

Covered Bonds follow-up Rating

Commerzbank AG

Public Sector Covered Bond Program

Creditreform
Rating

Rating Object	Rating Information	
Commerzbank AG, Public Sector Covered Bond Program	Rating / Outlook : AA / Stable	Type: Rating Update (unsolicited)
Type of Issuance : Public Sector Covered Bond under German law Issuer : Commerzbank AG	Rating Date : 13.12.2021 Rating Renewal until : Withdrawal of the rating Maximum Validity: 01.01.2050 Rating Methodology : CRA „Covered Bond Ratings“	
LT Issuer Rating : BBB+ (Commerzbank) ST Issuer Rating : L2 Outlook Issuer : Stable		

Program Overview			
Bonds nominal value	EUR 12,124 m.	WAL maturity covered bonds	4.63 Years
Cover pool value	EUR 13,576 m.	WAL maturity cover pool	10.93 Years
Cover pool asset class	Public Sector	Overcollateralization (nominal/committed)	11.98%/ 2.00%
Repayment method	Hard Bullet	Min. overcollateralization	2.00%
Legal framework	German Pfandbriefe Act	Covered bonds coupon type	Fix (39.87%), Floating (60.13%)

Cut-off date Cover Pool information: 30.09.2021

Rating Action

Content

Rating Action	1
Issuer Risk	2
Structural Risk	2
Liquidity and Refinancing Risk	4
ESG Criteria	4
Credit and Portfolio Risk	5
Cash-Flow Analysis	8
Counterparty Risk	9
Appendix	11

This follow-up report covers our analysis of the public sector covered bond program issued under German law by Commerzbank AG („Commerzbank“). The total covered bond issuance at the cut-off date (30.09.2021) had a nominal value of EUR 12,123.55 m, backed by a cover pool with a current value of EUR 13,576.16 m. This corresponds to a nominal overcollateralization of 11.98%. The cover assets mainly include German public sector assets as well as obligations of regional and local authorities 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 a AA rating. The AA rating represents a very high level of credit quality and very low investment risk.

Analysts

AFM Kamruzzaman
Lead-Analyst
a.kamruzzaman@creditreform-rating.de
+49 2131 109 1948

Qinghang Lin
Analyst
Q.Lin@creditreform-rating.de
+49 2131 109 1938

Neuss, Germany

Key Rating Findings

- + Covered Bonds are subject to strict legal framework for covered bonds (PfandBG)
- + Covered Bond holders have full recourse to the issuer.
- + Good asset quality despite the negative effect of the Corona pandemic on the economy
- Low interest rate phase continues to impact earnings of the issuer in interest business

Table1: Overview results

Risk Factor	Result
Issuer rating	BBB+ (rating as of 21.11.2021)
+ Legal and regulatory framework	+4 Notches
+ Liquidity and refinancing risk	+1 Notch

= Rating after 1 st uplift	AA
Cover pool & cash flow analysis	BB
+ 2 nd rating uplift	+/-0 Notch
= Rating covered bond program	AA

