MOODY'S

CREDIT OPINION

16 June 2021

New Issue



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Contacts

Martin Lenhard +49.69.70730.743

VP-Sr Credit Officer
martin.lenhard@moodys.com

DZ HYP AG - Mortgage Covered Bonds

New Issue Report – German covered bonds

Ratings

Exhibit 1

Cover Pool (€)	Ordinary Cover Pool Assets	Covered Bonds (€)	Rating
38,125,963,136	Commercial & Residential Mortgage Loans	32,815,277,218	Aaa

All data in the report is as of 31 March 2021 unless otherwise stated Source: Moody's Investors Service

Summary

The covered bonds issued by DZ HYP AG (the issuer, Aa1(cr)) under its mortgage covered bond programme are full recourse to the issuer and are secured by a cover pool of assets consisting of commercial assets (72.3%) and residential assets (25.2%) mainly in Germany along with other supplementary assets (2.5%).

Credit strengths include the full recourse of the covered bonds to the issuer and support provided by the German legal framework for *Pfandbriefe*, which provides for the issuer's regulation and supervision.

Credit challenges include the high level of dependency on the issuer. As with most covered bonds in Europe, there are few restrictions on the future composition of the cover pool. The cover pool also has geographical and obligor concentration risks.

Our credit analysis takes into account the cover pool's credit quality, which is reflected in the collateral score of 11.8%, and the current over-collateralisation (OC) of 22.0% (on an unstressed present value basis) as of 31 March 2021.

Credit strengths

- » Recourse to the issuer: The covered bonds are full recourse to the DZ HYP AG (Aa1(cr)). (See "Covered bond description")
- » **Support provided by the German legal framework**: The covered bonds are governed by the German *Pfandbrief* Act, which provides for the issuer's regulation and supervision and sets certain minimum requirements for the covered bonds and the cover pool. (See "Moody's related publications: Covered Bond Legal Frameworks")
- » *High credit quality of the cover pool*: The covered bonds are supported by a cover pool of high-quality assets. The cover pool consists of commercial assets (72.3%), residential assets (25.2%) and supplementary assets (2.5%). The collateral quality is reflected in the collateral score, which is currently 11.8%. Almost all of the residential assets and 95.4% of the commercial assets are backed by properties in Germany. (See "Cover pool analysis")
- » **Refinancing risk:** Following what we call a covered bond (CB) anchor event, refinancing risk would be mitigated by a well-established and deep market for German *Pfandbriefe*, as well as the liquidity-matching requirements. A CB anchor event occurs when the issuer, or another entity within the issuer group that supports the issuer, ceases to service the payments on the covered bonds. The liquidity matching requirement for the next 180 days also reduce refinancing risk. (See "Covered bond analysis")
- » Interest rate and currency risks: The currencies of the cover assets and the outstanding covered bond are well matched. All liabilities are denominated in euro while 99.0% of the assets are denominated in euro as well. There is some exposure to interest rate risk because currently 75.1% of assets are fixed rate while 98.5% of covered bonds are fixed rate. Interest rate risk and currency risk are further mitigated by the Pfandbrief Act's 2% present value OC requirement, which has to be maintained in stressed market conditions (that is, yield curve movements and changes in the relevant exchange rates). (See "Covered bond analysis")
- » **Provisions for a cover pool administrator**: Following an issuer default, the covered bondholders would benefit from a cover pool administrator (the *Sachwalter*) that acts independently from the issuer's insolvency administrator. Furthermore, if the German banking regulator BaFin deems it necessary, the *Sachwalter* may be appointed ahead of any issuer default. (See "Covered bond analysis")

Credit challenges

- » High level of dependency on the issuer: As with most covered bonds, before the insolvency of the issuer, the issuer can materially change the nature of the programme. For example, the issuer can add new assets to the cover pool, issue new covered bonds with varying promises and enter into new hedging arrangements. Also similar to most covered bonds in Europe, this programme has few restrictions on the future composition of the cover pool. These changes could affect the credit quality of the cover pool as well as the overall refinancing and market risks. Further, if the quality of the collateral deteriorates below a certain threshold, the issuer would have the ability, but not the obligation, to increase the OC in the cover pool. (See "Covered bond analysis")
- » Cover pool concentration: The cover pool has the following concentrations: (1) obligor concentration: the 10 largest borrower groups in the commercial sub-pool represent 6.3% of total commercial cover pool assets; (2) geographical concentration: almost all loans in the cover pool are secured on properties located in Germany with significant concentration in North Rhine-Westphalia (55.2% of the residential assets and 23.7% of the commercial assets are located in this region), (3) property type concentration of the commercial sub-pool: multifamily (47.2%), office (23.2%) and retail (17.2%) represent the largest property type concentrations. In an adverse scenario, these concentrations increase the probability of significant losses. However, our collateral score model takes into account, inter alia, the impact of borrower, regional and property type concentrations. (See "Cover pool description")
- » *Market risks*: Following a CB anchor event, covered bondholders, to achieve timely principal payment, might need to rely on proceeds raised through the sale of, or borrowing against, the cover pool assets. The market value of these assets may be subject to high volatility after a CB anchor event. In addition, covered bondholders might have exposure to interest rate and currency risks. There are no swaps in the programme. (See "Covered bond analysis")

This publication does not announce a credit rating action. For any credit ratings referenced in this publication, please see the ratings tab on the issuer/entity page on www.moodys.com for the most updated credit rating action information and rating history.

» *Time subordination*: After a CB anchor event, later-maturing covered bonds are subject to time subordination. Principal cash collections may be used on a first-come, first-served basis, paying earlier-maturing covered bonds before later-maturing covered bonds. This subordination could lead to the erosion of OC before any payments are made to later-paying covered bonds. (See "Covered bond analysis")

- » Lack of liquidity facility: The programme would not benefit from any designated source of liquidity if cash flow collections are interrupted. (See "Covered bond analysis")
- » **Economic uncertainty**: The coronavirus pandemic has had a significant impact on economic activity. Although global economies have shown a remarkable degree of resilience to date and are returning to growth, the uneven effects on individual businesses, sectors and regions will continue throughout 2021 and will endure as a challenge to the world's economies well beyond the end of the year. While persistent virus fears remain the main risk for a recovery in demand, the economy will recover faster if vaccines and further fiscal and monetary policy responses bring forward a normalization of activity. As a result, there is a heightened degree of uncertainty around our forecasts. Our analysis has considered the effect on the performance of covered bonds from a gradual and unbalanced recovery in the German economic activity. We regard the coronavirus outbreak as a social risk under our ESG framework, given the substantial implications for public health and safety.

ESG considerations

Except with respect to the coronavirus outbreak, which we consider a social risk as described above under Economic uncertainty, In general, we consider ESG risks to be low for covered bonds. In our assessment of the programme's credit quality, we evaluate ESG risks as low. The covered bonds' dual recourse structure mitigates environmental, social and governance risks. Environmental and social risks are further mitigated by the diversified nature of the cover pool, while governance risk is largely mitigated by (i) the [Country] legal framework (ii) key programme participants' adherence to obligations; and (iii) the operational and substantive provisions of the programme documents. Please refer to General Principles for Assessing Environmental, Social and Governance Risks Methodology, 26 April 2021, which explains our general principles for assessing ESG Risks in our credit analysis globally.

