Danske Bank

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Danish Covered Bond Handbook 2025

This document provides an overview of the Danish covered bond market and its pass-through bonds, including details of the securities underlying the bonds. Until 2007, issuance of Danish covered bonds (mortgage bonds) in Denmark was through specialist mortgage banks, of which the general feature was a pass-through product. A significant revision of the law in 2007 paved the way for non-specialist banks to issue covered bonds as well as higher degrees of freedom in the funding structure of even specialist mortgage banks. However, recent developments show that the share of bonds used to fund mortgage lending in a pure pass-through model by specialist mortgage banks continues to make up the large majority of the Danish covered bond market. The only Danish covered bond issuer that is not a specialist mortgage bank is Danske Bank.

Covered bonds issued out of Denmark fall into two categories: traditional Danish mortgage bonds (the pure pass-through product) and euro-style covered bonds in a jumbo format (similar to what exists in the euro area). The pass-through products are tapped on a daily basis in the domestic market and comprise one of the largest residential covered bond markets in Europe. Currently, only Danske Bank has established a euro medium-term note (EMTN) covered bond programme and issues euro-style covered bonds similar to those in Germany, the Netherlands, Sweden, Norway and so on. However, Danske Bank has not been quite active in this segment the recent years.

Specialist Danish mortgage banks can issue covered bonds collateralised by first-lien mortgages secured on real property as set out in the legislation and are the main focus of this publication. On top of this, ship finance institutes can issue covered bonds to fund first-lien mortgage lending secured on ships. Currently, only Danmarks Skibskredit performs lending to the shipping industry.

Chapter 1 briefly outlines why Danish covered bonds are an interesting asset class. Chapter 2 explains the legal framework of the Danish mortgage credit system and the security aspects of Danish covered bonds. Chapter 3 describes the Danish mortgage banks and Chapter 4 provides an overview of the current ratings of each institution and their rated capital centres. Chapter 5 gives a detailed description of the characteristics of Danish covered bonds and Chapter 6 describes the primary and secondary markets.

Moving on to prepayments, Chapter 7 explains how covered bonds can be refinanced and shows different types of remortgaging strategies. Chapter 8 explains how to estimate prepayment rates for callable covered bonds. Chapter 9 gives an overview of investor distribution. Chapter 10 presents different ways of measuring the yield pickup of Danish covered bonds and introduces option-adjusted figures for yield spreads (OAS) and durations. In Chapter 11, we describe bond futures on Danish covered bonds. Finally, Chapter 12 summarises the available data on Danish covered bonds.

For more information on the euro-style Danish covered bond, see the Danske Bank publication *Nordic Covered Bond Handbook – The handbook of the Nordic covered bond markets and issuers*, 4 September 2018.

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1. Why are Danish covered bonds an interesting asset class?

Danish covered bonds are an interesting asset class for various reasons. The bonds are issued under a strong mortgage act and the more than 200-year old Danish credit system has gone through a number of stages and survived several bouts of economic and political turmoil. The levels of repossessed dwellings and loans in arrears have been very low – even in periods of significantly falling house prices. S&P rates Danish covered bonds 'AAA'. The liquidity of the short-dated, non-callable covered bonds is good and at times better than the liquidity of Danish government bonds.

The following details why Danish covered bonds are an interesting asset class.

The more than 200-year-old Danish credit system has survived several bouts of economic and political turmoil

In 1795, a very large fire in Copenhagen burned one in four houses in the city to the ground. Funding was needed to rebuild the city, but provision of credit was scarce. Lenders formed a mortgage association to provide loans secured by mortgages on real property based on joint and several liability to enhance credit quality.

To fund the loans, the first Danish mortgage bonds were issued and thus a more than 200-year tradition of mortgage bond issuance in Denmark commenced.

Over the past 200-plus years, the Danish mortgage credit system has gone through a number of stages and survived several occasions of economic and political turmoil, including the bankruptcy of the Kingdom of Denmark in the early 19th century and the depression of the 1930s. Every single issued bond has been repaid in full to the investors.

This unblemished record is attributable mainly to the strong legislative framework, which from an early stage in the development of the market has put great emphasis on the protection of the mortgage bond investor by imposing strict limits on risk taking by mortgage banks. In 1850, a long tradition of strict regulation of the activities of mortgage banks commenced with the passing of the first Mortgage Bond Act. The legal framework has been amended several times. However, guiding principles such as the balance and investor protection principles have remained unchallenged (Chapter 2 describes the present Mortgage Credit Act in detail).

In its first 100 years, the Danish mortgage credit sector consisted of many mortgage credit associations, where mutuality was general feature. However, mutuality contributed to a very restricted lending policy, as the most important duty of a mortgage credit association was to safeguard the interests of its members.

At the end of the 1950s, the Danish government took the initiative to establish independent mortgage banks. Commitment to mutuality gradually disappeared and institutions with independent means were established. This resulted in a more liberal lending policy.

Since 1970, Denmark's mortgage credit legislation has seen several reforms. In search of economies of scale, the mortgage credit reform in 1970 introduced a provision for the approval of future new mortgage banks only if there was an apparent need. The number of mortgage banks fell from 24 to seven. Another important change in 1970 was the switch from a three- to a two-tier system – ordinary and special mortgage credit loans. This led to the 1980 reform, which introduced the use of only one tier known as the 'unity' mortgage credit system.

In 1989, deregulation resulting from EU directives enabled commercial and savings banks to establish mortgage banks, formed as limited companies. Traditional mortgage banks were allowed to convert into limited companies. New lenders entered the market and fierce competition ensued, resulting in consolidation within the sector.

Since 2000, the mergers of Danske Kredit, BG Kredit and Realkredit Danmark and that of Nykredit and Totalkredit have intensified competition even further to form the market today. Further, at end-2019 Nykredit bought all the shares in LR Realkredit, and BRFkredit changed its name to Jyske Realkredit in 2018 following the merger with Jyske Bank in 2014.

Today, Danish covered bonds secured on real property are issued by a comparatively small number of issuers – at present six, of which five are specialist mortgage banks – adding to the liquidity of the bonds issued. In addition to mortgages on real property, Danish Ship Finance offers ship mortgages. Furthermore, market concentration is high, with Nykredit Realkredit and Realkredit Danmark accounting for 68% of all Danish krone covered bonds issued and 27% of all Danish euro covered bonds issues.

Totalkredit is also a wholly owned subsidiary of Nykredit Realkredit. Totalkredit as a joint mortgage bank. Since the acquisition of Totalkredit in 2003, Nykredit Realkredit has developed a partnership with around 60 Danish local and regional banks (including Nykredit Bank) with substantial distribution networks. These local and regional banks sell mortgage products under the Totalkredit brand. Recently (September 2024), NYK has committed to changing the terms of the Totalkredit partnership so that competitors have a significantly better opportunity to compete with Nykredit. The Danish Competition Council has had concerns about whether Nykredit has abused its dominant position. The case has now been resolved with a commitment from Nykredit. A final decision has therefore not been taken on whether the competition rules have been violated. The significant change is that TOT partner banks can change mortgage providers without losing future commissions from mortgages already taken out. The changes will probably not have major effects on the mortgage market, is our immediate assessment. NYK/TOT currently has the lowest prices, and TOT partner banks have a functioning IT setup and product knowledge in place, so it is not straightforward for borrowers to change mortgage providers to, for example, JYSK/RD/NDA (or DLR) due significant switching cost.

I January 2025, NYK also announced that they lower pricing on mortgage loan fees by 5bp. NYK is operating with a discount concept called “KundeKroner”, where they increased the discount from 0.20% of the remaining debt to 0.25%. As a result, Totalkredit's mortgage loans become even cheaper compared to competitors, which is particularly relevant given the recent decision regarding competition in the Danish mortgage market. From a cost perspective for homeowners, this change makes it even more advantageous for Totalkredit's partner banks to continue using Totalkredit as their mortgage provider. It shall now be interesting to see if competing issuers will also adjust their contribution rates to better match these lower total contribution rates and reduce the price gap to Totalkredit.

The demand for both floating and fixed rate loans in EUR has fallen in recent years as the policy rate in Denmark has been stable and below that of the Euro Area. This also means that mortgage banks which fund mortgages using a pure pass-through principle have decreased their outstanding volumes in EUR. Note, however, that Danske Bank and Jyske Realkredit are both issuing in EURs independently of loan demand and are handling potential currency risks using derivatives. This practice has been under scrutiny from the regulators and a ‘best practice’ document was presented in June 2018[1] underlining the Danish FSA’s stance that specialist mortgage banks should not drift too far away from the pure pass-through principle even if allowed (note that Danske Bank is not a specialist mortgage bank).

Table 1. Volumes and market shares of Danish mortgage bonds issued by specialist mortgage banks and a bank and ship mortgage bonds issued by a ship finance institute, December 2024

	DKK bonds		EUR bonds		Total volume	
Issuer	Volume (EURbn)	Share (%)	Volume (EURbn)	Share (%)	Volume (EURbn)	Share (%)
Nykredit Realkredit	199.4	44.3%	5.2	28.1%	204.6	43.6%
Realkredit Danmark	112.9	25.1%	0.3	1.7%	113.2	24.1%
Nordea Kredit	56.4	12.5%	0.4	2.2%	56.8	12.1%
Jyske Realkredit	50.1	11.1%	3.8	20.4%	53.9	11.5%
DLR Kredit	27.3	6.1%	0.1	0.7%	27.4	5.8%
Danske Bank	0.0	0.0%	7.1	38.8%	7.1	1.5%
Danmarks Skibskredit (ships)	4.3	0.9%	1.5	8.1%	5.8	1.2%
Total	**384.0**	**100.0%**	**25.5**	**100.0%**	**409.5**	**100.0%**

Note: For Jyske Realkredit and Danske Bank also including EUR issues registered on Euroclear.
Source: Danske Bank

Danish covered bonds are issued under a strong mortgage act

Danish covered bonds are issued under the Danish mortgage act. One of the central elements in the Danish mortgage act is the balance principle. The balance principle requires that there is a match between the inflow and the outflow of a mortgage bank and limits the amount of risk (interest rate, volatility, FX and liquidity) that a Danish mortgage bank can undertake. See Chapter 2 for more details on the Danish mortgage credit system.

In addition, Danish mortgage banks must observe capital requirements as defined in applicable EU Directives, i.e. the capital base of mortgage banks must be a minimum of 8% of risk-weighted assets.

Another key feature of the Danish system is very well-defined property rights through a general register of all properties in Denmark. The title and land registration systems ensure that ownership and encumbrances on individual properties are easily identified, and that the information is available to the public. Furthermore, if a borrower defaults on a payment, the mortgage bank can take over the house and the compulsory sale procedure would ensure that a mortgage bank could sell the house in the real estate market or through a forced sale. The period from default to a forced sale being completed may be as short as six months. Hence, the Danish title number and land registration systems add investor protection.

[1] ’Hvor meget balance skal der være i realkreditten’ – Finanstilsynet, 2018.

Danish covered bonds are rated 'AAA' by Standard & Poor's

Danish covered bonds issued by the major Danish mortgage banks' most traded capital centres are rated 'AAA' by Standard & Poor's (S&P). Each mortgage bank has a range of capital centres and S&P rates the covered bonds depending on capital centres and bond type (SDO/SDRO/RO). The table in the margin shows the current rating for the covered bonds issued by Realkredit Danmark, Danske Bank, Nykredit Realkredit, Nordea Kredit, Jyske Realkredit, DLR Kredit and the ship finance institute Danmarks Skibskredit.

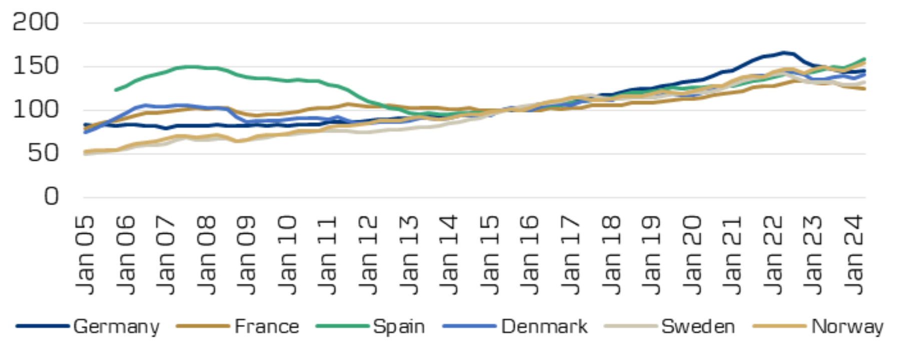
In addition, covered bonds issued out of Realkredit Danmark's capital centres S and T were rated 'AAA' and 'AA+', respectively, by Fitch. Danske Bank and RD have chosen to use only S&P and Scope Rating as rating agencies for rating the Danske Bank covered bonds and RD mortgage bonds going forward. Fitch withdrawn their rating of the bonds in December 2024.

In 2018, new capital centres were opened on the part of RD (Capital Centre A), Nykredit Realkredit (Capital Centre J) and Jyske Realkredit (Capital Centre S) following a change in the funding model of government subsidised social housing. None of the capital centres are rated and the bonds issued are all with a government guarantee.

Low level of repossessed dwellings and loans in arrears

House prices in Denmark experienced a gradual increase over the decades leading up to the beginning of the financial crisis in 2007. During the financial crisis, house prices fell quite significantly until the beginning of 2009, when we saw a stabilisation in prices (see chart below).

Chart 1. House prices in selected countries 2005-2024 (index 100=2015)



Source: Macrobond Financial, Danske Bank

Between the peak in 2007 and Q3 12, house prices in Denmark declined by almost 20%. Over the same period, house prices in Norway and Sweden increased by 24.7% and 9.8% and in Spain and the UK house prices declined by 32.6% and 11.5%, respectively, over this period.

Despite the significant fall in house prices during the financial crisis, the levels of repossessed dwellings and loans in arrears have been very low. This is due to the low unemployment rate in Denmark and the strong mortgage legislation – the amount of repossessed dwellings usually correlates poorly with house prices but strongly with unemployment rates.

Table 2. Ratings from S&P

Capital centre	Type	Rating
Realkredit Danmark (RD)		A+
General Capital Centre	RO	AAA
Capital Centre S and T	SDRO	AAA
Capital Centre A (gov. guar.)	SDRO	N/A
Danske Bank		A+
Register C, D and I	SDO	AAA
Nykredit Realkredit (NYK)		A+
General Capital centre	RO	AAA
Capital Centre D, G and I	RO	AAA
Capital Centre E and H	SDO	AAA
Capital Centre J (gov. guar.)	SDO	N/A
Totalkredit CC C*	RO	AAA
Nordea Kredit (NDA)		AA-
Capital Centre 1	RO	AAA
Capital Centre 2	SDRO	AAA
Jyske Realkredit (JYSK)		A+
General Capital centre	RO	AAA
Capital Centre B	RO	AAA
Capital Centre E	SDO	AAA
Capital Centre S (gov. guar.)	SDO	N/A
DLR Kredit (DLR)		A-
General Capital Centre	RO	AAA
Capital Centre B	SDO	AAA
Danmarks Skibskredit		BBB+
General Capital Centre	SMB	AA-
Capital centre A	SDO	AA-

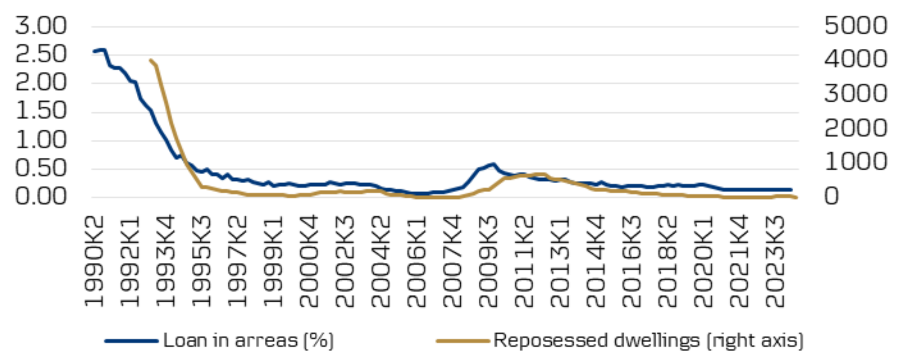
Source: Standard & Poor's, Danske Bank

**Currently closed for new loan issuance*

Starting 1 January 2018 new loan loss provision standards were implemented in Danish and EU legislation (IFRS 9), meaning that provisions to a larger degree than previously will come to depend on Expected Credit Losses (ECL) taking into account a range of macro-economic scenarios. This is opposed to previous legislation where a loan wasn't provisioned for until an Objective Evidence of Impairment (OEI) had been noted (which currently corresponds to level 3 in the IFRS 9 framework with a level 1 debtor requiring no provisioning).

Thus, periods of high macro-economic uncertainty (such as during the COVID-19 crisis of H1 20) will be dominated by larger provision charges and thus lead to larger than previous changes in regulatory capital[2]. The Danish FSA estimated before the introduction of the new rules that total provisions among Danish credit institutions would increase by 9-10%, leading to a fall in the Tier 1 capital ratio of 25bp[3]. The new legislation also affects Danish mortgage banks despite these measuring loans at fair value (as opposed to amortised cost).

Chart 2. Repossessed dwellings and loans in arrears



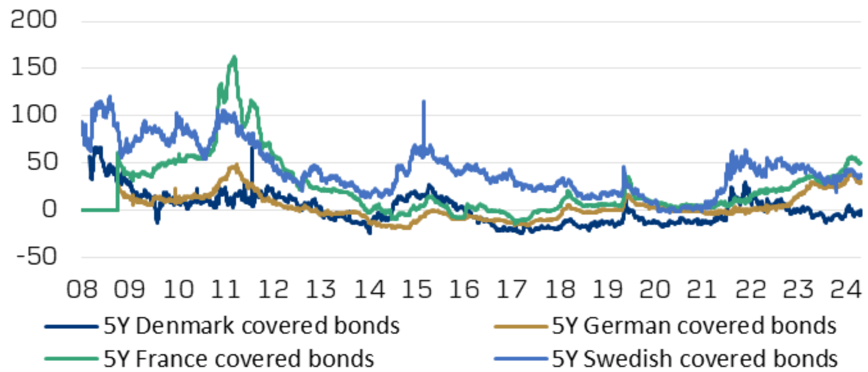
Source: Finance Denmark, Danske Bank

[2] During the COVID-19 crisis, this led the European Commission to adopt a revised text specifying that credit institutions should not automatically increase ECL but make use of expert judgement as well.
[3] 'Nye nedskrivningsregler som følge af IFRS 9' – Finanstilsynet, 2017.

Low spread volatility of Danish covered bonds compared with other European covered bond markets (non-callables)

Over the past few decades, the spread volatility of Danish covered bonds has generally been quite low compared with other European covered bond markets. Spreads on Danish covered bonds widened quite significantly in autumn 2008 due to the increased risk aversion in the market, but compared with other European covered bond bonds, the spread widening in Denmark in 2008 was moderate. Also, the Danish bond market was unaffected by the European debt crisis, as investors used the Danish bond market as a 'safe haven'. Since 2012, we have seen a significant tightening of (local) asset swap (ASW) spreads on European covered bonds driven partly by the ECB's covered bond buyback programmes (CBPP). Over the same period, the spreads on Danish covered bonds traded in a relatively stable range until 2015, when we saw a temporary widening of spreads. The drivers of the spread widening in 2015 were uncertainty about the impact of regulation (for example, the implementation of the liquidity coverage requirement [LCR] as of 1 October 2015), uncertainty regarding the leverage ratio and risk weights and increased volatility in the financial markets. After the spread widening in 2015, the spread tightening on Danish covered bonds continued and the spreads reached historically low levels in 2018. The COVID-19 crisis brought renewed spread widening to the covered bond segments during March 2020, however spreads returned fairly quickly to pre-crisis levels. Worth mentioning is that the Riksbank in March 2020, for the first time ever, embarked on QE in SEK covered bonds. Even so, the subsequent spread tightening in DKK was at the same pace as seen in the SEK market and at the time of writing the longer-lasting effects on risk premiums are yet to be seen. We also saw some widening during 2022 due to the inflation-crisis. Similar to the historical event, spread widening and spread volatility of Danish covered bonds were generally quite low compared with other European covered bond markets.

Chart 3. ASW-spreads on 5Y Danish Noncallable vs. ASW-spread on EU covered and Pfandbriefe 5-7Y (bp)



Note: Past performance is not a reliable indicator of current or future results
Source: Danske Bank

Good liquidity in short-dated, non-callable covered bonds

The liquidity of short-dated non-callable covered bonds is relatively high and at times better than the liquidity of Danish government bonds. Despite periods of very low liquidity (for example, during the financial turmoil in 2008-09), Danish mortgage banks have been able to issue and sell bonds in the market. This has also been noted from time to time in academic literature as well as by Danmarks Nationalbank and is partly attributable to the match funding principle (see next section)[4]. Specifically, recent research finds that the match funding principle and the lack of other funding sources than covered bonds for specialist mortgage banks (for example, the inability to take deposits) means that adverse selection, which tends to be a problem in most other funding markets in periods of severe financial stress, is a very limited issue. Adverse selection arises in a situation where, in a period of rising funding costs, only issuers of a low quality choose to issue and 'good names' tend to stay away from the market, which is not possible under a match funding principle, where bonds are issued on an ongoing basis as loans are originated. For example, German 'Pfandbriefe' issuers were largely absent from the EUR covered bond market during H1 20 when funding costs rose due to the COVID-19 crisis, which was not the case at all for the Danish mortgage banks.

The matched maturities of assets and liabilities create a high degree of transparency, thus circumventing the problem of adverse selection, which is an especially important feature in times of stress. The high liquidity lowers the funding costs of mortgage banks and thereby contributes to lending growth supporting the real economy. The research also shows that liquidity is independent of trade size, issuance size and ownership concentration, but instead attributable to low price uncertainty given the ease by which an issue can be benchmarked to other frequently traded covered bonds.

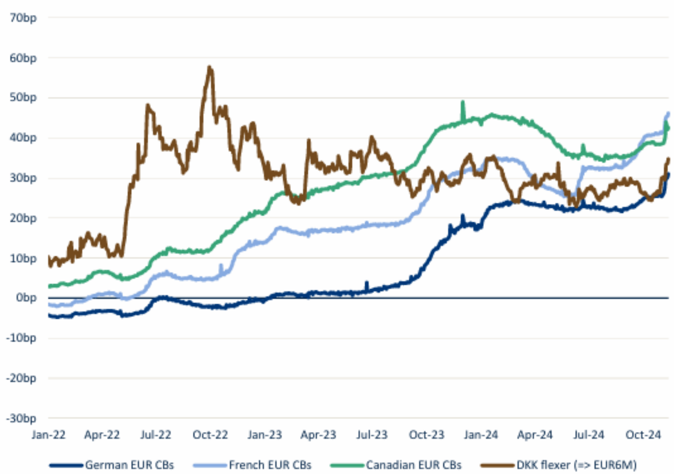
Danish covered bonds offer same return as EUR covered bonds despite better liquidity

Looking at the current (as of 15 June 2020) spread levels for Danish and other European covered bonds, Danish covered bonds currently trade slightly through the spread levels on European covered bonds if we look at the spreads versus local swap (DKK, SEK and EUR swaps, respectively), which has been the case for a few years now. However, this does not imply that Danish covered bonds offer lower rates of return in a funded and hedged strategy versus peers, or in an outright long position as shown in Charts 4 and 5. Given the fixed exchange rate peg to the euro, DKK covered bonds are substitutes for EUR covered bonds (except for eligibility in ECB's collateral framework), meaning that yield levels typically track those prevailing in the euro area.

The low ASW level to some extent reflects the Danish FRA/OIS spread, which is typically in the range of 20-25bp. Another important driver for differences in yield levels is the very large callable bond segment (see later), which drives duration needs when interest rates either increase or fall rapidly, as was for example the case in February 2018 (spreads increased) and June 2019 (swap rates fell rapidly), meaning that 5Y DKK bonds will be in low or high demand.

[4] See 'Financial Stability 1st Half 2020' – Danmarks Nationalbank (2020) and 'Highly liquid mortgage bonds using the match funding principle' – Dick-Nielsen and Gyntelberg (2020).