Issuer Risk

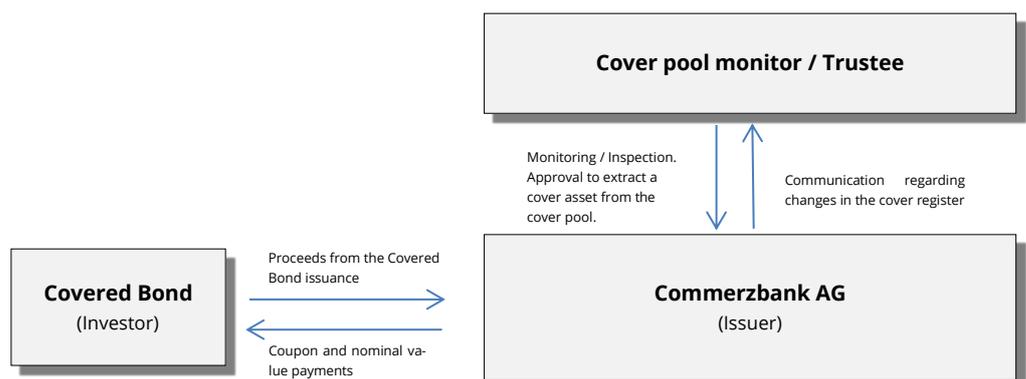
Issuer

Our rating of Commerzbank covered bond program is reflected by our issuer rating opinion of Commerzbank AG (Group) due to its group structure. In 24 November 2021, the long-term issuer rating of Commerzbank AG (Group) is confirmed at 'BBB+', while the outlook is raised from negative to stable. Commerzbank AG's rating benefits from its good asset quality, which has hardly suffered from the consequences of the Corona pandemic, contrary to our previous expectations. The restructuring measures introduced under Strategy 2024 point to an improvement in profitability. In addition, Commerzbank's rating as one of the leading banks in an economically strong country benefits from our methodic update. By contrast, 2020 will be characterized by high loan loss provisions and significant restructuring expenses, which will also impact 2021. For a more detailed overview of the issuer rating, please refer to 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 last amended on July 2021. 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 European Commission on November 2019 has adopted the legislative package to provide for enhanced harmonisation of the EU covered bond market. Each of the Member States should implement the Covered Bond Directive (CBD) by 8 July 2021 and the national measures shall be applied at the latest from 8 July 2022.

Subsequently, the German Bundestag (German parliament) passed the German CBD Implementation Act on 15 April 2021, followed by the approval of the Bundesrat (Federal Council of Germany) on 7 May 2021. The changes to the law provide for adjustments to the PfandBG with a view to harmonize the national legislation with the EU covered bond harmonization measures. Some measures, in particular, the provisions on building insurance and on maturity extension came into force as of 1 July 2021 and have been included in the rating analysis. Other provisions on implementing the CBD like provisions on transparency will enter into force on July 2022, which might have a potential effect on the legal and regulatory framework applicable to the issuance of covered bonds currently in force.

A comprehensive overview of the initial PfandBG with previous amendments can be found in our initial and follow-up rating reports of Commerzbank Public Sector Covered Bonds. Subsequently, the following major provisions describe the status of PfandBG as of 01 July 2021 including the most recent amendments.

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 public sector covered bonds („Öffentliche Pfandbriefe“) the cover assets comprise of public sector exposures to sovereigns, regional and local authorities confined to EU/EEA countries, Switzerland, USA, Canada, Japan and explicitly widened to UK due to Brexit.

An independent trustee (Treuhand) 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. The amended PfandBG foresees a strengthening of the dual recourse, whereby the insolvency administrator must keep reserves for the claims of the covered bond holders during the insolvency proceedings of the issuer. Furthermore, on a regular basis BaFin audits cover pool assets, as of 1 July 2021 usually every three years (instead of every two years before).

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 2.00% of the net present value of the liabilities (net present value of statutory overcollateralization) after stress tests. 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, calculated each day.

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 legal amendments to the PfandBG as of 1 July 2021 also introduce the legal option of extending the maturity for covered bonds by up to 12 months by a cover pool administrator, if, this action is necessary, not over indebted and subsequent solvency of the issuer can be assumed. In addition, the cover pool administrator is allowed to extend maturities of interest and principal within the first month after his appointment to the end of this month. However, the original maturity schedule of the covered bonds must be kept.

According to the recently amended PfandBG, derivatives are only eligible as forward transactions. The provisions on derivative transactions that can be included in the cover pool provide for a limit for liabilities from cover pool derivatives of maximum 12% of the sum of outstanding covered bonds and liabilities from cover pool derivatives, calculated on a net present value basis.

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. The option to defer maturity can mitigate existing refinancing risks, but is limited to the actions of the cover pool administrator. Remaining risks 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.