- » **Environmental:** Overall exposure to meaningful environmental risks is low in this programme as covered bondholders benefit from the issuer's liability to make payment on the covered bonds and the cover pool's geographical diversification. (See Cover pool analysis Environmental considerations)
- » Social: Overall exposure to meaningful social risks is moderate in this programme, mainly because social issues that affect lenders can also affect the cover pool. Social risks are mitigated by the covered bonds' dual recourse to both issuer and cover pool as well as the cover pool's diversification. In addition, we regard the coronavirus pandemic as a social risk under our ESG framework, given the substantial implications for public health and safety. (See Summary Credit challenges and Cover pool analysis Social considerations)
- » **Governance**: Overall exposure to meaningful governance risks is low in this programme due to: (i) covered bonds' dual recourse to both issuer and cover pool; (ii) the German legal framework; (iii) key programme participants' adherence to obligations; and (iv) the operational and substantive provisions of the programme documents. (See Additional analysis Governance considerations)

Key characteristics

Exhibit 2

Covered bond characteristics

Moody's Programme Number:	491
Issuer:	DZ HYP AG
Covered Bond Type:	Commercial and residential mortage covered bonds
Issued under Covered Bonds Law:	Yes
Applicable Covered Bonds Law:	German Pfandbrief Act
Entity used in Moody's TPI analysis:	DZ HYP AG
CR Assessment:	Aa1(cr)
CB Anchor:	CR assessment +1 notch
Senior unsecured/deposit rating:	Aa1
Total Covered Bonds Outstanding:	€32,815,277,218
Main Currency of Covered Bonds:	EUR (100.0%)
Extended Refinance Period:	No
Principal Payment Type:	Hard bullet
Interest Rate Type:	Fixed rate covered bonds (98.5%), Floating rate covered bonds (1.5%)
Committed Over-Collateralisation:	2% (on a stressed present value basis)
Current Over-Collateralisation:	22.0% (on an unstressed present value basis)
Intra-group Swap Provider:	No
Timely Payment Indicator:	High
TPI Leeway:	7 notches

Sources: Moody's Investors Service, issuer data

Exhibit 3

Cover pool characteristics

Size of Cover Pool:	€38,125,963,136
Main Collateral Type in Cover Pool:	Commercial assets (72.3%), residential assets (25.2%), other supplementary assets (2.5%)
Main Asset Location of Ordinary Cover Assets:	Germany
Main Currency:	EUR (99.0%)
Loans Count:	14,688 (commercial assets); 95,034 (residential assets)
Number of Borrowers:	9,524 (commercial assets); 86,100 (residential assets)
WA unindexed LTV:	69.6% (commercial assets), 54.4% (residential assets)
WA indexed LTV:	n/a
WA Seasoning (in months):	52 (commercial assets), 74 (residential assets)
WA Remaining Term (in months):	132 (commercial assets), 284 (residential assets)
Interest Rate Type:	Fixed rate assets (75.1%); floating rate assets (24.9%)
Collateral Score:	11.8%
Cover Pool Losses:	17.4%
Further Cover Pool Details:	See Appendix 1
Pool Cut-off Date:	31 March 2021

Exhibit 4

Transaction counterparty

Counterparty Type	Transaction Counterparty
Sponsor	n/a
Servicer	n/a
Back-up Servicer	n/a
Back-up Servicer Facilitator	n/a
Cash Manager	n/a
Back-up Cash Manager	n/a
Account Bank	n/a
Standby Account Bank	n/a
Account Bank Guarantor	n/a

Source: Moody's Investors Service

Covered bond description

The covered bonds issued under the mortgage covered bond programme of DZ HYP AG are full recourse to the issuer. Upon a CB anchor event, covered bondholders would have access to a cover pool of mixed loan receivables of commercial and residential loans as well as high quality substitute assets.

Structure description

The bonds

All outstanding covered bonds have a bullet repayment at maturity, without any extension period for the repayment of the bonds. As of July 2021, the amendments of the Pfandbrief Act will, under certain conditions, allow the cover pool administrator to postpone principal payments by up to 12 months.

Issuer recourse

The covered bonds are full recourse to the issuer. Therefore, the issuer is obliged to repay principal and pay interest on the covered bonds

Recourse to cover pool and over-collateralisation

If the issuer becomes insolvent, the covered bondholders would have priority claims over a pool of assets (cover pool). (See "Cover pool description" for the cover pool characteristics and "Cover pool analysis" for our analysis of the pool)

As of March 2021, the level of OC in the programme was 22.0% on an unstressed present value basis.

The current covered bond rating relies on an OC within the minimum legal requirements by the German *Pfandbrief* Act. The act requires that the OC exceed the principal balance of the bonds by 2%. Based on data as of 31 March 2021, 0% of OC is sufficient to maintain the current covered bond rating, which is lower than the statutory minimum OC. This shows that our analysis currently does not rely on OC that is not in committed form.

Although the issuer has the ability to increase the OC in the cover pool if collateral quality deteriorates below a certain threshold, the issuer does not have any obligation to do so. The failure to increase OC following a deterioration of the collateral could lead to a negative rating action.

Legal framework

The covered bonds are governed by the *Pfandbrief* Act. There are a number of strengths in this legislation, including the regulation of the issuer by BaFin, as well as certain minimum requirements for the covered bonds and the cover pool. No specific structural features beyond the statutory requirements are implemented for DZ HYP AG's mortgage covered bond programme. (See "<u>Covered Bonds</u>: <u>Germany - Legal Framework for Covered Bonds</u>", July 2019, for a description of the general legal framework for *Hypothekenpfandbriefe* governed by the *Pfandbrief* Act.)

Covered bond analysis

Our credit analysis of the covered bonds primarily focuses on the issuer's credit quality, refinancing risk, interest rate risk and currency risk, as well as the probability that payments on the covered bonds would be made in a timely fashion following a CB anchor event, which we measure using the Timely Payment Indicator. (See "Timely Payment Indicator")

Primary analysis

Issuer analysis - Credit quality of the issuer

The issuer's CR Assessment is Aa1(cr). (For a description of the issuer's rating drivers, see Credit Opinion, published March 2021)

The reference point for the issuer's credit strength in our analysis is the CB anchor, which for covered bond programmes under the covered bond law in Germany is the CR Assessment plus one notch.

Issuer analysis - Dependency on the issuer's credit quality

The credit quality of the covered bonds depends primarily on the credit quality of the issuer. If the issuer's credit strength were to deteriorate, there would be a greater risk that a CB anchor event would occur, leading to refinancing risk for the covered bonds. Consequently, the credit quality of the covered bonds would deteriorate unless other credit risks were to decrease.

In the event that the CB anchor deteriorates, the issuer would have the ability, but not the obligation, to increase the OC in the cover pool. Failure to increase the level of OC under these circumstances could lead to a negative rating action.

