Volksbanken Raiffeisenbanken
cooperative financial network

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THE GERMAN PFANDBRIEF MARKET 2021 | 2022

Environment for new issues remains positive – Pfandbrief act ensures future EU premium status

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PREFACE

Dear Sir/Madam,

Over the course of the second year of the COVID-19 pandemic, developments on the Pfandbrief market have been fairly mixed. While the market has continued to grow, the number of large-volume new public issues has decreased markedly. This is due to loans being offered by the European Central Bank (ECB) at favourable terms, which is dampening primary market activity. Moreover, banks have seen rising deposit balances over this period. Given the above, it is fair to assume that high new issue volumes achieved up to and including in 2019 will not be matched for the year as a whole – not even the issuer group of 'traditional' mortgage banks, which regularly issue Pfandbriefe through public placements, has the power to change this. At the same time, the ECB's bond-buying programmes have contributed to ensure that, following the pandemic-driven widening of risk premiums in the spring of 2020, covered bond spreads have narrowed again considerably, and have been moving sideways at a low level for months now.

The growth trend in sustainable covered bonds (also known as ESG covered bonds), which include Green and Social Pfandbriefe, continues apace. This is accompanied by a steady increase in the number of active ESG issuers. By mid-2021, there were already 26 banks which had at least one ESG covered bond with issuance volumes of at least €250 million – up from 20 issuers at the end of 2020. In July, the EU Commission presented its long-awaited proposal on the definition of green bonds. The European Green Bond Standard (EUGBS), which forms one component of the EU Commission's 2018 action plan for financing sustainable growth, is part of the European Green Deal, in which the EU's overarching aim is to make Europe climate-neutral by 2050. Any green bond issuer throughout the world can voluntarily follow the EUGBS, which is expected to become the "gold standard" for green bonds in the future. However, there is still some way to go before this can happen, since the EU Commission's proposal on the EUGBS has not yet entered into force.

We already reported last year on Europe's influence on German Pfandbriefe. In May 2021, the European Covered Bond Directive was transposed into national law via an amendment to the German Pfandbrief Act, providing a legal basis for the status of Pfandbriefe as "European Covered Bonds (Premium)". However, for this to happen, the Pfandbrief Act, the main pillar of the legal framework for covered bank bonds in Germany, had to be amended in two stages. The first changes already entered into force on 1 July 2021, and include granting the cover pool administrator the authority to extend the maturity of Pfandbriefe by up to twelve months, subject to certain conditions. The introduction of this legislative 'soft bullet' is arguably the most heavily debated change. Further changes, which we already present in this report, will enter into force on 8 July 2022.

"The German Pfandbrief Market 2021/2022" is also available in German. All current reports can be downloaded from our website (on www.dzhyp.de/en/about-us/market-research/).

Yours sincerely,

DZ HYP

September 2021

PFANDBRIEF ACT ENSURES PREMIUM STATUS IN FUTURE

- » **Fewer new issues placed publicly and yet the volume outstanding is growing because banks need their covered bonds themselves**
- » **Central bank's bond purchases and subdued primary market activity are reflected in stable risk premiums**
- » **The European covered bond directive was implemented in May, the updated legal framework is securing the future premium status of the pfandbrief**

Summary
The pfandbrief market grew by 5.8 per cent to EUR 391.5bn in the first half of the year. At the same time, large-volume new issues placed publicly with investors have become rare. The German pfandbrief market is thus following a trend that can also be observed in many other European countries. One reason for this can be seen in the favourable long-term tenders of the European Central Bank (ECB), which are too attractive for banks to pass up. At the same time, deposit holdings at credit institutions rose sharply during the corona pandemic. Both dampened the refinancing needs of the institutions, which would have to be covered by the capital market. As a result, the volume of new issues of large-volume covered bonds collapsed in 2021. It was not uncommon for banks to retain their own covered bonds and deposit them as collateral for central bank loans. For this reason, the covered bond volume outstanding grew in Germany and other countries.

Mortgage banks in particular are still regular guests on the primary market this year. The environment for new issues is good thanks to the bond purchase programmes of the ECB. These covered bond purchases - in addition to the low level of primary market activity - are likely to have made a significant contribution to the fact that, after the widening of risk premiums in spring 2020, covered bond spreads narrowed significantly again and have been moving sideways at a low level for several months.

Away from new issues and spreads, new European standards are a point of interest these days. The European covered bond directive was transposed into German law in May 2021 via an amendment to the Pfandbrief Act, thus lsecuring the status of pfandbriefe as European Covered Bonds (Premium). In addition, there will soon be a new gold standard for sustainable bonds with the European green bond standard, which makes reference to the strict requirements of the EU taxonomy. The standards for Green and Social Pfandbriefe of the Association of German Pfandbrief Banks (vdp) will probably not be raised to this new gold standard immediately because, among other things, practical problems in connection with the necessary data collection still stand in the way.

MARKET DEVELOPMENTS

The second year in the Corona pandemic

The pandemic is still with us

At mid-year 2021, the corona pandemic is still in the headlines. Since July 2021, the infection figures in Germany have been rising again. The virus, whose delta variant has already spread around the world, seems to be far from defeated despite some progress in vaccination campaigns. The pandemic has thus remained one of the most important topics, which was also the focus of interest for market participants in mid-2020. What has changed in the past twelve months with the corona pandemic? At the time, there were concerns about a second wave in Europe and the associated negative impact of further lockdowns on economic development. In mid-2020, no vaccines against covid-19 had been approved in America and Europe. However, promising candidates were spreading some hope for an improvement of the situation. Away from the pandemic, the European Union (EU) was negotiating intensively with Great Britain on a trade agreement in order to reorganise trade relations after brexit. Across the great pond, candidates in the United States of America entered the home stretch of the presidential campaign.

CORONA, VACCINES AND THE DOMINANT INFLUENCE OF CENTRAL BANKS ON THE PFANDBRIEF MARKET

Topics and yield levels mid-2020	Topics and yield levels mid-2021
Corona pandamic, and headaches about a looming second wave	Monetary policy, bond purchases and worries about inflation
Negotiation between the EU and Great Britain about a trade agreement	Fourth corona wave, delta variante and progress in the vaccination campaigns
US presidential elections	New market standards for sustainable bonds
Bund yield (10 years): around -0.4 per cent, pfandbrief yield (10 years): around -0.2 per cent	Bund yields (10 years): around -0.5 per cent, pfandbrief yields (10 yields): around -0.1 per cent

Source: DZ BANK Research

Impact of the pandemic

Uncertainty among market participants was high in mid-2020, especially because of the rampant pandemic. The economic situation was heavily burdened by the corona pandemic, which ultimately also led to a strong increase in risk provisions at the banks in order to be better prepared against loan defaults. This weighed heavily on the profitability of the credit institutions in 2020. Borrowers (both private and commercial) were helped with temporary payment moratoriums if they suffered a loss of income due to short-time work or the shutdown of public life and could no longer afford their loan instalments. The overall bad mood in the economy and on the capital markets was impressively reflected in the stock markets, with share prices plummeted massively in the first half of 2020.

The world keeps turning

The world has continued to turn. In the first half of 2021, many financial institutions were already able to partially release their risk provisions that had been made in 2020. As a result, the banks' business figures had already improved significantly by the end of the second quarter of 2021. Things also continued on the international stage without, for example, a hard brexit that some feared. For the UK's exit from the

EU on 1 January 2021, it was possible to work out a trade agreement at the last minute that prevented a hard brexit - and the associated negative effects on trade between these two economic areas. However, this agreement does not yet regulate all relevant issues. The US election was held in November 2020. In January 2021, the new US president was inaugurated, who in his first months in office launched a gigantic economic stimulus and investment package to combat the consequences of the pandemic in the USA, which is also likely to have had a positive impact on the mood of market participants. Even if the corona pandemic no longer dominates the headlines as much as it did twelve months ago, many discussions still revolve around the question of how life with the pandemic should continue in the long term. The stock markets seem to have reached their verdict as early as mid-2020, switching quite quickly from crisis mode to bull market. After the crash in share prices in the first half of 2020, share prices rose again from summer 2020 to August 2021. The German share index DAX kept climbing to new record levels during the aforementioned period. At that time, hopes for effective vaccines contributed to the positive change in sentiment. In our opinion, the governments' economic and infrastructure programmes and the central banks' expansive monetary policy may also have been important.

The ultra-expansive monetary policy and its side effects

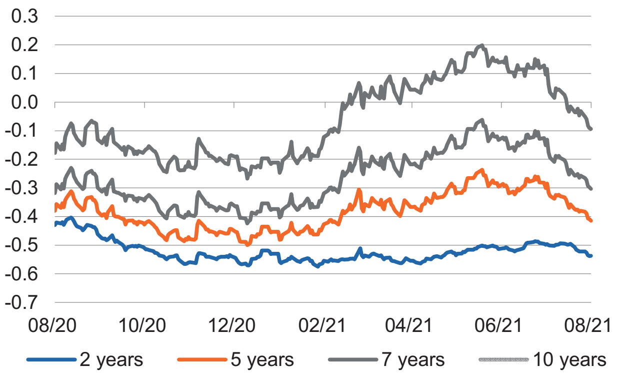
Effects of the pandemic on bond markets were overshadowed by ECB bond purchases

Of course, the collapse in economic growth did not leave the bond markets unscathed in 2020. However, the effects were strongly overshadowed by the ultra-expansive monetary policy of the central banks. In the Eurozone, for example, it was and is the massive bond purchases initiated by the ECB in March 2020 under its Pandemic Emergency Purchase Programme (PEPP) that had and still has a firm grip on yields and risk premiums on the bond market - including the pfandbrief market. In this environment, yields on ten-year Bunds hovered around -0.4% in mid-2020 and even fell below -0.6 per cent by the end of 2020. The ups and downs in the months thereafter ultimately led to Bund yields trading at around -0.5 per cent for a time in mid-2021. In parallel, yields on two-year German government bonds have fallen by more than 10 basis points since the spring to near -0.8 per cent (as of 5 August 2021).

Yield curve of pfandbriefe became somewhat steeper

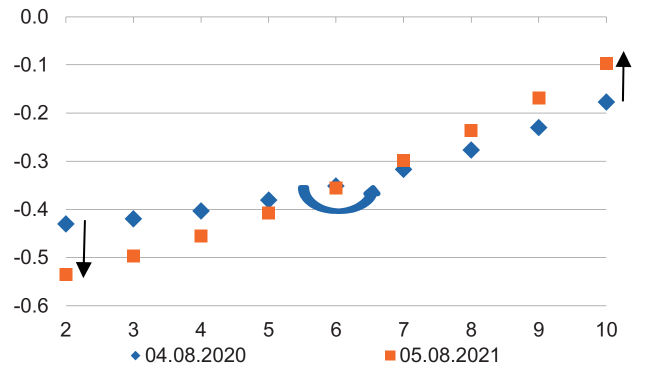
German pfandbriefe, or covered bank bonds in general, are purchased by the ECB within the framework of its third covered bond purchase programme (CBPP3) and PEPP, so that one might actually assume that pfandbrief yields - which can stand for the entire international covered bond market - would have followed a similar path as government bonds in the past twelve months. However, it was not quite like that. In mid-2020, ten-year pfandbriefe yielded an average of just over -0.2 per cent, rising to 0.2 per cent (plus, mind you) by May 2021, following the trend of Bunds. However, pfandbrief yields have since fallen again to -0.1 per cent. This means that the yield level of covered bank bonds at the beginning of August is still slightly above the level of twelve months ago, while the Bund yields have decreased on balance by about 10 basis points compared to the value of one year ago. After a bit of back-and-forth, pfandbrief yields in the medium maturities have remained almost unchanged compared to the beginning of August 2020 (as of 5 August 2021). Only the yields of short-dated pfandbriefe have fallen by around 10 basis points on average over the year (two-year maturity). Accordingly, the generic yield curve calculated by DZ BANK Research for the pfandbrief market has steepened by around 18 basis points from 4 August 2020 to 5 August 2021.

ONLY A SLIGHT CHANGE IN THE ABSOLUTE YIELD LEVEL OF PFANDBRIEFE
X-AXIS: MONTH/ YEAR, Y-AXIS: GENERIC PFANDBRIEF YIELD IN PER CENT



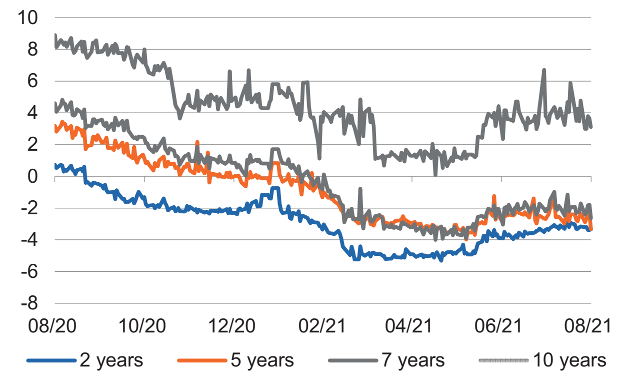
Source: Bloomberg, calculations and presentation DZ BANK Research; as of 5 August 2021

GENERIC PFANDBRIEF YIELD CURVE STEEPENED BY AROUND 18 BASIS POINTS WITHIN 12 MONTHS
X-AXIS: RESIDUAL MATURITY IN YEARS, Y-AXIS: GENERIC PFAND-BRIEF YIELD IN PER CENT



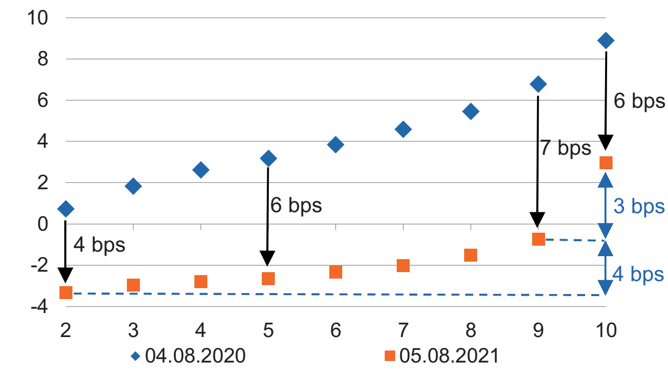
Source: Bloomberg, calculations and presentation DZ BANK Research

RISK PREMIUMS FOR PFANDBRIEFE HAVE NARROWED FURTHER IN TWELVE MONTHS - THANKS TO ECB PURCHASES
X-AXIS: MONTH/ YEAR, Y-AXIS: GENERIC SWAP SPREADS FOR PFANDBRIEFE IN BASIS POINTS



Source: Bloomberg, calculations and presentation DZ BANK Research; as of 5 August 2021

SWAP SPREADS FOR TEN-YEAR PFANDBRIEFE LAG SOMEWHAT BEHIND THE TIGHTENING MOVEMENT
X-AXIS: REMAINING MATURITY IN YEARS, Y-AXIS: GENERIC SWAP SPREADS FOR PFANDBRIEFE IN BASIS POINTS (BPS)



Source: Bloomberg, calculations and presentation DZ BANK Research

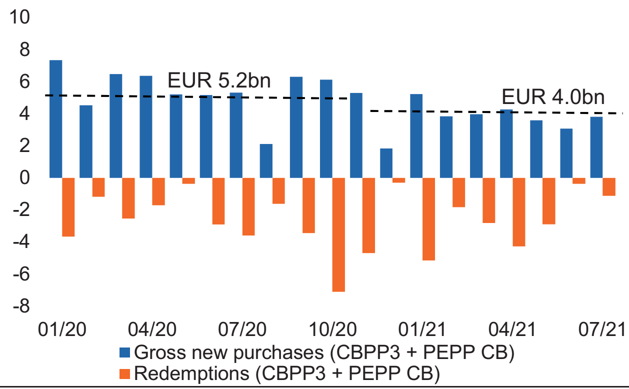
Credit curve became flatter, but there is an upward slope at the long end

The swap spread of German pfandbriefe narrowed in the period mentioned. At the short end of the curve, the narrowing was somewhat less pronounced with around 4 basis points than for pfandbriefe with medium and longer maturities, for which the swap spreads narrowed by up to 7 basis points. The credit curve for pfandbriefe based on the swap spreads has thus become flatter as a result. The pfandbrief credit curve is particularly flat in the range of maturities from two to nine years. The gap between the respective swap spread of pfandbriefe with a maturity of two and nine years was only just under 3 basis points on 5 August 2021. In contrast, the average swap spread for ten-year pfandbriefe is once again almost 4 basis points above that of nine-year pfandbriefe. The upward slope at the long end of the pfandbrief credit curve is only a few basis points, but it stands out due to the very flat curve up to nine years maturity. This peculiarity can be explained by the fact that quite a lot of covered bonds with maturities of ten years or longer were issued between the end of April and the end of June. During this period, the spectre of inflation also haunted the bond market. Due to many investors' concerns about rising inflation in the context of the economic recovery, swap spreads of covered bonds with long maturities widened more than those of bonds in the short and medium maturity segments. The swap spreads of ten-year bonds - in contrast to bonds with a maturity of up to nine years - were not able to fully recover from this widening by the beginning of August.

