of impairment stage 3 - amounted to € 52 million.

It has to be noted that future changes (for instance in the economy or developments relating to individual risks) may lead to changes in the above-mentioned EL figures. Over a period of time, the default and loss history of the pbb Group may also lead to adjustments of estimated risk parameters within the framework of annual checks to identify the need for re-calibration. The actually incurred losses may also differ from the expected losses.

The loss given default (LGD) for non-defaulted real estate loans was 11 % on average. For the entire real estate finance portfolio, the LGD average was also 11 %.

For the real estate financing loans which have not defaulted, the probability of default (PD) is 1.6 % on average.

5.6 Counterparty credit risk

This chapter shows information in accordance with the articles 439, 444 and 452 CRR for exposures for which the value of the receivable is calculated in accordance with part 3, title II, chapter 6 "Counterparty credit risk" of the CRR. These regulations for calculating the exposure value for the counterparty credit risk are applied by the pbb Group for derivative transactions, using the mark-to-market method in accordance with article 274 CRR.

The pbb Group does not use a method based on an internal model (IMM). Disclosure of the table EU CCR7 in accordance with EBA/GL/2016/11 is accordingly not relevant for the pbb Group. As was the case in the previous year, the pbb Group had again not carried out any hedging transactions with credit derivatives as of 31 December 2018 (neither as a protection taker nor as a protection giver), and also does not operate in the field of prime brokerage. The tables in accordance with article 439 letters g and h CRR and the table EU CCR6 in accordance with EBA/GL/2016/11 are therefore not applicable.

For security financing transactions (security lending/repo transactions), the pbb Group uses the regulations for mitigating credit risk (for financial securities) in accordance with chapter 4 of the CRR (comprehensive method in accordance with Art. 223 et seq. CRR); this is the reason why these transactions are not shown in the counterparty credit risk tables (the table EU CCR1 is an exception in this respect).

Objective

The pbb Group uses derivatives mainly to hedge market risks resulting for instance from changes in interest rates or exchange rates. These hedging transactions are opposed by underlyings of asset or liability positions. The hedging of interest and exchange rate risks is intended to reduce and/or avoid market risks.

The counterparties in derivatives business are mainly OECD credit institutions. The pbb Group also provides derivatives for real estate customers and public law entities, for instance to enable them to hedge market risks of commercial real estate financing.

Netting and collateral agreements

Netting agreements

The business with derivatives is usually based on standard mutual netting agreements which aim to minimise legal risks as well as economic and regulatory credit risks, and which enable mutual risks to be netted. This means that positive and negative market values of derivative contracts included under a netting agreement can be offset against each other and future regulatory risk premiums for these products can be reduced. Within the framework of the netting process, the credit risk is reduced to a single net receivable due from the contracting party.

These risk-mitigating techniques are used for the purpose of regulatory reporting and the internal measurement and monitoring of credit commitments only if they are considered to be enforceable in the relevant jurisdiction in the event of the insolvency of the business partner. Legal appraisals are used for assessing such enforceability.

The national and international agreements used for this purpose are the German Master Agreement for Financial Futures (DRV) based on German law as well as the ISDA Master Agreement of the International Swaps and Derivatives Association (ISDA).

pbb is a direct clearing member of Eurex Clearing. Eurex Clearing is the central clearing house used by pbb or the qualified central counterparty (qualified CCP) in accordance with article 4 point 88 CRR. The pbb Group uses the possibility of using a central counterparty for clearing purposes for certain contract types and of thus reducing bilateral default risk.

Collateral management

By way of analogy with the netting agreements, the pbb Group also concludes collateral agreements with certain business partners in addition to the netting agreements (German hedging appendix to the DRV or ISDA Collateral Support Annex) in order to hedge any net receivables/liabilities which may be due after netting (receipt or provision of collateral). These collateral

service agreements limit the credit risk by means of a timely assessment and adjustment of the customer exposure (limit relief), thereby creating scope for new business transactions within the granted counterparty lines.

Collateral is received mainly in the form of cash collateral and, in certain cases, securities. Collateral which is received is systematically documented.

The current hedging requirement is determined on a daily basis within the framework of mark-to-market evaluations and agreed with the counterparties. If threshold amounts have been agreed, collateral is only requested once the threshold for the particular contracting party has been attained. The same is applicable for any minimum transfer amounts which have been agreed. A call will be made only when the respective minimum transfer amount has been attained or exceeded. If there is a change in the mark-to-market valuation to a level below this threshold, no call is made in order to limit processing costs. Incoming payments are monitored and the counterparty is sent a reminder when needed.

A collateral service agreement is also in place with the central Eurex Clearing counterparty. Collateral is mainly provided in the form of securities using a specific securities portfolio set up for this purpose for Eurex Clearing. Cash collateral can however also be provided.

Derivative credit risk exposures

Within the framework of its over-the-counter (OTC) business, the pbb Group is exposed to credit risks relating to business with derivatives.

Potential replacement cost

The two following tables in accordance with article 439 letter e CRR in conjunction with EU CCR5-A and EU CCR5-B of the EBA/GL/2016/11 show the extent to which the pbb Group has exposures in various contract types and also the extent to which it uses legally enforceable derivative netting agreements and collateral netting. The collateral which is received and provided for the purpose of reducing the counterparty credit risk is broken down according to types of collateral (cash collateral and securities). Netting agreements and eligible collateral relate to all types of contract within a framework agreement; this is the reason why these positions are not broken down according to contract type. The pbb Group does not use netting covering all products (derivatives versus security financing transactions).

Table 41: Impact of netting and collateral held on exposure values (EU CCR5-A)

All figures in € million

	Counterparty credit risk exposures by contract types	Gross positive fair value or net carrying amount [1]	Netting benefits	Netted current credit exposure	Eligible collateral held [2]	Net credit exposure [3]
		a	b	c	d	e
1	Derivatives	2,957	1,744	1,213	1,027	186
1a	Interest risk rate	2,921				
1b	Foreign exchange rate risk	36				
1c	Exchange/ index-related risk	-				
1d	Credit derivatives	-				
1e	Commodity-based risk	-				
1f	Others	-				
2	Securities financing transactions (SFT) [4]	-	-	-	-	-
3	Cross-product netting [5]	-	-	-	-	-
4	**Total**	**2,957**	**1,744**	**1,213**	**1,027**	**186**

1) Current positive market value before netting and eligible received collateral.
2) Eligible received collateral after deduction of a safety margin (haircut).
3) Current positive market value after taking into account the positive effects of legally enforceable netting and collateral agreements.
4) pbb Group does not calculate the exposure value for securities lending/repo transactions in accordance with Part Three, Title II, Chapter 6, but in acc. with Chapter 4 "Credit risk mitigation" of the CRR.
5) pbb Group does not apply cross-product netting (e.g. derivatives and securities financing transactions).

Table 42: Collateral for exposures to counterparty credit risk (EU CCR5-B)

All figures in € million

	Types of collateral	Collateral used in derivative transactions [1]				Collateral used in SFTs [4]	
		Fair value of collateral received		Fair value of collateral posted		Fair value of collateral received	Fair value of collateral posted
		Segregated [2]	Unsegregated [3]	Segregated [2]	Unsegregated [3]		
		a	b	c	d	e	f
1	Cash	-	1,120	-	1,708	-	-
2	thereof: EUR	-	1,120	-	1,704	-	-
3	thereof: USD	-	-	-	0.1	-	-
4	thereof: GBP	-	-	-	4	-	-
5	thereof: CHF	-	-	-	0.1	-	-
6	Secutities	-	-	23	-	-	-
7	**Total**	**0**	**1,120**	**23**	**1,708**	**0**	**0**

1) Total collateral received / posted as of 31 December 2018.
2) Refers to collateral that is held in a bankruptcy-remote manner in the meaning of Article 300 in the CRR.
3) Refers to collateral that is not held in a bankruptcy-remote manner.
4) pbb Group does not calculate the exposure value for securities lending / repo transactions in acc. with Part Three, Title II, Chapter 6, but in accordance with Chapter 4 "Credit risk mitigation" of the CRR.

Derivative positions result not only in market risks but also credit risks if a claim against a counterparty arises in the form of positive market values. From the perspective of the pbb Group, these positive replacement values (positive gross fair values) are relevant for assessing the risk, as they correspond to the additional expense or reduced income which would result from the replacement of an equivalent position following a default of the counterparty. Accordingly, the positive market values are considered to be replacement cost for regulatory purposes.

The positive replacement values (before netting and collateral) of derivative transactions declined to € 2,957 million as of 31 December 2018 (31 December 2017: € 3,548 million). The decline of € 591 million compared with the previous year is attributable to the decline in the volume of derivatives as well as the on-balance-sheet netting of derivatives concluded with Eurex Clearing. In the financial year 2018, new derivative contracts which were concluded were settled via Eurex Clearing and derivatives with bilateral counterparties from the portfolio were converted to Eurex Clearing.

The amount of € 2,957 million (before netting and collateral which is received) corresponds to the expenses which the pbb Group would incur for replacing originally concluded contracts by means of transactions of equal commercial significance. Accordingly, from the point of view of the pbb Group, this amount indicates the maximum potential counterparty-related credit risk. From the regulatory point of view, these expenses are considered to be replacement costs. Most of these costs relate to interest rate swaps.

By concluding mutual netting agreements allowing for negative and market values across all contracts to be netted within a single framework agreement, the counterparty-related credit risk is reduced to one single net receivable due from the contracting party. The pbb Group has used derivative netting with an amount of € 1,744 million.

The pbb Group has concluded collateral agreements with its business partners to hedge the net receivable remaining after netting. Most of the eligible collateral received (€ 1,027 billion) is in the form of cash collateral. Overall, the pbb Group has received collateral in the amount of € 1,120 million. As a result of hedging, the credit risk or the net credit exposure has declined to € 186 million (31 December 2017: € 276 million).

Exposure values

The calculation of the regulatory receivables (risk-weighted assets) for the credit risk resulting from derivative positions is based on so-called credit equivalent amounts and not on the positive replacement values described above. The credit equivalent amounts correspond to the exposures at default (EAD) of the default exposures shown in the balance sheet. The credit equiva-

lent amounts are determined on the basis of the current potential replacement cost and an expected future increase in the current potential replacement cost, the potential future replacement cost (regulatory add-on).

The counterparty credit risk of derivative transactions is shown in the following two tables in accordance with article 439 letters e, f and i CRR in conjunction with EU CCR1 and EU CCR8 of the EBA/GL/2016/11. Table EU CCR1 (excl. receivables due to the central counterparty Eurex Clearing) provides an overview of the calculation of the regulatory requirements for the methods used for the counterparty credit risk as well as the main parameters of the respective methods. For calculating the credit equivalent amounts, the pbb Group uses the mark-to-market method according to article 274 CRR. Table EU CCR8 shows the exposure at default (EAD) and the risk-weighted assets (RWA) for receivables due from central counterparties, including the exposures of pre-financed contributions to the default fund with regard to a central counterparty. The central clearing house used by pbb or the qualified central counterpart in accordance with article 4 point 88 CRR is Eurex Clearing; pbb is a direct clearing member.

