Creditreform Covered Bond Rating

Landesbank Baden-Württemberg
Public Sector Covered Bond Program

Creditreform Rating

Rating Object	Rating Information	
Landesbank Baden-Württemberg, Public Sector Covered Bond Program	Rating / Outlook : **AAA / Stable**	Type: Initial Rating (unsolicited)
Type of Issuance : Public Sector Covered Bond under German law	Rating Date :	31.03.2021
Issuer : Landesbank Baden-Württemberg	Rating Renewal until :	Withdrawal of the rating
LT Issuer Rating : A- (Landesbank Baden-Württemberg)	Maximum Validity:	01.01.2050
ST Issuer Rating : L2	Rating Methodology :	CRA „Covered Bond Ratings"
Outlook Issuer : Stable		

Program Overview

Bonds nominal value	EUR 8,922 m.	WAL maturity covered bonds	5.20 Years
Cover pool value	EUR 11,651 m.	WAL maturity cover pool	6.90 Years
Cover pool asset class	Public Sector	Overcollateralization (nominal/committed)	30.59%/ 2.00%
Repayment method	Hard Bullet	Min. overcollateralization	2.00%
Legal framework	German Pfandbriefe Act	Covered bonds coupon type	Fix (80.40%), Floating (19.60%)

Cut-off date Cover Pool information: 31.12.2020

Rating Action

Content

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This rating report covers our analysis of the public sector covered bond program issued under German law by Landesbank Baden-Württemberg („LBBW"). The total covered bond issuance at the cut-off date (31.12.2020) had a nominal value of EUR 8,922.06 m, backed by a cover pool with a current value of EUR 11,651.32 m. This corresponds to a nominal overcollateralization of 30.59%. 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") has assigned the covered bond program an AAA rating with stable outlook. 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 for covered bonds
+ Covered bondholders have full recourse to the issuer
+ Current high nominal overcollateralization (OC) of 30.59% as of 31.12.2020
+ Balanced consumer loan portfolio with correspondingly good asset quality of the issuer, thus low risk potential in times of crisis

+/- Covid-19 can leads to sustained impacts on the cover pool and the issuer rating

- Although earnings of the issuer increased, they remain too low in relation to total assets and equity due to high dependence on interest business

Table1: Overview results

Risk Factor	Result
Issuer rating	A- (rating as of 02.10.2020)
+ 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	+1 Notch
= Rating covered bond program	**AAA**

Issuer Risk

Issuer

LBBW was formed on 01.01.1999 through the merger of Landesgirokasse, Südwestdeutsche Landesbank Girozentrale and Landeskreditbank Baden-Württemberg. LBBW was the largest Landesbank in Germany as of 2020 in terms of total assets. Together with its two customer banks BW-Bank and LBBW Rheinland-Pfalz Bank, LBBW operates nationwide as a universal bank. In addition to its headquarter in Stuttgart, LBBW has further headquarters in Karlsruhe, Mainz and Mannheim. The main business areas of the LBBW Group are: Corporate Customers (in particular SMEs), Real Estate/Project Finance, Retail Customers/Savings Banks (mainly in Baden-Württemberg, Saxony and Rhineland-Palatinate) and Capital Markets Business.

CRA has affirmed the Long-term rating of LBBW at A- in a Rating Update dated 02.10.2020. LBBW successfully continued its growth in the 2019 fiscal year. In particular, the increase in the consumer loan portfolio with a consistently high asset quality had a positive effect on the quantitative analysis. Only the further decline in capital ratios clouded (slightly) the otherwise good annual result. The 2020 financial year must be assessed from the perspective of the Corona pandemic, and it remains to be seen to what extent the risk provisioning recognized will have to be utilized. It can be assumed that the distortions on the capital markets will persist in 2020 and that there will therefore be higher NPLs on LBBW's balance sheet, which will impact the annual result. However, the business model and the operating business are sustainably diversified in Germany. The business volume, in particular with the savings bank sector and SME customers, will be able to continue to grow operationally after the Corona pandemic.