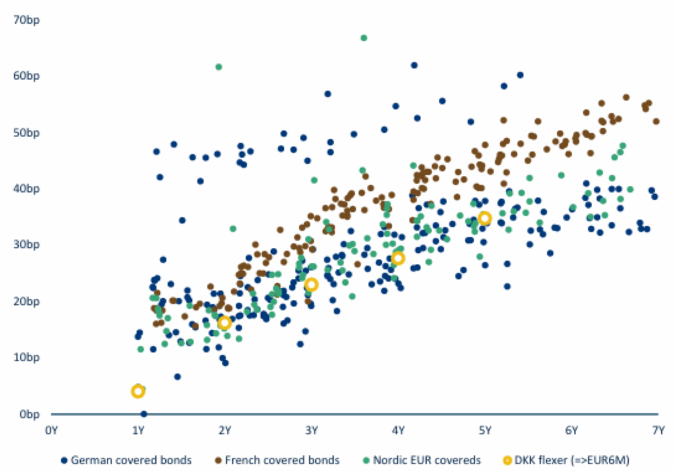
Chart 4. Generic 5Y spreads, EUR covered bonds against DKK flexer swapped to EUR6M, since 2022



Note: Past performance is not a reliable indicator of current or future results

Source: Danske Bank

Chart 5. Spread EUR covereds (ASW EUR6M) against DKK flexer swapped to EUR6M (up to 10-year maturity)



Note: The yield levels for EUR covered bonds are not representative of actual clearing levels in March and April of 2020. Past performance is not a reliable indicator of current or future results

Source: Danske Bank

Another (although at present less important driver) is the near permanent EUR/DKK FX forward discount priced in 3M to 12M maturities ever since 2010. The reason is, in our view, Danish fundamentals, which include several years of high current account surpluses (savings) resulting in a net foreign asset position at 80% of nominal GDP (Denmark's nominal GDP was DKK2,300bn in 2019). The assets are largely concentrated in the Danish life and pension sector managing net foreign assets, corresponding to 65% of GDP, and a large share of those assets are hedged back into DKK, creating imbalances in the FX forward market, where the need to sell foreign currency is much larger than the need to sell DKK.[5] We see little to change these fundamental flows going forward and thus the FX forward market should continue to be a positive factor for Danish covered bonds (see Charts 6 and 7) below.

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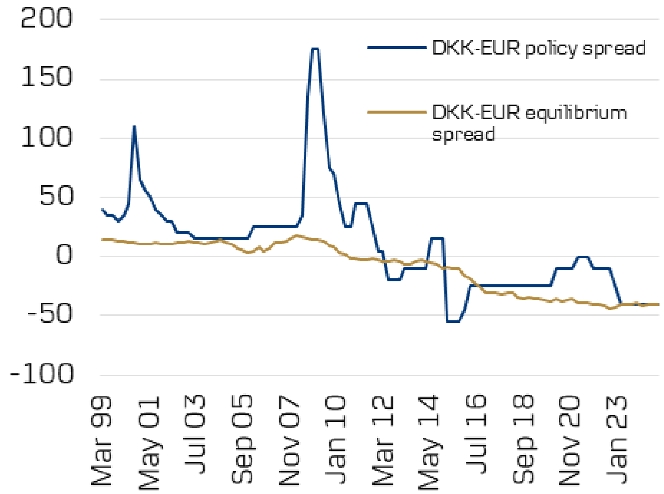
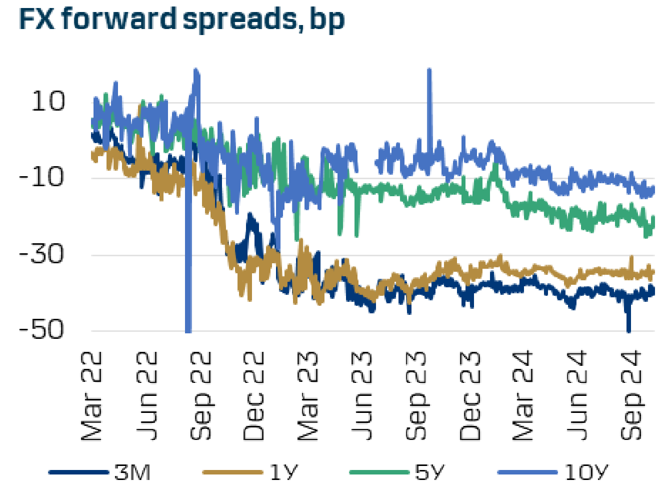
[5] Details can be found here: (Estimating structural demand for DKK and implications for DKK EUR deposit spread, Danske Bank, July 2023):
)*https://research.danskebank.com/research/#/Research/articlepreview/1d2cb0f8-98a3-4d4c-951a-7ebd7fbf8e2c/EN*

Chart 6. Excess carry following from the FX forward discount.



Note: Past performance is not a reliable indicator of current or future results
Source: Danske Bank

Chart 7. Negative basis swap also in longer tenors.



Note: Past performance is not a reliable indicator of current or future results
Source: Danske Bank

2. The mortgage credit system

Danish mortgage banks provide mortgage lending at a very competitive cost. This has led to persistent demand for mortgage lending from property owners (residential, commercial and public sector real estate) in Denmark, and makes the Danish covered bond market the largest in the world relative to GDP and among the largest in Europe in absolute terms together with France.

Covered bonds are issued in series. A ‘capital centre’ consists of a series or a group of series with a joint series reserve fund and joint liability. The assets in each capital centre (also referred to as the ‘cover pool’) are made up of mortgage loans and other eligible assets. A mortgage bank can have multiple capital centres and we refer to the parts of a mortgage bank outside individual capital centres as the ‘general capital centre’.

Until 1 July 2007, the Danish mortgage market was characterised by two main features.

- Only specialist mortgage banks were allowed to issue ‘Realkreditobligationer’ (mortgage covered bonds secured on real property, ROs) and a ship finance institute issued ‘Skibskreditobligationer’ (ship mortgage covered bonds secured on ships, SMBs).
- All mortgage banks followed a strict balance principle, matching a loan exactly with the bond bought by the investor. In a pure pass-through system, as shown in Chart 8, the mortgage bank did not take interest rate, volatility, FX or liquidity risks but only credit risk.

Chart 8. Pass-through system

Source: Danske Bank

On 1 July 2007, an amendment to the legal framework came into force. The purpose of the amendment was twofold:

- To render the Danish covered bond system compliant with the covered bond criteria in the EU Capital Requirement Directive (CRD). The most important change was that loans entering into the cover pools underlying a CRD-compliant covered bond issuance as of this date should no longer agree only with the relevant LTV limit at disbursement of the loan but at each point in time. In the event a loan breaches the limit, supplementary collateral will have to be posted into the capital centre, or the bond issued loses its status as ‘covered’.
- To give Danish universal banks access to covered bond funding of eligible assets.

To meet its purpose, the amendment introduced different covered bond types, four of which qualify for preferential treatment in the CRR Article 129, as they fulfil both UCITS *and* CRD (qualify (Y) or don’t qualify (N)):

- SDO – ’særligt dækkede obligationer’ (Y).
- SDRO – ’særligt dækkede realkreditobligationer’ (Y).
- ‘Realkreditobligationer’ issued before 31 December 2007 (grandfathered ROs, Y).
- ‘Skibskreditobligationer’ issued before 31 December 2007 (grandfathered SMBs, Y).

- 'Realkreditobligationer' issued after 31 December 2007 (new ROs, N).
- 'Skibskreditobligationer' issued after 31 December 2007 (new SMBs, N).

All the bonds mentioned are covered bonds but under the new covered bond directive (see more below), new ROs and SMBs can only carry the label 'European Covered Bond', while SDOs/SDROs and grandfathered ROs/SMBs can carry the label 'European Covered Bond (Premium)'.

SDOs, SDROs and ROs/SMBs issued before 31 December 2007 are all classified as CRD-compliant covered bonds and thus carry low risk weights (10% under the standard approach if the covered bond programme is AAA-rated). New ROs and new SMBs do not qualify for preferential treatment, as it is not required that the loans collateralising new ROs/SMBs comply with the relevant LTV limits at all times and are thus to be regarded as regular credit exposures towards another credit institution (with a risk weight of 20% under the standard approach).

SDOs/SDROs, ROs and SMBs must be issued out of separate capital centres.

The most important difference today between the SDOs and SDROs is that SDROs may be issued by specialist mortgage banks only, while SDOs may be issued by both universal banks and specialist mortgage banks. However, in 2007, when the legislation was passed, joint funding schemes (where funding and subsequent issuance of covered bonds takes place in a credit institution different from the one originating the loan) were for various reasons seen to fit best with the SDO format. This is the reason for Nykredit (which at the time was involved in a joint funding scheme with Totalkredit) choosing the SDO format, while Jyske Realkredit and DLR Kredit both wanted the opportunity to set up joint funding schemes at a later stage, and thereby also chose the SDO format. However, back then and today, joint funding schemes are fully possible using SDROs as well.

The only ship finance institute is Danmarks Skibskredit issuing SMBs or SDOs secured on ships. Specialist mortgage banks are per definition not allowed to offer ship mortgages and universal banks with license to issue covered bonds cannot make an issue secured on *both* ships and real property.

As mentioned above, the amendments allowed the mortgage banks to issue new ROs, but these are not CRD compliant and higher risk weights apply for these bonds relative to SDOs/SDROs. This does not mean that they are still not issued, however, and Nykredit in particular is still active in this segment. In 2009, Nykredit introduced a requirement of 'two-tier mortgaging', as a way to limit the probability of having to fund supplementary collateral in scenarios with large downward price corrections in the housing market. This was implemented for non-residential mortgages in 2009 (the requirement still exists for this segment), whereas for residential mortgages the requirement was not applied until 2012 but was phased out again only two years later. The 'two-tier mortgaging' model implies funding the most risky part of the loans using RO bonds and the less risky part by SDOs[6].

In the years following the new legislation, most mortgage banks refinanced maturing interest-reset loans and floaters into new SDOs/SDROs. Among the other mortgage banks, ROs are no longer used actively in funding plans, although RD and JYSK issue (in very small size) in RO floating rate bonds secured on commercial mortgages.

[6] Specifically considering the funding of a loan secured on a residential mortgage. The maximum LTV is 80% for this type of lending, which is funded by SDOs from 0-60% and by ROs from 60-80%.

Danmarks Skibskredit has mostly issued SMBs, as the vast majority of the investor segment underlying these bonds are not banks and thus not regulated under the CRR. Furthermore, ship mortgages with an LTV up to 70% can be used as collateral for ship mortgage bonds, but not SDOs, where a limit of 60% applies.

In the years leading up to the introduction of the new regulation, most larger banks expressed a wish to start up a covered bond programme. However, the financial crisis hit shortly after and with the introduction of the LCR regulation in 2015, the need for large and liquid outstanding bond series cooled the interest completely, and today Danske Bank is the only non-specialist mortgage bank issuing covered bonds, but here issuance is also quite moderate.

Instead, banks have either taken over mortgage banks (the Jyske Bank merger with BRFkredit in 2014) or made joint funding arrangements with specialist mortgage banks. Nykredit is especially active in providing funding for banks included in the Totalkredit partnership, where banks originate the loan on their own balance sheets (so-called ‘prioritetslån’).

Furthermore, the amendments gave the specialist mortgage banks and the universal banks the possibility to issue under two different balance principles:

- The specific balance principle, which is very close to the old balance principle.
- The general balance principle, which is more in line with what is in force in the euro area and allows for looser ties between funding and lending and a wider use of derivatives is allowed. Making active use of this principle, however, comes with larger capital requirements.

In the table below we illustrate how issuers in the Danish market have positioned themselves with regard to the type of covered bond and the type of balance principle. A more thorough description of the two balance principles is found in the section titled ‘Balance principle’.

The two specialist mortgage banks, Nordea Kredit and Realkredit Danmark, which are owned by the two large banks Nordea and Danske Bank, respectively, are the only ones that issue covered bonds in the SDRO format *and* adhere to the specific balance principle. The specialist agricultural mortgage bank DLR Kredit also adheres to the specific balance principle but issues in the SDO format. Jyske Realkredit and Nykredit Realkredit have opted for the general balance principle and issue SDOs.

Table 3. Danish issuer positions

Issuer	Type	Balance principle	Main issuing principle
Jyske Realkredit	SDO	General principle	Pass through, tap or auction and euro style, syndication
Danske Bank	SDO	General principle	Euro style, syndication
DLR Kredit	SDO	Specific principle	Pass through, tap or auction
Nordea Kredit	SDRO	Specific principle	Pass through, tap or auction
Nykredit Realkredit	SDO	General principle	Pass through, tap or auction and Euro style, syndication
Realkredit Danmark	SDRO	Specific principle	Pass through, tap or auction
Danmarks Skibskredit	SMB/SDO	Specific principle	Tap and euro style, syndication

Source: Danske Bank

Despite the choice of the largest mortgage lender Nykredit to issue under the general balance principle, Nykredit makes use of match funding on all its mortgage loans and, currently, Nykredit does not make use of the degree of freedom under the general balance principle[7]. Nevertheless, Nykredit issues 3M CITA (based on 3M DKKOIS) floaters which are used to fund bank priority loans, meaning that both the fixing type and maturity are a bit unusual. It is callable and Nykredit Bank holds the right to call. Nykredit made its first EUR syndication in 2017 (3M EURIBOR floater) and did another one in 2018. Both are used for match funding, thus funding floating rate bullet loans in EUR.

Jyske Realkredit uses the flexibility under the general balance principle to finance DKK mortgage loans by issuing syndicated non-callable EUR benchmark covered bonds and then using derivatives to hedge market risk and Jyske Realkredit has been doing so since 2016 and was first among the specialist mortgage banks to embark on this practice. Jyske Realkredit also issues 4y-5y DKK non-callable bullets to finance shorter than 4y-5y loans[8]. Currently, the amount outstanding in EUR bonds is fairly muted and stands around EUR4bn (out of a total outstanding amount of close to EUR60bn in covered bonds on Jyske Realkredit's balance sheet). Jyske Realkredit also issues non-capped 3M CIBOR floaters for the funding of capped 3M CIBOR floating rate loans through Jyske Bank.

Despite the choice of specific versus general balance principles, the vast majority of mortgage loans granted from specialist mortgage banks are match funded, meaning a 1:1 correspondence between lending terms and issued covered bonds[9]. In addition, the specialist mortgage banks still rely on daily tap issuance and refinancing auctions that take place four per year.

Not being a specialised mortgage bank, Danske Bank is allowed to issue only covered bonds in the form of SDOs and, being a universal bank, the general balance principle within the ALM suits it best.

Legislation

Danish mortgage banking is supported by restrictive and detailed regulations designed to protect covered bond investors. Mortgage banking in Denmark is regulated subject to the general Financial Business Act, the specific Mortgage-Credit Loans and Mortgage-Credit Bonds Act and a number of Ministerial Orders.

Key elements of the regulation are as follows.

- Specialist mortgage banks must operate subject to the balance principle limiting the market risk exposure of the issuer to a minimum.
- Bonds issued and collateral must be assigned to specific capital centres within the specialist mortgage banks.
- Each capital centre is regulated subject to a balance principle – either the general or the specific principle – at the discretion of the issuer.
- Mortgage loans and securities serving as collateral must meet restrictive eligibility criteria, including loan-to-value (LTV) limits and valuation of property requirements.

[7] Nykredit has made use of the general principle previously when funding loans in NOK by issuance in DKK or EUR. This model would likely also be used to fund potential future lending in GBP (Nykredit has a licence to lend in the UK).
[8] Jyske Realkredit issues 4y at the recent refinancing auction in Nov'24 partly in order to finance shorter than 1y lending.
[9] The Danish FSA found in 2018 that the highest portfolio share among mortgage banks in which derivatives were necessary to comply with the balance principle was 10%.

- Investors have a privileged position in the case of bankruptcy, rendering covered bond bankruptcy remote.
- Mortgage banks are closely supervised by the Danish FSA.

Property registration and the compulsory sale system

A key feature of the Danish system is very well defined property rights through a general register of all properties in Denmark. This consists of the Danish title number and land registration systems and efficient compulsory sale procedures. The title and land registration systems ensure that ownership and encumbrances on individual properties are easily identified and that the information is available to the public.

Furthermore, if a borrower defaults on a payment, the mortgage bank can take over the house and the compulsory sale procedure ensures that a mortgage bank can sell the house in the real estate market or through a forced sale. The period from default to a forced sale being completed may be as short as six months. Hence, the Danish title number and land registration systems add investor protection.

Balance principle

The balance principle is a guiding principle of Danish mortgage banking, which restrictively regulates the market risk exposure of Danish covered bond issuers.

The principle imposes a number of tests, which must be passed at all times, and the mortgage bank must choose to adhere to one of two balance principles: the general balance principle or the specific balance principle.

Table 4. Balance principles

	General principle	Specific principle
Payments definition	Payment may include margins	Payments excluding margins
Interest risk	Risk limit 1%[1] +2%[2] of OC: +/-100bp parallel shift Risk limit 5%[1]+10%[2] of OC: +/-100bp twist and +/-250bp shift 50% offset of EUR interest rate risk	Risk limit 1% of OC: +/-100bp parallel shift and twist No offset of EUR interest rate risk
Exchange rate risk	Risk limit 10% of OC: +/-10% shift in EU currencies +/-50% shift in other currencies	Risk limit 0.1% of OC Currency indicator II
Option risk	Risk limit 0.5%[1]+1%[2] of OC: +/-100bp shift in volatility (vega)	Perfect hedge required
Liquidity risk	Deficits in interest payments may not exceed OC within 12M NPV surplus of all future payments	Deficits in total payments limited to: - 25% of OC in year 1-3 - 50% of OC in year 4-10 - 100% of OC from year 11

1. Percentage of the capital adequacy requirement
2. Percentage of the additional excess cover for mortgage banks
Note: OC = over-collateralisation
Source: The Danish FSA, Danske Bank

The balance principle is enforced by the Danish FSA. If a mortgage bank does not pass the tests, the FSA must be informed immediately. In addition, mortgage banks must report their market risk exposure to the FSA on a quarterly basis.

Interest rate risk is tested in scenarios of both yield curve shifts and yield curve twists. The diversity of scenarios implies that duration matching of a loan and funding portfolio will not be sufficient to pass the test.

Currency risk

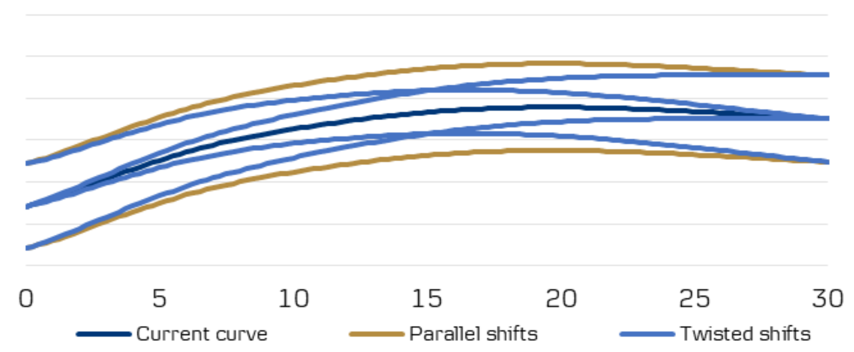
Currency risk is tested in scenarios of shifts in the currencies in which the bonds have been issued to comply with the general principle.

Currency risk is tested employing an empirical measure of the greatest loss suffered within a 10-day period with a 0.99 probability (Currency Indicator II) to comply with the specific principle. The measure is calculated by the Danish FSA.

Option risk

Option risk is tested in scenarios of shifts in the volatility (vega) to comply with the general principle.

Chart 9. Shifting the yield curve



Source: Danske Bank

Liquidity risk

The cover of future payments to covered bond investors is tested to limit the liquidity and funding risk of mortgage banks. In passing this test, mortgage banks will have sufficient liquidity to meet future payments on mortgages.

Specialist bank principle and supplementary collateral

Before the SDO legislation in 2007, only specialist mortgage banks were allowed to issue covered bonds, but with the introduction of the new law other credit institutions can now issue covered bonds. However, only Danske Bank is currently making use of this opportunity and it is not expected that this will change for the foreseeable future, given the added regulatory requirements in past years. On top of this the Danish FSA, borrowers and market participants in general prefer the transparency that the specialist mortgage bank model provides for. Thus, the landscape for mortgage loans is very much dominated by specialist mortgage banks still[10].

The specialist bank principle confines the activities of mortgage banks to mortgage lending based on the issuance of mortgage covered bonds[11].

The principle implies that mortgage banks are prohibited from granting loans that do not meet the eligibility criteria imposed by legislation. Similarly, the sources of funding are confined to issuing covered bonds, i.e. collecting deposits is not an applicable source of funding for Danish mortgage banks. This also means that new lending is always matched by a tap of covered bonds.

The principle implies that mortgage banks operate as monoline businesses, which adds to the transparency of investing in covered bonds.

[10] Danske Bank's domestic cover pool (D) comprises DKK28bn of pool notional as compared to c. DKK3,100bn total issued covered bonds from Danish covered bonds issuers.
[11] Cf. appendix 3 to the Financial Business Act (definition of a specialist mortgage bank).

As specialist mortgage banks are not allowed to fund lending in any other way than through the issuance of covered bonds, this also means that mortgages cannot be moved from a capital centre without a corresponding amount of bonds being moved as well. Also, since covered bonds must be issued out of capital centres, a mortgage bank will only be able to move a mortgage from one capital centre to another.

This implies that loans breaching prevailing LTV limits cannot be removed from a capital centre and adding more mortgages to the cover pool will not remedy possible LTV limit issues nor can they be used to meet OC requirements, as such practice will increase the amount of covered bonds outstanding at the same time.

Furthermore, the principle implies that non-performing loans which will remain in the cover pool until they have been derecognised.

Thus, in the case where a loan is in breach of prevailing LTV limits, specialist mortgage banks have been given the right to issue bonds out of capital centres in order to fund supplementary collateral. The funding obtained in this way can also be employed for OC requirements for rating purposes[12].

Note that a drop in house prices implying a LTV for a single loan above the limits set in the legislation on the face of it only reduces over-collateralisation levels in the cover pool. However, section 33 (a) in the Mortgage-Credit Loans and Mortgage-Credit Bonds Act specifies that the total value of assets must at least correspond to the value of outstanding covered bonds in each capital centre, which implies a need to issue covered bonds.

These bonds are known as 'section 15 bonds' or junior covered bonds (JCBs) and currently (December 2024) the outstanding amount of JCBs is around DKK5bn, all issued by DLR under the name 'Senior Secured Bonds'. The reason for the low amount is mainly the gradual increase in house prices lowering LTVs as well as providing for sufficient OC. In turn, going forward, it is expected that part of the potential need to fund supplementary collateral will happen through the use of senior non-preferred debt (see more below for an introduction to MREL in Danish legislation and see chapter 5 for more on JCBs).

Supplementary collateral can also be in the form of capital, which is being used to fulfil the capital or OC requirements in the capital centre.

Reasons for having to post more supplementary collateral includes:

- House price deflation (decreases LTV, as the denominator is lowered).
- Properties selected for supervision.
- Refinancing and remortgaging of loans (multiple loans are registered on the same property).
- Increased market value on issued bonds (decreases LTV as the numerator is lowered – the loan is measured at fair value using the market price of the corresponding outstanding bond or a verified model).

Note the delicate relationship between the need for supplementary collateral and OC. Consider a simple cover pool in which there is a single loan worth DKK 100, secured on a property worth DKK 125, implying an LTV of 80%. The value of the issued covered bonds

[12] Cf. section 33(a) in the Mortgage-Credit Loans and Mortgage-Credit Bonds Act the value of the assets collateralizing a covered bond issuance must at least correspond to the value of the covered bonds issued in each capital centre. Thus, if the decline in house prices is large enough and the mortgage bank does not provide supplementary collateral all outstanding covered bonds issued from the capital centre loses status as SDROs/SDOs and are instead downgraded to ROs.

are 100 as well implying an OC of 0%. After a short period of time the housing market corrects such that the market value of the property drops to 100. Thus, the eligible part of the loan is now only 80 (since this implies a LTV of 80%). Given that the value of issued covered bonds is still 100, the mortgage bank will have to provide supplementary collateral worth at least DKK 20 or otherwise the issued covered bonds will be downgraded to ROs. If the mortgage bank does so, the OC level in the cover pool will in effect increase from 0% to 20%, but the buffer for meeting a future supplementary collateral call will still be DKK 0.

