Volksbanken Raiffeisenbanken
cooperative financial network

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THE GERMAN PFANDBRIEF MARKET 2022 | 2023

Sustained high investor confidence – Pfandbrief law successfully reformed

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PREFACE

Dear Ladies and Gentlemen

This year, the volume of new issues of benchmark pfandbriefe has returned to the level seen before the outbreak of the Corona pandemic. Investors trust its security, especially in times of crisis. This is all the more evident since war has broken out again in Europe after many years of peace with the Russian invasion on 24 February 2022. This is associated with profound economic burdens and uncertainties. In addition, the Corona pandemic is still with us. Even if its direct effects are hardly noticeable during the summer months, its third year shows again how fragile the international supply chains are and how quickly bottlenecks at the other end of the world can affect Europe.

In this environment, it has once again been shown that the Pfandbrief remains a proven refinancing instrument. Despite high volatility on the international equity and bond markets in 2022, the risk premiums of German pfandbriefe have increased only very little since the beginning of the year and have generally outperformed other international covered bank bonds. The strict legal requirements for pfandbriefe are likely to be an important reason for investor confidence. On 8 July 2022, the amendments to the Pfandbrief Act already adopted in the previous year came into force, completing the transposition of the European Covered Bond Directive into German law. Among other things, the new European standards provide for an expansion of the transparency rules. All further details on this and a detailed presentation of the Pfandbrief Act can be found in this study.

In view of the high inflation, an interest rate increase was already on the horizon in early summer for the first time in eleven years, which the European Central Bank (ECB) implemented in July. A key interest rate increase from 0.0 to 0.50 per cent and an increase in the deposit rate to 0.0 per cent were decided. Interest rates for bonds and mortgages have also risen significantly. No effects of this can yet be seen in the banks' loan books or in property prices. But times will not get easier in the mortgage market in the future. One bright spot at the moment is the growth in the market for sustainable covered bonds (including Green and Social Pfandbriefe). In an international comparison, Germany has the most issuers of ESG covered bonds, and their number continues to grow. The issue of DZ HYP's very first Green Pfandbrief in mid-February saw the bank join the ranks of green bond issuers. This opens up the opportunity for us to secure solid funding levels for the future as well. The issue also helps to round off the Bank's value chain from a green finance perspective, contributing to the process of transformation towards a more sustainable real estate industry.

"The German Pfandbrief Market 2022/2023" is also available in German. All current reports are available on our website www.dzhyp.de/en/about-us/market-research.

Kind regards

DZ HYP

September 2022

REFORM OF THE PFANDBRIEF ACT IN A DIFFICULT MARKET ENVIRONMENT

- **Amendments to the Pfandbrief Act to implement the European Covered Bond Directive came into force on time on 8 July 2022**
- **Due to the turmoil on the bond markets, fuelled by inflation and recession concerns, spreads have widened slightly**
- **The market for Green and Social Pfandbriefe continues to grow at a low level, but EU taxonomy causes headaches**

Summary
The last amendments to implement the European Covered Bond Directive came into force in the German Pfandbrief Act on 8 July 2022. Mortgage pfandbriefe, public sector pfandbriefe and ship pfandbriefe issued since this effective date may use the name "European Covered Bond (Premium)". Aircraft pfandbriefe meet the standard for "European Covered Bonds". The regulatory privileged status of pfandbriefe was thus seamlessly ensured by law and already officially confirmed by the Federal Financial Supervisory Authority.

Even before the outbreak of the war in Ukraine, prices on the commodity and energy markets had performed some capers. After 24 February 2022, volatility increased sharply once again. In the wake of these developments, inflation rates in the Western industrialised countries rose to high levels. Within the eurozone, it is the highest inflation since the introduction of the common currency. Central banks around the globe have reacted by raising interest rates, among other things. The European Central Bank also ended its policy of negative interest rates and in July hiked its key interest rate for the first time in eleven years. Rising interest rates, uncertainty about short-term energy supplies and problems in global supply chains fuelled recession concerns. Bond yields went up and down on inflation and recession concerns, and the gap between the Bund and swap curves widened. The risk premiums of pfandbriefe held up better than those of unsecured bank bonds. Nevertheless, they could not completely escape the general market turmoil and have increased slightly compared to the spread level of 2021.

More and more banks are issuing Green or Social Pfandbriefe. At the end of July 2022, there were already twelve pfandbrief banks, including DZ HYP as of this year. Despite this encouraging development, ESG pfandbriefe remain only a niche segment, with a share of around 3 percent of the pfandbrief market. Furthermore, the detailed EU requirements make it difficult for pfandbrief banks to issue taxonomy-compliant pfandbriefe despite their best efforts and commitment. Even if the EU taxonomy is likely to become the new standard, the full implementation in the ESG pfandbrief programmes will still require time and a lot of hard work.

MARKET DEVELOPMENTS

War in Ukraine, inflation and the corona pandemic

War in Ukraine, rising energy and commodity prices and increasing fear about recession

Concerns about an imminent recession in Germany and in the entire eurozone are shaping developments on the financial markets as we approach the mid of 2022. The stock markets fell significantly at the beginning of June, and the exchange rate of the euro also lost considerable ground against the US dollar, so that its value had fallen below one US dollar for a short time. The yield on ten-year German bunds stood at almost 1.9 per cent in mid-June and fell back below the mark of 1 per cent at the end of July. Due to the war in Ukraine and its impact on the global economy, energy and commodity prices were particularly in the focus of market participants in the first half of 2022. After a sharp rise in spring 2022, the oil price fell noticeably again in mid-July and was once again below the 100-dollar mark, the lowest since April. Other commodity prices have also fallen, for example for industrial metals or wheat. One reason for the ups and downs in commodity prices is the concern or the current assessment of market participants regarding economic development.

Russia's gas supplies are a political instrument

With regard to gas prices, fears of further restrictions or even termination of supplies from Russia dominate in Germany and Europe. Russian gas could not be replaced sufficiently from other sources in Germany, at least in the short term. Even in the event of a recession-related drop in demand, there would probably be a gas shortage in the winter and thus the need to physically restrict supply to some gas consumers. How serious the macroeconomic consequences would be can hardly be reliably predicted. The Bundesbank at least assumes a decline in gross domestic product (relative to the base scenario) of between 5 per cent and 6 per cent for Germany in 2023 in this case. Gas deliveries were a political instrument for Russia in the middle of the year and are likely to remain so for the time being. Following regular maintenance of the Nord Stream 1 gas pipeline, gas deliveries resumed on 21 July 2022, which initially eased the supply situation in Central Europe somewhat. However, deliveries were significantly reduced again barely a week later. Therefore, it cannot be ruled out that Russia repeatedly increases and decreases its deliveries to Europe at short notice for political reasons in order to keep the uncertainty and thus the price of natural gas high.

And the corona pandemic is not yet defeated

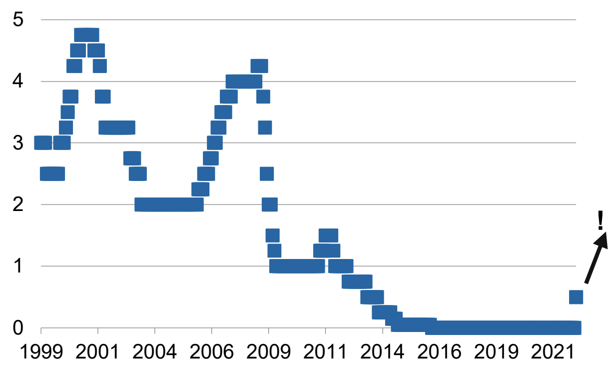
And then, of course, there is always the corona pandemic, which after the invasion of Russian troops in Ukraine on 24 February 2022 no longer ranks high in the news reports, but is nevertheless not out of the world. On the contrary, the omicron subline BA.5 of the coronavirus, which has dominated since mid-June, has almost completely displaced other variants of the virus, accounting for almost 87% of reported cases, as the Robert Koch Institute announced in its weekly report on 21 July 2022. The 7-day incidence in Germany is significantly higher than a year ago at the same time, with almost 800 new infections reported per 100,000 inhabitants (as of 17 July 2022) in summer 2022. Nevertheless, there are no general and far-reaching restrictions on public life in Germany and Europe. In China, the situation is different. The Chinese government's rigid zero-covid strategy, which can also include strict lockdown measures in important economic centres such as Shanghai, threatens to disrupt global supply chains time and again. This therefore hangs like a sword of Damocles over global economic development, and negative effects on the European economy cannot be ruled out.

Reaction of the European Central Bank to the changed environment

ECB reacts to increased inflation rate by raising its key interest rate

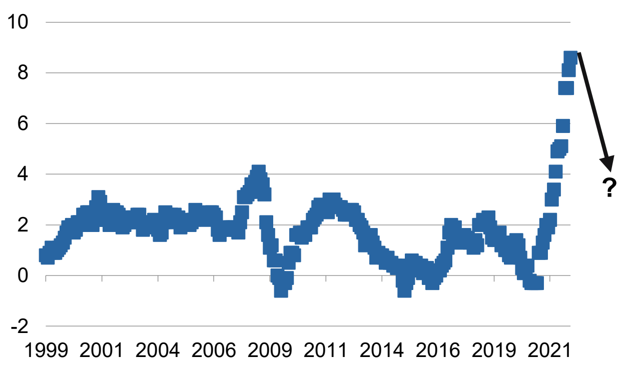
The war in Ukraine, the high volatility of increased energy and commodity prices, disrupted supply chains and the as yet still not defeated corona pandemic are some of the key developments and issues that formed the backdrop for the European Central Bank's (ECB) monetary policy decisions on 21 July 2022, which marked a historic turning point in its interest rate policy. The ECB surprised by raising the key interest rates by 50 basis points straight away and not - as previously announced in its forward guidance - by only 25 basis points. In the press conference, the ECB President also made it clear that in the current environment there will be no forward guidance - i.e. a previously communicated intention regarding its future monetary policy. Rather, the central bank will decide on future monetary policy measures from meeting to meeting and depending on the data situation prevailing at the time. In July, the ECB justified its larger than expected interest rate move by stating that the inflation rate in the eurozone, which has risen sharply since 2021, can no longer be regarded as transitory, but will probably remain at an undesirably high level for some time to come. Further key rate hikes are therefore likely in the months ahead. The ECB's first interest rate hike in eleven years, with which the chapter of negative deposit rates was closed, could have far-reaching effects on the capital markets. In the following, we take a look at the effects of the historic interest rate turnaround in the eurozone on the mortgage as well as the pfandbrief market.

END OF THE ZERO INTEREST RATE POLICY: FOR THE FIRST TIME IN ELEVEN YEARS, THE ECB RAISES ITS KEY INTEREST RATES AGAIN
ECB MAIN REFINANCING RATE IN PERCENT



Source: Bloomberg, presentation DZ BANK Research

STEEP RISE IN INFLATION: HIGH ENERGY AND COMMODITY PRICES DRIVE UP INFLATION RATE
OVERALL INFLATION RATE IN PERCENT



Source: Bloomberg, presentation DZ BANK Research

Effects of rising interest rates on the mortgage market

High house prices and rising mortgage rates

House prices in Germany and many other European countries have risen until mid-2022, in some cases sharply, despite the corona pandemic. Nevertheless, mortgage rates remained affordable for a long time thanks to low interest rates. However, mortgage rates were already rising significantly in Europe before the ECB hiked its key interest rate. Due to the rise in interest rates in the mortgage market in the first half of 2022 - in Germany by more than 1.5 percentage points in the first months of 2022 - fewer and fewer private households will be able to afford to buy their own home at the current high house price level, as the following example illustrates using the purchase of a terraced house. On average, in German cities more than 500,000 euros are necessary in order to purchase such a property (as of the first half of 2022). Due to the aforementioned rise in interest rates, the current annual loan instalment has increased by around 8,000 euros since the contract was concluded last December 2021 (at a loan-to-value ratio of 100 percent).

Burdens for borrowers increase due to higher inflation

Borrowers who agreed on a long-term fixed interest rate for their house financing are not immediately burdened by the current increase in mortgage rates, but mortgage borrowers with variable interest rates are. Irrespective of this, the possibly higher financing costs are currently compounded by unusually high inflation rates for consumer spending, which put additional pressure on the budgets of private households. The danger of higher default rates on home loans increases further if the economy slips into a recession with higher unemployment. Against the backdrop of rising interest rates and consumer prices, losses in income for private households could presumably only be absorbed to a limited extent by cutting back on consumption or restructuring household spending.

HOUSE PRICES GO THROUGH THE ROOF IN MANY COUNTRIES SINCE THE BEGINNING OF THE PANDEMIC

Across all country-specific differences, the pandemic has brought strong price increases to international housing markets. In particular, already expensive and tight housing markets showed **impressive price increases during the pandemic years of 2020 and 2021**, well above the long-term average from 1999 to 2019 (see the ECB's Financial Stability Review 2022 of May 2022). At the top of the ranking of the strongest price increases since the corona outbreak are the countries relevant for the covered bond market, New Zealand, Canada, Australia, Sweden and the Netherlands, with real house price increases of more than 8 percent per year. **Germany leads the midfield**, which also includes Denmark, Norway, France, Belgium and the UK. In these countries, real house price growth was between 4 percent and 8 percent. In Ireland, Finland and Spain, house price growth fell below the long-term average from 1999 to 2019, against the general trend. Worse credit conditions in the form of higher mortgage rates can cause stress in the housing market. In addition, high energy prices as well as a lack of and expensive building materials contribute to concerns in the real estate markets, as this could lead to less construction activity.

Source: DZ BANK Research

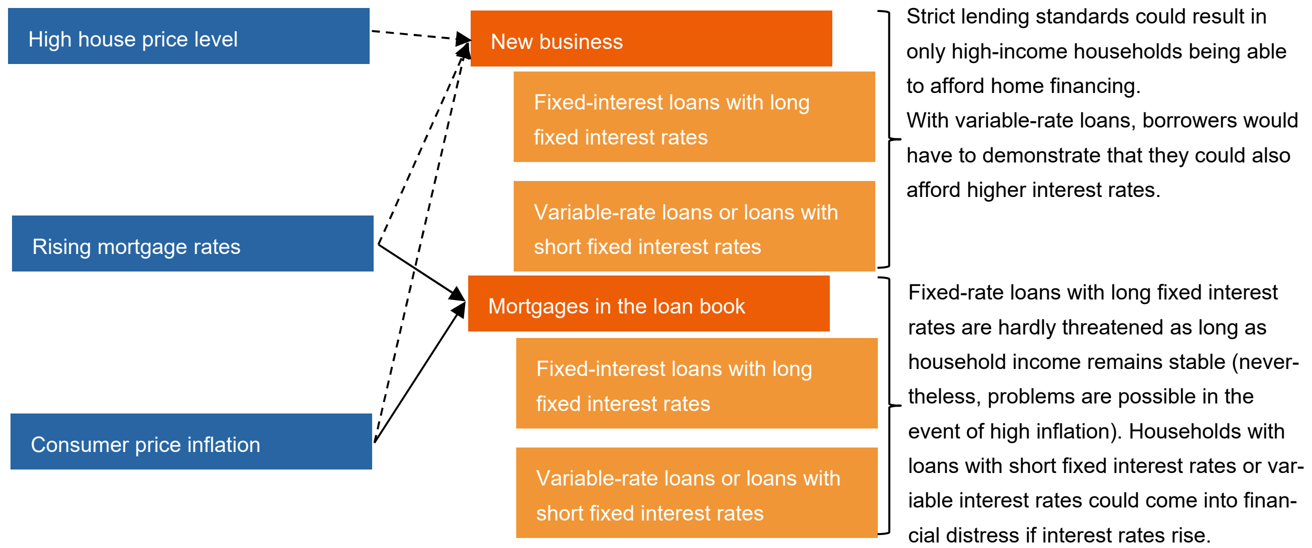
Debt service ratios rise

The higher interest rate level could also have negative consequences for house prices if demand for real estate declines because, for example, private households can no longer afford a credit-financed home. In its study "Covered Bond Quarterly: Q1 2022" of 29 April 2022, the rating agency Scope looked at the current risk factors in the European mortgage markets. According to Scope, house prices in Europe have increased by more than 5 percent on average per year over the last eight years, while household incomes have risen by only 2 percent per year on average. Against the backdrop of increased yields on the capital market, Scope seems to expect mortgage rates to rise further. The rates for new home financing would increase both in absolute terms and in relation to household income because of the property price and interest rate development. In other words, debt service ratios - mortgage rates in relation to current household income - will rise. Households that have taken out fixed-rate home financing whose fixed interest rates are about to expire are also threatened by higher costs.

Fitch study shows that interest rate hikes have only a limited impact in Germany

Fitch has analysed the vulnerability of mortgage loans to a notional rise in interest rates for a total of ten countries (see Fitch's report "Global Mortgage Markets Ranked by Vulnerability to Rising Rates" of 16 May 2022). The agency calculated the average monthly debt service to monthly disposable income (DSTI) ratio to find out the impact of floating-rate loans. Fitch included loans that originally had a fixed interest rate of two years or less under variable-rate loans. In its study, the agency only took into account newly issued loans from 2020, for which it calculated average DSTIs per country. In the stress scenario considered, it was then assumed that household income would remain unchanged until the end of 2023 and mortgage rates would rise by 3 percentage points. Accordingly, Australia, Spain and the United Kingdom are most exposed due to their high shares of variable-rate mortgages. Average DSTIs would therefore increase the most in these countries. In comparison, France, Germany and Italy have the lowest impact of interest rate stress when looking at the averages, because the share of variable-rate mortgages is significantly lower. Canada and the Netherlands are in the middle of the pack, according to Fitch. In terms of the impact of interest rate increases on variable-rate loans, the change in DSTI is highest in the Netherlands, Germany, the UK and Canada. In our view, this reflects the level of indebtedness of the borrowers affected.

HOUSE PRICES, INTEREST RATES, INFLATION AND THE MORTGAGE BUSINESS OF BANKS



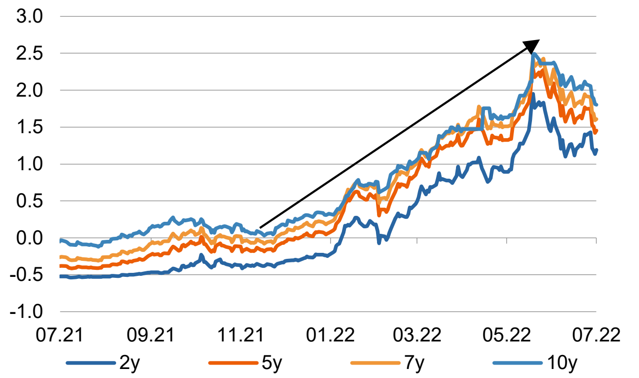
Source: DZ BANK Research

Yields have increased significantly in the pfandbrief market

Yields started to rise as early as August 2021

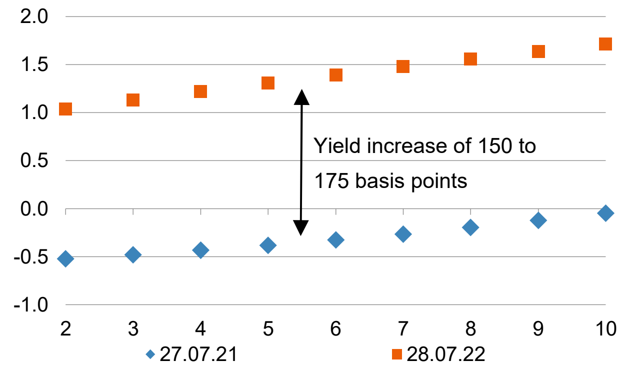
The ECB was late by international standards with its current interest rate turnaround. Around the globe, many central banks had already raised their key interest rates months before the ECB. Yields on the pfandbrief market also began to rise slowly as early as August 2021, although the pace of the rise in yields only increased more noticeably from November 2021 onwards. In mid-June 2022, pfandbrief yields calculated by DZ BANK Research for the twelve-month period since July 2021 reached their peak, which - depending on the maturity - was around 150 to 175 basis points above the yield level at the beginning of August 2021. Since then, pfandbrief yields have gone up and down by almost 100 basis points, with yields at the end of August back at the level of the end of June. The recent ups and downs in yields reflected the prevailing fears of recession or inflation among market participants. The bottom line is that yields on the pfandbrief market were at the end of August 2022 well above the levels of 2021.

STEEP RISE IN YIELDS WITHIN A FEW MONTHS
GENERIC PFANDBRIEF YIELDS IN PERCENT



Source: Bloomberg, calculations and presentation DZ BANK Research, as at 28 July 2022, 17:00h

THE BOTTOM LINE IS THAT - DESPITE A BOUNCEBACK AT THE END OF JULY - THE YIELD CURVE HAS SHIFTED UPWARDS
Y-AXIS: GENERIC PFANDBRIEF YIELDS IN PERCENT,
X-AXIS: REMAINING MATURITY IN YEARS



Source: Bloomberg, calculations and presentation DZ BANK Research; as at: 28 July 2022, 17:00h

Positive yields and shorter maturities

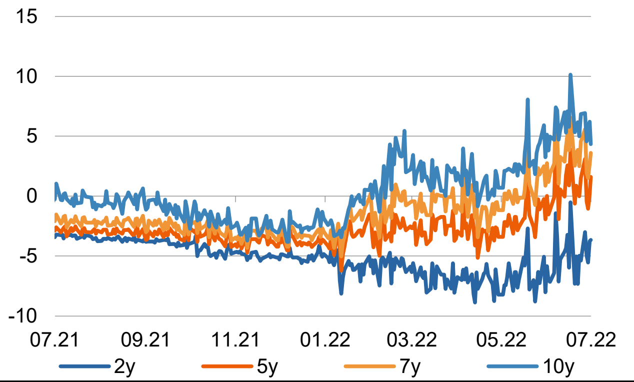
The yield development can also be seen in the new issues. In the first half of 2022, no large-volume pfandbrief was newly issued with a negative yield at the time of pricing the new bond. At the beginning of the year, the yields at the time of issue were generally still below 0.3 percent. They rose in line with the general market development in the following months to over 2.5 percent in June. New issues with initial maturities of three to five years also had clearly positive yields in the first half of the year, so that in the market for euro benchmark covered bonds (all countries and not just Germany) the average maturity of the new issue declined compared to the previous year. In the first seven months of 2022, more than half of the new issues had a maturity of seven years or less. In 2021, not even 20 percent of large-volume new issues fell into this maturity spectrum.

