Covered Bonds follow-up Rating

Commerzbank AG

Mortgage Covered Bond Program

Creditreform Rating

Rating Object	Rating Information	
Commerzbank AG, Mortgage Covered Bond Program	Rating / Outlook : **AAA / Stable**	Type: Rating Update (unsolicited)
Type of Issuance : Mortgage Covered Bond under German law Issuer : Commerzbank AG	Rating Date : 11.12.2019 Rating Renewal until :	 Withdrawal of the rating
LT Issuer Rating : BBB+ (Commerzbank) ST Issuer Rating : L2 Outlook Issuer : Stable	Rating Methodology :	CRA „Covered Bond Ratings"

Program Overview

Nominal value	EUR 17.294 m.	WAL maturity covered bonds	5,81 Years
Cover pool value	EUR 28.156 m.	WAL maturity cover pool	5,67 Years
Cover pool asset class	Mortgages	Overcollateralization (nominal/committed)	62,81%/ 2,00%
Repayment method	Hard Bullet	Min. overcollateralization	2,00%
Legal framework	German Pfandbriefe Act	Covered bonds coupon type	Fix (99,42%), Floating (0,58%)

Cut-off date Cover Pool information: 30.09.2019

Content

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Rating Action

This follow-up report covers our analysis of the mortgages covered bond program issued under German law by Commerzbank AG („Commerzbank"). The total covered bond issuance at the cut-off date (30.09.2019) had a nominal value of EUR 17.293,83 m, backed by a cover pool with a current value of EUR 28.155,64 m. This corresponds to a nominal overcollateralization of 62,81%. The cover assets include German mortgages obligations in Germany.

Taking into consideration the issuer rating, our analysis of the regulatory framework, liquidity- and refinancing risks, as well as our cover pool assessment and results of the cash flow analysis, Creditreform Rating AG ("Creditreform Rating" or "CRA") affirms the covered bond program with an AAA rating. The AAA rating represents the highest level of credit quality and the lowest investment risk.

Key Rating Findings

+ Covered Bonds are subject to strict German legal framework (PfandBG), and full recourse of the covered bonds to the issuer.
+ Current high overcollateralization (OC) of 62,81% as of 30.09.2019
- Low income margin of the issuer

Table1: Overview results

Risk Factor	Result
Issuer rating	BBB+ (rating as of 29.11.2019)
+ Legal and regulatory framework	+4 Notches
+ Liquidity and refinancing risk	+1 Notch
= Rating after 1st uplift	AA

Cover pool & cash flow analysis	AAA
+ 2nd rating uplift	+2 Notches
= Rating covered bond program	**AAA**

Issuer Risk

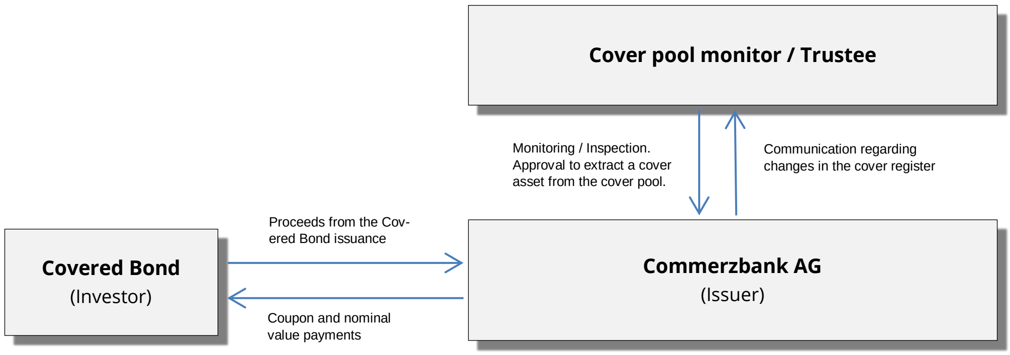
Issuer

Our rating of Commerzbank covered bond program is reflected by our issuer rating opinion of Commerzbank AG. CRA has affirmed the Long-term Issuer Rating of Commerzbank AG at 'BBB+' in a Rating Update dated 29 November 2019. Responsible for this affirmation were significant reduction of non-performing loans, continuing growth in private and corporate customer business and the tight earnings figures. For a more detailed overview of the issuer rating, please refer to the issuer rating report published on the webpage of Creditreform rating AG.