Table 43: Counterparty credit risk by approach (EU CCR1)

All figures in € million

	Methods for calculating the regulatory exposure value	Notional	Replacement cost / current market value [1]	Potential future credit exposure	EEPE [2]	Multiplier [3]	EAD post CRM [4]	Risk-weighted assets (RWA)
		a	b	c	d	e	g	g
1	Mark-to-market method		186	284			470	260
2	Original exposure method	-					-	-
3	Standardised approach		-			-	-	-
4	IMM (for derivatives and SFTs)				-	-	-	-
5	thereof: securities financing transactions (SFT)				-	-	-	-
6	thereof: derivatives and long settlement transactions				-	-	-	-
7	thereof: from contractual cross-product netting				-	-	-	-
8	Financial collateral simple method (for SFTs)						-	-
9	Financial collateral comprehensive method (for SFTs) [5]						592	107
10	VaR for SFTs						-	-
11	**Total**							**367**

1) Current positive market value after netting and after eligible received collateral, without exposures to central counterparties (CCP).
2) Effective expected positive exposure according to Article 284 CRR (Internal model method (IMM) based).
3) Multiplier according to Article 276 CRR (standardised approach) and Article 284 CRR (Internal model method).
4) Regulatory exposure value (exposure at default, EAD) or credit equivalent amount after considering any credit risk mitigation (CRM) techniques.
5) pbb Group does not calculate the exposure value for securities lending/repo transactions in acc. with Part Three, Title II, Chapter 6, but in acc. with Chapter 4 "Credit risk mitigation" of the CRR.

Table 44: Exposures to central counterparties (EU CCR8)

All figures in € million

	Exposures to central counterparties (CCP)	EAD post CRM [1]	Risk-weighted assets (RWA)
		a	b
1	**Exposures to qualified Central Counterparties (QCCP) total**		**3**
2	Exposures for trades at QCCPs (excluding initial margin and default fund contributions), thereof:	92	2
3	i) OTC derivatives	92	2
4	ii) Exchange-traded derivatives	-	-
5	iii) Securities financing transactions (SFTs)	-	-
6	iv) Netting sets where cross-product netting has been approved	-	-
7	Segregated[2] initial margin	-	
8	Non-segregated[3] initial margin	-	-

All figures in € million

	Exposures to central counterparties (CCP)	EAD post CRM [1]	Risk-weighted assets (RWA)
		a	b
9	Prefunded default fund contributions	8	1
10	Alternative calculation of own funds requirements for exposures	——	-
11	**Exposures to non-qualified Central Counterparties (Non-QCCP) total**	——	**0**
12	Exposures for trades at non-QCCPs (excluding initial margin and default fund contributions), thereof:	-	-
13	i) OTC derivatives	-	-
14	ii) Exchange-traded derivatives	-	-
15	iii) Securities financing transactions (SFT)	-	-
16	iv) Netting sets where cross-product netting has been approved	-	-
17	Segregated[2] initial margin	-	——
18	Non-segregated[3] initial margin	-	-
19	Prefunded default fund contributions	-	-
20	Unfunded default fund contributions	-	-

1) Regulatory exposure value (exposure at cefault, EAD) or credit equivalent amount after considering any credit risk mitigation (CRM) techniques, without exposures to non-CCPs.
2) Refers to collateral that is held in a bankruptcy-remote manner in the meaning of Article 300 in the CRR.
3) Refers to collateral that is not held in a bankruptcy-remote manner.

The credit equivalent amount (exposure at default, EAD) for the counterparty credit risk of derivative transactions calculated using the mark-to-market method amounted to € 562 million at the end of 2018 (31 December 2017: € 684 million); of this figure, € 92 million (31 December 2017: € 83 million) is attributable to receivables due from the central counterparty Eurex Clearing. The exposures for pre-financed contributions to the default fund due to a central counterparty amounted to approx. € 8 million (unchanged compared with the previous year). The pbb Group uses the risk-sensitive method in accordance with article 308 CRR for calculating the own funds requirements for pre-financed contributions to the default fund of a qualified central counterparty.

Exposures at default according to the credit risk approach

The following tables show the derivative counterparty credit exposures broken down according to the credit risk approach used for calculating the risk-weighted assets (RWA), the standard approach (CRSA) or the advanced IRB approach (IRBA).

The table in accordance with article 444 letter e CRR in conjunction with EU CCR3 of the EBA/GL/2016/11 contains a break-down of the counterparty credit risk exposures in the standard approach according to the type of counterparty and according to the risk weight allocated in the standard approach. pbb also discloses all receivables due from Eurex Clearing in the CRSA, in the exposure category Institutions.

The table in accordance with article 452 letter e CRR in conjunction with EU CCR4 of the EBA/GL/2016/11 shows a break-down of the counterparty credit risk exposures in the IRB approach according to the type of counterparty and various PD areas defined by the EBA and also according to additional important risk parameters. Additional disclosure of this table in accordance with article 452 letter j (i) CRR for every regional nature of the exposures is not relevant for the pbb Group. The derivative transactions are carried out exclusively by pbb, which is headquartered in Germany.

The IRB models used at the level of the pbb Group for calculating the own funds requirements for the counterparty credit risk, the related scope as well as the attribution of an obligor to an IRBA credit risk exposure to the rating systems are explained in the chapter 5.5 “IRB approach”.

Table 45: Counterparty credit risk exposures under the standardised approach (EU CCR3)

All figures in € million, unless otherwise stated

	Exposure classes Standardised approach (CRSA)	Risk weight											Total [1]	thereof unrated [2]
		0%	2%	4%	10%	20%	50%	70%	75%	100%	150%	Others		
		a	b	c	d	e	f	g	h	i	j	k	l	m
1	Central governments or central banks	-	-	-	-	-	-	-	-	-	-	-	-	-
2	Regional governments or local authorities	-	-	-	-	-	-	-	-	-	-	-	-	-
3	Public sector entities	-	-	-	-	-	-	-	-	-	-	-	-	-
4	Multilateral development banks	-	-	-	-	-	-	-	-	-	-	-	-	-
5	International organisations	-	-	-	-	-	-	-	-	-	-	-	-	-
6	Institutions	-	92	-	-	-	-	-	-	-	-	-	92	92
7	Corporates	-	-	-	-	-	-	-	-	-	-	-	-	-
8	Retail	-	-	-	-	-	-	-	-	-	-	-	-	-
8a	Secured by mortgages on immovable property	-	-	-	-	-	-	-	-	-	-	-	-	-
8b	Exposures in default	-	-	-	-	-	-	-	-	-	-	-	-	-
8c	Exposures associated with particularly high risk	-	-	-	-	-	-	-	-	-	-	-	-	-
8d	Covered bonds	-	-	-	-	-	-	-	-	-	-	-	-	-
9	Exposures to institutions and corporates with short-term credit assessment	-	-	-	-	-	-	-	-	-	-	-	-	-
9a	Exposures in the form of units or shares in collective investment undertakings (CIUs)	-	-	-	-	-	-	-	-	-	-	-	-	-
9b	Equity exposures	-	-	-	-	-	-	-	-	-	-	-	-	-
10	Other itmes	-	-	-	-	-	-	-	-	-	-	-	-	-
11	**Total**	**0**	**92**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**92**	**92**

1) CRSA-regulatory exposure value (exposure at default, EAD) or credit equivalent amount after considering any credit risk mitigation (CRM) techniques.
2) A credit assessment by a nominated ECAI (External Credit Assessment Institutions) is not available.

Table 46: Counterparty credit risk exposures under the IRB approach (EU CCR4)

All figures in € million, unless otherwise stated

	Exposure classes according to PD ranges IRB approach	Exposure at default (EAD) post CRM [1]	Average PD [2] in %	Number of obligors	Average LGD [3] in %	Average maturity in years	Risk-weighted assets (RWA)	RWA density [4] in %
		a	b	c	d	e	f	g
1	Central governments and central banks							
2	0,00 to < 0,15	3	0.04%	2	109%	5	2	83%
3	0,15 to < 0,25	-	-	-	-	-	-	-
4	0,25 to < 0,50	-	-	-	-	-	-	-
5	0,50 to < 0,75	-	-	-	-	-	-	-
6	0,75 to < 2,50	-	-	-	-	-	-	-
7	2,50 to < 10,00	-	-	-	-	-	-	-
8	10,00 to < 100,00	-	-	-	-	-	-	-
9	100,00 (Default)	-	-	-	-	-	-	-
10	Subtotal	3	0.04%	2	109%	5	2	83%
11	Institutions							
12	0,00 to < 0,15	90	0.10%	7	15%	5	20	22%
13	0,15 to < 0,25	156	0.20%	17	17%	5	54	35%
14	0,25 to < 0,50	64	0.35%	8	17%	5	27	42%
15	0,50 to < 0,75	-	-	-	-	-	-	-
16	0,75 to < 2,50	-	-	-	-	-	-	-
17	2,50 to < 10,00	-	-	-	-	-	-	-
18	10,00 to < 100,00	-	-	-	-	-	-	-
19	100,00 (Default)	-	-	-	-	-	-	-
20	Subtotal	309	0.20%	32	16%	5	100	32%

All figures in € million, unless otherwise stated

	Exposure classes according to PD ranges IRB approach	Exposure at default (EAD) post CRM [1]	Average PD [2] in %	Number of obligors	Average LGD [3] in %	Average maturity in years	Risk-weighted assets (RWA)	RWA density [4] in %
		a	b	c	d	e	f	g
21	Corporates							
22	0,00 to < 0,15	34	0.02%	5	23%	5	4	11%
23	0,15 to < 0,25	9	0.20%	6	56%	4	7	80%
24	0,25 to < 0,50	55	0.40%	72	56%	4	49	89%
25	0,50 to < 0,75	-	-	-	-	-	-	-
26	0,75 to < 2,50	39	1.28%	55	56%	4	57	146%
27	2,50 to < 10,00	10	3.25%	24	56%	4	19	184%
28	10,00 to < 100,00	10	10.00%	1	56%	4	22	211%
29	100,00 (Default)	0.3	100%	1	56%	2	0.2	62%
30	Subtotal	158	1.55%	164	49%	4	157	100%
31	thereof: specialised lending							
32	0,00 to < 0,15	4	0.10%	3	56%	4	2	46%
33	0,15 to < 0,25	1	0.20%	4	56%	4	1	72%
34	0,25 to < 0,50	31	0.36%	65	56%	4	27	89%
35	0,50 to < 0,75	-	-	-	-	-	-	-
36	0,75 to < 2,50	38	1.29%	53	56%	4	56	146%
37	2,50 to < 10,00	7	3.14%	22	56%	4	13	181%
38	10,00 to < 100,00	10	10.00%	1	56%	4	22	211%
39	100,00 (Default)	0.3	100.00%	1	56%	2	0.2	62%
40	Subtotal	92	2.38%	149	56%	4	121	131%
41	thereof: SMEs							
42	0,00 to < 0,15	-	-	-	-	-	-	-
43	0,15 to < 0,25	-	-	-	-	-	-	-
44	0,25 to < 0,50	16	0.45%	2	56%	4	15	90%
45	0,50 to < 0,75	-	-	-	-	-	-	-
46	0,75 to < 2,50	-	-	-	-	-	-	-
47	2,50 to < 10,00	3	3.50%	2	56%	5	6	190%
48	10,00 to < 100,00	-	-	-	-	-	-	-
49	100,00 (Default)	-	-	-	-	-	-	-
50	Subtotal	20	0.96%	4	56%	4	21	107%
51	Retail	-	-	-	-	-	-	-
52	Equity	-	-	-	-	-	-	-
53	thereof: internal model approach (IMA)	-	-	-	-	-	-	-
54	thereof: PD-/LGD approach	-	-	-	-	-	-	-
55	thereof: simple risk-weighting approach	-	-	-	-	-	-	-
56	**Total**	**470**	**0.65%**	**198**	**28%**	**4**	**260**	**55%**

1) IRBA-Regulatory exposure value (exposure at default, EAD) or credit equivalent amount after considering any credit risk mitigation (CRM) techniques.
2) Average probability of default (PD) weighted by the EAD.
3) Average loss given default (LGD) weighted by the EAD.
4) Relationship between column (f) and column (a).