ESG Criteria

CRA generally takes ESG-relevant factors (environmental, social and governance) into account when assessing Covered Bond ratings. Overall, ESG factors have a significant impact on the current rating of this Covered Bond program. CRA identifies governance factors, in particular, to have a highly significant impact on Covered Bond ratings. Since Covered Bonds are subject to strict legal requirements, regulatory risk plays an important role in assessing the credit rating.

The German covered bond legislation (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. Additionally, Risk management and internal controls as well as the macroeconomic factors such as

hedging strategies, interest rates and yield curve are considered to have a highly significant impact on the assessment of the credit rating. Other individual factors with a potential key rating influence were not identified, and therefore did not affect the final rating

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”.

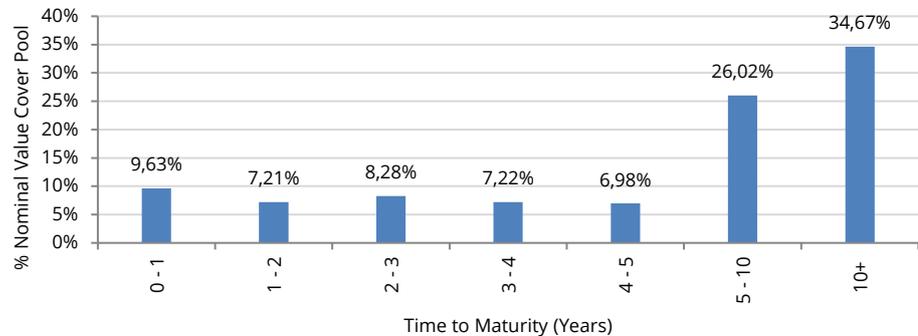
At the cut-off-date 30.09.2021, the pool of cover assets consisted of 1,066 debt receivables from 562 debtors, of which 61% are domiciled in Germany. The total cover pool volume amounted to EUR 13,576.16 m in bonds (14.26%), loans (85.74%) and others (0.00%) which have been lent to the central government, regional authorities and entities, and other debtors. The ten largest debtors of the portfolio total to 29.88%. Table 2 displays additional characteristics of the cover pool:

Table 2: Cover pool characteristics | Source: Commerzbank

Characteristics	Value
Cover assets	EUR 13,576 m.
Covered bonds outstanding	EUR 12,124 m.
Substitute assets	EUR 73.47 m.
Cover pool composition	
<i>Public Sector</i>	99.46%
<i>Substitute assets</i>	0.54%
<i>Other / Derivative</i>	0.00%
Number of debtors	562
<i>Bonds</i>	14.26%
<i>Loans</i>	85.74%
<i>Other</i>	0.00%
Average asset value	EUR 12,666.69 k.
Non-performing loans	0.0%
10 biggest debtors	29.88%
WA seasoning	Not relevant
WA maturity cover pool (WAL)	10.93 Years
WA maturity covered bonds (WAL)	4.63 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 30.09.2021 (see figure 2):

Figure 2: Distribution by remaining time to maturity | 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

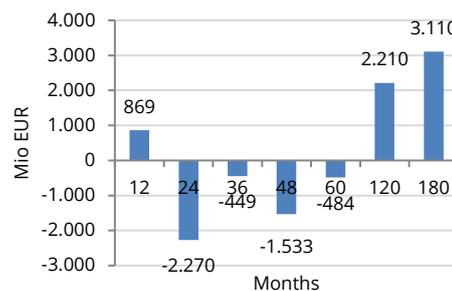
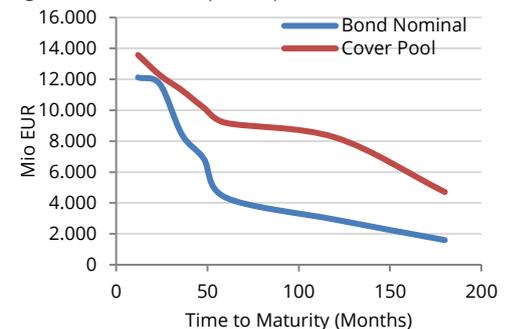


Figure 4: Amortization profile | Source: Commerzbank



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. This program, however, possess significant currency risk as 24.66% of the cover pool assets and 2.12% of the cover bonds are denominated in currencies other than euros. Therefore, we have applied interest rate and foreign exchange stresses on the cash flows for each rating level according to our methodology.