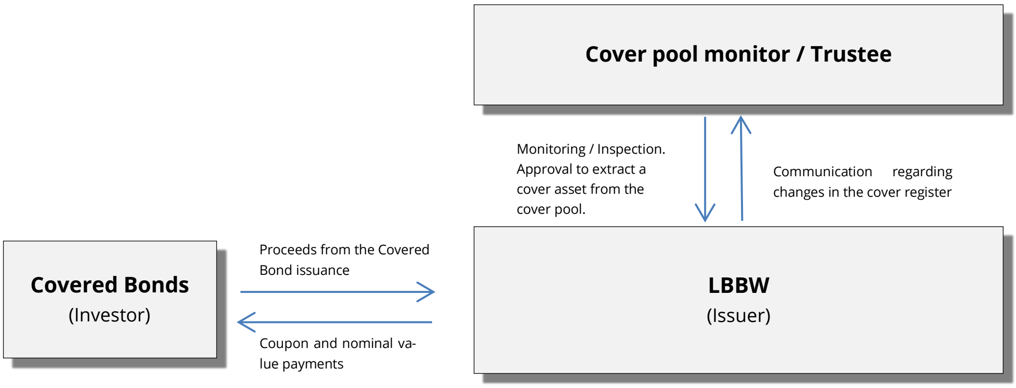
Structural Risk

Transaction structure

Table 2: Overview of all transaction's parties | Source: CRA

Role	Name
Issuer	Landesbank Baden-Württemberg, Stuttgart
Cover pool monitor / Trustee	Appointed by BaFin as stipulated in Pfandbriefgesetz, "PfandBG"
Cover pool administrator	Appointed by BaFin in case of issuer insolvency

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 22.05.2005 and the relevant secondary legislations. According to PfandBG, the public supervision of German covered bond banks is exercised by the Federal Financial Supervisory Authority (BaFin), which also grants licenses to operate the covered bond business. The supervisory duties include, for example, the verification of compliance with the statutory coverage and overcollateralization, the assessment and monitoring of market-, liquidity- and operational risks, as well as the performance of coverage tests based on appropriate samples. If necessary, BaFin can request additional information and information at any time.

In May 2014, Germany implemented the European Union's Bank Recovery and Resolution Directive ("BRRD") in national law, providing the resolution authorities with special resolution tools including the so-called "bail-in tool". Among others, this law ensures that covered bonds are exempted from a potential bail-in.

Listed issues according to the German PfandBG fulfil the criteria according to UCITS 52 (4) as well as the requirements according to Annex VI, part 1, section 58 (a) to (f) of the European Capital Requirements Directive (CRD) and are eligible for repo transactions.

The last amendment of PfandBG which came into force on March 2019, ensured that existing and future business with UK and Northern Ireland 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.

Insolvency Remoteness and Asset Segregation

While cover assets remain on the consolidated balance sheet as long as the bank is solvent ("in-balance" transaction), PfandBG stipulates that the issuer create a cover register per asset class in order to identify the cover assets. Covered bonds must be fully backed by the appropriate cover asset class. In addition, PfandBG complies with the principle of uniform coverage, i.e each covered bond program includes only one cover pool which contains all the claims of this cover class. The legal framework prohibits the mixing of the primary cover asset classes.

In the event of a default by the issuer, the registered cover assets will be marked as a non-insolvent part of the issuer´s estate and will be isolated from the insolvency estate; they form the insolvency-free assets of the issuer and are not affected by insolvency proceedings. If the cover pool is insufficient to fully service the claims of the covered bond creditors, the covered bond holders have recourse to the bank's aggregate bankruptcy estate in a *pari passu* relationship with other unsecured bond creditors.

In addition, there is no automatic sale of the cover assets or accelerated repayment of the covered bonds in the event of a default. Only in the case of insolvency or over-indebtedness of the cover pool can BaFin apply for a separate insolvency procedure to liquidate the assets of the covered bond issuer, thereby accelerating the repayment of the covered bonds.

Trustee

In order to ensure that the cover assets are correctly recorded in the relevant cover register and that their inclusion meets eligibility criteria, the issuer is obliged by the regulatory authority BaFin to appoint a trustee (including a representative). The issuer must communicate to the trustee any changes to the cover register in order to ensure the monitoring process. The responsibilities of the trustee include i.e. the review of the cover register and the statutory coverage ratios of the cover pool, the assurance of a proper determination of the mortgage lending values, and the approval of deletion of cover assets from the cover register.