Structural Risk

Transaction structure

Figure1: Overview of Covered Bond emission | Source: CRA



Legal and Regulatory Framework

The legal basis of covered bond („Pfandbriefe") programs in Germany is the German Covered Bond Act (Pfandbriefgesetz, "PfandBG") dated 22 May 2005 and the relevant secondary legislations. The PfandBG was last amended on 2019. Under this framework, banks can issue covered bonds backed by pool of mortgages, public sector assets, registered ship mortgages or registered liens on registered aircrafts.

The covered bondholders have direct recourse to the issuer and a preferential claim over the cover pool assets secured by its cover asset class. For mortgage covered bonds ("Hypothekenpfandbriefe") the cover assets comprise mortgage assets confined to EU/EEA countries, Switzerland, USA, Canada, Japan, Australia, New Zealand and Singapore.

An independent trustee (Treuhänder) ensures that the cover assets are correctly recorded in the relevant cover register and that their inclusion meets eligibility criteria. In the event of issuers insolvency, a special administrator („Sachwalter“) will be appointed by the regulatory authority BaFin to manage the cover pool. Furthermore, on a regular basis BaFin audits cover pool assets, usually every two years.

In general, we consider the structural framework for covered bonds in Germany as positive, as the PfandBG defines clear rules to mitigate risks, in particular regarding insolvency remoteness, asset segregation, investor's special claim vis-à-vis other creditors, the roll and appointment of a special administrator, among other provisions. Due to those reasons, with regard to the regulatory and structural framework for German covered bond programs, we have set a rating uplift of four (+4) notches.

Liquidity and Refinancing Risk

According to PfandBG, it is compulsory for the covered bond issuers to maintain an overcollateralization (OC) of at least 2%, measured on a daily net present value and on a weekly stressed net present value basis. Furthermore, the Issuer is required to maintain a liquidity buffer to cover, for the next 180 days, all debt service outflows (interest and principal) and derivative transactions.

The underlying cover pool must be subjected to a stress test at least weekly to ensure the present value coverage, and that the OC is maintained in case of changes in interest rates and exchange rates. The stress scenarios are either static, dynamic or model-based. Derivatives can be an additional measure to hedge interest rate and currency risks.

In the event of issuer's insolvency, the PfandBG stipulates that the special administrator can sell covered pool assets or use them as a guarantee for liquidity operations if liquidity shortfalls are foreseeable.

The European Commission, on April 2019, has also adopted the directive to provide for enhanced harmonisation for the EU covered bond market. Once fully implemented, the directive might have a potential impact on legal and regulatory framework on the issuer and the covered bonds of each EU member states.

The German PfandBG and the stipulated risk management processes for liquidity risks constitute, in general, a comparatively strict framework by which they can be effectively reduced. Refinancing risks, however, cannot be structurally reduced due to the hard bullet repayment structure, which can only be cushioned by sufficiently high overcollateralization or other liquid funds to bridge the asset-liability mismatches. We assess the overall legal provisions on liquidity management for German Covered Bond programs as positive and set a rating uplift of one (+1) notch.

A more comprehensive overview of the regulatory framework can be found in our initial rating report. It is worth mentioning that, the PfandBG had a recent amendment that came into force on March 2019. It ensures that existing and future business with UK and Northern Ireland might remain eligible for the cover pool, in particular in case of UK being no longer a part of the EU. Hence, UK and Northern Ireland are now considered as third countries in the PfandBG, this implies that new lending business will be covered up by the same provisions as for third countries such as Switzerland, the USA, Canada and Japan.

Credit and Portfolio Risk

Cover pool analysis

The analysis of the cover pool is based on public information which has been made available by the Issuer, in particular the Harmonised Transparency Template („HTT“) as per regulatory requirements. This information was sufficient according to CRA’s rating methodology “Covered Bond Ratings”.