ECB purchases decline in 2021 compared to the previous year

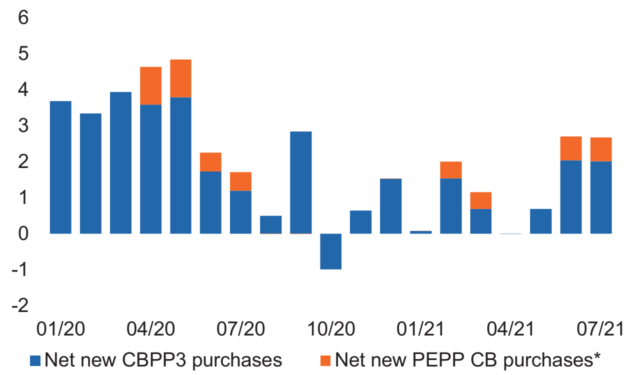
The purchases under CBPP3 are the driving factor for the spread development and are therefore worth a closer look. At the end of July 2021 - during the summer break in the primary market for covered bonds - CBPP3 purchases came to an almost complete standstill. Average purchases per trading day in the last week of July were only EUR 14m. Due to the significant CBPP3 purchases at the beginning of July and because of the low maturities this month of just EUR 1.1bn, the CBPP3 portfolio has grown by around EUR 2bn to EUR 293.8bn on balance. This results in gross CBPP3 purchases of EUR 3.1bn for July. Gross purchases are the changes in holdings plus the volume of cash inflows into the CBPP3 portfolio due to bond redemptions. In order to determine the total volume of ECB purchases in the covered bond market, the purchases under PEPP still have to be taken into account. Unfortunately, the ECB only reports this data every two months and then only for the entire two-month period. For June and July 2021, this figure was EUR 1.3bn. If this volume is distributed evenly over these two months, the purely mathematical result is EUR 664m per month. This brings the ECB's gross purchases to a total of just under EUR 3.8bn in July. In 2020, the ECB's monthly covered bond purchases under CBPP3 and PEPP together averaged EUR 5.2bn. The month of July was not atypical for the current year. The monthly average fell to around EUR 4bn for the period January to July inclusive in 2021 compared to 2020.

RELATIVELY STABLE GROSS PURCHASES WHEN CBPP3 AND PEPP ARE CONSIDERED TOGETHER
X-AXIS: MONTH/ YEAR, Y-AXIS: FIGURES IN BILLION EUROS



Source: European Central Bank, presentation DZ BANK Research; PEPP CB = Covered Bond Purchases under PEPP

CURRENTLY, COVERED BOND PURCHASES UNDER PEPP ONLY COMPLEMENT CBPP3 PURCHASES.
X-AXIS: MONTH/ YEAR, Y-AXIS: IN BILLIONS OF EUROS



Source: European Central Bank, presentation DZ BANK Research, * Data for two months were always distributed evenly over the respective calendar months concerned

Covered bond purchases by the ECB on a gigantic scale

Due to the reduced monthly purchase volume, the ECB's covered bond holdings can only grow more slowly, if at all. At the same time, the volume of repayments in the CBPP3 portfolio seems to have stabilised on a high level of EUR 30.1bn for 2021 (previous year: EUR 33.2bn), which also works against portfolio growth. However, the ECB's covered bond holdings are already at an extraordinarily high level. Under PEPP, the central bank has meanwhile accumulated covered bank bonds with a volume of EUR 5.4bn. If the holdings of all portfolios are added up, the result is a breathtaking total of EUR 302bn (figures for PEPP and CBPP 1 to 3 as of the end of July 2021). This corresponds to almost half of the market value of all CBPP3-eligible bonds in the iBoxx € Covered Index at that time. These figures demonstrate the extent of the ECB's gigantic covered bond purchases in recent years since CBPP3 was launched in October 2014.

ECB COVERED BOND HOLDINGS COMPARED TO THE IBOXX € COVERED INDEX

Figures in billion euros	End July 2020	End July 2021
CBPP1	0.5	0.4
CBPP2	2.9	2.4
CBPP3	284.0	293.8
PEPP (covered bonds only)	3.1	5.4
Total ECB covered bond holdings	**290.5**	**302.0**
Market value of the bonds in the iBoxx € Covered Index	867.8	802.1
Market value of CBPP3-eligible bonds in the iBoxx € Covered Index	655.4	612.7
ECB covered bond holdings divided by the market value of CBPP3-eligible bonds in the iBoxx € Covered Index	**44.3%**	**49.3%**

Source: ECB, Markit, presentation DZ BANK Research

ECB purchases are an important support for covered bond spreads

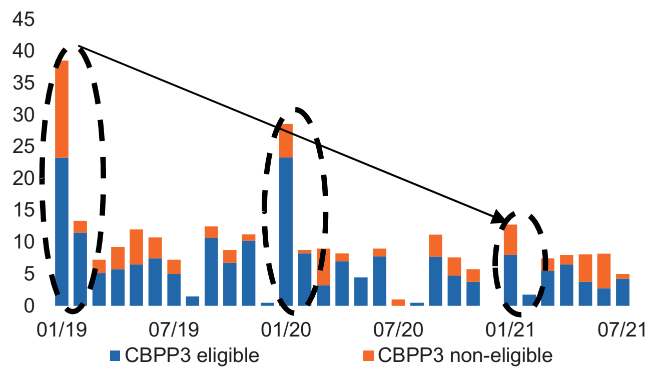
There is of course a reason for the decline in ECB purchases in the covered bond market. We suspect that the central bank is finding it increasingly difficult to maintain the buying pace from 2020 due to the lower primary market activity in recent months. Therefore, it would not be a surprise if monthly purchases start to go up again when there are more new issues ready to buy. However, that does not look like happening for the time being until the end of 2021. The ECB purchases are, however, an important support for covered bond spreads, even at the historically somewhat lower level. They make a significant widening of risk premiums in the coming months very unlikely, despite the threat of a fourth corona wave, for example.

Cheap central bank loans instead of covered bond new issues

Historically low volume of new issues of publicly placed benchmark covered bonds

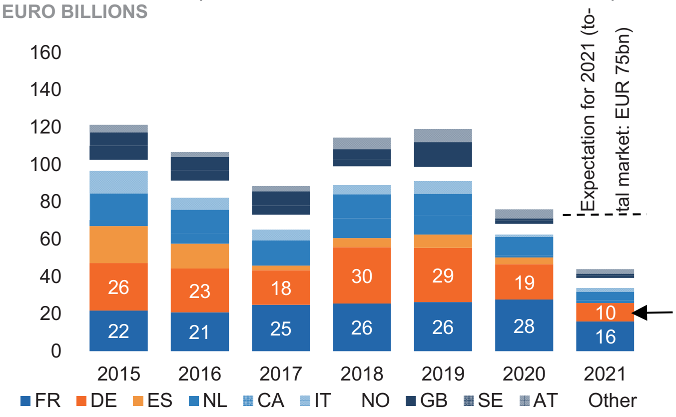
Because of what we see as the very likely interaction of primary market activity and the volume of ECB purchases, it is particularly worth taking a close look at primary market activity. In this context, new issuance activity in the market for euro benchmark covered bonds with an issuance volume of at least EUR 500m is a good starting point, because large-volume new issues have accounted for about half of all new euro-denominated issues in a year in each of the last ten years - with two exceptions. In the first seven months of the current year, covered bonds in the euro benchmark format with a total volume of EUR 51.3bn were issued or tapped. Compared to the same period last year, this is already significantly less than the EUR 69.1bn at the time. The respective values from the years 2015 to 2019, in which new issue volumes fluctuated from EUR 78.8bn to EUR 102bn from January up to and including July, clearly show in a longer historical comparison how sharply new issue activity slumped in 2021. This was already apparent at the beginning of the year. The volume of new issues in January and February was sharply below the levels of previous years in 2021. Experience shows that a weak start into the year is difficult to make up for in the covered bond market as the year progresses. We therefore assume that the low volume of new issues for 2020 as a whole of EUR 94.1bn compared to the past ten years will not be nearly reached in 2021 and will probably be in the order of EUR 75bn.

MAINLY DUE TO LOW PRIMARY MARKET ACTIVITY AT THE BEGINNING OF THE YEAR AND LONG SUMMER BREAKS ...
NEW ISSUE VOLUME (ONLY EURO BENCHMARK COVERED BONDS) IN EURO BILLION



Source: Bloomberg, calculations and presentation DZ BANK Research

... THE VOLUME OF NEW ISSUES FELL SHARPLY IN 2020 AND ESPECIALLY IN 2021, INCLUDING PFANDBRIEFE.
NEW ISSUE VOLUME (ONLY EURO BENCHMARK COVERED BONDS) IN EURO BILLIONS



Source: Bloomberg, calculations and presentation DZ BANK Research figures for 2021 up to and including the end of August 2021

Favourable central bank credit leads to subdued primary market activity

The reason for the weakness of the primary market is again to be found with the ECB. It is true that the central bank is supporting the general market environment with its bond purchases and issuers can enjoy a well-functioning primary market despite the corona pandemic. However, the central bank is offering plenty of cheap money through its current long-term tenders (TLTRO III). The special conditions for loans under TLTRO III (50 basis points below the ECB's deposit rate), which have been extended until mid-2022, are so fabulously attractive that banks are not going to miss out on this free money. The TLTRO III offers had already led to declining new issues in the course of 2020. In 2021, however, this effect has already been at work since the beginning of the year. The special conditions for TLTRO III are related to combating possible negative effects on bank lending. The better the economy regains its footing in the coming months, the more likely it is that the special conditions will come to an end and that primary market activity will pick up again. However, this is not to be expected until 2022 at the earliest. The general statements for the covered bond market can in principle also be applied to the German pfandbrief market. It is unlikely that the volume of new issues (only euro benchmark pfandbriefe) of the previous year will be reached in 2021. It is likely to fall well short of the volumes of previous years, even if there is an issuer group with the specialised mortgage banks that regularly places pfandbriefe publicly. It was also two German mortgage banks that ended the summer break on the primary market in mid-August 2021 with euro benchmark new issues. Therefore, the German pfandbrief banks have so far been able to defend their place as the second strongest country segment in large-volume new issues behind the French banks.

Banks increasingly use their own covered bonds as collateral for the central bank

Despite a declining volume of publicly placed new issues, the covered bond market is growing. This sounds paradoxical at first, if only the market for covered bonds in the euro benchmark format is considered. This actually shrank by just under EUR 24bn in 2020. If our primary market forecast for 2021 of EUR 75bn is correct for the year as a whole, then the outstanding volume of large-volume euro-denominated covered bonds will decline by just under EUR 57bn again this year. According to the figures of the European Covered Bond Council (ECBC), the outstanding volume of euro-denominated covered bank bonds increased by around EUR 100bn or 5.7 per cent to 1.8 trillion euros in the course of 2020. Euro. In the same period, the global cov+ered bond market even grew - converted to euros - by around EUR 200bn or 7.4 per cent to a new record volume of EUR 2.9tr. Unfortunately, we do not have more recent figures from the ECBC. The solution to the riddle of the different developments in the market for euro benchmarks and the overall market lies in the strongly increased volume of retained covered bonds. In 2020, banks issued their own covered bonds on a large scale and, as far as possible, deposited them with the central bank as collateral for cheap TLTRO III loans. These bonds are not included in the primary market statistics for euro benchmark new issues. However, they have driven up the outstanding volume of the overall market.

PARADOXICAL MARKET GROWTH DUE TO RETAINED COVERED BONDS

	2015	2016	2017	2018	2019	2020	2021
New issues and taps (gross, only euro benchmark covered bonds), in euro billion	146.0	125.5	111.6	136.6	138.1	94.1	75.0*
New issues and taps (net, only euro benchmark covered bonds), in euro billion	-0.9	-27.5	-11.4	47.2	35.1	-23.9	-56.9
New issue volume of all covered bonds denominated in euros, in euro billions	275.0	252.1	235.4	271.8	257.5	302.8**	--
Share of euro benchmark covered bonds in all new euro covered bond issues	53%	50%	47%	50%	54%	31%**	--
Outstanding volume of all euro-denominated covered bonds, in euro billions	1,593.0	1,580.9	1,578.5	1,673.7	1,740.1	1,840.5	--
Volume outstanding of all covered bonds (all currencies, converted to euros), in euro billions	2,499.0	2,491.3	2,460.6	2,576.9	2,707.6	2,907.8	--

Source: Bloomberg, European Covered Bond Council, calculations and presentation DZ BANK Research, * gross new issues for 2021 (DZ BANK Research forecast, by the end of July 2021, euro benchmark covered bonds with a total volume of EUR 51.3bn had been issued), ** Effect due to retained covered bonds.

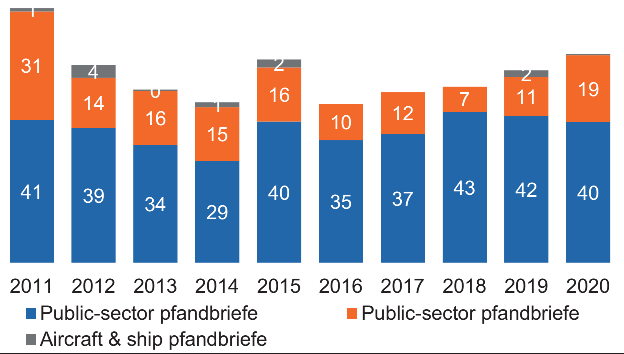
High issue volume, but large share of retained pfandbriefe

Similar developments took place on the German pfandbrief market in 2020 as shown above for the global covered bond market. According to the vdp, the gross new issue volume in 2020 was EUR 59.8bn, just about the highest since 2012. However, according to the association, around EUR 31bn of the new issues were pfandbriefe retained by the issuer, which were most likely used as collateral for the ECB. At the same time, the volume of publicly placed benchmark pfandbriefe fell to EUR 19bn in 2020 (2019: EUR 29.2bn). In the current year, the primary market for large-volume pfandbriefe does not look any better after the first seven months, with a gross new issue volume of just under EUR 9bn (as of 5 August 2021). In our view, it is very unlikely that the mark for large-volume pfandbrief new issues in 2021 will be similar to the EUR 19bn mark from 2020. However, the share of retained pfandbriefe in new issuance is likely to remain high in our opinion. This is evident from the vdp's figures: similar to last year, Pfandbrief banks did indeed launch an impressive new issue volume of around EUR 41bn in the first seven months of 2021 (of which public sector pfandbriefe accounted for EUR 12.9bn and mortgage pfandbriefe for EUR 28.1bn). According to the Bundesbank, however, around EUR 21bn of these new issues were launched in March, the month in which the seventh tranche was issued under TLTRO III. We therefore suspect that a large part of these new issues was retained by the pfandbrief banks and used as collateral for the ECB.

Registered pfandbriefe lose further market share

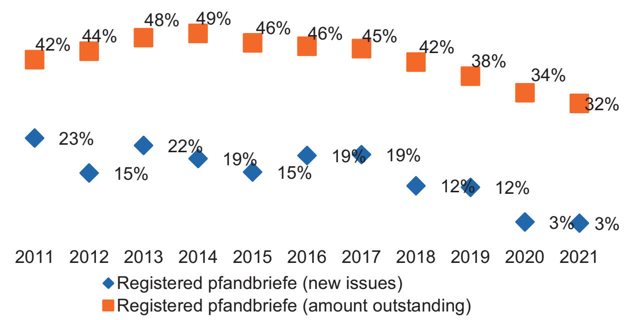
The story in the market for registered pfandbrief (namenspfandbriefe) from 2020 seems to be repeating itself again this year. Registered pfandbriefe can only be transferred with the consent of the issuer and are mostly issued with rather small issue volumes and with bond features tailored to the investor. Due to the term, which is usually tailor-made for the investor, and the higher expenditure on the part of the issuer, registered pfandbriefe are usually somewhat more expensive from the investor's point of view than benchmark pfandbriefe with comparable features. In the current low interest rate environment and perhaps due to the fact that benchmark new issues in the past and in the current year have increasingly longer maturities compared to previous years, the share of registered pfandbriefe in the volume of new issues collapsed to 3 per cent in 2020 and also in the first five months of 2021, according to data from the Bundesbank. As a result, the share of registered pfandbriefe in the overall market fell further and reached around 32 per cent at the end of May 2021. The figures suggest that investors seem to prefer the more liquid euro benchmark pfandbriefe in the current environment.