Special Administrator

In the event of insolvency of the issuer, a special administrator („Sachwalter“) will be appointed to manage the cover pool. The special administrator may perform all legal transactions with effect to the cover pool, insofar as these are necessary for an orderly settlement in the interest and to the full satisfaction of the covered bond creditors. In the absence of liquidity, the custodian may engage in liquidity transactions or sell assets from the cover pool (see "Liquidity and refinancing risk"). The special administrator is also entitled to transfer all or part of the cover assets and liabilities of the program to another covered bond bank or to appoint a fiduciary administrator. Both decisions require the written approval of BaFin.

Eligibility Criteria

Eligible cover assets are loans backed by mortgages, public sector assets, and smaller asset classes such as registered ship mortgages or registered liens on registered aircrafts. Each asset class corresponds to an individual class of covered bonds: mortgage covered bonds (“Hypothekenpfandbriefe”), public sector coverd bonds (“Öffentliche Pfandbriefe”), ship covered bonds (“Schiffspfandbriefe”) and aircraft covered bonds (“Flugzeugpfandbriefe”), respectively. The legal framework prohibits a commingling of primary asset classes. Consequently, a covered bond must be completely secured by its cover asset class. Furthermore, PfandBG conforms to the convention of unitary cover, i.e. to each covered bond type belongs one single cover pool, which contains all debts incurred from issuing covered bonds of that type. Thus, the issuer bank cannot decree to introduce a supplementary cover pool covering a new series of covered bonds of that type.

Exposures to the European Central Bank, central banks in the European Union or to appropriate credit institutions, which qualify for the CQS 1 with respect to the Directive 2006/48/EC, present eligible cover assets as well, but must not exceed 10% of the nominal value of covered bonds outstanding. Asset backed securities and mortgage backed securities are not allowed to be part of the cover pool.

The geographical scope of public sector loans is confined to EU/EEA countries, Switzerland, USA, Canada and Japan. Ship and aircraft mortgages can be warranted worldwide, given that there is a public register and the guarantee of a security comparable to German ship and aircraft mortgages. The total amount of loans provided in non-EU countries, where it is not ensured that the right of preferential treatment of covered bond holders extends to the cover assets, is limited to 10% of the total volume of the cover loans and 20% for ship and aircraft mortgages. Due to the fact that the legal framework does not restrict the geographical scope to the EU/EEA countries and permits extension to other countries, Germany is considered partially aligned with EBA's best practice.

Permitted substitute assets are limited to 10% of the total amount of public sector covered bonds outstanding.

Systemic Relevance and External Support

While the total volume of outstanding covered bonds was more than EUR 639 billion in 2010[1], it fell down to EUR 364 billion in 2019. The main determinant of this decline was the public sector covered bonds, which declined from around EUR 412 billion to EUR 121 billion in this period. This decline in public-sector covered bonds is due, in particular, to a decrease in new issuances, which have fallen by approx. 73% in the last ten years, the value accounting for approximately 25% of the total covered bonds market.

With total assets of EUR 276.4 billion, LBBW was the largest Landesbank in Germany in terms of total assets in 2020. It is also ranked as one of the largest public sector covered bonds issuer in the German market with an outstanding volume of EUR 8.9 billion as of 31.12.2020.

Summary Structural Risk

In general, the PfandBG defines the legal basis for covered bond programs in Germany, it 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 the extended geographical scope of eligible assets other than EU/EEA countries, Germany is considered partially aligned with EBA's best practices. However, we considered the structural framework in Germany as positive, accomplishing an adequate set of rules for German covered bonds. Furthermore, we contemplate the importance of LBBW in the German Pfandbrief market in our analysis. Due to those reasons we have set a rating uplift of four (+4) notches.

[1] Source: EMF-ECBC (2020), ECBC: European Covered Bond Fact Book 2020-online, EMF-ECBC

Liquidity and Refinancing Risk

Minimum Overcollateralization

According to PfandBG, it is compulsory to maintain an overcollateralization (OC) of at least 2% measured on a daily net present value and on a weekly stressed net present value. This mandatory overcollateralization has to be covered under interest rate and currency stress scenarios. Overall, Germany is considered to be fully aligned with EBA Best Practices regarding coverage principles and regulatory overcollateralization.