Impact of the general rise in yields on spreads

Spreads only widened somewhat with the outbreak of the war in Ukraine

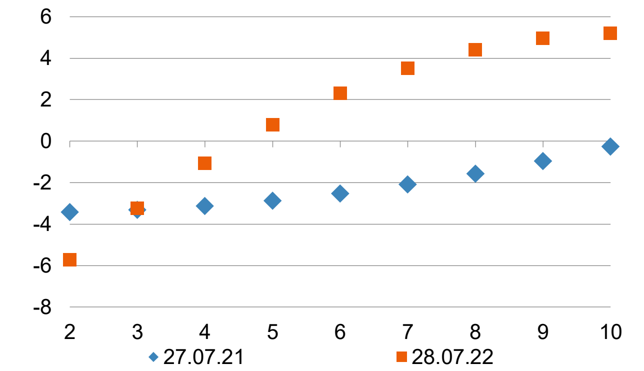
The higher yields may also have attracted one or the other investor - who had left the covered bond market in times of negative yields - again. In addition, the gap between the bund and swap curves had widened, making pfandbriefe even more attractive than German bunds. The large-volume new issues could therefore not complain about too little investor interest, especially at the beginning of 2022. After the outbreak of war in Ukraine on 24 February 2022, covered bonds including pfandbriefe are also likely to have benefited from their status as a safe haven in the bond market. The new issue premiums that issuers had to pay for their new covered bonds at the beginning of 2022 were accordingly moderate. Towards the end of the first half of the year - when the economic outlook became increasingly gloomy but inflation nevertheless remained high - it became difficult in the meantime for banks to find sufficient demand for new large-volume covered bonds, even if generous new issue premiums, in some cases in the double digits, were offered. Despite a general rise in yields, the swap spreads of German pfandbriefe remained largely stable until the outbreak of war. With the start of the war in Ukraine, however, the risk premiums of German pfandbriefe also gradually increased by a few basis points. The generic credit curve of the pfandbrief market steepened again in the course of this development (as of the end of July 2022), after having been almost completely flat at the end of July 2021.

SWAP SPREADS FOR GERMAN PFANDBRIEFE WITH MEDIUM MATURITY OR LONGER WIDENED SLIGHTLY IN 2022
GENERIC SWAP SPREADS FOR GERMAN PFANDBRIEFE IN BASIS POINTS



Source: Bloomberg, calculations and presentation DZ BANK Research; as at: 28 July 2022, 17:00h

GENERIC CREDIT CURVE FOR GERMAN PFANDBRIEFE STEEPENED AGAIN IN 2022 COMPARED TO SUMMER 2021
Y-AXIS: GENERIC SWAP SPREADS FOR PFANDBRIEFE IN BASIS POINTS, X-AXIS: REMAINING MATURITY IN YEARS



Source: Bloomberg, calculations and presentation DZ BANK Research; as at: 28 July 2022, 17:00h

Spreads of German pfandbriefe have held up better in international comparison

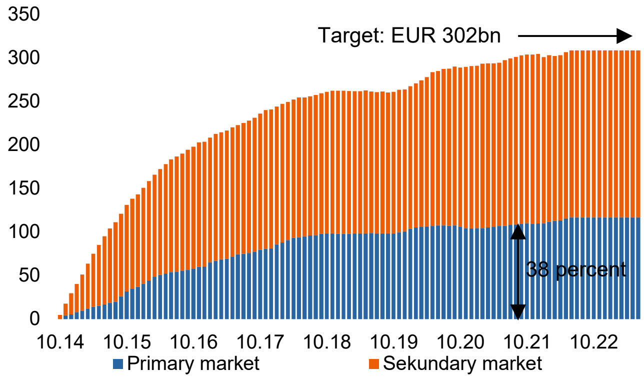
With regard to the widening of spreads since February, two further points stand out. The risk premiums of German pfandbriefe have fared better (i.e. widened less) in international comparison, especially with the swap spreads of covered bonds from Southern Europe. Moreover, investors seem to have preferred covered bonds with short maturities. The generic swap spread for pfandbriefe with a maturity of two years has outperformed the overall market since the outbreak of war in Ukraine and even narrowed by a few basis points until the beginning of June. Then, however, pfandbriefe with short maturities were also affected by the general market weakness. Covered bond spreads - including the risk premiums for pfandbriefe - had the opportunity to calm down during the summer lull in the primary market for large-volume bonds. In our view, it is not unlikely that spreads will stabilise at their current level in the coming weeks. However, this will largely depend, among other things, on the gas supply in Europe in the coming months. In this respect, the spreads - depending on the news situation - can swing upwards or, in the best case, downwards. The widening pressure for covered bonds from the eurozone will continue to be limited due to the ECB purchases in the covered bond market, even if they have declined.

ECB covered bond purchases remain noticeable

ECB reinvests only cash inflows into its CBPP3 portfolio since July 2022

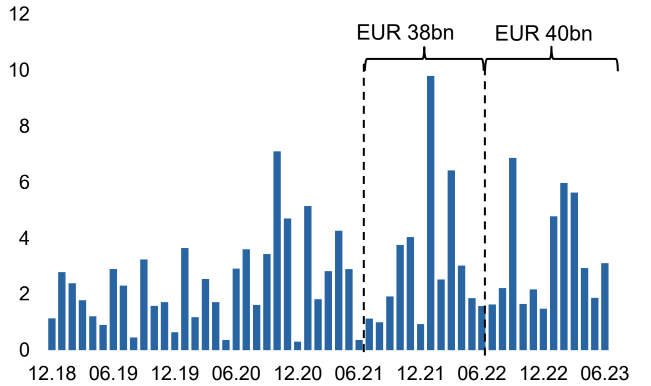
The ECB has not only influenced yields and spreads in the pfandbrief market with its interest rate turnaround. A significant factor is also the central bank's bond purchase volume on the covered bond market. At the beginning of the second half of the year, two key points changed in the ECB's third covered bond purchase programme (CBPP3). The net new purchases under CBPP3, which amounted to a monthly average of EUR 0.8bn in the first half of 2022, were reduced to zero at the beginning of the second half of the year. At the same time, the ECB announced on its website (question Q5.1) that it would like to maintain the CBPP3 stock of EUR 302.2bn at the end of June 2022 for the time being. To do so, it must replace maturing covered bonds with corresponding reinvestments. In the second half of 2022, bonds with a total volume of EUR 16bn will mature in the CBPP3 portfolio. This volume is not evenly distributed over the individual months. However, it can be assumed that the ECB will smooth out its reinvestments over time. On average, the central bank should therefore demand covered bonds with a volume of around EUR 2.7bn per month in the second half of 2022.

TARGET FOR THE CBPP3 PORTFOLIO: EUR 302BN
CBPP3 PORTFOLIO VOLUME, BROKEN DOWN BY PURCHASES ON THE PRIMARY AND SECONDARY MARKET, FIGURES IN EUR BN



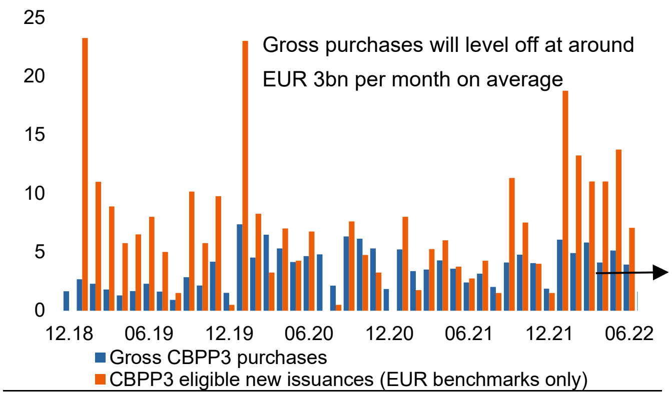
Source: European Central Bank, presentation DZ BANK Research

REINVESTMENT NEEDS OF EUR 40.3 BN UNTIL JUNE 2023
MATURITY VOLUME PER MONTH IN THE CBPP3 PORTFOLIO, IN EUR BN



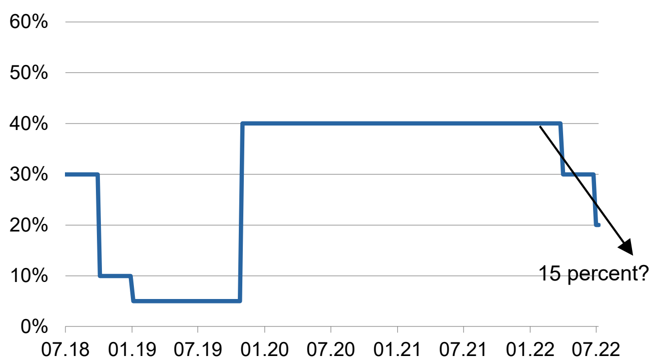
Source: European Central Bank, presentation DZ BANK Research

PRIMARY MARKET OFFERS PURCHASE OPPORTUNITIES FOR THE ECB
FIGURES IN EUR BN



Source: European Central Bank, presentation DZ BANK Research

ECB RECENTLY BOUGHT LESS IN NEW ISSUES
ECB ORDER AS A PERCENTAGE OF THE EXPECTED ISSUE VOLUME



Source: European Central Bank, presentation DZ BANK Research

Maturity volume in the CBPP3 portfolio increases slightly

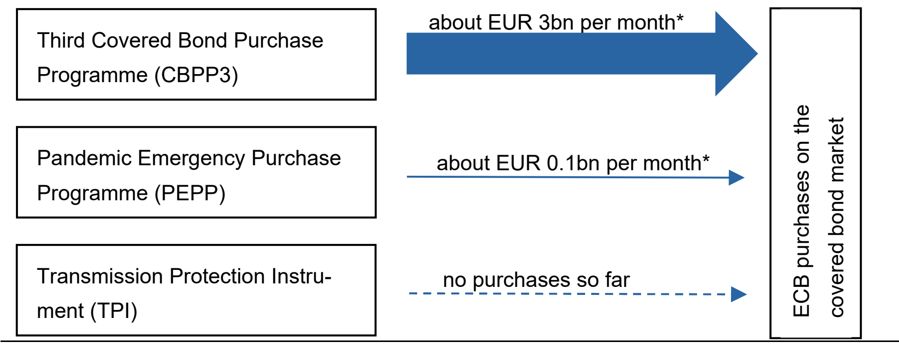
In the second half of 2021 and the first half of 2022, the combined maturity volume in the CBPP3 portfolio amounted to EUR 38bn. In the second half of 2022 and the first half of 2023, it rises slightly to EUR 40.3bn in this twelve-month period. Based on these figures, we expect the ECB's reinvestment needs to stabilise above a monthly average of EUR 3bn. Quite a chunk of money. By way of comparison, the ECB also targeted a purchase volume of EUR 40bn for CBPP2 from July 2011 to June 2012. The central bank will therefore not be able to avoid buying on the primary market if it wants to sufficiently satisfy its reinvestment needs. Around 38 percent of the current CBPP3 holdings were purchased as new issues on the primary market. And this is where the second major change since July 2022 comes into play: the ECB has reduced its order on new issues from 30 percent to 20 percent of the expected volume of the bond, and this percentage could fall even further. From January to October 2019 - when net new purchases were already cut to zero once - the central bank's primary market order was just 5 percent. It will not fall quite that low for the time being, we expect.

New ECB antifragmentation instrument unlikely to have any direct impact on covered bond purchases

TPI to complement the ECB's toolbox in the future

After the Governing Council meeting on 21 July 2022, the central bank also presented the outlines of its new Transmission Protection Instrument (TPI). With the TPI, which was previously discussed under the heading of antifragmentation instrument, the ECB wants to ensure a smooth transmission of its monetary policy in all countries of the eurozone. The new instrument is to be used when fundamentally unjustified market dynamics threaten the transmission of monetary policy. Subject to certain criteria, the ECB plans to buy bonds on the secondary market in future from countries where financing conditions have deteriorated without there being a fundamentally justified reason for doing so. The outlines for the TPI were already presented in July, but some details still need to be worked out by the ECB. For the ECB, however, it was already clear by mid-2022 that the focus of the new programme would be on the purchase of bonds from public sector borrowers (states, local authorities and public agencies as defined by the ECB). According to the ECB, the purchases will concentrate on bonds with a maturity of one to ten years. At the same time, the central bank did not rule out that private sector bonds could also be purchased under TPI - under which the ECB can act in unlimited volume. In our opinion, this should also include covered bonds, even though the ECB did not name any specific asset classes from the private sector.

ECB PROGRAMMES UNDER WHICH COVERED BONDS CAN (POTENTIALLY) STILL BE PURCHASED



Source: DZ BANK Research, * estimated average values

Covered bond purchases under CBPP3 have the greatest impact

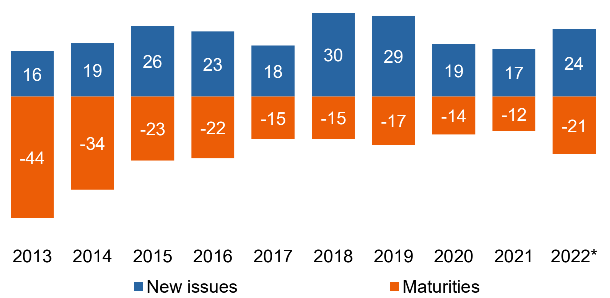
Despite the general reference to being able to buy private sector bonds under TPI, we do not believe that the ECB will buy covered bonds on a larger scale under this programme. Already under the Pandemic Emergency Purchase Programme (PEPP), which was launched at the beginning of the corona pandemic, the ECB bought covered bonds with a volume of only EUR 6.1bn. This corresponds to just about 0.4 percent of the PEPP portfolio volume (as of 30 June 2022) or, to put it somewhat poetically: covered bonds are only a drop in the PEPP ocean. With the TPI, the ECB presumably intends to smooth out what it sees as unjustified spread divergences in the government bond market. Covered bond purchases would hardly help to achieve this goal. Moreover, targeted reinvestments in the PEPP portfolio with TPI in the instrument box remain the first line of defence against unjustified spread divergences, as the ECB somewhat martially puts it. However, the diversion of covered bond cash inflows into the government bond market within the PEPP is unlikely to have much impact on the covered bank bond market. Covered bond cash inflows in the PEPP portfolio are unlikely to exceed EUR 0.1bn per month on average over the longer term, according to our estimate. Our estimate of this monthly average assumes an average remaining maturity of the covered bonds in the PEPP portfolio of 5 years. Since the beginning of the PEPP, the cash inflows from covered bonds have never exceeded EUR 6m. In summary, it can therefore be said that the CBPP3 reinvestments will exert by far the greatest direct influence of the ECB on the covered bond market in the coming months.

More large-volume new issues in the first half of 2022

Growth in the market for benchmark pfandbriefe since 2015

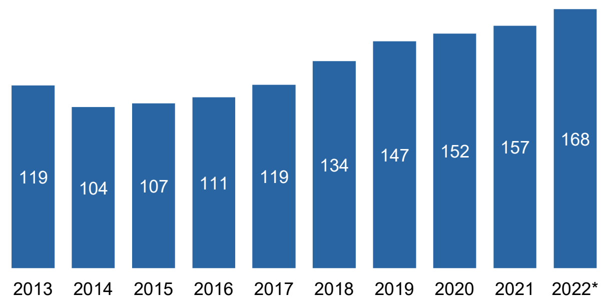
For the ECB, large-volume, CBPP3-eligible new issues are a good buying opportunity. Conversely, issuers should be pleased to find the ECB with a substantial buy order in the order book of their new issues. It is probably just coincidence, but with the start of CBPP3 in October 2014, growth also returned to the pfandbrief market in the euro benchmark format, after this segment had previously shrunk by an average of EUR 28bn per year for eleven years (from 2003 to 2014). The growth will continue in 2022. Since the beginning of the year (up to and including the end of July 2022), euro benchmark pfandbriefe with a total volume of EUR 24.25bn have already been issued. This means that not only has the new issue volume for the full year 2021 of EUR 17.25bn already been significantly exceeded, but also the volume of maturing euro benchmark pfandbriefe for the full year 2022 of EUR 20.8bn. The dynamic new issuance activities in the first half of 2022 accordingly led to an increase in the volume outstanding, which reached around EUR 168bn by mid-year, according to Bloomberg. In an international comparison, Germany belongs to the top trio in terms of this year's new issue volume of euro benchmark covered bonds at the end of July, just behind France (EUR 26.75bn) and just ahead of Canada (EUR 23bn). These three countries already account for around 60 percent of the relevant new issue volume.

NET NEW ISSUE VOLUME POSITIVE AGAIN SINCE 2015 ...
FIGURES FOR EURO BENCHMARK PFANDBRIEFE IN EUR BN



Source: Bloomberg, calculations and presentation DZ BANK Research
* Figures for 2022 as at the end of July

... WHICH LED TO A CORRESPONDING INCREASE IN THE VOLUME OUTSTANDING
VOLUME OUTSTANDING OF EURO BENCHMARK PFANDBRIEFE IN EUR BN



Source: Bloomberg, calculations and presentation DZ BANK Research
* Figures for 2022 as at the end of July

Implementation of the European Covered Bond Directive did not lead to a pause in issuance in Germany

The international covered bond market was generally characterised by numerous new issues in the first half of the year. Some European issuers seem to have deliberately placed their planned new issues in the first half of the year in order to have their refinancing transactions done and dusted before the important deadline of 8 July 2022. The European Covered Bond Directive (CBD) had to be transposed into national law in the member states of the European Union (EU) by the said deadline and the new rules had to be put into effect. This in turn led to a temporary pause in issuance in some countries. In Finland and Norway, for example, issuers have to apply for a new issuing licence to continue their covered bond business. In other countries, issuers were still waiting for explanations and regulations from the supervisory authorities, which in some cases require adjustments in their issuing prospectuses. In Germany, the implementation of the CBD - even though the new pfandbrief regulation (secondary legislation) of the German financial supervisory authority BaFin is (at the end of August) still pending - did not lead to a pause in issuance. The first publicly placed pfandbrief was brought to the market by DekaBank on 11 July 2022 (sub-benchmark with a volume of EUR 250m). Berlin Hyp followed two days later with the first Green Pfandbrief, which was also denominated in a foreign currency. Landesbank Baden-Württemberg completes the statistics of the "first new issues" under the Pfandbrief Act amended according to the CBD with the first pfandbrief in the euro benchmark format (and also green), which was issued on 18 July 2022.

Pfandbrief market grew to EUR 391bn at the end of 2021

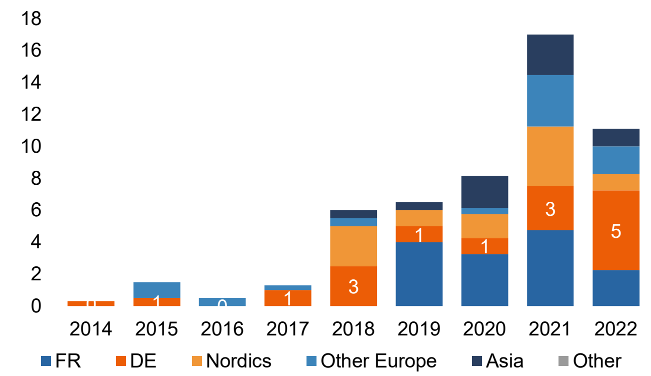
Euro benchmark pfandbriefe accounted for around 40 percent of the total pfandbrief volume outstanding in mid-2022. Registered pfandbriefe (Namenspfandbriefe) also had a significant share of around 30 percent, although their market share has been declining for some time. However, with the rise in yields since the end of 2021, a small renaissance of the registered pfandbrief has set in, so that according to Bundesbank data, the share of registered pfandbriefe in the volume of new issues as at the end of May 2022 has increased slightly again compared to 2020 and 2021. Overall, the pfandbrief market appears to remain on a growth path. At the end of 2021, the total volume outstanding of the pfandbrief market reached EUR 391bn.

Market for ESG pfandbriefe continues to grow

Despite growth, the ESG pfandbrief remains a niche product

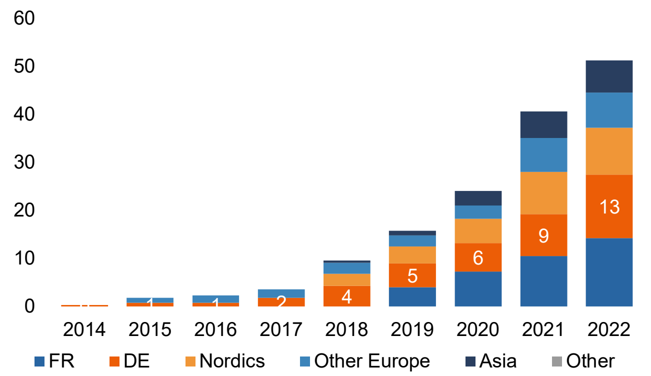
Not only is the pfandbrief market growing, the market segment for sustainable pfandbriefe (ESG pfandbriefe) is also flourishing. The volume of new issues (exclusively ESG pfandbriefe denominated in euros with an issue volume of at least EUR 250m) already reached a new record level for the year as a whole in the first seven months of 2022, at exactly EUR 5bn. At this point, the German pfandbrief banks were ahead of all other countries in an international comparison. The number of German ESG issuers also already grew by three more institutions in the first half of 2022, including DZ HYP. No other country has as many ESG covered bond issuers as Germany. A total of twelve banks had issued at least one ESG pfandbrief by mid-2022. However, among the twelve issuers are two that have so far only launched smaller private placements in the sustainability format. The growth of the ESG pfandbrief market is encouraging. But the truth is also that - eight years after the first ESG pfandbrief was issued - this market segment is still a small niche. The volume of ESG pfandbriefe outstanding in July 2022 was equivalent to only about 3 percent of the total market.