STRONG NEW ISSUANCE ACTIVITY, BUT MOST NEW PFANDBRIEFE WERE RETAINED BY THE ISSUER
GROSS NEW ISSUE VOLUME IN EURO BILLION



Source: Association of German Pfandbrief Banks, calculations and presentation DZ BANK Research

IMPORTANCE OF REGISTERED PFANDBRIEFE CONTINUES TO DECLINE
SHARE OF REGISTERED PFANDBRIEFE IN THE VOLUME OF OUTSTANDING AND NEW ISSUES

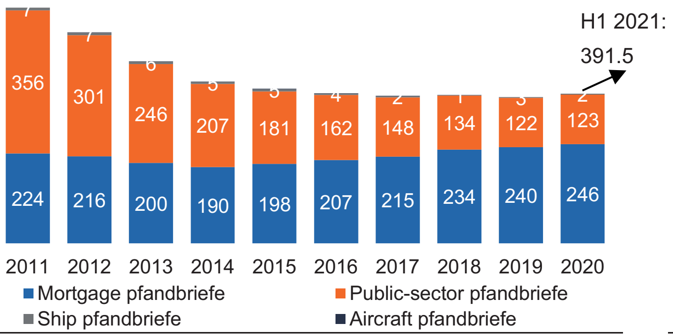


Source: Bundesbank, calculations and presentation by DZ BANK Research, data for 2021 as at the end of May

Volume outstanding has been hovering around the EUR 370bn mark since 2016

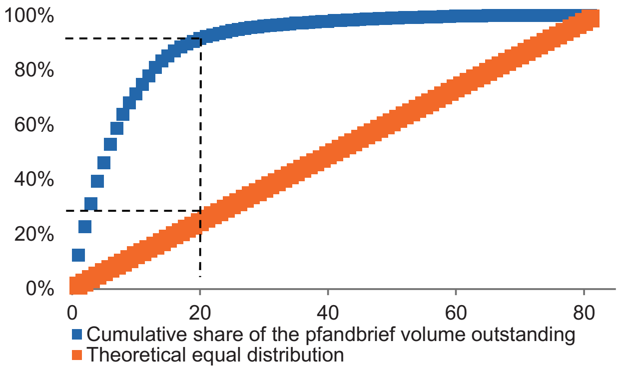
Although euro benchmark pfandbriefe seem to be en vogue among investors at the moment, by far not all pfandbrief banks use this refinancing instrument. At the end of 2020, 22 of the total of 82 active pfandbrief banks in Germany had covered bonds in the euro benchmark format outstanding. No new benchmark issuer has joined since the beginning of the year (as of 5 August 2021). However, the number of pfandbrief banks with at least one outstanding sub-benchmark pfandbrief (a bond with an outstanding volume of at least EUR 250m but less than EUR 500m) increased to nine in the first half of 2021 (from eight at the end of 2020). Despite the rather high number of active pfandbrief banks at 82, the lion's share of the volume outstanding is concentrated on the regular benchmark issuers. At the end of 2020, according to our research and calculations, the pfandbrief volume outstanding amounted to EUR 372bn. Of this, 71 per cent was already accounted for by the top ten pfandbrief issuers (by volume outstanding) and 91 per cent by the top 20 pfandbrief issuers. Due to mergers among German benchmark issuers in recent months and years, the concentration of the volume outstanding has increased, although new commercial and regional banks have repeatedly started issuing pfandbriefe. Both are likely to continue. This means that the concentration of the volume outstanding on the large issuers is likely to increase further. The recent merger of Deutsche Hypo with its parent company Norddeutsche Landesbank contributed to this, for example. At the same time, further smaller credit institutions will continue to take up the pfandbrief business, which means that the number of active pfandbrief banks should continue to increase slightly in the future despite mergers. Finally, it remains to be noted that the volume outstanding in the pfandbrief market has hovered around the EUR 370bn mark since 2016 until the end of 2020. However, there was a real growth spurt in the first half of 2021 to EUR 391.5bn, with the market share of mortgage pfandbriefe growing for years and reaching a value of 66.6 per cent in mid-2021. However, due to the recent extensive use of retained public sector pfandbriefe as collateral for the ECB, this trend had weakened recently. Public sector pfandbriefe most recently had a market share of 32.8 per cent of the volume outstanding, with the remaining 0.5 per cent accounted for by ship pfandbriefe.

VOLUME OUTSTANDING ROSE TO EUR 391.5BN IN THE FIRST HALF OF 2021 (MAINLY DUE TO RETAINED COVERED BONDS)
VOLUME OF PFANDBRIEFE OUTSTANDING IN EURO BILLION



Source: Association of German Pfandbrief Banks, issuers, calculations and presentation DZ BANK Research

MORE THAN 90 PER CENT OF THE MARKET IS ACCOUNTED FOR BY THE TOP 20 PFANDBRIEF ISSUERS (BY VOLUME OUTSTANDING)
X-AXIS: NUMBER OF PFANDBRIEF BANKS; Y-AXIS: MARKET SHARES IN THE PFANDBRIEF OUTSTANDING IN PER CENT, AS OF Q4 2020



Source: Association of German Pfandbrief Banks, issuers, calculations and presentation DZ BANK Research

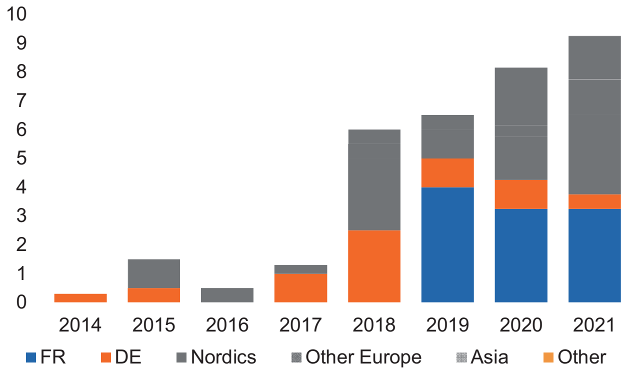
ESG covered bonds: dynamic growth at a low level

The growth trend in sustainable covered bonds (or ESG covered bonds), which also include Green and Social pfandbriefe from Germany, continues. In the first half of 2021, the global new issue volume of ESG covered bonds, at EUR 9.25bn, already exceeded the new issue volume of EUR 8.15bn for the whole of 2020 (both figures refer to euro-denominated new issues with a volume of at least EUR 250m or taps in these ESG bonds). Accordingly, the outstanding volume of ESG covered bonds climbed to EUR 32.9bn by mid-2021 (end-2020: EUR 24.1bn). The dynamic growth is impressive. However, it is taking place at a rather low starting level. By way of comparison, the outstanding volume of unsecured ESG bank bonds was already over EUR 100bn on 30 June 2021 (end of 2020: EUR 71bn) and the volume of new issues in the first half of 2021 reached a value of EUR 31.3bn (full year 2020: EUR 23bn). So there is still room for growth for ESG covered bonds, including Green Pfandbriefe. The market for ESG covered bonds was opened by a German pfandbrief bank in 2014. In the meantime, Germany has fallen back to third place behind France and Norway in terms of market share in the volume of ESG covered bonds outstanding.

Growth impulses from euro-denominated covered bonds ...

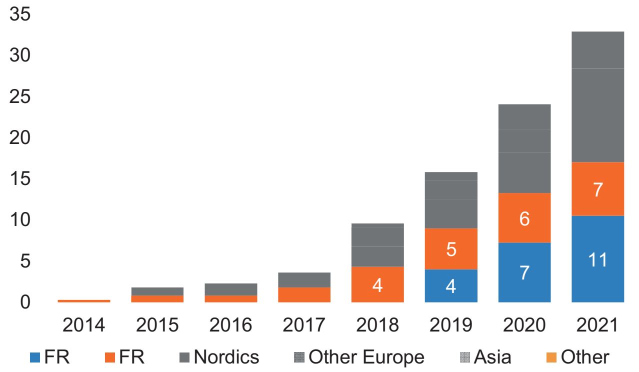
Not only is the outstanding volume of the ESG covered bond market growing, but the number of active ESG issuers is also steadily increasing. In mid-2021, there were already 26 banks with at least one ESG covered bond outstanding with a volume of EUR 250m. At the end of 2020, there were still 20 credit institutions. More issuers mean a broadening of the market. This development gives reason to hope for further growth in the volume of new issues. Most ESG covered bond issuers are from Europe, which means that most sustainable covered bank bonds are denominated in euros. According to the ECBC, ESG covered bonds with a total volume of EUR 28.7bn were outstanding (all currencies) at the end of 2020. According to our calculations, the share of euro denominated ESG covered bonds was 84 per cent at that time. We therefore assume that the decisive growth impulses for the ESG covered bond market will continue to come from euro-denominated bonds in the coming years.

DUE TO LOW NEW ISSUE ACTIVITY IN THE MARKET FOR ESG COVERED BONDS ...
ESG COVERED BONDS (GROSS NEW ISSUES) IN EURO BILLION (EURO COVERED BONDS, AT LEAST EUR 250M ISSUE VOLUME)



Source: Bloomberg, calculations and presentation DZ BANK Research, data for 2021 since the beginning of the year up to and including 5 August 2021

... GERMANY FALLS BACK TO THIRD PLACE BEHIND FRANCE AND NORWAY IN TERMS OF MARKET SHARE OF VOLUME OUTSTANDING
VOLUME OUTSTANDING OF ESG COVERED BONDS IN EURO BILLION (EURO COVERED BONDS, MINIMUM ISSUE VOLUME OF EUR 250M)



Source: Bloomberg, calculations and presentation by DZ BANK Research, data for 2021 as of 5 August 2021.

... and through uniform framework conditions

The further development of the ESG covered bond market will largely depend on the extent to which uniform framework conditions regarding, for example, sustainable assets, support a positive development. This topic is presented in more detail in the next chapter.

ESG STANDARDS IN THE COVERED BOND MARKET

Green and Social Pfandbriefe

Minimum standards for Social Pfandbriefe were published in 2021

In the past twelve months, standards in the ESG covered bond market have evolved, also in Germany. In March 2021, the Association of German Pfandbrief Banks (vdp) published minimum standards for Social Pfandbriefe for the first time, which are based on the Green Pfandbrief concept of August 2019 and build on the Social Bond Principles of the International Capital Market Association (ICMA). According to the vdp, the eligible assets refinanced from the proceeds of a Social Pfandbrief must offer a social added value, whereby this is derived from the United Nations Sustainable Development Goals (SDGs), which, according to the vdp, include the following areas in particular:

- Financially sustainable basic infrastructure (for example, clean drinking water, sanitation, transport and energy)
- Access to basic social services (for example health care, education)
- 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 information (at least annually) on its social cover assets (including an impact study). The Social Pfandbrief programme must also be externally assessed on an ongoing basis by an independent third party (second party opinion, SPO) in accordance with the vdp's requirements. This task is usually performed by ESG rating agencies.

PLEASE DO NOT CONFUSE: SOCIAL PFANDBRIEFE (SOZIALPFANDBRIEFE) AND SOCIAL PFANDBRIEFE (SOZIALE PFANDBRIEFE)

Social Pfandbriefe (Sozialpfandbriefe) were mortgage pfandbriefe and public sector pfandbriefe, where at least 90 per cent of the proceeds of the bond 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

Pfandbrief Act applies, no separate cover pools

Social Pfandbriefe complement Green Pfandbriefe, for which the association has held the trademark right since 2019. No separate cover pools are maintained for Green and Social Pfandbriefe. Furthermore, the sustainable pfandbriefe of a pfandbrief bank naturally also fall under the general provisions of the Pfandbrief Act and the relevant ordinances. In both cases, therefore, the principle remains that there is only one cover pool for each covered bond type of an issuer, to which the same legal requirements apply. A Green mortgage pfandbrief, for example, is therefore collateralised with the same cover assets as all other outstanding mortgage pfandbriefe of an issuer. 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. Green Pfandbriefe are subject to the same additional transparency requirements as Social Pfandbriefe, which also includes an SPO. In our opinion, the minimum standards for Green and Social Pfandbriefe are fully in line with ICMA's ideas. The vdp envisages a continuous further development of its minimum standards for sustainable pfandbriefe, which are based on international standards - such as the ICMA guidelines.

REQUIREMENTS FOR THE PROPERTIES IF THE MORTGAGE LOANS ARE TO BE USED AS ELIGIBLE COVER ASSETS FOR GREEN PFANDBRIEFE (ACCORDING TO VDP'S MINIMUM STANDARDS)

In the case of new buildings, the building complies with the statutory energy standards - valid at the time of financing - of the respective country

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

- The comparative values* published by the German government are complied with. The same comparative values apply to properties located abroad.
- A sustainablility certificate has been issued by an established provider that ranks the commercial property in one of the provider's top categories.
- The commercial property is in the top 15 per cent of the national commercial property stock with regard to energy consumption/ demand.

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

- The residential building can be assigned to energy efficiency class B or better.
- The energy demand is no greater than 75 kWh/m².
- The project is co-financed by KfW funding programmes for energy-efficient construction and renovation.
- The residential buliding is in the top 15 per cent of the national residential property stock with regard to energy consumption/ demand.

When financing renovations/ refurbishments, the following criteria apply:

- A reduction in energy consumption or demand of at least 30 per cent is achieved and ...
- ... the energy efficiency measures must lead to energy consumption/ demand reaching levels consistent with EU climate objectives.

Source: Association of German Pfandbrief Banks, * link to comparative values, presentation DZ BANK Research

The foundations for sustainable pfandbriefe: ICMA guidelines

ICMA calls for transparency

In the context of sustainable covered bonds, the most important international standards are ICMA's frameworks for green, social and sustainable bonds (Green, Social, Sustainability, GSS). ICMA has created separate guidelines or principles for the individual topics, which all follow the same basic idea and are revised annually (most recently in June 2021). The 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 should 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 adequately record the use of the bond proceeds. The selected projects shall have a clear social or environmental benefit. ICMA guidelines recognise a wide range of sustainable projects. ICMA emphasises that it does not favour particular technologies or environmental standards. Rather, it is up to countries and international organisations to develop technical standards or taxonomies that allow for greater comparability of sustainable assets.

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 clearly recorded. The issuer must ensure through an internal process that the bond proceeds are used exclusively for the intended 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 or invested in the transition phase.

Reporting

- Transparency is essential in ICMA's view. 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, CO_2 emission savings) should be stated. If this is not possible (due to for example confidentiality or the high number of projects), meaningful information should be provided at portfolio level.

External control

True to the motto "trust, but verify", the second pillar of the ICMA recommendations aims at verifying the issuer's disclosures. The external verification 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). Compliance with the criteria required to obtain the label should, in turn, be verified by an external third party according to ICMA's idea.

Scoring/ rating

- An issuer could also have its bonds or sustainable bond programme reviewed and rated 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 his general experience with the topic of sustainability as well as the concrete 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 covered bond 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 has created a framework in the form of guidelines in 2020. 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.

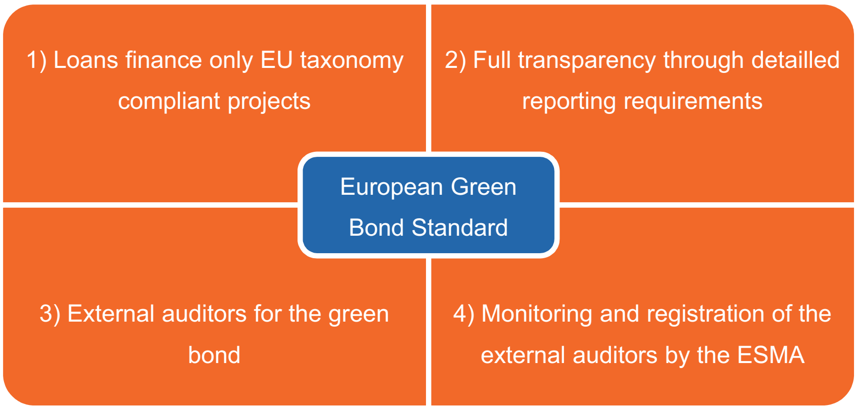
Source: ICMA, presentation DZ BANK Research

Proposal for EU green bond standards

EU Commission presents draft regulation for European Green Bonds

On 6 July 2021, the EU Commission presented its long-awaited proposal on the definition of green bonds. The so-called European Green Bond Standard (EUGBS), which is part of the EU Commission's 2018 Action Plan on Financing Sustainable Growth and is also part of the European Green Deal, is based on the corresponding proposals of the Technical Expert Group on Sustainable Finance. Specifically, the EUGBS imposes four requirements on green bonds: 1) the proceeds of the bond issue must be fully allocated to projects that comply 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 external auditors by the European Securities and Markets Authority (ESMA).