Supplementary collateral can be provided through other mean than by issuing JCBs/other senior debt or equity financing. Also loan loss guarantes provided by other credit institutions can be employed up to a 15% limit of the outstanding covered bonds (read more about the loan loss guarantees already in place among the different mortgage banks in chapter 3). Loan loss guarantees do not provide for higher OC levels as they cannot be utilised unless the value of the underlying collateral deteriorates.

While the property collateralizing mortgage lending remains the ultimate security, individual mortgage debtors are personally liable towards the holders of covered bonds, and thus holders of covered bonds have a claim towards the remaining notional principal and not the underlying collateral. Even if the value of the property is reduced this does not necessarily mean that the debtor will be unable to service the outstanding debt. Only in the case where this is no longer possible, the mortgage bank needs to realise funds by turning to the collateral provided, ie. the property.

Assets placed in the cover pool for the purpose of fulfilling the LCR requirement (see more below) cannot at the same time be used for supplementary collateral purposes. However, mortgage banks often embarks on the practice of placing LCR assets into the cover pools in order to increase OC levels on an individual capital centre level.

Consider the following example: At the end of Q4 RD's capital centre S had issued covered bonds with a value of DKK 271bn, meaning that roughly the same amount of cover assets in the form of mortgages were available in the cover pool. In addition, DKK 19bn worth of substitute assets were also readily available. The LCR requirement in the cover pool was DKK 6.8bn (2.5% times the total lending) and the supplementary collateral requirement was DKK 4.3bn. Thus, OC was 7% (19 divided by 270) and the buffer for meeting a future supplementary collateral call was DKK 8.1bn. Supplementary collateral buffers are typically determined by stress testing the housing market relative to historical volatility.

Asset eligibility criteria

There are slight differences between which assets can be used as collateral for the issuance of covered bonds depending on whether the bond in question is an SDRO/RO or an SDO. For SDROs and ROs, the following assets qualify as collateral[13]:

- Loans secured by a registered mortgage on real property, including loans secured on temporary collateral.
- Loans secured by a registered mortgage on real property, including loans secured on temporary collateral, provided by other credit institutions in accordance with the statutory provisions on joint funding.
- Bonds and debt instruments issued on or guaranteed by public sector entities and central banks.

[13] See Mortgage-Credit Loans and Mortgage-Credit Bonds Act section 2 and section 33(a), 33(b).

- Exposures arising from financial instruments applied to hedge risks between assets and issued bonds in a capital centre entered into with other credit institutions. These exposures must be kept within either the 10% or 15% limit set out in the CRR Article 129(1)c. Any exceedance of these limits must be immediately remedied by provision of supplementary collateral in assets as set out in the CRR Article 129(1)a-b. Mortgage banks, however, are allowed to place so-called ‘balancing funds’ in connection with covered bond issuance (i.e. prepaid funds from repayments, fixed-price agreements, etc.) temporarily in reverse repos and deposits with other credit institutions above the 15% limit. Also not included in this limit are the placement of such funds, within the capital centre, in own issued bonds.

SDOs can be collateralised by the assets set out in the CRR Article 129(1)a-f and 129(3).

Asset substitution not allowed

The definition of a specialist mortgage bank (see above) means that asset substitution is not allowed for and hence non-performing loans are then always included in the cover pool.

Ships are not eligible for SDOs/SDROs under the specific Mortgage-Credit Loans and Mortgage-Credit Bonds Act. Thus, specialist mortgage banks cannot conduct mortgage lending secured on ships. Ships are funded by Danish Ship Finance under the Act on a ship finance institute.

In general, the pledged properties must be valued subject to an inspection of the property by a valuation officer of the mortgage bank. However, the majority of the Danish mortgage banks, including Realkredit Danmark, DLR Kredit, Nykredit Realkredit, Jyske Realkredit and Nordea Kredit, have developed a valuation model based on extensive data on property prices in Denmark.

The Danish FSA has reviewed the reliability of the models. Based on this, the FSA can in some cases grant an exemption from the inspection requirement for properties meeting certain criteria.

In order for SDOs/SDROs to obtain preferential treatment the valuation principle must be in line with CRR article 229(1) (and from July 2022 regulated under the Covered Bond Directive) specifying a current valuation at or below market value. This can for industrial property be disregarded when collateralizing ROs. However, this option is set to expire on July 2022 following from the implementation of the Covered Bond Directive.

Table 5. Eligibility criteria for mortgage loans –maturity and interest-only (IO) period

	RO	SDO/SDRO
Maturity	Max. 30 years but up to 40 years for certain guaranteed lending.	Same as for ROs.
IO period	A maximum of 10 years.	If LTV is below 75% for the property types outlined below in Table 6 where an ordinary 80% LTV limit is in force, the IO period can be up to 30 years.

Source: The Danish FSA, Danske Bank

Table 6. Eligibility criteria for mortgage loans – maximum LTV

Property type	RO	SDO/SDRO
Private residential property	80%	80% (75%*)
Residential rental property	80%	80% (75%*)
Office and shop property	60%	60% (70%**)
Industrial property	60%	60% (70%**)
Agricultural property	70%	60% (70%**)
Loans covered by municipal guarantee	80-100%	80%
Holiday homes	75%	75%
Land	40%	40%

** The maximum LTV is 75%, if the loan has a 30Y interest-only period*
*** The maximum LTV can be raised to 70%, if supplementary collateral is provided of no less than 10% for the part of the loan that exceeds 60% of the value of the property*
Source: The Danish FSA, Danske Bank

The maximum LTV for ships mortgages collateralising ship mortgage bonds (SMBs) is 70%, but only 60% when collateralising SDOs.

Bankruptcy regulation

Covered bond investors are awarded a privileged position in a bankruptcy scenario. The privileged position ensures that covered bond investors will only be affected in a bankruptcy scenario in exceptional cases, rendering the chances of covered bond bankruptcy remote.

The bankruptcy regulation specifies detailed guidelines, which must be observed in a bankruptcy scenario. In the event a mortgage bank becomes insolvent, the Danish FSA may file a petition for bankruptcy. After a bankruptcy order has been issued, individual capital centres and the general capital centre are treated separately and funds cannot be transferred between capital centres.

All the funds in individual capital centres and the general capital centre are used to cover payments arising from senior covered bondholders' preferential claims and certain financial instruments. Financial instruments can be an asset or a liability to the capital centre only if the instrument is used to hedge market risk between cover pool assets and issued covered bonds *and* if the agreement on the financial instrument specifies that a suspension of payments, bankruptcy or inability to comply with the request for supplementary capital of the mortgage bank does not constitute a breach. Counterparties to these financial instruments thus rank pari passu with senior covered bondholders in a bankruptcy scenario. After payments to senior covered bondholders and qualified derivatives counterparties have been covered in full, section 15 senior debt holders' claims are covered and any remaining funds will be transferred to the bankruptcy estate. The above proceedings take place even if the issued bonds have lost their status as 'covered' due to a breach of the over-collateralisation or other requirements.

Bankruptcy cannot be used by bondholders (senior or junior) or derivatives counterparties as a valid reason to demand an acceleration of payments and at the same time mortgage debtors' rights to redeem in part or in full any loan obligation are still applicable. Thus, coupons and repayments are transferred to bondholders in ordinary fashion to the extent possible. If there is a lack of sufficient liquid funds, coupons will be paid before any promised repayments.

Bonds that are up for refinancing may be replaced by new issuance of refinancing bonds. However, the liquidator is not allowed to do so if after the issuance of refinancing bonds there is an insufficient amount of funds in place to cover the payments to bondholders or if it cannot be expected that there is a sufficient number of buyers. In these cases, the maturity of the expiring bonds will be extended by 12 months at a time.

Implementation of MREL (BRRD) into Danish law

Debt buffer requirement

When the Bank Recovery and Resolution Directive (BRRD) was implemented into Danish law, the Danish legislators exercised the option to exempt mortgage banks from bail-in[14] (covered bonds are already exempt from the bail-in requirement in BRRD). This in turn also means that mortgage banks are exempt from the minimum requirements for own funds and eligible liabilities (MREL). Instead, legislators have introduced a debt buffer requirement corresponding to 2% of a mortgage bank's unweighted lending exposures. The requirement can be met by CET1, AT1, Tier 2 instruments or unsecured senior debt with a maturity longer than two years[15]. Furthermore, there is a requirement for a diversified maturity structure and the Danish FSA may decide that the instruments used to meet the debt buffer requirement include in the terms a contractual loss absorption feature whereby in a resolution event such debt instruments can be written down without the use of bail-in (this is currently the case). Instruments used to meet the debt buffer requirement cannot be issued out of specific capital centres but must be issued by the general capital centre and cannot at the same time be used to fulfil Pillar I, Pillar II or combined buffer requirements.

However, these instruments can (as mentioned above) be used to fund supplementary collateral and OC in individual capital centres. If this is the case, the funds obtained must be placed in eligible assets (see section below on 'Placement of funds and liquidity requirements').

Size of debt buffer requirement

The size of the total MREL/debt buffer requirement depends on whether the mortgage bank in question has been appointed as a Systemically Important Financial Institution (SIFI) on a standalone basis or at a consolidated level as part of a group. If the mortgage bank has been appointed as a SIFI on a standalone basis, the debt buffer requirement must be set at a level, although at a minimum of 2%, that ensures that the mortgage bank's total solvency requirement and debt buffer requirement in combination totals no less than 8% of total liabilities and own funds (TLOF). The 8% requirement ensures that the Danish resolution fund can be employed to cover losses or restructuring.

If the mortgage bank as the part of a group has been appointed a SIFI at a consolidated level, the size of the debt buffer requirement must be set at a level, although at a minimum of 2%, that ensures that the mortgage bank's total solvency requirement (as the mortgage bank's solvency requirement does not enter the MREL requirement of the group), the group's MREL requirement and debt buffer requirement in combination total no less than 8% of the group's TLOF. In case the combination does not total 8%, it is the debt buffer requirement of the mortgage bank in the group that will be increased until the combination totals 8%.

As mentioned above, the Danish FSA *may* require the senior unsecured debt issued to meet the debt buffer requirement to include a contractual loss absorption feature. It is not required that the debt issuance is subordinated relative to simple claims but the FSA guides mortgage banks to follow such practice and due to S&P's Additional Loss-Absorbing Capacity requirement for banks, it can be worth issuing in SNP format even if this is not an actual requirement.

[14] Entities subject to bail-in means that the supervisory authority can, if the use of such will result in reasonable restructuring of said entity, convert subordinated liabilities into equity. The resolution strategy chosen for all SIFIs in Denmark is restructuring, whereas for other banks it is liquidation under normal insolvency procedures.
[15] The Danish FSA requires the entire MREL requirement for banks under BRRD I to be subordinated. Until 1 January 2022, banks could fulfil the subordination requirement using ordinary senior debt issued before 1 January 2018.

If the mortgage bank is a wholly owned subsidiary as part of a group and if the resolution strategy chosen is to restructure an insolvent group without separating the parent and the mortgage bank (the case of Jyske Realkredit, Realkredit Danmark and Nykredit Realkredit), the Danish FSA guides that instruments used to meet the debt buffer requirement are subordinated and have a contractual loss absorption feature. Furthermore, the parent must buy the issued debt instruments used to meet the debt buffer requirement.

Example: Debt buffer requirement of Jyske Realkredit in 2019. Jyske Realkredit is part of the Jyske Bank Group. In 2019 the Risk Exposure Amount (REA) of the group was DKK181.3bn of which REA in the mortgage bank was DKK 81.3bn – thus REA excluding the mortgage bank was DKK100bn. The MREL requirement was 30.7% or DKK30.7bn[16]. The total solvency requirement for the mortgage bank was DKK12.2bn. Total liabilities and own funds (TLOF) were DKK649bn. Thus, the sum of the MREL requirement of the group and solvency of the requirement makes up more than 8% of TLOF and thereby the debt buffer requirement is fixed at 2% of the total unweighted lending exposures.

Capital requirements

Mortgage banks must observe capital requirements as defined in applicable EU directives, i.e. the capital base of mortgage banks must be a minimum of 8% of REA. This requirement applies to both individual capital centres as well as the general capital centre. If a capital centre is unable to meet this requirement, funds must be transferred from the general capital centre unless such a transfer would imply a breach of the requirement in the general capital centre.

Mandatory over-collateralisation

Funds deployed for the purpose of mandatory over-collateralisation must be held separately from other liquid funds that the issuer might hold. Funds in excess of the capital requirement in individual capital centres may be transferred to the general capital centre. In addition, the common equity Tier 1 capital (CET1) and the Tier 1 (T1) must be at least 4.5% and 6.0%, respectively, of the risk exposure amount.

The mandatory over-collateralisation of mortgage banks falls within the scope of the privileged position of covered bond investors in a bankruptcy scenario. The trustee will be instructed to employ the mandatory over-collateralisation exclusively to meet the payment obligations on covered bonds issued. The mandatory over-collateralisation may not be employed for any other purpose.

Capital buffer requirements

In addition to the Pillar I requirement applying also for individual capital centres, the general capital centre must also comply with an individual Pillar II requirement set by the Danish FSA and with the following three capital buffer requirements.

- **Capital conservation capital buffer** equal to 2.5% of the risk exposure amount.
- **Discretionary counter-cyclical capital buffer** of up to 2.5%. The discretionary counter-cyclical capital buffer is currently at 2.5% in Denmark and has gradually been raised since 2022. During the COVID-19 crisis, the buffer was lowered to 0%.
- **Systemic risk buffer** applies only to SIFIs (systemically important financial institutions) and is set according to the degree of systemic importance for the different

[16] The MREL requirement for Danish SIFIs is set at twice the solvency need plus twice the combined buffer requirement (however, the countercyclical capital buffer enters only once from 2019) and the Danish FSA demands that only subordinated liabilities qualify for MREL. Following the implementation of BRRD II, however, which was implemented at the end of 2020, a maximum subordination requirement corresponding to max{(twice the solvency need) + the combined buffer requirements; 8% of TLOF} was implemented. The remaining part can be fulfilled by ordinary senior debt.

financial institutions. The systemic risk buffer currently applies to all mortgage banks as these are all deemed to be SIFIs or part of a SIFI group.

Note that the Minister for Business, Industry and Financial Affairs announced on April 26th, 2024 that the Government has decided to activate a sector-specific systemic risk buffer for exposure to real estate companies due to increasing risk in the sector after the significant interest rate increases during 2022-2023. The buffer rate is at 7% of the risk weighted exposures and applies to all credit institutions. The buffer applies from June 30th 2024.

Note that with the introduction of the new covered bond directive (see below), a minimum OC requirement at 5% has been introduced (non-risk weighted). However, if the jurisdiction (as is the case in Denmark) has introduced a risk-based requirement, the requirement can be lowered to 2%.

Placement of funds and liquidity requirements

Placement of funds

Supplementary collateral must be placed in accordance with the CRR Article 129(1)a-f or Article 129(3).

LCR

Originally, following the introduction of the LCR regulation in the EU, the Danish FSA allowed mortgage banks to exempt some interdependent cash-flows from the inflow cap of 75% (article 33 in the LCR regulation). Later the authority made use of article 26 directly excluding some outflows with interdependent inflows from the calculation of net outflows. Five such exemptions currently exist under the FSA's use of article 26:

1. Coupons and repayments received from borrowers and passed through to investors on term dates.
2. Sold bonds settling on a forward date in relation to refinancing auctions matching outflows to investors in maturing bonds.
3. Balancing funds – funds invested in safe assets on the back of borrowers' fixed price agreements (in relation to loan payments or prepayments) in order to cover future outflows to either borrowers (loan payments) or investors (prepayments).
4. Loan payments: outflows to borrowers in relation to agreed upon loans, which has not yet been covered by a fixed rate agreement.
5. Cancelling of loans: outflows to bond investors following the cancelling of loans and covered by balancing funds (see above).

Instead, the Danish FSA has set a Pillar II HQLA requirement corresponding to the higher of 2.5% of a mortgage bank's unweighted mortgage lending ('the LCR floor') or net cash outflow over the coming 30 days including inflow cap exemptions. Assets used to fulfil the requirement of supplementary collateral in individual capital centres as well as any liquidity arising in connection with balancing funds are to be considered encumbered for the calculation of LCR as these assets cannot be deemed to not be subject to contractual restrictions as per the LCR regulation article 7. There is no requirement that the LCR must be fulfilled in each capital centre, but only on a general mortgage bank level. However, mortgage banks most often place HQLA in individual capital centres to increase OC levels.

Mortgage banks own a large share of their own issued covered bond in to place liquidity arising from balancing funds. While such investments have no value in a HQLA context they count as a 100% cash in-flow when maturity-matched. As alternative mortgage banks can place such liquidity by buying other mortgage banks' issues. See also the section above titled 'Asset eligibility criteria'.

Mortgage banks' placement of funds can have large consequences for the Danish money market. For instance, the October 2019 payment date was dominated by large prepayments in fixed rate callable bonds following from the fall in yields during the most of 2019 and borrowers in this segment had opted to refinance into lower coupon fixed rate callables through fixed price agreements during Q3. We have not seen large prepayments in recent years due to interest increases (see Chapter 7 for details). As mortgage banks hedge fixed price agreements by selling bonds up-front they had a large placement need until October. This is normally covered by buying non-callables with the same maturity date (either own issues or other mortgage banks') or alternatively place the funds in reverse repos with commercial banks as both typically yield above the certificates of deposit offered by the Danish central bank. However, in October 2019 both traded below that level prompting mortgage banks to place large sums of liquidity with the central bank instead of depositing with commercial banks. This put a strain on the money market as a lot of liquidity was suddenly removed from banks and deposited with the central bank instead.

In 2019, the Danish FSA reported that it will phase out the LCR floor, replacing it with another risk-based and individual Pillar II liquidity add-on. The new add-on will replace the existing LCR floor when the new covered bond directive takes effect (see below). Until then the mortgage banks will enter an observation period in which the new model will become a reporting requirement. The model takes into account potential new loans-in-arrears, refinancing and 'open prepayments' for the upcoming payment date[17].

Block issues

It is allowed for mortgage banks to conduct so-called 'block issues' of bonds of an amount corresponding to the expected gross lending over the coming six months (general balance principle) or 90 days (specific balance principle). Bonds not secured by mortgage loans within six months/90 days after the block issue must be cancelled. Block issues have been introduced to better reflect the actual outstanding amount in a bond series[18].

New legislation addressing refinancing risk

On 1 April 2014, a new law aimed at reducing refinancing risk for borrowers and mortgage banks came into force. Initially it covered loans where the refinancing period of the underlying bonds is up to 12 months (FlexLån® F1 loan). For loans where the refinancing period of the underlying bonds is more than 12 months, the law came into force from 1 January 2015. The law applies to non-callable bullets, short- and medium-term capped or non-capped floaters

The new law transfers the refinancing risk from the borrowers/mortgage banks to the investor. The law is centred on the two following main triggers.

Interest rate trigger

- **Interest rate trigger.** If the yield at a refinancing auction increases by more than 500bp within a period of one year and the underlying bonds have a maturity of up to two years after refinancing, the maturity will be extended by one year. The yield of the extended bond will be the yield level on a corresponding bond traded 11-14 months earlier plus 500bp. A maturity extension triggered by a rise in the yield level of 500bp is limited to one year. For floating-rate bonds, the interest rate at the refinancing of a mortgage loan cannot be fixed at a rate more than 500bp above the most recently fixed interest rate. The interest rate must remain unchanged for 12 months or up to the next refinancing

[17] When a borrower chooses to prepay a mortgage the mortgage bank registers a cash outflow on the upcoming prepayment date. However, no cash inflow is registered until the borrower decides on what mortgage is refinanced into and conducts a fixed price agreement. This presents a liquidity risk since no cash inflow is matching the outflow until then. The add-on will depend on cash flows inside the coming 30 days in line with the period used under the existing LCR requirement.

[18] This is particularly the case for joint funding agreement schemes, where the mortgage bank issuing covered bonds in order to fund mortgage lending by other banks will on an ongoing basis do block issues in order to reflect the expected amount of bonds to be sold over the coming period.

unless a lower interest rate is fixed within the said 12 months or before the next refinancing. The 'Interest-rate trigger' element only applies to loans where the refinancing period of the underlying bonds is 24 months or less.

Failed auction trigger

- **Failed auction trigger.** If a mortgage bank is unable to sell its bonds at a refinancing auction, the maturity of the underlying bond will be extended by one year. If the mortgage bank is still unable to sell the bonds the following year, the maturity of the bond will be extended by one year every year until the mortgage bank is able to sell the bonds in the market or the loans mature. If a mortgage bank is unable to sell its bonds at a refinancing auction and the maturity is extended by one year, the yield of the maturity-extended bond will be the yield on:
  - A corresponding bond traded 11-14 months earlier plus 500bp if the maturity is less than or equal to 24 months.
  - A corresponding bond with a maturity of 11-14 months traded 11-14 months earlier plus 500bp if the maturity is more than 24 months.
- If the mortgage bank is still unable to sell the bonds in the market after the first maturity extension, the yield will remain unchanged. Applying the yield level on a corresponding bond with a maturity of 11-14 months traded 11-14 months earlier enables the mortgage bank to reuse the bond series up until the time to maturity if the bond falls below 24 months. This is an important feature, as it significantly improves the liquidity for bonds with a maturity of more than 24 months.

If a mortgage bank is under resolution and the maturity is extended under the failed auction trigger, the coupon is fixed at a variable reference rate (for example 12M Cita) plus up to 500bp, for one year at a time. However, if the Trustee is still able to issue bonds, there will be no activation of the triggers.

The maturity on capped floaters and floaters can be extended due to the failed auction trigger or interest rate trigger (only for bonds with an original maturity of less than 24 months). If the maturity is extended due to the failed auction trigger, the coupon rate after the extension will be the coupon rate at the last fixing plus 500bp. This new rate is fixed for 12 months.

If the maturity is extended due to the interest rate trigger – where the interest rate increases by more than 500bp relative to the last fixing – the coupon after the extension will be the coupon rate at the last fixing plus 500bp. This new rate is fixed for 12 months, unless the yield falls to a lower level at a new fixing within the 12 months.

The transferring of the refinancing risk to the investors means investors have to price in both the risk of a pronounced rise in yields and the risk of a 'failed' auction.

Banks' issuance of covered bonds must have a maturity of more than 24 months

The interest rate trigger and failed auction trigger as described above only apply to covered bonds issued by a mortgage bank. To ensure that universal banks do not have a competitive advantage by being able to issue covered bonds without the interest rate trigger, universal banks' issuance of covered bonds must have a maturity of more than 24 months. Hence, as of 1 January 2015, universal banks, e.g. Danske Bank, can only issue covered bonds with a minimum maturity of 24 months.

In the event that a universal bank is unable to replace covered bonds at maturity with a new issue of covered bonds, it will be possible for the bank to repay the principal of the matured bonds from other sources of funding, e.g. deposits. Hence, the refinancing risk for banks is primarily relevant in a winding up situation where there is no access to other sources of funding. In this case, there will be a maturity extension of up to one year (previously this was one year at a time but changed in connection to the implementation of the Covered Bond Directive).

FSA supervision

The risk profile of mortgage banks is closely monitored by the Danish FSA.

Property valuations are reported to the FSA

Property valuations are reported directly to the FSA for control purposes. If the value of a pledged property is set too high, the FSA will carry out a second valuation. If the second valuation confirms that the value is set too high, the FSA will instruct the mortgage bank to reduce the size of the loan to observe the maximum LTV ratio.

Reports to the FSA are prepared on a quarterly basis on the following.