VOLUME OF NEW ESG PFANDBRIEFE INCREASED SO FAR IN 2022
FIGURES IN EUR BN FOR EURO-DENOMINATED COVERED BONDS (ONLY NEW ISSUES) WITH AN ISSUE VOLUME OF AT LEAST EUR 250M



Source: Bloomberg, calculations and presentation DZ BANK Research, Figures for 2022 as at the end of July

OUTSTANDING VOLUME OF ESG PFANDBRIEFE GROWING SLOWLY
FIGURES IN EUR BN FOR EURO-DENOMINATED COVERED BONDS (OUTSTANDING VOLUME) WITH AN ISSUING VOLUME OF AT LEAST EUR 250M

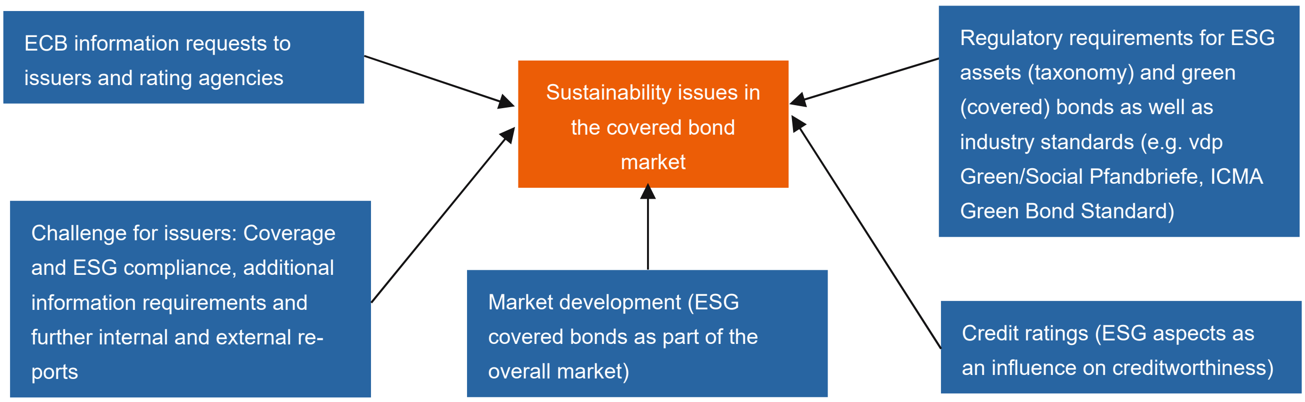


Source: Bloomberg, calculations and presentation DZ BANK Research, Figures for 2022 as at the end of July

German banks increasingly issued unsecured bonds in ESG format

Sustainability criteria already enjoy a high priority for many investors and some even invest their money exclusively in ESG assets. Pfandbrief banks therefore reach a broader investor base with Green or Social Pfandbriefe compared to their conventional counterparts, which is an advantage when placing new issues. However, issuers also take on a lot of additional work with their ESG Pfandbriefe. The ESG cover assets must not only fulfil the requirements of the Pfandbrief Act, but also certain green or social criteria. In order to identify appropriate ESG cover assets, corresponding data must already be collected and evaluated when the loan is granted. The data is needed for additional sustainability reports and for the ESG reporting of the Pfandbrief programme. Perhaps the high workload and the double qualification criteria - according to the Pfandbrief Act and ESG criteria - are reasons why not more credit institutions issue ESG Pfandbriefe (in Germany, a total of 84 banks were authorised to issue Pfandbriefe at the end of June 2022, of which only twelve have already issued ESG Pfandbriefe, as mentioned). The interest on the part of the banks is likely to be there in principle. However, in the past two years many German banks have preferred to issue their new green issues in unsecured format or as subordinated bonds. These bond formats also allow them to use ESG assets that would not be suitable as cover assets for their Pfandbriefe. Another reason for the preference of unsecured or subordinated bonds is likely to be the higher potential savings in refinancing costs. Green or Social Pfandbriefe offer at best - if at all - a refinancing advantage of one basis point compared to conventional Pfandbriefe. In the case of unsecured bonds, issuers have been able to save more so far.

ESG AS A MULTI DIMENSIONAL ISSUE



Source: DZ BANK Research

Different perspectives on the ESG issue

Minimum standards for Social Pfandbriefe were published in 2021

The market for ESG pfandbriefe, which can be described with data on new issues, outstanding volumes, new issue premiums and the like, is one facet of the ESG topic that touches on even more areas of the banking business. In the following, we would therefore like to give a brief overview of other aspects of the ESG topic, such as market standards and what they mean for the lending business. Regarding market standards, in Germany the Association of German Pfandbrief Banks (vdp) has criteria for Social Pfandbriefe and Green Pfandbriefe. Both are based on the principles of the International Capital Market Association (ICMA) for sustainable bonds. In the case of Social Pfandbriefe, according to the vdp, the financed projects must offer social added value, whereby this is derived from the United Nations Sustainable Development Goals (SDGs), which include the following areas in particular:

- Financially sustainable basic infrastructure (for example, clean water, sanitation, transport and energy)
- Access to basic social services (e.g. health care, education and training)
- Affordable housing
- Job creation through the financing of small and medium-sized enterprises and microcredits
- Food security
- Socio-economic development and empowerment

Regular information and external control

The issuer of a Social Pfandbrief undertakes to provide regular (at least annual) information on its social cover assets (including an impact study). The Social Pfandbrief programme must also be assessed on an ongoing basis by an independent external third party (second party opinion, SPO) in accordance with the vdp's requirements. This task is usually performed by an ESG rating agency.

PLEASE DO NOT CONFUSE: SOZIALPFANDBRIEFE AND SOZIAL PFANDBRIEFE

Sozialpfandbriefe were mortgage covered bonds and public sector covered bonds where at least 90 percent of the proceeds were used to promote social housing. They served to alleviate the housing shortage in Germany in the post-war period. In 1952, the first law to promote the capital market exempted the interest on Sozialpfandbriefe from tax. The tax-privileged Sozialpfandbriefe have already all been repaid.

Source: DZ BANK Research

Green Mortgage Pfandbriefe dominate

Green Pfandbriefe are subject to the same additional transparency requirements as Social Pfandbriefe, which also include an SPO. In the case of Green Pfandbriefe, mortgage pfandbriefe currently dominate, and this is not likely to change any time soon. Therefore, we focus here on the criteria for the cover assets of Green Mortgage Pfandbriefe. These are summarised in the chart below.

REQUIREMENTS REGARDING PROPERTIES IF THE LOANS ARE TO BE USED AS ELIGIBLE COVER ASSETS FOR GREEN PFANDBRIEFE

For new buildings, the legal energy standards of the respective country valid at the time of financing are complied with.

For existing commercial properties, at least one of the following criteria must be met:

- The relevant comparative values* published by the Federal Government are complied with.
- An established provider confirms that the commercial property falls into one of the provider's top categories (proof via sustainability certificate).
- The commercial property is in the top 15 percent of the national commercial property stock in terms of energy consumption/ demand.

For residential existing properties, at least one of the following criteria must be met:

- The residential building can be assigned at least to energy efficiency class B.
- The energy requirement of 75 kWh/m² is not exceeded.
- There is co-financing via KfW funding programmes for energy-efficient construction or refurbishment.
- The residential building is among the top 15 percent of the national residential building stock in terms of energy consumption/ demand.

The following criteria apply to renovations/refurbishments of buildings:

- The structural measures achieve a reduction in energy consumption of at least 30 percent and ...
- ... the energy refurbishment results in energy consumption/ demand reaching a level that is in line with the climate targets of the European Union.

Source: Association of German Pfandbrief Banks (vdp minimum standards), * link to comparative values, presentation DZ BANK Research

Pfandbrief Act applies, no separate cover pools

It applies equally to Green and Social Pfandbriefe that there is no separate cover pool for them that would be separate from the cover assets of conventional Pfandbriefe. Furthermore, a bank's sustainable pfandbriefe are of course also subject to the general provisions of the Pfandbrief Act and the relevant pfandbrief ordinances. However, the cover pools of green or Social Pfandbrief issuers contain claims in at least the amount of their outstanding green or Social Pfandbriefe respectively.

The foundations for sustainable pfandbriefe: ICMA guidelines

ICMA calls for transparency

As already mentioned, Green and Social Pfandbriefe are based on ICMA's general principles, which are among the most important international standards for sustainable bonds (green, social, sustainability; GSS). For the individual topics ICMA has created separate principles (Principles), which all follow the same basic idea and are revised annually. Issuers of GSS bonds voluntarily undertake to proceed in accordance with the ICMA guidelines for their sustainable bond programmes. These provide guidance on the key elements of the bond programme, centred on transparency recommendations. Investors are to be assisted by the provision of essential information to enable them to assess the social or environmental benefits of the programme. There are four core components to this, which together form the first pillar of the ICMA recommendations:

Use of proceeds

- The bond documentation shall show the use of the bond proceeds. The selected projects financed shall have a clear social or environmental benefit. The ICMA guidelines recognise a wide range of sustainable projects.

Process for project evaluation and selection

- ICMA recommends that issuers publish their own green or social bond framework. This should provide information on how the issuer selects the sustainable projects to be financed and what objectives are being pursued. Among other things, this document should clearly state the eligibility and exclusion criteria used for this purpose.

Management of proceeds

- The use of the bond proceeds should be transparent. The issuer must ensure through an internal process that the bond proceeds are used exclusively for the sustainable projects described in the bond framework. If the bond proceeds cannot flow immediately into corresponding long-term projects, the issuer should explain how the money will be used in the transition phase.

Reporting

- Until the bond proceeds are fully allocated, the issuer should report annually on the use of the bond proceeds. As far as possible, the projects should be specifically named and the expected effect (for example, the saving of CO_2 emissions) should be stated. If this is not possible (for example due to confidentiality or the high number of projects), meaningful disclosures should be made at portfolio level.

External control

The second pillar of the ICMA recommendations aims at verifying the issuer's disclosures. An external audit should cover all of the four core components of the first pillar in order to achieve the highest possible level of transparency. ICMA particularly emphasises independent verification in the selection of projects as well as the use of funds for its sustainability programme. The review can be carried out, for example, by an auditor or a rating agency specialising in sustainability issues. According to ICMA, the independent external audits can vary in scope. The association roughly
divides the audits into four categories:

Second Party Opinion (SPO)

- The organisation issuing the SPO should be independent of the issuer's adviser on the sustainable bond programme and provide an independent assessment of compliance with the ICMA guidelines.

Verification

- An issuer may seek independent verification against a defined set of criteria.

Certification

- An issuer can have its sustainable bond programme certified (for example with a seal of approval or label). In turn, ICMA believes that compliance with the criteria required to obtain the label should be verified by an external third party.

Scoring/Rating

- An issuer could also have its bonds or the sustainable bond programme reviewed by, for example, an eco-rating agency or a specialised research provider.

ICMA would like to see the results published

The audit by an external third party can also be limited to partial aspects. Furthermore, ICMA recommends that the auditor should disclose its general experience with the topic of sustainability as well as the results of the investigation. ICMA has developed specific forms for the publication of the results.

MIX OF GREEN AND SOCIAL BONDS AS WELL AS SUSTAINABILITY-LINKED BONDS

Sometimes a clear separation along the Green Bond Principles (GBP) and Social Bond Principles (SBP) is difficult or an issuer would like to combine financing for green and social projects in an ESG programme. For this purpose, ICMA has created separate guidelines to be applied to sustainability bonds. The same recommendations apply to these bonds as to GBP and SBP. An important principle for all these bonds (Green Bonds, Social Bonds or Sustainability Bonds) is that the proceeds from the bond issue can only be used to finance specific, predefined projects. This is to be distinguished from sustainability-linked bonds, for which ICMA 2020 has created a framework in the form of guidelines. In the case of sustainability-linked bonds, the issuer undertakes to achieve certain predefined ESG targets (sustainability performance targets, SPT). This is monitored using key performance indicators (KPIs). However, the issuer is not bound to specific projects when using the bond proceeds.

Source: ICMA, presentation DZ BANK Research

Uniform ESG standards through the EU taxonomy

European Green Deal as a central European project

ICMA does not specify content standards for green or social projects. According to ICMA, these should be developed by institutions - such as the European Union. The EU has laid the foundations for general European ESG standards in its EU Taxonomy Regulation, which came into force on 12 July 2020. It sets criteria for economic activities which could be considered environmentally sustainable. Two essential and general criteria are:

- The activities make a significant contribution to achieving at least one of the environmental objectives set out in the EU Taxonomy Regulation.
- The economic activities do not lead to any significant harm to any of the six environmental goals (Do No Significant Harm, DNSH).

Detailed evaluation criteria

The EU Taxonomy Regulation defines a total of six environmental objectives. For two of these objectives (climate protection and adaptation to climate change), the EU Commission has already published a delegated act that specifically defines the requirements and technical assessment criteria. Within the framework of the delegated act, criteria for energy-sustainable buildings were also presented. If a pfandbrief bank finances such buildings, these real estate loans would be "green mortgages" within the meaning of the taxonomy.

ENVIRONMENTAL OBJECTIVES OF THE EU TAXONOMY REGULATION

1) Climate change mitigation
2) Climate change adaptation
3) The sustainable use and protection of water and marine resources
4) The transition to a circular economy
5) Pollution prevention and control
6) The protection and restoration of biodiversity and ecosystems

Delegated act on the taxonomy of the EU Commission is available

Source: DZ BANK Research

EU criteria for green buildings

Properties will be recognised as taxonomy-compliant if they have a class A energy performance certificate or rank among the top 15 percent in terms of primary energy demand of the building stock of a country or region. Furthermore, a maximum energy consumption of 10 percent below the requirements for a nearly zero-energy building to be defined by each EU member state is foreseen for new buildings from 2021 onwards. However, it is not enough for a building to meet the presented and quite ambitious criteria. A building will only be taxonomy-compliant if the mentioned criteria and the DNSH rule are met.

SUMMARY OF IMPORTANT RULES FOR TAXONOMY-COMPLIANT BUILDINGS FOR THE ENVIRONMENTAL GOAL OF CLIMATE PROTECTION
ASSESSMENT CRITERIA FOR THE BUILDING SECTOR

Purchase and ownership of buildings constructed before the end of 2020*	1) Either an energy certificate of class A or better … 2) … or the building is in the top 15 percent of the national or regional building stock by primary energy consumption (comparison with the stock of houses built by the end of 2020). In addition, for larger non-residential buildings (with air conditioning and heating system > 290 kW): Proof of the use of an energy management system.
Construction of new buildings (built from 2021)	Primary energy consumption of the building is 10 percent below the requirement for nearly zero-energy buildings Additionally for buildings > 5,000 square metres: 1) Airtightness test 2) Test of thermal integrity (or traceable quality control processes in this respect during the construction process). 3) Life cycle assessment via greenhouse gas emissions
Renovation	Renovation reduces primary energy demand by at least 30 percent Fulfilment of the legal requirements for comprehensive renovations (major renovation)

Source: EU Commission, vdp, DZ BANK Research, * for buildings constructed from 2021 onwards, the requirements to the construction of new buildings apply

DNSH criteria cause headaches

In the context of the environmental objective of climate protection, the delegated act provides for the following DNSH criteria for new buildings, the renovation of buildings and the purchase and ownership of buildings, among others:

- Integration of adaptation solutions that reduce climate risks
- Climate risk and impact analyses
- Maximum consumption for water fittings in non-residential buildings
- At least 70 percent of construction and demolition waste can be recycled
- Building design and construction technology support the circular economy and the limitation of waste generation during construction and demolition
- Measures to limit noise, dust and pollutant emissions during construction work
- Soil analysis in the case of suspected contaminated sites and limit values for hazardous substances
- The building is not erected in a protected area

Criticism of the amount of data that has to be collected

According to the vdp, the information required for green buildings goes far beyond the data currently available for real estate financing. This is why the vdp sometimes uses the term "bureaucratic monster" in context of the topic of EU taxonomy, because banks have to collect more and more data. Here is an example: For new construction projects, known physical risks, such as floods, are examined as of today. However, a future-oriented analysis of individual physical climate risks with a projection period of - as required by the taxonomy - 10 to 30 years does not currently take place. It is therefore likely to be a great challenge for banks to provide evidence of taxonomy conformity for real estate loans at present. The association criticises excessive complexity. In addition, there is a lack of databases at national and European level that could help banks to retrieve the necessary information in a uniform and structured manner. In addition, the vdp criticise the fact that there is no weighting of the DNSH criteria. The dripping tap thus acquires the same weight as the check for contaminated sites or the preservation of protected areas.

European Standard: Proposal for EU Green Bond Standards

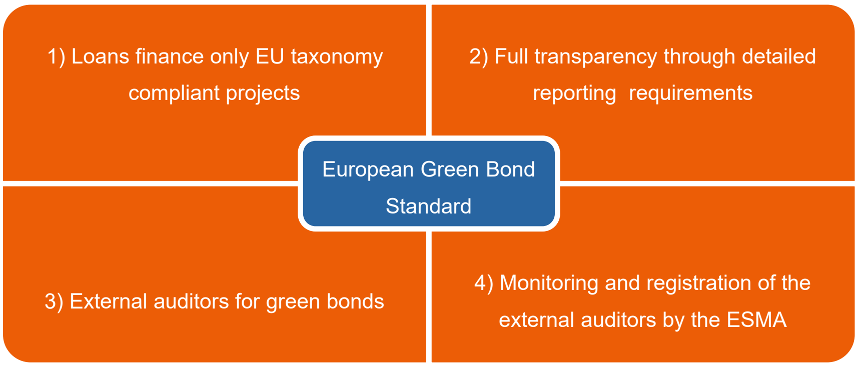
Gold standard for green bonds: European Green Bonds

The so-called European Green Bond Standard (EUGBS) sets four requirements for green bonds: 1) the proceeds of the bond issue must be fully channelled into projects that are in line with the EU taxonomy, 2) full transparency through detailed reporting requirements, 3) all green bonds and their taxonomy-compliant use of funds must be verified by an external auditor, and 4) monitoring and registration of the external auditors by the European Securities and Markets Authority (ESMA). In points 2) and 3), the ICMA guidelines are clearly recognisable. The reference to the EU taxonomy, in turn, clearly goes beyond the ICMA criteria in terms of content. According to the EU Commission, the EUGBS should become the international "gold standard" for green bonds, for the benefit of issuers (proof of financing of taxonomy-compliant projects) and investors (easier recognition of sustainable investments and thus reduction of the risk of "greenwashing"). All issuers of green bonds worldwide can voluntarily comply with the EU GBS, whether they are based inside or outside the EU.

ICMA is one step ahead of the EU with updated Green Bond definition

While the EUGBS Standard was still pending and waiting in mid-2022, ICMA presented revised guidelines for its Green Bond Principles, Social Bond Principles, Sustainability Bond Guidelines and Sustainability-Linked Bond Principles. In addition, an updated list of around 300 key performance indicators (KPIs) for sustainability-linked bonds was published. The KPIs are sorted by sector and by core and secondary indicators. Furthermore, a new Climate Transition Finance (CTF) Methodology Register was created with a list of tools to help issuers, investors or financial intermediaries validate their emission reduction pathways as scientifically sound. Likewise, the guidelines for external verifications were updated. In terms of disclosure, new metrics related to impact have been published for green projects related to environmentally sustainable management of living natural resources and land use, and for social projects (including an expanded list of social indicators and an impact statement for target populations).

THE FOUR CORNERSTONES OF THE EUROPEAN GREEN BOND STANDARD



Source: EU Commission, presentation DZ BANK Research

At the moment, the ICMA criteria are the market standard

In 2021, according to ICMA, an estimated 98 percent of sustainable bonds issued worldwide referred to the ICMA guidelines. In the covered bond market, this rate is even 100 percent according to our research. Of the 40 issuers worldwide so far that have issued sustainable covered bonds in euros (issue volume of at least EUR 250m), all refer the corresponding ICMA guidelines. In this respect, the ICMA guidelines can justifiably be called the market standard.

Green and Social Pfandbriefe are based on the principles of ICMA

The vdp is striving for an approximation to the taxonomy criteria within the framework of the requirements for Green and Social Pfandbriefe over time. However, the vdp minimum requirements currently make no direct reference to the taxonomy criteria. Green and Social Pfandbriefe can therefore keep their name and also remain in line with the ICMA guidelines. However, they will not be granted European Green Bond status any time soon - as it looks at the moment.

ESG and credit default risks

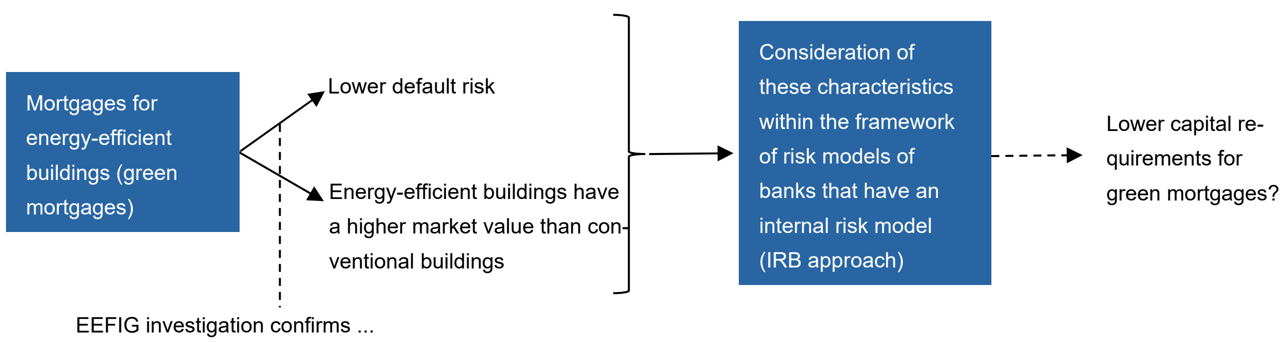
The greener the mortgage, the lower its credit risk, says a recent study by EEFIG

The ECB is increasingly emphasising the importance of sustainability issues in its work, also with regard to their influence on credit default risks. In this context, the question arises whether financing of green buildings is associated with lower risks for the bank. The European Mortgage Federation's Energy Efficient Mortgage Initiative (EEMI) has already supported several studies that have investigated the relationship between the energy efficiency of buildings and the credit risk of mortgages. A fundamental study was prepared by the Energy Efficiency Financial Institutions Group (EEFIG) on behalf of the EU Commission and published in April 2022: "The quantitative relationship between energy efficiency improvements and lower probability of default of associated loans and increased value of the underlying assets". A key finding of the study presented in the EEFIG report is a negative correlation between the energy efficiency of the building and the credit risk of the mortgage. In short, the greener the mortgage, the lower the credit risk. For its analysis, EEFIG used a data pool of almost 800,000 residential mortgages, with the lion's share of 658,000 coming from the UK. The calculations confirm, according to the rules of statistical art, that customers who finance properties with high and medium energy efficiency have a 20 percent lower risk of default than customers who have properties with low energy efficiency. This result also occurred when control variables were included to account for effects of, for example, borrower income, loan maturities, loan-to-value ratios, and a number of variables related to the building. The EEFIG findings were in line with statistical research carried out by EEMI in recent years using data from Italy, Portugal and the Netherlands.