THE FOUR CORNERSTONES OF THE EUROPEAN GREEN BOND STANDARD



Source: EU Commission, presentation DZ BANK Research

Gold standard for green bonds

All issuers of green bonds worldwide can voluntarily follow the EUGBS, regardless of whether they are based inside or outside the EU. The EU Commission envisages that the EUGBS will become the "gold standard" for green bonds, for the benefit of issuers (proof of financing of taxonomy-compliant projects) and investors (easier identification of sustainable investments and thus reduction of the risk of "greenwashing"). However, there are still a few steps to be taken before this future gold standard sees the light of day, because the EU Commission's proposal on the EUGBS has not yet entered into force. It has first been forwarded to the EU Parliament and the EU Council within the framework of the European legislative procedure and is being examined by these institutions. If the proposals of the EU Commission remain, the ICMA Guidelines would be clearly recognisable in points 2) and 3). The reference to the EU taxonomy and the requirements for external third parties go far beyond the ideas of the ICMA. Due to the link between the EU GBS and the EU taxonomy, it is therefore worth taking a closer look at this complex set of rules.

A brief overview of the EU taxonomy

EU Green Deal as a central European project

The EU Taxonomy Regulation (EU Regulation 2020/852 of the European Parliament and of the Council establishing a framework to facilitate sustainable investment) entered into force on 12 July 2020. It is aimed at financial market participants that offer, for example, sustainable or green bonds. Real estate financing or the pfandbrief business do not fall directly under the EU Taxonomy Regulation. The EU Taxonomy Regulation is part of the European Union's efforts for the European Green Deal, in the context of which the EU is aiming for climate neutrality by 2050. It sets criteria for when economic activities can be considered environmentally sustainable. Two essential criteria from our point of view are:

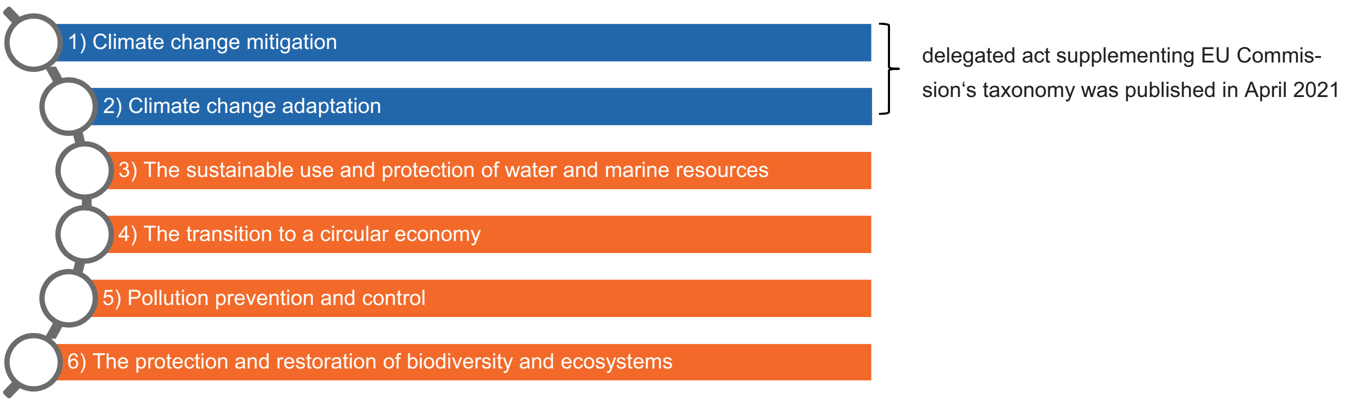
» The activities make a significant contribution to achieving at least one of the six environmental goals.

» The economic activities do not result in significant harm to any of the environmental objectives (Do No Significant Harm, DNSH).

Substantiation of the evaluation criteria

The EU Taxonomy Regulation defines six environmental objectives. A detailed taxonomy has been published for two of these objectives (climate change mitigation and adaptation). Within the framework of the delegated act published on 21 April 2021, the EU Commission has also defined the requirements and technical evaluation criteria for assessing whether an economic activity is sustainable within the meaning of the taxonomy. The current version of the delegated act must still be examined and approved by the EU Parliament and the European Council. They have until the beginning of December 2021 at the latest to do so. However, these two European institutions can no longer make changes to the present taxonomy. It is therefore expected that the delegated act can enter into force on 1 January 2022 after publication in the EU Official Journal.

ENVIRONMENTAL OBJECTIVES OF THE EU TAXONOMY REGULATION



Source: DZ BANK Research

Definition of green buildings is important for the covered bond market

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. These green mortgages could be used to issue taxonomy-compliant Green Pfandbriefe, which would also be an important prerequisite for compliance with the European Green Bond Standard.

There was a long struggle over the criteria

The definition of energy-sustainable buildings was the subject of a long struggle. In the original draft of the delegated act, it was demanded, among other things, that buildings constructed before the end of 2020 must have at least a Class A energy performance certificate in order to be classified as taxonomy-compliant. In this context, the European Covered Bond Council pointed out in a statement that in some countries only 1 per cent of the building stock meets this requirement. In the end, this and other requirements were relaxed. Thus, properties are also recognised as taxonomy-compliant if they belong to the top 15 per cent in terms of primary energy demand of the building stock of a country or region, irrespective of the class of any existing energy certificate. A rule that was already proposed in a similar form by the Technical Expert Group set up by the EU Commission in 2019, and was therefore also used by numerous European covered bond issuers as a selection criterion for green mortgage loans even before the publication of the delegated act. Furthermore, the draft delegated act still envisaged a maximum energy consumption for new buildings from 2021 that was to be 20 per cent below the requirements for a nearly zero-energy building to be defined by each member state. This value was reduced to 10 per cent in the April 2021 version.

SUMMARY OF IMPORTANT RULES FOR TAXONOMY-COMPLIANT BUILDINGS

	Delegated act (as of 21 April 2021)
Acquisition and ownership of buildings (built until the end of 2020*)	1. At least EPC of class A, or 2. the building is in the top 15 per cent of the national or regional building stock in terms of primary energy demand (comparison with the stock of buildings built before 31 December 2020)
Construction of new buildings (built starting 2021)	The primary energy demand of the building is 10 per cent below the requirements for nearly zero-energy buildings (NZEB).
Renovation of buildings	The renovation reduces the primary energy demand by at least 30 per cent.

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

In future, more data must be collected when granting loans

However, it is not enough for a building to meet the presented and quite ambitious criteria. A building will only be fully taxonomy compliant if the mentioned criteria and the DNSH rule are met. The requirement to support one environmental objective without counteracting any of the other environmental objectives of the EU Taxonomy Regulation is a coherent concept. However, it currently raises very practical problems, which is why the vdp sometimes uses the word "bureaucracy monster" in connection with the topic of EU taxonomy, because banks have to collect more and more data in real estate financing. A prominent example that is mentioned again and again relates to the protection of water and marine resources in context of non-residential mortgages. When building or renovating commercial properties, the flow of water from WC flushes, showers and taps must not exceed certain thresholds. This information - to put it mildly - is unlikely to be readily available and in electronic form for all existing properties financed by banks in the past. For banks - not only for German pfandbrief banks - it is therefore likely to be a major challenge to collect the data necessary to ensure taxonomy compliance for these real estate loans and to adapt their processes accordingly for future new business.

Some stumbling blocks still have to be navigated around

In our view, it is also unclear how buildings (and the corresponding mortgage loans) are to be treated that no longer rank among the top 15 per cent in energy consumption over time. Or what happens if the taxonomy criteria change over the years (after all, they are supposed to be reviewed regularly and adjusted to changes if necessary)? This could be a major problem for covered bank bonds that want to comply with the EUGBS (which in turn require taxonomy-compliant mortgages). The lending business that is refinanced with covered bonds is usually - appropriate to the real estate lending business - long-term. In the case of private home financing, it is not uncommon for the term to be significantly longer than ten years. The buildings that were pledged as collateral for the mortgage loans cannot easily be replaced by modern buildings if the original houses may no longer meet newer, stricter criteria. In this scenario, mortgage loans that were originally considered green and taxonomy compliant could subsequently lose this status. Grandfathering could provide certainty. This means that real estate loans that were taxonomy-compliant when they were granted should remain so even if the criteria were subsequently tightened.

Green Pfandbriefe and European Green Bond Standards

Commercial real estate finance plays an important role for many major German pfandbrief banks, for which providing evidence of taxonomy compliance is likely to be very costly. The vdp is therefore striving for developing its own criteria towards the taxonomy criteria within the framework for Green Pfandbriefe over time. However, the vdp's minimum requirements currently make no direct reference to the taxonomy criteria. Green Pfandbriefe can therefore keep their name and also remain in line with the ICMA guidelines. But they will not - as it looks at the moment - be granted European Green Bond status any time soon.

ECB and climate risks

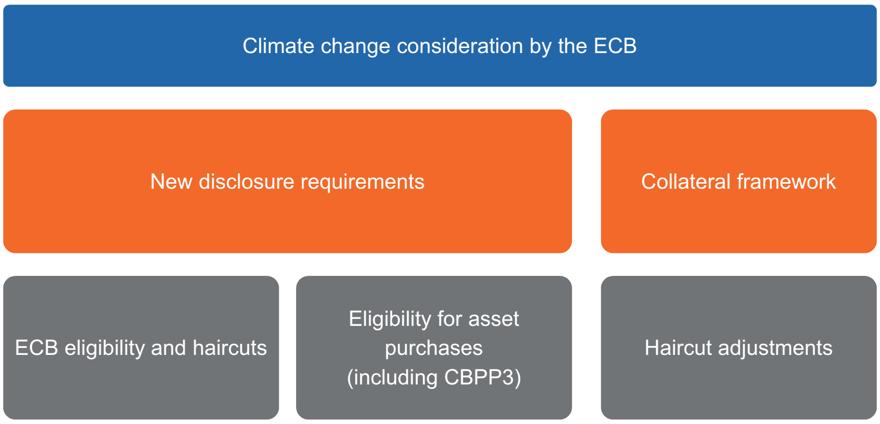
ECB wants to make its contribution

The European Central Bank (ECB) also wants to contribute to achieving the European climate targets. In July 2021, the ECB presented a plan for measures to take climate protection aspects into account in its monetary policy strategy, some of which are also relevant for covered bonds.

New disclosure requirements to apply as of 2024

The planned ECB measures range, for example, from the revision of macroeconomic models, to the development of new indicators for green bonds and the carbon footprint of banks, to the adjustment of the requirement profile for eligible collateral and bonds that can be purchased by the central bank. Especially the latter two points are important for the covered bond market. The ECB will introduce disclosure requirements on environmental sustainability for private sector assets (for example corporate and bank bonds) "*as a new eligibility criterion or as a basis for differentiated treatment for collateral and asset purchases*". In plain language, this means that the eligibility of covered bonds as collateral or their haircut in this context will in future depend on the fulfilment of new disclosure requirements regarding sustainability issues in addition to the existing requirements. Special transparency requirements for securitisations or covered bonds have already existed for years, which essentially relate to credit-relevant features of the cover pools. With the new requirements, the ECB wants to take into account disclosure measures and EU initiatives. Moreover, as we understand it, the new transparency requirements should also apply to the bond purchase programmes. This means that only if the required data are published can bonds continue to be purchased under the third covered bond purchase programme (CBPP3). Through these measures, the ECB aims to "*promote more consistent disclosure practices in the market.*" Details on the disclosure requirements are not yet known and will only be presented next year. According to the ECB's roadmap on climate-related measures, issuers will be able to use 2023 as an adjustment period before the rules come into force in 2024.

ECB PLANS TO TAKE CLIMATE RISKS INTO ACCOUNT: IN WHICH AREAS COULD THE ECB MEASURES HAVE AN IMPACT ON THE COVERED BOND MARKET?



Source: ECB, presentation DZ BANK Research

Climate risks can influence collateral haircuts

In addition, climate aspects are to be taken into account in the catalogue of requirements for ECB-eligible collateral in order to cover all relevant risks. According to our reading, this should conceal a possible adjustment of the haircuts for the collateral depending on the identified climate risks, which may also affect covered bank bonds. Implementation is planned from mid-2022, should changes to the collateral framework be necessary.

No preferential treatment of green covered bonds planned under CBPP3

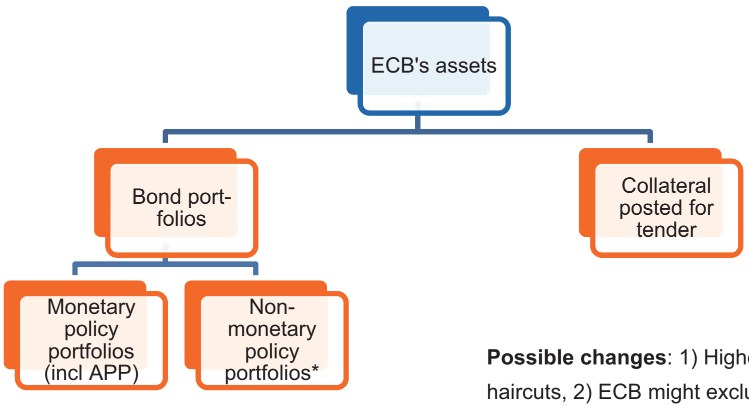
In future, climate risks will also play a role as a selection criterion in the ECB's corporate bond purchase programme (CSPP) and are to be incorporated into the CSPP purchase conditions from mid-2022. This direct influence of ecological considerations on the purchasing behaviour of the central bank is (at least currently) not explicitly provided for in the covered bond purchases under CBPP3.

High practical relevance

The measures presented by the ECB to take climate risks into account are manifold and may in part be of high practical relevance for the covered bond market, as the ECB and CBPP3 capability touch on important topics (keyword: new disclosure requirements) for issuers and investors. Whether the new disclosure requirements and the time for their implementation will prove to be a real hurdle for issuers cannot yet be predicted due to the lack of details. However, given the high importance of ECB eligibility of covered bonds both for issuers (through the use of retained covered bonds as collateral for central bank loans) and for investors from the banking industry, as well as the reduction of the placement risk of new issues through the ECB's

CBPP3 purchases, issuers are likely to pull out all the stops to implement the new transparency requirements on time. Similar to what the institutions have already done in the past in cooperation with the rating agencies when the ECB introduced the requirements regarding credit risk-relevant ratios. The new measures should enable the monetary authorities to give a strong push to the desired more uniform disclosure practice of climate risks, from which all market participants - especially ESG investors - would ultimately benefit.

IMPACT OF CLIMATE CHANGE ON ECB'S ASSETS



Possible changes: 1) ECB could favour purchases of green bonds, 2) ECB might exclude issuers, which do not meet certain climate-related criteria

Possible changes: 1) Higher haircuts, 2) ECB might exclude issuers, which do not meet certain climate-related criteria, **3) ECB might only you ratings, which adequately consider climate-related risks**

Source: European Central Bank, presentation DZ BANK Research, * for example pension funds

ECB examines the extent to which agencies take climate risks into account in their rating analyses

The ECB's assets, including the collateral posted in its favour, are exposed to default risks, which may also be influenced by climate risks. There is a very interesting sentence on this in an ECB press release of 8 July 2021: "*Furthermore, the ECB will assess whether the credit rating agencies accepted by the Eurosystem Credit Assessment Framework have disclosed the necessary information to understand how they incorporate climate change risks into their credit ratings.*" The ECB currently considers credit ratings from DBRS Morningstar, Fitch, Moody's and S&P. These agencies take ESG factors, which include climate risks, into account in their analyses for covered bonds and have already started to show these aspects separately. It remains to be seen whether the ECB will expand the reporting standards currently applicable to the agencies to include further key figures relating to climate risks and thus ensure standardisation in this playing field as well.