CVA risk

The following table in accordance with article 439 letters e and f CRR in conjunction with EU CCR2 of the EBA/GL/2016/11 shows the exposure at default (EAD) and the risk-weighted assets (RWA) for the CVA charge.

The CVA charge is the additional own funds requirement for the risk of adjusting the credit valuation (CVA risk) in the case of OTC derivatives, i.e. for potential (unexpected) losses of market value in connection with a decline in the credit standing of a counterparty. pbb calculates the own funds requirement for the risk of an adjustment to the credit valuation in accordance with the standard method pursuant to article 384 CRR, based on the mark-to-market method in accordance with article 274 CRR. In accordance with article 382 CRR, no CVA charge is calculated for receivables due from the central counterparty Eurex Clearing.

Table 47: CVA capital charge (EU CCR2)

All figures in € million

	Methods used for determining the exposure value for the CVA risk	Exposure value [1)	Risk-weighted assets (RWA)
		a	b
1	Total portfolios subject to the advanced method	-	-
2	i) VaR component (including the triple-multiplier)	———	-
3	ii) SVaR component (including the triple-multiplier)	———	-
4	All portfolios subject to the standardised method	367	294
EU4	Based on the original exposure method	-	-
5	**Total subject to the CVA capital charge**	**367**	**294**

1) Exposure value used to calculate the capital requirement for the risk of an adjustment of credit valuation (CVA risk) for OTC derivatives. This means the regulatory exposure value (exposure at default, EAD) after considering any credit risk mitigation (CRM) techniques.

Rating-based collateral service agreements

With some counterparties, the pbb Group has concluded rating-based collateral service agreements (CSA) which provide for an adjustment of the threshold amount or a reduction of the minimum transfer amount in the event of a rating downgrade. The extent of the adjustment is explicitly agreed with the contracting party in the collateral service agreement.

In the event of an adjustment to the threshold amount, the related cash flow would become immediately due as pbb would have to provide a higher collateral contribution in this case. In the event of an amendment to the minimum transfer amount, there would only be a postponement in the cash flows, and there would not be any additional payments. This is related to the fact that the minimum transfer amount, unlike the threshold amount, does not involve the provision of additional collateral and instead specifies the amount from which payments must be made. If the minimum transfer amount is reduced, and if therefore payments have to be made from a lower threshold, this would not have any impact on the amount of collateral itself, and instead would only have an impact on the amount from which changes in value in the CSA portfolio would have to be settled. For smaller minimum transfer amounts, changes in value are thus settled at an earlier date.

Table 48: Threshold amounts and minimum transfer amounts in the derivatives business

All figures in € million

	Threshold amounts	Minimum transfer amounts
Deutsche Pfandbriefbank AG	-	43
Total	**0**	**43**

The figures in the above table show the threshold amounts and minimum transfer amounts which are agreed in the collateral service agreements and which are still relevant for current ratings. Most collateral service agreements no longer provide for threshold amounts, there are only minimum transfer amounts. In a small number of cases, these amounts depend on the rating. As can be seen, the downgrading of a rating does not have any material impact on the liquidity of the pbb Group. This is due to the fact that most long-term ratings for the collateral service agreements (CSA) of pbb are already in the lowest category. The following table shows the senior unsecured ratings commissioned by pbb as of the reporting date.

Table 49: Senior unsecured ratings

		Standard & Poor's	DBRS [1]
Deutsche Pfandbriefbank AG	Long-term issuer rating / outlook	A- / negative	BBB / positive
	Short-term issuer rating	A-2	R-2 (high)
	Long-term "preferred" senior unsecured debt rating [2]	A-	BBB
	Long-term "non-preferred" senior unsecured debt rating [3]	BBB-	BBB (low)

1) The rating mandate with DBRS was terminated as at 31 December 2018.
2) S&P: "Senior Unsecured Debt"; DBRS: "Senior Unsecured Debt".
3) S&P: "Senior Subordinated Debt"; DBRS: "Senior Unsecured Debt".

Rating agencies may alter or withdraw their ratings at any time. Ratings of individual securities issued by pbb may deviate from the ratings indicated above, or not be rated at all. For the evaluation and usage of ratings, please refer to the rating agencies' pertinent criteria and explanations. The relevant terms of use are to be considered. Ratings should not serve as a substitute for personal analysis. They do not constitute a recommendation to purchase, sell or hold securities issued by pbb.

Internal capital allocation and upper limits for the counterparty credit risk

Capital allocation and the limitation of default risks for counterparties with derivative positions is embedded in the generally applicable allocation and limitation process for credit risks in the pbb Group. Limits are allocated primarily on the basis of the counterparties' credit rating for which the rating methods used play an important role. For details of the allocation of capital to the risk types, please refer to the chapter addressing ICAAP and monitoring of the risk-bearing capacity (see chapter 4.3 "Economic capital and risk-bearing capacity"). In all other respects, the methods of regulatory large credit management are applicable. Risk Management & Control is responsible for ongoing monitoring of counterparty limit usage on a daily basis.

Correlations of market and counterparty risks

The requirements of article 439 letter c CRR concerning a description of regulations relating to correlation risks are not relevant for the pbb Group. The pbb Group does not trade any products whose underlying is directly correlated with the probability of default of the counterparty.

Accounting and valuation methods for derivatives

In accordance with IFRS 9, derivatives are measured at fair value through other comprehensive income (as has been previously the case), unless they are used as hedging instruments within the framework of hedge accounting.

The positive/negative market values of the stand-alone derivatives are shown in the balance sheet under "Financial assets measured at fair value through other comprehensive income" or "Financial liabilities measured at fair value through other comprehensive income". Changes in the fair value during a period are shown through other comprehensive income under the position "Result of financial instruments measured at fair value through other comprehensive income" (fair value valuation result) of the income statement.

The positive/negative market values of the hedging derivatives are shown under the balance sheet items "Positive fair values of the hedging derivatives" or "Negative fair values of the hedging derivatives". Hedging derivatives contain the fair values of the derivatives which are used as hedging instruments in hedge accounting. Because the pbb Group no longer designates any derivatives in a cash flow hedge, this is only applicable for derivatives of micro fair value hedge accounting or the portfolio hedge of interest rate risks which are measured at fair value. Changes in the fair value during a period are shown through other comprehensive income under the item "Result of hedges" in the income statement.

In order to account for counterparty credit risks in the case of OTC derivatives, the pbb Group determines credit value adjustments (CVA) and debt value adjustments (DVA), i.e. valuation adjustments of OTC derivatives within the framework of accounting. The CVA describes the valuation adjustments to reflect the default risk (the deterioration in the credit standing) of the counterparty, and the DVA describes the adjustments relating to the Group's own default risk (the deterioration in the Group's own credit standing) with regard to a counterparty. The CVA losses are recognised in the income statement and also for determining the risk exposure. The DVA adjustments are deducted from the common equity tier 1 capital.

5.7 Shareholdings in the banking book

Objective

The pbb Group takes on investments for achieving its corporate objectives exclusively for strategic considerations. The shareholdings of the pbb Group are therefore an essential element of the business model of the pbb Group described in chapter 2.1 “Organisational and legal structure”. The companies under pbb are legally and operationally separate entities, but pursue objectives which are coordinated at the Group level.

Accounting and valuation methods

The shareholdings of pbb are detailed in the notes to the annual report 2018 of the pbb Group (note 83 “Holdings of pbb”) which set ouit the subsidiaries and the shareholdings.

Consolidated subsidiaries

All fully consolidated companies have the calendar year as their financial year. In the case of Immo Immobilien Management Beteiligungsgesellschaft i. L., the financial year is a short financial year with a closing date of 31 December 2018 in view of the liquidation process which was initiated in the course of the year. The separate financial statements of consolidated German and foreign companies are included in the consolidated financial statements of pbb based on uniform accounting and valuation principles.

At the time of acquisition, the costs of purchase of the business combination are distributed by way of recognising the identifiable assets, liabilities and contingent liabilities of the acquired company which meet the recognition criteria set out in IFRS 3.10 at their fair values applicable at that time. In accordance with IFRS 3.32-36, any difference between the costs of purchase of the business combination and the percentage interest of the purchaser in the net fair value of the identifiable assets, liabilities and contingent liabilities recognised in this way is shown as goodwill or as the excess of the purchaser’s interest in the net fair value of the identifiable assets, liabilities and contingent liabilities of the acquired company over the costs of purchase. If the percentage interest in the sum of the fair values exceeds the costs of purchase of the business combination, the identifiable assets, liabilities and contingent liabilities as well as the extent of the costs of purchase of the business combination are re-assessed, and any excess remaining after the re-assessment is recognised immediately in the income statement.

Business relations within the consolidation group are netted with respect to each other, and inter-company results attributable to internal transactions are eliminated.

Non-consolidated subsidiaries

As of 31 December 2018, the pbb Group did not have any non-consolidated subsidiaries.

Associated companies

As of 31 December 2018 (as was the case in the previous year), there were no material interests in associated companies or joint ventures. The shares which are not of a material nature from the point of view of the Group are recognised at fair value through other comprehensive income in accordance with IFRS 9.

Values of shareholdings

In the following table, the shareholdings of the pbb Group are shown in accordance with their accounting classification in line with article 447 letters b and c CRR. The table shows only those shareholdings which are part of the regulatory consolidation scope. Items which are subject to the deduction method or which are subject to regulatory risk weighting are not included.