Reasons for the high level of dependency of the covered bonds with the issuer also include exposure to decisions made by the issuer in its discretion as manager of the covered bond programme. For example, before a CB anchor event, the issuer may add new assets to the cover pool and remove assets from the cover pool, issue further bonds and enter new hedging arrangements. Such actions could reduce the value of the cover pool.

As with most covered bonds in Europe, there are few contractual restrictions on the future composition of the cover pool, which creates substitution risk. Nevertheless, cover pool quality over time will be protected by, among other things, the requirements of the German *Pfandbrief* Act, which specifies what types of assets are eligible. (See "Moody's related publications: Covered Bond Legal Frameworks")

Refinancing risk

Following a CB anchor event, the "natural" amortisation of the cover pool assets alone cannot be relied on to repay the principal. We assume that funds must be raised against the cover pool at a discount if covered bondholders are to receive timely principal payment. Where the portion of the cover pool that is potentially exposed to refinancing risk is not contractually limited, our expected loss analysis typically assumes that this amount is in excess of 50% of the cover pool.

After a CB anchor event, the market value of these assets may be subject to volatility. Examples of the stressed refinancing margins we use for different types of prime-quality assets are published in our Rating Methodology. (See "Moody's related publications - Moody's Approach to Rating Covered Bonds")

The refinancing-positive aspects of this covered bond programme include:

- » The *Pfandbrief* Act: At the time of the declaration of the issuer's bankruptcy, or earlier if BaFin considers it necessary, a cover pool administrator (the *Sachwalter*) would take over management responsibility of the covered bond programme. The *Sachwalter* would have the ability to sell all or part of the cover pool, with or without all or parts of the liabilities attached.
- » The depth of the German market and the high level of government and financial market support expected to be available to *Pfandbriefe* in Germany, where refinancing risk is perceived as lower than in most other jurisdictions. In the modeling of this transaction, we have used refinancing margins that are lower than the refinancing margins used for most other jurisdictions.
- » The issuer is required to cover potential liquidity gaps over the next 180 days between payments expected to be received under the cover pool assets and the payments due under the outstanding covered bonds.

The refinancing-negative aspects of this covered bond programme include:

» The programme does not benefit from any contractual provisions to allow for an extension of a principal refinancing period; all covered bonds issued under this programme will have a hard bullet repayment with no extension period. This risk will be partially mitigated once the change to the Pfandbrief Act comes into effect that allows the Sachwalter to extend the principal payments to covered bondholders by up to one year.

Interest rate and currency risk

As with the majority of European covered bonds, there is potential for interest rate and currency risks, which could arise from the different payment promises and durations made on the cover pool and the covered bonds.

Exhibit 5

Overview of assets and liabilities

	WAL Assets (Years)	WAL Liabilities (Years)	Assets (%)	Liabilities (%)
Fixed rate	11.2	7.0	75.1%	98.5%
Variable rate	6.1	2.9	24.9%	1.5%

WAL: weighted average life Sources: Moody's Investors Service, issuer data

In the event of issuer insolvency, we currently do not assume that the *Sachwalter* would always be able to efficiently manage any natural hedge between the cover pool and the covered bonds. Therefore, following a CB anchor event, our model would separately assess the impact of increasing and decreasing interest rates on the expected loss of the covered bonds, taking the path of interest rates that leads to the worst result. The interest rate and currency stresses used over different time horizons are published in our Rating Methodology.

Aspects of this covered bond programme that are market risk positive include:

- » Low currency risk. Currently, there are no foreign exchange-denominated covered bonds outstanding and almost all (99.0%) the cover pool assets are also denominated in Euros.
- » The requirement under the *Pfandbrief* Act that the stressed present value OC of the cover pool must exceed, by at least 2%, the total of outstanding covered bonds issued against the cover pool, and the requirement that *Pfandbrief* issuers must regularly run stress tests regarding interest rate and foreign-exchange risks. DZ HYP AG opted for the dynamic approach for determining the stress levels applied to the calculation of the stresses present value OC.

Aspects of this covered bond programme that are market risk negative include:

- » Majority of the cover pool assets are fixed rate (75.1%). A potential sale of fixed-rate assets to meet payments due on covered bonds following a CB anchor event could lead to a crystallisation of mark-to-market losses caused by interest rate movements upon issuer default.
- » As of the date of this report, DZ HYP AG has not entered any swaps into the cover pool register. We understand that there are no plans to change this in the near future.

Timely Payment Indicator

Our Timely Payment Indicator (TPI) assesses the likelihood that timely payments would be made to covered bondholders following a CB anchor event, and thus determines the maximum rating a covered bond programme can achieve with its current structure while allowing for the addition of a reasonable level of OC. We have assigned a TPI of High to these covered bonds, in line with other mortgage covered bonds issued under the *Pfandbrief* Act.

Based on the current TPI of High, the TPI leeway for this programme is seven notches. This seven-notch leeway implies that we might downgrade the covered bonds' rating because of a TPI cap if we were to lower the CB anchor by more than seven notches, all other variables being equal.

The TPI-positive aspects of this covered bond programme include:

- » The high level of government and financial market support provided to *Pfandbriefe* in Germany
- » The refinancing-positive factors discussed in the "Refinancing risk" section
- » The strength of the German *Pfandbrief* legislation, including:
- The Sachwalter would take over management responsibility of the covered bond programme at the time of the declaration of the issuer's bankruptcy, or earlier.
- The Sachwalter would act independently from the issuer's insolvency administrator. Having an independent cover pool administrator might reduce potential conflicts of interest between the covered bondholders and other creditors.
- The issuer is required to cover potential liquidity gaps over the next 180 days between payments expected to be received under the cover pool assets and payments due under the outstanding covered bonds.
- Set-off: We understand that the *Pfandbrief* Act excludes from set-off loans registered in the cover pool that are under German law and located in Germany.

The TPI-negative aspects of this covered bond programme include:

- » Almost all covered bonds outstanding have a bullet repayment at maturity, without any extension period for the repayment of the bonds. This will change once the amendments to the Pfandbrief Act become effective in July 2021.
- » The covered bond programme does not benefit from any designated source of liquidity if cash flow collections are interrupted.
- » Commingling risk: Upon the appointment of the *Sachwalter*, it is our understanding that the *Sachwalter* has a priority claim on all cash flows stemming from the cover pool assets. However, these cash flows have to be separated from other cash flows to the issuer before they can be used to make payments to covered bondholders.

Additional analysis

Liquidity

The covered bond programme would not benefit from any designated source of liquidity if cash flow collections were to be interrupted. However, before an issuer default, the *Pfandbrief* Act requires the issuer to cover potential liquidity gaps for the next 180 days and to maintain a minimum OC level of 2%. After an issuer default, the *Sachwalter* would have the ability to sell a portion of the cover pool to make timely payments on the bonds.

Time subordination

After a CB anchor event, later-maturing covered bonds would be subject to time subordination. Principal cash collections may be used on a first-come, first-served basis, paying earlier-maturing covered bonds before later-maturing covered bonds. Such payments could result in the erosion of OC before any payments are made to later-paying covered bonds.