Green buildings have a higher market value

According to the study, energy-efficient buildings have a market price premium of up to 10 percent compared to conventional buildings. In addition, green buildings would command up to 5 percent higher rents when rented out. In our opinion, this reflects the energy savings in the use of the building, although against the background of the sharp rise in energy costs, the value-enhancing effect for green properties is more likely to increase in the future. EEFIG recommends that financial institutions record the energy efficiency of the buildings deposited as collateral and, as far as possible, adopt the statistical approaches of the working group for the analysis of their own portfolios. This would allow banks to better manage their credit risks and optimise the capital requirements for their mortgages. Mortgage lenders using internal risk models should therefore consider energy efficiency as a risk factor in these models. Furthermore, financial institutions should develop special credit products to (better) support customers in the energy-efficient refurbishment of buildings in the future.

GREEN MORTGAGES: DOES THE LOWER CREDIT RISK JUSTIFY CAPITAL REQUIREMENTS FOR GREEN MORTGAGES?



Source: DZ BANK Research

LEGAL FRAMEWORK FOR PFANDBRIEFE

Summary of the amendments to the Pfandbrief Act as of 8 July 2022

On 8 July 2022, further amendments to the Pfandbrief Act (PfandBG) came into force which had already been adopted in 2021 as part of the implementation of the European Covered Bond Directive (CBD). The amendments that have recently come into force include:

New designation protection

» Introduction of the new designation protection "European Covered Bonds (Premium)" for mortgage pfandbriefe, public sector pfandbriefe and ship pfandbriefe as well as "European Covered Bonds" for aircraft pfandbriefe.

Introduction of a minimum nominal overcollateralisation

» Introduction of an overcollateralisation of 2 percent on a nominal basis for mortgage pfandbriefe and public sector pfandbriefe and of 5 percent for ship and aircraft pfandbriefe. The overcollateralisation on a stressed present value calculation that continues to apply in parallel is to serve to cover the settlement costs. Therefore, from now on, the assets used to fulfil the overcollateralisation on a stressed present value basis may not be used to fulfil the nominal overcollateralisation requirement.

Extended transparency requirements

» Expansion of the transparency disclosures to include a) a list of the outstanding pfandbriefe with their international securities identification number (ISIN), b) information on statutory, contractual and voluntary overcollateralisation, c) conditions for the maturity extension of pfandbriefe, including the powers of the cover pool administrator and their impact on the maturity structure of the pfandbriefe outstanding, d) information on the liquidity risk in the form of the largest liquidity gap within the next 180 days (as a cumulative amount of daily cash flows) as well as the day on which this liquidity gap occurs, and e) the proportion of cover assets that are in default according to the criteria set out in article 178 CRR. Furthermore, the mandatory disclosures on derivatives in the cover pool and other cover assets have been expanded. The additional transparency requirements must be met for the first time for the third quarter of 2022. However, the disclosures for the previous year's values do not have to be published until one year later in the third quarter of 2023.

New requirements for claims against banks as further cover assets

» Credit balances with credit institutions may only be used to fulfil the overcollateralisation requirements if the claims are against banks with a credit quality step 1 rating (Aa3/AA- or better from a recognised agency) or a credit quality step 2 (A3/A- or better). Balances with credit institutions from the same group of companies as the pfandbrief bank may no longer be used to fulfil the minimum overcollateralisation requirement. However, these claims can be used as further cover assets if they arise from the payment settlement of cover assets. The claims against banks from the same group is limited to 2 percent.

Mandatory reference to the possible maturity extension

» As of 8 July 2022, pfandbrief banks must indicate in their terms and conditions of their pfandbrief issues that the maturity of the covered bonds might be extended. Within the terms and conditions pfandbrief banks shall also explain under which conditions this may take place.

New public list of supervision

» The Federal Financial Supervisory Authority is required by law to publish a list of pfandbrief banks on its website on a quarterly basis. This list also includes the pfandbrief programmes whose covered bonds may be designated as "European Covered Bond (premium)" or "European Covered Bond".

Cooperation between the authorities involved

» The cooperation of the supervisory authorities involved in connection with the special public supervision for the banks' pfandbrief business has been updated in the Pfandbrief Act.

New rules for the derivatives business

» Legal obligation to adequately document the derivative transactions in the cover pool (including legal opinions on the derivative transactions), to regularly review and update them if necessary, and to keep them available. The scope of hedging transactions/relationships must be adjusted if, for example, the risk position has changed due to redemptions. Derivatives with institutions from the same group as the pfandbrief bank are no longer eligible as cover pool assets.

Updated penalties

» Negligent false entries in the cover register, whereby the identification of the cover asset is not possible because the information is incorrect or incomplete, is included in the catalogue of administrative offences. The list of possible sanctions against a pfandbrief bank and its management has been updated with respect to these offences.

Changes in Pfandbrief-related regulations

Changes were put out for consultation in 2021

In July 2021, the German Federal Financial Supervisory Authority (BaFin) published revised pfandbrief-related regulations for consultation (see DZ BANK Research's study "BaFin: Consultation for new pfandbrief regulation started" of 5 July 2021). The publication of the new Pfandbrief Regulation was already expected for the end of June 2022, but it has not yet taken place at the time of publication of this study (editorial deadline was 29 August 2022). The most important changes that have been discussed include the following points:

Reality check for the present value calculation

» The BaFin wrote in July 2021 that "the reality of negative interest rates [is] not sufficiently taken into account in the present value cover calculation" (at that time, the yields of German sovereign bonds were still deeply negative). The reality on the capital market has moved on in the meantime. Nevertheless, it makes sense to delete the passage according to which the yield curves used for discounting could not fall below the zero.

Reform of the determination of the mortgage lending value

» The calculation of mortgage lending values for real estate is to be reformed. The pfandbrief banks want more realistic discount factors when calculating the income value of a property, which is important for the determination of the mortgage lending value. In the low interest rate environment, the discount factors that have applied so far have led to mortgage lending values ranking well below the market values of the buildings. In addition, the small loan limit is to be raised to 500,000 euros. For the determination of comparative values for domestic residential real estate, computer-assisted procedures are also to be permitted in the future.

Digital reporting and ...

» The legal basis for a digital reporting system is to be created. A new reporting format is also to be used to collect the data needed to set higher minimum coverage requirements.

... more modern register management

» Modernising the keeping of registers, for example by creating the possibility to digitise the register records.

Questions and answers on the legal basis for pfandbriefe

What are the legal bases?

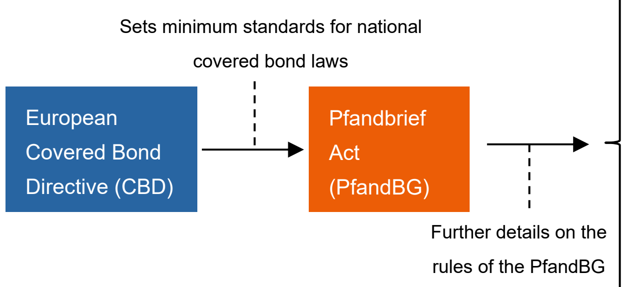
PfandBG forms the legal basis

The Pfandbrief Act (PfandBG) is the central building block for the legal framework of covered bank bonds in Germany. It was amended in May 2021 to transpose the European Covered Bond Directive (CBD) into German law. The amendments entered into force in two stages. The first amendments came into force on 1 July 2021. These include the authorisation of the cover pool administrator (sachwalter) to extend the maturity of pfandbriefe by up to twelve months under certain conditions.

BaFin ordinances elaborate on the PfandBG

In addition to the PfandBG, there are ordinances/regulations issued by the BaFin. They elaborate on the partly general requirements of the PfandBG. Market participants eagerly awaited the publication of BaFin's updated regulations, which was expected by the end of June 2022. The updated pfandbrief regulation was not published by the editorial deadline (29 August 2022) of this study. The new regulation will among other things deal with the determination of the mortgage lending value, the net present value calculation and the reporting system were revised and reformed.

ELEMENTS OF THE LEGAL FRAMEWORK FOR THE GERMAN PFANDBRIEF AT A GLANCE



- Net present value regulation (Barwertverordnung)
- Regulation on the determination of the mortgage lending value (Beleihungswertermittlungsverordnung)
- Cover register statutory order (Deckungsregisterverordnung)
- Regulation on the determination of the mortgage lending values of ships and ships under construction (Schiffsbeleihungswertermittlungsverordung
- Regulation on the determination of mortgage lending values on air-craft (Flugzeugbeleihungswertermittlungsverordnung)
- German banking act (KWG) regulations on the funding register (Refinanzierungsregister) and the special representative
- Funding register statutory order (Refinanzierungsregisterverord-nung)

Source: DZ BANK Research

Who is responsible for the public supervision of the covered bond market?

Cover pool monitor checks the day-to-day business

Compliance with the statutory provisions is ensured by an independent cover pool monitor (treuhänder) who checks the relevant day-to-day business of the pfandbrief bank (see also section "Requirements for the cover calculation", question "Is there an independent monitor of the cover pool?"). In addition to the independent checks by the cover pool monitor, BaFin also exercises a special public supervision over a bank's pfandbrief business. Pfandbrief issuers are thus not only under the supervision of the relevant banking supervisory authority as a bank, such as the European Central Bank (ECB), but also under special public supervision by BaFin with regard to their pfandbrief business.

How is the public supervision structured?

Pool audit by BaFin usually after every three years

BaFin is authorised to issue all orders that are suitable and necessary to keep the business of the pfandbrief banks in compliance with the Pfandbrief Act and the legal ordinances issued in this connection. Of highest importance is the right of the supervisory authority to examine the cover pool assets of the pfandbriefe and thus compliance with the statutory requirements on a random basis. As a rule, these audits are carried out every three years. Furthermore, BaFin can take its own measures at any time, such as issuing instructions to the management or appointing supervisors with regard to the cover pool. BaFin also proposes an independent administrator of the cover pool (cover pool administrator or sachwalter) at the latest when the bank becomes insolvent.

Information rights and intervention options of BaFin

As the competent supervisory authority for the pfandbrief business of German banks, BaFin has the authority to set individual cover add-ons for each individual cover pool. This cover add-on can be ordered by administrative act if the minimum cover requirement laid down by the PfandBG is deemed by BaFin to be insufficient to cover the risks due to the specific composition of the cover pool. The explanatory memorandum to this part of the Pfandbrief Act lists the following examples, among others, which could justify a higher minimum cover requirement:

- The cover pool assets' market values deviate considerably from the value assumptions factored into the cover calculation.
- There are significant risk concentrations in the cover pool.
- The cover pool contains a considerable proportion of assets whose intrinsic value depends on the solvency of companies associated with the pfandbrief bank.
- Significant interest and exchange-rate mismatches exist between the cover assets and pfandbrief liabilities where these are not already adequately taken into account through the requirement to provide appropriate risk cover based on the risk-adjusted cover calculation.

Requirements for issuers

Who is allowed to issue covered bonds?

Permission from BaFin required

In principle, all credit institutions in Germany could potentially issue pfandbriefe. To do so, they must be licensed as a CRR credit institution in Germany. In addition, written permission from BaFin is required to conduct pfandbrief business, whereby additional requirements apply (see question below). Banks that issue pfandbriefe are called "pfandbrief banks" by the German PfandBG.

Are there any special (licensing) requirements for issuers?

Requirements for obtaining a pfandbrief license

Yes. The issuance of pfandbriefe requires the permission from BaFin, whereby the "pfandbrief license" can be limited to one or more pfandbrief types - mortgage pfandbriefe, public sector pfandbriefe, ship pfandbriefe and/or aircraft pfandbriefe. In order to obtain the license, the Pfandbrief Act does not stipulate minimum or maximum pfandbrief issuance volumes. The pfandbrief license is granted if the credit institution meets certain minimum requirements. The general requirements include, among others, the following points:

Regular pfandbrief issues

- The credit institution must have a license to conduct lending business. By means of a business plan, the pfandbrief issuer must prove to BaFin that the pfandbrief business is to be conducted regularly.
- The bank's core capital must amount to at least EUR 25m.

» The pfandbrief bank must have a risk management system suitable for pfandbrief business. The organisational structure and the equipment of the credit institution must be set up for the pfandbrief business.

Requirements for risk management

The PfandBG places specific requirements on the risk management of a pfandbrief bank. This must ensure that all risks associated with the pfandbrief business, such as default risks, interest rate risks or currency risks as well as operational risks and liquidity risks, can be identified, assessed, managed and monitored. The risk management system must therefore meet the following requirements, among others:

Limit system and management of risks

» Limiting the concentration of risks using a limit system

» The existence of a procedure that guarantees risk reduction and early information of decision-makers in case of a strong increase of a risk

Flexibility and regular review

» Flexibility and adaptability to changing conditions alongside a review of the risk management system at least annually

» Regular, but at least quarterly, submission of a risk report to the executive board of the pfandbrief bank

» The risk management system must be documented in a detailed and comprehensible manner

License can also be withdrawn again

Once a pfandbrief license has been granted, it can also be withdrawn. However, this is only possible if the bank no longer meets the qualitative requirements of the Pfandbrief Act or has persistently violated provisions of the Pfandbrief Act or accompanying ordinances. Withdrawal is also possible if the pfandbrief bank has not issued any pfandbriefe for two years and is not expected to take up again the pfandbrief business within the next six months. In the event of license withdrawal, BaFin may order the cover pools to be liquidated by a cover pool administrator.

Is there a public register of all covered bond programmes?

Public register of the BaFin

Yes, BaFin informs on its website whether a bank has permission to conduct pfandbrief business.

Design of the transaction structure

What is the underlying transaction structure of covered bonds?

Integrated model, the cover assets remain on the issuer's balance sheet

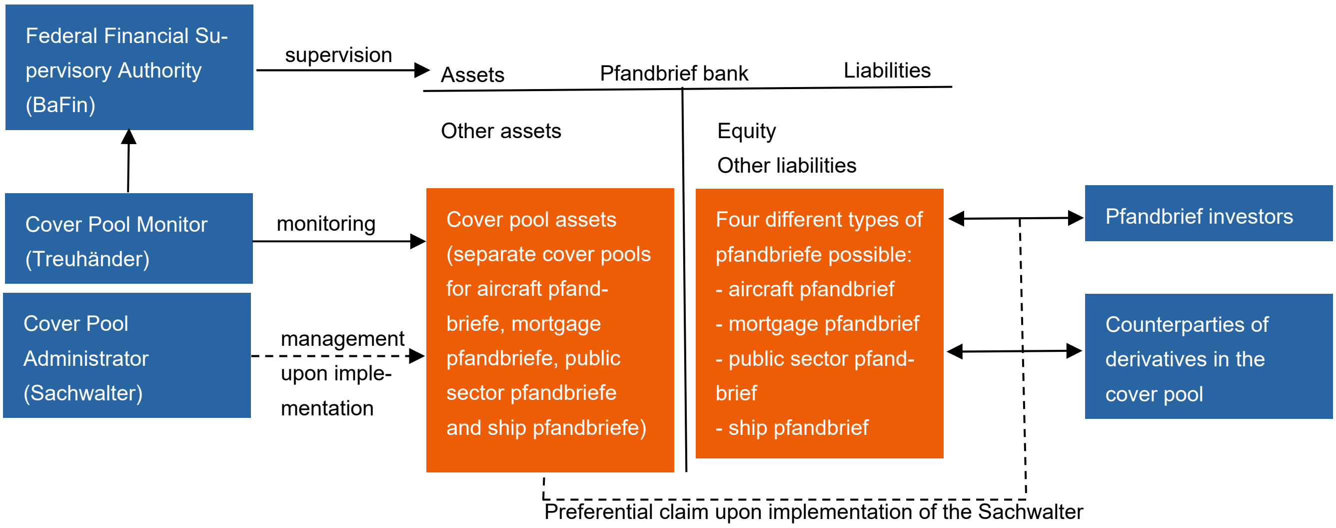
The German pfandbrief legislation follows the integrated model. This means that the cover assets remain on the issuer's balance sheet. The entry of all cover assets in a cover register ensures that in the event of insolvency the cover pool and all cover assets can be easily and clearly identified for the benefit of the pfandbrief creditors. At the latest after insolvency, the cover pool would be separated from the remaining assets of the pfandbrief bank.

Is the dual recourse guaranteed?

Pfandbriefe are secured bank bonds

Yes. Pfandbriefe are secured bank bonds and therefore fulfil the principle of double recourse. The pfandbrief creditors have a direct claim against the pfandbrief bank as the issuer of the bonds. Should the pfandbrief bank be insolvent, the pfandbrief creditor would have a priority right with respect to the cover assets. Should the cover assets also turn out to be insufficient to satisfy all claims of the pfandbrief creditors, the pfandbrief creditor would still have a claim against the insolvency estate of the issuer.

GENERALISED TRANSACTION STRUCTURE OF A PFANDBRIEF



Source: DZ BANK Research

Has a regulatory issuance limit been set?

No issuance limit

No. The Pfandbrief Act does not provide for an explicit issuance limit for a bank's pfandbriefe. Rather, an implicit limit on the volume outstanding results from the bank's lending business, i.e. the extent to which the pfandbrief bank holds assets that qualify as cover assets for pfandbriefe.

Eligible cover assets

Which cover assets are eligible?
a) Public sector pfandbriefe

Claims and receivables from local authorities

For public sector pfandbriefe, only claims with a link to the public sector can be use as cover assets. The PfandBG specifies detailed requirements, which can be summarised as follows:

- Claims on domestic sovereign and sub-sovereign governments or public-law institutions authorised to charge fees, raise levies or impose other taxes.
- Claims on member states of the EU or of the EEA and/or their central banks and claims on regional and local authorities from member states of the European Union and of the EEA.
- Claims against Great Britain, the United States of America, Japan, Switzerland and Canada as well as their central banks, regional governments and local authorities, as long as these can be assigned to credit quality step 1 for regulatory purposes.
- Claims against the ECB and other multilateral development banks and international organisations according to the European Banking Regulation (CRR).
- Public sector entities of a member states of the EU or the European Economic Area

- Public entities within the meaning of the European banking regulation domiciled in the United States of America, Japan, Switzerland and Canada, as long as they comply with credit quality step 1 of the European banking directive.

- Claims or receivables guaranteed by the above-mentioned states or local authorities. These could also be, for example, state-guaranteed claims against small and medium-sized enterprises.

- Export finance credits benefiting from a guarantee from a public sector institution or government.

Eligibility as cover for bonds with debt rescheduling clauses is given

The treaty establishing the European stability mechanism (ESM treaty) provides for the inclusion of collective action clauses (CAC) in the bond terms and conditions of ESM treaty signatory states. Similar clauses also exist in the bond conditions of other countries. They make it possible to subsequently change the bond conditions with the consent of the majority of the creditors. The Pfandbrief Act clarifies that government bonds with corresponding provisions qualify as cover (be it cover assets as in the case of public sector pfandbriefe or as further cover assets for all other pfandbrief types).

Pfandbrief Act lacks rating rules for public sector debtors

The Pfandbrief Act allows claims on the public sector entities listed above to be fully recognised in cover calculations, irrespective of the debtor's or guarantor's credit rating. The vdp's member institutions have agreed standards for the recognition of the credit quality of public sector entities in pfandbrief cover calculation, which go beyond the requirements of the Pfandbrief Act. The vdp calls this standardised procedure the "vdp Credit Quality Differentiation Model". When including claims on member states of the EEA and their sub-sovereign entities, vdp member institutions factor rating-based discounts into their cover calculation (see table below).

RATING-BASED VALUATION DISCOUNTS/HAIRCUTS IN THE VDP CREDIT QUALITY DIFFERENTIATION MODEL

Rating*	Haircut used until 31 December 2017	Haircut used until 31 December 2018	Haircut used until 31 December 2019	Haircut used until 31 December 2020	Haircut used until 31 December 2021	Haircut used since 1 January 2022
AAA to BBB-	0%	0%	0%	0%	0%	0%
BB+	9%	8%	8%	7%	7%	9%
BB	11%	11%	10%	10%	9%	11%
BB-	14%	13%	13%	12%	12%	14%
B+	18%	17%	16%	15%	15%	17%
B	21%	20%	20%	19%	18%	21%
B-	26%	24%	24%	23%	22%	25%
CCC	36%	34%	34%	33%	32%	35%
CC	55%	54%	54%	52%	52%	54%
C	80%	79%	79%	79%	78%	80%
D	100%	100%	100%	100%	100%	100%

Source: vdp, presentation DZ BANK Research, as of July 2022, * ratings of S&P or corresponding Fitch or Moody's rating

b) Mortgage pfandbriefe

Receivables and loans secured by real estate liens

Only mortgages or claims secured by real estate liens that meet certain requirements are eligible as cover assets for mortgage pfandbriefe. Among other things, this means for example that only mortgages may be used as cover assets which are secured on real property, rights equivalent to real property or rights under foreign law which have the same effect as rights equivalent to real property under German law. Further requirements imposed on mortgage loans include mandatory insurance and a mortgage lending value calculation.