Table 50: Values of shareholdings based on their accounting classification

All figures in € million

Equity instruments by groups	Comparison		
	Carrying amount	Fair value	Market value (stock-market price)
Subsidiaries	**20**	**20**	**-**
Consolidated subsidiaries under accounting law			
thereof exchange-trade equity instruments	-	-	-
thereof unlisted, but part of a sufficiently diversified portfolio	-	-	-
thereof other investments	20	20	-
Non-consolidated subsidiaries under accounting law			
thereof exchange-trade equity instruments	-	-	-
thereof unlisted, but part of a sufficiently diversified portfolio	-	-	-
thereof other investments	-	-	-
Associated companies	**-**	**-**	**-**
Associated companies of minor significance			
thereof exchange-trade equity instruments	-	-	-
thereof unlisted, but part of a sufficiently diversified portfolio	-	-	-
thereof other investments	-	-	-

In addition to pbb as the parent company, the regulatory consolidation scope of the pbb Group comprises three companies which are also all consolidated in accordance with the German Commercial Code (IFRS). Accordingly, it is not necessary for a fair value to be additionally determined for these three companies. Their fair value is equal to their carrying amount.

Altogether, the carrying amounts of the companies in the regulatory consolidation scope (excl. pbb itself) are stated as € 20 million (31 December 2017: € 14 million). None of the companies is listed.

Realised and unrealised gains and losses from shareholdings

In accordance with article 447 letters d and e CCR, the realised and unrealised gains and losses from shareholdings are stated in accordance with the regulations of IFRS 12.

Realised gains and losses

As of 31 December 2018, the pbb Group did not have any non-consolidated subsidiaries. Immo Immobilien Management Beteiligungsgesellschaft mbH (since October 2018 in liquidation), Munich, which is wholly owned by pbb, was previously not consolidated in view of its minor significance; it was included in the consolidated financial statements for the first time at the beginning of 2018.

Following the disposal of WISUS Beteiligungs GmbH & Co. Zweite Vermietungs-KG, Munich, for a price of less than € 1 million and without any impact on the results of operations, the pbb Group still holds shares in two associated companies (31 December 2017: three). Because of their minor significance for the pbb Group, these shares are no longer included in the consolidated financial statements using the at-equity method; instead, they are recognised at fair value through other comprehensive income in accordance with IFRS 9. The sum of the carrying amounts of the shareholdings in these associated companies (which are insignificant when viewed individually) was € 0 million (unchanged compared with the previous year; 31 December 2017, € 0 million). The total amount of shares of the Group in the profit or loss of the holdings of associated companies which (when viewed individually) are not of a material nature is € 1 million (2017: € 1 million).

Unrealised gains and losses from revaluation

As was the case in the previous year, the pbb Group did not hold any shareholdings in companies as of 31 December 2018 for which the fair value could be reliably determined but which were not fully consolidated or recognised in accordance with the at-

equity method. Accordingly, in the financial year 2018, the pbb Group did not have any unrealised gains or losses from revaluations resulting from changes in the fair value based on a subsequent fair value measurement (31 December 2017: € 0 million).

Effects from deconsolidation

In May 2018, the previously consolidated IMMO Immobilien Management GmbH & Co. KG, Munich, was merged with Immo Immobilien Management Beteiligungsgesellschaft mbH (since October 2018 in liquidation). This has not had any impact on the net assets, financial position and results of operations of the pbb Group. There were also no changes in the scope of consolidation of the pbb Group in 2018.

5.8 Securitisations

Objectives, acquired functions and activities in the securitisation process

In the reporting year 2018, the pbb Group did not place any of its own securitisations and did not invest in securitisation positions of third-party receivables (unchanged compared with the previous year). From securitisation business carried out in the past, the pbb Group still has a synthetic securitisation transaction in its regulatory role as originator. This originator securitisation is the only securitisation transaction of the Group. The pbb Group does not operate on the market as investor or sponsor in the regulatory roles. pbb and its affiliated companies (the pbb Group) also do not have a trading book.

In accordance with article 449 CRR, the following table provides an initial overview of the extent of existing activities in the respective functions; they are then subsequently described in greater detail.

Table 51: Overall securitisation activities

All figures in € million

	Securitisation activities							
	Originator				Investor		Sponsor	
	With significant credit risk transfer [1]		Without significant credit risk transfer [2]		Securitisation positions purchased			
	31.12.2018	31.12.2017	31.12.2018	31.12.2017	31.12.2018	31.12.2017	31.12.2018	31.12.2017
Banking book	127	178	-	-	-	-	-	-
Trading book	-	-	-	-	-	-	-	-
Total	**127**	**178**	**0**	**0**	**0**	**0**	**0**	**0**

1) Sum total of securitisation positions created with recognition of capital considerations according to Basel III due to essential and significant risk transfers according to Article 244 section 2 CRR.

2) Exposure at Default (CRSA-/ IRBA-regulatory exposure amount) of the underlying receivables for securitisation positions without recognition of capital considerations according to Basel III due to essential and significant risk transfers according to Article 244 section 2 CRR.

Originator

As was the case in the previous year, the pbb Group had only one own securitisation transaction from 2007 in its portfolio as of the reporting date; namely the synthetic securitisation transaction Estate UK-3. In February 2007, a predecessor institution of pbb (Hypo Real Estate Bank International AG, which was merged with pbb) securitised a credit portfolio in Great Britain within the framework of the synthetic securitisation transaction Estate UK-3, and thus hedged credit risks. The UK credit portfolio was hedged by means of a financial guarantee of a major credit institution for the super senior tranche and by issued credit-linked notes (CLN) for the remaining tranches. The portfolio consisted of thirteen loans, which financed 110 commercial properties. The transaction was concluded with a maturity of 15 years (maturity 2022), the originally securitised total volume amounted to € 813 million. The secured party of the transaction is pbb.

The primary motivation behind the bank's own securitisation programmes in the past was to achieve risk and capital relief (reduction of credit risks) and to manage the credit portfolio by limiting or removing risk concentrations. In this sense, pbb has securitised its own sub-portfolios in its role as originator. This was the complete or partial transfer of the credit risks of selected pre-defined credit portfolios to the capital market.

Securitisations are divided into securitisation transactions with transfer of receivables (so-called traditional securitisations or true-sale securitisations) and securitisation transactions without transfer of receivables (so-called synthetic securitisations). In the case of synthetic securitisations, the risks are transferred by means of collateral in the form of guarantees or credit derivatives; in the case of traditional securitisations, this is achieved by the sale (true sale) of balance sheet assets.

In accordance with article 449 letters n(i) and p CRR, the two following tables show own receivables securitised by the pbb Group in its role as originator for which risk-weighted securitisation positions are determined in accordance with articles 245 to 266 CRR.

Table 52: Total amount of securitised receivables

All figures in € million

Underlying portfolio	Originator				Sponsor	
	Banking book		Trading book		Banking book	Trading book
	True sale securitisations	Synthetic securitisations [1]	True sale securitisations	Synthetic securitisations [1]		
Real Estate loans	-	127	-	-	-	-
thereof: commercial real estate loans	-	127	-	-	-	-
thereof: residential real estate loans	-	-	-	-	-	-
thereof: commercial and residential real estate loans	-	-	-	-	-	-
Public sector investment finance	-	-	-	-	-	-
Resecuritisation	-	-	-	-	-	-
Total	**0**	**127**	**0**	**0**	**0**	**0**

1) Total amount of generated securitisation positions.

The total amount of securitisation positions as of 31 December 2018 amounted to € 127 million (31 December 2017: € 178 million), broken down over six classes with sequential loss allocation. The reduction in volume compared with the previous year is due mainly to the repayment (ahead of schedule) of a real estate loan underlying the securitisation, and is also due to exchange rate changes between the issue currency, Sterling (GBP) and the Euro.

The securitisation transactions usually provide for the retention of a small portion of risks in the form of a junior tranche (first loss piece) of the collateral provider. The synthetic securitisation transaction Estate UK-3 contains junior tranches of € 17 million (31 December 2017: € 17 million). The pbb Group does not hold any of the issued credit-linked notes. All credit-linked notes (including the junior tranches) have been sold to investors.

Based on the previous table “Total amount of securitised receivables”, the following table shows the non-performing and past due receivables of the loans securitised by the pbb Group as originator as well as the related actual losses which were incurred in the financial year 2018.

Table 53: Non-performing/past due receivables and losses from securitised receivables

All figures in € million

Underlying portfolio	Securitised receivables as Originator			
	Banking book		Trading book	
	Non-performing/ past due	Losses	Non-performing/ past due	Losses
Real Estate loans	127	-	-	-
thereof: commercial real estate loans	127	-	-	-
thereof: residential real estate loans	-	-	-	-
thereof: commercial and residential real estate loans	-	-	-	-
Public sector investment finance	-	-	-	-
Resecuritisation	-	-	-	-
Total	**127**	**0**	**0**	**0**

The classification “non-performing/past due” applies to underlying past-due receivables where the obligor failed to meet his contractually agreed payment of interest or principal or where another default event as defined by CRR occurred or an stage 3 impairment was created in relation to the receivable as of the reporting date. As distinct to the non-performing and past due

receivables, "losses" show the use of impairments for underlying receivables, i.e. the write-downs on capital, interest or cost recognised in relation to these receivables in the financial year.

The single loan in the UK credit portfolio which still existed as of the reporting date, namely a real estate loan underlying the securitisation transaction Estate UK-3 with an exposure at default (EAD) of € 127 million, is non-performing or shows a default event. The collateral underlying the loan (commercial real estate properties) was sold in 2016. The realised proceeds were considerably lower than the original value of the collateral. The default-related loss is approximately GBP 114 million (approx. € 127 million as of 31 December 2018). At the end of November 2016, pbb notified the auditing company Deloitte, the trustee of Estate UK-3, that the loss should be attributed to the investors (CLNs). Deloitte then notified pbb that, in the opinion of Deloitte, there are doubts as to whether the loss allocation intended by pbb is allowable and that Deloitte will appoint an expert in accordance with the conditions of the Estate UK-3 to determine the allowability of the loss allocation. If the loss allocation is wholly or partly inadmissible, the loss would thus have to be borne by pbb. The expert was mandated by Deloitte in mid-2017, and the expert process is currently still ongoing. pbb is still of the opinion that the criteria for complete allocation of the loss are satisfied.

The pbb Group did not provide any support beyond the contractual obligations in accordance with article 248 (1) CRR.

Securitisation positions from revolving default exposures

The pbb Group was not involved in securitisation positions featuring a securitised portfolio of revolving default exposures (early amortisation approach) in accordance with article 265 CRR. This information is therefore not disclosed in accordance with article 449 letter n (iv) CRR.

Securitisation transactions without effective risk transfer

As was the case in the previous year, the pbb Group did not have any of its own securitisation transactions without effective risk transfer in its portfolio in accordance with article 243 f CRR at the end of 2018.