At the cut-off-date 30.09.2019, the pool of cover assets consisted of 227.567,00 debt receivables from 186.157 debtors, of which 100,00% are domiciled in Germany. The total cover pool volume amounted to EUR 28.155,64 m in residential (97,59%), commercial (2,41%) and others (0,00%) loans.

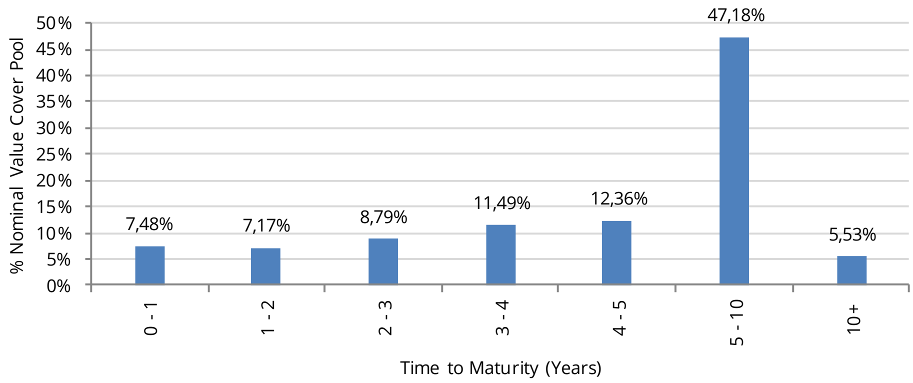
The residential cover pool consists of 227.128 mortgage loans having an UNINDEX weighted average LTV of 52,62%. The non-residential cover pool consists of 439 mortgage loans. The ten largest debtors of the portfolio total to 1,40%. Table 2 displays additional characteristics of the cover pool:

Table 2: Cover pool characteristics | Source: Commerzbank

Characteristics	Value
Cover assets	EUR 28.156 m.
Covered bonds outstanding	EUR 17.294 m.
Substitute assets	EUR 595,50 m.
Cover pool composition	
Mortgages	97,88%
Substitute assets	2,12%
Other / Derivative	0,00%
Number of debtors	186.157
Mortgages Composition	
Residential	97,59%
Commercial	2,41%
Other	0,00%
Average asset value (Residential)	EUR 118,42 k.
Average asset value (Commercial)	EUR 1.510,59 k.
Non-performing loans	0,0%
10 biggest debtors	1,40%
WA seasoning	55,92 Months
WA maturity cover pool (WAL)	5,67 Years
WA maturity covered bonds (WAL)	5,81 Years

We have listed an extended view of the composition of the cover pool in the appendix section “Cover pool details”. The following chart displays the maturity profile of the cover assets at the cut-off date 30.09.2019 (see figure 2):

Figure 2: Distribution by remaining time to maturity I Source: Commerzbank



Maturity profile

The following charts present the cash flow profile of the Issuer (see figure 3 and figure 4):

Figure 3: Cover asset congruence | Source: Commerzbank

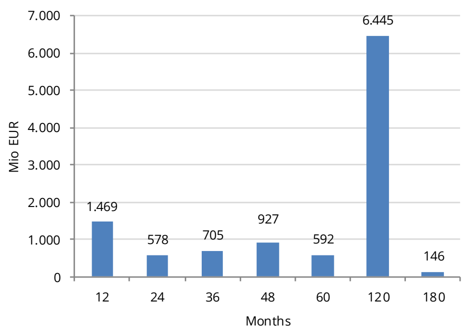
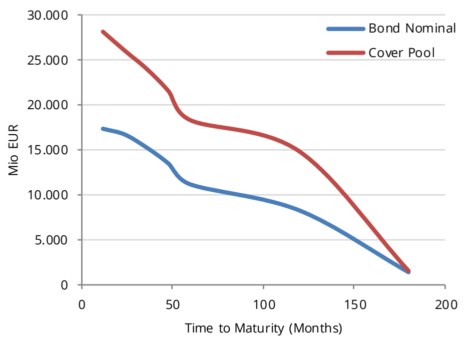


Figure 4: Amortization profile | Source: Commerzbank



During its cash flow modelling, CRA has taken into consideration the maturity structure of cover assets and liabilities. This structure was an integral part of the cash flow analysis.