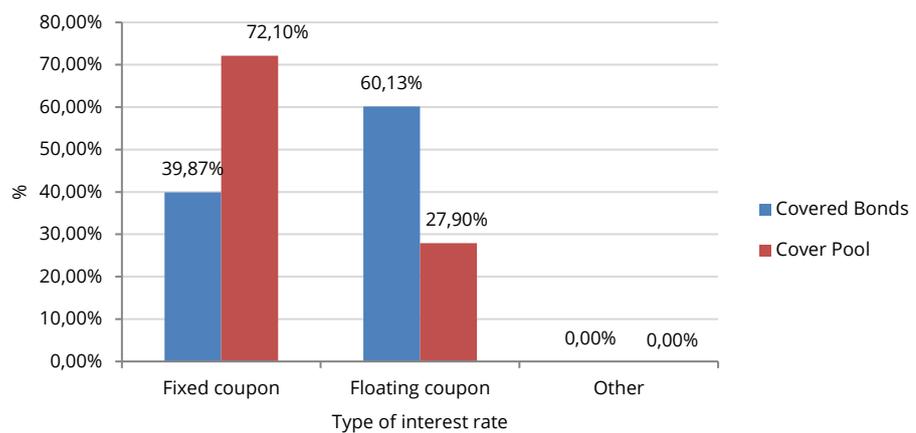
Table 3: Program distribution by currency | Source: Commerzbank

Currency	Volume	Share (%)
<i>Cover Pool</i>		
EUR	10,229 m	75.34%
CHF	712 m	5.24%
GBP	1,629 m	12.00%
USD	1,007 m	7.42%

Covered Bond		
EUR	11,867 m	97.88%
CHF	257 m	2.12%

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

Figure 5: Type of interest rate | Source: Commerzbank



Credit Risk

In Covered Bond Public Sector programs, CRA assesses the credit risk of the cover assets primarily through an assessment of the creditworthiness of the obligors and their future ability to meet all payment obligations. In order to derive a base case assumption for credit risk, CRA uses the CRA Sovereign Ratings of all obligors in the portfolio, which will be taken into account pro-rata. The rating reports of relevant sovereigns can be accessed at www.creditreform-rating.de. Using all portfolio information available (number of debtors, sovereign – sub-sovereign, maturity profile, regional diversification etc.), CRA has modelled the cover asset portfolio and, using Monte Carlo simulations, derived a distribution of defaults which can be used to elicit rating-level dependent default assumptions.

Recovery and loss-severity assumptions have been determined in accordance with CRA rating methodology. This includes a differentiation of sovereign- and sub-sovereign credits in terms of loss severities, which is included using the current portfolio composition to determine a weighted average recovery rate.

Using both rating-level dependent default and recovery assumptions, the following loss assumptions have been derived for the current cover pool (see Table 4)

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

Rating	Default Rate (%)	Recoveries (%)	Expected Loss (%)
BBB	11.11%	49.83%	5.57%
BBB-	10.34%	51.49%	5.02%
BB+	8.96%	53.16%	4.20%
BB	8.02%	54.83%	3.62%
BB-	6.63%	56.49%	2.88%
B+	5.83%	58.16%	2.44%
B	4.99%	59.83%	2.00%