Securitisation special-purpose entities

As was the case in the previous year, the pbb Group did not use any SSPEs as of 31 December 2018 as defined in article 449 letter i CRR which invested in securitisation positions of those securitisation transactions for which the pbb Group is considered to be the originator. The pbb Group also does not work with securitisation special-purpose vehicles (SPVs) serving as sponsors in order to securitise third-party positions.

Risk-weighted securitisation position values and own funds requirements

As was the case in the previous year, the risk-weighted receivables and own funds requirements for retained or acquired securitisation positions amounted to € 0 as of 31 December 2018. With the synthetic securitisation transaction, the pbb Group did not achieve any relief from the risk-weighted assets in accordance with CRR (RWA of the real estate loans less RWA of the securitisation positions). The expected loss reduction amounted to € 153 million (31 December 2017: € 154 milion).

Risk management for securitisation positions

Credit and market risk

As was the case in the previous year, the ongoing monitoring of investments in securitisations in accordance with article 449 letter f CRR, i.e. the changes in the credit and market risk of securitisation and re-securitisation positions, is not relevant for the pbb Group as of the reporting date.

Liquidity risk

The liquidity risk in connection with securitisations comprises the investor activities as well as the originator activities of so-called special-purpose vehicles (SPVs). As was the case in the previous year, the pbb Group was not subject to such a liquidity risk as

of 31 December 2018. The business strategy of the pbb Group does not allow for new investments in SSPVs, so that it is not possible for liquidity risks to arise from these types of transaction. Such information is therefore not disclosed in accordance with article 449 letter b CRR.

Accounting and valuation methods for securitisations (according to IFRS)

Originator

The pbb Group makes a distinction between securitisation transactions with a transfer of receivables (so-called traditional securitisations or true-sale securitisations) and securitisation transactions without a transfer of receivables (so-called synthetic securitisations).

In the case of traditional securitisations, the risk transfer and capital relief are achieved by selling balance sheet assets. The financial assets are derecognised in accordance with the disposal concept of IFRS 9 once essentially all opportunities and risks have been transferred to a third party. Any differences between the carrying amount and the sale price, i.e. gains or losses resulting from a disposal, are recognised immediately in the income statement.

On the other hand, in the case of synthetic securitisations, the pbb Group retains ownership of the balance sheet assets, and the securitised portfolio is not derecognised in accordance with IFRS. The transferred assets must not be derecognised as the disposal criteria in accordance with IFRS 9 are not met. The underlying receivables continue to be recognised in the relevant IFRS category and are thus stated in the balance sheet of the pbb Group. These receivables continue to be recognised and valued in accordance with the rules of the relevant IFRS category.

Investor

As was the case in the previous year, the pbb Group did not have any investor securitisation positions in its portfolio as of 31 December 2018.

Securitisation transactions using special-purpose vehicles

As was the case in the previous year, the pbb Group did not use any securitisation special-purpose vehicles as of 31 December 2018.

Derivatives in connection with securitisations

The pbb Group analyses securitisation transactions in order to identify any embedded derivatives. In IFRS 9, an embedded derivative is defined as a component of a hybrid contract which also contains a non-derivative basic contract, in such a way that part of the cash flows of the combined financial instrument vary in a way similar to a stand-alone derivative. It has to be borne in mind that a derivative which is combined with a financial instrument but which is contractually transferable independently of such financial instrument or which has been concluded with a different contracting party is not an embedded derivative financial instrument, and instead is an independent financial instrument.

If the basic contract of the hybrid contract is a financial asset within the scope of IFRS 9, it is not permissible for the embedded derivative to be separated. The structured financial asset has to be assessed in its totality, including the embedded derivative, with regard to the cash flow conditions, and must be classified accordingly.

Securitisation activities in the reporting period

As was the case in the previous year, the pbb Group did not carry out any new securitisation transactions with an effective risk transfer in 2018 in accordance with article 244 (2) CRR; accordingly, no such information is disclosed in accordance with article 449 letter n (vi) CRR.

Assets earmarked for securitisation

At present, the business strategy of the pbb Group does not define new securitisations as a company objective. Accordingly, the pbb Group has not planned any new securitisations of its own receivables for the financial year 2019; no such information is therefore disclosed in accordance with article 449 letters n (iii) and j (v) CRR.

6 Market risk

6.1 Management of market risk

Definition

Market risk is defined as the risk of a market value loss, or a negative change in net interest income for the period, due to volatility of the market prices of financial instruments. Transactions entered into by pbb Group are mainly exposed to the following types of market risk:

- General interest rate risk (risk from changes in market interest rates)
- Credit spread risk (risk from changes in credit spreads)
- Volatility risk (risk from changes in implied volatility)
- Foreign currency risk (risk from changes in foreign exchange rates)
- Basis risk (risk from changes in tenor spreads or cross-currency basis spreads)
- Concentration risk (risk of additional losses due to a non-diversified portfolio mix).

Risk strategy

pbb Group adheres to the following fundamental principles in relation to market risks:

- Transactions may be conducted exclusively in financial instruments which have successfully passed the new product process, and for which market values are either observable or determinable via a model.
- All positions entered into are subject to daily monitoring, in terms of sensitivity, value-at-risk (VaR) and performance, which is independent from trading units.
- Interest rate risk in the banking book is identified, measured, managed and monitored using both a present value approach as well as in terms of net income for the period. In this context, the present value approach is the primary approach for interest rate risk management, supplemented by the integration of interest rate risk of quarterly net interest income.

Organisation

Positions are monitored by the Risk Management & Control (RMC) unit, which is separated from trading in the structural organisation, right through to senior management.

Risk reporting

RMC prepares detailed market risk reports for senior management and operational management purposes, on a daily basis. The daily market risk report, which is primarily addressed to the Management Board, includes:

- market risk value-at-risk (VaR) and VaR limit utilisations across all relevant levels of the portfolio structure
- sensitivities of market risk factors at various levels of detail and monitoring of sensitivity trigger limits
- a presentation of economic performance measurement and breakdown by risk factors.

In order to monitor interest rate risk for the period, quarterly reports are provided on changes in net interest income given predefined interest rate scenarios – assuming an unchanged balance sheet (the so-called “static NII”).

Risk quantification – Market risk measurement and market risk limitation

Market risk – Value-at-Risk

RMC determines VaR attributable to market risk, at an overall as well as partial portfolio level, on a daily basis, using a simulated model based on historical data. All positions are taken into account for determining VaR, whereby the credit spread risk from items classified under IFRS category Amortized Costs (AC) is not taken into consideration within market risk, but in credit risk.

- The simulation model is based on historical market data of the past ten years, which is incorporated in the simulation with an equal weighting.
- Individual types of market risk are aggregated to form a total VaR, which forms the basis of limit monitoring.
- For the purposes of daily operational risk management, VaR is determined using a holding period of ten days and a one-sided 99 % confidence interval.

Market risk VaR as at 31 December 2018 amounted to € 35 million, taking diversification effects between the individual market risk types into consideration (31 December 2017: € 66 million). The reduction in market risk VaR compared to the year-end 2017 was primarily due to reduced credit spread risk. Credit spread risk is considered for all assets measured at fair value through profit or loss (FVPL) or at fair value through other comprehensive income (FVOCI).

In accordance with IFRS 9, some financial assets previously allocated to the available for sale measurement category now need to be measured at amortised cost (AC). Since credit spread risks are only included in market risk VaR for transactions of measurement categories FVOCI or FVPL, total market risk VaR was reduced upon the changeover to IFRS 9, at the beginning of 2018. Other effects on market risk VaR (besides the initial application of IFRS 9) were of minor importance. Accordingly, the market risk VaR limit was reduced from € 100 million to € 80 million at the beginning of 2018.

There were no breaches of market risk VaR limits at pbb Group level during the period under review.

The VaR assessment is complemented by additional tools, such as sensitivity analyses, stress tests, back-testing and periodic interest rate risks.

Sensitivity analyses

Overnight yield curves are used for the purposes of measurement relevant to sensitivity analyses. Sensitivity analyses quantify the impact of changes in individual market parameters upon the value of positions. For instance, the credit spread sensitivity provides an indication of the change in economic present value which results from a one basis point increase in the credit spreads which are relevant for measurement purposes.

Stress testing

Whilst VaR measures market risk in “normal” market conditions and does not provide a measure for potential maximum losses, stress scenarios are used to map market risk in difficult or even extreme economic framework conditions. pbb Group employs specific hypothetical market risk stress scenarios for key risk drivers, on a monthly basis, to determine the impact of strong to extreme changes in market data (yield curves, foreign exchange rates, credit spreads, volatility and tenor spreads) on the economic present value. Additionally, the impact of historical stress scenarios (or those required by regulators) are simulated.

A 200 basis point parallel upwards or – to the extent applicable – downwards shift in the yield curve would have resulted in a maximum market value loss of € 221 million across all of pbb Group’s interest rate-sensitive positions (excluding equity) at the end of 2018 (31 December 2017: € 239 million).

An extreme widening in the relevant credit spreads – given the applied scenarios – would have resulted in market value losses of €173 million as at end of 2018.

The Management Board and the executive bodies are informed about the results of stress test scenarios on a regular basis.

Back testing

The quality of the risk measurement methods in use is checked on an ongoing basis by comparing one-day VaR figures to the actual changes occurring in the portfolio's present value on a daily basis. pbb Group has adopted the Basel Capital Accord's "traffic light" system for the qualitative analysis of its risk model. For this purpose, the number of outliers detected in backtesting within a period of 250 trading days are counted. As at end of 2018, based on a data history of 250 trading days, no outliers were observed. The risk model employed by pbb Group therefore has "green" status, as defined in the "traffic light" system of the Basel Capital Accord.

Periodic interest rate risks

Periodic interest rate risks are outlined using delta static net interest income, simulating changes in net interest income for the period that would occur under pre-defined interest rate scenarios – also assuming an unchanged balance sheet. Calculations are carried out at the end of each quarter, for a simulation horizon covering the following four quarters. Negative deviations from the base value NII are monitored under consideration of a trigger limit (2018: € 80 million).

Economic capital for market risk

The chapter 4.3 "Economic capital and risk-bearing capacity" (ICAAP) provides details concerning the calculation as well as the quantification of economic capital for market risk.

Mapping and recognition of economic hedges as on-balance-sheet hedges

The concept of hedge accounting refers to specific accounting rules applicable to hedge relationships in accordance with IFRS, entered into for the purpose of neutralising the change in value of the hedged underlying transaction against the change in value of the hedging instrument to a large extent. The criteria set out in IFRS must be satisfied for a hedge to be recognised accordingly. To a certain extent, these criteria – such as the requirements relating to hedge effectiveness – are inconsistent with the methods applied to bank management. As a result, there may be differences between economic hedges and hedge relationships recognised on the balance sheet.

Risk management, monitoring and mitigation

pbb Group uses a three-pillar approach for managing and monitoring market risk:

- management of positions maintained by the Treasury
- risk measurement and monitoring compliance with limits (independent from trading units) and
- escalation processes across all decision-making bodies, right through to the Management Board.