PFANDBRIEF RATINGS

Climate risks are becoming increasingly important in credit analysis

Natural disasters are a factor in credit analysis

Disasters such as the forest fires that ravaged parts of southern Europe in August or the floods in parts of central Europe in the summer clearly show how devastating the forces of nature can be. Buildings and sometimes entire settlements were washed away or burned, or had to be demolished for safety reasons due to excessive damage as part of the clean-up efforts. Extreme weather conditions, for whose increasingly frequent occurrence experts blame climate change, favour the occurrence of natural disasters. Banks would do well to systematically consider the growing risks posed by climate change in their lending process. However, these exceptional events, which unfortunately seem to be becoming more frequent, are difficult to predict. And it should not be an alternative to stop lending because of the possible threat of natural disasters in certain regions. In our view, hedging against the risks, where for example natural hazard insurance can help, is gaining in importance. When compiling cover pools for pfandbriefe, there is an additional possibility: by spreading the cover assets as evenly as possible geographically or regionally - as far as the issuer's business activities allow - good protection for the value of the cover pool can also be achieved (assuming that the natural disasters only occur regionally).

Empirical findings on the default risks of green mortgages not yet conclusive

The majority of the 20 million or so residential buildings in Germany are quite old and require a lot of energy - often from oil and gas - for heating. But it is not only the real estate in Germany that plays a central role in climate change. New construction and the use of buildings account for almost 40 per cent and thus a significant share of global greenhouse gas emissions. Banks can - as mentioned above - contribute to reducing CO_2 emissions by financing climate-friendly new buildings and energy-efficient renovations of existing buildings. This may be socially sensible and desirable per se. However, in the context of credit analysis, the question also arises whether green building standards also lead to lower default risks, so that green mortgages can also be seen as the better assets with lower credit risk attached to them. This issue has been preoccupying the covered bond market for some time, with more and more market participants speaking out on the subject over the past twelve months. For example, a study by the Ca' Foscari University of Venice showed that there is a negative correlation between the energy efficiency of real estate and the default risks of the associated mortgage loans. In plain language, this means that the default risks decrease when the energy efficiency of the properties increases. Unfortunately, the empirical findings have not been conclusive so far. Scope Ratings had also commented on this topic in its publication "Covered Bond Quarterly: Q2 2021". In it, the agency states that it sees no systematic connection between the energy efficiency of a building and the default risks of a loan. In the agency's own investigations based on available data on the Norwegian covered bond market, no significant dependencies between probability of default, loss given default of the loan and energy efficiency could be found. Fitch also issued a statement along the same lines in the summer. We assume that this topic will be the subject of even more studies in the coming years, as banks hope for lower capital requirements for energy-efficient mortgage loans if a negative correlation is proven. European banking supervisors have already made it clear in the past that the negative correlation must be based on robust data before any regulatory benefits for green mortgages are discussed.

Pfandbrief ratings and the corona pandemic

No downgrade of German pfandbriefe in the past months

The corona pandemic has not yet led to any pfandbrief programme being downgraded. In the course of 2020, the rating agencies had indeed set the outlooks for most banks to negative against the backdrop of the dramatically worsened economic situation and the sharp increase in risk provisions of many credit institutions. However, this had no effect on the level of the pfandbrief ratings. In the meantime, the business figures for the first half of 2021 are available and many banks have been able to partially reverse the risk provisioning that was mostly made across the board in 2020. The earnings situation of the banks has improved noticeably on average by the middle of 2021 compared to 2020. As a result, the majority of bank rating outlooks have now been set to stable again by S&P & Co. Only in a few cases were there actual downgrades of the issuer rating (mainly in Germany), but these were not reflected in lower pfandbrief ratings. The table below summarises the rating development for covered bank bonds from Germany. It should be noted that the deterioration in Fitch's rating distribution for German pfandbriefe from mid-2020 to mid-2021 is related to the agency assigning new AA ratings to pfandbriefe and withdrawing credit ratings for other programmes previously rated AAA during the period mentioned. In terms of all covered bond ratings worldwide, it can be seen for all three agencies mentioned in the table that the rating distribution has improved slightly overall.

DEVELOPMENT OF THE RATINGS OF GERMAN COVERED BOND PROGRAMMES

Share of the respective rating category at the end of July 2021 (end of July 2020)	Moody's	S&P	Fitch
Germany: Number of ratings	39 (37)	6 (6)	13 (13)
Aaa/ AAA	77% (76%)	83% (83%)	69% (85%)
Aa/ AA	21% (22%)	17% (17%)	31% (15%)
< Aa/ AA	3% (3%)	--	--
Worldwide: Number of ratings	249 (245)	99 (96)	103 (110)
Aaa/ AAA	61% (60%)	78% (75%)	75% (71%)
Aa/ AA	29% (29%)	14% (17%)	11% (11%)
< Aa/ AA	10% (11%)	8% (8%)	14% (18%)

Source: Rating agencies, calculations and presentation DZ BANK Research

Has the corona pandemic weakened the systemic importance of covered bonds?

Something seems to have changed, however. During the corona pandemic, covered bonds were widely pledged as collateral for central bank loans - often in the form of their own retained covered bonds. Moody's points out in this context that the importance of central bank loans as a crisis management tool has increased sharply in the current pandemic, while the importance of covered bank bonds has declined in mirror image. The financial market crisis following the insolvency of Lehman Brothers in 2009 and the resulting crisis of confidence among banks led to a sharp rise in risk premiums for unsecured and covered bank bonds. In some cases, the risk premiums for unsecured bond issuance were so high that banks strongly preferred to issue covered bonds for cost reasons when it came to refinancing on the capital market. Due to the deep crisis of confidence immediately after the Lehman insolvency, even new issuing activities in the covered bond market came to a standstill for a few months. At that time, the ECB helped to revive the primary market for covered bonds with its first covered bond purchase programme (CBPP1). At that time, covered bank bonds were an important component in overcoming the financial market crisis, during which banks refinanced themselves much more via the capital market than they do today, despite sharply increased risk premiums. At least this was not the case in the first phase of the corona pandemic in 2020. The risk premiums for unsecured bank bonds had indeed widened sharply in the first half of 2020. In the second half of the year, however, a noticeable recovery set in - similar to the stock markets. There was no question of a crisis of confidence among banks, as in the times of the financial crisis in 2009. The stricter regulatory requirements for banks that were introduced after the financial market crisis contributed to this (keyword bail-in and the build-up of loss-absorbing debt at banks, to name just one example). As a result, the banking sector entered the corona pandemic stronger than it entered the financial market crisis in 2009. However, it was also important that central banks worldwide had provided commercial banks with practically unlimited liquidity, thus remove any doubts about the short-term solvency of financial institutions. In 2020 and 2021, banks deposited their own covered bonds as collateral with central banks, in some cases on a large scale, for the cheap central bank loans. The role of the covered bond as a refinancing instrument in the context of the current crisis has therefore changed considerably. If this development continues over a longer period of time, Moody's sees a risk that the importance of covered bonds for the capital market and investors could suffer in the long term. In the agency's view, the likelihood of support for covered bond programmes or the market by the public sector could decline in the long term if they are no longer needed as a direct refinancing instrument in the crisis and thus lose some of their systemic relevance. Rating agencies - not only Moody's - have so far relied upon the systemic relevance of covered bonds and the resulting likelihood of public support (or support from the banking sector). The credit ratings for covered bank bonds therefore include some uplifts due to the assumed systemic importance. However, we do not see the valuation bonuses due to the bail-in exemptions for covered bonds (covered bank bonds are explicitly excluded from loss sharing) as being at risk.

Legal framework form the basis for the ratings

In addition to the - in our opinion - undoubtedly still existing systemic importance of covered bonds, rating agencies also emphasise the legal basis as a factor that strengthens credit ratings. For European covered bonds, a harmonisation process was officially started in this area by the covered bond directive at the beginning of 2020. The implementation process for this directive is still partly underway in some member states of the European Union. In Germany, the directive has already been implemented on time with the recent amendment of the Pfandbrief Act. The influence of the directive was unanimously greeted by the agencies as generally positive. In some countries such as Austria and Spain, where major changes are pending, a stronger impact on ratings is therefore expected. In Germany, there was a far-reaching change in the Pfandbrief Act with the introduction of a statutory soft bullet, which has met with a positive response from the rating agencies. With a soft bullet - the maturity of covered bond might be extended if necessary after the insolvency of the issuer - the liquidity of the cover pool is strengthened and potential refinancing risks are reduced. At Fitch, this led to the payment continuity uplift (PCU) of covered bonds being raised. The agency thus allows the pfandbrief rating to move further away from the creditworthiness of the issuer in future (see Fitch Comment "Soft-Bullet Maturities to Improve German Pfandbriefe Payment Continuity" of 10 May 2021). Moody's also praised the changes in the Pfandbrief Act. In addition to the regulations on the statutory soft bullet, the agency cited the introduction of nominal over-collateralisation from July 2022 as an improvement. Furthermore, Moody's also sees the updated regulations for securing liquidity in the next 180 days (liquidity reserve) and the requirements for limiting claims in the cover pool against institutions from the same group as the issuer as improvements from a credit perspective (see Moody's Sector Profile "Germany: Legal framework for covered bonds" of 20 July 2021). Due to the high importance of the legal framework for pfandbriefe - not only for ratings - we present the current legal basis for pfandbriefe in detail in the next section.

LEGAL FRAMEWORK FOR PFANDBRIEFE FROM GERMANY

Overview of the legal bases

What are the legal bases?

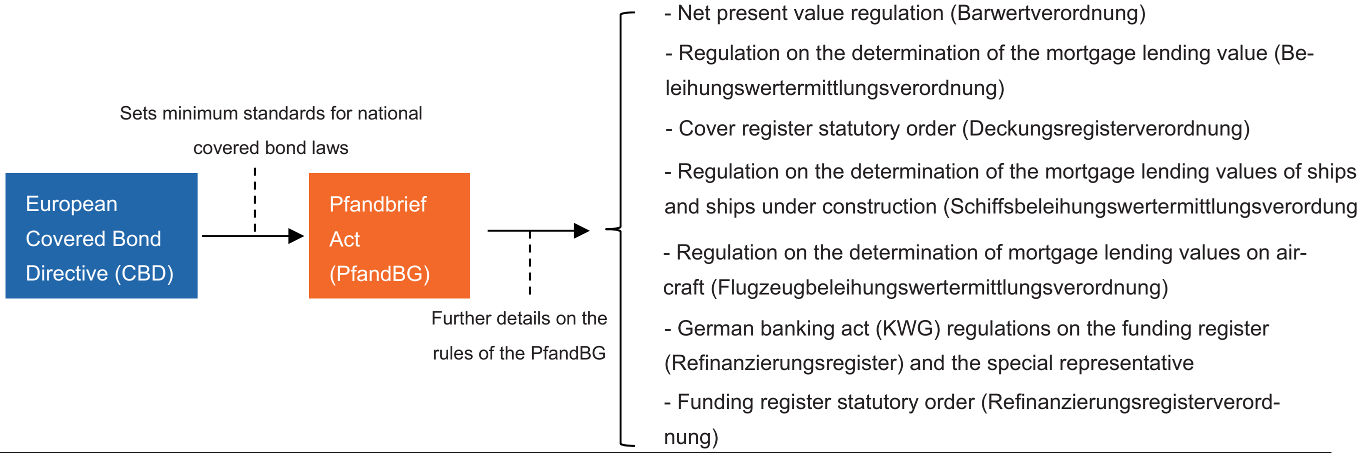
PfandBG forms the legal basis

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 will enter into force in two stages. The first amendments have already come 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. The introduction of this statutory soft bullet is probably the change that has been most intensively discussed in the public debate. As of 8 July 2022, further changes will come into force, which we have already alluded to in the context of this study.

BaFin ordinances elaborate on the PfandBG

In addition to the PfandBG, there are a number of ordinances issued by the Federal Financial Supervisory Authority (BaFin) (see chart below). They elaborate on the partly general requirements of the PfandBG. A consultation period ran until 15 August 2021, during which market participants had an opportunity to comment on the amendments to some regulations recently proposed by BaFin. Probably the most important changes include the creation of legal foundations for greater digitalisation in register management for the cover pool. However, the proposed amendments to the regulation on the determination of the mortgage lending value have met with strong criticism from the pfandbrief banks because, on balance, they contribute to additional administrative work and at the same time move the mortgage lending value further away from the market value of the properties rather than towards it.

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



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 (CRR=Capital Requirement Regulation). 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 a minimum issue volume in relation to the total of pfandbriefe to be issued. 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.

Minimum capital and appropriate risk management

- 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. From July 2022, BaFin will publish a list of pfandbrief banks. This list will then be updated at least once every quarter.

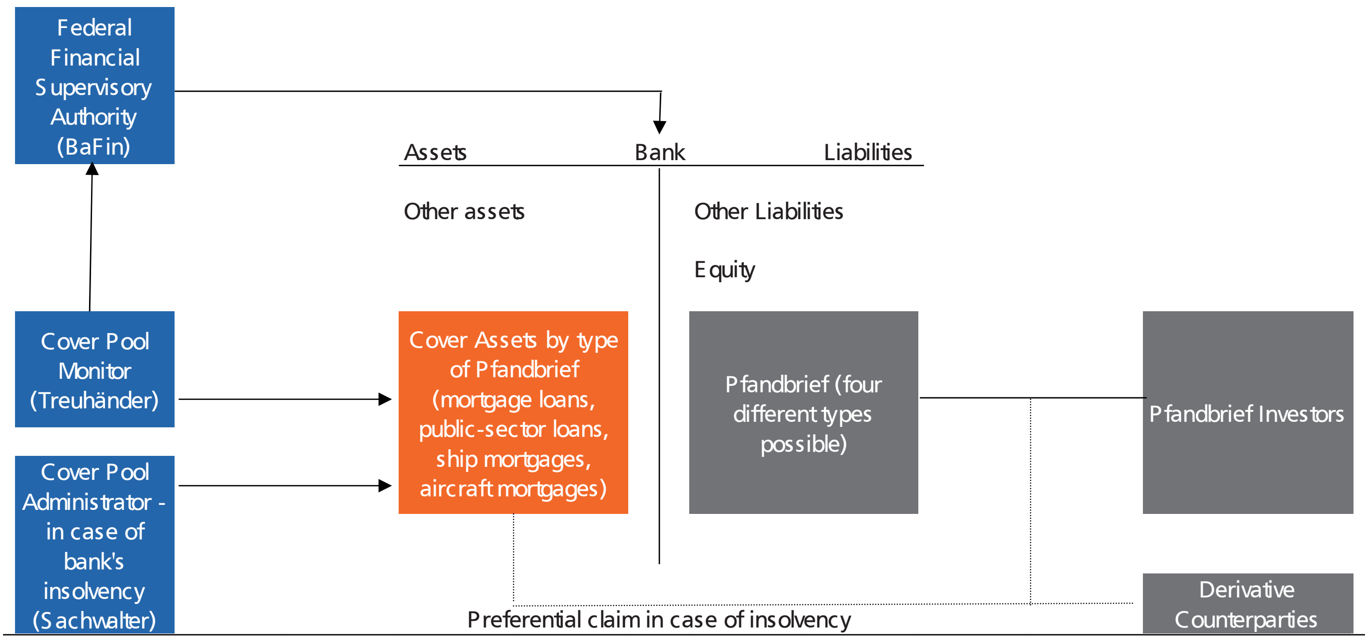
Design of the transaction structure

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 as sets 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.

GENERALISED TRANSACTION STRUCTURE OF A PFANDBRIEF



Source: DZ BANK Research

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.