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
BBB	7.84%	0.94%
BBB-	7.13%	0.95%
BB+	6.37%	0.97%
BB	5.52%	0.98%
BB-	4.65%	1.00%
B+	3.82%	1.01%
B	2.94%	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 a BB 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 available information as of 30.09.2021, 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 analyses, 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
BBB	17.40%
BBB-	15.76%
BB+	13.40%
BB	11.25%
BB-	8.67%
B+	6.63%
B	4.57%

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 (sovereigns). 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 can be seen by a reduction in the base case rating by 2 notches to B+ (see Table 7):

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

Recovery Defaults	Base Case	-25%	-50%
Base Case	BB	BB-	BB-
+25%	BB-	BB-	B+
+50%	BB-	BB-	B+

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 BB. Consequently, the secondary rating uplift was set at zero (0) notch.

However, it is worth mentioning that, the ongoing Covid-19 crisis could have a potential impact on the cover pool. It remains to be seen how serious the effects of the lockdown, among other things, will be. Should there be any changes to the cover pool and the issuer rating in the future, we will include them during our monitoring process.

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	10.12.2018	19.12.2018	AA / stable
Rating Update	11.12.2019	17.12.2019	AA+ / stable
Monitoring	24.03.2020	28.03.2020	AA+ / watch negative
Rating Update	10.12.2020	16.12.2020	AA / negative
Monitoring	05.07.2021	06.07.2021	AA / watch
Rating Update	13.12.2021	17.12.2021	AA / stable

Details Cover Pool

Table 8: Characteristics of Cover Pool | Source: Commerzbank

Characteristics	Value
Cover Pool Volume	EUR 13,576 m
Covered Bonds Outstanding	EUR 12,124 m
Substitute Assets	EUR 73 m
Share Derivatives	0.00%
Share Other	100.00%
Substitute Assets breakdown by asset type	
Cash	0.00%
Guaranteed by Supranational/Sovereign agency	0.00%
Central bank	0.00%
Credit institutions	100.00%
Other	0.00%
Substitute Assets breakdown by country	
Issuers country	100.00%
Eurozone	0.00%
Rest European Union	0.00%
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	
Public Sector	99.46%
Total Substitute Assets	0.54%

Covered Bonds follow-up Rating

Commerzbank AG

Public Sector Covered Bond Program

Other / Derivatives	0.00%
Number of Debtors	562
Distribution by debtor type	
Central Government	25.02%
Regional authorities	31.74%
Municipal authorities	39.31%
Other	3.94%
Distribution by asset type	
Loans	85.74%
Bonds	14.26%
Other	0.00%
Average asset value	EUR 12,667 k
Share of Non-Performing Loans	0.00%
Share of 10 biggest debtors	29.88%
WA Maturity (months)	131.15
WAL (months)	131.15
Distribution by Country (%)	
Austria	2.55
Belgium	0.63
Denmark	0.49
Estonia	0.01
Finland	0.67
France	0.59
Germany	60.68
Greece	1.37
Italy	4.70
Portugal	0.89
Spain	3.48
Sweden	0.08
Iceland	0.69
Switzerland	6.51
United Kingdom	12.80
Canada	0.23
Japan	0.31
US	2.09
Other	1.22