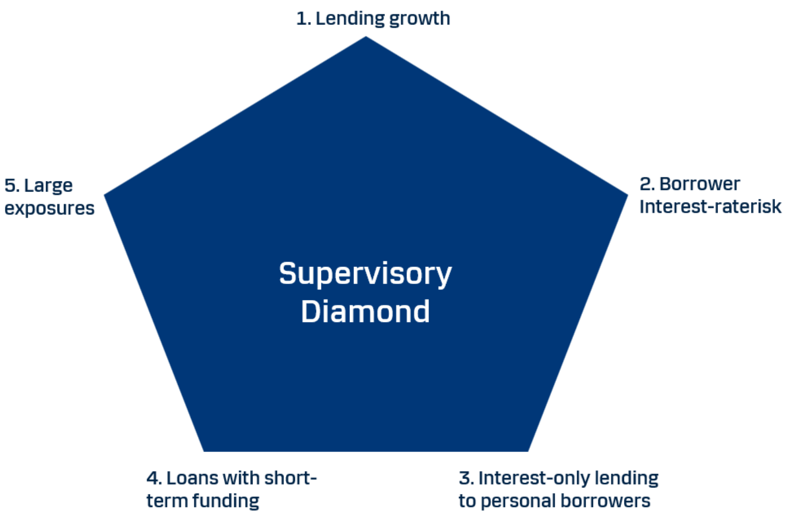
- Credit risk exposures.
- Market risk exposures.
- Solvency.

Inspections of mortgage banks by the FSA are performed on a regular basis. During inspections, the FSA will monitor if risk-mitigating procedures are sufficient and being adhered to.

Supervisory Diamond implemented in 2018/2020

The Danish FSA's 'Supervisory Diamond' for mortgage banks has been implemented in 2018/2020. The Diamond contains five indicators with corresponding limits on risk of the mortgage banks. The five indicators are as follows.

Chart 10. Supervisory Diamond for Danish mortgage-credit institutions



Source: Danish FSA, Danske Bank

- **Lending growth.** Growth in lending to individual customer segments should not exceed 15% per year. The four customer segments are private homeowners, rental property, agriculture and other corporates.

- **Borrower interest rate risk.** Share of lending where loan-to-value (LTV) exceeds 75% of the lending limit for mortgage banks and where the interest rate is only fixed for up to two years should be less than 25%. Applies only to loans to private homeowners and rental property. Loans hedged by interest rate swaps and the like are excluded.
- **Interest-only lending to personal borrowers.** The share of interest-only loans in the LTV band above 75% of the lending limit should not exceed 10% of total lending. Interest-only loans are included regardless of position in order of priority.
- **Loans with short-term funding.** The share of lending to be refinanced should be less than 12.5% of the total loan portfolio per quarter and less than 25% of the loan portfolio annually.
- **Large exposures.** Sum of the 20 largest exposures should be less than the institution's CET 1 (core equity tier 1 capital).

The benchmarks for interest-only lending (point 3) and loans with short-term funding (point 4) apply from 2020, while the other benchmarks have been in effect since 2018.

Our general assessment is that the Supervisory Diamond will prompt the mortgage-credit institutions to maintain their focus on reducing the proportion of interest-only loans and loans with annual refinancing and on spreading out the auctions.

New standards and limitations of the choice of loan products

During the period 2013-2020 numerous actions have been taken in order to limit the choice of eligible loan products among the most risky borrowers (those with high LTV and DTI ratios[19]). The reasoning has been that a general consolidation among Danish households has been seen as beneficial given the gradual build-up of a large share of interest-reset loans and interest-only features among the outstanding stock of mortgages, as well as fairly large increases in housing price in years up to the Covid-19-crisis. Also, given the very low interest rate environment in that period, the regulation came at a time when there is little macroeconomic effect on the economy as a whole. Note that mortgage banks have throughout the years implemented many of the requirements set out below in their internal credit policies, but they have not previously been written in to law.

Additional criteria for lending

In 2013 a requirement that a borrower must, no matter the choice of loan product, be able to service a fixed rate amortising loan, was written in to law.

In 2014, the supervisory diamond (see above) was introduced.

In 2015, the requirement that debtors should provide for a minimum 5% equity financing was introduced. This requirement effectively means that the amount of second lien (bank) debt can at most make up 95% of the value of the property.

In 2016, the FSA introduced a guidance for 'growth areas', meaning municipalities in the Greater Copenhagen Area and Aarhus municipality. For these areas the mortgage bank's assessment of whether disposable income is sufficient at the time of granting the loan should generally be based on a fixed interest rate that is 1 percentage point higher than the current 30 year fixed interest rate, though at least 4%, and including repayments.

Also, for DTI (debt-to-income) ratios of more than 5 or an LTV above 75% the borrower can only raise a fixed rate loan including redemptions.

[19] The debt-to-income ratio (DTI) is the debtor's total amount of debt (mortgage and bank debt) relative to income before tax.

In 2017 a guidance issued by the FSA (with effect from 1 January 2018) put further limits on the choice of eligible mortgage loans for risky borrowers[20]. The limits apply only to those borrowers with: 1) a DTI of more than 4, and 2) a LTV of more than 60%, in which case the borrower can only choose a fixed rate mortgages incl./excl. repayment or 5Y interest-reset loans incl. repayment. The same is the case if the borrower has a LTV below 75% but above 60%, no matter the DTI.

The 'growth area' guidance comes into effect if the borrower has a DTI above 5 and a LTV (mortgage and bank debt in combination) above 75%, in which case only fixed rate loans incl. repayment are eligible. The same limited loan offer applies if a borrower in a 'growth area' has a DTI of more than 4 but below 5 and a LTV (mortgage and bank debt in combination) of more than 90%.

Majority of Danish covered bonds qualify as Level 1B assets

The CRR includes the rules for the Liquidity Coverage Ratio (LCR). The LCR has a large impact on the pricing of Danish covered bonds due to the large share of the investor segment being regulated under CRR. Level 1B and Level 2A classes are relevant for Danish mortgage bonds and the main features are as follows.

- **Level 1B.** Covered bonds (CRD- or UCITS-compliant mortgage bonds) with a minimum rating of AA- and an outstanding volume of at least EUR500m may account for up to 70% of the liquidity buffer after a haircut. The haircut is 7% (i.e. only 93% of the market value can be included in the liquidity buffer). There is an OC requirement of 2% in the capital centres from which the mortgage bonds are issued.
- **Level 2A.** Covered bonds (CRD- or UCITS-compliant mortgage bonds) with a minimum rating of A- and an outstanding volume of at least EUR250m may account for up to 40% of the liquidity buffer. The haircut is 15%. There is an OC requirement of 7% in the capital centres from which the mortgage bonds are issued. For covered bonds that do not meet the liquidity requirement of EUR500m but meet all other requirements for Level 1B, the OC requirement is 2%.

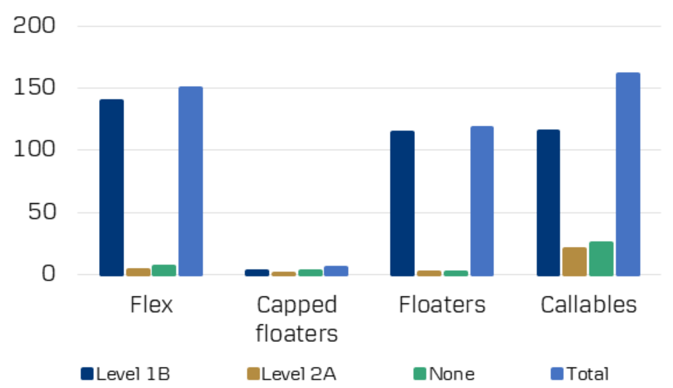
Grandfathered ROs and new ROs are on a par with SDO/SDRO in the EU Commission's delegated act, as they are all UCITS-compliant. Junior Covered Bonds cannot be included in the LCR.

All the mortgage-credit institutions have an AAA rating from S&P for their most used capital centres (see ratings table in Chapter 4). Realkredit Danmark is also using Scope and it is also rated AAA. If a capital centre is rated by two or more rating institutions, the second highest rating will be used.

Based on the outstanding volumes for Danish mortgage bonds as of December 2024, we estimate that around 85% of the total outstanding volume of mortgage bonds has an outstanding volume of more than EUR500m, while around 6% has an outstanding volume of between EUR250m and EUR500m (see charts below). As can be seen from the charts, there is a relatively high share of Level 1B assets across all segments. The share of non-Level 1B callables has increased since 2022 due to the large volatility in interest rates that shad implied a growing amount of bonds with low outstanding amount.

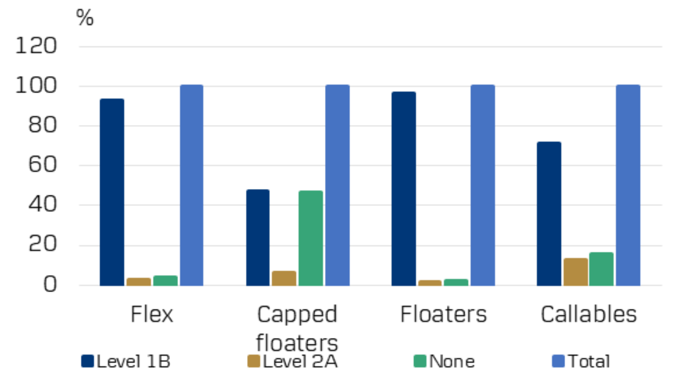
[20] An important factor not guided by the FSA is the monthly disposable income after amortisations. This is to be assessed for each borrower individually.

Chart 11. Total outstanding volumes of LCR eligible Danish covered bonds (EURbn) – December 2024



Source: Danske Bank

Chart 12. Share of Level 1B and 2A assets – December 2024



Source: Danske Bank

Only the capped floater segment has a low share of Level 1B, which is due to the very low issuance in the segment (only Nykredit issues in this segment). Mortgage banks have in general lifted the share of Level 1B assets during the past few years (up from 80% in 2017), which happens partly automatically as the capped floater segment runs off and grandfathered ROs are now mostly refinanced into new SD(R)Os. Mortgage banks have also been implementing targeted efforts to increase the share of level 1B bonds by, for example, collecting enough loans for refinancing for a particular payment date to make liquid bond series (DLR did that in 2019 by moving some borrowers to the October refinancing), and NYK has refinanced commercial floating rate loans from Capital Centre D into new liquid RO series in Capital Centre G starting in 2017.

New covered bond directive

In March 2018 the European Commission (EC) put forward a proposal for a new directive regarding regulation of covered bonds and when implemented it will be the first directive with the specific aim to regulate covered bonds in a comprehensive manner. There is currently national covered bond legislation throughout Europe and the CRR's Article 129 regulates what eligible assets the proceeds from covered bonds issuance can be placed in. Finally, there is the Directive on Undertakings for Collective Investments in Transferable Securities (UCITS) Article 52(4), which defines the minimum requirements that provide the basis for privileged treatment of covered bonds in different areas of European financial market regulation.[21] The covered bond directive (EU 2019/2162) was published as law in the fall of 2019 and has been implemented into Danish legislation.

The proposal includes three pillars: the directive itself, a change of the CRR's Article 129 and a set of voluntary recommendations. From the beginning of the negotiations the strategy from the Danish government was to target harmonisation rules building on the foundations of the Danish mortgage model, such that Denmark should not in the future have to make a targeted effort each time new regulation comes up in order to make sure that the specialist mortgage bank model is not endangered. The specialist model is now specifically mentioned and defined and so is match funding.

[21] Added to this the following EU regulations also regulate covered bonds: Solvency II delegated act Article 180 (1), BRRD Article 44(2), LCR Delegated Act Article 11, 12 and 13, EMIR (the RTS defines a specific treatment of cover pool derivatives, which are not cleared by a CCP).

The content of the new rules very much reflects existing Danish legislation and hence mortgage banks are not expected to have to make large changes following implementation. This is also the case with regards to the liquidity buffer requirement introduced by the directive, given that covered bonds issued subject to match funding requirements are exempt from the buffer. However, a minimum nominal OC requirement of 5% will be required, although this requirement can be lowered nationally to 2% if the OC *"is based on a formal approach where the underlying risk of the assets is taken into account"*, which is the case in Denmark.

Other regulation

In June 2019 the EU banking package was adopted (BRRD II, CRD V and CRR II). The CRR II includes the EU implementation of the Basel III net stable funding ratio requirement as well as the minimum leverage ratio requirement of 3%. It had no major impact as the match funding and extendable maturity triggers are recognised in the requirement of the NSFR and all mortgage banks have a sizeable leverage ratio buffer.

In July 2024 the EU completed its implementation of the Basel III standards into EU law that includes IRB approaches for credit risk, the standard model for CVA, and standard and internal model approaches for market risk as well as the introduction of an output floor.

The output floor is the most important for mortgage banks as these without exception make use of internal model approaches to calculate REA for mortgage lending exposures and are usually risk-weighted lower than using the standard approach.

In the commission's proposal for CRRIII concerning exposures with collateral in real estate, additional granularity is introduced in terms of risk weights under the standard method, which must be used for the calculation of the floor requirement. For a Danish perspective, It has especially been the change to Article 125 that has been in focus. Prior to the change, 35% of the risk weight of up to 80% LTV. It is now in line with Basel increased to 20% of up to 55%, while the remaining share is an unsecured exposure which thus receives a risk weight of 75% under Article 123. This means a weighted 80% LTV risk weight of 0.55/0.8*0.2+0.25/0.80*0.75 = 37%. So basically unchanged.

In Article 465, a transitional arrangement has been introduced such that up to 55% LTV a risk weighting of 10% can be applied until 31 December 2032. Note that this only applies to the output floor and therefore not for companies that only follow the standard method.

Central bank eligibility

All Danish covered bonds in EUR and DKK are repo eligible at Danmarks Nationalbank. SDOs, SDROs and ROs are all treated with the same haircuts depending on time to maturity. It is also possible to post EUR covered bonds as collateral, which comes with an additional haircut of 5%, however. Some ISINs are eligible in Riksbanken and Norges Bank as well.

Some EUR denominated 'DK-' ISINs are repo eligible at the ECB, which is also the case for the EUR covered bonds issued by Jyske Realkredit with an 'XS-' ISIN. Previously the ECB did not accept EUR-denominated bonds as collateral not issued through a central securities depository in the euro area, meaning that Danish mortgage banks started issuing out of a Luxembourg-based depository (VP Luxembourg) leading to the existence of 'LU-' ISINs (VP opened a subsidiary on 1 October 2008). However, this is no longer needed today and VP Securities A/S closed its Luxembourg subsidiary in November 2018, after which all 'LU-' ISINs are now registered in Denmark. However, EUR denominated bonds issued by an issuer not registered in the euro area are not QE eligible.

Output floor can lead to a potentially large increase in capital requirements

LCR eligibility

In December 2024, Danish non-callables were accepted as collateral by LCH. It is all 5 issuers of Danish non-callables that has been accepted as collateral by LCH. Callables and floaters cannot be used. It is only SDO and SDRO bonds with a maturity of up to 5 years that can be used. They must have a AAA rating from S&P.

The haircut on Danish non-callables are 7.57% compared to 1% for DGBs between 0Y to 3Y. Hence, if we were to calculate a BE-spread between a 1Y-2Y DGB relative to 1-2Y Danish non-callables on a funded trade, then the BE-spread 29bp. currently, the spreads is between 1Y DGB vs. 1Y noncallable is some 20bp and almost 40bp in the 2Y segment.

There is also a limit on how much you can spend in LCH. It is currently set to EUR 500m per bank (i.e. the total amount from customers and bank where you can spend flex). It is a relatively low amount but will probably be increased over time.

Legislation regarding a ship finance institute

Ships are funded by Danmarks Skibskredit under the Act on a ship finance institute and the Executive Order on a Ship Finance Institute. The legislation regarding capital requirements and balance principles are very much the same as is the case for issuers of covered bonds secured by loans on real property. However, there are a few differences.

- The activities of a ship finance institute are confined to ship mortgage lending.
- Covered bonds secured on ship mortgages can be in the form only of SMBs/SDOs. Note that a SDO cannot be secured by *both* ships and real property.
- A ship finance institute can issue both SDOs and ship mortgage bonds (SMBs). However, ship mortgages serving as collateral for SDOs must at all times comply with the relevant LTV limit, which is not the case for SMBs. Thus, SMBs do not comply with CRD and are thereby not to be considered 'covered' and carry larger risk weights.
- A ship finance institute may finance loans against the assets set out in CRR Article 129(1)a-c and Article 129(2) by the issuance of SDOs. This includes loans secured by maritime first liens on ships. If needed, supplementary collateral must be secured by the same asset types. SMBs can be issued only to finance ship mortgages.
- The LTV limit for ship mortgages serving as collateral for SDOs is 60% and 70% for SMBs.

3. Mortgage banks

In this chapter, we focus on mortgage banks and a ship finance institute. The specialist bank principle confines the activity of mortgage banks to mortgage lending funded by the issuance of covered bonds (mortgage bonds). Activities not directly linked to mortgage lending and mortgage bond funding are prohibited.

In return, mortgage banks are awarded the privilege of issuing covered bonds. Entities that are not licensed as mortgage banks do not have access to covered bond funding.

Mortgage banking market

Persistent demand for housing finance in Denmark has made the Danish covered bond market the largest in the world.

Table 7. Outstanding covered bonds in selected countries 2023 (EURm)

	Public Sector	Mortgage	Ships	Others	Mixed Assets	Total	
Australia	-	79,777	-	-	-	79,777	
Austria	15,616	94,274	-	-	-	109,891	
Belgium	1,711	54,707	-	-	-	56,418	
Brazil	630	20,787	-	-	-	21,417	
Canada	-	192,353	-	-	-	192,353	
Cyprus	-	650	-	-	-	650	
Czech Republic	-	13,213	-	-	-	13,213	
Denmark	18,075	441,008	6,259	-	-	465,342	
Finland	-	48,551	-	-	-	48,551	
France	70,192	347,122	-	-	51,153	468,467	
Germany	103,991	294,810	1,449	-		400,250	369,747
Greece	-	9,840	-	-	-	9,840	
Hungary	-	5,473	-	-	-	5,473	
Iceland	-	6,358	-	-	-	6,358	
Ireland	-	13,220	-	-	-	13,220	
Italy	1,650	157,793	-	-	-	159,443	
Japan	–	6,505	–	–	-	6,505	
Latvia	-	-	-	-	-	-	
Luxembourg	4,020	-	-	300	-	4,320	
The Netherlands	-	212,057	-	-	-	212,057	
New Zealand	-	10,957	-	-	-	10,957	
Norway	1,931	130,621	-	-	-	132,552	
Panama	-	10	-	-	-	10	
Poland	87	4,248	-	-	-	4,335	
Portugal	600	39,020	-	-	-	39,620	
Singapore	-	13,683	-	-	-	13,683	
Slovakia	-	15,027	-	-	-	15,027	
South Korea	-	14,591	-	-	-	14,591	
Spain	13,040	191,825	-	10,009	-	214,875	
Sweden	-	235,228	-	-	-	235,228	
Switzerland	-	201,085	-	-	-	201,085	
Turkey	-	6	-	-	-	6	
United Kingdom	575	99,979	-	-	-	100,554	
United States	-	-	-	-	-	-	
Total	232,118	2,954,778	7,708	10,309	51,153	3,256,068	

Source: ECBC covered bond fact book 2024

Measured as a percentage of GDP, the Danish covered bond market is by far the largest covered bond market in Europe.

Table 8. Mortgages relative to size of economy 2023 – Denmark stands out

	GDP current prices (EURm)	Mortgages relative to GDP
Australia	1,797,251	4.4%
Austria	532,174	17.7%
Belgium	670,601	8.2%
Brazil	2,260,703	0.9%
Canada	2,228,259	8.6%
Cyprus	35,244	1.8%
Czech Republic	356,950	3.7%
Denmark	423,393	104.2%
Finland	307,366	15.8%
France	3,174,032	10.9%
Germany	4,706,920	6.3%
Greece	253,248	3.9%
Hungary	220,893	2.5%
Iceland	32,579	19.5%
Ireland	573,474	2.3%
Italy	2,393,075	6.6%
Japan	4,372,850	0.1%
Latvia	43,940	-
Luxembourg	89,189	-
The Netherlands	1,200,584	17.7%
New Zealand	262,273	4.2%
Norway	504,743	25.9%
Panama	86,654	0.0%
Poland	841,602	0.5%
Portugal	300,691	13.0%
Singapore	521,505	2.6%
Slovakia	138,230	10.9%
South Korea	1,781,376	0.8%
Spain	1,684,962	11.4%
Sweden	608,383	38.7%
Switzerland	920,375	21.8%
Turkey	1,163,030	0.0%
United Kingdom	3,516,229	2.8%
United States	28,830,691	-

Source: Danske Bank

Covered bonds in circulation by issuer

Danish covered bonds are issued by a total of seven mortgage banks of which DLR Kredit specialises in commercial lending. The fairly low number of issuers adds to the liquidity of the bonds issued.

In addition, market concentration is high, with Nykredit and Realkredit Danmark accounting for 70% of all Danish krone covered bonds issued, while Nykredit and Danske bank account for 67% of all Danish euro covered bond issues.

Table 9. Volumes and market shares of Danish mortgage bonds issued by specialist mortgage banks and a bank and ship mortgage bonds issued by a ship finance institute, December 2024

	DKK bonds		EUR bonds		Total volume	
Issuer	Volume (EURbn)	Share (%)	Volume (EURbn)	Share (%)	Volume (EURbn)	Share (%)
Nykredit Realkredit	199.4	44.3%	5.2	28.1%	204.6	43.6%
Realkredit Danmark	112.9	25.1%	0.3	1.7%	113.2	24.1%
Nordea Kredit	56.4	12.5%	0.4	2.2%	56.8	12.1%
Jyske Realkredit	50.1	11.1%	3.8	20.4%	53.9	11.5%
DLR Kredit	27.3	6.1%	0.1	0.7%	27.4	5.8%
Danske Bank	0.0	0.0%	7.1	38.8%	7.1	1.5%
Danmarks Skibskredit (ships)	4.3	0.9%	1.5	8.1%	5.8	1.2%
Total	**384.0**	**100.0%**	**25.5**	**100.0%**	**409.5**	**100.0%**

Note: For Jyske Realkredit and Danske Bank also including EUR issues registered on Euroclear.

Source: Danske Bank

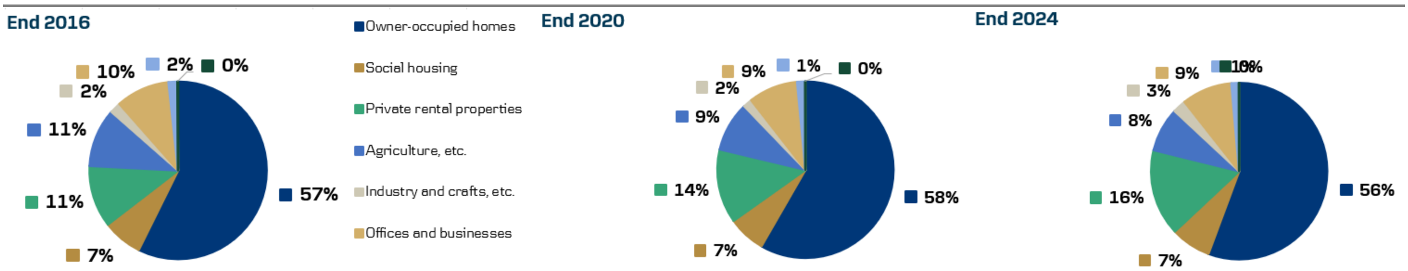
Portfolio segmentation

Residential property mortgages dominate collateral pools

Mortgages on a variety of categories of real estate are eligible as collateral for mortgage bonds. However, mortgages on residential property dominate most collateral pools.

Mortgages on residential property dominate the Danish mortgage market and there have been only minor changes in the borrower composition over the past 15 years. In 2020, loans secured by mortgages on residential property accounted for 58% of total net new lending.

Chart 13. Lending segments by property category as of end-2016, end-2020 and end-2024



Source: Danske Bank, Danmarks Nationalbank

Realkredit Danmark

Company profile

Realkredit Danmark (RD) is a wholly owned subsidiary of Danske Bank, the largest financial institution in Denmark. Danske was founded in 1871. Today, Danske Bank is a global bank with activities in northern Europe and the Baltic region under various brands. Its main business areas are retail banking, corporate banking, asset management, life insurance and pensions and mortgage finance.

RD was established in 1851 under the name Østifternes Kreditforening. In 2001, RD merged with Danske Kredit A/S and BG Kredit A/S following the merger of Danske Bank A/S and RealDanmark A/S. RD is the continuing mortgage credit arm of the Danske Bank Group and the second-largest specialist mortgage bank in Denmark, with a market share of 25%.