Real value versus capitalised earnings value

With regard to the calculation of the mortgage lending value, only the long-term, intrinsic or tangible value or real value (sachwert) as well as the capitalised earnings value or income value (ertragswert) of a property are taken into account, which is why the mortgage lending value of a property is usually lower than its market or fair value. This means that it is only to be derived on the basis of the permanent characteristics of the land or building and the income to be generated from it in the long run. The income value is decisive for the mortgage lending value. This value may not be exceeded. If the real value is more than 20 percent below the income value, the assumptions on which the income value is based must be checked for their sustainability and corrected if necessary. The procedure for determining the mortgage lending value for real estate is defined in more detail by a regulation from BaFin, which is currently being revised.

REFORM OF CAPITALISATION RATES FOR THE CALCULATION OF THE LENDING VALUE

The regulation on the determination of the mortgage lending value specifies the discount factors to be used for the income value of the property, which are derived from the capitalisation rates. The rates, which have to be used for the capitalisation of the cash flows produced by the property, could not be lower than 5 percent for residential properties. For commercial real estate, at least 6 percent must be applied, whereby in justified exceptional cases this percentage could be lowered by 0.5 percentage points. In the low interest rate environment, these capitalisation rates led to mortgage lending values that were far below the market values of the properties. Therefore, BaFin reviews the capitalisation rates at the moment.

Source: DZ BANK Research

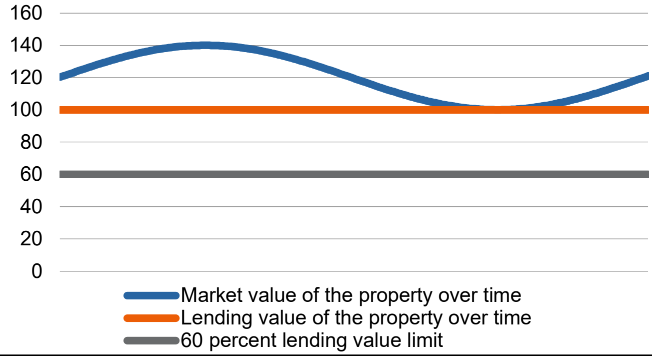
Mortgage lending value only takes into account the sustainable and long-term properties of a building

As a rule, the mortgage lending value does not exceed the market value of a property, which fluctuates over time, because speculative elements must not be taken into account when determining the mortgage lending value. The mortgage lending value must be determined by a valuer who is independent of the lending decision. He or she must have the necessary professional experience and appropriate expertise for determining the mortgage lending value. In principle, the requirements for the determination of the mortgage lending value are the same for properties located in Germany or abroad.

Relief for loans falling under the small loan limit

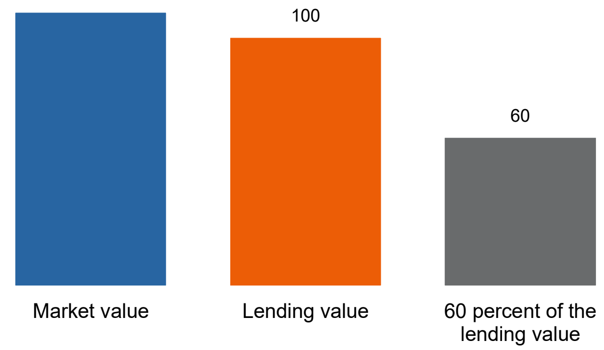
German covered bond law allows an exception for owner occupied residential buildings like owner-occupied houses. If the building is partly used commercially, the share of income from the commercial use may not exceed one third of the total gross income generated from the property if this exception is to be applied. In addition, the loan volume may not exceed 400,000 euros (and 500,000 euros according to the draft of the updated regulation). If the amount of these loans - taking into account any existing prior ranking mortgage or liens - is not exceeded, then banks may use a simplified procedure to determine the mortgage lending value. For example, automated valuation procedures, which may be based on hedonic models and data banks, could be used to assist in determining the value of residential mortgages.

LENDING VALUE ONLY REFLECTS BUILDING'S PERMANENT ATTRIBUTES



Source: vdp, presentation DZ BANK Research

60 PER CENT LTV LIMIT OFFERS ADDITIONAL PROTECTION



Source: DZ BANK Research

Regular review of the mortgage lending values

The special feature of the mortgage lending value concept is that this value is to apply for the entire loan term. According to the BaFin's draft of the updated regulation on the determination of the mortgage lending value, the basis for the mortgage lending values must be reviewed annually in future. If there are indications that the assumptions made for the determination of the mortgage lending value have deteriorated not insignificantly, they must be reviewed.

ILLUSTRATIVE LENDABLE VALUE CALCULATION: TWO PILLARS PRINCIPLE USING THE EXAMPLE OF A NEWLY-BUILT OFFICE BUILDING

Income approach (first pillar)		**Cost approach (second pillar)**	
Land value		Land value	
600 square meter à 5,200 Euro per square meter	3,120,000 Euro	600 square meter à 5,200 Euro per square meter	3,120,000 Euro
Gross income		Value of the building	
2,000 square meters of office space à 30 Euro per square meter and month sustainable rent	720,000 Euro	Building costs: 11,500 cubic meters à 520 Euro per cubic meter	5,980,000 Euro
15 underground parking spaces à 110 Euro per parking space and month	19,800 Euro	Depreciation (0 Euro, as new building)	0 Euro
Gross annual rent	739,800 Euro	Subtotal	5,980,000 Euro
Less operating expenses (costs that are not allocable to tenants)		Plus costs of the outside area (3 percent)	179,400 Euro
- Management costs (3 percent of gross income)	22,194 Euro	Subtotal	6,159,400 Euro
- Maintenance costs	31,125 Euro	Less safety margin pursuant to section 16 (2) BelWertV of 10 percent	615,940 Euro
- Loss of rental income risk (4 percent of gross income)	29,592 Euro	Subtotal	5,543,460 Euro
Total operating expenses	82,911 Euro	Plus incidental building costs pursuant to section 16 (3) BelWertV of 16 percent	886,954 Euro
In percent of gross income	11.2 percent	Value of the building	6,430,414 Euro
Operating expenses	15.0 percent	Land value	3,120,000 Euro
Stated operating expenses	110,970 Euro	**Depreciated replacement cost value**	**9,550,414 Euro**
Net annual income	628,830 Euro	**Depreciated replacement cost value (rounded)**	**9,550,000 Euro**
Capitalisation rate: 6.00 percent			
Expected return on land	187,200 Euro	Income value / depreciated replacement cost value - 1	6.83 percent
Net income of building	441,630 Euro	The depreciated replacement cost value is only 6.83 percent below the income value (which is less than 20 percent), therefore the lending value is based on the income value (the sustainability of the income generated by the property has not to be double-checked in this case).	
Income value of the building*	7,136,741 Euro		
Land value	3,120,000 Euro		
Income value	**10,256,741 Euro**	**Mortgage lending value (income properties)**	**10,250,000 Euro**
Income value (rounded)	**10,250,000 Euro**	**Value of the cover asset (lending limit 60 percent)**	**6,150,000 Euro**

Source: vdp, presentation DZ BANK Research, * capitalisation rate 6 percent, remaining useful life 60 years

Mortgage lending value concept flattens LTV development

The principle of prudence expressed in the mortgage lending value leads to a smoothing of the development of the loan-to-value (LTV) over time. Rising or moderately falling house prices do not affect the current LTV. Sharply falling house prices, however, would be taken into account in the LTV. In addition, the rules for determining the mortgage lending value aim to achieve a prudent valuation of the property that is sustainable in the long term. However, this is at the expense of transparency, because the mortgage lending values does not reflect the current value of the property, but can be significantly lower if the market value of a property has risen after the mortgage lending value was established.

Uniform mortgage lending value limit of 60 percent

According to the Pfandbrief Act, only real estate loans within the first-ranking 60 percent of the determined mortgage lending value of a property can be used as cover asset for mortgage pfandbriefe (realkredit). This limit applies regardless of whether the building is residential or commercial. Loans with an LTV of more than 60 percent may be included in the cover pool, but only the first-ranking portion (taking into account any prior ranking mortgages) up to the 60 percent limit is taken into account for the cover calculation, since in the event of the pfandbrief bank's insolvency the pfandbrief creditors' preferential right is limited to these loan parts (soft LTV limit).

Geographical restrictions

In addition to the above-mentioned requirements for the cover assets, there are also geographical restrictions. For example, the mortgages must be located in the European Economic Area, Australia, Great Britain, Japan, Canada, New Zealand, Switzerland, Singapore or the United States of America.

Building insurance is compulsory

The Pfandbrief Act requires an insurance obligation against the risks existing according to the type and location of the building if loans in the cover pool are secured with these properties. After the insolvency of the pfandbrief bank, the insurance benefits the pfandbrief creditors.

c) Ship pfandbriefe

Rights in ships and ships under construction

Loan rights backed by ship mortgages quality to serve as ordinary cover assets for ship pfandbriefe. The loans may only relate to ships or ships under construction which are recorded in a public register. The loan term may not extend beyond 20 years from launch. The regulator may permit exceptions in individual cases. Loans secured by foreign registered ships or ships under construction can only be included in the cover pool under certain conditions defined by the Pfandbrief Act. Ships and ships under construction have to be insured for at least one hundred and 10 percent of the loan's residual sum through the term of the loan.

60 percent LTV and duty to insure

The calculation of the lending value of ships and ships under construction is also subject to explicit rules, including the same 60 percent LTV ceiling for assets that applies to mortgage pfandbriefe. The lending value for ships and ships under construction must be determined by an independent and expert appraiser. The valuation must take account of the ship's permanent long-term characteristics as well as its age and possible uses. The valuation process must include an inspection of the ship. The calculation of the ship's lending value must have regard to the following four market values/prices:

Current market value

- The current market value is an estimate for the price that a ship might fetch in the normal course of business on the valuation date, when both buyer and seller are acting with the requisite prudence and without duress (i.e. no fire sale).

» The average market value refers to the average market value fetched by comparable ships over the ten years preceding the year of valuation.

Average market value

» The new-build price is the construction price agreed with the yard plus reasonable standard add-on costs.

New-build price

» The purchase price is the contractually agreed price for acquiring the ship being valued.

Purchase price

Ship's lending value based on lower of cost or market principle

The ship's lending value may not be higher than the current and/or average market value. If the average market value for the last ten years cannot be established, then additional safety discounts must be applied: either 15 percent (if the average relates to less than ten but more than three years) or 25 percent (if the average is based on three years or less). If neither the current nor the average market value can be determined, then another suitable method must be used, but in this case, the ship's lending value must not exceed 75 percent of the new-build price or purchase price.

Fall in price can trigger revaluation

The ship's lending value should reflect its long-term value. If however there should be good reason subsequently to question whether the assumptions underlying the valuation might not have deteriorated significantly, then these assumptions must be tested and amended if necessary. The Regulation on the Determination of the Mortgage Lending Values of Ships and Ships under Construction (Schiffsbeleihungswertermittlungsverordnung) stipulates that this applies particularly in cases where the general market price level has fallen sharply. As with property loans, the Regulation on the Determination of the Mortgage Lending Values of Ships and Ships under Construction does not affect other laws requiring regular reviews of ships' lending values.

Aircraft pfandbriefe

Aircraft mortgages which extend to the engines

Loans secured by a right in rem in aircraft (aircraft mortgage) qualify as ordinary cover assets for aircraft pfandbriefe. Only aircraft recorded in a public register are eligible. The registered lien or foreign aircraft mortgage must also cover the engines, which account for a large proportion of the value of an aircraft. As we saw with ship mortgages, the duration of the loan on an aircraft may not exceed 20 years. The regulatory authority can allow exceptions in individual cases. Loans secured by foreign registered aircraft may also be included in the cover pool under certain conditions defined in the Pfandbrief Act. The aircraft must be insured throughout the term of the loan for at least one hundred and 10 percent of the respective loan outstanding.

Independent expert must appraise the aircraft's value

As in the case of property and ship loans, the aircraft loan may not exceed the first 60 percent of the value of the aircraft (aircraft lending value) in order to qualify as cover asset. The underlying lending value of the collateral for aircraft pfandbriefe is also subject to explicit rules defined in a regulation, and these are similar to the provisions governing ships. The aircraft lending value must be determined by an independent expert appraiser. The valuation must focus on the aircraft's long-term features. In contrast to the methodology for identifying the lending values of ships, the process for aircraft essentially focuses on the market price and the average market price in the last ten years along with the plane's value given well-balanced market conditions and in relation to the aircraft's average state (the aircraft's estimated value factoring in its maintenance condition). The lending value shall not exceed any of these three figures. If the average market price of the last ten years is not available, then the value based on the aircraft's average state is assumed to be the lending value, subject to a 10 percent markdown. As we saw with the valuation of real property and ships, the valuation of aircraft is also subject to possible review, if for example aircraft prices strongly fluctuate.

e) Other or further cover assets (for all pfandbrief types)

Other cover assets in addition to ordinary cover assets

In order to give the pfandbrief banks more flexibility in managing the cover pools, the PfandBG allows the inclusion of further cover assets in the cover register of pfandbriefe to a limited extent. The claims and receivables eligible for further cover assets are the same for all four pfandbrief types. In principle, the following receivables, among others, are suitable as further cover assets:

Due from central banks and credit institutions ...

- Claims on the European Central Bank and other central banks from the European Union or the European Economic Area as well as claims on eligible credit institutions

... and debtors from the public sector

- For mortgage, ship and aircraft pfandbriefe: claims that would qualify as ordinary cover assets for public sector pfandbriefe

Derivatives

- Derivatives that hedge the changes in the value of the cover pool against interest rate and currency risks

Limitation for the present value of payment obligations from derivatives in cover pool

The use of derivatives in cover pool is restricted by the PfandBG. Based on a present value calculation, the share of all payment obligations from derivatives in cover pool in relation to the total amount of pfandbriefe outstanding plus the payment obligations from these derivatives may not exceed 12 percent. This 12 percent limit does not include derivatives used to hedge currency risks. For all derivatives allocated to the cover pool, special requirements apply to the underlying master agreements. Among other things, the insolvency of the pfandbrief bank must not trigger an early termination of the derivatives.

OTHER COVER ASSETS ACCORDING TO THE PFANDBRIEF ACT (OVERVIEW FOR CLAIMS AGAINST BANKS)

1) Up to 8 percent of the relevant pfandbriefe outstanding

- Claims arising from the amounts to be paid to the pfandbrief bank in the event of an early termination of the master agreements for derivatives (with regard to the banks permitted by BaFin on the basis of a general ruling)

2) Up to 10 percent of the relevant pfandbriefe outstanding, taking into account all assets mentioned under 1)

- Claims against credit institions (credit quality step 2)
- Claims arising from the amounts to be paid to the pfandbrief bank in the event of early termination of the master agreement for derivatives (with regard to counterparties tin credit quality step 2)

3) Up to 15 percent of the relevant pfandbriefe outstanding, taking into account all assets mentioned under 2)

- Claims against the European Central Bank, central banks of the European Union or the European Economic Area and credit institution (credit quality step 1)
- Claims arising from the amounts to be paid to the pfandbrief bank in the event of early termination of the master agreement for derivatives (with regard to counterparties tin credit quality step 1)

Source: Pfandbrief Act, presentation DZ BANK Research

Proportion of other cover assets regulated by law

Rating agencies view it as a strength that the share of claims on other institutions from the same group as the pfandbrief bank is limited to a maximum of 2 percent. Overall, the share of claims on credit institutions as further cover assets is graded according to credit quality (see the figure above). The PfandBG allows a share of further cover assets for mortgage, ship and aircraft pfandbriefe up to a maximum of

20 percent of the outstanding volume of pfandbriefe, with the share of claims against credit institutions limited to a maximum of 15 percent. Should the pfandbrief bank enter more further cover assets into its cover register, no pfandbriefe may be issued against these assets. In the case of mortgage pfandbriefe, ship pfandbriefe and aircraft pfandbriefe, in addition to claims against credit institutions and central banks, assets that qualify as ordinary cover pool assets for public sector pfandbriefe also qualify as further cover assets. In the case of public sector pfandbriefe, the share of further cover assets is generally limited to 15 percent of the volume of public sector pfandbriefe outstanding.

Requirements for the cover calculation

What are the requirements for the cover calculation and overcollateralisation?

Cover at nominal and cash value with a minimum surplus cover of 2 percent

The PfandBG provides for nominal overcollateralisation of the pfandbriefe in addition to the overcollateralisation based on a stressed present value calculation, which must also take into account liabilities from derivatives in cover where relevant. The cover calculation based on the present values of the pfandbriefe is subject to BaFin's supervisory requirements. According to BaFin, the pfandbrief bank must ensure that the pfandbriefe are sufficiently secured by cover assets on a net present value basis, also in stress scenarios. The issuer must ensure an overcollateralisation of at least 2 percent on a stressed risk net present values basis. The overcollateralisation based on the net present value calculation aims to cover the administration cost for the cover pool and the respective cover assets must therefore be suitable for covering the minimum liquidity ratio (LCR-eligible assets). In addition, the cover assets which are used to meet the requirements stemming from the stressed net present value calculation may not be taken into account within the cover calculation on a nominal basis. This de facto increases the nominal overcollateralisation ratio. The nominal value of the minimum overcollateralisation for mortgage pfandbriefe and public sector pfandbriefe is 2 percent. For ship and aircraft pfandbriefe, the legislator has provided for 5 percent.

INTERACTION OF PRESENT VALUE AND NOMINAL VALUE OVERCOLLATERALISATION

EXAMPLE FOR A MORTGAGE PFANDBRIEF: THE CASH FLOWS (LEFT-HAND TABLE) ARE USED TO CALCULATE THE VALUES FOR THE NET PRESENT VALUE CALCULATION, WHICH IN TURN IS USED TO CALCULATE THE MINIMUM FOR THE NOMINAL VALUE OF THE COVER POOL

	Cover pool cash flows	Pfandbrief cash flows
Year 1	2	-2
Year 2	7	-5
Year 3	8	-6
Year 4	5	-4
Year 5	68	-66
Year 6	7	-6
Year 7	8	-7
Year 8	5	-3
Present value (with 2 percent market yield)	**95.3**	**-85.7**

	In Euro	In percent
Net present value calculation		
Overcollateralisation (net present value)	9.6	11.2 percent
Minimum overcollateralisation (2 percent)	1.7	2.0 percent
	In Euro	**In percent**
Calculation of nominal overcollateralisation		
Pfandbrief, volume outstanding	80.0	--
+ minimum nominal overcollateralisation	1.6	2.0 percent*
+ minimum net present value overcollateralisation	1.7	2.0 percent
Minimum value of the cover pool on a nominal basis	**83.3**	**4.1 percent****

Source: DZ BANK Research, * for mortgage pfandbriefe or public sector pfandbriefe (in the case of ship or aircraft pfandbriefe, the minimum overcollateralisation on a nominal basis would be 5 percent, ** minimum nominal overcollateralisation taking into account the minimum overcollateralisation on a net present value and a nominal basis

The total overcollateralisation is available to the pfandbrief creditors

If risks arise for the recoverability of the cover pool, BaFin can impose a higher individual overcollateralisation requirement on the pfandbrief bank. With this regulation, the supervisory authority can counteract an imminent deterioration of the cover pool if necessary. The provision can have the same effect as an issue ban for a pfandbrief bank. However, in our view, compared with an actual issue ban, the BaFin's power to set a specific overcollateralisation level provides better protection for the interests of pfandbrief creditors. In addition, the Pfandbrief Act makes it clear that pfandbrief creditors shall have a preferential claims over any assets over and above the statutory overcollateralisation or overcollateralisation required by BaFin in the event of the insolvency of the pfandbrief bank.

Does the issuer have to keep a cover register?

Separate cover register for each Pfandbrief type

Yes. All assets serving as cover assets for a bank's pfandbriefe must be entered in a cover register kept separately for every pfandbrief type. This enables the unambiguous identification of the respective cover pool. Details on the form and the necessary contents of the cover register as well as the entries to be made will be precisely determined by a separate legal ordinance.

Is there an independent monitor of the cover pool?

An independent monitor continuously checks compliance with the legal requirements

Yes. A cover pool monitor (treuhänder) and at least one deputy cover pool monitor shall be appointed at each pfandbrief bank to check that the cover register is properly kept and that the pfandbriefe are sufficiently secured in accordance with the pfandbrief legislation. The appointment shall be made by BaFin after hearing the pfandbrief bank. The cover pool monitor shall independently monitor compliance with the statutory and supervisory provisions regarding the cover requirements for the pfandbriefe. The pfandbrief bank may only issue new pfandbriefe or take out assets from the cover pool with the approval of the cover pool monitor. Before issuing new pfandbriefe, the cover pool monitor shall certify that sufficient cover assets are available to meet the statutory requirements also after the new issue.

Extensive information rights

In order for the cover pool monitor to be able to fulfil his duties, he may at any time request to inspect the bank's pfandbrief-related documents and request information on its outstanding pfandbriefe and the values entered in the cover register. The Pfandbrief Act also stipulates that both the cover pool monitor and his deputies must have the relevant expertise and experience necessary to perform their duties. The Pfandbrief Act does not explicitly prescribe a formal requirement for his qualifications, such as official admission as a tax advisor or auditor. The law merely states the assumption that qualification as an auditor or certified public accountant is sufficient for this purpose.

Transparency requirements

Do issuers have to comply with certain transparency requirements?

Legal standard for mandatory reports

Yes. Every pfandbrief bank is obliged to publish the statutory minimum catalogue of information on the pfandbriefe outstanding and the cover assets in a publicly accessible form once a quarter. The PfandBG requires, for example, that for each pfandbrief type the pfandbrief bank must disclose the total amount of the pfandbriefe outstanding as well as the corresponding volume of the cover pool with respect of the nominal and present value as well as also the risk present value for stressed scenarios. In the case of the risk present value, only the result from the stress scenario leading to the lowest overcollateralisation has to be stated. In addition, the maturity structure (based on the time to the re-set of the interest rates) of the pfandbriefe as well as the cover assets must be listed and broken down according to specified maturity bands. The cover assets and pfandbriefe with a fixed-interest period of up to 24 months are shown in four sections of six months each. This is followed by three maturity bands of one year each up to the fixed-interest period of a maximum of five years. The last two maturity bands are five to ten years and more than ten years. In addition, the potential impact of a possible maturity extension by the cover pool administrator must also be taken into account when presenting the maturity profile of the pfandbriefe. In addition, in order to give investors a sense of any interest rate or currency mismatches that may exist in the bank's pfandbrief business, the transparency rules include the distribution of the cover pool and the pfandbriefe outstanding according to fixed and variable interest rates. In addition, the net present value of open currency positions between cover assets and pfandbriefe must be published (per foreign currency) and the net present value of derivatives in the cover pools must be shown.