Table 9: Participant counterparties | Source: Commerzbank

Role	Name	Legal Entity Identifier
Issuer	Commerzbank AG	851WYGNLUQLFZBSYGB56

Figure 6: Arrears Distribution | Source: Commerzbank

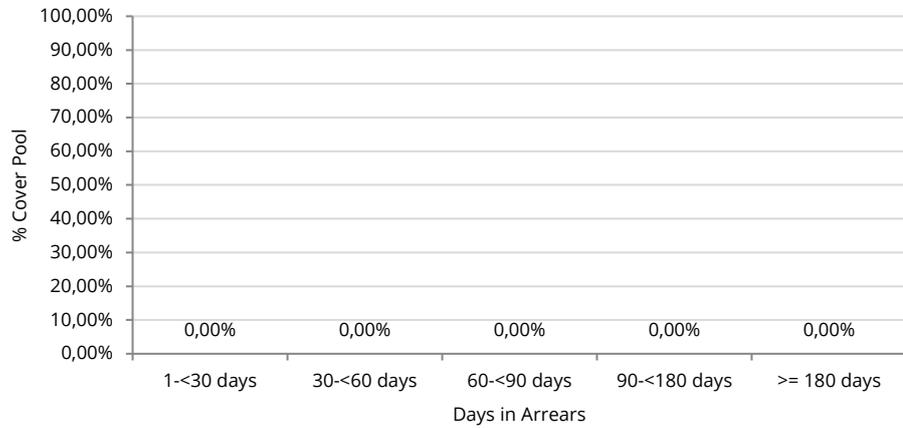
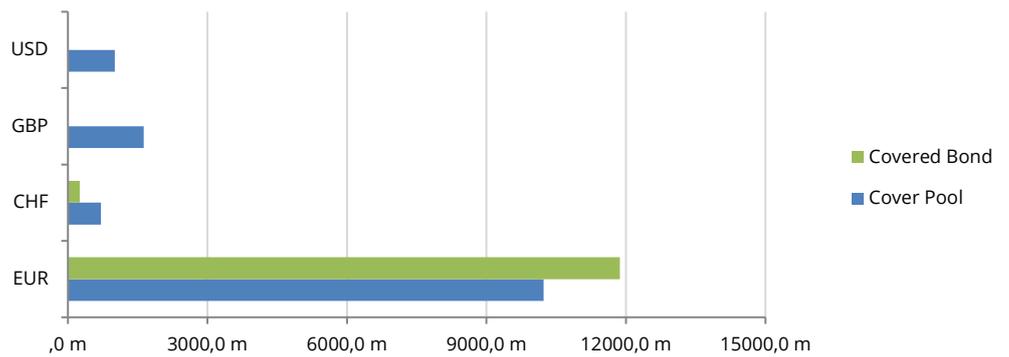


Figure 7: Program currency mismatches | Source: Commerzbank



Key Source of Information

Documents (Date: 30.09.2021)

Issuer

- Audited consolidated annual reports of Commerzbank AG (Group) 2017-2020
- Final Rating report as of 21.11.2021
- Miscellaneous Investor Relations Information and Press releases
- Peergroup-Data und other data from the CRA/ eValueRate databank

Covered Bond and Cover Pool

- HTT Reporting from Commerzbank as of 30.09.2021
- Base prospectus of Commerzbank covered bonds program dated 31.05.2021
- Market data of Public Sector Covered Bond Program

Regulatory and Legal Disclosures

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 \(v1.0, July 2017\)](#)" and "["Technical Documentation Portfolio Loss Distributions" \(v.1.0, July 2018\)](#)" in conjunction with Creditreform's basic document "["Rating Criteria and Definitions" \(v1.3, January 2018\)](#)". On the subject of ESG (environment, social and governance), Creditreform Rating AG has published the basic document "["The Impact of ESG Factors on Credit Ratings" \(March 2020\)](#)".

Unsolicited Credit Rating

With Rated Entity or Related Third Party Participation	NO
With Access to Internal Documents	NO
With Access to Management	NO

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 CRA/eValueRate. The cover pool's quantitative analysis for the rated Covered Bond Program was based on the "Harmonised Transparency Template" (HTT) published by the Commerzbank.

Information on the meaning of a rating category, definition of default and sensitivity analysis of relevant key rating assumptions can be found at "Creditreform Rating AG, Rating Criteria and Definitions":

<https://www.creditreform-rating.de/en/about-us/regulatory-requirements.html>

This rating was carried out by analysts AFM Kamruzzaman (Analyst) and Qinghang Lin (Analyst) both based in Neuss/Germany. On 13.12.2021, the rating was presented to the rating committee by the analysts and adopted in a resolution. The function of Person Approving Credit Ratings (PAC) was performed by Christian Konieczny (Senior Analyst).