Interest rate and currency risk

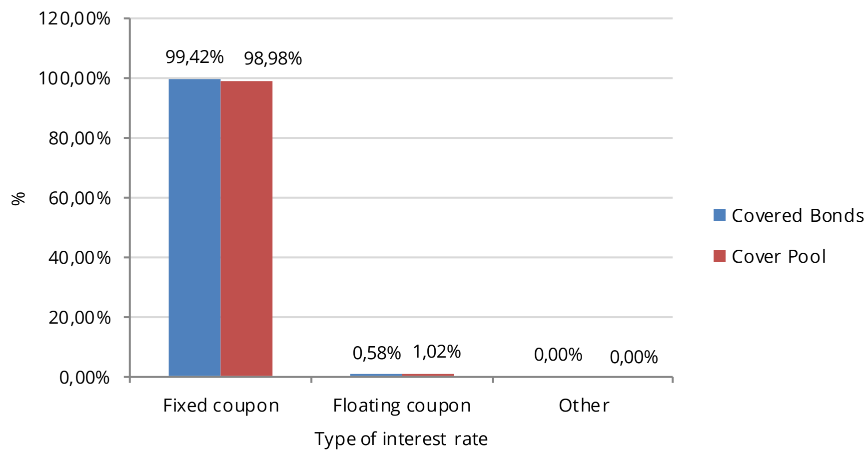
The legal framework provides for weekly stress tests to be conducted on interest rate- and currency risks. Therefore, interest rate risk could be mitigated by the 2% OC requirement. Currency risk, on the other hand, is limited for this program as 100,00% of the cover pool assets and 100,00% of the cover bonds are denominated in euro. Nevertheless, we have applied interest rate on the cash flows for each rating level according to our methodology.

Table 3: Program distribution by currency | Source: Commerzbank

Currency	Volume	Share (%)
Cover Pool		
EUR	28.156 m	100,00%
Cover Bond		
EUR	17.294 m	100,00%

Figure 5 shows the types of interest rate used in this program

Figure 5: Type of interest rate | Source: Commerzbank



Credit Risk

The credit risk assessment for Mortgage Covered Bond has been determined in accordance with CRA rating methodology for Covered Bonds by means of historical data and particular parameters from the Covered Bonds.

Due to the high granularity of mortgage pools we have characterized these portfolios as big enough and with a homogeneous composition i.e. ("Large Homogeneous Portfolio", LHP). Furthermore, under that premise we have assumed that it is possible to derive a loss distribution. CRA has used the issuer's historical NPL ratios to derivate a conservative default rate proxy for the approximation through the LHP distribution. For the Commerzbank it has been assumed an expected default rate of 1,32% for the LHP. Furthermore, CRA has considered a 15,00% correlation to define the LHP distribution. Table 4 disclosed the expected default rate for each relevant rating level.

In order to derive recovery and loss-severity base case assumption, CRA has used historical data from mortgage price indexes. To determine loan-level recovery assumptions the resulting stressed recoveries assumptions were compared with the portfolio's existing loan-to-value ratios (LTVs).

Based on the default rates and taking into account the recovery assumptions, the following loss assumptions were determined for the current cover pool (see Table 4)

Table 4: Cover Pool Base case assumptions | Source: CRA

Rating	Default Rate (%)	Recoveries (%)	Expected Loss (%)
AAA	38,01%	87,42%	4,78%
AA+	35,31%	88,77%	3,97%
AA	30,53%	91,17%	2,70%
AA-	26,78%	93,37%	1,78%
A+	25,24%	94,32%	1,43%
A	25,22%	94,33%	1,43%
A-	24,29%	94,94%	1,23%

Cash-Flow Analysis

Model Assumptions

Based on public information and using the base case loss assumptions, we implement a scenario-based cash flow model. This model aims to test the ability of the structure to service all covered bonds according to their payment profile in diverse stress scenarios. The CRA cash flow analysis assumes that the Issuer has defaulted, i.e. all obligations will be met using cash flows from the cover pool assets only. We also assume that no additional assets will be added to the cover pool during the wind-down phase.