Governance considerations

Overall exposure to meaningful governance risks is low in this programme due to covered bonds' dual recourse to both issuer and cover pool and the consideration set out below.

The principal sources of governance for this programme are (i) German covered bond law; (ii) key programme participants' adherence to obligations; and (iii) the operational and substantive provisions of the programme documents. In this programme, there are control mechanisms in place that are designed to protect covered bondholders from mistakes, misallocation of cash flows and misappropriation of assets, and that promote compliance with the covered bond legal framework and operational and reporting requirements.

In particular, we note that (i) the issuer is a regulated entity and maintains the cover pool on its balance sheet, incentivising it to maximise cover pool value as owner and servicer; (ii) the cover pool monitor and any cover pool administrator are roles prescribed by the covered bond law and both owe duties to bondholders; (iii) the covered bond law contains provisions addressing treatment of

ineligible and non performing assets and contains detailed reporting requirements; and (iv) there is a high level of legal certainty over the segregation of the cover pool and the parties' respective rights to it.

Cover pool description

Pool description as of 31 March 2021

The cover pool consists of mortgage loans backed by commercial assets (72.3%) and residential mortgage loans (25.2%), and further cover assets that constitute substitute assets under the *Pfandbrief* Act (2.5%). The majority of the cover assets are loans backed by properties in Germany. The cover pool has geographical concentration in North Rhine-Westphalia region of Germany. 99.9% of the loans are not in arrears.

On a nominal value basis, the cover pool assets total €38.1 billion, which back €32.8 billion of covered bonds, resulting in an OC level of 22.0% on an unstressed present value basis.

Mortgage loans with backing of commercial properties amount to €27.6 billion. Multi-family (47.2% of the commercial sub pool), offices (23.2% of the commercial sub pool) and retail (17.2% of the commercial sub pool) are the most important asset types within the sub-pool. The weighted average whole loan loan-to-value (LTV) ratio is 69.6% based on the property mortgage lending values. The exposure to ten largest borrowers is 6.3% and 99.9% of the loans are not in arrears.

Mortgage loans with backing of residential properties amount to €9.6 billion. The reported weighted average loan-to-value (LTV) ratio is 54.4% based on the property mortgage lending values. The residential cover pool has seasoning of 74 months. 99.9% of the loans are not in arrears. (For DZ HYP AG's underwriting criteria, see "Appendix: Income underwriting and valuation")

Exhibits below show more details about the cover pool assets.

Commercial assets

Exhibit 6

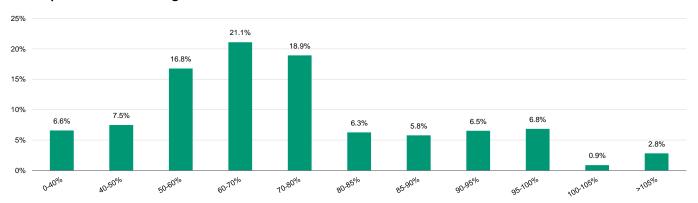
Cover pool summary - Commercial assets

	Details on Loan Underwriting	
Commercial	WA DSCR:	n/d
27,589,387,985	WA loan seasoning (in months):	52
1,878,280	WA remaining term (in months):	132
14,688		
9,524	Details on LTV	
6.3%	WA LTV(*):	69.6%
17,290	WA Current LTV(**):	n/a
Germany (95.4%), Netherlands (2.3%), France (1.0%)	Valuation type:	Lending Value
	LTV Threshold:	60.0%
32.2%	Performance	
EUR (98.6%), GBP (1.0%), SEK (0.2%)	Loans in arrears ≥ 2 months:	0.1%
84.6%	Loans in a foreclosure procedure:	0.0%
n/d		
	27,589,387,985 1,878,280 14,688 9,524 6.3% 17,290 Germany (95.4%), Netherlands (2.3%), France (1.0%) 32.2% EUR (98.6%), GBP (1.0%), SEK (0.2%) 84.6%	Commercial WA DSCR: 27,589,387,985 WA loan seasoning (in months): 1,878,280 WA remaining term (in months): 14,688 9,524 Betails on LTV 6.3% WA LTV(*): 17,290 WA Current LTV(**): Germany (95.4%), Netherlands (2.3%), France (1.0%) Valuation type: LTV Threshold: LTV Threshold: BUR (98.6%), GBP (1.0%), SEK (0.2%) Loans in arrears ≥ 2 months: 84.6% Loans in a foreclosure procedure:

(note *) Based on property value at origination. (note **) Based on updated property value. Sources: Moody's Investors Service, issuer data

Exhibit A

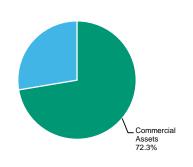
Balance per LTV band - Lending Value



Sources: Moody's Investors Service, issuer data

Exhibit B

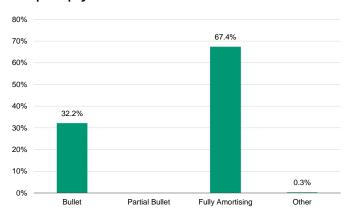
Percentage of commercial assets



Sources: Moody's Investors Service, issuer data

Exhibit C

Principal repayment method



Sources: Moody's Investors Service, issuer data

Exhibit D

Borrower concentration

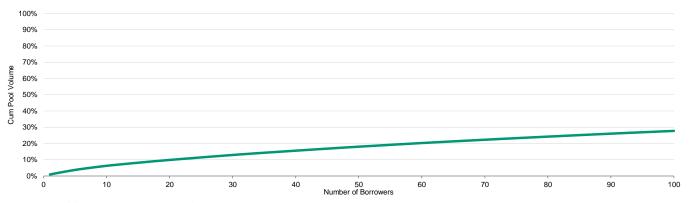
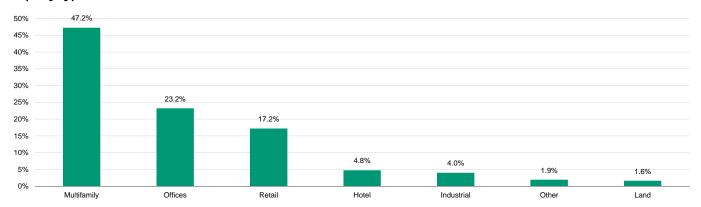