RD's covered bonds issued out of capital centre S and T and the general capital centre are rated 'AAA' by Standard & Poor's and Scope.

Financial performance

Realkredit Danmark reported an operating profit of DKK4.4bn in 2023, an increase from DKK3.6bn in 2018. Administration margins fell slightly by DKK200m. The cost/income ratio was at 15.3% and slightly lower when compared to 2022. Loan impairment charges were DKK -114m, against an expense of DKK 212m in 2022. 2022 was affected by charges related to Realkredit Danmark's share of debt collection write-offs of DKK 174m.

Capital ratios remain solid and RD currently has no outstanding additional tier 1 or tier 2 instruments. The arrears rate remains at historically very low levels.

Business model and funding profile

RD is a specialist mortgage bank subject to supervision by the Danish FSA. RD's objective is to carry out business as a mortgage bank, including any kind of business permitted by the Danish Mortgage Act. RD's principal market is Denmark, but Realkredit Danmark's geographical business area also includes mortgage lending to large business customers in Sweden and Norway.

RD's core markets in Denmark are residential housing – defined as lending for the financing of owner-occupied housing and holiday homes – and the corporate market, which comprises loans to customers with property in urban trade, agriculture and residential rental property.

All mortgages included in the cover pool are distributed through the branch networks of Danske Bank, RD Large Real Estate and the wholly owned real estate agent 'home' in Denmark. Realkredit Danmark also offers customers online and self-service solutions through the rd.dk and danskebank.dk websites.

Table 10. Ratings (S&P/S) – RD

Covered bond rating - CC S	AAA/AAA
Covered bond rating - CC T	AAA/AAA
Issuer rating	N/A /A

Source: Standard & Poor's, and Scope, Danske Bank

Table 11. Financial information

DKKm	2023	2022
Administration margins	5.593	5.733
Fees and commissions	-70	-18
Investment portfolio income	183	48
Pre-provision income	5,849	4,871
Loan impairment charges	-114	212
Operating profit	4,394	3,626
Cost/income ratio	15.3%	18.5%
Total capital ratio	31.5%	29.1%
Tier 1 capital ratio	31.1%	28.6%
Arrears rate	0.08%	0.08%
Repossessed properties	14	6

Source: Realkredit Danmark annual report 2023.

Table 12. Further information

Bond ticker	RDKRE
Websites	www.danskebank.com www.rd.dk

Source: Danske Bank

A management agreement exists between RD and Danske Bank, stating the following.

- The branch that originated the mortgages is responsible for all handling of customers.
- Danske Bank covers all losses (with an LTV of 60-80%) on mortgages originated at Danske Bank branches.
- RD receives all payments directly from customers. In turn, RD pays provisions to Danske Bank.

As at the end of 2019, loss guarantees issued by Danske Bank amounted to DKK 32bn.

All mortgages are transparent (pass-through), which means that consumers have a delivery option on the underlying bonds. Interest-reset loans are funded by a portfolio of fixed-rate non-callable bonds, while other types of mortgages are funded individually by issuing bonds with exactly the same characteristics as the mortgages.

Mortgages backing covered bonds issued by RD are divided into different cover registers (capital centres). According to the revised Mortgage Act, new SDROs must be issued out of separate capital centres. Therefore, since July 2007, SDROs have been issued out of capital centre S. Existing RO series in the general capital centre have been closed for new issuance since the end of 2007 and are grandfathered according to the CRD. Since 2011, RD has issued all new interest-reset loans (ARMs) out of capital centre T and a large part of the interest-reset loans in capital centre S has been refinanced into the new capital centre T, starting from the refinancing auctions set for December 2011. Today, the majority of the total mortgage book is included in capital centre S and capital centre T. In 2018 RD opened capital centre A for the funding of interest-reset loans to social housing unions with a government guarantee. This capital centre is not rated. Realkredit Danmark has no Senior bonds outstanding in both capital centres T and S.

Realkredit opened a 6M CIBOR floater RO bond (*Realkreditobligationer*) issued out of the general capital centre in 2015 and in 2018 this was refinanced into DK0004609823. This bond does not comply with the CRD and hence does not get preferential treatment in terms of risk weighting. The bond currently sees only very limited issuance.

Cover pool and asset quality

As at Q1 20, the cover pools for capital centre S and capital centre T totalled DKK286bn and DKK487bn, respectively. Capital centre S cover assets consist mostly of residential housing at 89% of the cover pool. The cover pool consists almost solely of fixed rate callable mortgages (99%) with a large overweight of amortising loans. Capital centre T cover assets are more diversified across both asset types and geography, although solely containing loans with a floating rate. Of mortgages 28% are secured on commercial property, reflecting the preference for the types of mortgages to primarily be in the form of floating rate. RD funds NOK and SEK loans out of this capital centre as well by issuance in EURIBOR, NIBOR and STIBOR linked floaters. NOK and SEK loans make up 3% of this cover pool.

Table 13. Cover pool info – Capital Centre S

Capital Centre S	DKK286bn
WA Indexed LTV	46% LTV
Over-collateralisation	6.6%
Interest-only mortgages	33.3%
Fixed-rate loans	99.6%
Geography	DK
- Metropolitan area	49%
- Other Zealand	14%
- Norther region	5%
- Eastern Jutland	16%
- Southern region	16%
- Other area	0%
Asset type	
- Residential	89%
- Private rental	8%
- Agriculture	3%

Source: ECBC template Q3 '24 from Realkredit Danmark.

Table 14. Cover pool info – Capital Centre T

Capital Centre T	DKK487bn
WA Indexed LTV	52%
Over-collateralisation	7%
Interest-only mortgages	67%
Fixed-rate loans	0%
Geography	DK, SE, NO, EUR
- Metropolitan area	51%
- Other Zealand	12%
- Northern region	6%
- Eastern Jutland	16%
- Southern region	15%
- Other area	0%
Asset type	
- Residential	72%
- Private rental	21%
- Agriculture	7%

** Loan from parent*

Source: ECBC template Q324 from Realkredit Danmark

Danske Bank

Company profile

Danske Bank A/S (Danske Bank) is part of the Danske Bank Group, which also includes the wholly owned subsidiaries Realkredit Danmark (one of the largest Danish mortgage credit institutions) and Danica Pension (a leading Danish life insurance company). Danske Bank is the largest bank in Denmark,

Danske Bank provides a wide range of banking products and services to retail, corporate and institutional clients. It has four main operating units: Personal Banking, Business Banking, Corporates & Institutions and Wealth Management. The group also reports its business activities in Northern Ireland as a separate unit, as well as a non-core division (consisting mainly of the portfolio of Baltic exposures, which are being wound up) and other activities (group treasury, group support functions and eliminations).

As of Q4 '23, Danske Bank reported total lending of DKK1,779bn before loan impairment charges. Of this amount, Personal Banking and Business Banking exposures accounted for 80%, followed by C&I (17.6%). Total credit exposures amounted to DKK2,547bn.

Danske Bank's issuer ratings from Moody's, S&P and Scope are 'A1' (stable), 'A+' (stable) and 'A+' (negative), respectively. Most recently, Moody's upgraded issuer rating to 'A1' and changed to 'stable". The upgrade reflects solid capitalisation and good asset quality, but still below that of its Nordic peers according to Moody. S&P recent upgrade was in 2021 to the current level 'A+'. Fitch withdrawn their rating of covered bonds in December 2024.

Financial performance

In 2023, Danske Bank Group posted pre-tax profits from core activities of DKK26.7bn up from -DKK1,697bn in 2022. The increase was mainly driven by provision for Estonia matter of DKK13.8bn and higher interest rate income. Total income was DKK52,445bn, up around DKK 1bn from the level in 2022. Net interest income totalled DKK35bn. Net interest income has in general been increasing among Danish banks the interest rate hikes during 2022-2023.

At the end of 2023, the total capital ratio was 23.1% and the common equity tier 1 (CET1) ratio was 18.8%. Danske operates with targets for both capital measure with a total capital ratio target of above 20% and a CET1 ratio above 16%.

Table 15. Ratings (Moody/S&P/S)

Covered bond rating	AAA /AAA
Issuer rating	A1 / A+ / A+
Covered bond rating - CP C/D	/AAA/AAA
Covered bond rating - CP I	//AAA

Source: Moody's, Standard & Poor's, Fitch, Danske Bank

Table 16. Financial information

DKKm	2023	2022
Net interest income	35,000	25,108
Net Fee income	11.707	12.590
Net trading income	6,590	1.581
Loan impair. charges	2.62	1502
Profit before tax, core	26,682	-1.697
Cost/income ratio	48.5%	100.3%
Total capital ratio	23.1%	22.1%
CET1% capital ratio	18.8%	17.8%

Source: Danske Bank Annual Report 2023

Table 17. More information

Bond ticker	DANBNK
Website	www.danskebank.com/ir

Source: Danske Bank

Business model and funding profile

Danske Bank is a universal bank subject to supervision by the Danish FSA. The group has a well-diversified funding platform including a solid deposit base. Much of the lending consists of Danish mortgages, financed by Realkredit Danmark (RD) pass-through covered bonds. However, the group also issues covered bonds under the Danske Bank name in SDO format under the Danish Covered Bond Act. In addition, Danske Bank issues covered bonds through its Finnish subsidiary Danske Bank Plc and Danske Hypotek under Swedish legislation (see *Nordic Covered Bond Handbook: The handbook of the Nordic covered bond markets and issuers*, 4 September 2018).

Danske Bank has three active cover pools, which it uses to issue covered bonds directly on its balance sheet. Cover pool D ('domestic') comprises 100% Danish residential mortgages, while cover pool I and C include Norwegian and Swedish mortgages originated by Danske Bank. Cover pool I is purely residential, but is undergoing a structural change, as Swedish mortgages are being migrated into the cover pool of Danske Hypotek and the cover pool will thus over time comprise purely Norwegian residential assets, which is currently almost already the case. Cover pool C contains a mix of residential and commercial mortgages, originating from both Sweden and Norway. According to the issuer, eligible Swedish assets may migrate into the Danske Hypotek cover pool after 2020.

Danske Bank issues covered bonds in EUR benchmark format out of all its cover pools, but Cover Pool I is primarily dedicated to NOK funding.

Cover pool and asset quality

As of Q3 24, cover pool D totalled DKK38bn and consisted mostly of 'Prioritet Plus' mortgage loans, which offer the borrower the flexibility to draw down partially or repay amounts held in a dedicated savings account. In a bank's default scenario, the borrower cannot set off the deposit account against its loan account, thus protecting bondholders against set-off risk. In recent years Danske has started offering also interest-reset mortgages, which are callable at any time.

Cover pool I amounted to DKK45bn and comprised 100% Norwegian. The underlying properties are mostly owner occupied (96%). The majority of mortgages are floating rate (89%) and amortising.

Cover pool C stood at DKK47bn and comprised Swedish and Norwegian mortgage assets – consisting mainly of retail (57%) and properties used for manufacturing industries (22%). Average loan size of DKK915m, reflecting the more business-oriented nature of the pool.

Loans in arrears (over 90 days) are not allowed in any of the cover pools. Furthermore, Danske Bank commits to a voluntary minimum over-collateralisation of 2% (agreed with the Danish FSA). However, due to the new CB directive came into force in July 2022, this OC level will be a regulatory minimum requirement. Approval of mortgages by Danske Bank is based on a strict credit policy, identical to that of Realkredit Danmark.

Table 18. Funding sources (Q3 24, excl. RD pass-through covered bonds)

Deposits	53%
Covered bonds	13%
Non-preferred senior unsecured	5%
Interbank deposits	5%
Repos	10%
Subordinated debt	2%
Equity	9%

Source: Danske Bank Debt Investor Update Q3 14

Table 19. Cover pool info (D, I, C)

Cover Pool D	DKK 38bn
Residential mortgages	100%
Average loan size	944,000
Over-collateralisation	10.2%
WA indexed LTV	53%
Arrears (>90 days)	None
Floating rate	60%
Interest-only loans	30%
Geography	DK
- Metropolitan Area	50%
- Other Zealand	13%
- Northern Region	6%
- Eastern Jutland	15%
- Southern Region	16%
Asset type	
- Primary home	94%
- Secondary home	6%

Cover Pool I	DKK 48bn
Residential mortgages	100%
Avg. loan size	1,551,000
Over-collateralisation	10.5%
WA indexed LTV	53,8%
Arrears (>90 days)	None
Floating rate	89%
Interest-only mortgages	4%
Geography	
- Norway	100%
Asset type	
- Owner-occupied	96%
- Holiday homes	4%
- Other	0%

Cover Pool C	DKK 47bn
Res. mtg. (R)	18%
Com. mtg. (C)	82%
Avg. loan size (R/C)	DKK15m/DKK11m
Over-collateralisation	24%
WA indexed LTV (R/C)	51%/52%
Arrears (>90 days)	None
Floating rate (R/C)	94%/95%
Interest-rate only (R/C)	49%/30%
Geography	
- Sweden	70%
- Norway	30%
Property type	
- Retail	57%
- Industry	22%
- Agriculture	20%

Source: ECBC template Q1 20 from Danske Bank

Nykredit Realkredit

Company profile

Nykredit Realkredit (NYK) is a wholly owned subsidiary of Nykredit A/S. Nykredit A/S is an unlisted holding company owned by Forenet Kredit (79%), PFA Pension (10%) and seven other pension funds/investment funds. As a mortgage association, Nykredit Realkredit originated in 1851. Today, besides mortgage finance, Nykredit is active in retail and corporate banking, asset management, insurance and real estate. Mortgage finance is the most important business area. Forenet Kredit and Nykredit's Board of Directors decided in 2016 to prepare for an IPO due to Nykredit not having any access to equity markets. The board's view was that a listing would make for a flexible way to raise funding and limit the need for large capital buffers thereby lowering cost of capital. However, in November 2017 Forenet Kredit decided to sell 11% of its shares in Nykredit A/S to a group of Danish pension funds, who will be able to inject equity into Nykredit if needed. Thus, the plans of an IPO were shelved.

In 2003, Nykredit Realkredit acquired Totalkredit (TOT), which is currently a wholly owned subsidiary of Nykredit A/S. Following the acquisition of Totalkredit, Nykredit became the largest specialist mortgage bank in Denmark, with a current market share based on outstanding mortgages of 41.1% at June 2020. There are nearly 60 partner banks in the Totalkredit corporation network, making it crucial for the distribution of Nykredit Realkredit mortgages. Nykredit Realkredit and both local and regional banks are competitors in agricultural mortgage and non-mortgage markets. In 2008, Nykredit Realkredit acquired Forstædernes Bank, which increased Nykredit Realkredit's market share within banking to 5.2%. Forstædernes Bank subsequently merged with Nykredit Bank and the market share as of Q1 17 was 6.7% – in Q4 '19 the market share was 5%. In December 2019 Nykredit A/S took over the specialist mortgage bank LR Realkredit, who specialises in lending targeted housing co-ops and social housing. Recently, Nykredit Realkredit has made an offer on Spar Nord Bank. Completion of Nykredit offer is subject to meeting certain conditions, including obtaining regulatory approvals and shareholder acceptances for at least 67% of Spar Nord Bank's total shares and voting rights. The offer is expected to complete in the first half of 2025.

Nykredit's covered bonds issued out of capital centres E and H are rated 'AAA' by S&P. Nykredit has a 'A+' long-term rating from S&P and 'A' from Fitch.

In 2018, Nykredit opened capital centre J for the funding of interest-reset loans to social housing unions with a government guarantee. This capital centre is not rated.

Financial performance

Net interest income increased to DKK 12,305m (2022: DKK 10,871m), positively impacted by rising interest rates in addition to an increase in nominal bank and mortgage lending compared with 2022. Net fee income decreased by 11% on 2022, totalling DKK 2,789m (2022: DKK 3,119m), primarily due to low mortgage activity in both the personal and business segments compared with the previous year.

Capital ratios in general increased in line with the target as Nykredit operates with a target CET1% of 15-16%. The arrears rate (75 days) as of Q4 23 was 0.18% – a slight fall from the 2018 level. The number of repossessed properties decreased from 5 to 2 from 2012 to 2023.

Table 20. Ratings (S&P/F)

Covered bond rating – CC E:	AAA
Covered bond rating – CC H	AAA
Issuer rating:	A+/A+

** Unsolicited rating*
Source: Moody's, Standard & Poor's, Fitch, Danske Bank

Table 21. Financial information

DKKm	2023	2022
Net interest income	12,305	10,871
Net fee income	2,789	3,119
Investment portfolio income	1,625	1,736
Loan impairment charges	-177	-80
Operating profit	14,024	10,583
Cost/income ratio	32.1%	37.6%
Total capital ratio	23.7%	23.3%
Tier 1 capital ratio	20.4%	19.5%
Arrears rate	0.18%	0.20%
Repossessed properties	2	5

Source: Nykredit, Danske Bank

Table 22. More info

Bond ticker	NYKRE
Website	www.nykredit.com

Source: Nykredit, Danske Bank

Business model and funding profile

Nykredit Realkredit is a specialist mortgage bank subject to supervision by the Danish FSA. Banking, asset management and insurance activities are carried out by wholly owned separate subsidiaries. As mentioned above, Totalkredit is also a wholly owned subsidiary of Nykredit Realkredit. Retail and commercial customers are offered mortgages through Nykredit's distribution channels, which include 41 full-service customer centres, Nykredit.dk, mobile app downloads, a central customer services centre and the real estate agencies of the Nybolig and Estate chains.

In 1994, local and regional banks in Denmark established Totalkredit as a joint mortgage bank. Since the acquisition of Totalkredit in 2003, Nykredit Realkredit has developed a partnership with around 60 Danish local and regional banks (including Nykredit Bank) with substantial distribution networks. These local and regional banks sell mortgage products under the Totalkredit brand. They also deliver the large majority of growth in mortgage lending.

Denmark is the largest market for Nykredit Realkredit and Totalkredit. In addition, Nykredit Realkredit provides loans secured by residential property in Sweden. Totalkredit offers only mortgages secured on residential property, while Nykredit Realkredit's core markets in Denmark are in residential housing and commercial properties, which comprise loans to customers for urban trade, agriculture and residential rental properties.

A management agreement exists between Nykredit Realkredit/Totalkredit and the local and regional banks. The agreement states the following.

- The branch that originated the mortgage is responsible for all handling of customers.
- The bank that originated the mortgages covers all losses (LTV between 60% and 80%) on mortgages originated by said bank.
- Totalkredit receives all payments directly from customers. In turn, it pays provisions to the banks.

From 2005, Nykredit Realkredit and Totalkredit have been jointly funded and until 2008 all mortgages originated by Nykredit Realkredit or Totalkredit were funded by covered bonds issued out of Nykredit Realkredit capital centre D. According to the revised Mortgage Act, new SDOs must be issued out of separate capital centres. Therefore, since 1 January 2008, Nykredit Realkredit/Totalkredit has issued SDOs out of capital centre E, with existing series in capital centre D closed at the end of 2007. The series in capital centre D was grandfathered according to the CRD. Nykredit announced in June 2011 that existing interest-reset and floating-rate loans – issued out of capital centre E – would be refinanced into the new capital centre H starting from the refinancing auction in September 2011. Hence, since then joint funding has been carried out from capital centre E for fixed-rate loans and from capital centre H for interest-reset and floating-rate loans.

In 2014, Nykredit's 'second joint funding model' was established. This works such that partnership banks of Totalkredit can fund mortgage lending through the use of covered bonds by selling the loans to Nykredit, who then issues match funded SDOs[22]. The loans are callable with a variable interest rate based on the 3M CITA fixing, and Nykredit issues bonds with the same characteristics – match funding is thus preserved. This is beneficial for banks without the set-up to issue covered bonds themselves since funding a mortgage over 30 years essentially through deposits creates liquidity risks.

[22] Since 2003, banks have been able to offer 'prioritetslån', which are mortgage loans with a first lien claim.

Table 23. Cover pool info – Capital Centre E

Capital Centre E	DKK580bn
WA indexed LTV	58%
Over-collateralisation	3.6%
Interest-only mortgages	28%
Fixed-rate loans	100%
Geography	DK
- Metropolitan area	30%
- Other Zealand	14%
- Northern region	12%
- Eastern Jutland	24%
- Southern region	20%
- Other area	0%
Asset type	
- Residential	94%
- Private rental	6%
- Agriculture	0%

Source: ECBC template Q1 20 from Nykredit

Table 24. Cover pool info – Capital Centre H

Capital Centre H	DKK788bn
WA indexed LTV	57.5%
Over-collateralisation	3.8%
Interest-only mortgages	64%
Fixed-rate loans	0%
Geography	DK, SE, EUR
- Metropolitan area	34%
- Other Zealand	11%
- Northern region	13%
- Eastern Jutland	24%
- Southern region	18%
- Other area	0%
Asset type	
- Residential	77%
- Private rental	23%
- Agriculture	0%

Source: ECBC template Q1 20 from Nykredit.

The Danish FSA has shown some concern for the joint funding arrangements as partnership banks might suddenly be in need of instant liquidity meaning a large demand to transfer loans to Nykredit at a point in time when funding markets might have dried up. However, Nykredit has established limits to the amount of loans the partnership banks can transfer during a period of 12 months, which shields Nykredit from a sudden large need to issue covered bonds.

Nykredit introduced two-tier mortgaging for commercial borrowers in 2009 and residential borrowers in Q2 12, as a way to limit the need to fund supplementary collateral at times with large downward price corrections in the housing market. This works such that all new loans are funded using SDO covered bonds up to an LTV of 45% for commercial real estate and 60% for residential real estate, while the top 15% and 20%, respectively, is funded using RO bonds issued out of capital centres G and I. Furthermore, the top loan had to be amortising. Since mid-2014, Nykredit once again offers one-tier mortgaging for residential loans with an LTV up to 80%.

All in all, Nykredit currently has four active capital centres: Capital Centre H (SDO, non-matched maturity funding), Capital Centre E (SDO, matched-maturity funding), Capital Centre G (RO, non-matched maturity funding) and Capital Centre I (RO, matched-maturity funding). By far the largest amount of issuance takes place out of capital centres E and H.

Starting in 2017, all commercial floating rate loans in Capital Centre D will be refinanced into Capital Centre G in order to increase the outstanding amount in each bond series and thus improve the LCR levels in general.

Cover pool and asset quality

As at Q4 2023, Nykredit Realkredit's capital centres E and H totalled DKK580bn and DKK788bn, respectively, of which 100% and 91%, respectively, was Danish-based mortgages. These are secured on residential (94% and 77%, respectively. Capital Centre E comprises only fixed rate callable mortgages, while Capital Centre H comprises only interest-reset and adjustable rate loans. Besides lending to Denmark, Germany and Sweden, there is also a smaller share of French (1.0%) and Spanish (1.2%) mortgages in the cover pool.

Nordea Kredit

Company profile

Nordea Kredit Realkreditaktieselskab (NDA) is a wholly owned subsidiary of Nordea Bank Danmark, which is part of the Nordea Group. In 1997, Sweden's Nordbanken merged with Finnish Merita Bank to form MeritaNordbanken. In 2000, Denmark's Unibank merged with MeritaNordbanken, which, at the same time, changed its name to Nordea. Later in 2000, Norway-based Christiania Bank joined the newly formed Scandinavian banking group. Today Nordea is the largest bank in Scandinavia, with activities in Scandinavia, the Baltic region and Russia.

Nordea's main business areas include retail banking, corporate banking, asset management, life insurance, pensions and mortgage finance.

NDA began its mortgage activities in September 1993. Initially, it provided lending only for residential properties and holiday homes, but it now offers mortgage loans for most types of property. NDA's share of the domestic mortgage market was in June 2020 13% (mortgage loans at nominal value as a share of all Danish mortgage bank loans).

Nordea's long-term issuer ratings from Moody's, S&P and Fitch are 'Aa3', 'AA-' and 'AA-' with a 'positive' outlook for Moody and "stable" from S&P and Fitch. Covered bonds issued by NDA have 'AAA' ratings from S&P.

Table 25. Ratings (Moody/S&P/Fitch)

Covered bond rating (only S&P)	AAA
Issuer rating	Aa3/AA-/AA-

Source: Moody's, Standard & Poor's, Fitch, Danske Bank.