Short-term Liquidity Coverage

The Issuer is required to maintain a liquidity buffer for the next 180 days to cover all debt service outflows (interest and principal) and derivative transactions. The calculation of the buffer size takes into account the cash inflows from maturing receivables of the cover pool. The buffer amount must be kept in liquid assets and is measured on a daily basis.

A further measure to decrease liquidity risk in the German PfandBG is the provision that after the insolvency of the issuer a covered bond bank has its own bank status and can therefore obtain liquidity from the central bank (Bundesbank) against pledging of its cover assets (repo ability).

Stress Tests and Matching

The issuer must ensure that the present value coverage and OC is also maintained in the case of changes in interest rates and exchange rates. For this purpose, the underlying cover pool must be subjected to a stress test at least weekly. If a deficit is detected on the basis of the present values determined by applying the respective stress scenario, the resulting shortfall must be added immediately to the cover pool. A decrease in the cover pool assets and corresponding OC may only be made if the result of a stress test does not show a shortfall.

Asset-Liability Mismatch

Asset-liability mismatches ("ALM") arise with different maturities of cover assets and covered bonds. According to PfanBG, natural matching - i.e. the congruence of present values – forms the essential approach to reduce ALM risk. In addition, the statutory liquidity coverage requirement for 180 days is a safeguard mechanism to ensure the servicing of pending principal and interest payments.

Repayment Method

This covered bond program issues covered bonds with hard bullet maturity, i.e. a final repayment without extension optionality at the end of the term. Maturity mismatches between cover assets and liabilities thus cannot be mitigated by extension of the legal final maturity. This feature of German covered bond programs is considered both qualitatively and within our cash flow analysis.

Refinancing Costs

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

CRA's analysis assumes that refinancing gaps due to ALM will be closed by a sale of assets from the cover pool. In doing so, we take into account related costs in the form of a discount to the nominal value. The quantification of this discount is adjusted following an analysis of relevant market data and will be used in our cash flow analysis.

Other liquidity risks

Derivatives can be an additional measure to hedge interest rate and currency risks. The legal framework provides for weekly stress tests to be conducted on interest rate- and foreign exchange risks. The stress scenarios are either static, dynamic or model-based.

Information on the maturity of outstanding bonds, notional and NPV coverage, the structure of the cover assets, positions in derivatives and the fixed interest periods, the stress tests and the respective coverage shall be published in each quarter.

Summary Liquidity and Refinancing Risk

Compared to other jurisdictions, the German PfandBG and the stipulated risk management processes for liquidity risks constitute 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, short-term cash availability, or other liquid funds to bridge the asset-liability mismatches in the portfolio. Nevertheless, 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.

It can be noted that, 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 shall implement the Covered Bond Directive by 8 July 2021 and the national measures shall be applied at the latest from 8 July 2022. 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.

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”.

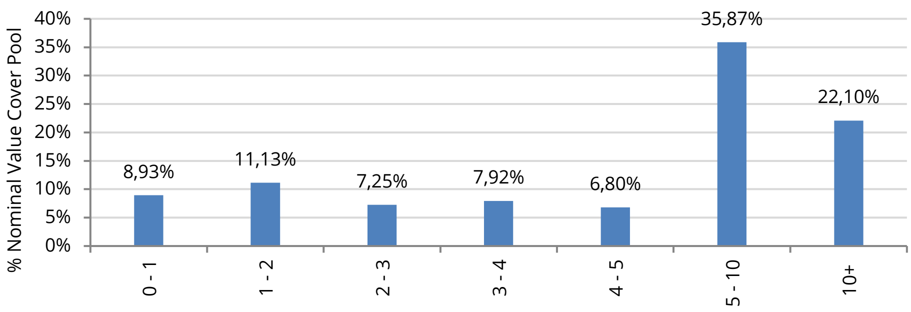
At the cut-off-date 31.12.2020, the pool of cover assets consisted of 7,195 debt receivables from 2,829 debtors, of which 94.50% are domiciled in Germany. The total cover pool volume amounted to EUR 11,651.32 m in bonds (3.13%), loans (96.87%) and others (0.00%) which have been lent to the central government, regional authorities and entities, and other debtors. The ten largest debtors of the portfolio total to 27.91%. Table 3 displays additional characteristics of the cover pool:

Table 3: Cover pool characteristics | Source: LBBW

Characteristics	Value
Cover assets	EUR 11,651 m.
Covered bonds outstanding	EUR 8,922 m.
Substitute assets	EUR 0,00 m.
Cover pool composition	
Public Sector	100.00%
Substitute assets	0.00%
Other / Derivative	0.00%
Number of debtors	2,829
Bonds	3.13%
Loans	96.87%
Other	0.00%
Average asset value	EUR 1,619.36 k.
Non-performing loans	0.0%
10 biggest debtors	27.91%
WA seasoning	124.1 Months
WA maturity cover pool (WAL)	6.90 Years
WA maturity covered bonds (WAL)	5.20 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 31.12.2020 (see figure 2):

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



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: LBBW

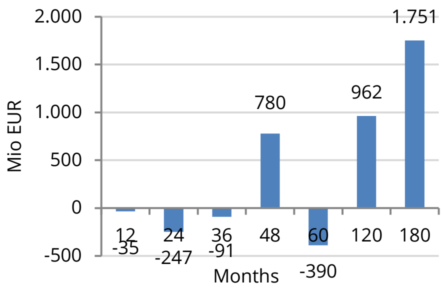
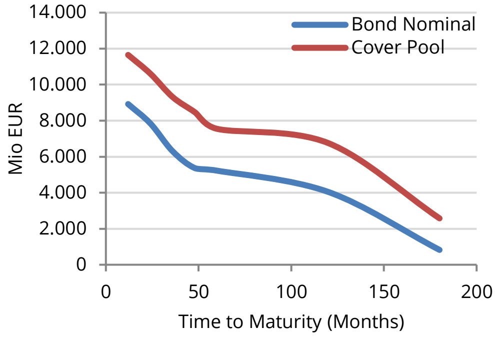


Figure 4: Amortization profile | Source: LBBW



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

This covered bond program does not use derivatives to hedge interest rate- and currency risk. However, the legal framework provides for weekly stress tests to be conducted on interest rate- and currency risks to maintain the mandatory OC. Therefore, interest rate risk could be mitigated by the 2% OC requirement. The program has a very high current overcollateralization of 30.59% as well. Currency risk, on the other hand, is also limited for this program as 99.84% of the cover pool assets and 99.82% of the cover bonds are denominated mainly in Euros. Nevertheless, we have applied interest rate and foreign exchange stresses on the cash flows for each rating level according to our methodology.

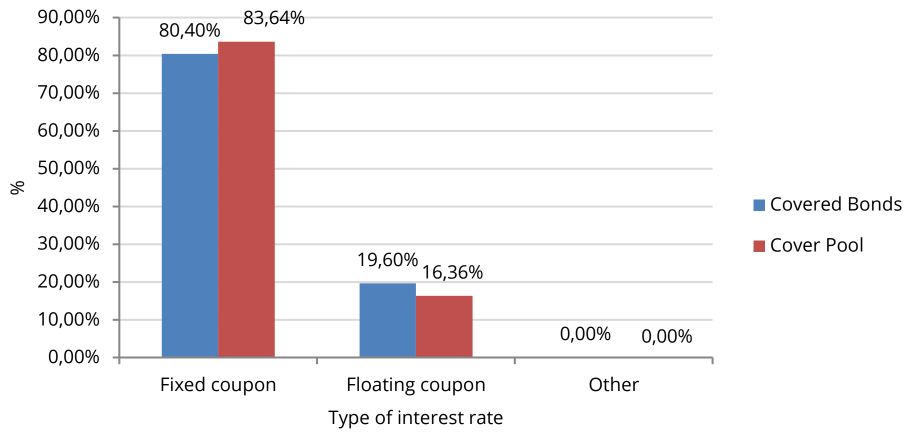
Table 4: Program distribution by currency | Source: LBBW

Currency	Volume	Share (%)
Cover Pool		
EUR	1,632.76 m	99.84%
CHF	0.05 m	0.00%
USD	18.51 m	0.16%

Covered Bond		
EUR	8,905.76 m	99.82%
USD	16.30 m	0.18%

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

Figure 5: Type of interest rate | Source: LBBW



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 5)

Table 5: Cover Pool Base case assumptions | Source: CRA

Rating	Default Rate (%)	Recoveries (%)	Expected Loss (%)
AAA	**17.79%**	**33.65%**	**11.80%**
AA+	14.28%	36.15%	9.12%
AA	12.68%	38.65%	7.78%
AA-	10.54%	40.32%	6.29%
A+	9.82%	41.98%	5.70%
A	9.20%	43.65%	5.19%
A-	8.25%	45.32%	4.51%

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.