Exhibit E

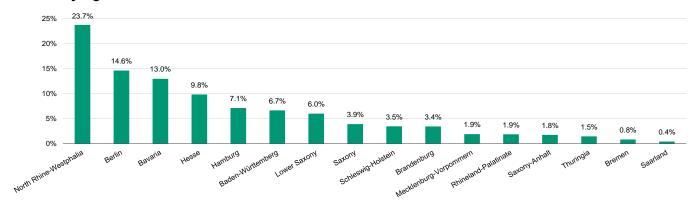
Property type



Sources: Moody's Investors Service, issuer data

Exhibit F

Main country regional distribution



Sources: Moody's Investors Service, issuer data

Exhibit G

Year of loan origination

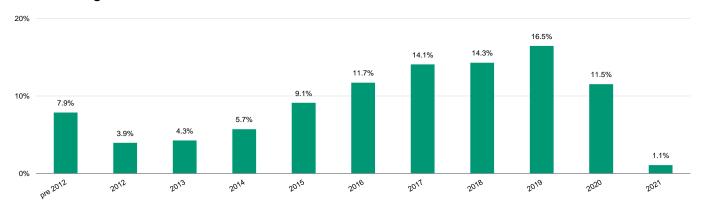
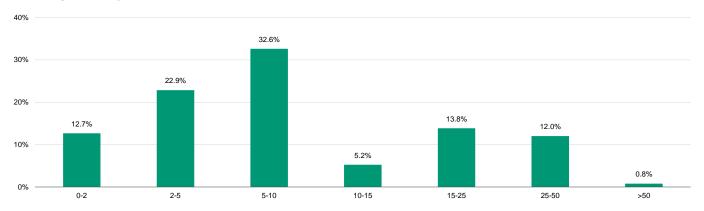
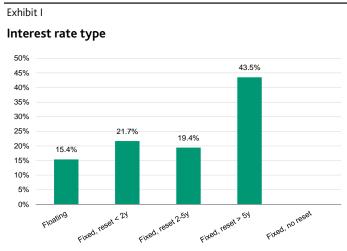


Exhibit H

Remaining term (in years)



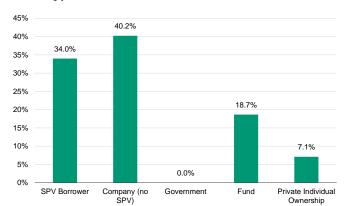
Sources: Moody's Investors Service, issuer data



Sources: Moody's Investors Service, issuer data

Exhibit J

Debtor type



COVERED BONDS MOODY'S INVESTORS SERVICE

Residential assets

Exhibit 7 Cover pool summary - Residential assets

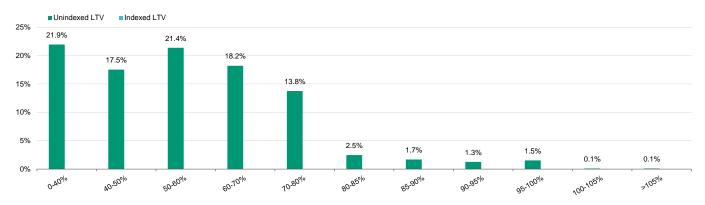
Overview		Specific Loan and Borrower characteristics	
Asset type:	Residential	Loans with an external guarantee in addition to a mortgage:	n/d
Asset balance:	9,595,575,151	Interest only Loans	3.2%
Average loan balance:	100,970	Loans for second homes / Vacation:	0.0%
Number of loans:	95,034	Buy to let loans / Non owner occupied properties:	15.2%
Number of borrowers:	86,100	Limited income verified:	0.0%
Number of properties:	91,705	Adverse credit characteristics (**)	0.0%
WA remaining term (in months):	284		
WA seasoning (in months):	74	Performance	
		Loans in arrears (≥ 2months - < 6months):	0.1%
Details on LTV		Loans in arrears (≥ 6months - < 12months):	0.0%
WA unindexed LTV (*)	54.4%	Loans in arrears (≥ 12months):	0.0%
WA Indexed LTV:	n/a	Loans in a foreclosure procedure:	0.0%
Valuation type:	Lending Value		
LTV threshold:	60.0%	Multi-Family Properties	
Junior ranks:	n/d	Loans to tenants of tenant-owned Housing Cooperatives:	n/d
Loans with Prior Ranks:	5.6%	Other type of Multi-Family loans (***)	n/d

⁽note *) may be based on property value at time of origination or further advance or borrower refinancing

⁽note **) Typically borrowers with a previous personal bankruptcy or borrowers with record of court claims against them at time of origination (note ***) This "other" type refers to loans directly to Housing Cooperatives and to Landlords of Multi-Family properties (not included in Buy to Let) Sources: Moody's Investors Service, issuer data

Exhibit A

Balance per LTV band (eligible loan part only)



Sources: Moody's Investors Service, issuer data

Exhibit B

Percentage of residential assets

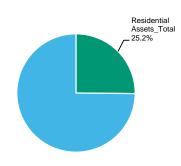
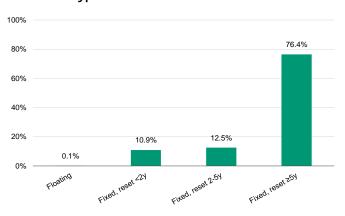


Exhibit C

Interest rate type



Sources: Moody's Investors Service, issuer data

Sources: Moody's Investors Service, issuer data

Exhibit D

LTV

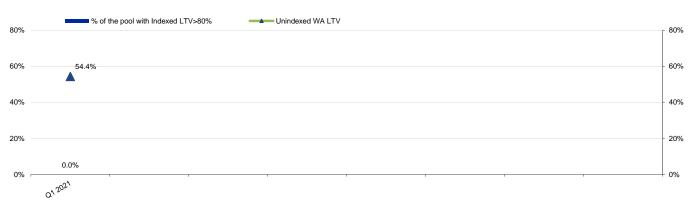
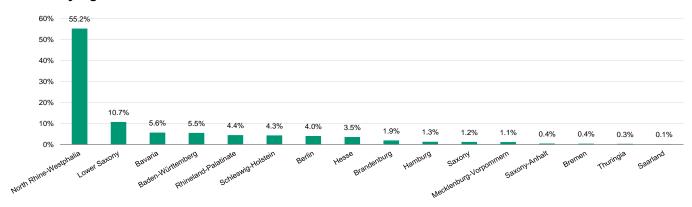


Exhibit E

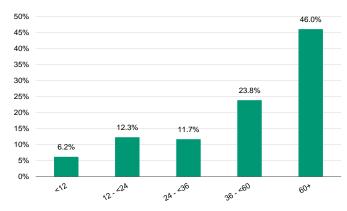
Main country regional distribution



Sources: Moody's Investors Service, issuer data

Exhibit F

Seasoning (in months)



Sources: Moody's Investors Service, issuer data

Substitute assets

Of the cover assets, €941.0 million (2.5%) are substitute assets. The substitute assets currently consist of debt securities issued by German agencies.

Cover pool monitor

Pursuant to the *Pfandbrief* Act, the regulator (BaFin) has appointed a cover pool monitor (*Treuhänder*). (See "Moody's related publications: Covered Bond Legal Frameworks")

Cover pool analysis

Our credit analysis of the pool takes into account specific characteristics of the pool, as well as legal risks.

Primary cover pool analysis

We calculate the collateral score for the commercial mortgages using a multifactor model that is created through a Monte Carlo simulation. Our analysis takes into account, among other factors, the impact of concentration on borrower, regional and country levels, as well as the credit quality of the individual borrowers.