Table 26. Financial info

DKKm	2023	2022
Net interest income	4,043	3,517
Net fee income	3,269	2,840
Investment portfolio income	-	-
Pre-provision income	2,379	2,257
Loan impairment charges	-19	-27
Operating profit	3,240	2,828
Cost/income ratio	52.0%	50.4%
Total capital ratio	30.7%	30.5%
Tier 1 capital ratio	28.5%	28.4%
Arrears rate	0.31%	0.27%
Repossessed properties	12	59

Source: Nordea Kredit, Danske Bank

Table 27. More info

Bond ticker	NDAFH
Website	www.nordea.com

Source: Nordea, Danske Bank

Financial performance

Nordea Kredit reported net interest income of DKK4.0bn for 2013, an increase from the 2022 level of DKK3.5bn. The return was driven by a higher return on own funds, which was positively affected by the increase in interest rate levels. Administration margins decreased to DKK 3.6bn in 2023 from DKK3.6bn due to lower lending volumes and average margins, driven by lower LTV ratios for the loans remortgaged. Fee and commission income was down by 34% to DKK 420m and was mainly driven by lower lending activity for household and agricultural customers. The total capital ratio and the tier 1 capital ratio both increased 0.2% and 0.1%-points, respectively. The arrears rate (above 3M) and repossessed properties are generally low.

Business model and funding profile

NDA is a specialist mortgage bank subject to supervision by the Danish FSA. Its objective is to carry on business as a mortgage bank, including any kind of business permitted pursuant to the Danish Mortgage Act. NDA has mortgage credit activities only in Denmark, while all mortgages in the cover pool are secured on properties situated in Denmark. All mortgages included in the cover pool are distributed through Nordea's branch network and that of the real estate chain DanBolig.

A management agreement exists between NDA and Nordea Bank Danmark. It states the following: Nordea Bank Danmark A/S provides a guarantee for the upper 25% of mortgage loans originated by the bank. For loans granted for non-profit housing, youth housing and housing for the elderly, there is only a 10% guarantee. For loans for all-year dwellings, co-operative housing, private rental housing, non-profit rental housing and properties for social, cultural and educational purposes, the guarantee covers that part of the mortgage loan that exceeds 60% of the valuation made in conjunction with the loan origination process. For loans granted to agricultural properties, the guarantee covers that part of the mortgage loan that exceeds 55% of the valuation made in conjunction with the loan origination process.

For loans granted to recreational dwellings, industrial and craftsmen's properties, office and retail properties and collective energy supply plants, the guarantee covers that part of the loan that exceeds 45% of the valuation made in conjunction with the loan origination process.

The guarantee period begins when the loan is disbursed or remortgaged. The former guarantee period of 10 years or five years for loans granted to owner-occupied, all-year and recreational dwellings changed to the lifetime of the loan on 9 December 2013.

At the end of 2023, guarantees from Nordea Bank Danmark A/S covered loans worth DKK417bn. The share of the total loans covered by the loss guarantees was 99%.

The management agreement between NDA and Nordea Bank Denmark also includes the following.

- The branch that originated the mortgage is responsible for all customer handling.
- NDA receives all payments from customers directly. In turn, NDA pays provisions to Nordea Bank Denmark.

Cover pool and asset quality

The mortgages backing the covered bonds issued by NDA are divided into different cover pools (capital centres). According to the revised Mortgage Act, new SDROs must be issued out of separate capital centres. Therefore, at the end of 2007, NDA closed the RO capital centre 1 and subsequently grandfathered the existing series according to the CRD and new SDROs have been issued out of Capital Centre 2. Capital Centre 2 holds approximately the total mortgage book.

At the end of 2023, Capital Centre 2 totalled DKK450bn and consisted entirely of Danish-based mortgages. These are secured mainly on residential mortgages and carry a fixed rate. Interest-only mortgages constitute close to 50% of the covered pool.

Table 28. Cover pool info – Capital Centre 2

Capital Centre 2	DKK 450bn
WA indexed LTV	54%
Over-collateralisation	7.4%
Interest-only mortgages	54%
Fixed-rate loans	74%
Geography	DK
- Metropolitan area	46%
- Other Zealand	17%
- Northern region	4%
- Eastern Jutland	21%
- Southern region	13%
- Other area	0%
Asset type	
- Residential	82%
- Private rental	10%
- Agriculture	8%

Source: ECBC template Q1 20 from Nordea Kredit

Jyske Realkredit

Company profile

Jyske Realkredit was established under the name BRFkredit in 1959 as an independent business foundation authorised to grant third-lien mortgages. Originally, it was intended that BRFkredit grants mortgage loans for specific purposes. Until 30 April 2014, BRFkredit was an independent specialist mortgage bank providing customers with financial solutions and other services connected with real estate and was wholly owned by BRFfonden, an independent business foundation, through the holding company BRFholding. On 30 April 2014, a merger between BRFkredit and Jyske Bank A/S came into effect after which BRFkredit was owned by Jyske Bank A/S with BRFholding obtaining 25.6% of the total amount of shares outstanding in Jyske Bank. In 2018 BRFkredit changes its name to Jyske Realkredit. Jyske Bank acquired Handelsbanken activities in Danmark in 2022 including its mortgage activities. Jyske Realkredit continues as a subsidiary subject to Danish mortgage finance legislation. Today, Jyske Bank plus Jyske Realkredit is the fourth largest financial institution in Denmark and Jyske Realkredit has an 11-12% share of the total Danish mortgage market.

Jyske Realkredit issues SDO covered bonds in the form of traditional pass-through callable bonds and partly through EUR syndications. In addition, Jyske Realkredit adheres to the general balance principle.

In October 2019, S&P assigned Jyske Bank an ‘A’ rating with a ‘stable’ outlook up from ‘A-‘. This was so as Jyske had through issuance of Senior non-preferred debt increased its additional loss-absorbing capacity (ALAC). Jyske Realkredit’s capital centres are all assigned ‘AAA’ ratings by S&P. On July 2023, S&P raised its long-term issuer credit rating on Jyske Bank to ‘A+’. It also applied to Jyske Bank’s long-term senior unsured debt. Jyske Realkredit still issues RO bonds out of Capital Centre B although to a very limited extent and only floaters and short-dated ARMs – currently DKK2.3bn RO floaters are outstanding.

In 2018 Jyske Realkredit opened capital centre S for the funding of interest-reset loans with a government guarantee to social housing. This capital centre is not rated.

Financial performance

Jyske Realkredit reported an operating profit of DKK2.0bn in 2023, an increase from the 2022 level of DKK1.4bn. Jyske Realkredit cites large remortgaging activity from borrowers as the prime reason. The higher profit was largely due to a higher level of interest rates and a resultant higher return on Jyske Realkredit’s portfolio of securities and the effect from the take-over of housing loans from Handelsbanken’s Danish activities in December 2022. We still see a low level of recognised losses and arrears, and consequently the losses recognised in the income statement and loan impairment charges were at a sustained low level in 2023.

Note that in 2019 Jyske Realkredit and Jyske Bank entered into a new agreement regarding intra-group fees and costs. This affected net fees and provisions. The agreement means that Jyske Realkredit pays a distribution fee on all mortgage loans as well as jointly funded bank mortgage loans. On the other hand, administration margins enter gross in Jyske Realkredit’s annual reports.

Table 29. Ratings (S&P)

Covered bond rating	AAA
Issuer rating	A+

Source: Standard & Poor’s

Table 30. Financial information

DKKm	2023	2022
Administration margins	2,496	2,356
Fees and commissions	-556	653
Investment portfolio income	370	2
Pre-provision income	2,661	1,471
Loan impair. charges	-12	-272
Operating profit	2,030	1,117
Cost/income ratio	14,3%	21.1%
Total capital ratio	27.5%	28.3%
Tier 1 capital ratio	275%	28.3%

Source: jyskerealkredit, Danske Bank

Table 31. More info

Bond ticker	BRF
Website	www.jyskerealkredit.dk

Source: Jyskerealkredit, Danske Bank

Business model and funding profile

Jyske Realkredit is a specialist mortgage bank subject to supervision by the Danish FSA. It offers mortgages through Jyske Bank A/S and several partnerships. For example, Jyske Realkredit has entered into agreements with a range of independent real estate agencies and financial institutions. In 2012, Jyske Realkredit entered into a range of referral agreements with enterprises that meet the customers before a financing requirement arises, for instance estate agents and companies operating in energy renovation and large consumer durables.

Jyske Realkredit offers mortgages secured on properties in Denmark, specialising in those used for residential properties and office and shop premises. Loans for residential properties, including owner-occupied homes, co-operative homes, rental homes and publicly subsidised housing projects, comprise most of the total mortgage book. BRFkredit's main lending segments are owner-occupied dwellings and vacation homes.

Mortgage-backed covered bonds issued by Jyske Realkredit are divided into different cover registers (capital centres). Bonds issued prior to 31 December 2007 were issued out of capital centre B and are grandfathered to the CRD. New ROs are also issued from capital centre B, to a very limited extent, but they do not comply with the CRD and hence do not get preferential treatment in terms of risk weighting. According to the revised Mortgage Act, any new SDOs must be issued out of separate capital centres and new SDOs are issued out of capital centre E.

Jyske Realkredit first entered into a joint funding agreement with Jyske Bank and Sydbank in February 2012 and Arbejdernes Landsbank shortly afterwards (June 2012), all of which were Totalkredit partnership banks at the time. The Danish FSA approved the joint funding model in 2012 and it enabled financial institutions to fund private residential mortgage loans through Jyske Realkredit for a fee. The mortgages were funded through Jyske Realkredit's SDO covered bond programme and must comply with the requirements of Danish mortgage finance legislation. Furthermore, the underwriting standards must comply with Jyske Realkredit's policies. Following the merger with Jyske Bank in April 2014, the joint funding agreement with Jyske Bank continued whereas the Totalkredit partnership banks chose to withdraw from the agreement and team up with Nykredit/Totalkredit instead through the 'second joint funding agreement' (see section on Nykredit Realkredit).

Since 2016, Jyske Realkredit has financed part of its mortgage lending by issuing in EUR benchmark format and was the first specialist mortgage bank to do so. The currency and interest-rate risks between the loans denominated in DKK and the bonds in EUR are fully hedged through swaps. The EUR funds are kept separate from DKK funds and used for specific loan types. Also, it is stated in the loan documentation where needed that there is not a 1:1 correspondence between the bond issued and the loan. As of June 2020, Jyske Realkredit had issued five EUR-denominated SDO bonds for a total of EUR 2.5bn. See table below.

Table 33. EUR-denominated SDO bonds

Name	ISIN	Issuer	Maturity	Outstandingamount	Seriestype	Capitalcentre
JYSK SDO(E) Jan'25	DK0009411902	JYSK	01/01/2025	2846216 EUR	SDO	E
JYSK SDO(E) Jan'26	DK0009414252	JYSK	01/01/2026	2621138 EUR	SDO	E
JYSK SDO(E) Oct'27	DK0009404618	JYSK	01/10/2027	500000000 EUR	SDO	E
JYSK SDO(E) Oct'29	DK0009410185	JYSK	01/10/2029	500000000 EUR	SDO	E
JYSK SDO(E) Jul'30	DK0009412553	JYSK	01/07/2030	750000000 EUR	SDO	E
JYSK SDO(E) Apr'31	DK0009414336	JYSK	01/04/2031	750000000 EUR	SDO	E

Source: Jyske Realkredit, Danske Bank

Table 32. Cover pool info – Capital Centre E

Capital Centre E	DKK 350bn
WA indexed LTV	51%
Over-collateralisation	6.5%
Fixed-rate loans	59%
Interest-only loans	51%
Geography	DK, FO
- Metropolitan area	46%
- Other Zealand	11%
- Northern region	7%
- Eastern Jutland	22%
- Southern region	14%
- Other area	0%
Asset type	
- Residential	83.5%
- Commercial	16.5%

Source: ECBC template Q3 24 from Jyske Realkredit

Cover pool and asset quality

As of Q3 24, Jyske Realkredit's capital centre E stood at DKK350bn, made up of 99% Danish-based loans. The average LTV ratio is 51%. A large share of assets is secured on private rental properties and in general residential mortgages make up the lion's share of the cover pool.

DLR Kredit

Company profile

'Dansk Landbrugs Realkreditfond' (DLR) is a Danish mortgage lender, specialised in agricultural and commercial mortgages. DLR was founded in 1960 on the initiative of the banks and savings banks associations (now the Danish Bankers Association). DLR's formation was driven by farmers' requirements for long-term capital in the 1950s, which were covered only partially by first- and second-lien mortgage banks. Lack of funding resulting from the hesitant lending policies of first- and second-lien mortgage banks led in part to the establishment of DLR, which was allowed to operate with a loan-to-value ratio of 70% of DLR's valuation of the mortgaged property.

Between its establishment in 1960 and 1 July 2000, DLR operated on its own individual legal basis pursuant to the DLR Act. DLR's exclusive right to grant loans based on an LTV ratio of 45-70% was abandoned from 1 January 1999. It became subject to the Mortgage Credit Act as of 1 July 2000 and in 2001 it became a company limited by shares.

Shares in DLR are held by 47 local and regional banks and savings banks. The number of shareholders has been falling slightly in recent years because mergers and acquisitions have reduced the number of banks. DLR does not disclose a detailed owner structure, but as of Q4 23 member banks of Lokale pengeinstituter (The Association of Local Banks in Denmark, Savings Banks and Cooperative Banks in Denmark) owned 54% and member banks of Landsdækkende Banker (National Banks) owned 17%, PRAS 8%. Other financial institutions owned 23% and DLR owns 9% of its own shares).

DLR's market share was 6% as of November 2024. For DLR's main lending areas (agriculture, office and business properties, private rental housing properties and private co-operative housing properties), the market share was 17.4%. As well as providing mortgage loans, DLR has managed the loan portfolio of LR Realkredit since 1994. This agreement was cancelled in 2019 with effect from 2022 following Nykredit's take-over of LR Realkredit. DLR takes no credit risk on this portfolio.

DLR has an 'A-' issuer rating from Standard & Poor's and an 'AAA' covered bond rating (capital centre B and general capital centre).

Financial performance

DLR Kredit A/S reported a 2023 operating profit of DKK1.4bn – an increase from DKK720m in 2022. Lending growth lifted DLR's administration margin income in 2023. However, the in crease in administration margin income was more than offset by a decline in in come from fees and commissions due to the lower level of activity in gross lending. Overall, core earnings fell by DKK 108m to DKK 1,368m.

Business model and funding profile

DLR is a specialist mortgage bank subject to supervision by the Danish FSA. It provides mortgages through the branch networks of its shareholder banks. In order to support the customer advisory services of the banks in connection with mortgage loans, DLR has developed an electronic communications system – DLRxperten. DLR has no branches itself.

Table 34. Ratings (S&P)

Covered bond rating:	AAA
Issuer rating:	A-

Source: Standard & Poor's, Danske Bank

Table 35. Financial info

DKKm	2023	2022
Net interest income	2,439	2,039
Fees and commissions	-782	-797
Investment portfolio income	800	-215
Pre-provision income	288	-304
Loan impair. charges	1	10
Operating profit	1.347	720
Cost/income ratio	17.2%	27.0%
Total capital ratio	24,0%	24.3%
Tier 1 capital ratio	22.2%	22.5%
Arrears rate	0.17%	0.17%
Repossessed properties	15	22

Source: DLR Kredit, Danske Bank

Table 36. More info

Bond ticker	DLRKRE
Website	www.dlr.dk

Source: DLR and Danske Bank

DLR offers only mortgages secured on properties in Denmark. It focuses on mortgages on agricultural and commercial properties as well as co-operative homes, rental homes and publicly subsidised housing projects. The share of lending to agricultural properties has been falling during the past years and made of 50% as of Q3 2024. The bank offers interest-reset loans (38%), fixed-rate callable loans (24%) and floating-rate loans (54%). All mortgages are based on the pass-through principle, meaning that consumers have a delivery option on underlying bonds.

DLR implemented a new uniform loss guarantee concept for all new lending as of 1 January 2015. This means that realised losses on mortgages are partly carried by the loan distributing partner banks in three stages: (1) a 6% guarantee covering the entire notional of the loan for which the distributing banks receive a guarantee provision, (2) offsetting guarantee provisions paid to the distributing bank potentially over 10 years and (3) a portfolio guarantee covering each distributing bank's loss guarantee on which DLR can draw if the losses incurred are not covered by (1) or (2). Additional guarantees are required for loans secured by risky collateral such as power plants, hotels etc. Consider for example a loan with a remaining notional of 50 being designated as non-performing with a recovery of 40. In this case the distributing bank covers 6% of the remaining notional – i.e. 3. Furthermore, following (2), DLR can offset the remaining loss of 7 in expected guarantee provisions over the following 10 years to the distributing bank. In case (1) and (2) do not cover the entire loss DLR can draw on the provided portfolio guarantee. DLR carries all losses not covered by the guarantees.

Mortgage-backed covered bonds issued by DLR are divided into different cover registers (capital centres). According to the revised Mortgage Act, any new SDOs must be issued out of separate capital centres. By the end of 2007, DLR had closed and subsequently grandfathered the existing series in General Capital Centre, according to the CRD, with new SDOs issued out of capital centre B.

Cover pool and asset quality

As of Q3 24, DLR's Capital Centre B totalled DKK218bn and consisted mainly of Danish-based assets, distributed as 50% in agricultural assets and 20% in commercial assets.

DLR's cover pool consists primarily of agriculture exposures, although this share has fallen in recent years. DLR is among the more diversified mortgage banks geographically and holds a large share of mortgages with exposures to Jutland and Funen (60%).

Table 37. Cover pool info – Capital Centre B

Capital centre B	DKK 218bn
JCBs/SNP	DKK 4bn
WA indexed LTV	
Over-collateralisation	11.9%
Fixed-rate loans	44%
Interest-only loans	38%
Geography	DK, EUR
- Metropolitan area	6%
- Other Zealand	13%
- Northern region	22%
- Eastern Jutland	32%
- Southern region	28%
Asset type	
- Residential	30%
- Private rental	20%
- Agriculture	50%

Source: Cover pool report Q1 '20 from DLR.

Danmarks Skibskredit (ship finance)

Company profile

Danmarks Skibskredit A/S (Danish Ship Finance [DSF]) was established in 1961 to provide financing to the Danish shipping industry. DSF is based in Copenhagen and operates as a ship finance institute under a dedicated legal framework (the Act on a ship finance institute and the Executive order on a ship finance institute). The Act on a ship finance institute confines the lending activities conducted by a ship finance institute to ship mortgage lending only. DSF is supervised by the Danish FSA.

Since late 2016, DSF has been owned by a consortium of private equity fund Axcel and pension funds PFA and PKA. The three entities hold equal shares of 98% of the equity in Danmarks Skibskredit Holding A/S, which owns 87% of the shares in DSF. The remaining shares in DSF are held mainly by The Danish Maritime Fund (10% of share capital), a trust established to promote Danish shipping- and shipbuilding industries. DSF's lending is based on first-lien ship mortgages and, to a limited extent, ship owners' payments of instalments to shipyards for vessels under construction. DSF's clients include Danish as well as select international shipping companies.

In June 2024, Abu Dhabi-based investment fund Magellan Capital Holdings Ltd (Magellan) became the company's new majority capital owner. As a result, Axcel, PFA and PKA agreed to sell their stakes to Magellan, corresponding to 97.6% of the shares. Magellan is an investment fund that focuses on stable investments in both public and private markets as well as within real estate. It is owned by the Swedish national Mr. Elali, who is based in Abu Dhabi and has previously been involved in shipping through his ownership of Zahker Marine International (ZMI) that was sold in 2022.

The Danish Maritime Fund will retained its 10% shareholding (B-shares with one-tenth of A-shares voting rights), while Axcel retained a 5% share for up to two years to ensure a smooth transition. According to the company announcement, it is the new owner's intention to continue developing DSF in accordance with its current strategy. This is also reflected by Axcel continuing to hold a stake in DSFH in the near term as well as the fact that the current executive management and five non-executive board members including the chairman will stay on board (two board members will be joining representing Magellan).

DSF has a 'BBB+' issuer rating from S&P. S&P reconfirmed their rating after the Magellan acquisition. The latter incorporates an uplift of two notches over the issuer rating reflecting resolution regime uplift and 'moderate' systemic importance (one notch each). However, S&P does not assign collateral-based uplift, as replacement language for counterparties (bank account provider, swap providers) is not in place. The outlook on both the issuer rating and the covered bond rating was revised to 'stable' from 'negative' in 2019 due to a low amount of non-performing loans and a robust capitalisation. DSF also has an unsolicited standalone issuer rating of Baa3 from Moody's and Baa2 rating of the covered bonds issued (both with 'stable' outlooks).

In January 2025, DSF covered bonds were upgraded to 'AA- (Stable Outlook)' by S&P From 'A'. Furthermore, DSF ship covered bonds are now also qualify for Level 1B liquid assets if their outstanding volume exceeds EUR 500 million, and the bonds are now on par with the Danish AAA-rated covered bond market in terms of risk weights and LCR under CRR. The upgraded is positive for pricing and is rooted in low historical losses and solid capital requirements.

Table 38. Ratings (S&P)

Covered bond rating:	AA-
Issuer rating:	BBB+

** Unsolicited rating*
Source: Standard & Poor's, Danske Bank

Table 39. Financial info

DKKm	2023	2022
Net interest income	413	562
Fees and commissions	15	24
Investment portfolio	189	64
Pre-provision income	617	640
Loan impair. charges	506	583
Operating profit	1,097	296
Cost/income ratio	25.4%	43.2%
Total capital ratio	23.6%	23.6%
Tier 1 capital ratio	23.6%	21.9%
Net write-offs	-1.3%	-0.9%
Net NPL ratio	2.8%	3.6%

Source: DSF, Danske Bank

Table 40. More info

Bond ticker	DANSKB
Website	www.shipfinance.dk

Source: DSF, Danske Bank

Financial performance

In 2019, Danmarks Skibskredit enjoyed another year of decent lending growth of 5%. Gross lending thus increased to DKK41bn (collateralised by 774 vessels) leading to an increase in net interest income from lending to DKK516m. However, this was on the back of a low starting point in 2018, when a lower average loan balance during the year meant net interest rate income was at its lowest in five years. Loan impairment charges were negative driven by the gradual improvement of credit quality among borrowers following the high default levels among especially dry bulk and offshore in 2016. The investment portfolio did not fare well in 2019, due largely to a weak performance among high-coupon Danish callable bonds because of large prepayments.

Net write-offs during the year were at the highest level over the past 20 years at DKK485m, corresponding to 1.2% of the loan book but well within the loss allowance account standing at DKK2bn (4.9% of the loan book). The majority of write-offs stemmed from existing non-performing exposures towards offshore. cording to S&P the new owner has explicitly committed to keep DSF’s CET1 ratio above 19% after discretionary shareholder distributions.

Business model and funding profile

DSF is a specialist ship mortgage bank and adheres to the specific balance principle. Given Danish covered bond legislation, DSF is, like the other specialist mortgage banks, entirely wholesale funded.

DSF issues mainly DKK-denominated ship mortgage bonds (‘Skibskreditobligationer’, SMBs) in the domestic market. As lending is predominantly in USD, DSF uses cross-currency basis swaps to swap the proceeds raised through wholesale debt issues, mainly to USD floating rate.

SMBs can be issued to finance loans with LTV up to 70% and meet the requirements stipulated in UCITS Article 52(4). However, SMBs do not comply with CRD, as the latter requires the underlying ship mortgages serving as collateral to comply with a 60% LTV limit at all times. Nonetheless, SMBs issued before 2008 are grandfathered. DSF issues SMBs out of the General Capital Centre. Loans exceeding 70% of the value of the vessel(s) may be provided subject to an additional capital charge in the form of a deduction from own funds in the calculation of the total capital ratio.

DSF is also authorised to issue SDOs. As SMBs and SDOs cannot be issued out of the same capital centre, DSF issues SDOs out of Capital Centre A. Ship mortgages serving as collateral for SDOs must at all times comply with a 60% LTV limit – if this level is exceeded, supplementary collateral must be provided. Capital Centre A was opened in March 2019 for the purpose of issuing DSF's EUR denominated SDOs targeted a European investor base. DSF has been targeting a broader investor base for some time, which was completed in 2019 through two syndicated EUR deals in March and November.