The cash-flow analysis considers, among other factors, asset value haircuts ("asset-sale discount"), and the possible positive yield spread between covered assets and covered bonds ("yield spreads"). To derive the asset-sale discount, CRA assumes, based on secondary market data, a rating level haircut on the asset value. Furthermore, CRA, using available public information (i.e. issuer's annual accounts), has derived estimations for yield spreads (see table 5):

Table 5: Cash-Flow Model assumptions | Source: CRA

Rating level	Asset-Sale Discount	Yield Spread
AAA	66,67%	0,98%
AA+	61,27%	0,99%
AA	57,79%	1,00%
AA-	54,47%	1,01%
A+	51,92%	1,02%
A	49,83%	1,02%
A-	47,10%	1,03%

Rating Scenarios

In our cash flow model rating scenarios have been tested considering several central input parameters, such as:

- Portfolio composition (diversification, concentration, granularity)
- Probability of default of cover assets
- Correlations of cover assets and systematic risk factors
- Recoveries
- Maturity profile of covered bonds and cover assets (ALM)

Within an AAA rating scenario, the cash flow model showed that obligations can be paid fully and in a timely manner. Overall, the cash flow analysis revealed that the portfolio, given all used information as of 30.09.2019, may ensure the repayment of bonds' nominal capital notwithstanding the occurrence of the presented stressed scenarios.

Overcollateralization Break-Even Analysis

CRA also performed a break-even OC analysis taking into considerations the following drivers: ALM, Loss level, Interest rate spreads, Foreign currency mismatches and Recoveries. Performing the break-even OC analysis, we took rating-level specific stressed outcomes into account. Based on these analysis, the maximum OC required for each relevant rating level during the whole period has been presented in table 6.

Table 6: Breakeven Analysis | Source: CRA

Rating Level	Break-Even OC
AAA	**2,15%**
AA+	2,00%
AA	2,00%
AA-	2,00%
A+	2,00%
A	2,00%
A-	2,00%

Sensitivity Analysis

CRA also evaluates the sensitivity of the structure and program with respect to important input parameters. In particular, the following factors have been varied:

- Credit quality of cover assets
- Recoveries

The following table presents the rating impact of a decline in recoveries and an increase in the credit risk of single debtors. Starting from the best-case, which is represented by our base case assumptions, the analysis reveals the sensitivity of the rating with respect to recovery rates and credit risk. The worst-case scenario, in which we reduce recoveries by 50% and increase credit risk by 50%, the impact leads to an unchanged base case rating, i.e. AAA (see Table 7):

Table 7: Covered Bond Program Sensitivity: Credit Quality und Recovery Rates | Source: CRA

Recovery / Defaults	Base Case	-25%	-50%
Base Case	**AAA**	AAA	AAA
+25%	AAA	AAA	AAA
+50%	AAA	AAA	AAA

In general, based on the presented cash flow analysis results, the rating of the cover pool within our covered bond program rating has been set at AAA. Consequently, the secondary rating uplift was set at two (+2) notches.

Counterparty Risk

Derivatives

No derivatives in use at present.

Commingling

In the event of issuer's bankruptcy, in order to avoid commingling of funds, the PfandBG stipulates that the cover assets should be isolated from the general bankruptcy estate (insolvency-free assets) and a special cover pool administrator will be appointed to manage the cover pool. Under that mandate the cover pool administrator will have first priority on the up-coming cash flows from the cover pool assets, which in turn should be used to cover interest and principal payments of the covered bond holders in event of the Issuer's insolvency.