We calculate the collateral score for the residential mortgages using a scoring model that estimates loss in severe recession scenario. Our analysis takes into account, among other factors, the LTV ratios of the mortgage loans, the seasoning and the geographical distribution

The collateral quality is reflected in the 11.8% collateral score of the pool, which is higher than the average collateral score (9.6%) of the mortgage covered bonds in Germany, but in line with DZ HYP's peers in the commercial mortgage lending business. Our collateral scores for commercial mortgage loan cover pools are generally higher than those for residential mortgage loan cover pools because we consider commercial real estate assets more risky and more volatile than residential assets. (For details, see "Moody's related publications - Moody's Global Covered Bonds Sector Update, Q1 2021")

Commercial assets (72.3% of the cover pool)

From a credit perspective, we view positively the following characteristics of the cover assets:

- » Almost all the assets (99.9%) are current.
- » The high share of multi-family properties.
- » The relatively low weighted average whole loan LTV of 69.6%.
- » The relatively low obligor concentration with the 10 largest obligors accounting for 6.3% of the commercial sub-pool.

From a credit perspective, we view negatively the following characteristics of the cover assets:

» The cover pool is concentrated in Germany, 95.4% of the loans are backed by properties in Germany.

Residential assets (25.2% of the cover pool)

From a credit perspective, we view positively the following characteristics of the cover assets:

- » Almost all of the assets (99.8%) are current.
- » The loans are well-seasoned (weighted average seasoning is 74 months).

From a credit perspective, we view negatively the following characteristics of the cover assets:

- » The cover pool has regional concentration with the majority (55.2%) of the residential properties are located in North Rhine-Westphalia.
- » The reported LTV only reflects loans granted by DZ HYP. In our analysis, we also considered existing additional loans which are provided by third party banks and are regularly secured by junior ranking land charges. These junior loans increase the respective borrower's leverage and therefore we adjusted our assumptions for the borrower's probability of default accordingly. We derived our assumption from data on a loan sample which we received from DZ HYP.

Additional cover pool analysis

Environmental considerations

Overall exposure to meaningful environmental risks is low in this programme due to the issuer's liability to make payment on the covered bonds and:

» In respect of physical risks to the cover pool, the geographical diversification of the pool, the largest concentration being 55.2% of the residential assets and 23.7% of the commercial assets are located in North Rhine-Wesphalia. In addition to geographical diversification, physical environmental factors are mitigated by mandatory possession of insurance in line with market practices.

» In respect of regulatory risk, we expect that over time properties and buildings that do not meet climate-aligned standards for energy efficiency or carbon emissions will face regulatory sanctions and value impairment. However, we expect much of this risk to be gradually absorbed into the periodic updating of property valuations or ongoing capex. This will impact key credit metrics such as LTVs.

In the event of shocks in connection with regulation or physical hazards, the impact on property/building collateral will be partly mitigated by borrowers' liability to repay mortgage loans regardless of property value.

Social considerations

Overall exposure to social factors is moderate for this programme. Covered bondholders benefit from the issuer's liability to make payment on the covered bonds, meaning the bondholders will not be directly exposed to social factors affecting the cover pool unless the issuer defaults. Misconduct, poor handling of data security and customer privacy breaches by lenders are the most significant social risks that may in due course affect the credit quality of the cover pool, although lenders' financial and operational flexibility and track record of adjusting to social issues may mitigate this. In addition, the diversified nature of the cover pool is a mitigant to exposure to social factors.

In respect of the property collateralizing loans in the cover pool, externally driven demographic trends and societal preferences are the main social considerations affecting credit. These considerations generally affect the operations of building owners in respect of demand for space. For retail properties, the most notable shifts have come in mature markets, such as the shift in retail shopping toward online retailing. Especially in secondary and tertiary locations, retailers demand less physical store space, a trend accelerated in recent pandemic conditions. For office properties, the pandemic has also exacerbated existing long-term trends such as flexible/remote-working that can lead to lower tenant demand resulting eventually in lower rental levels and property values. However, in this programme the small portion of the pool exposed to offices, combined with the prime nature of those assets mitigates such trends as illustrated by the high and stable historical occupancy rate.

Social factors that potentially affect the cover pool have varied implications. Social risks can arise from changing demographic trends such as aging, urbanization, an increase in telecommuting and flight from cities, population declines or ways of living trends in general that impact the supply or demand for housing in particular areas, which can reduce home values. Societal and demographic trends will be relevant but typically develop over an extended timeframe that smooths out materiality for expected loss.

Social issues may be driven also by a political agenda related to housing and consumer protection, particularly in down cycles, creating pressure on recovery values. Borrower-friendly legislation as a reaction to consumer activism can affect both the underwriting and the servicing of mortgage loans in the cover pool.

In addition, the coronavirus pandemic has had a significant impact on economic activity. Although global economies have shown a remarkable degree of resilience to date and are returning to growth, the uneven effects on individual businesses, sectors and regions will continue throughout 2021 and will endure as a challenge to the world's economies well beyond the end of the year. While persistent virus fears remain the main risk for a recovery in demand, the economy will recover faster if vaccines and further fiscal and monetary policy responses bring forward a normalization of activity. As a result, there is a heightened degree of uncertainty around our forecasts. Our analysis has considered the effect on the performance of covered bonds from a gradual and unbalanced recovery in Germany's economic activity. We regard the coronavirus outbreak as a social risk under our ESG framework, given the substantial implications for public health and safety.

Legal risks for assets outside of Germany

In the event of the issuer's insolvency, we believe that cover pool assets outside of Germany would be less protected against claims of the issuer's other creditors than would be assets in Germany. In particular, we have identified and analysed the following scenarios:

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» Claims against borrowers outside of Germany or loans not governed by German law: In the case of loans not governed by German law, the borrower might be allowed to exercise set-off, thereby reducing the amount that would be payable to the benefit of covered bondholders. Loans outside of Germany account for 4.6% of the cover pool. However, borrower set-off risk is low because DZ HYP AG neither takes deposits nor acts as a swap counterparty for clients outside of Germany.

» Loans to borrowers outside of the European Economic Area (EEA): 1.0% of the loans in the commercial mortgage sub-pool are granted to borrowers in the UK. For these assets, in addition to the above risk, there exists the risk that the cover pool assets might not be available to the covered bondholders on a priority basis because other (unsecured) creditors of the issuer might successfully access the assets in the cover pool. These actions might result in lower recovery, owing, for example, to secondary proceedings commenced under the respective domestic law. We have considered this additional legal risk in our analysis.