Danmarks Skibskredit conducts tap issuances in DKK and EUR bonds (although no taps have been conducted in the recently issued EUR denominated bonds) and do syndicated deals in EUR. The tap issuances in DKK works differently from normal tap issuance among other Danish covered bond issuers (for more on issuance procedures see Chapter 6). Each week Danmarks Skibskredit will publish price targets for each of its bonds and whether they intend to conduct buybacks or offers in the listed ISINs. Price targets are usually communicated as a spread to matched maturity swaps or non-callable bullets issued by the other specialist mortgage banks and will be updated throughout the week if spreads move significantly. No weekly funding target is communicated. Subsequently, during the week investors can contact Danmarks Skibskredit for an offer of a specific amount (in practice trading takes place through the larger Danish investment banks). The amounts for sale can vary during the year but it is possible to do fairly large size.

Cover pool and asset quality

DSF's General Capital Centre stood at DKK45bn as of Q1 20, of which DKK38bn was loans secured on vessels with the remaining DKK7bn being substitute assets all of which were central bank eligible. Of the cover assets, 85% were USD denominated followed by DKK and EUR. The 10 largest exposures made up 49% of the cover pool and 76% of the outstanding loans had an LTV below 40%. Covered bonds issued out of this capital centre are all DKK denominated.

DSF's Capital Centre A stood at DKK9bn as of Q1 20, of which DKK7.4bn was loans secured on vessels, with the remaining DKK1.6bn being substitute assets, all of which were central bank eligible. Of the cover assets, 90% were USD denominated followed by NOK and EUR. The 10 largest exposures made up 77% of the cover pool and 75% of outstanding loans had a LTV below 40%. Covered bonds issued out of this capital centre are all EUR denominated.

Loans in both capital centres are in general amortising floating rate loans.

Table 41. Cover pool info –Capital Centre A

Capital Center A	DKK10.7bn
WA Indexed LTV	35.5% LTV
Over-collateralisation	20.2%
Interest-only mortgages	0%
Fixed-rate loans	3.5%
Currency	DK, EUR, USD
- Denmark	15%
- Norway	8%
- Greece	34%
- Germany	7%
- United Kingdom	22%
- Other area	14%
Asset type	
- Ships*)	100%

** Excluding substitute assets*

Source: ECBC template Q1 20 from Danmarks Skibskredit

Table 42. Cover pool info –General Capital Centre

General CC	DKK42bn
WA Indexed LTV	50%
Over-collateralisation	20.3%
Interest-only mortgages	0%
Fixed-rate loans	8%
Currencies	DK, NO, GR, SEK, USD, EUR
- Denmark	25%
- Norway	13%
- Greece	32%
- United Kingdom	10%
- Germany	3%
- Other area	17%
Asset type	
- Ships*)	100%

** Excluding substitute assets*

Source: ECBC template Q1 '20 from Danmarks Skibskredit

4. Ratings

The Danish covered bond legislative framework is recognised as among the strongest in the world. In particular, the almost non-existent market risk, eliminated by the balance principle, is a major advantage for traditional Danish covered bonds.

Ratings include capital centres and classification

Danish mortgage banks have a number of different capital centres and the covered bond ratings from S&P, Fitch and Moody's are by capital centre and classification (RO/SDO/SDRO/JCB(SSB)). For example, Realkredit Danmark's SDRO covered bonds issued out of Capital Centre S are rated 'AAA' by S&P and Scope. This also applies to the SDRO bonds in Capital Centre T. Realkredit Danmark's Section 15 senior debt (junior covered bonds), issued out of capital centres S and T, is rated 'AA-' by S&P.

Ratings by Standard & Poor's (S&P)

All the major Danish mortgage banks, such as Realkredit Danmark, Nykredit, Nordea Kredit, Jyske Realkredit and DLR Kredit, have 'AAA' ratings with 'Stable outlook' on the most traded capital centres. According to S&P's rating methodology, Danish covered bonds have a systemic importance and a jurisdictional support assessment of 'Very Strong'.

Danish mortgage institutions are exempt from the Bank Recovery and Resolution Directive (BRRD) due to their non-deposit taking nature but are still required to maintain a debt buffer equivalent to 2% of their unweighted loans. For more information on the debt buffer, see Chapter 2. S&P removed all uplift from government support in its ratings of Danish banks in July 2015, following the implementation of BRRD in Denmark. This meant it removed two notches of uplift for Nykredit, placing the issuer rating on 'Negative outlook'. Instead of lowering the rating from 'A+' to 'A-', S&P kept the rating on 'A' due to a one-notch uplift from additional loss absorbing capital (ALAC) based on the assumption that Nykredit would defend this uplift by issuing around EUR2-3bn of new ALAC-compliant debt. S&P put the rating on negative outlook, as Nykredit was required to have this in place in 2017 at the latest. Nykredit successfully issued a total of EUR1bn of senior resolution notes in 2016 (EUR500m in May 2016 and EUR500m in July 2016) and EUR800m of Tier-2 debt in November 2015. As a result, S&P changed the outlook for the Nykredit issuer rating to 'Stable outlook' on 8 July 2016. Nykredit issued additional EUR0.8bn of senior resolution notes in 2017 (EUR500m in March 2017 and EUR300m in June 2017) and a further EUR2bn of senior non-preferred debt (SNP) in 2018, 2019 and 2020. In November 2019 S&P upgraded Nykredit's issuer rating to 'A+' and 'stable outlook' following the rapid build-up of additional loss-absorbing capital. In May 2020 the Danish FSA de facto moved forward the implementation date of BRRD II effectively lowering the subordination requirement for Danish banks and thus also the need for SNP issuance in 2020.

As was the case with Nykredit, DLR Kredit was also put on 'negative' outlook in 2015 due to the implementation of BRRD reflecting the possibility that S&P might remove one notch of uplift from government support. DLR Kredit has also issued senior resolution notes starting in 2017 pursuant to the debt buffer requirement. In June 2017, DLR Kredit issued EUR1bn in a DKK-denominated bond and has issued further DKK3-4bn in years after to meet the debt buffer requirement of 2%. Currently, DLR outstanding amount of SNP is DKK5.7bn with stable rating at BBB.

S&P put the outlook for Realkredit Danmark's JCB programme on 'negative' in October 2018 following a similar action two month earlier regarding the outlook of Danske Bank's senior unsecured debt issuances due to the at the time ongoing money laundering case. As of June 2020 RD has DKK 4bn loan from its parent group outstanding with the loan being used primarily to comply with over-collateralisation requirements in capital centre T. In December 2019 S&P confirmed the rating and outlook of capital centre S as 'AAA' and 'stable outlook'. As of December 2024 RD has DKK 0bn senior secured debt and DKK2 bn in senior unsecured debt in capital centre T.

The last rating update by S&P for Nordea Kredit took place in December 2017, when its rating of capital centre 2 was kept unchanged at 'AAA' with a 'stable' outlook.

Table 43. Ratings by Standard & Poor's

Capital centre	Classification	Rating (ICR/ covered bond)	Outlook	WAFF	WALS	Target CE	Actual CE	Unused notches of uplift
Realkredit Danmark		A+	Stable outlook					
Capital Centre S	SDRO	AAA	Stable outlook	13.1%	30.5%	4.04%	7.37%	4 notches
Capital Centre S	JCB	AA-						
General Capital Centre	Grand RO	AAA	Stable outlook					
Capital Centre T	SDRO	AAA	Stable outlook	16.2%	33.4%	4.51%	7.06%	3 notches
Capital Centre T	JCB	AA-						
Capital Centre A	SDRO	N/A	N/A					
Danske Bank		A+	Stable outlook					
Register C	SDO	AAA	Stable outlook	25.19%	40.4%	38.95%	21.96%	0 notches
Register D	SDO	AAA	Stable outlook	12.03%	36.10%	12.3%	9.59%	2 notches
Register I	SDO	AAA	Stable outlook					
Nykredit Realkredit		A+	Stable outlook					
Capital Centre C	Grand RO	AAA	Stable outlook					
Capital Centre D	Grand RO/ New RO	AAA	Stable outlook					
Capital Centre D	JCB	AA	Stable outlook					
Capital Centre E	SDO	AAA	Stable outlook					
Capital Centre G	New RO	AAA	Stable outlook					
Capital Centre H	SDO	AAA	Stable outlook					
Capital Centre H	JCB	AA	Stable outlook					
Capital Centre I	New RO	AAA	Stable outlook					
Capital Centre J	SDO	N/A	N/A					
General Capital Centre	Grand RO	AAA	Stable outlook					
Totalkredit CC C	Grand RO	AAA	Stable outlook					
Nordea Kredit		AA-	Stable outlook					
Capital Centre 1	Grand RO	AAA	Stable outlook					
Capital Centre 2	SDRO	AAA	Stable outlook					
Jyske Realkredit		A+	Stable outlook					
Capital Centre B	Grand/New RO	AAA	Stable outlook	28.45%	48.58%	13.88%	13.05%	1 notch
Capital Centre E	SDO	AAA	Stable outlook	14.93%	35.08%	3.40%	6.44%	2 notches
General Capital Centre	Grand RO	AAA	Stable outlook	18.18%	39.59%	23.03%	27.34%	2 notches
DLR Kredit A/S		A-	Stable outlook					
Capital centre B	SDO	AAA	Stable outlook	27.62%	57.72%	9.21%	12.67%	2 notches
Capital centre B	SSB	N/A	N/A					
General Capital Centre	Grand RO	AAA	Stable Outlook	32.96%	39.12%	13.02%	13.00%	1 notch
Danmarks Skibskredit		BBB+	Stable outlook					
Capital Centre A	SDO	AA-	Stable outlook	-	-	-	-	0 notches
General Capital Centre	SMB	AA-	Stable outlook	-	-	-	-	0 notches

Grand. RO: Grandfathered RO bonds issued before 2008; New RO: RO bonds issued after 2007; SMB: Ship Mortgage Bond.

Source: Standard & Poor's, Danske Bank

The issuer credit rating of Jyske Bank was raised to ‘A’ from ‘A-‘ in October 2019 due to an increased ALAC-buffer providing meaningful protection to senior creditors in a resolution scenario. On July 2023, S&P raised its credit rating on Jyske Bank to 'A+' from 'A'. At the same time, we affirmed our 'A-1' short-term issuer credit ratings on both entities. The outlook on both entities is stable. Jyske Bank issue ratings on long-term senior unsecured instrument was also raised to 'A+' from 'A' and affirmed our ratings on all other instruments, including senior subordinated and other hybrid issue ratings. The upgrade reflected expectation that Jyske's materially and sustainably increased its buffer of bail-inable debt instruments, providing additional protection to senior preferred creditors. The rating on capital centre E has been confirmed at ‘AAA’ with ‘stable’ outlook.

Danmarks Skibskredit’s issuer and covered bond rating were revised from ‘negative’ to ‘stable’ in 2019 and has not changed since. In January 2025, Danish Ship Finance's covered bonds were upgraded to 'AA- (Stable Outlook)' by S&P. Furthermore, DSF ship covered bonds are now also qualify for Level 1B liquid assets if their outstanding volume exceeds EUR 500 million, and the bonds are now on par with the Danish AAA-rated covered bond market in terms of risk weights and LCR under CRR. The upgraded is positive for pricing and is rooted in low historical losses and solid capital requirements.

DLR has been rated by S&P since 2012 and has since May 2017 had an Issuer Credit Rating (ICR) of ‘A-‘.

S&P defines the WAFF as the weighted-average foreclosure frequency. The foreclosure frequency is a loan’s probability of default leading to foreclosure. The estimated foreclosure frequency is a function of borrower and loan characteristics as well as the economic stress scenario commensurate with a certain rating level.

WAFF: weighted-average foreclosure frequency

WALS is the weighted-average loss severity. The loss severity quantifies the loss realised as a result of foreclosure. The expected loss is predicated on assumptions about the potential decline in the market value of collateral that may secure the asset, as well as the expenses incurred in foreclosing on and reselling the property, considering an economic stress scenario, commensurate typically with a certain rating level. The WALS is generally higher in Denmark than the average for the rest of Europe, which is because of a high share of commercial lending. However, the WAFF is comfortably lower than the European average.

WALS: weighted-average loss severity

Target credit enhancement (target CE) is the amount of over-collateralisation (OC) that is commensurate with the maximum collateral-based uplift.

CE: credit enhancement

Ratings by Fitch

Danske Bank and RD decided in November 2024 to use only S&P and Scope Rating as rating agencies for rating the Danske Bank covered bonds and RD mortgage bonds going forward. As a results, Fitch withdrawn their rating of the bonds in December 2024. Historically, the only Danish covered bonds rated by Fitch were those issued by Danske Bank and Realkredit Danmark. Danske Bank’s covered bonds issued out of register C, D and I are rated ‘AAA’. Realkredit Danmark’s covered bonds in capital centres S and T were both rated ‘AAA’.

In June 2020 Danske Bank’s and Realkredit Danmark’s issuer ratings were confirmed at ‘A’ with a continued ‘negative’ outlook for Danske Bank, but an increase from ‘negative’ to ‘stable’ outlook for RD. For Danske Bank the ‘negative’ outlook reflects COVID-19 downside risks, whereas RD’s ‘stable’ outlook is attributed to the strong asset quality.

Table 44. Ratings by Fitch

Capital centre	IDR	Outlook	IDR uplift	PCU uplift	Recovery uplift	Relied upon OC	B/E OC	Credit loss	Cushion against IDR downgrade
Danske Bank	A+	Stable							
Nykredit Realkredit	A+	Positive							
Nordea Bank	AA-	Stable							

IDR = issuer default rating, CB = covered bond, D-Cap = discontinuity cap

Source: Fitch, Danske Bank

Nykredit Realkredit received a long-term issuer default rating of 'A' in August 2012 but covered bonds issued by Nykredit are not rated by Fitch. Nykredit's issuer default rating outlook was raised to 'positive' from 'stable' in June 2020 and was upgraded to 'A+' in November 2024 due to improving revenue diversification, driven by strengthened earnings contributions from banking activities and growing revenues from wealth management services. Nordea Bank has a long-term issuer default rating of 'AA-'. Danske Bank was upgraded in 2023 to A+. In December 2024, Fitch affirmed Danske Bank covered bonds issued under Pool C, D and I at 'AAA' with Stable Outlooks and subsequently withdrawn the ratings. Fitch has chosen to withdraw the ratings of the covered bonds for commercial reasons and will no longer provide ratings or analytical coverage of them.

The key rating drivers for Fitch when assessing covered bonds ratings are specified below[23].

Issuer Risk Present (IPR). Covered bond ratings are primarily driven by the long-term issuer default rating (IDR) of the issuing entity. However, an IDR uplift of up to two notches can be assigned to programmes in jurisdictions with resolution frameworks where bonds or secured debt are exempt from bail-in (as is the case in Denmark). This applies in jurisdictions where Fitch believes payments on covered bonds will continue to be made even if the issuer has defaulted on its senior debt.

Payment Continuity Assessment (PCU). Payments must be made in a timely manner despite asset/liability mismatches and thus the issuer must have a strong liquidity position. The PCU is expressed in notches above the IDR and, adjusted for the IDR uplift, from zero to eight.

Resolution uplift (RU). The resolution uplift depends on the amount of bail-in-able debt issued by the covered bond issuer. Since specialist mortgage banks are exempt from MREL the bail-tool is not applicable here and no resolution uplift is therefore assigned.

Credit for Recoveries Given Default (CRGD). If the outstanding covered bonds default Fitch assumes expected recoveries based on a tested PD rating basis. Up to two notches of uplift can be generated.

OC Protection. The main source of credit enhancement and can be expressed as an asset percentage (AP). Fitch determines the level of OC or AP and compares that with a break-even OC or AP for a given rating. Depends on CRGD and PCI.

Asset Stresses (AS). The credit risk of cover pools is analysed and stressed in line with asset-specific covered bond criteria.

Cash Flow Stresses (CFS). A cash-flow model depending on NPV calculations determines the level of OC that supports timely payments in a given scenario. Stresses include prepayments, changes to refinancing spread levels, fees and changes in interest and exchange rates.

[23] See Covered Bonds Rating Criteria – Fitch (2019).

The covered bond rating can exceed the IDR of the issuer and the total number of uplifts correspond to the sum of the IDR uplift, PCU and the recovery uplift (RU).

The rating of a cover pool is broken down into two steps: (1) determining the maximum achievable rating and (2) asset and cash-flow stress-testing and OC.

(1) Consists of determining the IDR and subsequently the IDR uplift. The IDR uplift can as mentioned be up to two notches if covered bonds are exempt from bail-in. The exact determination of the number of notches depends on the amount of junior debt outstanding or other buffers available at a holding company level and whether the IDR of a potential parent is dependent is support-driven. Zero notches are attached to specialised mortgage lenders that form part of a broader banking group and are not operationally integrated with the parent.

The uplift from PCU depends mainly on the issuer's liquidity unless other risks constitute a larger threat to payment uncertainty. The standard amount of PCU notches of uplift is 8 if the programme is a pure pass-through. Note that not all PCU notches are always used in the rating analysis.

Lastly, regarding the recovery uplift this can generate up to two notches if the tested rating on a PD basis is investment grade. Not all notches of recovery uplift are always used. Fitch regards cover pools collateralised by mortgage loans as being able to secure at least one notch of uplift. However, the recovery uplift is limited to one notch if Fitch identifies material downside risk to recovery expectations for example due to FX risk. This could apply even to some hedged programmes. Again not all recovery notches of uplift is always used.

(2) Consists of cash-flow modelling, ALM losses, credit losses, recovery given default and break-even OC or AP for the rating.

The cash-flow model is used to determine the level of OC that supports timely payment in a given stress scenario. It assumes that the cover pool becomes static under the case of a third party starting from a simulated date. The model assumes that no further issuance is made.

The ALM loss measure relies on two main aspects: the first addresses the impact of interest-rate and FX movements on the NPV of assets and liabilities (NPV difference). The second (loss on sales and reinvestment loss) addresses the impact of maturity mismatches between the cover assets and the liabilities.

Expected credit losses are modelled with parameters depending on the nature and geographical location of the underlying assets or obligors. The credit loss is the percentage equalising the outstanding covered bonds with the cover pool net of stressed losses under the assumption of an OC of 0%.

The OC protection is the OC that can be relied upon as compared with the break-even OC, which Fitch determines. The level of OC that can be relied on depends on legally enforceable OC requirements and any targeted OC levels that the issuer has published.

Ratings from Moody's

Moody's was the first ratings agency to rate a Danish mortgage bank more than a decade ago. However, over the past couple of years a large number of Danish mortgage banks have ended their collaboration with Moody's following a general reassessment of the Danish banking system, which led to a range of ratings actions. In addition to taking action on current ratings and rating outlooks, Moody's raised its current over-collateralisation requirements for the various mortgage banks. The many increases in over-collateralisation requirements, which could lead to current ratings being downgraded, caused investor jitters, and following the Timely Payment Indicator (TPI) revision in 2011, some Danish mortgage banks decided to end the collaboration with Moody's.

The majority of Danish mortgage banks (Realkredit Danmark (RD), Nykredit/ Totalkredit, Jyske Realkredit, Nordea Kredit and DLR Kredit) and Danske Bank have terminated their collaborations with Moody's and Moody's has withdrawn its covered bond ratings. However, Danske Bank still has an issuer rating from Moody's and Moody's has maintained the issuer rating on Nykredit. This is an unsolicited rating determined by Moody's without access to Nykredit's management or organisation in general. Nordea Bank is not using Moody for issuer rating. Instead, they are using Moody's rating for senior debt, where Moody's Ratings affirms its rating on Nordea Bank on 'Aa3' in May 2024 and changes outlook to positive from stable due to its diversified regional footprint in the Nordic region, healthy asset quality and robust capital.

Moody's changed the outlook for the Danish banking system to negative in June 2020 following the COVID-19 crisis also affecting the outlook for Danske Bank's issuer rating.

Nordea Kredit solicited the rating of Moody's until 1 April 2020 after which the ratings of capital centres 1 and 2 were withdrawn in June 2020 by Moody's. Danmarks Skibskredit, no longer solicits ratings from Moody's as of February 2016.

TPI leeway and collateral score

TPI leeway determines how far an issuer's rating can be downgraded without affecting the covered bond rating. The collateral score is Moody's opinion of how much credit enhancement is needed to protect against the credit deterioration of assets in a cover pool in order to reach a theoretical 'Aaa' based on expected loss, assuming those assets are otherwise unsupported. The higher the credit quality of the cover pool, the lower the collateral score.

Table 45. Ratings by Moody's Investor Service

Capital centre	Classification	Rating (Issuer/covered bond)	Outlook	TPI	TPI leeway	Collateral score	Current OC	OC level necessary to maintain current rating
Danske Bank		A1	Stable					
Nykredit		A1u						

Source: Moody's, Danske Bank

Moody's (like S&P and Fitch) has also amended its rating criteria following the agreement on the draft EU directive in spring 2014 on bank resolution, so that it now takes into account that covered bonds are exempt from bail-in, while senior unsecured debt is not; thus putting covered bonds at a relative advantage to senior unsecured bonds, which Moody's deems should also be reflected in its ratings. The most significant change in the rating methodology is how the anchor for the covered bond rating process is now determined. Moody's refers to the covered bond anchor as '*the probability of a covered bond anchor event occurring. A covered bond anchor event occurs when the issuer, or another entity in the issuer group that supports the issuer, ceases to service the debt obligations under the covered bonds'.*

5. Bond types

Danish covered bonds are secured by mortgages on residential, commercial and public property. Persistent demand in Denmark for mortgage finance has rendered the Danish covered bond market among the largest in the world and mortgage finance has to some degree lowered the need for corporate bond issuance. As of December 2024, the volume of Danish covered bonds (denominated in DKK and EUR) issued by specialist mortgage banks stood at DKK3380bn (EUR456bn).

Bonds are issued against mortgages on residential, commercial and public property

Table 46. outstanding amount of Danish bonds (DKKbn)

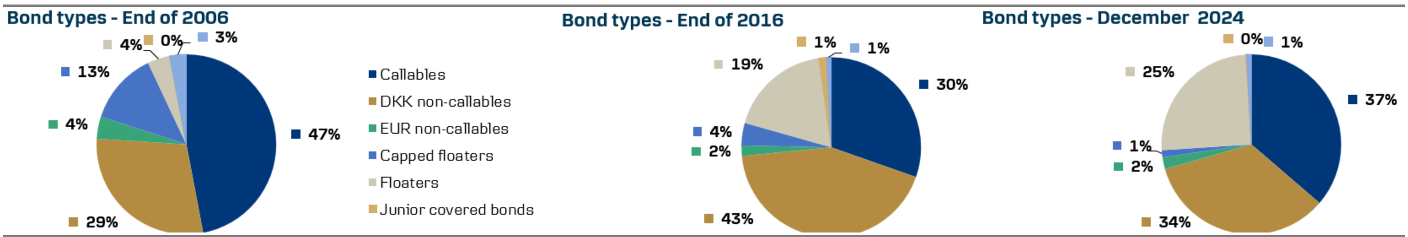
	End 2012	End 2016	End 2020	End 2024	Jan. 2017
Government bonds	**586.9**	**579.3**	**555.6**	**612.6**	617.9
T-bills	44.7	30.9	85.7	4.7	33.7
Mortgage bonds	**3,218**	**3,066**	**3,254**	**3.380**	**2,778.8**
- Callable annuities	654.8	909.7	1321.3	1189.3	2,778.8
- Non-callable bullets*)	1,894.5	1,298.0	1,133.5	1,132.0	2,778.8
- Floaters*)	308.1	626.4	642.2	901.5	2,778.8
- Capped floaters	212.0	129.1	64.0	42.0	

** Only DKK. Limited amounts in EUR*
Note: Not including government guaranteed bonds
Source: Danmarks Nationalbank, Danske Bank

The covered bond market in Denmark has experienced a rapid and profound transition over the past decade. Traditionally, callable annuity bonds dominated, mirroring the dominance of callable fixed rate mortgage loans in the Danish property market. Non-callable bullet bonds were introduced to fund interest-reset loans, which were launched in 1996. Since then, a sustained demand for interest-reset loans has shifted the Danish covered bond market to such an extent that non-callable bullet bonds as at the end of 2016 made up almost 43% of total market volume (see Chart below) and as of December 2024 around 34%.