Appendix

Rating History

Event	Rating Date	Publication Date	Result
Initial Rating	27.12.2018	04.01.2019	AAA / Stable
Rating Update	11.12.2019	19.12.2019	AAA / Stable

Details Cover Pool

Table 8: Characteristics of Cover Pool | Source: Commerzbank

Characteristics	Value
Cover Pool Volume	EUR 28.156 m
Covered Bonds Outstanding	EUR 17.294 m
Substitute Assets	EUR 596 m
Share Derivatives	0,00%
Share Other	100,00%
Substitute Assets breakdown by asset type	
Cash	0,00%
Guaranteed by Supranational/Sovereign	100,00%
Central bank	0,00%
Credit institutions	0,00%
Other	0,00%
Substitute Assets breakdown by country	
Issuer country	71,37%
Eurozone	14,11%
Rest European Union	14,53%
European Economic Area	0,00%
Switzerland	0,00%
Australia	0,00%
Brazil	0,00%
Canada	0,00%
Japan	0,00%
Korea	0,00%
New Zealand	0,00%
Singapore	0,00%
US	0,00%
Other	0,00%
Cover Pool Composition	
Mortgages	97,88%
Total Substitute Assets	2,12%
Other / Derivatives	0,00%
Number of Debtors	186.157
Distribution by property use	
Residential	97,59%

Commercial	2,41%
Other	0,00%
Distribution by Residential type	
Occupied (main home)	17,16%
Second home	0,00%
Non-owner occupied	0,00%
Agricultural	0,00%
Multi family	11,86%
Other	70,98%
Distribution by Commercial type	
Retail	30,26%
Office	61,78%
Hotel	-
Shopping center	-
Industry	0,03%
Land	0,00%
Other	7,92%
Average asset value (Residential)	EUR 118 k
Average asset value (Commercial)	EUR 1.511 k
Share Non-Performing Loans	0,00%
Share of 10 biggest debtors	1,40%
WA Maturity (months)	68,04
WAL (months)	68,04
Distribution by Country (%)	
Germany	100,00

Table 9: Participant counterparties | Source: Commerzbank

Role	Name	Legal Entity Identifier
Issuer	Commerzbank	851WYGNLUQLFZBSYGB56
Servicer	Not applicable for the jurisdiction	Not applicable for the jurisdiction
Account Bank	Not applicable for the jurisdiction	Not applicable for the jurisdiction
Sponsor	Not applicable for the jurisdiction	Not applicable for the jurisdiction

Figure 6: Program currency mismatches | Source: Commerzbank

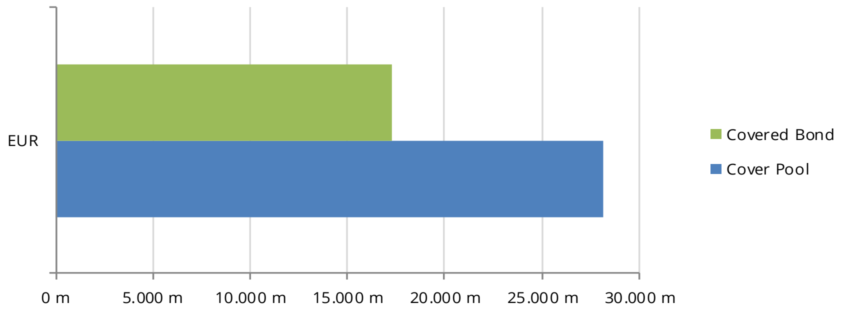
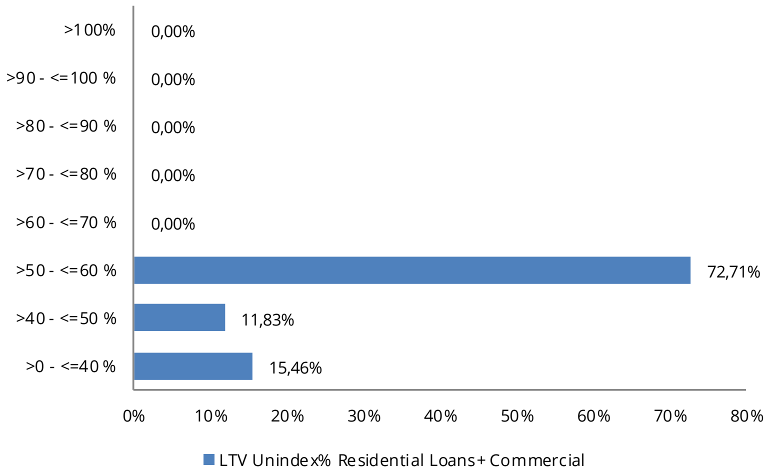