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Comparables

Exhibit 8
Comparables -DZ HYP - Mortgage Covered Bonds and other selected deals

PROGRAMME NAME	DZ HYP - Mortgage Covered Bonds	Muenchener Hypothekenbank eG - Mortgage Covered Bonds	Landesbank Baden- Wuerttemberg - Mortgage Covered Bonds	Berlin Hyp AG - Mortgage Covered Bonds	Aareal Bank AG - Mortgage Covered Bond
Overview					
Programme is under the law	Pfandbrief Act	Pfandbrief Act	Pfandbrief Act	Pfandbrief Act	Pfandbrief Act
Main country in which collateral is based	Germany	Germany	Germany	Germany	Various
Country in which issuer is based	Germany	Germany	Germany	Germany	Germany
Total outstanding liabilities	32,815,277,218	28,846,299,541	10,552,601,541	14,838,674,820	10,590,380,488
Total assets in the Cover Pool	38,125,963,136	30,110,084,023	14,694,332,530	15,196,211,322	12,406,080,672
ssuer name	DZ HYP AG	Muenchener Hypothekenbank	Landesbank Baden- Wuerttemberg	Berlin Hyp AG	Aareal Bank AG
ssuer CR assessment	Aa1(cr)	Aa3(cr)	Aa3(cr)	Aa2(cr)	A3(cr)
Group or parent name	DZ BANK AG	n/a	n/a	n/a	n/a
Group or parent CR assessment	Aa1(cr)	n/a	n/a	n/a	n/a
Main collateral type	Commercial	Residential	Commercial	Commercial	Commercial
Collateral types	Commercial 72.3%, Residential 25.2%, Public Sector 0%, Other/Supplementary assets 2.5%	Residential 68%, Commercial 29%, Public Sector 0%, Other/Supplementary assets 2%	Commercial 76%, Residential 18%, Public Sector 0%, Other/Supplementary assets 6%	Commercial 95%, Residential 0%, Public Sector 0%, Other/Supplementary assets 5%	Commercial 92%, Residential 2%, Public Sector 0%, Other/Supplementary assets 6%
Ratings					
Covered bonds rating	Aaa	Aaa	Aaa	Aaa	Aaa
Entity used in Moody's EL & TPI analysis	DZ HYP AG	Muenchener Hypothekenbank eG	Landesbank Baden- Wuerttemberg	Berlin Hyp AG	Aareal Bank AG
CB anchor	CR Assessment + 1 notch	•	CR Assessment + 1 notch	CR Assessment + 1 notch	CR Assessment + 1 noto
CR Assessment	Aa1(cr)	Aa3(cr)	Aa3(cr)	Aa2(cr)	A3(cr)
SUR / LT Deposit	Aa1	Aa3	Aa3	Aa2	n/a
Unsecured claim used for Moody's EL analysis	Yes	Yes	Yes	Yes	Yes
/alue of Cover Pool					
Collateral Score	11.8%	8.0%	9.1%	13.6%	12.8%
Collateral Score excl. systemic risk	11.0%	5.9%	n/a	n/a	n/a
Collateral Risk (Collateral Score post-haircut)	7.9%	5.4%	6.1%	9.1%	8.6%
Market Risk	9.5%	12.7%	13.0%	11.0%	10.5%
Over-Collateralisation Levels					
Committed OC*	2.0%	2.0%	2.0%	2.0%	2.0%
Current OC	22.0%	9.6%	48.6%	3.8%	18.2%
OC consistent with current rating	0.0%	0.0%	0.5%	0.0%	16.0%
			10 10/	3.8%	2.2%
Surplus OC	22.0%	9.6%	48.1%	3.0%	2.270
	22.0%	9.6%	48.1%	3.0%	2.270
Surplus OC Fimely Payment Indicator & TPI Leeway FPI	22.0% High	9.6% High	48.1% High	High	High
Timely Payment Indicator & TPI Leeway					

Methodology and monitoring

The primary methodology we use in rating the issuer's covered bonds is "Moody's Approach to Rating Covered Bonds", published in October 2020. Other methodologies and factors that may have been considered in the rating process can also be found on http://www.moodys.com. In addition, we publish a weekly summary of structured finance credit, ratings and methodologies, available to all registered users of our website, at www.moodys.com/SFQuickCheck.

We expect the issuer to deliver certain performance data to us on an ongoing basis. In the event that this data is not made available to us, our ability to monitor the ratings may be impaired. This lack of data availability could negatively affect the ratings or, in some cases, our ability to continue to rate the covered bonds.

Appendix: Income underwriting and valuation

Exhibit 9

Income underwriting and valuation

A. Residential Income Underwriting	
1 Is income always checked?	Yes
2 Does this check ever rely on income stated by borrower ("limited income verification") ?	No
3 Percentage of loans in Cover Pool that have limited income verification	None
4 If limited income verification loans are in the Cover Pool, describe what requirements lender has in place for these loans.	Not applicable
5 Does income in all cases constrain the amount lent (for example through some form of Income Sufficiency Test ("IST")?	Yes
6 If not, what percentage of cases are exceptions.	No exceptions
For the purpose of any IST:	
7 Is it confirmed that income after tax is sufficient to cover both interest and principal?	Yes
8 If so over what period is it assumed principal will be paid (typically on an annuity basis)? Any exceptions?	Payment of interest and principal on an annuity basis over the whole lifetime of the loan, i.e., until maturity. No exceptions.
9 Does the age of the borrower constrain the period over which principal can be amortised?	The age of the borrower and the mortgage lending value constrain the period over which principal has to be amortised by requiring a minimum amortisation rate.
10 Are any stresses made to interest rates when carrying out the IST? If so when and for what type of products?	Yes. Generally a reasonable minimum annuity based on the remaining loan amount at the end of the fixed interest rate period is considered.
11 Are all other debts of the borrower taken into account at the point the loan is made?	Yes. All other debts with a maturity of more than one year are taken into account.
12 How are living expenses of the borrower calculated? And what is the stated maximum percentage of income (or income multiple if relevant) that will be relied on to cover debt payments. (specify if income is pre or post tax)	The living expences of the borrower are based on borrower's sustainable net income and the size of the household.
Other comments	
B. Residential Valuation	
1 Are valuations based on market or lending values?	Valuations are based on market as well as mortgage lending values.
2 Are all or the majority of valuations carried out by external valuers (with no direct ownership link to any company in the Sponsor Bank group)?	The majority of valuations are carried out by external valuers. For standard-residential loans <= EUR 400,000, valuations are carried out by the partner banks (Genossenschaftliche FinanzGruppe) of DZ HYP. All other valuations are carried out by the VR WERT (a company fully owned by DZ HYP).
3 How are valuations carried out where an external valuer not used?	In exceptional cases, internal valuations for standard-residential loans are carried out by qualified employees of DZ HYP supported by a valuation tool based on market data.
4 What qualifications are external valuers required to have?	For standard-residential loans, external valuers must prove experience and expertise in valuations of real estate. All other external valuers must have a HypZert certification or a comparable qualification.
5 What qualifications are internal valuers required to have?	Internal valuers must prove experience and expertise in valuation of real estate by participating in in-house trainings.
6 Do all external valuations include an internal inspection of a property?	Yes. Generally external valuations include internal and external inspection of the property.
	· · ·
7 What exceptions?	For standard-residential loans <= 400,000, an internal and an external inspection is generally required. It is possible to abstain from the internal inspection, provided that the valuation parameters are sufficiently known. No exceptions for all other external valuations.
7 What exceptions? 8 Do all internal valuations include an internal inspection of a property?	an internal and an external inspection is generally required. It is possible to abstain from the internal inspection, provided that the valuation
	an internal and an external inspection is generally required. It is possible to abstain from the internal inspection, provided that the valuation parameters are sufficiently known. No exceptions for all other external valuations.