On 13.12.2021, 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.

Endorsement

Creditreform Rating did not endorse the rating according Article 4 (3), CRA-Regulation.

Conflict of Interests

No conflicts of interest were identified during the rating process that might influence the analyses and judgements of the rating analysts involved or any other natural person whose services are placed at the disposal or under the control of Creditreform Rating AG and who are directly involved in credit rating activities or approving credit ratings and rating outlooks.

In the event of provision of ancillary services to the rated entity, CRA will disclose all ancillary services in the credit rating report.

Rules on the Presentation of Credit Ratings and Rating Outlooks

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
4. Other rating related documentation

There are no other attributes and limitations of the credit rating or rating outlook other than displayed on the CRA website. Furthermore, CRA considers satisfactory the quality and extent of information available on the rated entity. In regard to the rated entity, Creditreform Rating AG regarded available historical data as sufficient.

Between the disclosure of the credit rating to the rated entity and the public disclosure no amendments were made to the credit rating.

The rating report and/or press release indicates the principal methodology or version of methodology that was used in determining the rating, with a reference to its comprehensive description.

In cases where the credit rating is based on more than one methodology, or where reference only to the principal methodology might cause investors to overlook other important aspects of the credit rating, including any significant adjustments and deviations, Creditreform Rating AG explains this fact in the credit rating and indicates how the different methodologies and other aspects are taken into account in the credit rating. This information is integrated in the credit rating report.

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 rating report and/or press release 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 the rating report and/or press release.

In accordance to Article 11 (2) EU-Regulation (EC) No 1060/2009 registered or certified credit rating agency shall make available in a central repository established by ESMA information on its historical performance data, including the ratings transition frequency, and information about credit ratings issued in the past and on their changes. Requested data are available at the ESMA website: <https://cerep.esma.europa.eu/cerep-web/statistics/defaults.xhtml> .

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

Disclaimer

Any rating performed by Creditreform Rating AG is subject to the Creditreform Rating AG Code of Conduct which has been published on the web pages of Creditreform Rating AG. In this Code of Conduct, Creditreform Rating AG commits itself – systematically and with due diligence – to establish its independent and objective opinion as to the sustainability, risks and opportunities concerning the enterprise or the issue under review.

Future events are uncertain, and forecasts are necessarily based on assessments and assumptions. This rating is therefore no statement of fact, but an opinion. For this reason, Creditreform Rating AG cannot be held liable for the consequences of decisions made on the basis of any of their ratings. Neither should these ratings be construed as recommendations for investors, buyers or sellers. They should only be used by market participants (entrepreneurs, bankers, investors etc.) as one factor among others when arriving at corporate or investment decisions. Ratings are not meant to be used as substitutes for one's own research, inquiries and assessments.

We have assumed that the documents and information made available to us by the client are complete and accurate and that the copies provided to us represent the full and unchanged contents of the original documents. Creditreform Rating AG assumes no responsibility for the true and fair representation of the original information.

This report is protected by copyright. Any commercial use is prohibited without prior written permission from Creditreform Rating AG. Only the full report may be published in order to prevent distortion of the report's overall assessment. Excerpts may only be used with the express consent of Creditreform Rating AG. Publication of the report without the consent of Creditreform Rating AG is prohibited. Only ratings published on the Creditreform Rating AG web pages remain valid.

Creditreform Rating AG

Contacts

Creditreform Rating AG

Europadamm 2-6
D - 41460 Neuss

Fon +49 (0) 2131 / 109-626
Fax +49 (0) 2131 / 109-627
E-Mail info@creditreform-rating.de
Internet www.creditreform-rating.de

CEO:
Dr. Michael Munsch
Chairman of the board:
Michael Bruns

HRB 10522, Amtsgericht Neuss