For all positions, market risk is monitored (independent from trading units) through a combination of VaR-limits and sensitivity triggers. Financial derivatives are mainly used for hedging purposes.

General interest rate risk

The general present value interest rate risk was at € 36 million as at end of 2018 compared to € 38 mllion as at end of 2017. Periodic interest rate risk assuming an unchanged balance sheet (delta static NII) was € -22 million at the end of 2018 (end of 2017: € -18 million).

Volatility risk

VaR amounted to € 3 million as at year-end 2018 (end of 2017: € 4 million).

Credit spread risk

Credit spread risk reflects potential changes in the present value of exposures as a result of changes in the corresponding credit spread. The majority of credit spread risk is attributable to assets eligible as cover for Pfandbriefe. The Bank has risk measurement systems in place for calculating credit spread risk for all relevant exposures. Only credit spread risks of holdings classified as FVOCI or FVPL are subject to VaR limits; AC exposures are not subject to these limits. As outlined above, IFRS 9 requires that some financial assets of the previous available-for-sale measurement category now need to be measured at amortised cost; at the beginning of 2018, this led to a decline in credit spread risk. Specifically, credit spread VaR of exposures at FVOCI and FVPL totalled € 28 million as at the end of December 2018 (as at end of 2017: € 88 million). Other effects on credit spread risk were of minor importance.

Other market risks

The present value of foreign currency risk was €1 million as at end of 2018 (end of 2017: €11 million). Basis risks include cross-currency spread and tenor spread basis risks (including OIS and Libor/Euribor basis risks); these are quantified and recognised within the framework of the VaR model. All basis risks are included in aggregate VaR and are therefore subject to market risk limitation. The bank reported overnight index risks of € 6 million, tenor spread risks of €1 million, and cross-currency spread risks of € 2 million on the reporting date.

Opportunities

As detailed above, the sensitivities result in value at risk: a possible future (economic) loss in the event of an unfavourable market development. The very same sensitivities may also result in economic gains, in the event of a positive market development. For instance, as described above, high negative credit spread sensitivities represent a risk. In the event of a narrowing of the relevant credit spreads, however, these credit spread sensitivities will yield economic profits, constituting an opportunity.

Open interest rate risk exposures (from an economic perspective) may indeed be neutral or even income-enhancing for periodic interest rate risk; this is the case for medium- to long-term fixed-rate loans extended, for example.

Outlook

Regulatory topics and prioritisation of focal topics will continue to require further adjustments to market risks management in the years to come. The introduction of EBA Guideline EBA/GL/2018/02 (Interest Rate Risks in the Banking Book) is of major importance in this context – its implementation is due on 30 June 2019. Moreover, it is fair to expect changes in risk management, resulting from the CRD V/CRR II revision, which had not been completed by the end of 2018. To the extent that further action is required in order to fulfil such new or changed regulatory requirements, suitable measures will be taken to ensure implementation in good time.

6.2 Own funds requirement for the market risk

In accordance with part 3, title IV of the CRR, market risks must be backed with own funds. The pbb Group still does not maintain a trading book for portfolios with the aim of achieving short-term profits. Accordingly, the transactions of the pbb Group are exclusively subject to the own funds requirements for the foreign currency risk of the banking book, as detailed in the following table in accordance with article 445 CRR in conjunction with EU MR1 of the EBA/GL/2016/11. The pbb Group uses the standard approach in accordance with article 325 et seq. CRR for calculating the own funds requirement for market risks.

The own funds requirement for market risks amounted to € 18 million as of the reporting date (31 December 2017: € 30 million).

Table 54: Market risk under the standardised approach (EU MR1)

All figures in € million

	Market risk Standardised approach	**Risk-weighted assets (RWA)**	**Minimum capital requirement**
		a	b
	Outright products		
1	Interest rate risk (general and specific)	-	-
2	Equity risk (general and specific)	-	-
3	Foreign exchange risk	229	18
4	Commodity risk	-	-
	Options		
5	Simplified approach	-	-
6	Delta-plus method	-	-
7	Scenario approach	-	-
8	Securitisation (specific risk)	-	-
9	**Total**	**229**	**18**

1) pbb does not maintain a trading book for securities or derivatives portfolios held to realise short-term gains.

The pbb Group currently does not use its own internal models. Accordingly, disclosure in accordance with article 455 CRR in conjunction with EU MRB, EU MR2-A and EU MR2-B, EU MR3 and EU MR4 of the guidelines EBA/GL/2016/11 is not relevant for the pbb Group.

6.3 Interest rate risk in the banking book

Unlike the situation with credit risks, other market risks (foreign currency risks) or operational risks, there is no provision in the CRR for regulatory own funds backing for the interest rate risk in the banking book. pbb is subject to direct supervision by the European Central Bank (ECB), and is therefore also not required to comply with the additional own funds requirements for interest rate risks in the banking book in accordance with the general ordinance of the BaFin of 23 December 2016 (reference: BA 55-FR 2232-2016/0001). On the other hand, pbb fulfils the additional own funds requirements and capital requirements in accordance with the Supervisory Review and Evaluation Process (SREP) of the ECB.

Notwithstanding the fact that there is no provision for own funds backing, the methods and processes used by the pbb Group for the interest rate risk in the banking book are the same as those used for measuring market risk, as described in detail in the prior chapter 6.1 “Market risk management”.

The present-value interest rate risk in the banking book is determined by Risk Management & Control (RMC) on a daily basis, independently of trading. All rate-sensitive positions of the banking book are considered for this purpose. Compliance with the sensitivity triggers and the Value at Risk (VaR) limits is monitored and reported to the Management Board of pbb. In line with the regulatory requirements, the non-interest-bearing components of equity (liabilities side of the balance sheet) are not recognised (see the EBA guidelines EBA/GL/2015/08 as well as the BaFin Circular 09/2018 “Interest rate risks in the banking book”). However, the assets of these resources are included. In addition, assumptions have also been made with regard to the retention time of impairments which have been created as well as the related fixed interest, and special assumptions have also been made with regard to loan repayments ahead of schedule and for the fixed interest rate period for overnight money accounts in retail business.

Periodic interest rate risks are detailed by way of Delta Static Net Interest Income (NII) on the assumption of a constant scenario. A simulation is carried out with regard to changes in the periodic net interest income which would result on the assumption of a constant scenario and under specified interest rate scenarios. The calculation is carried out at the end of each quarter, with a

simulation horizon of the following four quarters. The negative variances with regard to the base value NII are monitored with a trigger limit.

In accordance with article 448 letter b CRR, the following table shows the present-value interest rate risk in the banking book, i.e. the increase or decrease in the present values in the event of an interest rate shock. The changes in present values are broken down according to currencies. Foreign currencies with changes in present values which are immaterial in stress cases are pooled under the heading “Other”.

Table 55: Present-value interest rate risks in the banking book

All figures in € million

	Interest rate risk in the banking book by currencies	Present value change 31.12.2018		Present value change 31.12.2017	
		Decline in interest - 200 Bp	Increase in interest + 200 Bp	Decline in interest - 200 Bp	Increase in interest + 200 Bp
		a	b	c	d
1	EUR	-95	-223	-80	-227
2	USD	6	-4	10	-9
3	SEK	-	-	1	-4
4	CHF	-	-2	-	-2
5	GBP	-3	5	-1	2
6	JPY	-	2	-	1
7	Other	-	-	-	-
8	**Total**	**-92**	**-221**	**-70**	**-239**

Overall, for interest stress scenarios of +200 basis points or -200 basis points (with a lower interest rate limit of 0 %, interest rates which are already negative are not shifted), the pbb Group shows a negative present-value change potential in the banking book of € -221 million under the above assumptions as of 31 December 2018. This present-value change occurs in the event of an increase in an interest rate increase of +200 basis points and represents a slight decline compared with the previous year (31 December 2017: € -239 million).

With regard to periodic interest rate risks, a sudden parallel increase in the rate structure curves would have a positive impact on the Delta Static NII. As of 31 December 2018, the change in the Delta Static NII would amount to a total of € 40 million in the event of a parallel shift of +200 in the rate structure curves; it would amount to € -22 million in the event of a parallel shift of -200 basis points (with a lower interest rate limit of 0 %, interest rates which are already negative are not shifted) (comparison value at the end of 2017: € -18 million).

7 Liquidity and funding risk

7.1 Management of liquidity and funding risk

Definition

Liquidity risk is defined as the risk of not being able to meet the amount and/or due dates of existing or future payment obligations, in full or on time.

Internal liquidity adequacy assessment process

In accordance with the Supervisory Review and Evaluation Process (SREP), pbb has conducted an Internal Liquidity Adequacy Assessment Process (ILAAP), which was examined and approved by the Management Board. The ILAAP ascertains that all material liquidity and funding risks can be identified, measured and monitored, and that measures to prevent a liquidity shortage are taken in good time if required.

Risk strategy

The Management Board determines both the risk strategy as well as the risk appetite of pbb Group. The liquidity risk strategy is a key component of pbb Group's risk strategy. It is broken down into various modules (comprising various liquidity scenarios, given certain market conditions and stress parameters). This ensures that the Group's short- and medium-term funding is monitored and managed by means of a limit system. The limits are defined as part of the annual business planning process, approved by the Management Board.

Organisation

Risk Management & Control (RMC) identifies, measures, reports and monitors liquidity risk. The Treasury department, which is independent from RMC, is responsible for managing liquidity risk. The processes and methods employed are reviewed on a regular basis by the Risk Committee and the Asset Liability Committee. Liquidity Risk cannot be calculated and reported at a business segment level.

Risk reporting

Liquidity management reports are prepared daily and submitted to the entire Management Board, as well as to the Joint Supervisory Teams (JSTs) of ECB and national competent authorities. The reports contain up-to-date information on the day's liquidity situation as well as forecasts made using contractual cash flows and in recognition of future events that could potentially influence liquidity developments.

Risk quantification – Liquidity risk measurement and limitation

To manage liquidity risks, pbb has established a system for measuring and limiting short-term and medium-term variances within cash flows. This incorporates both contractual as well as optional cash flows. The data is subject to regular back-testing.

The liquidity position resulting from the liquidity reserve as well as contractual and optional cash flows is measured in different scenarios, with three liquidity positions being projected on a daily basis. The projections assume

- unchanged market and funding conditions (base scenario)
- a risk scenario (modified [historical] stress scenario) and
- liquidity stress ([historical] stress scenario).

For instance, the risk and the (historical) stress scenario simulate possible client behaviour in “stress situations”. Historical time series are used to calculate 95 % and 99 % quantiles.

Liquidity risk triggers (early warning indicators) have been defined for a 24-month horizon in the base scenario. Limits in the risk and the (historical) stress scenario are applicabel for a six- and three-month horizon.

The limit system consists of:

- limits relating to the liquidity stress profile (risk scenario and (historical) stress scenario); and
- triggers for the base scenario as well as the six-month bucket of [historical] stress-szenario.