Information on non-performing loans and geographical distribution

For each pfandbrief type, the total amount of non-performing loans (more than 90 days in arrears) must be stated separately. In this calculation, only loans are taken into account for which the overdue payments account for at least 5 percent of the total claim of the loan concerned. In addition, the geographical distribution of the cover pool by country must also be published. In this context, information must be provided separately for ordinary and further cover assets.

List of ISIN and the amount of the liquidity reserve

Pfandbrief bank must publish a list of outstanding pfandbriefe with international identification numbers such as the ISIN. Furthermore, the amount of the liquidity reserve in the cover pool resulting from the 180-day liquidity calculation must also be stated.

GENERAL TRANSPARENCY REQUIREMENTS FOR ALL PFANDBRIEF TYPES

- Information on the cover calculation on a nominal, a net present value and a stressed net present value calculation including the statutory, contractual and voluntary overcollateralisation
- Maturity structure of the cover assets and the pfandbriefe outstanding as well as the conditions for a maturity extension and its effects on the maturity structure of the pfandbriefe outstanding
- Information on the liquidity risk in the form of the largest liquidity gap within the next 180 days (as a cumulative amount of daily cash flows) as well as the day on which this liquidity gap occurs
- List of pfandbriefe outstanding with their international securities identification number (ISIN)
- Information on loans in arrears in the cover pool as well as the proportion of cover assets that are in default in accordance with article 178 CRR.
- Distribution of the cover pool and the pfandbriefe outstanding by fixed and variable interest rates as well as the net present value of open currency positions (separately for each foreign currency) and the current net present value of derivatives in the cover pool.

The extended transparency requirements must be met for the first time for the third quarter of 2022. However, the information for the previous year's values does not have to be published until one year later in the third quarter of 2023.

Source: Pfandbrief Act, presentation DZ BANK Research

Special information requirements on mortgage pfandbriefe

The distribution of the real estate loans in the cover pool for mortgage pfandbriefe must be made according to property type and according to the volume of the loan receivables in specified volume classes. For the loans in the cover pool, the weighted average of the term of the loans that has elapsed since the loan was granted (i.e. loan seasoning) must also be published. This figure is not broken down into owner-occupied residential mortgages and commercial property financing, but is reported for all property financing as a whole. In general the seasoning is an interesting indicator especially for owner-occupied home financing. The pfandbrief banks are also obliged to regularly report the average loan-to-value ratio for the cover pool of their mortgage pfandbriefe. Due to the calculation rules for the loan-to-value ratio, this will never exceed the statutory maximum LTV-limit of 60 percent. The PfandBG thus deviates from international standards in this respect. Nevertheless, the ratio remains an interesting piece of information for investors.

SPECIFIC TRANSPARENCY REQUIREMENTS FOR EACH PFANDBRIEF TYPE

- "Mortgage pfandbriefe: Information on property types, geographical distribution of cover assets (by country), average loan seasoning, average loan-to-value (LTV) and on the distribution of cover assets by loan volume, as well as information on other cover assets.
- "Public sector pfandbriefe: distribution of cover assets by borrower type (state, region, municipality, others), distribution by direct claims against and claims guaranteed by sovereigns, local governments and other public sector entities and information on export financing, distribution of cover assets by loan volume and information on other cover assets.
- "Ship pfandbriefe: Distribution of financing by inland and seagoing vessels, geographical distribution of cover assets, information on other cover assets.
- "Aircraft pfandbriefe: Geographical distribution of cover assets, information on other cover assets

Source: Pfandbrief Act, presentation DZ BANK Research

Proportion of public sector guaranteed export finance credits must be disclosed

In the case of public sector pfandbriefe, a breakdown of municipal and state loans in the cover pool by borrower type must be disclosed in line with the structure level of the regional and municipal authority. Issuers must also disclose the proportion of export finance credits with a public guarantee in the cover pool. Although the specific state level guaranteeing the export financing is not explicitly disclosed, it is fair to assume that, as a rule, the central government guarantees that the terms of the loan are met in the case of public sector guaranteed export finance credits. The claims must also be split by group size, although the breakdown of these groups is different from what it is in the case of mortgage pfandbriefe.

Few details in the case of aircraft and ship pfandbriefe

The statutory requirements in the context of transparency rules for aircraft and ship pfandbriefe are less detailed than they are in the case of mortgage pfandbriefe. In the case of ship pfandbriefe, issuers are merely required to disclose whether the ships used as collateral for the mortgage are sea-going or inland waterway vessels. In the case of aircraft pfandbriefe, there is not even a roughly comparable breakdown of the cover assets by type of aircraft. The pfandbrief bank merely has to indicate the share of aircraft mortgages in relation to the cover assets overall. In the case of aircraft and ship pfandbriefe, claims also have to be broken down into the prescribed size categories, whereby other size categories apply than in the case of mortgage and public sector pfandbriefe. Pfandbrief banks which issue aircraft and ship pfandbriefe often give detailed information of cover assets in investor presentations and therefore go beyond legal requirements. The low level of detail required by the

Pfandbrief Act in the case of these pfandbrief types may reflect the fact that they are both niche products in the pfandbrief market.

Information can be downloaded centrally from the websites of banking associations

For years now, the vdp has provided the compulsory disclosures of its member institutions on their pfandbrief programmes in standardised form on its website. Reports can now be found on the vdp's website which conform with an international standard of the harmonised transparency template (HTT) for over half the vdp member banks. The covered bond label initiated by the European Covered Bond Council (ECBC) requests regular reporting within the HTT-format. By far not all German pfandbrief bank carry the covered bond label. But the majority of vdp pfandbrief banks voluntary provide quarterly reports in HTT-format on top of their statutory transparency requirements, even without a covered bond label.

VOLUNTARY SUPPLEMENTING REPORTS ON TOP OF THE STATUTORY TRANSPARENCY REQUIREMENTS

Minimum transparency requirements according to the PfandBG

- Ensures the minimum information requirements set out in the CBD

Voluntary cover pool reports, for example in the HTT-format

- A high number of German pfandbrief issuers publish cover pool reports according to international standards on top of the minimum transparency requirements of the PfandBG

Source: DZ BANK Research

Rules for the insolvency of the issuer and existing risks

What happens in the event of the issuer's insolvency?

Cover pool administrator continues the pfandbrief business

The cover pools of a pfandbrief bank become pfandbrief banks with limited operations after the insolvency of the issuer. The original issuer remains the legal owner of the cover pool despite its insolvency. After the pfandbrief bank's insolvency, the cover pool is no longer represented by its board of directors but by a cover pool administrator (sachwalter). The competent court appoints up to two natural persons as cover pool administrator at the request of BaFin. The cover pool administrator may also be appointed by the competent court prior to the pfandbrief bank's insolvency, if BaFin deems this necessary. The cover pool administrator shall continue the pfandbrief business independently of the pfandbrief bank's insolvency estate. The pfandbriefe shall not automatically become due and payable upon the commencement of insolvency proceedings against the pfandbrief bank.

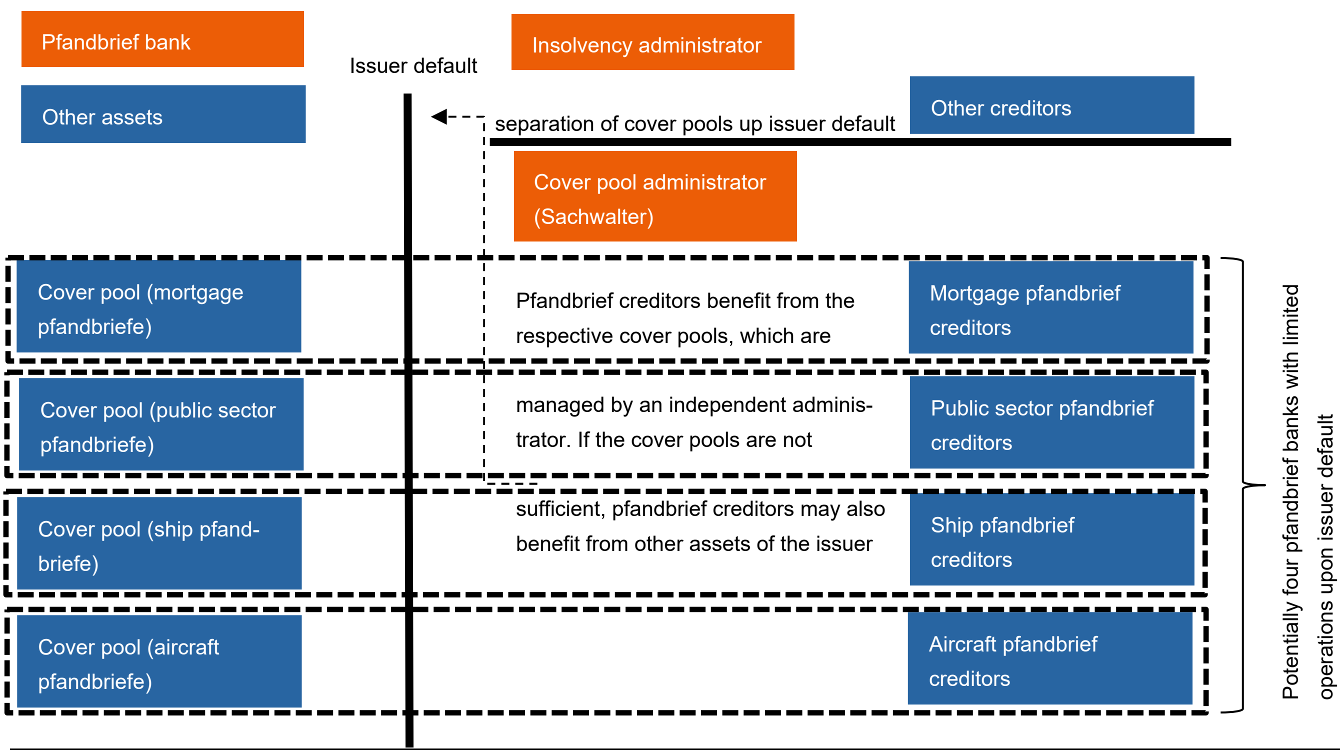
Cover pool administrator can set up advisory board

The number of pfandbrief banks with limited operations depends on the number of cover pools of the issuer. If, for example, a pfandbrief bank keeps a cover register for public sector pfandbriefe and one for mortgage pfandbriefe, one "pfandbrief bank with limited operations" is created for each cover pool after the insolvency of the issuer, i.e. in the example a total of two. The cover pool administrator may appoint an advisory board (beirat) with up to five members. This body of experts is designed to help and support to the cover pool administrator by advising him on the possibly complicated issues involved in managing the cover pool. The Pfandbrief Act makes it clear that the cover pool administrator and the pfandbrief bank's insolvency administrator are considered equal partners. The pfandbrief bank's insolvency administrator may not challenge acts of the cover pool administrator that the latter performs within the scope of his activities and as port of his or her obligations and duties. The explanatory memorandum to the PfandBG states that this also applies if the insolvent pfandbrief bank's compensation claim against the cover pool is reduced as a result.

Operational risks

The cover pool administrator carries out the legal transactions necessary for the wind-down of the cover pool. A more technical question concerns the operational risks after the pfandbrief bank's insolvency. The Pfandbrief Act makes it clear that the cover pool administrator is entitled to use the pfandbrief bank's staff and operational infrastructure to fulfil all his or her duties. The costs actually incurred are born by the cover pools of the pfandbriefe. The regulations on the cover pool administrator in the Pfandbrief Act are aiming at the operational risks and are attempting to make the management of the cover pools as efficient as possible after the insolvency of the pfandbrief bank. Probably the most elegant solution would be the transfer the programme to another solvent pfandbrief bank, which integrates the cover assets and the pfandbriefe into its own programme (see also question "What happens after the cover pool is separated?" below).

PFANDBRIEF CREDITORS' PRIORITY IN BANKRUPTCY



Source: vdp, DZ BANK Research

Appointment of a special representative

If a pfandbrief bank is threatened to become insolvent, BaFin is allowed to appoint a special representative who can later assume the role of a cover pool administrator if necessary. The special representative has information rights only, which are intended to prepare him for the possible administration of the pfandbrief bank with limited operations. This gives the acting persons the necessary time to familiarise themselves with the task of running the cover pool.

Self-administration of the cover pool is a lengthy procedure

If the cover pool administrator determines that the value of the cover assets are no longer sufficient to satisfy all pfandbrief creditors' claims, a separate insolvency proceedings must be opened over the cover pool. In this case, the pfandbriefe would accelerate (i.e. become due and payable) and the cover pool would be liquidated. The proceeds from this would be distributed to the pfandbrief creditors in equal shares (pari passu). The PfandBG also creates the possibility that an illiquid or over-indebted pfandbrief bank with limited operations can be continued by the cover pool administrator within the framework of self-administration. In this case, BaFin can order the cover pool's self-administration as an alternative to opening insolvency proceedings over its assets, if this is in the interest of the creditors. Should the creditors' committee oppose this, the competent court would decide on an ordered self-administration. The liquidation of the assets of the cover pool under self-administration may be more protracted than normal insolvency proceedings, but higher recovery rates may be achievable. The flexibility created by this further option in the event that a cover pool needs to be liquidated is likely to be helpful in avoiding a distress sale due to a forced liquidation of the assets.

Are covered bonds bail-in able?

A bail-in is in theory possible, if minimum coverage requirement were not met

No, German pfandbrief creditors do not participate in any restructuring proceedings of the issuer. However, it is theoretically conceivable that a remaining (unsecured) claim of the pfandbrief creditors due to an insufficient amount of cover assets could be affected by a bail-in. However, this would mean that the pfandbrief bank had not complied with the statutory overcollateralisation (not to mention requirement to have enough cover assets for all its pfandbriefe).

What is the role of the supervisory authority?

Clear responsibilities

The responsibility for the court decisions on the appointment of the cover pool administrator is governed by the general German Insolvency Code. When appointing a cover pool administrator - if necessary even before the pfandbrief bank becomes insolvent - BaFin may propose a candidate. However, the cover pool administrator is always appointed by the competent court, regardless of whether the pfandbrief bank is already insolvent or not.

What happens after the cover pool has been separated?

Transfer of the cover pool together with the pfandbriefe outstanding to a third-party pfandbrief bank

The cover pool administrator may transfer the entire cover pool or parts thereof together with the pfandbriefe outstanding to another solvent pfandbrief bank. If there is no suitable bank, the cover pools will be wind down in an orderly manner by the cover pool administrator. Only when all claims of the pfandbrief creditors have been satisfied in full can any remaining cover assets be transferred to the pfandbrief bank's insolvency estate and be used for the benefit of the other bank creditors. The cover pool administrator may also take out bridge loans or sell cover assets in order to meet the payment obligations arising from the pfandbriefe on time.

Further questions in connection with the pfandbrief bank's insolvency

In the context of insolvency, there are a variety of scenarios through which the recoverability of the cover pool could be threatened. In this context, for example, the following legal issues could arise, which are, however, taken into account in the PfandBG:

Claw-back risk

- The PfandBG ensures that the pfandbrief creditors have a priority claim to the entire cover pool (including the entire overcollateralisation). The pfandbrief bank's insolvency administrator can, however, attempt to reclaim parts of the overcollateralisation. To do so, he must demonstrate to the competent court that these assets will obviously not be necessary to secure the pfandbrief creditors' claims. The hurdles for a possible transfer of cover assets to the pfandbrief bank's insolvency estate are therefore considered quite high.

Set-off risks

- Pfandbrief bank customers who have both cash on deposit at the bank and a loan from the bank could try to offset opposing (or mutual) claims against each after the issuer's insolvency. However, the Pfandbrief Act obviates this potential set-off risk to pfandbrief creditors if for example the pfandbrief bank's cover pool assets are to be netted off against for example (due) deposits held with the insolvent bank. Cover pool assets and liabilities (like pfandbriefe), which are falling due at the same time can, however, be set off.

Commingling of cash flows

» It is unlikely to be the norm for pfandbrief banks that all their cover pool related cash flows will be accounted for separately and booked to a separate clearing account even before the insolvency of the issuer. For this reason, the rating agencies point out that there is a risk for the cover pools that, after the insolvency of the issuer, the cover pool administrator might not have direct access to all cash flows into the cover pool. In the worst-case scenario, it could become impossible to separate cash inflows from the bankrupt estate and they could therefore become entirely lost to the cover pool. We believe that this risk is mitigated by the fact that a cover pool administrator can be appointed even before the pfandbrief bank defaults. The administrator would then have the opportunity to initiate appropriate precautionary measures such as the prompt redirection of cash flows.

Protection against residual legal risks

Even though the residual legal risks for pfandbrief creditors in the event of the insolvency of the issuer outlined here as examples cannot be excluded with absolute certainty, there are nevertheless regulations in the Pfandbrief Act which limit these risks and contribute to avoiding them at best. In our view, these are quality features of the legal framework of German pfandbriefe.

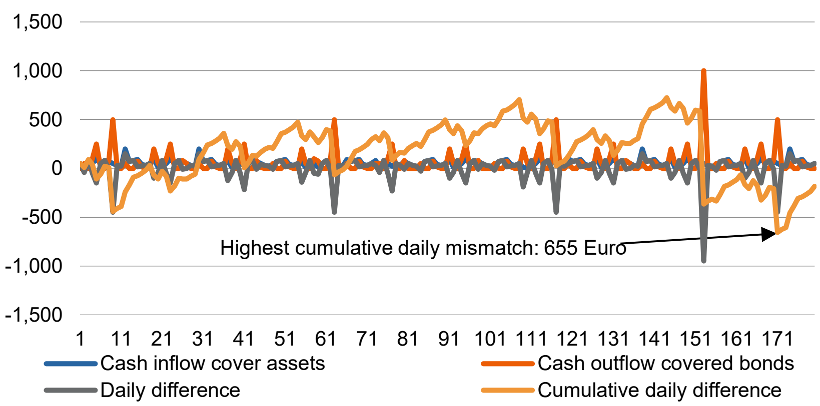
Are covered bonds repaid in the same order as originally planned after issuer insolvency?

No overtaking

The pfandbriefe do not become automatically due and payable after the insolvency of the issuer. They are redeemed in the original order according to the expected maturity date. The original redemption order must be maintained even if the term of a pfandbrief has been extended (so no overtaking, if the cover pool administrator uses the legal soft bullet, see next question).

How is the liquidity of the cover pool ensured after the insolvency of the issuer?

EXAMPLE CALCULATION OF 180 DAYS LIQUIDITY NEEDS
VERTICAL AXIS: EURO, HORIZONTAL AXIS: TIME IN DAYS



Source: DZ BANK Research

Payments on pfandbriefe for the next 180 days must be ensured

In order to ensure the liquidity of the cover pool immediately after an insolvency of the pfandbrief bank, the PfandBG requires that for the next 180 days the net payment obligations are covered by a sufficient liquidity reserve with the cover pool. For each day, the difference between due payments on the pfandbriefe outstanding and cash inflows into the cover pool has is to be calculated. The largest cumulative liquidity requirement resulting from this calculation must be covered with liquid cover assets such as cash or government bonds. In the chart below you will find an example that illustrates the liquidity cover requirement of the PfandBG. In this example, the largest cumulative daily difference (the line marked with the arrow) occurs towards the end of the 180-day period and amounts to 655 euros. This amount would have to be available within the cover pool in the form of liquid assets.

Rating analysts focus on liquidity gaps

The provision to ensure liquidity for the first 180 days gives the cover pool administrator some leeway directly after the insolvency proceedings started for the pfandbrief bank. Liquidity risks may arise later on during the wind-down process of the cover pools if the maturities of the cover assets are longer than the maturities of the pfandbriefe outstanding. In order to strengthen the liquidity position of the cover pool, the cover pool administrator has the power to extend the maturity of the pfandbriefe outstanding by up to twelve months. The following points are particularly important in this regard:

» A solvent pfandbrief bank cannot unilaterally extend the maturity of its pfandbriefe. Only the court-appointed cover pool administrator is authorised to extend the repayment of pfandbriefe in clearly defined situations.

» The cover pool administrator may extend the redemption including interest payments of a pfandbrief by up to four weeks after the insolvency of the issuer without giving reasons if, for example, the situation is still unclear shortly after the appointment of the cover pool administrator. However, if the maturity shall be extend by several months, this may only be done if the cover pool does not have sufficient liquid assets to cover an upcoming pfandbrief redemption and the cover pool is not over-indebted and the cover pool administrator must be convinced that the redemption will take place after the extension period. The longer-term extension of the maturity does not apply to interest payments that must continue to be made during the extension period.

» Should the term of a pfandbrief have to be extended at some point, a statutory ban on overtaking applies. This means that other pfandbriefe that mature after the original due date of the extended pfandbrief may only be repaid once the extended pfandbrief has been redeemed.

» Interest is also paid on the pfandbriefe during the maturity extension. If the terms and conditions do not include any provisions about the coupon during the extension phase, then the original coupon payments continue to apply. However, issuers may make provisions for coupon payments during a possible extension phase in the bond terms and conditions.

Better safe than sorry: the influence of the soft bullet on the liquidity reserve

In many countries, maturity extensions may be taken into account when calculating the liquidity needs for the next 180 days. This means that no liquidity reserve needs to be built up within the cover pool for the repayment of these covered bonds because the liquidity risk within the covered bond programme is hedged by the application of the soft bullet. In the German PfandBG, however, no use was made of such provision, so that for the rolling window of 180 days a liquidity reserve has to be hold within the cover pool in addition to the soft bullet provisions.