Asset-Sale Discount

In our model, short-term liquidity needs and liquidity needs due to asset-liability mismatches will be met with a sale of cover assets available for monetization. Based on secondary market data, CRA assumes a rating-level haircut on the asset value („Asset-Sale Discount") which represents additional costs of disposal and market risks during the sale of cover assets (see Table 6).

Yield Spread

Since cover assets often have a positive yield spread against the covered bonds issued, CRA uses available public information (i.e. issuers´ annual accounts) to size this assumed spread („Yield Spread") (see Table 6):

Table 6: Cash-Flow Model assumptions | Source: CRA

Rating level	Asset-Sale Discount	Yield Spread
AAA	**13.66%**	**0.57%**
AA+	12.35%	0.59%
AA	11.51%	0.60%
AA-	10.71%	0.61%
A+	10.09%	0.62%
A	9.59%	0.62%
A-	8.92%	0.63%

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. In total, the cash flow analysis revealed that the portfolio, given all information available as of 31.12.2020, could be sufficient to repay bond nominal capital notwithstanding the occurrence of any extraordinary events. On this basis, the rating of the cover pool within our covered bond program rating has been set at AAA.

Overcollateralization Break-Even Analysis

CRA also performed a break-even OC analysis. Such OC levels should bear the corresponding losses for a given rating scenario. Main drivers of the analysis are:

- ALM
- Loss level
- Interest rate spreads
- Foreign currency mismatches
- 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 7.

Table 7: Breakeven Analysis | Source: CRA

Rating Level	Break-Even OC
AAA	**14.56%**
AA+	11.20%
AA	9.45%
AA-	7.60%
A+	6.78%
A	6.12%
A-	5.23%

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 an unchanged base case rating of AAA (see Table 8):

Table 8: 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

Summary Cash-Flow Analysis

Based on public information and using the base case loss assumptions, the analysis showed that obligations can be paid in full and in a timely manner. Overall, the cash flow analysis revealed that the portfolio, given the used information, may ensure the repayment of bonds' nominal capital notwithstanding the occurrence of the presented stressed scenarios. Therefore, 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 one (+1) 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

Transaction parties

Table 9: Participant counterparties | Source: LBBW

Role	Name	Legal Entity Identifier
Issuer	Landesbank Baden-Württemberg	B81CK4ESI35472RHJ606

Derivatives

No derivatives in use at present.

Commingling

Incoming cash flows generated from the cover pool will normally be transferred to the Issuer and will be forwarded to the covered bond holders according to the payment terms and conditions. Should the issuer become bankrupt, there is a risk ("commingling risk") that funds may not be returned and commingled with the insolvency estate of the issuer. In order to avoid such risk, the PfandBG stipulates that the cover assets should be isolated from the general bankruptcy estate (insolvency-free assets) and a special cover pool administrator ("Sachwalter") 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. These cash flows 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	
Result/ Outlook	**AAA / Stable**
Rating Date	31.03.2021
Publication Date	09.04.2021

Details Cover Pool

Table 10: Characteristics of Cover Pool | Source: LBBW

Characteristics	Value
Cover Pool Volume	EUR 11,651 m
Covered Bonds Outstanding	EUR 8,922 m
Substitute Assets	EUR 0 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	0.00%
Other	0.00%
Substitute Assets breakdown by country	
Issuers country	0.00%
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	100.00%
Total Substitute Assets	0.00%
Other / Derivatives	0.00%
Number of Debtors	2,829
Distribution by debtor type	