In addition to reporting, pbb Group uses stress tests, conducted at regular intervals, for investigating the impact of additional stress events on the liquidity position.

Scenario analyses are performed to simulate the potential impact of crises attributable to macroeconomic, monetary policy or political crises on the liquidity situation.

The scenarios are reported to the Management Board, as well as to external bodies such as the Joint Supervisory Teams (JSTs) of ECB and national competent authorities.

Risk monitoring and risk management

Monitoring of liquidity risks is ascertained through daily reporting of the liquidity situation and a defined escalation process. A liquidity emergency plan has also been adopted in this context; this plan forms the functional and organisational framework for the handling of any liquidity shortages. The liquidity emergency plan is part of the pbb Recovery Plan and updated at least annually.

Liquidity risk management is based on various interconnected components (daily and monthly liquidity reports), which are based on a “liquidity risk tolerance” defined by the Management Board. This ensures that pbb Group has adequate liquidity reserves at its disposal.

Risk hedging and risk mitigation

A risk tolerance system is in place, to limit liquidity risk. Risk tolerance is integrated in the liquidity management process by means of triggers (limit system), in order to safeguard a “survival period” for pbb Group in stressed conditions.

The limits applicable for risk tolerance are determined in line with stress scenarios, and adjusted at regular intervals.

Opportunities

pbb Group’s cumulative liquidity position of € 5.0 billion in the base scenario over a 12-month horizon, which is detailed in chapter 7.2 “Liquidity risk development”, section „Development of pbb Group’s risk position“, as at 31 December 2018 provides the Group with scope for a flexible response, particularly with regard to possible new business.

If the external factors specified in chapter 7.2 “Liquidity risk development”, section „Forecast liquidity requirement”, were to develop favourably for pbb Group, this would result in a lower future liquidity requirement.

7.2 Liquidity risk development

Development of pbb Group's risk position

The cumulative liquidity position (liquid assets plus projected net cash flows) determined as part of the liquidity risk measurement process as at 31 December 2018 amounted to € 5.0 billion for a 12-month horizon in the base scenario – a € 2.0 billion decrease compared to the previous year (based on the same projection horizon). This reduction was caused by a regular repayment of excess liquidity. As at 31 December 2018, the cumulative liquidity position for a six-month horizon amounted to € 2.6 billion in the risk scenario (31 December 2017: € 2.5 billion). The cumulative liquidity position in the stress scenario for a six-month horizon amounted to € 0.9 billion as of 31 December 2018 (31 December 2017: €1.2 billion).

Regulatory liquidity coverage requirements (Liquidity Coverage Ratio, LCR)

The Liquidity Coverage Ratio (LCR) is calculated using the ratio of the liquidity buffer (liquid assets) to net liquidity outflows during a stress period of 30 days. A minimum LCR of 100 % is mandatory in regulatory liquidity reporting. The levels determined for pbb Group during 2018 were clearly in excess of 100 %. The Liquidity Coverage Ratio as at 31 December 2018 was 212 %. Further detailed information can be found in chapter 7.3. „Liquidity coverage ratio“.

Funding markets

Please refer to the Report on the Economic position of the Annual Report 2018 of the pbb Group for details concerning developments on funding markets and changes in pbb's funding volumes during the period under review.

Forecast liquidity requirement

In addition to the forecast liquidity requirement for new business activities, the extent of future liquidity requirements also depends on numerous external factors:

- further developments in the context of the European financial crisis and negotiations on Brexit and possible effects on the real economy
- future developments of haircuts applied to securities for repo funding on the market, and with central banks
- possible additional collateral requirements as a result of changing market parameters (such as interest rates and foreign exchange rates)
- developments in requirements for hedges
- changed requirements from rating agencies regarding the necessary over-collateralisation in the cover pools
- refinancing requirements of real estate investors.

Funding risk

The chapter 4.3 "Economic capital and risk-bearing capacity" (ICAAP) provides details concerning funding risk as part of business and strategic risk.

Market liquidity risk

For financial instruments, quantitative details for a better assessment of market liquidity risk can be obtained from the presentation of the three levels of the fair value hierarchy in the notes of the Annual Report 2018 of the pbb Group. Generally, there is no intention to sell LaR holdings for liquidity management purposes, as liquidity for these holdings can mainly be generated by way of including them in the cover pool, using the funding opportunities provided by the central bank, or using them in repo transactions. Market liquidity risk is included in the internal risk management process as part of market risk.

7.3 Liquidity coverage ratio

The liquidity coverage ratio (LCR) is defined as the liquidity buffer of an institution (i.e. holdings of high-quality liquid assets) divided by its net liquidity outflows during a stress phase of 30 calendar days, and is expressed as a percentage. The ratio is calculated on the basis of the requirements of the Delegated Regulation (EU) 2015/61 of the Commission of 10 October 2014 for complementing the (EU) Directive No. 575/2013 of the European Parliament and Council regarding the liquidity coverage requirement of credit institutions.

In accordance with article 412 CRR, the aim of the LCR is to oblige institutions to maintain a liquidity buffer in the form of highly liquid assets in order to be able to compensate for net outflows of cash over a period of 30 days in a stress scenario. The defined stress scenario comprises market-wide as well as institution-specific effects. In stress periods, institutions are permitted to use their liquid assets to cover their net liquidity outflows, even if such use of liquid assets would mean that the liquidity coverage ratio in such phases would fall below the minimum threshold of 100 % which has been applicable since 2018.

According to the Delegated Regulation (EU) 2015/61, a minimum value of 100 % has been applicable for the liquidity coverage ratio since 1 January 2018. As was the case in the previous year, the figures for 2018 determined (internally) for the pbb Group were considerably higher than 100 %. The liquidity coverage ratio was 212 % as of 31 December 2018 (31 December 2017: 187 %).

In accordance with article 435 (1) CRR in conjunction with the guidelines EBA/GL/2017/01 of the European Banking Authority (EBA), the following table shows the information concerning the LCR for the pbb Group. In accordance with point 20 of the EBA/GL/2017/01, the information comprises the figures and the relevant numbers for each of the four calendar quarters before 31 December 2018. These figures and numbers have to be calculated as simple average figures of the month-end details collated over the twelve months before the end of each quarter.

Table 56: Liquidity coverage ratio (EU LIQ1)

All figures in € million, unless otherwise stated

	Liquidity Coverage Ratio (LCR) pbb Group	**Total unweighted value** (12-month-average) [1]				**Total weighted value** (12-month-average) [1]			
	Quarter ending on:	31.12.2018	30.09.2018	30.06.2018	31.03.2018	31.12.2018	30.09.2018	30.06.2018	31.03.2018
	Number of data points used in the calculation:	12	12	12	12	12	12	12	12
		a	b	c	d	e	f	g	h
High-quality liquid assets									
1	Total high-quality liquid assets (HQLA)	———	———	———	———	5,939	6,191	6,343	6,491
Cash-outflows									
2	Retail deposits and deposits from small business customers	756	761	778	828	151	152	146	138
3	Stable deposits	-	-	-	-	-	-	-	-
4	Less stable deposits	756	761	778	828	151	152	146	138
5	Unsecured wholesale funding	560	684	751	784	463	573	624	641
6	Operational deposits (all counterparties) and deposits in networks of cooperative banks	-	-	-	-	-	-	-	-
7	Non-operational deposits (all counterparties)	388	401	425	460	291	290	298	317
8	Unsecured debt	172	283	326	324	172	283	326	324
9	Secured wholesale funding	———	———	———	———	-	-	-	-
10	Additional requirements	487	502	518	540	482	486	486	493
11	Outflows related to derivative exposures and other collateral requirements	481	484	482	488	481	484	482	488
12	Outflows related to loss of funding on debt products	-	-	-	-	-	-	-	-
13	Credit and liquidity facilities	6	18	36	52	1	2	4	5
14	Other contractual funding obligations	75	66	69	72	59	49	52	56
15	Other contingent funding obligations	4,113	4,211	4,186	4,196	1,410	1,538	1,582	1,604
16	**Total cash outflows**	———	———	———	———	**2,565**	**2,798**	**2,890**	**2,932**

All figures in € million, unless otherwise stated

Liquidity Coverage Ratio (LCR) pbb Group		Total unweighted value (12-month-average) [1]				Total weighted value (12-month-average) [1]			
	Quarter ending on:	31.12.2018	30.09.2018	30.06.2018	31.03.2018	31.12.2018	30.09.2018	30.06.2018	31.03.2018
	Number of data points used in the calculation:	12	12	12	12	12	12	12	12
		a	b	c	d	e	f	g	h
Cash-inflows									
17	Secured lending (e.g. reverse repos)	-	-	-	-	-	-	-	-
18	Inflows from fully performing exposures	193	179	166	150	162	149	138	125
19	Other cash inflows	86	93	105	175	86	93	105	175
EU-19a	(Difference between total weighted inflows and total weighted outflows arising from transactions in third countries where there are transfer restrictions or which are denominated in non-convertible currencies)					-	-	-	-
EU-19b	(Excess inflows from a related specialised credit institution)					-	-	-	-
20	**Total cash inflows**	**279**	**272**	**271**	**325**	**248**	**242**	**243**	**300**
EU-20a	Fully exempt inflows	-	-	-	-	-	-	-	-
EU-20b	Inflows subject to 90% cap	-	-	-	-	-	-	-	-
EU-20c	Inflows subject to 75% cap	279	272	271	325	248	242	243	300
21	**Liquidity buffer**					**5,939**	**6,191**	**6,343**	**6,491**
22	**Total net cash outflows**					**2,317**	**2,556**	**2,647**	**2,632**
23	**Liquidity Coverage Ratio (in %)**					**256%**	**242%**	**240%**	**247%**

1) The values and figures shall be calculated in accordance with EBA/GL/2017/01 as simple averages of the end-of-month surveys over the 12 months preceding the end of each quarter.

The pbb Group uses a wide range of refinancing sources, including deposits of private and institutional customers, issues on the capital markets as well as the raising of secured and unsecured funds via wholesale refinancing arrangements, whereby the main emphasis is on issues of Pfandbriefe.

As of 31 December 2018, the liquidity reserves of € 4,910 million (31 December 2017: € 6,877 million) consist of highly liquid level 1 assets; the average figure for 2018 was € 5,939 million (2017: € 6,793 million). Level 1 assets comprise deductible deposits with the Deutsche Bundesbank, bonds issued by central governments, regional or local authorities, public bodies, multilateral development banks or international organisations as well as credit institutions with government backing.

In 2018, cash flows of derivative positions on average accounted for only a minor percentage of the overall net cash flows. The pbb Group uses a historical look-back approach (HLBA) as the method for calculating the potential backing requirements for derivatives, i.e. backing requirements observed in the past are analysed and used for deriving a conservative assumption for potential future backing requirements. On average of last year, this assumption was € 417 million. Possible rating changes are not expected to have any significant impact on the provision of collateral.