Has a regulatory emission 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 against regional authorities or claims against institutions and corporations under public law may be used as cover assets if they are subject to maintenance obligation (anstaltslast) or liability obligation (gewährträgerhaftung) or an explicit guarantee by a regional authority. Examples of the latter category are claims against public development banks or bonds and monetary claims against public sector companies in the legal form of an institution under public law that have a liability obligation. The PfandBG specifies detailed requirements for possible ordinary cover assets for public sector pfandbriefe, 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 European Economic Area (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 EEA
- 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 bondholders. 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 2016	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 since 1 January 2021
AAA	0%	0%	0%	0%	0%	0%
AA+	0%	0%	0%	0%	0%	0%
AA	0%	0%	0%	0%	0%	0%
AA-	0%	0%	0%	0%	0%	0%
A+	0%	0%	0%	0%	0%	0%
A	0%	0%	0%	0%	0%	0%
A-	0%	0%	0%	0%	0%	0%
BBB+	0%	0%	0%	0%	0%	0%
BBB	0%	0%	0%	0%	0%	0%
BBB-	0%	0%	0%	0%	0%	0%
BB+	11%	9%	8%	8%	7%	7%
BB	13%	11%	11%	10%	10%	9%
BB-	16%	14%	13%	13%	12%	12%
B+	20%	18%	17%	16%	15%	15%
B	24%	21%	20%	20%	19%	18%
B-	28%	26%	24%	24%	23%	22%
CCC	38%	36%	34%	34%	33%	32%
CC	57%	55%	54%	54%	52%	52%
C	81%	80%	79%	79%	79%	78%
D	100%	100%	100%	100%	100%	100%

Source: vdp, presentation DZ BANK Research, as of July 2021, * 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

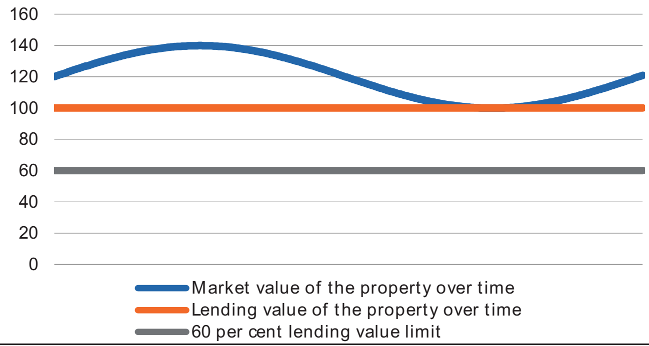
With regard to the calculation of the mortgage lending value, only the long-term, intrinsic or tangible value or real value (sachwert) as well as the capitalised earnings value or income value (ertragswert) of a property are taken into account, which is why the mortgage lending value of a property is usually lower than its market or fair value. The procedure for determining the mortgage lending value for real estate is defined in more detail by the regulation on the determination of the mortgage lending value (Beleihungswertermittlungsverordnung), which is currently being revised. However, the principle will remain the same: The mortgage lending value is to be determined according to the principle of prudence. 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 per cent below the income value, the assumptions on which the income value is based must be checked for their sustainability and corrected if necessary. 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. At present, the capitalisation rates may not be lower than

5 per cent for residential properties. For commercial real estate, at least 6 per cent must be applied, whereby in justified exceptional cases this percentage may be lowered by 0.5 percentage points.

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

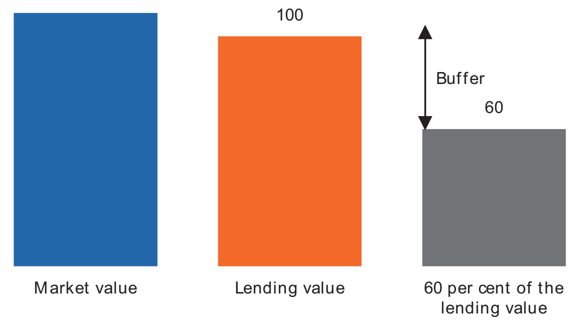
As a rule, the mortgage lending value does not exceed the market value of a property, which fluctuates over time. Speculative elements must therefore not be taken into account when determining the mortgage lending value. The mortgage lending value must be determined by a valuer who is independent of 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.

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

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 EUR 400,000, which according to BaFin's consultation paper for the updated regulations is to be increased to EUR 500,000. The amount of these loans from the retail business of a pfandbrief bank must take into account any existing prior ranking mortgage or liens. The limit of the loan amount is determined by the loan amount to be secured, i.e. the amount of collateral entered in the land register to which the pfandbrief bank is entitled. In these cases the banks can 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, can be used to assist in determining the value of owner-occupied homes.

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 consultation paper on the 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.

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 LTV according to mortgage lending values does not reflect the current value of the property, but can also be significantly higher at the moment if the market value of a property has risen after the mortgage lending value was established.

Uniform mortgage lending value limit of 60 per cent

According to the Pfandbrief Act, only real estate loans within the first-ranking 60 per cent 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 per cent may be included in the cover pool, but only the first-ranking portion (taking into account any prior ranking mortgages) up to the 60 per cent 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).

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 per cent)	179,400 Euro
- Management costs (3 per cent 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 per cent	615,940 Euro
- Loss of rental income risk (4 per cent 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 per cent	886,954 Euro
In per cent of gross income	11.2 per cent	Value of the building	6,430,414 Euro
Minimum operating expenses according to BelWertV	15.0 per cent	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 per cent			
Expected return on land	187,200 Euro	Income value / depreciated replacement cost value - 1	6.83 per cent
Net income of building	441,630 Euro	The depreciated replacement cost value is only 6.83 per cent below the income value (which is less than 20 per cent), 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**	**Inclusion in cover (lending limit 60 per cent)**	**6,150,000 Euro**

Source: vdp, presentation DZ BANK Research, BelWertV = regulation on the determination of the mortgage lending value (Beleihungswertermittlungsverordnung), * capitalisation rate 6 per cent, remaining useful life 60 years, * income value (ertragswert), ** cost value or sustainable asset value (sachwert)

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. As already mentioned, only mortgages on real estate property, rights equivalent to mortgages on real estate property or such rights of a foreign legal system that are comparable to rights equivalent to mortgages on real estate property under German law can be used as cover assets.

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 per cent of the loan's residual sum through the term of the loan.

60 per cent 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 per cent 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 long-term characteristics (permanent features) 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).

Average market value

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

New-build price

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

Purchase price

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

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 per cent (if the average relates to less than ten but more than three years) or 25 per cent (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 per cent 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 per cent 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 per cent 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 the Regulation on the Determination of Aircraft Lending Values (Flugzeugbeleihungswertermittlungsverordnung), 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 per cent markdown. As we saw with the valuation of real property and ships, the valuation of aircraft is also subject to possible review. The Regulation on the Determination of Aircraft Lending Values cites strong fluctuations in aircraft prices as one reason which could make a revaluation necessary. However, the Regulation does not affect other rules requiring the review of aircraft lending values.

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 per cent. This 12 per cent 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. In a recent study, Moody's positively emphasises that pfandbrief banks may not include derivatives with institutions of their own group (internal derivatives) in their cover pools (see Moody's study "Germany: Legal framework for covered bonds" of 20 July 2021).

OTHER COVER ASSETS ACCORDING TO THE PFANDBG (OVERVIEW)

1) Up to 8 per cent 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 per cent 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 per cent 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

Moody's also sees 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 per cent. 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 per cent of the outstanding volume of pfandbriefe, with the share of claims against credit institutions limited to a maximum of 15 per cent. 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 per cent of the volume of public sector pfandbriefe outstanding.

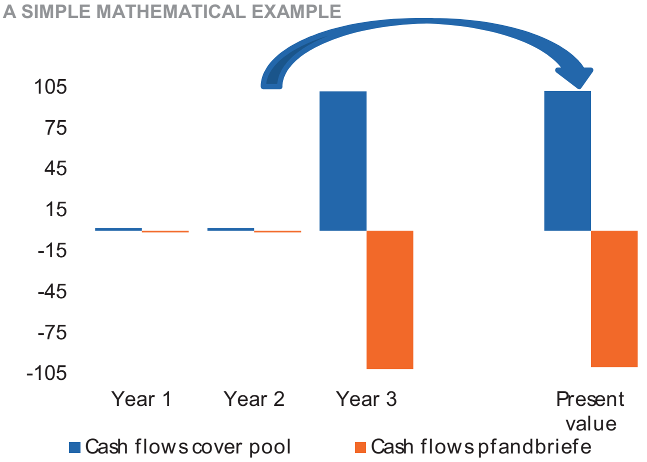
Requirements for the cover calculation

What are the requirements for the cover calculation and over-collateralisation?

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

From July 2022, the PfandBG provides for nominal over-collateralisation of the pfandbriefe in addition to the over-collateralisation 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 special supervisory requirements, which are regulated in the BaFin's net present value regulation (Barwertverordnung). According to this ordinance, the pfandbrief bank must ensure that the pfandbriefe are sufficiently secured by cover assets on a net present value basis, also in stress scenarios, which are defined in BaFin's ordinance. In addition, the issuer must ensure over-collateralisation of at least 2 per cent based on the stressed risk net present values of pfandbriefe and cover assets. The over-collateralisation based on the net present value calculation must be composed of cover assets that would 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 framework of the cover calculation on a nominal basis. This de facto increases the nominal over-collateralisation ratio. The nominal value of the minimum over-collateralisation for mortgage pfandbriefe and public sector pfandbriefe is 2 per cent and applies from July 2022. For ship and aircraft pfandbriefe, the legislator has provided for 5 per cent.

MARGIN ON LENDING BUSINESS MAY LEAD TO HIGHER OVER-COLLATERALISATION UNDER THE NET PRESENT VALUE CALCULATION THAN UNDER THE NOMINAL VALUE CALCULATION
A SIMPLE MATHEMATICAL EXAMPLE



Source: DZ BANK Research

	Cash flows cover pool	Cash flows pfandbriefe
Year 1	2	-1.25
Year 2	2	-1.25
Year 3	102	-101.25
	Cover pool	**Pfandbriefe**
Nominal value	100.0	100.0
Over-collateralisation (Nominal value)	0.0 per cent	
Present value	103.0	-100.7
Over-collateralisation (present value)	2.2 per cent	

Source: DZ BANK Research

The total over-collateralisation is available to the pfandbrief creditors

If risks arise for the recoverability of the cover pool, BaFin can impose a higher individual over-collateralisation 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 over-collateralisation 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 over-collateralisation or over-collateralisation 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 (cover register statutory order or Deckungsregisterverordnung) and will become more digital in the future according to BaFin's intention.

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.

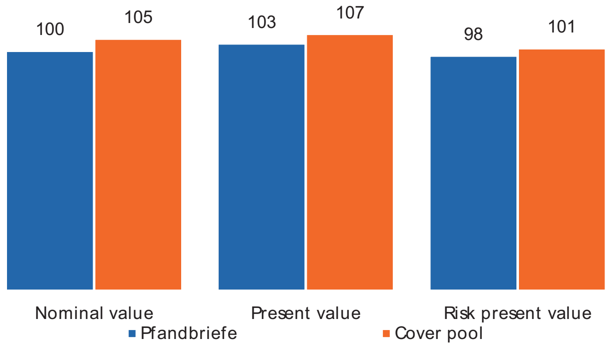
Transparency requirements

Do issuers have to comply with certain transparency requirements?

Legal standard for mandatory reports

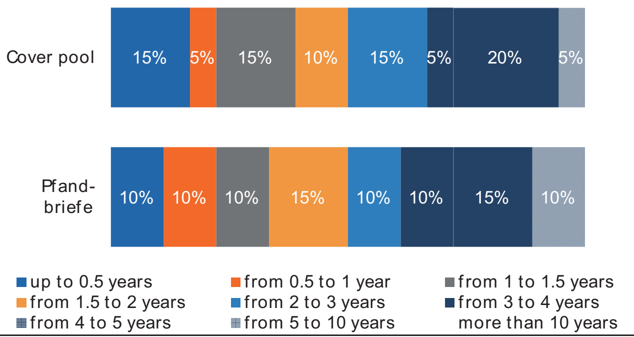
Yes. Every pfandbrief bank is obliged to publish the statutory minimum catalogue of information on the pfandbriefe outstanding and the cover assets in a publicly accessible form once a quarter. The PfandBG requires, for example, that for each pfandbrief type the pfandbrief bank must disclose the total 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 over-collateralisation 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. From July 2022, 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.

AGGREGATED COVER POOL AND OUTSTANDING PFANDBRIEF VALUES
ARBITRARY NUMERIC EXAMPLE: IN EURO



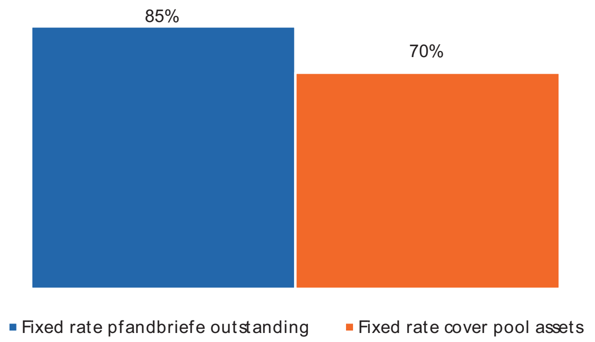
Source: DZ BANK Research

FIXED-INTEREST PERIODS OF COVER POOL AND OUTSTANDING PFANDBRIEFE
ARBITRARY NUMERIC EXAMPLE



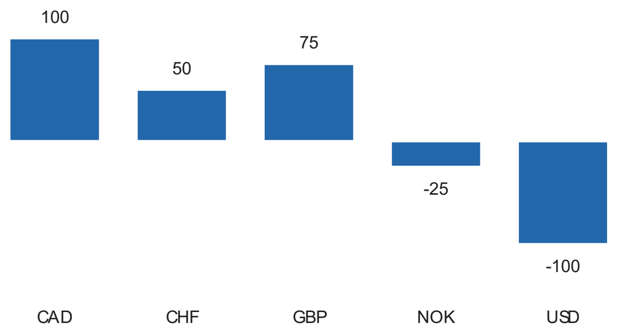
Source: DZ BANK Research

INTEREST ON THE COVER POOL AND OUTSTANDING PFANDBRIEFE
ARBITRARY NUMERIC EXAMPLE



Source: DZ BANK Research

CURRENCY MISMATCHES BETWEEN PFANDBRIEFE AND COVER POOL
ARBITRARY NUMERIC EXAMPLE: NET PRESENT VALUE IN EURO



Source: DZ BANK Research

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 per cent 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.

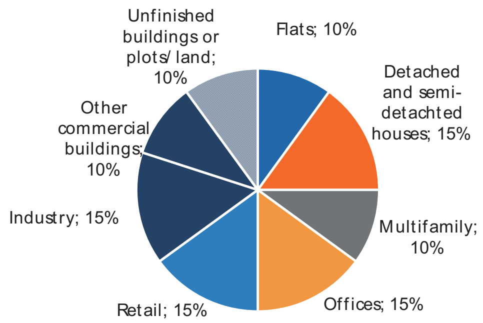
List of ISIN and the amount of the liquidity reserve

From July 2022, the pfandbrief bank must supplement its reports with 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.

Special information requirements on mortgage pfandbriefe

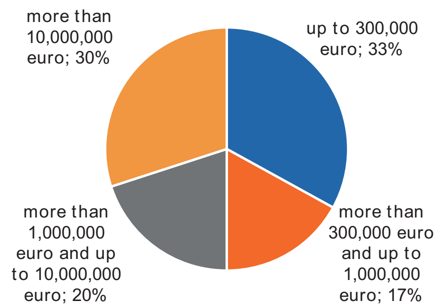
The distribution of the real estate loans in the cover pool for mortgage pfandbriefe must be made according to property type and according to the volume of the loan receivables in specified volume classes (see charts below). For the loans in the cover pool, the weighted average of the term of the loans 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 per cent. The PfandBG thus deviates from international standards in this respect. Nevertheless, the ratio remains an interesting piece of information for investors.