Central Government	11.99%
Regional authorities	21.06%
Municipal authorities	34.60%
Other	32.35%
Distribution by asset type	
Loans	96.87%
Bonds	3.13%
Other	0.00%
Average asset value	EUR 1,619 k
Share of Non-Performing Loans	0.00%
Share of 10 biggest debtors	27.91%
WA Maturity (months)	NR
WAL (months)	82.80
Distribution by Country (%)	
Austria	0.78
Belgium	0.67
Denmark	0.65
Germany	94.50
Netherlands	0.09
Italy	0.19
Poland	1.36
Slovenia	0.17
Spain	0.43
Sweden	0.76
Switzerland	0.23
US	0.17
Distribution by Region (%)	
Baden-Württemberg	47.78
Bavaria	1.55
Berlin	10.38
Brandenburg	0.08
Bremen	1.17
Hamburg	0.18
Hesse	2.92
Lower Saxony	6.79
Mecklenburg-Western Pomerania	0.67
North Rhine-Westphalia	14.03
Rhineland-Palatinate	9.97
Saarland	2.09
Saxony	0.36
Saxony-Anhalt	0.61
Schleswig-Holstein	0.62
Thuringia	0.80

Figure 6: Arrears Distribution | Source: LBBW

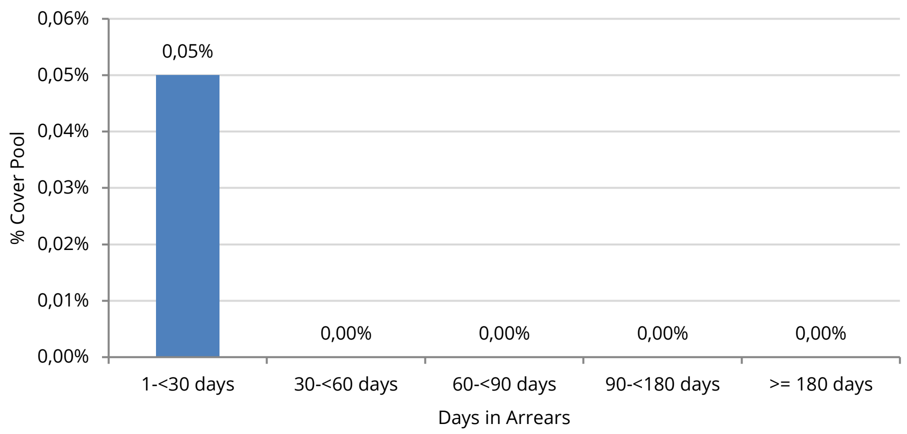
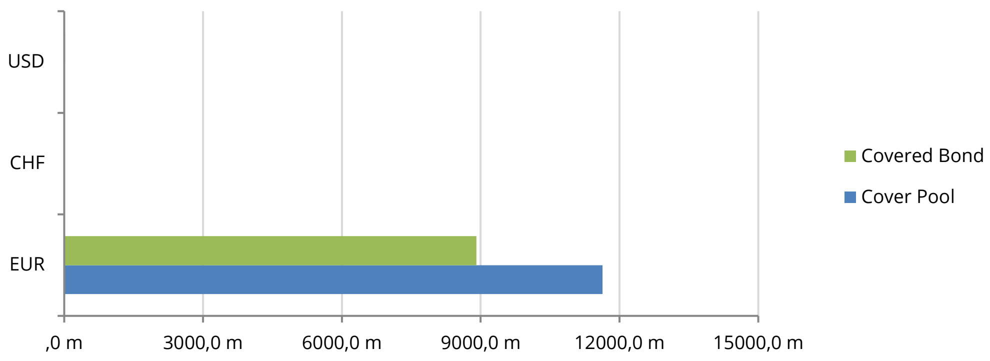


Figure 7: Program currency mismatches | Source: LBBW



Key Source of Information

Documents (Date: 31.12.2020)
Issuer ▪ Audited consolidated annual reports of LBBW (Group) 2015-2019 ▪ Final Rating report as of 02.10.2020 ▪ 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 LBBW as of 31.12.2020 ▪ Base prospectus of the LBBW covered bond program dated 22.04.2020 ▪ Market data of Public Sector Covered Bond Program of LBBW

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 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 LBBW.

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 Yannick Sagert (Analyst) both based in Neuss/Germany. On 31.03.2021, 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 Natallia Berthold (Senior Analyst).

On 31.03.2021, the rating result was communicated to LBBW, 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.

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

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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.

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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

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".

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