Commercial Lending	
1. Business Focus	
1.1 What kind of CRE loans will form part of the cover pool?	Mainly loans for existing commercial real estate, supplemented by loans for development projects and capex facilities.
1.2 What CRE property types do you finance?	All major asset classes (office, multi-family, retail, hotel and logistic), occasionally senior housing.
1.3 What kind of restrictions do you have in terms of property location and quality	Target market is Germany, extended by selected European markets (UK, The Netherlands, France and Austria). All real estate (except for developments) should be income producing (i.e. non owner occupied), must be located in transparent and liquid markets and should be owned by professional investors. The origination criteria differ per asset class. The foregoing is subject to a thoroughly underwriting process.
1.4 Does the cover-pool only contain self-originated loans or loan participations (e.g. syndicated loans, mezzanine loans)?	The majority contains of self-originated loans completed by selected participations in syndicated loans.
Loan underwriting policy	
2.1 Do you accept loans with refinancing risk? If yes, do you have a maximum Exit-LTV	DZ HYP provides loans with residual debt at maturity. The exit risk is addressed individually during
limit at loan maturity?	the approval process and is monitored on an ongoing basis.
2.2 Do you have a maximum LTV ratio that is covenanted in the loan agreement? Do max. LTV ratio vary by property type? Please specify.	The credit risk strategy defines, among other things, maximum LTV's that vary depending on certain financing characteristics (valuation/ location/ quality of the cashflow/ creditworthiness of the borrower liability of the sponsor). The requirement of a LTV covenant and its ratio is decided on a case-by-case basis.
2.3 Do you have a minimum DSCR ratio that is covenanted in the loan agreement? Do min. DSCR ratio vary by property type? Please specify.	The credit risk strategy defines, among other things, a maximum DSCR/debt yield that varies depending on certain financing characteristics (valuation/ location/ quality of the cashflow/ creditworthiness of the borrower/ liability of the sponsor). The requirement of an DSCR covenant and its amount is decided on a case-by-case basis.
2.4 Do you always require full hedging in terms of interest rate and currency risk? If not, which stresses are used to calculate the DSCR ratios?	In principle, interest rate and currency risks are fully hedged, justified exceptions are possible. In addition to the actual interest rate, a DSCR based on long term interest rates is applicable to ensure min. debt yields. If applicable currency risks are adressed by additional discounts.
2.5 Do you require a minimum exit debt yield? Please specify	The exit risk is subject to a case-related assessment during underwriting and is monitored on an ongoing basis.
2.6 Do you allow exceptions to and what reasons would justify exceptions?	Exceptions to the general credit risk policy are possible, but require special approval procedures and should be motivated (e.g. recourse to Sponsor, exceptionly quality of the collateral).
3. Cash flow analysis	
3.1 Is a cash-flow assessment always carried out?	V
	Yes
3.2 Do you consider in the DSCR calculation (cash-flow assessment) possible reduction in property cash flow (e.g. due to lease roll-over, changing market rents, capex requirements)?	Yes
in property cash flow (e.g. due to lease roll-over, changing market rents, capex requirements)?	
in property cash flow (e.g. due to lease roll-over, changing market rents, capex requirements)? 3.3 Do you rely in the DSCR calculation (cash-flow assessment) on possible increases in property cash flow (e.g. due to expected reduction in property vacancy, rent increase,	Yes No, next to the client's business case, DZ HYP underwrites a "bank" case based upon sustainable rents according to the mortgage lending value regulations defined by the PfandBG/ BelWertV,long term interest rates and minimum amortisation requirements. The creditworthiness of essential tenants will be assessed as well as the quality of the cashflow. Long term rental rates reflecting market fluctuations are applicable according to requirements of
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Commercial Valuation	
1 Are valuations based on market or lending values?	Both the market value and the mortgage lending value (in accordance to PfandBG/ BelWertV) are relevant for the loan underwriting and credit decision.
2 Do you consider vacant possession values for single-tenanted properties?	The mortgage lending value in accordance with the BelWertV is based on the long term sustainable rent (including a potential loss of income), from time to time, for special situations, a vacant possession value may be assessed.
3 Do valuations always comply with standards of the RICS Red Book?	Valuations are prepared by VR WERT (a wholly-owned subsidiary of DZ HYP), if third-party appraisers are involved, a plausibility check is performed by VR WERT to confirm that the standards of BelWertV are met. VR WERT is approved by HypZert and the company is regulated by RICS.
4 Do you always require that valuations include a review of the lease contracts, a technical report and environment report?	BelWertV Valuations include an assessment of the technical description (construction drawings, floor plans, sections, description of construction/ fittings, stae of repairs etc.), the rental/ lease agreements (except residential) and the energy certificate of the property (among other things).
5 Do you always require that valuations provide reference to comparable recent property transactions?	Comparables are taken into account as part of the parameters and assumptions for the determination of the mortgage lending and market values by the valuers.
6 Could the value of a property portfolio exceed the value of the individual properties?	No
7 How often is the property value updated and how often is checked that the LTV covenant is not breached? (annually, ad-hoc, depending on general market movement)?	Market Developments are continuously monitored by DZ HYP and VR WERT. In addition, the loan collateral (i.e. the property) is monitored on a regular basis (market fluctuation concept). Furthermore property values are re-appraised at least every third year (for property exposures >= € 3.0 million). LTV Covenants must be met at all times. Test dates are negotiated individually. Ad hoc tests due to a market deterioration or early warning criteria are generally possible.
Other comments	N/ A

Source: Issuer

Moody's related publications

Rating Methodology

» Moody's Approach to Rating Covered Bonds, October 2020 (1234823)

Special Comments

- » Covered bonds Global: 2021 Outlook, December 2020
- » Covered Bonds Global Sector Update Q1 2021: Slow economic recovery and uneven pandemic effects will shape credit environment in 2021, June 2021 (1284103)
- » Covered Bonds Europe: 2020 Outlook Credit quality will remain strong despite slowing global economy, December 2019
- » EU Bank Recovery and Resolution Regime Strengthens German Covered Bonds and Improves Their Ratings, July 2015 (1006468)
- » Structural Protection Mechanisms for Non-EEA Assets in German Cover Pools, July 2014 (SF374519)
- » Germany Legal Framework for Covered Bonds, July 2019 (1178095)
- » Proposed maturity extension and increased overcollateralization for Pfandbrief is credit positive, October 2020 (SF1249282)

Sector In-Depth:

» Pfandbriefe: Low interest rates raise safety but limit use of this funding tool, April 2020 (1213354)

Credit Opinion

» DZ HYP AG

Webpages

- » Covered Bonds: www.moodys.com/coveredbonds
- » Covered Bond Legal Frameworks: www.moodys.com/Pages/CoveredBondLegalFrameworks.aspx

To access any of these reports or webpages, click on the entry above. Note that these references are current as of the date of publication of this report and that more recent reports may be available. All research may not be available to all clients.

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