The sensitivity of the currency cash flows does not have any major impact on the liquidity position of the pbb Group. In line with the definition of the Basel Committee on Banking Supervision (BCBS), the currency positions of the pbb Group are not considered to be significant.

The table EU LIQ1 for the liquidity coverage ratio (LCR) contains all positions relevant for the LCR calculation. pbb is the only credit institution of the pbb Group. Liquidity management is carried out exclusively by pbb.

8 Operational risk

8.1 Management of operational risk (including legal risk)

Definition

According to Regulation 575/2013/EU (CRR) pbb defines the operational risk as follows: "the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events, including legal risk". Furthermore, pbb recognises the following risks within the operational risk category: behavioural risk, reputational risk, outsourcing risk, model risk as well as risks associated with information and communication technologies (ICT systems risk).

Risk strategy

The top priority of pbb Group's operational risk management is to prevent operational risk events and to meet the defined risk appetite. Key cornerstones of this strategy are the early recognition, systematic recording and assessment of operational risk, taking measures for risk mitigation as well as early management reporting. The operational risk management strategy is adopted by the Management Board on an annual basis as part of the overall risk strategy, after the Risk Committee voting. The risk strategy describes the risk management framework as well as pbb Group's measures regarding operational risk.

Organisation

pbb Group actively manages operational risk by way of a consistent Group-wide framework based on the principle of three lines of defence. In this context, the risk owners – meaning heads of divisions – are responsible for managing operational risk, and for implementing risk-mitigating measures within the various business units (first line of defence). Specifically, Legal is responsible for managing legal risks, Finance for managing outsourcing risk, whilst the IT and Corporate Office divisions are responsible for managing ICT systems risk.

Compliance and RMC form the second line of defence. Within RMC, the Operational Risk unit is responsible for uniform procedures, instruments and methods for identifying, assessing, monitoring, quantifying and reporting on operational risk throughout the Group. Internal Audit constitutes the third line of defence.

Risk reporting, risk monitoring and risk management, risk mitigation

Risk management is applied to all business processes in an overall approach. In particular, operational risk is analysed and assessed explicitly as part of major decision-making processes (such as new product processes and outsourcing agreements).

Essential components of operational risk management are as follows: recording and analysing internal and external loss data, operational risk self-assessments (ORSA) and scenario-based analyses.

A structured and central reporting system is used to inform the Management Board and the division heads, the Risk Committee and other supervisory bodies concerning risk events on a regular, timely and comprehensive basis. Reports are prepared both ad-hoc (where material risk events are escalated) as well as on a monthly basis (Group Risk Report), on a quarterly (Key Risk Indicator Report) or annual (Annual Risk Report) basis, and are part of risk reporting to the entire Management Board, and the division heads. Operational risk reporting encompasses material loss events and near-losses, analyses of causes, top risk issues, development of risk indicators and of capital requirements, as well as the results from ORSA and scenario analyses

Management of the ICT systems risk is fully integrated into operational risk management, and thus into the Bank's risk and compliance structure. Risk management for ICT systems risk generally applies at process level. The annual protection requirement analysis, the quarterly reporting of relevant information and metrics such as the key performance indicators (KPIs) as well as the IT security management, are all essential elements.

Management of legal risk, as performed by the Legal department, is aimed primarily at the prevention of losses which could be incurred if business activities of pbb Group were not documented with legal certainty. Structuring business activities in a manner that ensures legal certainty also serves to protect the integrity and reputation of pbb Group. In order to achieve this goal, the Legal department provides the entire pbb Group with a comprehensive and forward-looking business- and solution oriented consultancy service.

The Legal department assists business divisions by monitoring developments in the relevant legislation and case law, and reviews the effects of such developments on new and existing business. The results are discussed with the responsible divisions and/or in the Legal and Regulatory Risk Committee. The Legal Policy describes the roles and responsibilities of the Legal department within pbb Group and serves as a guideline for employees in the Legal department.

Furthermore, the Legal department gives an assessment towards the respective business divisions whether provisions for pending legal cases have to be recognised. Provisions for legal risks are recognised in accordance with IAS 37 and section 249 HGB if (a) an obligation of pbb Group is probable, and (b) a reliable estimate can be made of the amount of the obligation. According to IAS 37.15, it is not clear whether there is a present obligation in rare cases. In such cases, pbb takes into account all available evidence, including the opinion of experts, to assess whether provisions have to be recognised at the reporting date.

Moreover, the OpRisk loss database captures losses from – and provisions for – legal risks which need to be seen in conjunction with operational risk events. Overall, legal risks are taken into consideration in the existing operational risk management framework, and are an integral part of, inter alia, the Key Risk Indicator Report, the Operational Risk Self-Assessment (ORSA), the analysis and reporting of risk events, as well as for determining economic capital.

Risk quantification

Please refer to the chapter 4.3 „Economic capital and risk bearing capacity“ (ICAAP) for further details on the quantification of operational risk including legal risks as well as the calculation results of the economic capital for operational risk.

The regulatory own funds requirement for operational risk, which is calculated at the end of each year, is explained in the following chapter 8.3 „Own funds requirement for operational risk“.

Opportunities

pbb Group aims to reduce potential operational risk to the extent possible, through continuous development of its operational risk framework and the ongoing optimisation of processes.

8.2 Operational risk profile

pbb Group suffered a financial loss of € 6 million from operational risks (including legal risks) during 2018 (2017: € 20 million). pbb assesses its operational risk profile (including legal risk) as stable.

8.3 Own funds requirement for operational risk

In order to ensure compliance with the own funds requirements in accordance with the CRR, the operational risk has to be backed with own funds. The pbb Group uses the standard approach in accordance with article 317 et seq. CRR for calculating the own funds requirement for operational risk.

The relevant indicator is determined for each business unit for the last three financial years in accordance with article 316 CRR. The corresponding beta factors for each business unit correspond to the values defined in article 317 CRR. The business units of the pbb Group are limited to corporate client business and retail business, whereby corporate client business makes the

relevant contribution to the relevant indicator. The own funds requirement for operational risk is defined as the sum of the respective three-year averages of the relevant indicator per business unit, weighted with the corresponding beta factor.

The regulatory own funds requirement, which is calculated once a year at the end of the year, amounted to € 70 million as of 31 December 2018 (31 December 2017: € 72 million).

9 Outlook

With the Disclosure Report as of 31 December 2018, pbb implemented the disclosure regulations in accordance with the currently applicable regulatory requirements of the CRD IV reform package for the implementation of Basel III in Europe, consisting of the EU Regulation No. 575/2013 (CRR) and the EU Directive 2013/36 (CRD IV). These regulations which came into force in 2014 continue to be subject to comprehensive revision by the Basel Committee on Banking Supervision (BCBS) and the European Union (EU). The aim of BCBS and the EU is to create a single framework for Pillar 3. The main purpose of the new proposals is to further enhance the comparability and consistency of disclosure information and to enable market players to achieve a better assessment of the capital and risk situation of institutions. The revision process which has been implemented by the Basel Committee is broken down into three phases, whereby the first phase has essentially been completed.

Basel disclosure regulations, phase 1

At the end of January 2015, the Basel Committee on Banking Supervision published the final standard “Revised Pillar 3 disclosure requirements” (BCBS 309) of the first phase of revising the disclosure regulations (Pillar 3). On 14 December 2016, the European Banking Authority (EBA) presented its final guidelines on the implementation of these phase 1 regulations in the EU, the “Final Report - Guidelines on disclosure requirements under Part Eight of Regulation (EU) No 575/2013” (EBA/GL/2016/11). The EBA guidelines set out in detail the disclosure obligations in accordance with part 8 of the CRR, and establish the bridge to the CRR for implementation in Europe until this has been revised and until it has been formally implemented in European law.

pbb has already been implementing since 31 December 2017 the phase 1 guidelines in this Disclosure Report; it applies these guidelines EBA/GL/2016/11 which are only applicable for global system-relevant institutions G-SRI and other system-relevant institutions (A-SRI) on a voluntary basis.

pbb has also implemented the other phase 1 regulations, namely the guidelines EBA/GL/2017/01 and the Delegated Regulation (EU) 2017/2295 in this Disclosure Report. pbb has also been applying since 31 December 2017 on a voluntary basis the guidelines EBA/GL/2017/01 regarding disclosure of the liquidity coverage ratio for complementing the disclosure of liquidity risk management in accordance with article 435 CRR. The Delegated Regulation (EU) 2017/2295 regarding the Regulatory Technical Standard EBA/RTS/2017/03 for disclosure of encumbered and unencumbered assets in accordance with article 443 CRR is obligatory for all institutions; it was published on 13 December 2017 in the Official Journal of the European Union and came into force on 2 January 2018 (additional regulations concerning quality indicators of assets will only come into force one year later, on 2 January 2019). pbb has already disclosed the information (including the additional regulations) in this report.

In addition to the above-mentioned regulations, the European Banking Authority (EBA) on 17 December 2018 published its final guidelines “Final Report - Guidelines on disclosure of non-performing and forborne exposures” (EBA/GL/2018/10), which have been applicable since 31 December 2019. The main aim of these guidelines is to provide the market players with information regarding the credit quality of the institutions, as well as further information concerning the main features of their non-performing and forborne exposures. pbb will implement these guidelines for the first time in the Disclosure Report as of 31.12.2019.

Basel disclosure regulations, phase 2

In March 2017, the Basel Committee published further proposals for revising the disclosure regulations, the final standard “Pillar 3 disclosure requirements - consolidated and enhanced framework” (BCBS 400). In addition to further new disclosure regulations, this second phase will also include proposals for additions to the existing Pillar 3 framework in order to take account of existing disclosure requirements adopted in phase 1. The proposals will accordingly result in an extension of the existing matrices and tables. The Basel standard has so far not yet been translated into European law.

Basel disclosure regulations, phase 3

Following the first and second phases of revising the disclosure obligations of Pillar 3, the Basel Committee published the final version for phase 3 on 11 December 2018. The standard "Pillar 3" disclosure requirements - updated framework (BCBS 455) comprises additions and amendments to the phase 2 standard. It is not possible at present to make a reliable assessment of the time schedule of implementation in European law.

Revision of CRR and CRD IV

In November 2016, the EU Commission published proposals for revising EU Regulation No. 575/2013 (CRR), the Directive 2013/36/EU (CRD IV), the Directive 2014/59/EU (BRRD) as well as Regulation (EU) No. 806/2014 (SRM) (so-called CRR II/CRD V/BRRD II/SRM II package). Accordingly, disclosure of Pillar 3 in the EU should be proportionate to the size and capital market orientation of the institutions. For large institutions, this would result in significantly enhanced disclosures, which would also partly have to be published in the course of the year. For this purpose, and in accordance with article 434 letter a CRR II, the EBA has been engaged to draw up a technical implementation standard for defining uniform disclosure formats (tables) and instructions for disclosure. The final version of the CRR II/CRD V/BRRD II/SRM II package is expected to be published in the EU Journal of Laws in the first half of 2019.

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