Summary of the legal bases

GERMAN PFANDBRIEF ACT COMPARED TO THE MINIMUM REQUIREMENTS OF THE CBD AND ARTICLE 129 CRR

	Germany	European Covered Bonds (Premium)
Covered Bond Type/Designation	Hypothekenpfandbriefe (mortgage pfandbriefe), Öffentliche Pfandbriefe (public sector pfandbriefe), Schiffspfandbriefe (ship pfandbriefe), Flugzeugpfandbriefe (aircraft pfandbriefe)	Mortgage covered bonds, public sector covered bonds, ship covered bonds
Issuer	Banks holding a pfandbrief license	Credit institutions as defined in point 1 of article 4 (1) CRR
Transaction structure	Integrated model	No specifications, pooling structures possible
Special public supervision	Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin)	Appointment of national authority(ies)
Independent, regular monitoring of the cover pool	✓ (treuhänder)	option (when a monitor is appointed, the CBD sets out the monitor's powers and duties)
Main category of permitted cover assets	Depends on pfandbrief category: mortgage loans, government/municipal loans, ship finance or aircraft finance	Depending on the type of covered bond: mortgage loans, claims against public sector entities or ship financing (for the premium standard the requirements of article 129 CRR must be met)
Other permitted cover assets	For all pfandbrief types: claims against ECB, central banks and other eligible financial institutions (up to 15 percent), derivatives; additionally for mortgage, ship and aircraft pfandbriefe: claims against public sector entities (up to 20 percent, taking into account the above-mentioned claims)	Cash receivables, HQLA cover assets (high-quality assets), loans to or guaranteed by public sector entities, derivatives
Geographical restrictions for cover assets	Public sector pfandbrief: European Economic Area (EEA), Switzerland, USA, Canada, Japan Mortgage pfandbrief: EEA, Australia, Canada, Japan, New Zealand Singapore, Switzerland, USA Aircraft pfandbrief, ship pfandbrief: no restrictions	Articles 6 and 7 CBD: basically EEA member countries, cover assets outside the EEA are eligible if they comply with the requirements of article 6 CBD (for the premium standard the requirements of article 129 CRR must be met)
Lending limits (LTV limit)	Residential mortgages: 60 percent; Commercial mortgages: 60 percent; Ship mortgages: 60 percent; Aircraft mortgages: 60 percent	Residential mortgages: 80 percent; Commercial mortgages: 60 percent (as exception: 70 percent); Ship finance: 60 percent
Basis for the LTV calculation	Mortgage lending value of the property, ship or aircraft	Market value of the property or ship
Are loan portions above the lending limits also available to covered bond creditors on a priority basis?	×	Possible (depends on the regulation in the respective national covered bond law)
Special cover requirements	Aggregate claims on a single credit institution may not exceed 2 percent of outstanding pfandbrief volume Present value of derivatives: maximum 12 percent Cap on pool share of non-EEA countries that do not guarantee priority of pfandbrief creditors upon issuer default: maximum 10 percent	In general, nominal value calculation, other cover calculations (e.g. at present value) could be required in addition
Statutory minimum overcollateralisation	2 percent based on a stressed present value basis and 2 percent based on a nominal value basis for public sector pfandbriefe and mortgage pfandbriefe, for ship and aircraft pfandbriefe applies an overcollateralisation of 5 percent on a nominal basis	5 percent (nominal), exceptional case 2 percent
Are cover assets that exceed the statutory minimum overcollateralisation also available to covered bond creditors on a priority basis?	✓	Possible (depends on the regulation in the respective national covered bond law)
Issuance limit for covered bonds	×	× (but possible in principle, depends on the national covered bond legislation)
Cover calculation/matching requirements and liquidity regulations	Present-value and nominal cover required, issuer must maintain a 180-days liquidity buffer	Nominal cover (basically), other cover principles are possible
Stress test for cover calculation	✓	× (not required by the CBD, but permissible)
Special statutory regulations on repayment modalities of covered bonds	✓ (the cover pool administrator (sachwalter) may extend the maturity of the pfandbriefe by up to twelve months under certain circumstances)	✓ (if soft bullets are allowed, the covered bond law must, among other things, provide uniform framework conditions for the triggers for maturity extension)
Independent administrator of the cover pool after insolvency of the issuer	✓ (Cover pool administrator (sachwalter), BaFin may appoint the sachwalter even prior to issuer's insolvency)	Option to appoint a special administrator
Impact of an issuer insolvency on covered bonds	Servicing continues as per issue T&Cs	Servicing continues as per issue T&Cs
Covered bonds are generally exempt from a bail-in?*	✓	✓

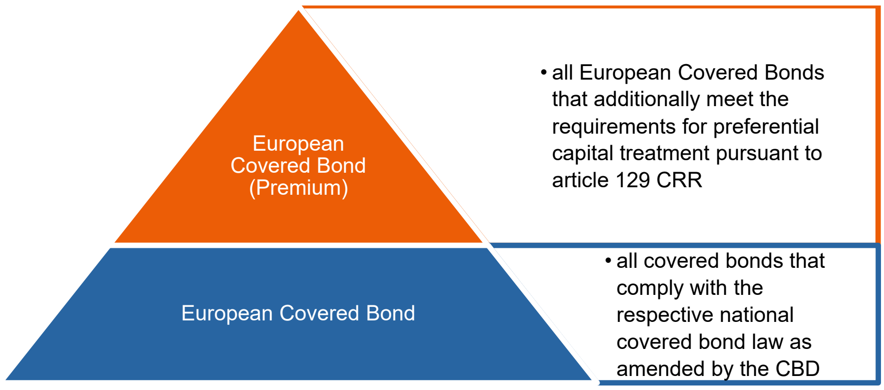
Source: European Covered Bond Council (ECBC), DZ BANK Research, ECB = European Central Bank, EEA = European Economic Area, ✓ = yes, × = no,
* unsecured claims of covered bond creditors may possibly be affected by a bail-in, CBD = European Covered Bond Directive, CRR = European Capital Requirements Regulation

REGULATORY TREATMENT IN THE EUROPEAN ECONOMIC AREA

European Covered Bonds and European Covered Bonds (Premium)

Covered bank bonds that meet the requirements of the CBD may be referred to as "European Covered Bonds". This standard is also referred to in article 52(4) of the Directive on the coordination of laws, regulations and administrative provisions relating to undertakings for the collective investment in transferable securities (UCITS Directive). The famous original UCITS criteria, which can be summarised as (i) secured bank bond (ii) from an EEA country (iii) subject to special public supervision, now only apply to covered bonds issued before 8 July 2022. In the revised UCITS Directive, article 52 refers to covered bonds as defined in article 3 CBD. These are all covered bonds that fall under the national covered bond law of an EEA member state that complies with the requirements of the CBD. In addition, there are the stricter requirements for the status as "European Covered Bond (Premium)", for which, in addition to the requirements of the CBD, the requirements for a privilege risk weighting (article 129 CRR) must also be met. European supervisory law partly ties in with these quality criteria.

DEFINITION OF THE NEW EUROPEAN LABEL FOR COVERED BONDS



Source: European Covered Bond Directive (CBD), presentation DZ BANK Research

Grandfathering rules for old bonds

Since July 2022, BaFin has published a list of credit institutions that have obtained a pfandbrief licence on its website. This list shows which pfandbriefe may call themselves "European Covered Bond" or "European Covered Bond (Premium)". This designation protection applies exclusively to pfandbriefe that have been issued since 8 July 2022. All pfandbriefe issued before 8 July 2022, on the other hand, may not be designated as such. However, BaFin clarifies that all "old" pfandbriefe also meet the CBD criteria and that in addition all mortgage pfandbriefe, public sector pfandbriefe and ship pfandbriefe meet the stricter premium standards. This clarification is not unimportant. For covered bank bonds from the European Economic Area (EEA) issued by 8 July 2022, there are grandfathering rules. These mean that old bonds issued by banks from the EEA should retain their previous regulatory privileges. Pfandbrief investors may thus refer to BaFin's official list when it comes to proving qualification for supervisory privileges.

IMPORTANT BUILDING BLOCKS OF REGULATORY PRIVILEGES: EUROPEAN COVERED BOND STATUS AND PREMIUM STATUS

The European Capital Requirements Regulation for Banks (CRR) contains further criteria for a capital privilege for "European Covered Bonds" in Article 129:

- Compared to the CBD, stricter requirements with regard to the permissible cover assets
- Value of real estate and ships (collateral of mortgage loans) must be monitored regularly (at least once a year)
- Nominal overcollateralisation of at least 5 percent (in exceptional cases 2 percent)

European Covered Bonds (Premium)

+

Requirements of the European Covered Bond Directive (CBD), which include the following:

- Article 4: Definition of dual recourse
- Article 5: Insolvency remoteness of covered bonds (no automatic early repayment after insolvency of the credit institution)
- Article 6: Eligible cover assets
- Article 10: Composition of the cover pools
- Article 11: Requirements for derivatives in cover pool
- Article 12: Separation of the cover assets from the rest of the issuer's assets
- Article 13: Cover pool monitor and monitoring the cover pool
- Article 14: Investor information
- Article 15: Coverage requirements
- Article 16: Liquidity protection of the cover pool
- Article 17: Conditions for extendable maturity structures
- Articles 18 to 26: Comments on the special public supervision of covered bonds including the granting of licences, public supervision after the insolvency of the issuer, reporting obligations of the issuer
- Article 27: Designation protection

European Covered Bonds

Points of reference for regulatory privileges of covered bonds

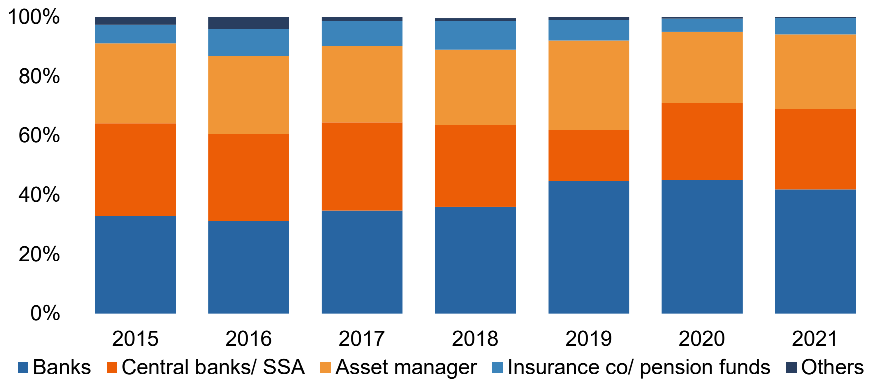
Source: DZ BANK Research, numerous requirements of the CBD are optional that do not have to be implemented by the EU member states, examples include article 13 (cover pool monitor for monitoring the cover pool) and article 17 (conditions for extendable maturity structures)

All investors: protection against bail-in

Covered bonds do not participate in a possible bail-in

Regulatory privileges contribute to the attractiveness of covered bonds for investors. A very important feature of covered bonds, as explained above, is that they are exempt from bail-in, which benefits all investors. Covered bonds - as collateralised claims against banks - are not reduced in nominal value or converted into equity (bail-in) in the event of a bank restructuring or resolution. Theoretically, there is a risk that covered bond creditors can participate in a bail-in with the part of their claims that is not sufficiently collateralised. However, since by definition covered bonds must always be fully collateralised - and in the case of "European covered bonds (premium)" even over-collateralised - we consider this risk for pfandbrief creditors to be very low. This case would only materialise, if the statutory cover requirements were not met.

IMPORTANT INVESTOR GROUPS IN THE COVERED BOND MARKET
INVESTOR DISTRIBUTION OF ORDER BOOKS OF COVERED BONDS IN THE EURO BENCHMARK FORMAT (AVERAGES FOR THE ENTIRE YEAR IN EACH CASE)



Source: IGM, Bloomberg, TheCover, calculations and presentation DZ BANK Research
SSA = sub-sovereigns and agencies

Banks are largest investor group, probably also because of regulatory privileges

In addition to the protection against a bail-in, various investor groups also benefit from special regulatory privileges, which we outline in turn below. Not least because of the regulatory privileges, banks form the largest investor group within the covered bond market (see the chart above on the order books of new covered bond issues in the euro benchmark format).

PRIVILEGES FOR COVERED BONDS: AN OVERVIEW BY INVESTOR GROUP

All investors	Covered bonds do not participate in a bail-in
Banks	Privileged risk weighting/ capital requirements Covered bonds are LCR-eligible Exception in context of the large exposure cap (in Germany, valid until 31 December 2028 at the latest) Basic ECB eligibility of covered bonds of issuers domiciled in the EEA or a G10 country
European Central Bank	Certain "European Covered Bonds" are purchased under the Asset Purchase Programme (APP) and the Pandemic Emergency Purchase Programme (PEPP)*.
Asset Manager	Undertakings for collective investment in transferable securities (UCITS) may invest up to 25 percent instead of 5 percent of their assets in covered bonds of the same issuer
Insurances	Lower factors in the calculation of spread risks and higher upper limits within the scope of concentration risks

Source: DZ BANK Research, * since Q3 2022 only cash flows from maturing covered bonds in the CBPP3 portfolio are reinvested (in the case of PEPP already since Q2 2022)

Banks: Do German pfandbriefe meet the requirements for privileged capital backing?

Privileged risk weight, except for aircraft pfandbriefe

In order for banks to be able to consider covered bonds with a privileged risk weighting within the framework of capital adequacy (credit risk standard approach), the covered bonds must fulfil the requirements of article 129 CRR (equivalent to the status of covered bonds as "European Covered Bond (Premium)"). Since the requirements of article 129 CRR are already taken into account in the Pfandbrief Act, mortgage pfandbriefe, public sector pfandbriefe and ship pfandbriefe always benefit from a lower (i.e. privileged) risk weighting on the basis of the German Pfandbrief Act and are also always considered to be a "European covered bond (premium)". Aircraft pfandbriefe cannot be assigned a reduced risk weight due to their cover assets. The specific risk weight also depends on the rating of the covered bond. If no covered bond rating is available, the risk weight for the covered bond can also be derived from the risk weight for unsecured bonds of the issuer. The risk weight for the covered bond in the credit risk standardised approach would then be 10 percent, 20 percent, 50 percent or 100 percent if the corresponding risk weight for unsecured bonds of the bank is 20 percent, 50 percent, 100 percent or 150 percent, respectively.

DERIVATION OF RISK WEIGHTS IN THE CREDIT RISK STANDARD APPROACH FOR PFANDBRIEFE BASED ON EXTERNAL RATINGS

Covered Bond Rating	Credit quality step	Risk weight
AAA to AA-	1	10 percent
A+ to A-	2	20 percent
BBB+ to BBB-	3	20 percent
BB+ to BB-	4	50 percent
B+ to B-	5	50 percent
CCC+ and below	6	100 percent

Source: Article 129 (4) CRR, BaFin, presentation DZ BANK Research

Banks: Can German pfandbriefe be included as high-quality assets in the LCR calculation?

Basic requirements for LCR capability

Yes. The LCR Regulation provides that "European Covered Bonds" issued since 8 July 2022 may be used as High-Quality Liquid Assets (HQLA) in the context of the determination of the Liquidity Coverage Ratio (LCR) if, in addition, the requirements of article 129 paragraph 1 letter (c) and paragraph 1a CRR are also met. These CRR regulations deal with claims against other credit institutions that can be part of the cover pool. All German pfandbrief types fulfil these requirements. Pfandbriefe issued before 8 July 2022 are grandfathered.

Bond characteristics have an impact on LCR eligibility

Whether and in which HQLA category (Level 1, Level 2A or Level 2B) the covered bonds can be classified depends not only on compliance with the general requirements mentioned above but also on individual characteristics of the bond or the covered bond programme, such as the rating, the issue volume or the existing overcollateralisation. An indication of the HQLA category of a covered bond with a covered bond label can be found in the issuer directory on the website of the Covered Bond Label. There, issuers (who are members of the Covered Bond Label) have the opportunity to enter the HQLA rating they consider appropriate for each bond.

LCR eligibility also depends on bond rating

There is one more regulation to consider. Aircraft pfandbriefe, mortgage pfandbriefe and ship pfandbriefe qualify in principle as HQLA as long as they are rated at least

A3/A-. Should the credit rating for aircraft pfandbriefe and ship pfandbriefe as well as mortgage pfandbriefe collateralised (in part) with commercial real estate financing fall below this rating threshold, a classification in HQLA category 2B is not possible anymore. Financing for aircraft, commercial real estate or ships is excluded for HQLA category 2B.

POSSIBLE LCR RATINGS FOR PFANDBRIEFE

HQLA level	**1**	**2A**	**2B**
Haircut	7 percent	15 percent	30 per cent
Maximum share of the LCR portfolio	At most 70 percent	At most 40 percent	At most 15 percent
Covered Bond Rating (second best rating)	At least AA- (credit quality step 1)	At least A- (credit quality step 2)	No specifications
Bond volume	At least EUR 500m	At least EUR 250m	At least EUR 250m
Cover	At least 2 percent	At least 7 percent	At least 10 percent
Cover assets	CBD-compliant and special requirements for claims against banks	CBD-compliant and special requirements for claims against banks	Only claims against the public sector or home financing with a risk weight of 35 percent or less (according to the Credit Risk Standard Approach)

Source: LCR Regulation, presentation DZ BANK Research

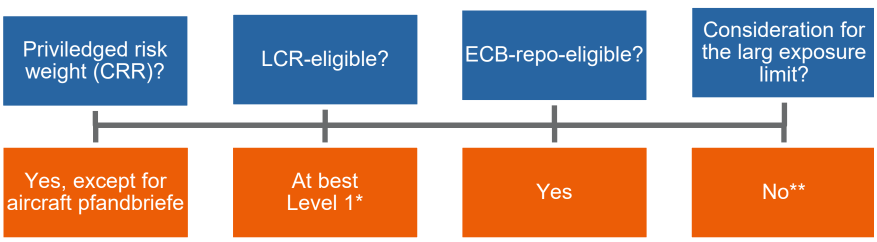
Banks: Are German pfandbriefe suitable as collateral for refinancing transactions with the ECB?

Law-based covered bonds are ECB-eligible

Yes, pfandbriefe or, more generally, a collateralised bank bond based on a special law (structured covered bonds are not ECB-eligible) are in principle suitable as collateral for refinancing operations with the ECB. In this context, the ECB refers to article 52(4) of the UCITS Directive, thereby requiring the standard to be a "European covered bond" ("European Covered Bonds"). In addition, the ECB expects a rating of at least Baa3/BBB- and it applies varying haircuts depending on the rating, coupon and outstanding volume of the covered bond. Under certain conditions, banks can also deposit their own covered bonds with the central bank as collateral ("own-use"). In addition to the above-mentioned conditions, the criteria in article 129 (1) to (3b) and (6) and (7) CRR are also relevant. Mortgage pfandbriefe, public sector pfandbriefe and ship pfandbriefe meet these requirements.

Banks: How are covered bonds taken into account under the large exposure limits?

SUMMARY OF THE ADVANTAGES FOR BANKS THROUGH PRIVILEGED TREATMENT OF PFANDBRIEFE UNDER REGULATIONS



Source: DZ BANK Research; * Pfandbriefe collateralised with aircraft, commercial real estate or ship financing and with a rating lower than A3/A- are not LCR-eligible ** Regulation in Germany, which, as things stand at present, applies until 31 December 2028 at the longest

Pfandbriefe are excluded from large exposure limits until 2028

The CRR lists limits for the amount of exposure to individual debtors (large exposure limits). When calculating the risk positions, the CRR grants the EU member states options. In Germany, this option was used in the Regulation Supplementing the Large Exposure Rules, among other things, to exclude covered bonds within the meaning of article 129 (1), (3) and (6) CRR from the limit. According to the Association of German Pfandbrief Banks, this option will continue to exist until 31 December 2028 at the latest.

European Central Bank: Eligibility criteria for the third covered bond purchase programme?

Own-Use Covered Bonds (bullet format) are CBPP3-eligible

As is well known, the European Central Bank buys covered bank bonds as part of its third covered bond purchase programme (CBPP3) - although since July 2022 only cash flow from maturing covered bonds into the CBPP3 portfolio have been reinvested. With a CBPP3 portfolio of around EUR 300bn as of 30 June 2022 and a monthly reinvestment requirement of around EUR 3bn, the ECB is one of the largest covered bond investors worldwide. Only so-called "own-use covered bonds" qualify for CBPP3, i.e. covered bonds that the issuer itself could deposit with the ECB as collateral. In addition to the own-use criterion, which is linked to the fulfilment of the requirements from article 129 CRR, the covered bonds must also be in a bullet format (i.e. hard bullet or soft bullet). Covered bonds with a conditional pass-through (CPT) mechanism are not eligible for CBPP3.

Asset Manager: What are the regulatory advantages of covered bonds for asset managers?

ARTICLE 52 UCITS DIRECTIVE (EXTRACTS)

(1) A UCITS shall invest no more than a) 5 percent of its assets in transferable securities or money market instruments issued by the same body [...].

(4) Member States may raise the 5 percent limit referred to in the first subparagraph of paragraph 1 to 25 percent for certain bonds if the bonds were issued before 8 July 2022 and complied with the requirements of that paragraph as in force on the date of issue of the covered bond or if the bonds meet the definition of article 3(1) of Directive (EU) 2019/2162 of the European Parliament and of the Council on covered bonds.

Source: UCITS Directive

Higher limits for investments in covered bonds

Asset managers or undertakings for collective investment in transferable securities (UCITS) are subject to many requirements, including limits on how much of the assets under management may be invested in securities of one issuer. For "European Covered Bonds", the UCITS Directive provides that EU Member States may raise in national law the limit set out in article 52 of the UCITS Directive on investments in the securities of one issuer from 5 percent to 25 percent.

Insurance companies: Are there regulatory privileges for covered bonds under Solvency II?

Regulatory privileges under Solvency II

Insurance companies are subject to the European Directive on the taking-up and pursuit of the business of Insurance and Reinsurance (Solvency II). Among other things, it regulates the solvency capital requirements for insurance companies, which are influenced by numerous factors. "European Covered Bonds" (Solvency II refers to article 52 of the UCITS Directive) - as long as they are rated at least Aa3/AA- or better - have regulatory advantages. When calculating spread risks, covered bonds are subject to less stringent factors, so that covered bonds have lower capital requirements than, for example, corporate bonds. In addition, "European covered bonds" are subject to higher ceilings than corporate bonds within the limits of concentration risks for insurance companies. Both privileges contribute to the attractiveness of covered bank bonds for insurance companies in the context of the rather complicated calculations under Solvency II.