Figure 7: Unindexed LTV breakdown - residential pool | Source: Commerzbank



Key Source of Information

Documents (Date: 30.09.2019)
Issuer ▪ Audited consolidated annual reports of Commerzbank AG (Group) 2015-2018 ▪ Final update dated 29.11.2019 based on the rating report dated 25.08.2018 ▪ Rating file 2019 ▪ Miscellaneous Investor Relations Information and Press releases ▪ Peergroup-Data and other data from eValueRate/CRA databank
Covered Bond and Cover Pool ▪ HTT Reporting from Commerzbank as of 30.09.2019 ▪ Base Prospectus of Commerzbank AG Covered Bond Program dated 17.05.2019 ▪ Market data Mortgage Cover Bond Program

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Creditreform Rating AG was neither commissioned by the rating object nor by any other third parties for the rating. The analysis took place on a voluntary basis by Creditreform Rating AG and is to be described in the regulatory sense as an unsolicited rating. The rating was conducted on the basis of Creditreform Rating´s "Covered Bond Ratings" methodology and "Technical Documentation Portfolio Loss Distributions" in conjunction with Creditreform`s basic document "Rating Criteria and Definitions".

The rating is based on publicly available information and internal evaluation methods for the rated bank and program. The issuer's quantitative analysis is based mainly on the latest annual accounts, interim reports, other information of the bank pertaining to investor relations, and key figures calculated by eValueRate/CRA subject to a peer group analysis of 24 competing institutes. The cover pool's quantitative analysis for the rated Covered Bond Program was based on the "Harmonised Transparency Template" (HTT) published by the Commerzbank

A complete description of Creditreform Rating´s rating methodologies and Creditreform`s basic document "Rating Criteria and Definitions" is published on the following internet page:

www.creditreform-rating.de/en/regulatory-requirements/

This rating was carried out by analysts AFM Kamruzzaman and Qinghang Lin both based in Neuss/Germany. On 11.12.2019, the rating was presented to the rating committee by the analysts and adopted in a resolution.

The rating result was communicated to Commerzbank, and the preliminary rating report was made available. The Issuer and all relevant parties examined the rating report prior to publication and were given at least one full working day to appeal the rating committee decision and provide additional information. The rating decision was not amended following this examination.

The rating is subject to one-year monitoring from the creation date (see cover sheet). Within this period, the rating can be updated. After one year at the latest, a follow-up is required to maintain the validity of the rating.

In 2011 Creditreform Rating AG was registered within the European Union according to EU Regulation 1060/2009 (CRA-Regulation). Based on the registration Creditreform Rating AG (CRA) is permitted to issue credit ratings within the EU and is bound to comply with the provisions of the CRA-Regulation.

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The approval of credit ratings and rating outlooks follows our internal policies and procedures. In line with our policy "Rating Committee," all credit ratings and rating outlooks are approved by a rating committee based on the principle of unanimity.

To prepare this credit rating, CRA has used following substantially material sources:

1. Transaction structure and participants

2. Transaction documents

3. Issuing documents

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The meaning of each rating category, the definition of default or recovery, and any appropriate risk warning, including a sensitivity analysis of the relevant key rating assumptions, such as mathematical or correlation assumptions, accompanied by worst-case scenario credit ratings as well as best-case scenario credit ratings, are explained.

The date at which the credit rating was released for distribution for the first time and when it was last updated including any rating outlooks, is indicated clearly and prominently in the "Basic data" card as a "Rating action"; first release is indicated as "initial rating", other updates are indicated as an "update", "upgrade or downgrade", "not rated", "confirmed", "selective default" or "default".

In the case of a rating outlook, the time horizon is provided during which a change in the credit rating is expected. This information is available within „Basic data“ information card.

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An explanatory statement of the meaning of Creditreform`s default rates are available in the credit rating methodologies disclosed on the website.

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