MORTGAGE PFANDBRIEFE: STRUCTURE OF COVER POOL PROPERTY LOANS BY PROPERTY TYPE
ARBITRARY NUMERIC EXAMPLE



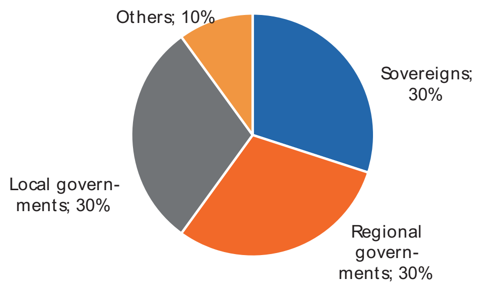
Source: DZ BANK Research

MORTGAGE PFANDBRIEFE: BREAKDOWN OF LOANS BY SIZE CATEGORY
ARBITRARY NUMERIC EXAMPLE



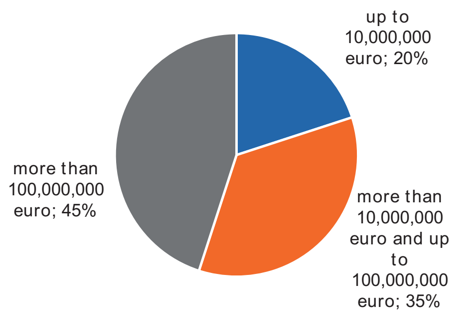
Source: DZ BANK Research

PUBLIC SECTOR PFANDBRIEFE: STRUCTURE OF COVER POOL STATE-SECTOR LOANS BY BORROWER TYPE
ARBITRARY NUMERIC EXAMPLE



Source: DZ BANK Research

PUBLIC SECTOR PFANDBRIEFE: BREAKDOWN OF LOANS BY SIZE
ARBITRARY NUMERIC EXAMPLE



Source: 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

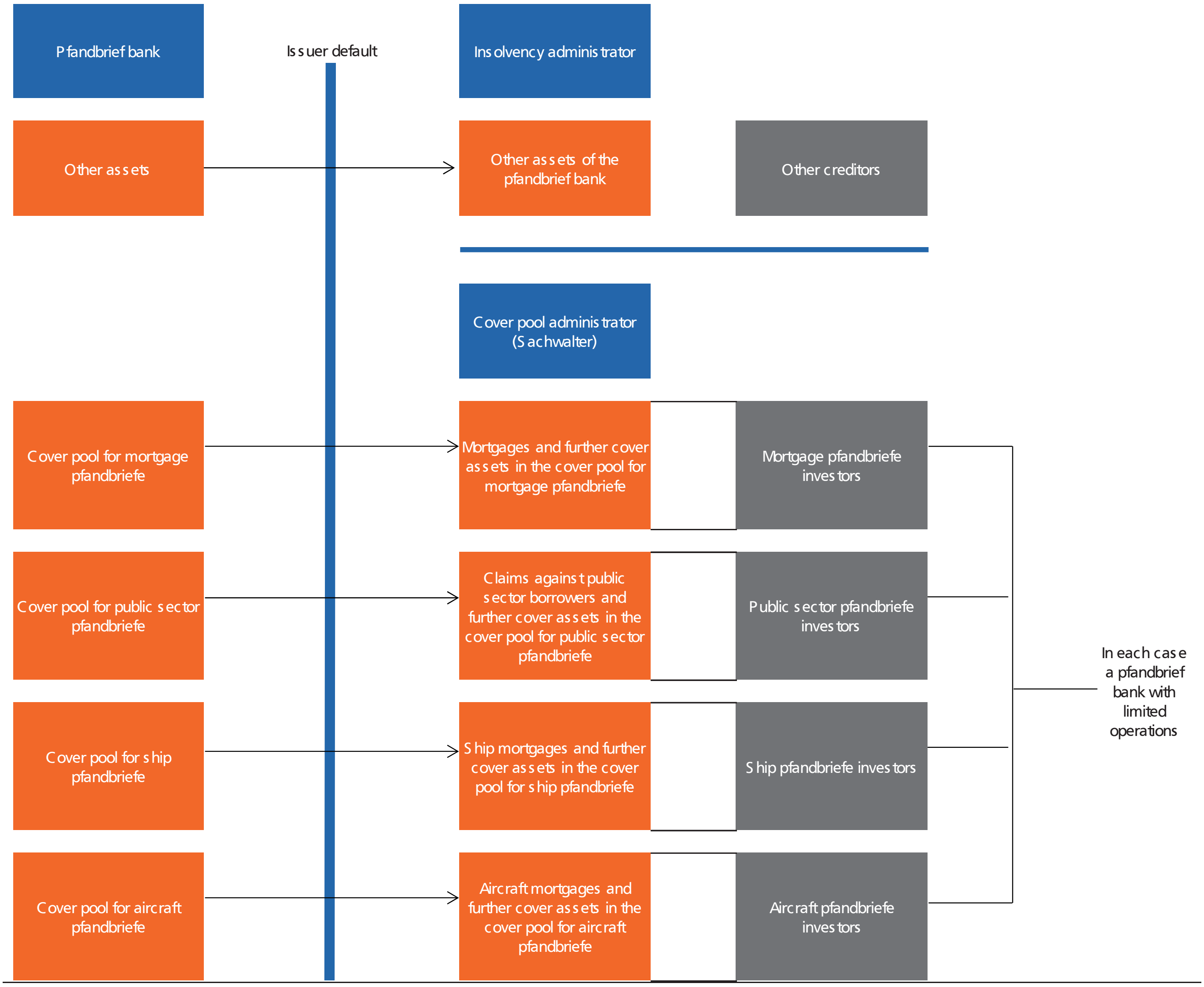
Rules for the insolvency of the issuer and existing risks

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.

PFANDBRIEF CREDITORS' PRIORITY IN BANKRUPTCY



Source: vdp, presentation DZ BANK Research

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. This committee can help to avoid that the cover pool administrator has to seek external advice for urgent individual questions. 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. For example, what resources can the cover pool administrator use to fulfil his or her duties? 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. In this context we see another interesting feature of the PfandBG. 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 complex task of running the cover pool without any public fuss.

Self-administration of the cover pool is a lengthy procedure

However, if the cover pool administrator determines that a transfer of the cover pool together with the outstanding pfandbriefe to a solvent pfandbrief bank is not possible (probably a more elegant solution compared to a lengthy wind-down process) and 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 unanimously 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?

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 over-collateralisation (not to mention requirement to have enough cover assets for all its pfandbriefe). In our opinion, the risk of a bail-in for pfandbriefe is therefore extremely low due to the legal requirements.

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. The solvent pfandbrief bank would assume the liabilities arising from the transferred pfandbriefe from the first pfandbrief bank and start the administration of the cover pool. If there is no solvent pfandbrief bank to take over the cover pools together with the pfandbriefe outstanding, the cover pools will be settled 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 over-collateralisation). The pfandbrief bank's insolvency administrator can, however, attempt to reclaim parts of the over-collateralisation. To do so, he must demonstrate to the competent court that these assets will obviously not be necessary to secure the pfandbrief creditors' claims. This is considered to be difficult to proof. With BaFin's ability to impose an individual over-collateralisation level on a pfandbrief bank, there is point of reference that the insolvency court could to take into account in its decision in this regard. The hurdles for a possible transfer of parts of the cover pool to the pfandbrief bank's insolvency estate are considered quite high. They should make it very unlikely for any over-collateralisation that may exist to be distributed to the pfandbrief bank's insolvency estate.

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 falling due can be netted off however; the aim in this case is to reduce the volume of the cover pool and the volume of the outstanding pfandbriefe by the same amount.

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. The Pfandbrief Act also makes it clear that cash inflows which replace assets in the cover pool automatically belong to the cover pool. However, this assumes that cash inflows are booked to accounts listed in the cover register for the pfandbriefe. We understand this phrasing as intended to give the pfandbrief banks the option to limit the pfandbrief creditors' potential loss risk which can arise through the irreversible commingling of cover pool receipts with the pfandbrief bank's other assets and eventual loss of the bankrupt estate, especially in the event of the bank's insolvency.

Provisions 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

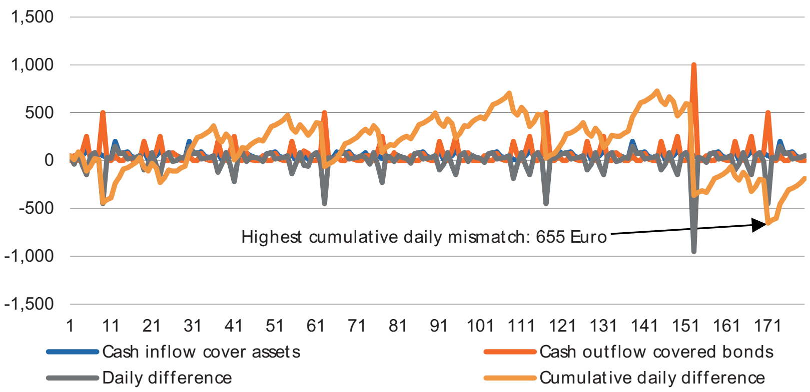
The pfandbriefe do not become automatically due and payable after the insolvency of the issuer. They are redeemed in the original order according to the expected maturity date. The original redemption order must be maintained even if the term of a pfandbrief has been extended (so no overtaking, if the 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?

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.

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



Source: DZ BANK Research

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. The Pfandbrief Act does not require a perfect matching between the payment flows of the cover pool and the payment obligation from the pfandbriefe outstanding. Liquidity risks may therefore 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. As a result there are usually liquidity gaps, which create refinancing risks from the cover pool's point of view. And rating agencies are regarding these refinancing risks as a significant source for losses within the scope of their credit rating analysis. In order to strengthen the liquidity position of the cover pool, the cover pool administrator has been allowed to extend the maturity of the pfandbriefe outstanding by up to twelve months since 1 July 2021. In our view, the following points are particularly important in this regard:

- A solvent pfandbrief bank cannot unilaterally extend the maturity of its pfandbriefe. The new "soft-bullet" provision in the PfandBG is therefore not an option at the discretion of the issuer. Only the court-appointed cover pool administrator is authorised to extend the repayment of pfandbriefe in clearly defined situations (after default of the issuer).

- The cover pool administrator may not make arbitrary use of the right to extend the maturity of the pfandbriefe. He or she 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 actually 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 - and this is likely to be the case with all pfandbriefe issued up to July 2021 - then the original coupon payments continue to apply. Since July 2021, however, issuers are able to make deviating 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

The covered bond directive requires that the liquidity of the cover pool must be ensured for 180 days on an ongoing basis. A corresponding liquidity reserve has been provided for in the PfandBG for years. 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 our opinion, this view is understandable. 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. So in a figurative sense, braces and belts have to be worn.

Regulatory Treatment in the European Economic Area

Do German Pfandbriefe meet the requirements for preferential capital treatment?

Definition of the cover assets

Article 129 of the European capital requirement regulation (CRR) regulates under which circumstances investors from the banking industry can take into account a preferential risk weight for covered bonds when determining their regulatory capital requirement (credit risk standard approach). The first paragraph of this article lists those assets that may be included in the cover pool so that a privileged treatment of covered bonds is possible in principle. Aircraft financing is not one of the assets listed in article 129 of the CRR. Apart from aircraft pfandbriefe, all other pfandbrief types under the PfandBG therefore meet the CRR criteria, so that they qualify for privileged risk weighting.

Transparency requirements must also be met

In order to be allowed to use a preferential risk weight for the covered bonds, bank investors must also be able to prove that they have information on the cover pool that is updated at least every six months. According to the vdp, the transparency requirements of the Pfandbrief Act should meet the requirements of the CRR.

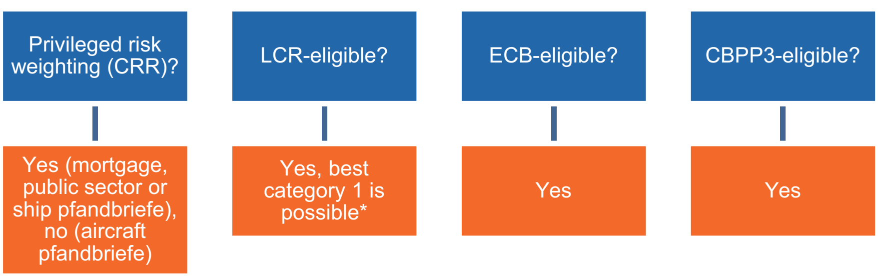
European covered bond status (premium)

The definition of covered bonds in article 52(4) of the Directive on Undertakings for Collective Investment in Transferable Securities (UCITS Directive), which has so far served as the basis for a number of regulatory privileges, will be replaced by the corresponding definition in the CBD as of July 2022. In addition, in order to qualify for the stricter European covered bond (premium) status, the criteria of article 129 CRR must be met. The amended PfandBG ensures that all pfandbrief types, with the exception of aircraft pfandbriefe, will meet the premium criteria, so that the preferential regulatory treatment (for example, a lower risk weight) remains guaranteed in principle. For covered bonds issued before the 8th of July 2022 (by this date the national legislative amendments with respect to the implementation of the CBD must enter into force), a number of the old rules may continue to apply beyond this deadline. Only new issues brought to the market after this date will have to be measured against all the new requirements.

Are German pfandbriefe eligible as collateral for refinancing operations with the ECB?

Pfandbriefe are suitable as collateral for refinancing transactions with the ECB.

SUMMARY GERMAN COVERED BONDS ACCORDING TO THE PFANDBRIEF ACT



Source: DZ BANK Research, * but pfandbriefe secured by aircraft (likely from 8 July 2022), commercial property or ship financings and rated lower than A3 or A-, are not LCR-eligible

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

LCR category must be determined individually

Subject to certain conditions, banks may use covered bonds as high-quality assets (HQLA) in context of their short-term liquidity coverage ratio (LCR). 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 of Article 52(4) of the UCITS Directive but also on individual characteristics of the bond or covered bond programme (for example, rating, issue volume, existing over-collateralisation and compliance with the transparency requirements pursuant to article 129(7) CRR). As of 8 July 2022, LCR-eligible covered bonds must meet the premium standard already mentioned.

Covered bond characteristics have an impact on LCR eligibility

The specific classification into an HQLA category must be determined individually for each bond, as already mentioned. 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 have the opportunity to enter the HQLA rating they consider appropriate for each bond.

LCR eligibility also depends on the covered bond rating

Banks can use pfandbriefe for their liquidity portfolios within the framework of the minimum liquidity requirements. There is a curious regulation to consider here. Mortgage and ship pfandbriefe qualify in principle as first-class, highly liquid assets as long as they are rated at least 'A3' or 'A-'. Should the credit rating for a ship pfandbriefe or a mortgage pfandbriefe, which is (partially) collateralised with commercial real estate financing, fall below this rating threshold, classification in HQLA category 2B is not possible anymore. Financing for commercial real estate or ships is explicitly excluded for HQLA category 2B. In addition, it should be noted that aircraft pfandbriefe are currently treated like ship pfandbriefe within the LCR framework, but they will very likely not meet the premium standard from 8 July 2022, so they will no longer be eligible for LCR portfolios from that date.

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 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 control 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 (defined in Article 129 CRR)
Other permitted cover assets	For all pfandbrief types: claims against ECB, central banks and other eligible financial institutions (up to 15 per cent), derivatives; additionally for mortgage, ship and aircraft pfandbriefe: claims against public sector entities (up to 20 per cent, 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: 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

	Germany	European Covered Bonds (Premium)
Lending limits (LTV limit)	Residential mortgages: 60 per cent Commercial mortgages: 60 per cent Ship mortgages: 60 per cent Aircraft mortgages: 60 per cent	Residential mortgages: 80 per cent Commercial mortgages: 60 per cent (exceptionally: 70 per cent) Ship finance: 60 per cent
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?	✗	Not inadmissible (regulation in the respective national covered bond law)
Special cover requirements	Aggregate claims on a single credit institution may not exceed 2 per cent of outstanding pfandbrief volume Present value of derivatives: maximum 12 per cent Cap on pool share of non-EEA countries that do not guarantee priority of pfandbrief creditors in bankruptcy: maximum 10 per cent	In general, nominal value calculation, other cover calculations (e.g. at present value) may be required in addition
Statutory minimum overlap	2 per cent (stressed present value); from July 2022 a nominal over-collateralisation of 2 per cent for public sector pfandbriefe and mortgage pfandbriefe and 5 per cent for ship and aircraft pfandbriefe will apply	5 per cent (nominal), exceptional case 2 per cent
Are cover assets that exceed the statutory minimum over-collateralisation also available to covered bond creditors on a priority basis?	✓	Not inadmissible (regulation in the respective national covered bond law)
Circulation limit for covered bonds	✗	✗ (but may be additionally required)
Cover calculation/ Congruence and liquidity regulations	Present-value and nominal cover required, issuer must maintain a 180-days liquidity buffer	Nominal cover (basically), other cover principles additionally permissible
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 possible, 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
Article 52 (4) UCITS Directive complied with	✓	✓ (the CBD replaces the UCITS criteria)
Do the cover assets meet the criteria of Article 129 (1) CRR?*	✓ (mortgage pfandbriefe, public sector pfandbriefe, ship pfandbriefe) ✗ aircraft pfandbriefe	✓ (Minimum requirement for „European Covered Bonds (Premium)")
Covered bonds generally LCR-eligible?*	✓ (likely from 8 July 2022: ✗ aircraft pfandbriefe)	✓
Covered bonds basically ECB-repo-eligible?*	✓	✓
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,
* see also subsection "Regulatory Treatment in the European Economic Area ", ** unsecured claims of covered bond creditors may possibly be affected by a bail-in, CBD = European covered bond directive, CRR = European capital requirements regulation

PFANDBRIEFE AND GILT-EDGED INVESTMENTS (MÜNDELSICHER) 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 was authorised to define the future gilt-edged investments within the framework of an ordinance. The ordinance has yet to be drafted. Even though the last word has not yet been spoken on this matter, the wording in the Act Amending the Guardianship and Support Law suggest that pfandbriefe may retain their status as gilt-edged investments after 2022.