PFANDBRIEFE AND TRUST COLLATERAL UNDER GERMAN LAW

Ward's money belongs to the assets of a ward, which may only be invested in a particularly safe manner (mündelsicher) by his or her guardian. The previous rules for this in the German Civil Code (BGB) will only apply until the end of 2022, as the guardianship and care law in Germany has been reorganised and updated. Until now, the ward's money had to be invested in the forms of investment declared by the legislator to be gilt-edged (mündelsicher). According to §1805ff BGB, these gilt-edged investments included German pfandbriefe as well as government bonds. With the reform of the guardianship and care law in 2021, the Federal Ministry of Justice and Consumer Protection (BMJ) was authorised to define the future gilt-edged investments within the framework of an ordinance. The draft ordinance published by the BMJ in April 2022 provides that German pfandbriefe as well as "European Covered Bonds" from EEA member states will be gilt-edged.

Source: DZ BANK Research

OUR ASSESSMENT

Adaptability of the German pfandbrief is a strength

The PfandBG ensures a high level of protection for pfandbrief creditor, also in an international comparison. The amendments repeatedly made to the Pfandbrief Act since its creation in 2005 underline the fact that the legislator is endeavouring to react to a changing environment and to adapt the legal regulations for German pfandbriefe in line with the times. This phenomenon is not new. The legislator is merely continuing the course taken since the introduction of the Mortgage Bank Act, even if the frequency of amendments to the Pfandbrief Act has increased compared to the times of the Mortgage Bank Act. At the same time, we believe it is a good thing that the legislator is repeatedly putting tried and tested regulations to the test and, if necessary, adapting them to the continuously changing regulatory environment and new market standards.

PfandBG with exemplary function

The implementation of the CBD and the changes in the CRR into the German pfandbrief legislation ensures the status of mortgage pfandbriefe, public sector pfandbriefe and ship pfandbriefe as European Covered Bonds (Premium) in the future. This proves that due to the regular adjustments of the pfandbrief legislation, a modern framework is available which corresponds to the current international standards or can even contribute as a model for international standards.

GLOSSARY OF TERMS FROM OVER 250 YEARS OF PFANDBRIEF HISTORY

Pfandbriefe and covered bonds prior to the introduction of the Pfandbrief Act (up to 2005)

Güterpfandbriefe (pfandbriefe on a specific property), pfandbriefe issued by "Landschaften"	Güterpfandbriefe (pfandbriefe on a specific property) were issued at the end of the 18th century by Landschaften (cooperative of noble landowners such as the Silesian Landschaft). Initially, Landschaften were compulsory public-law cooperatives of noble landowners with large estates (Rittergüter) in a particular region (e.g. Silesia or Eastern Prussia). The Landschaften helped their members access credit by issuing pfandbriefe which were then handed out to borrowers and sold on by them to creditors. The Landschaft guaranteed the pfandbriefe which were issued for which in turn all the members (initially) stood as guarantors jointly and severally. The credit framework for each individual member was dependent on the respective earning power of that member's estate who could lend up to half its value.
Pfandbriefe issued by "Stadtschaften"	In the 19th century, "Stadtschaften" also emerged modelled on the Prussian Landschaften. These Stadtschaften were an association including urban house owners among others. The local Stadtschaften were regrouped in the Prussian Central Stadtschaft in order to better coordinate their pfandbrief issues. Looking back, this is a precursor of the pooling idea.
Pfandbriefe issued by "Industrieschaften"	"Industrieschaften" in turn copied the model of the Landschaften and Stadtschaften. They were associations of small and medium-sized enterprises which aimed to provide funding for their members through the issue of pfandbriefe. In the end, however, this precursor of SME covered bonds could not gain a foothold.
Rentenbriefe	Agricultural reforms in Prussia in the early 19th century were aimed at enabling farmers to buy their freedom from compulsory labour and other obligations towards the landowners. However, farmers often lacked the necessary means. A solution to this problem was offered by the Rentenbanken which date from the same time with the issue of tradable "Rentenbriefe" or annuity bonds, which were handed over to the landowners as a form of compensation. The farmers paid interest and principal to the Rentenbanken, with which the latter in turn serviced the Rentenbriefe. Rentenbriefe differ significantly from Güterpfandbriefe in so far as they did not envisage compulsory membership of all farmers in a specific region who would be jointly and severally liable for each other. Farmers were free to decide to sign an agreement with the Rentenbank and were only liable for their own debt to the Rentenbank which in turn were liable to the bondholders. This fundamental innovation was also used by the mortgage banks which sprang up at the same time and gradually also established itself with the Landschaften.
Pfandbriefe issued by mortgage banks under the Mortgage Bank Act (HBG)	In the mid-19th century, mortgage banks developed as limited companies which were allowed to issue pfandbriefe. In general, the mortgage banks lending business was strictly limited and concentrated on property financing. There were also mixed mortgage banks with a broader spectrum of activities. Any pfandbriefe issued always had to be covered to a sufficient degree by mortgage loans. The Mortgage Bank Act was passed in 1899 under the German Reich in order to standardise the legal principles for pfandbriefe; the act came into force on 1 January 1900. The HBG was only replaced by the Pfandbrief Act on 19 July 2005. The trademark "pfandbrief" was first registered in 1930. Rules were approved in 1940 making pfandbriefe gilt-edge instruments.
Public-sector bonds (Kommunalschuldverschreibungen) or pfandbriefe under the Act relating to Pfandbriefe and Similar Instruments issued by Public Credit Institutions (ÖPG)	Mortgage banks have issued municipal bonds (Kommunalschuldverschreibungen) since the end of the 19 century for the purpose of funding loans to the public sector. In this manner, the special credit institutions opened up a new business activity. There were also issuers of municipal bonds which were could be involved in a much broader spectrum of credit activities than the mortgage banks which were regulated by law (including industrial loans). These banks also issued pfandbriefe which became the object of a debate in the 1920s under the heading "Pfandbrief ohne Pfand (or pfandbrief without pledge). Ultimately, this debate led to the Act relating to Pfandbriefe and Similar Instruments issued by Public Credit Institutions (ÖPG) of 21 December 1927 which was replaced from 19 July 2005 by the Pfandbrief Act. Key provisions in the ÖPG are modelled on the HBG. The ÖPG made provisions for matching cover of loans and issued covered bonds, for a cover register to be kept and for the preferential claim of bondholders in the event of a default of the issuer.
Pfandbriefe under the Ship Banking Act (SchBG)	The Ship Banking Act was approved on 14 August 1933; the Act regulated the issue of pfandbriefe backed by ship mortgages; it was replaced by the Pfandbrief Act on 19 July 2005.
Liquidation-gold pfandbriefe (liquidation pfandbrief or Liquidationspfandbrief)	After hyperinflation in Germany had been overcome in 1923, the value of mortgages and bond claims was raised by law, in order slightly to offset the huge losses incurred by bondholders after the devaluation of the currency. The value of pfandbriefe was raised slightly more than that of other asset classes, as a result of which, pfandbrief holders suffered slightly smaller losses. However, pfandbrief issuers were unable to compensate the increase in value of the old issue immediately in cash. Holders of the old pfandbriefe received liquidation pfandbriefe in compensation, which were paid interest and repaid after a few years.

Source: "Der Pfandbrief 1769-2019 - Von der preußischen Finanzinnovation zur Covered Bond Benchmark", DZ BANK Research presentation

Modern pfandbriefe as per Pfandbrief Act (post 2005)

Aircraft pfandbriefe	Only claims secured by registered liens on aircraft or foreign aircraft mortgages may be used as cover for aircraft pfandbriefe. The legal basis was set out in the Pfandbrief Act in 2009.
Mortgage pfandbriefe	Only mortgages may be used as cover for mortgage pfandbriefe insofar as they meet the requirements of the Pfandbrief Act. They are the oldest type of pfandbrief.
Public sector pfandbriefe	The Pfandbrief Act defines the debtors (public-sector bodies and public institutions) whose claims may be used in the cover pool for public pfandbrief. The term "public sector pfandbrief" was first coined at the beginning of the 1990s and was aimed at making a clear distinction in relation to mortgage pfandbriefe. The terms commonly used before that were "Kommunalobligation" or "Kommunalschuldverschreibungen" (public-sector bonds or municipal bonds).
Ship pfandbriefe	Only loan claims which are secured by ship mortgages may be used as cover for ship pfandbriefe insofar as they meet the requirements set out in the Pfandbrief Act. Today's hip pfandbriefe go back to the pfandbriefe under the Ship Banking Act of 1933.

Source: "Der Pfandbrief 1769-2019 - Von der preußischen Finanzinnovation zur Covered Bond Benchmark", DZ BANK Research presentation

Market relevant criteria for pfandbriefe

All the pfandbriefe shown in the table below only differ in terms of the format of their issue and are subject to the same collateral requirements. As explained in detail in the section on the Pfandbrief Act, all pfandbriefe of a specific type (e.g. mortgage pfandbriefe) from a particular issuer are collateralised against the same cover pool.	
Bearer pfandbriefe	Bearer pfandbriefe are freely tradable securities and can be securitised by a certificate. The transfer of a bearer pfandbrief does not require the prior approval of the issuer.
Registered pfandbriefe	Registered pfandbriefe differ from bearer pfandbriefe in so far as they are issued individually in line with the needs of investor and issued in the latter's name. Consequently, they are not fungible and any transfer to other investors is an onerous task.
Traditional pfandbriefe	Traditional pfandbriefe have an issue volume of under EUR 500m. Unlike in the case of benchmark or jumbo pfandbriefe, there is no market-making on offer involving at least three banks. Other so-called sub-benchmarks also come under this label; these have an issue volume of at least EUR 250m - a relevant issue size for the minimum liquidity ratio. As a rule, this category includes privately placed bonds, among which not least registered pfandbriefe.
Benchmark pfandbriefe	Benchmark pfandbriefe have an issue volume of at least EUR 500m and are placed publicly. The syndicate of banks which manages the placement is committed to quote bid and ask prices on demand, also for the time after the new issue has been launched. Benchmark pfandbriefe with an issue volume of EUR 1bn or over are called "jumbo" pfandbriefe. Benchmark pfandbriefe became popular in the wake of the ECB's first covered bond purchase programme (CBPP1) and were also called "Jumbolinos " at the beginning. Markit includes euro-denominated benchmark pfandbriefe (or benchmark covered bonds) in its iBoxx € Covered Index if they have a minimum maturity of over one year and an investment grade rating.
Jumbo pfandbriefe	The minimum size of jumbo pfandbriefe is EUR 1bn and they are placed publicly. The syndicate of banks involved in the placement of such pfandbriefe are committed to provide bid and ask price, also for the time after the new issue has been launched. Like benchmark pfandbriefe, jumbo pfandbriefe also qualify for inclusion in the iBoxx € Covered Index for example, if they also meet relevant criteria regarding the minimum maturity and rating.
Sub-benchmark pfandbrief	The size of sub-benchmark pfandbriefe is less than EUR 500m but at least EUR 250m. This minimum level is important in the context of rules about the minimum liquidity ratio of banks, because, under certain conditions such as rating, covered bonds with an issue volume of at least EUR 250m can qualify as Level 2A assets.
Foreign-currency pfandbriefe	Typically, pfandbriefe tend to be denominated in euro, the official currency in Germany. However, they can also be denominated in other currencies. Non-euro-denominated pfandbriefe are also called foreign currency pfandbriefe from the German point of view.
Zero-coupon pfandbriefe	Interest is paid for depositing money, and in the case of bonds such as pfandbriefe, interest is in the form of a coupon (fixed or variable rate). For pfandbriefe with a coupon of 0 per cent (or a zeron coupon), attracting investors for the money handed over for the duration of the pfandbrief is the difference between the issue price at the time of purchase or issue and the repayment amount at the maturity of the pfandbrief. In view of generally very low interest rates since 2019, situations could arise in which the pfandbriefe are issued above par and repaid at par even though there was no coupon payment during the lifetime of the bond. In such cases, the pfandbrief's (issue) yield is negative. The advantage for investors is merely that other similar forms of investment lead to higher losses.

Source: vdp, DZ BANK Research

Special repayment agreements for pfandbriefe in last 250 years

Pfandbriefe with termination rights	If the necessary agreements are made at the time of the issue of the bond, issuers can repay their bond before it matures. This termination option has been available for a long time. In the past, it was used to help manage matching maturities between the refinancing of the mortgage bank and its lending business (back then, pfandbriefe with a 50-year maturity were not unusual). Calling partial amounts of the volume outstanding of a pfandbrief was also possible, whereby repayments to individual series were determined by random selection. In the 19th century, there were also pfandbriefe with holder termination rights (to make the pfandbrief more attractive). However, termination rights are no longer allowed in the case of modern pfandbrief holders in order to protect the issuer's liquidity and that of the cover pool.
Redemption pfandbriefe	Under an old rule in the Mortgage Bank Act, for a suitable share of newly issued pfandbriefe, repayment had to begin after one third of the term of the bonds had elapsed. A share of 40% was regarded as appropriate and it could also include pfandbriefe with an original maturity of less than 15 years. This rule was therefore of no practical relevance.
Gold pfandbriefe along with grain pfandbriefe on rye and wheat	In the case of some pfandbriefe dating back from the period of hyperinflation in Germany in the 1920s, the repayment amount of the bond was pegged to the value of a specific amount of gold or grain types such as rye and wheat in order to ensure that the pfandbrief kept its value in real terms. The pfandbriefe were securitised by mortgage loans, as usual.
Bonus pfandbriefe	Bonus pfandbriefe were repaid during their life based on a fixed repayment and bonus plan. In addition to the regular capital repayments, there were annual prize draws in which specific series of outstanding pfandbriefe were identified which then received a bonus payment. The aim of the lottery was to promote the attraction of pfandbriefe against sovereign bonds in order to increase the sale of pfandbriefe. The issue of bonus pfandbriefe was banned in 1871.
Premium pfandbriefe and index pfandbriefe	In the case of premium pfandbriefe, the bonds' redemption value exceeds their nominal or face value. Prior to the introduction of the Mortgage Bank Act, there were pfandbriefe which were repaid with a premium of 10 to 20% against the nominal value upon termination. However, premium pfandbriefe were banned with the introduction of the Mortgage Bank Act. Pfandbriefe with a step-up-coupon, however, are still allowed. In addition, according to the Mortgage Bank Act, indexed pfandbriefe are also permissible for which the redemption value is higher than the nominal value, so long as the maximum redemption value is known at the time of issue.
Existing savers' (Altsparer) pfandbriefe	After WWII, pfandbriefe as well as cash were devalued based on a ratio of 10:1 through the currency reform in 1948 in the western German occupied zone. The gains of mortgage debtors through the devaluation of the loan claims were confiscated by law and put towards the general equalisation of the war burden (Lastenausgleich). Consequently, part of the intrinsic value of the properties underlying the cover pool for the mortgage pfandbriefe as collateral was withdrawn. To offset this, existing savers (i.e. those with holdings at 1 January 1940) received compensation of 10%. Bonds which had been converted and were still denominated in Reichsmark were combined into Altsparerpfandbrief series and were moreover exempt from tax. In exchange for the compensation paid to former investors, the mortgage banks received claims on the state (central government body).

Source: "Der Pfandbrief 1769-2019 - Von der preußischen Finanzinnovation zur Covered Bond Benchmark", DZ BANK Research presentation

Pfandbriefe with a societal impact

ESG pfandbrief	Issue proceeds from ESG pfandbriefe are only used to finance public-sector projects or property financings which meet a fairly broad definition of sustainability criteria (environmental, social & governance, ESG). The cover used for these pfandbriefe is the same as in the case of all other bonds of this type.
Green pfandbrief	Since 2019, the Association of German Pfandbrief Banks has held the right to the word mark "Grüner Pfandbrief" or "Green Pfandbrief", for which the Association has published minimum standards. Pfandbrief banks wishing to use the "Green Pfandbrief" brand must comply with these minimum standards. So far there have only been Green Mortgage Pfandbriefe, the issue proceeds of which flow primarily into the financing of particularly energy-efficient buildings. Like all other ESG covered bonds, Green Pfandbriefe also refer to the same cover pool as all other bonds of the same type.
Rentenbriefe	See above under "„Pfandbriefe and covered bonds prior to the introduction of the Pfandbrief Act (up to 2005)“
Social pfandbrief (Sozialer Pfandbrief)	In March 2021, the Association of German Pfandbrief Banks published minimum standards for "Soziale Pfandbriefe" or "Social Pfandbriefe", which - similar to those for Green Pfandbriefe - must be met by issuers if they wish to adorn their bonds with this name.
Social pfandbriefe (Sozialpfandbriefe(	Social pfandbriefe were pfandbriefe and public-sector bonds of which 90 per cent of the proceeds were used to promote social housing construction. They were used in the post-war era to alleviate the housing shortage in Germany. Interest on social pfandbriefe was made tax-free in 1952 with the first Act to Promote the Capital Market. These tax-advantaged social pfandbriefe have all been repaid already.

Source: "Der Pfandbrief 1769-2019 - Von der preußischen Finanzinnovation zur Covered Bond Benchmark", DZ BANK Research presentation

EURO COVERED BOND OVERVIEW

EURO DENOMINATED FIXED RATE COVERED BONDS WITH AN AMOUNT OUTSTANDING OF AT LEAST EUR 250M

Issuer	ISIN	Maturity	Repayment type*	Coupon (in percent)	Amount out-standing in EUR m	Indicative ASW in basis points	LCR category	ESG?
DZ HYP	DE000A14KKJ5	30.09.2022	Soft bullet	0.125%	500	62	1	×
DZ HYP	DE000A161ZU5	24.03.2023	Soft bullet	0.200%	500	1	1	×
DZ HYP	DE000A2G9HC8	30.06.2023	Soft bullet	0.250%	500	14	1	×
DZ HYP	DE000A161ZL4	27.10.2023	Soft bullet	0.625%	500	-1	1	×
DZ HYP	DE000A2TSD55	29.01.2024	Soft bullet	0.010%	750	-2	1	×
DZ HYP	DE000A2BPJ45	01.03.2024	Soft bullet	0.125%	500	-7	1	×
DZ HYP	DE000A13SWZ1	05.06.2024	Soft bullet	0.625%	500	2	1	×
DZ HYP	DE000A12UGG2	18.09.2024	Soft bullet	1.125%	750	-4	1	×
DZ HYP	DE000A2AAW12	06.12.2024	Soft bullet	0.050%	500	0	1	×
DZ HYP	DE000A14J5C9	26.02.2025	Soft bullet	0.625%	250	9	2A	×
DZ HYP	DE000A2AASB4	06.06.2025	Soft bullet	0.375%	750	1	1	×
DZ HYP	DE000A289PC3	12.09.2025	Soft bullet	0.010%	1,000	-5	1	×
DZ HYP	DE000A2G9HE4	13.11.2025	Soft bullet	0.500%	1,000	-1	1	×
DZ HYP	DE000A161ZQ3	02.02.2026	Soft bullet	0.750%	875	0	1	×
DZ HYP	DE000A14KKM9	31.03.2026	Soft bullet	0.375%	500	-3	1	×
DZ HYP	DE000A2BPJ78	16.06.2026	Soft bullet	0.500%	500	0	1	×
DZ HYP	DE000A2AAX45	31.08.2026	Soft bullet	0.100%	500	-4	1	×
DZ HYP	DE000A2AAW53	30.09.2026	Soft bullet	0.500%	500	-3	1	×
DZ HYP	DE000A3E5UY4	26.10.2026	Soft bullet	0.010%	1,000	-1	1	×
DZ HYP	DE000A2TSDW4	15.01.2027	Soft bullet	0.010%	1,000	2	1	×
DZ HYP	DE000A14J5J4	01.04.2027	Soft bullet	0.500%	750	-3	1	×
DZ HYP	DE000A2G9HD6	30.06.2027	Soft bullet	0.750%	500	1	1	×
DZ HYP	DE000A2BPJ86	30.08.2027	Soft bullet	0.625%	750	-1	1	×
DZ HYP	DE000A2TSDY0	12.11.2027	Soft bullet	0.010%	500	-1	1	×
DZ HYP	DE000A2GSP56	22.03.2028	Soft bullet	0.875%	750	-2	1	×
DZ HYP	DE000A289PA7	23.06.2028	Soft bullet	0.010%	1,000	-1	1	×
DZ HYP	DE000A289PH2	27.10.2028	Soft bullet	0.010%	1,000	-1	1	×
DZ HYP	DE000A2G9HL9	30.01.2029	Soft bullet	0.875%	750	1	1	×
DZ HYP	DE000A3H2TQ6	20.04.2029	Soft bullet	0.010%	1,000	-1	1	×
DZ HYP	DE000A2TSDV6	29.06.2029	Soft bullet	0.050%	750	1	1	×
DZ HYP	DE000A3MP619	21.11.2029	Soft bullet	0.750%	1,000	0	1	✓
DZ HYP	DE000A13SR38	18.01.2030	Soft bullet	0.875%	750	1	1	×
DZ HYP	DE000A3H2TK9	29.03.2030	Soft bullet	0.010%	1,000	-3	1	×
DZ HYP	DE000A3E5UU2	15.11.2030	Soft bullet	0.010%	750	0	1	×
DZ HYP	DE000A3MP684	30.05.2031	Soft bullet	1.625%	750	2	1	×
DZ HYP	DE000A2NB841	17.04.2034	Soft bullet	0.875%	500	4	1	×
DZ HYP	DE000A2TSDZ7	10.11.2034	Soft bullet	0.375%	500	5	1	×
DZ HYP	DE000A2BPJ60	23.03.2037	Soft bullet	1.375%	250	13	2A	×

Source: Bloomberg, DZ BANK Research, ASW = asset swap spread, LCR = Liquidity Coverage Ratio, spread data as of 30 August 2022, 08:20h, ✓ = yes, × = no, ESG = pfandbriefe secured by cover assets, which comply with certain environmental, social and/or governmental standards

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