Source: DZ BANK Research

Our assessment

PfandBG offers a very high level of protection

The PfandBG offers the pfandbrief creditor a high level of protection - also in international comparison. The German pfandbrief is therefore currently one of the safest financial investments, which has once again been strengthened by the implementation of the CBD into German law. Rating agencies unanimously emphasise the improved liquidity protection of the cover pool through the introduction of a maturity extension would further improve the already strong legal framework. The provisions on the over-collateralisation on a nominal basis in addition to the over-collateralisation on a stressed present value basis increase the level of protection for pfandbrief investors, albeit to a manageable extent. The strengthening of the pfandbrief creditors' claims against the insolvency estate, should the cover pool prove insufficient, is also welcomed by the agencies.

Adaptability of the German pfandbrief is a strength

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 in the German pfandbrief legislation will ensure the status of mortgage pfandbriefe, public sector pfandbriefe and ship pfandbriefe as European Covered Bonds (Premium) in the future. In our view 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.

OVERVIEW OF THE HISTORY OF THE PFANDBRIEF

Important milestones in the history of the pfandbrief

1) THE BEGINNINGS OF THE GERMAN PFANDBRIEF UP TO THE BEGINNING OF THE 20TH CENTURY

The foundation stone: Prussian Cabinets Ordre of 29 August 1769, which for the first time laid a general legal framework for a German pfandbrief, to which today's Pfandbrief Act in Germany can be traced back.

The birth of the pfandbrief market: After the end of the last Silesian War, the Silesian Landschaft was founded to finance the reconstruction of the region, and the to this end first pfandbrief was issued in December 1770.

Covered bonds spread across Europe: Similar secured bond formats were created across Europe for example in Denmark (1797) and Poland (1825). In addition, France adopted regulations on mortgage lending in 1852.

First imitators within Prussia: Based on the model of the Landschaft (for the countryside), Stadtschaften (for cities) were founded in the 19th century, which were all under the umbrella of the Preußische Zentralstadtschaft (Prussian central institution for Stadtschaften). A first form of pooling.
In the middle of the 19th century, the first mortgage banks also emerged as public limited companies (Aktiengesellschaft) that issued mortgage-backed bonds.
At the end of the 19th century, municipal bonds (Kommunalobligationen) were issued for the first time to refinance loans to the public sector.

Mortgage Bank Act (HBG): In order to unify the different laws governing mortgage bonds in Germany, which came into being in 1871, the Mortgage Bank Act was enacted in 1899 and came into force on 1 January 1900.

The great mortgage bank crisis: As a result of transactions that were not permitted under the HBG, real estate mortgage banks got into economic difficulties at the beginning of the 20th century, which in a couple of cases led to the deferral of the repayment of pfandbriefe or the conversion of pfandbriefe into equity or share capital. Today, these measures are called soft bullet and bail-in.

Further legislations on mortgage bonds and municipal bonds: The Act relating to Pfandbriefe and Similar Instruments issued by Public Credit Institutions (ÖPG) of 21 December 1927 created the legal basis for municipal bonds (kommunalobligationen). On 14 August 1933, the Ship Mortgage Bank Act (Schiffbankgesetz) was enacted, making ship pfandbriefe possible. The brand name "pfandbrief" was legally protected in 1930. The status of pfandbriefe and kommunalobligationen as gilt-edged (mündelsicher) investments was harmonised within Germany in 1940.

Source: DZ BANK Research, based on Friederike Sattler "Der Pfandbrief 1769-2019 – Von der preußischen Finanzinnovation zur Covered Bond Benchmark“

2) HYPERINFLATION, MONETARY REFORM AND THE SPIRIT OF CHIEMSEE

Hyperinflation: The young Weimar Republic was plagued by high inflation rates in the early 1920s. In order to secure the real value of mortgage-backed pfandbriefe, their repayment was linked to stock market prices for grain or gold. Indexed pfandbriefe are still permitted under the Pfandbrief Act today, as long as the highest possible redemption value can be determined.

Liquidation Gold Pfandbrief: After hyperinflation had been overcome in 1923, the value of mortgages and pfandbriefe was revalued 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 bond classes, as a result of which, pfandbrief holders suffered slightly smaller losses. However, pfandbrief issuers were unable to compensate the increase in value immediately in cash. Holders of the pfandbriefe received liquidation pfandbriefe as a compensation, which were repaid after a few years.

Currency reform after the Second World War: The 1948 currency reform in the West German occupation zones led to a devaluation of pfandbriefe and mortgage loans at a ratio of 10:1. Investors who had bought their pfandbriefe before 1 January 1940 (Altsparerpfandbrief) received additional compensation of 10 per cent.

Social pfandbrief: In 1952, pfandbriefe and municipal bonds were tax-privileged, if at least 90 per cent of their proceeds were used to finance and promote social housing construction. The coupon payments of social pfandbriefe were exempted from income taxes. These regulations have already expired. Today, the social pfandbrief would probably be very popular with ESG investors who are looking for sustainable forms of investment.

The spirit of Chiemsee: The harmonisation of European pfandbrief legislations was already being fervently discussed among market participants in the 1970s. At conferences in Munich (1981) and on Lake Chiemsee (1984) core elements of a European pfandbrief directive were drawn up.

UCITS criteria: There was no European pfandbrief directive at the time. However, the 1985 European directive on undertakings for collective investment in transferable securities (UCITS directive) laid down a definition of covered bank bonds, which had taken up the preparatory work for the pfandbrief directive. The UCITS criteria serve as a starting point for prudential privileges. They will be replaced in 2022 by the criteria in the EU covered bond directive.

Source: DZ BANK Research, based on Friederike Sattler "Der Pfandbrief 1769-2019 – Von der preußischen Finanzinnovation zur Covered Bond Benchmark“

3) INTERNATIONALISATION OF THE PFANDBRIEF BUSINESS AND THE GROWING INFLUENCE OF RATING AGENCIES

Ratings and jumbo pfandbriefe: In the 1980s and 1990s, municipal lending and state financing in particular boosted growth in the pfandbrief market. International investors were needed to fuel this growth of the German pfandbrief market, and they were to be attracted by liquid, large-volume pfandbriefe. It was also during this period that the first pfandbrief ratings were issued by S&P, Moody's and Co.

Reforms of the pfandbrief legislation: S&P expects that covered bank bonds do not automatically become payable (accelerate) after the issuer's insolvency if the bonds are to be rated AAA. In the 1990s - shortly after the first pfandbrief ratings were published – the German pfandbrief legislation was amended and introduced a non-acceleration provision. In the years that followed, there were repeated changes to the pfandbrief legislation, for example the introduction of over-collateralisation, the stressed net present value cover calculation or a cover pool administrator (Sachwalter). The changes also always seemed to be aimed at being approved by the rating agencies. Irrespective of rating considerations, the Pfandbrief Act (PfandBG) came into force in 2005, bringing together the HBG, ÖBG and the Schiffbankgesetz. Since then, the PfandBG has also been repeatedly adapted and amended.

International covered bond market: On the verge of the 21st century, an internationalisation process began that continues to this day and led to a global covered bond market. The term covered bond was coined, under which covered bank bonds from all countries were summarised. Initially, the pfandbrief was used as a model for many other covered bonds. There were also resourceful bankers who invented new structural elements for their covered bond programmes that were foreign to the pfandbrief market, but which made it easier to achieve AAA ratings. A prominent example is the soft bullet, which allows the maturity of the bond to be extended if necessary.

EU covered bond directive (CBD): After long discussions, the CBD came into force on 7 January 2020. It implements common standards for European covered bonds and replaces the UCITS criteria in due course. The CBD was implemented on time with a PfandBG amendment in May 2021. This introduces a possible maturity extension of pfandbriefe by operation of the PfandBG after insolvency of the pfandbrief bank (soft bullet), which also affects pfandbriefe already outstanding.

The journey continues: Sustainability issues such as green mortgages are currently in vogue and are the subject of intense debate. German issuers have already developed minimum standards for Green and Social Pfandbriefe. In addition, there are discussions about European Secured Notes (ESN), which are intended to refinance loans to small and medium-sized enterprises (SMEs). In the 1920s, there was an Industrieschaft which granted loans to SMEs. In 2013 there was also a structured covered bond from Germany that used SME loans as cover assets.

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: Verband deutscher Pfandbriefbanken, 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 outstanding in EUR m	Indicative ASW in basis points	LCR category	ESG?
DZ HYP	DE000A2TSD22	13.01.2022	Soft Bullet	0.010%	250	0	2A	✗
DZ HYP	DE000A1MLZQ1	29.03.2022	Soft Bullet	2.500%	500	-3	1	✗
DZ HYP	DE000A11QA72	24.06.2022	Soft Bullet	1.250%	325	11	2A	✗
DZ HYP	DE000A14KK32	29.07.2022	Soft Bullet	0.500%	500	-4	1	✗
DZ HYP	DE000A14KKJ5	30.09.2022	Soft Bullet	0.125%	500	-4	1	✗
DZ HYP	DE000A161ZU5	24.03.2023	Soft Bullet	0.200%	500	-3	1	✗
DZ HYP	DE000A2G9HC8	30.06.2023	Soft Bullet	0.250%	500	-4	1	✗
DZ HYP	DE000A161ZL4	27.10.2023	Soft Bullet	0.625%	500	-4	1	✗
DZ HYP	DE000A2TSD55	29.01.2024	Soft Bullet	0.010%	750	-3	1	✗
DZ HYP	DE000A2BPJ45	01.03.2024	Soft Bullet	0.125%	500	-4	1	✗
DZ HYP	DE000A13SWZ1	05.06.2024	Soft Bullet	0.625%	500	-4	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	-4	1	✗
DZ HYP	DE000A14J5C9	26.02.2025	Soft Bullet	0.625%	250	10	2A	✗
DZ HYP	DE000A2AASB4	06.06.2025	Soft Bullet	0.375%	750	-3	1	✗
DZ HYP	DE000A289PC3	12.09.2025	Soft Bullet	0.010%	1,000	-4	1	✗
DZ HYP	DE000A2G9HE4	13.11.2025	Soft Bullet	0.500%	1,000	-5	1	✗
DZ HYP	DE000A161ZQ3	02.02.2026	Soft Bullet	0.750%	875	-4	1	✗
DZ HYP	DE000A14KKM9	31.03.2026	Soft Bullet	0.375%	500	-4	1	✗
DZ HYP	DE000A2BPJ78	16.06.2026	Soft Bullet	0.500%	500	-3	1	✗
DZ HYP	DE000A2AAX45	31.08.2026	Soft Bullet	0.100%	500	-3	1	✗
DZ HYP	DE000A2AAW53	30.09.2026	Soft Bullet	0.500%	500	-3	1	✗
DZ HYP	DE000A2TSDW4	15.01.2027	Soft Bullet	0.010%	1,000	-4	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	-2	1	✗
DZ HYP	DE000A2BPJ86	30.08.2027	Soft Bullet	0.625%	750	-3	1	✗
DZ HYP	DE000A2TSDY0	12.11.2027	Soft Bullet	0.010%	500	-3	1	✗
DZ HYP	DE000A2GSP56	22.03.2028	Soft Bullet	0.875%	750	-3	1	✗
DZ HYP	DE000A289PA7	23.06.2028	Soft Bullet	0.010%	1,000	-2	1	✗
DZ HYP	DE000A289PH2	27.10.2028	Soft Bullet	0.010%	1,000	-2	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	-2	1	✗
DZ HYP	DE000A2TSDV6	29.06.2029	Soft Bullet	0.050%	750	-1	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	-1	1	✗
DZ HYP	DE000A3E5UU2	15.11.2030	Soft Bullet	0.010%	750	0	1	✗
DZ HYP	DE000A2NB841	17.04.2034	Soft Bullet	0.875%	500	1	1	✗
DZ HYP	DE000A2TSDZ7	10.11.2034	Soft Bullet	0.375%	500	2	1	✗
DZ HYP	DE000A2BPJ60	23.03.2037	Soft Bullet	1.375%	250	14	2A	✗

Source: Bloomberg, DZ BANK Research, ASW = asset swap spread, LCR = Liquidity Coverage Ratio, spread data as of 27 August 2021, 14:30h, ✓ = yes, ✗ = no, ESG = pfandbriefe secured by cover assets, which comply with certain environmental, social and/or governmental standards

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For defined share indices, share price forecasts are made at regular intervals. From the comparison between the current prices and the prepared forecasts on the development of such equity indices, investment recommendations that are not generally definable and that cannot be defined in advance may be developed.

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The aforementioned returns are gross returns. The gross return as success parameter relates to bond yields before deduction of taxes, remunerations, fees and other purchase costs. This compares with the net return of a specific investment, which is not calculated and can deliver significantly lower returns and which measures the success of an investment in consideration of / after deducting these values and charges.

4.5 The prevailing factor for the allocation of market segments and country weightings for covered bonds is the comparison between a sub-segment and all the sub-segments on the relevant market as a whole:

„Overweight „ refers to the expectation that a sub-segment can deliver a significantly better performance than all the sub-segments as a whole.
„Underweight" refers to the expectation that a sub-segment can deliver a significantly poorer performance than all the sub-segments as a whole.
„Neutral weighting" refers to the expectation that a sub-segment will not deliver any significant performance differences compared with all the sub-segments as a whole.

4.6 Derivatives

For derivatives (Bund futures, Bobl futures, treasury futures, Buxl futures) the arrows (↑) (↓) (→) merely indicate the trend direction and do not contain any investment recommendation. The trend direction is derived solely from the use of generally recognised technical analysis indicators without reflecting an analyst's own assessment.

4.7 Commodities

„Upward arrow (↑)" means that the absolute price increase expected in the next twelve months is greater than 10 percent.
„Downward arrow (↓)" means that the absolute price decline expected in the next twelve months is greater than 10 percent.
„Arrow pointing to the right (→)" means that the absolute price change expected in the next twelve months will lie between +10 percent and -10 percent.

4.8 Credit Trend Issuers

Based on the assessment of the rating development of the agencies and the DZ BANK CRESTA-SCORE forecast model, the following classifications apply:
„Positive“ is given if the agencies S&P, Moody’s and Fitch are expected to make a rating upgrade in the next twelve months,
„Negative“ is given if the agencies S&P, Moody’s and Fitch are expected to make a rating downgrade in the next twelve months,
„Stable“ is given if the agencies S&P, Moody’s and Fitch are expected to leave their ratings unchanged in the next twelve months
If none of the agencies S&P, Moody‘s and Fitch have given a rating, no assessment is made of the credit trend for the issuer concerned.

5. Updates and Validity Periods for Other Research Information

5.1 The frequency of updates of Other Investment Information depends in particular on the underlying macroeconomic conditions, current developments on the relevant markets, the current development of the analyzed companies, measures undertaken by the issuers, the behavior of trading participants, the competent supervisory authorities and the competent central banks as well as a wide range of other parameters. The periods of time named below therefore merely provide a non-binding indication of when an updated investment recommendation may be expected.

5.2 No obligation exists to update an Other Investment Information. If an Other Research Information is updated, this update replaces the previous Other Research Information with immediate effect.
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5.3 The validity periods for Other Research Information are as follows:

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Analyses according to the value approach:	one month
Asset allocation analyses (DZ BANK Sample Portfolio):	one month
Euro Stoxx Sector Strategy (DZ BANK Sector Favourites):	one month
Dividends (DZ BANK Dividend Aristocrats):	three months
Credit trend issuers:	twelve months
Share indices (fundamental):	three months
Share indices (technical / chart analysis):	one week
Share indices (technical daily):	publicationday
Currency areas:	six to twelve months
Allocation of market segments:	one month
Country weightings for covered bonds:	six months
Derivatives (Bund futures, Bobl futures, treasury futures, Buxl futures):	one month
Commodities:	one month

5.4 In a given case, updates of Other Research Information may also be temporarily suspended without prior announcement on account of compliance with supervisory regulations.

5.5 If no updates are to be made in the future because the analysis of an object is to be discontinued, notification of this shall be made in the final publication or, if no final publication is made, the reasons for discontinuing the analysis shall be given in a separate notification.

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