Innovation in recent years

Chart 14. Volume of Danish bonds



Source: Danske Bank

The mortgage banks introduced a line of products in 2004 that were funded by issuing capped floaters or floating-to-fixed covered bonds. In 2005, FLTs without a cap were introduced, targeting corporate clients, and in 2007 FLTs with a ratchet coupon ('RenteDyk') were launched.

Today, floating-to-fixed bonds and 'RenteDyk' are no longer issued by the mortgage banks and the outstanding amount on the existing series is limited. Also, the issuance of capped floater bonds has decreased in recent years and currently only Nykredit and Jyske Bank offers capped floating rate loans (note that Jyske Bank funds capped floating rate loans through Jyske Realkredit's issuance of non-capped floaters). Instead, the issuance of floating rate covered bonds (FLTs without a cap) has increased in recent years and made up 4% of the market in 2006, 19% in 2016 and 34% in 2034 largely at the expense of non-callable bullet bonds. This mirrors the mortgage banks' efforts to decrease refinancing risks following the introduction of the supervisory diamond in 2014 as well as increased focus from rating agencies.

Also, the share of callable annuities has in general been increasing the past years following new legislation (supervisory diamond, limited loan choices for risky borrowers etc.) and flat yield curves making it fairly cheap to pay a fixed rate as compared to a variable one, again at the expense of non-callable bullets.

Table 47. Bond structures

	Callable annuity bonds	Non-callable bullet bonds	Floaters/capped floaters
Interest payments	Quarterly	Annual	Quarterly
Repayment	Annuity or interest only	Bullet	Annuity or interest only
Coupon	Fixed	Fixed	Floating, capped
Currency denomination	DKK	DKK or EUR	DKK, EUR, SEK or NOK
Maturities	10, 15, 20 and 30 years	1-11 years	1-5 years (some capped +5Y)*)
Issuance	Tap	Tap or auction	Tap or auction
Opening period	3 years	Closes 3M prior to maturity	Closes 2m prior to maturity

*Source: Danske Bank. *) New issuance primarily takes place in maturities no longer than 5 years.*

Callable annuity bonds

Largest part of mortgage banking market

Callable annuity bonds are unique to the Danish covered bond market. Traditionally, callable annuity bonds were the only type of bonds issued in the Danish covered bond market, but the introduction of new products has expanded market diversity.

Payment dates and maturities

Originally, this type of bond had two payment dates per year but four has been the norm since 1985. Standard payment dates are 1 January, 1 April, 1 July and 1 October. Maturities are primarily 10, 15, 20 or 30 years.

Call option

Callable annuity bonds are fixed rate bonds with an embedded call option. The embedded call option enables borrowers to prepay their loan at par at each payment date during the duration of the loan.

Payment profiles and IOs

Traditionally, all callable loans were issued as annuity loans (level-pay loans). Annuity loans amortise with equal payments consisting of principal and interest but the amount of principal repaid increases over time, while the amount of interest decreases. In 2003, deregulation enabled mortgage banks to offer borrowers interest-only (IO) payments for up to 10 years. In theory this opened up for borrowers being able to turn on and off IO periods throughout the life of the loan – an option which was introduced by some mortgage banks. Today, however, mortgage banks only offer IO loans where the IO-period must be placed during the first 10 years of the loan. Callable annuity loans with an interest-only option are funded in separate callable bond series (interest-only hybrids) and since IO loans are only offered in the 30y segment so are the bonds. Issuance is split c. 60/40 between ordinary and IO annuities and price spreads are typically below one price point in favour of the ordinary bond. Note that the IO periods are to be understood as *up to* ten years meaning that ordinary annuity loans can be issued in IO series if the ordinary annuity bond is trading above 100.

30y IOs

Further, following the change to the mortgage legislation in 2007, it became possible through the issuance of SDOs/SDROs to fund loans secured on any of the types of assets where an up to 80% LTV limit is normally applied (see table 6) with a longer than 10 year IO period. However, only if the LTV is below 75% (this also includes potential second lien claims such as bank debt)[24]. This means that mortgage banks since 2007 has been able to offer *up to* 30y IO loans, but until 2020 30y IOs was not offered with a fixed rate (apart from a short period in Nordea in the early 2010s) and was only available from RD, JYSK and Nordea as interest-rate reset loans and from Nykredit as floating rate loans (also with a cap). This changed when first RD and subsequently Nordea, Nykredit and Jyske Realkredit introduced the fixed rate equivalents of the above products. The *up to* 30y IO fixed rate loans are funded using separate callable bond series (see the below details for more). All of the mortgage banks require that at the end of the 30 years the loans observe a LTV of no more than 60% and Nordea even requires this at the time of disbursement, whereas in both RD, Nykredit and Jyske Realkredit it is possible to enter into the product if observing an LTV below 75% for then subsequently to start repayments until an LTV of 60% is reached.

Table 38. IO30 loan offerings.

Issuer	RD FlexLife	NDA Frihed30
Maturity	20 to 30 years.	20 to 30 years.
IO period	Up to 30 years.	Up to 30 years.
LTV	A maximum of 60% at an agreed upon point in time (however, up to an individual assessment as well) and 75% at the time of disbursement (including any second lien claims).	A maximum of 60% at the time of disbursement (including any second lien claims).
Repayments	Possible to turn on and off any repayments against a fee each quarter also if LTV>60% as long as it is deemed likely that the borrower will end up with a LTV of <60% before an agreed point in time. Borrowers will have to start repayments if the LTV is above 75% two years in a row.	Not possible to turn on and off repayments. The loan is solely an IO offering up until the IO period is agreed to expire after which the loan will have to be amortized before the agreed upon final maturity. Borrowers cannot be required to start repayments dependent on a LTV level.
Current bond	4'56io30 (DK0004629425)	4'56io30 (DK0002060086)

Issuer	NYK Fastrente+	Jyske Frihed Fast Rente
Maturity	20 to 30 years.	20 to 30 years.
IO period	Up to 30 years.	Up to 30 years.
LTV	A maximum of 60% at an agreed upon point in time (however, up to an individual assessment as well) and 75% at the time of disbursement (including any second lien claims).	A maximum of 60% at an agreed upon point in time (however, up to an individual assessment as well) and 75% at the time of disbursement (including any second lien claims).
Repayments	Possible to turn on and off any repayments against a fee each quarter if LTV<60%. Borrowers will have to start repayments if the LTV is above 75% two years in a row.	Possible to turn off any repayments against a fee each quarter also if LTV>60% as long as it is deemed likely that the borrower will end up with a LTV of <60% before an agreed point in time. Borrowers will have to start repayments if the LTV is above 75% two years in a row.
Current bond	4'56io30 (DK000954594)	4'56io30 (DK0009414419)

Source: Danske Bank

Ordinary repayments

Borrowers' interest payments and redemptions made on the payment dates are distributed to investors in accordance with the percentage of bonds drawn so that any investor's holding in a given bond series corresponds to the overall percentage of bonds drawn in that series. The amount is rounded to the nearest øre (DKK0.01) for bonds denominated in Danish kroner and euro cents for bonds denominated in euro. The amounts of bonds drawn are published on the publication date.

[24] Through an introduction of section 33(c)2 in the Mortgage-Credit Loans and Mortgage-Credit Bonds Act.

Pools

There is no direct link between the borrower and the investor in the sense that the investor does not buy a bond in the name of a specific person or property. The pool of borrowers in a bond series may consist of both private and corporate borrowers. The repayments at one payment date are the sum of the redemptions from all borrowers in the pool. Every month the mortgage banks publish the borrower distribution of each bond series to enable investors to predict prepayment behaviour.

Opening period

Callable bond series are open for issuance for a period of three years[25], e.g. between 1 September 2020 and 31 August 2023 all 30-year loans were financed through the issuance of bonds maturing in 2053 and all 20-year loans by bonds maturing in 2043. When the bond series with maturity 2043 and 2053 closed for issuance as of 31 August 2023, new callable fixed rate loans are issued in new bond series with maturity 2046 and 2056. On account of this opening period and the possibility of taking a loan with a shorter maturity than the bond's maturity, the actual cash flow on a bond is not equivalent to the theoretical cash flow of a callable bond. Hence, the calculation of key figures on bonds requires information about the actual cash flow. After each payment date, the mortgage banks supply these figures to the OMX Nordic Exchange.

Par rule

Mortgage banks have agreed not to offer callable loans based on bonds priced above par, referred to as the par rule, to avoid arbitrage from borrowers simultaneously disbursing a loan at a price above par and prepaying the loan at par. Note, however, that while a loan *offer* cannot be made to borrowers in a bond series trading above par, the actual disbursement and subsequent tap can happen in bond series trading above par at the time the loan is granted as loan offers can be outstanding for up to six months. However, if a borrower with a loan size above DKK 3M obtains a loan in a bond series trading above 100 the borrower cannot prepay for the following 12 months. The opening period of a bond series may therefore be shortened if bond prices exceed par but the bond series will be reopened for issuance if the price falls below par again.

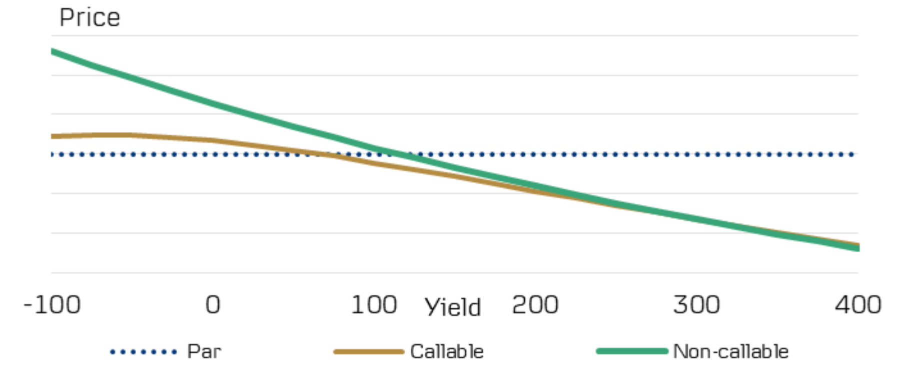
Mortgage banks generally only offer loans in series trading fairly close to but below par due to the pull-to-par effect and risk of a sudden fall in interest rates. If a loan is offered in bonds trading far below par the pull-to-par effect will over time imply that the borrower could become technically insolvent as the LTV would mechanically increase. The same would happen if interest rates were to suddenly fall massively – as the bond would effectively have a 10 to 15 year duration LTVs would increase requiring the mortgage bank to fund supplementary collateral. If the bond trades close to par even markedly lower interest rates would not change the LTV by much due to the negative convexity around these price levels following from the callable feature.

Pricing callable bonds

The traditionally positive convex relationship between the level of interest rates and the prices of traditional bonds is not directly applicable to callable bonds. The reason is that a callable bond can be considered as a portfolio of a non-callable bond and a sold option to repay the bond at par. As interest rates decline and the price of the bond rises above par, the value of the option will rise (see the chart below).

[25] The opening period can in certain circumstances be shorter or longer than three years, e.g. in connection with implementation of the new Mortgage Act in July 2007, the 2038 bond series was closed early and the opening period for the 2041 series was extended to almost four years.

Chart 15. The price of a callable and non-callable bonds



Source: Danske Bank

Compared with a non-callable bond, the price is kept down when interest rates decline, as debtors are likely to start repaying the bond at par. When a bond becomes extremely exposed to prepayments, the price will fall when interest rates fall. Conversely, these bonds may offer a defensive investment alternative for investors who expect increasing interest rates.

Non-callable bullet bonds

Interest-reset loans and non-callable bullet bonds

Non-callable bullet bonds are fixed rate bonds with a single annual payment on 1 January, 1 April, 1 July or 1 October. Nykredit and JYSK are currently the only Danish mortgage bank to issue non-callable bullet bonds with an annual payment on 1 July, but JYSK only has short-run bonds in this segment. Maturities range from one to 11 years, with emphasis on the one- to five-year segments (the share of +5 year maturities that are LCR level 1B is limited). The characteristics of the bonds mirror those of plain-vanilla Danish government bonds and most European covered bonds.

Non-callable bullet bonds were introduced to fund interest-reset loans (‘FlexLån’) first launched by Realkredit Danmark in 1996. Since then, sustained demand for interest-reset loans has been recorded, leading to a profound transition of the Danish covered bond market from callable issues to non-callable issues. As at end-2020, non-callable bullet bonds made up around 39% of total market volume in the Danish covered bond market.

The popularity of interest-reset loans is *inter alia* attributable to the great flexibility they offer to borrowers. The borrower may choose between more than 20 different interest-reset profiles, though all of these are funded by issuing a single range of bonds.

Payment dates and maturities

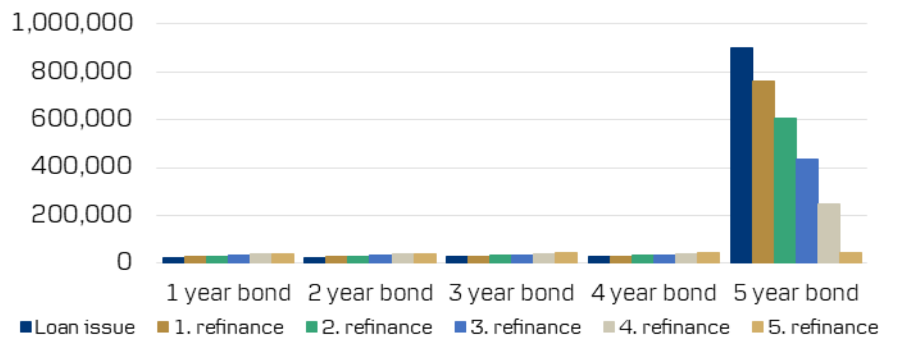
Interest-reset loans are offered as 10-, 15-, 20- or 30-year loans. The borrower can choose to make repayments on a loan four or 12 times a year. The one- to 11-year non-callable bullet bonds that fund the loans have one interest payment a year, on 1 January, 1 April, 1 July or 1 October. Each year, when the shortest bond matures, a new 11-year bond is opened.

Annuity loans based on bullet bonds

As is the case for callable bonds in Denmark, the majority of loans that are interest-reset are repaid in accordance with the ordinary annuity or annuity with an interest-only option. As the bonds funding the loans are not annuities but bullet bonds a loan is funded by (in case of match funding) issuing a portfolio of bullet bonds.

Example: In Chart 3 below the funding profile of a 5Y interest-rest profile is shown. Consider a borrower in December 2024 applying a mortgage from RD[26]. At the date of disbursement issuance is made in 5 different bond series: Jan'26, Jan'27, Jan'28, Jan'29 and Jan'30 (the borrower refinances in Jan'30). At issuance the fixed cash rate paid until Jan'30 is an unknown (unless the yield curve out to 5Y is perfectly flat), which must be solved for (the mortgage banks uses an algorithm to decide this but will in principle be very close to the yield on the Jan'30 bond). The constraints in the solving routine are: (1) the funds obtained must be equal the value of the loan, (2) the notional principal on the Jan'30 bond must be such that the sum of coupon payment and repayment of principal from the mortgage bank to bond investors on 1 January 2030 equals the sum of the remaining principal on the loan and any interest rate payments and principal repayments during the preceding 12M and (3) the combined coupon and principal repayments at each payment date must equal the preceding 12-month interest rate and principal payments on the loan. Due to the shorter than 5Y cash-flow the yield level will be slightly lower than the yield on the 5Y bond. Note that the above routine must be conducted also for IO loans since the interest payments from the loan must be matched by a cash outflow.

Chart 16. Funding profile of 30Y annuity loan based on a 5Y interest-reset profile



Source: Danske Bank

Increasing issues in interest-reset loans funded by longer maturities

Since the launch of FlexLån in 1996, the most popular profile of the loans has been the loan funded by the one-year bond. In the period with negative interest rates, an increase in demand for loans funded by bullet bonds with longer maturities was recorded, increasing the volume of bonds with three- and five-year maturities substantially. However, as rates increased in 2022, we return back to normal with larger supply in 1Y bonds.

Interest-reset with payment dates 1 January, 1 April, 1 July and 1 October

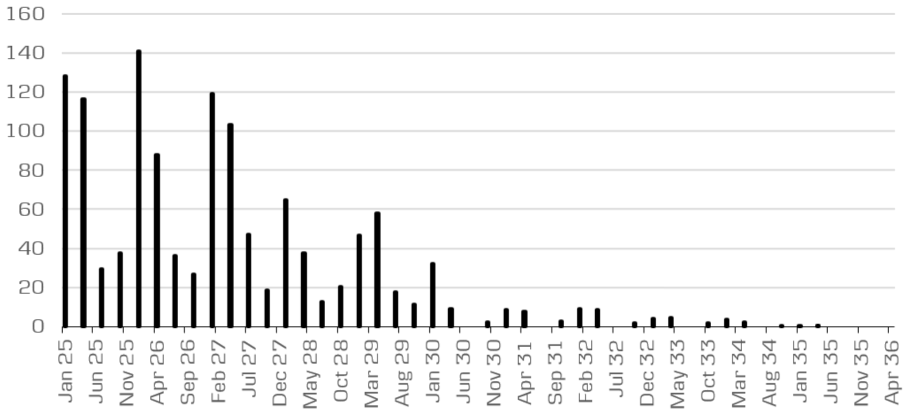
The payment date of the interest-reset loan has traditionally been 1 January, with a refinancing auction in December. However, as the outstanding amount for interest-reset loans increased quite significantly and hence the auctioned amount at the December auction, a need to limit the increasing auction size of the December auction arose. Since 2005 Nykredit has offered borrowers interest-reset loans with payment dates of 1 April and 1 October and since February 2013, Nykredit has been offering interest-reset loans with a payment date of 1 July. In 2010, Realkredit Danmark, Jyske Realkredit, Nordea Kredit, DLR and LRF started issuing non-callable bullet interest-reset covered bond series with payment dates of 1 April or 1 October.

The volume of non-callable bullet bonds split by maturity and payment date is indicated in the charts below.

[26] RD currently funds new 5Y interest-reset loans in January maturities – this was changed from April in October 2019 in order to limit the refinancing risk at a single term.

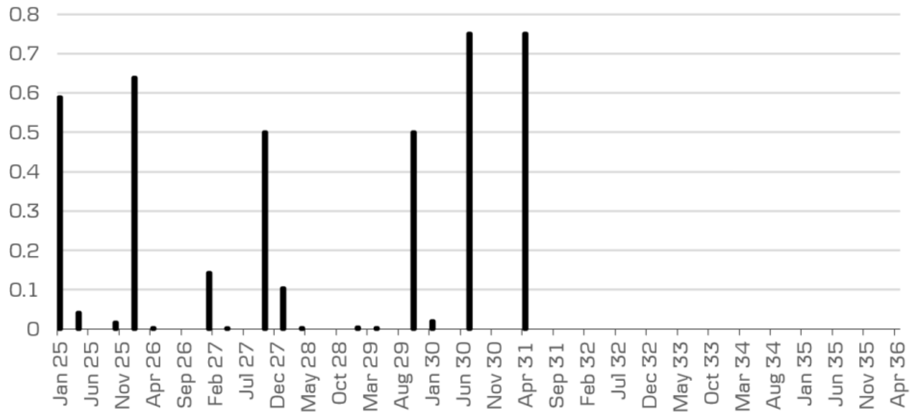
As is the case for all covered bonds in Denmark, there is no separation of the borrowers in a security code. This means that a borrower can be either a private or a commercial borrower. However, there are restrictions in Danish legislation as to which maturity and repayment profiles can be offered in the various segments (see Chapter 2).

Chart 17. Maturity profile on DKK non-callables measured by outamt (DKKbn)



Source: Danske Bank

Chart 18. Maturity profile on EUR non-callables measured by outamt (EURm)



Source: Danske Bank

The mortgage banks aim to keep the bond series that fund the interest-reset loans open throughout their maturity.

Refinancing maturing bonds at auction

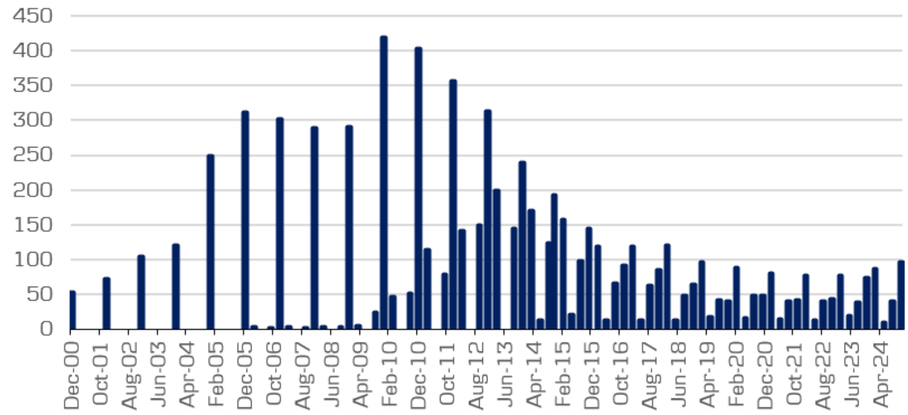
Non-callable bullet bonds are issued on tap throughout the maturity to match loan origination. Bonds maturing on 1 January, 1 April, 1 July and 1 October are refinanced by new bond issues sold at auctions in November, February, May and August, respectively[27]. Due to the success of interest-reset loans, refinancing auctions have grown into one of the most liquid-issuing activities in European covered bond markets.

[27] Due to the LCR requirement the bonds are auctioned more than 30 days before the funds are needed. The bonds sold are settled on the date of maturity of the maturing bonds.

The auctions take place at OMX Nordic Exchange's mortgage-issuing sub-market. The Dutch auction principle and hidden call method are used. Under the Dutch auction principle, all bids above the cut-off price are settled in full at the cut-off price. For bids at the exact cut-off price, proportional allocation is used. All bids below the cut-off price are not settled. Hidden call means the bidders can see only their own bids, while the issuer can see all bids.

The total volume of the refinancing auctions is indicated in the chart below.

Chart 19. Auction supply of non-callable bullet bonds (DKKbn)



Source: Danske Bank.

New mortgage act on non-callable bullet bonds as of 1 April 2014

A new mortgage act was passed as of 1 April 2014, aiming at reducing refinancing risk for borrowers. Under the new law, loans where the underlying bonds are issued with a maturity of up to two years risk the maturity of the underlying bonds being extended if (1) the yield level increases by more than 500bp at a refinancing auction or (2) the mortgage bank is unable to sell its bonds at a refinancing auction (failed auction trigger). Since 1 January 2015, the failed auction trigger has also applied to loans where the underlying bonds are issued with a maturity of more than two years. Read more about the new legislation under 'New legislation addressing refinancing risk' in Chapter 2.

Non-callable bullet bonds denominated in euro

At the commencement of the euro, the Danish mortgage banks launched a euro programme to fund EUR-denominated interest-reset loans. The euro programme was launched on equal terms with DKK-denominated non-callable bullet bonds. Hence, EUR-denominated covered bonds are non-callable fixed rate bullets with maturities from one to 11 years and a single annual payment due on 1 January, 1 April or 1 October.

Government guaranteed non-callable bullets

In November 2017, the law on the financing of government subsidised social housing loans was changed. Subsidised social housing loans are mortgages taken out by social housing unions, where a part of the monthly redemptions are subsidised by the government and prior to 2018 the loans had been funded through mortgage banks' issuance of standard covered bonds with the loan choices being determined by the Ministry of Housing (only Realkredit Danmark, Nykredit and Jyske Realkredit funds subsidised social housing). In the beginning of 2018, there was DKK 180bn outstanding in subsidised social housing loans of which DKK 55bn was inflation-linked – linkers did not become part of the new agreement. However, the government saw a chance to lower the costs of subsidising such lending and so, in collaboration with the mortgage banks, came up with a model including the issuance of government guaranteed non-callable bullet bonds[28]. Hence, starting in 2018 all new subsidised mortgage lending would be funded by issuance of 10 year government guaranteed non-callable bullets and existing loans would be remortgaged into such loans[29]. Mortgage banks pay the government a provision of 0.12% of the notional principal in exchange for the guarantee.

As of June 2020, all callable mortgages had been remortgaged and only DKK25bn of existing interest-reset loans with a 5 year interest-reset period were still outstanding – the total outstanding of government guaranteed non-callable bullets was DKK98bn.

The Danish government has since the change of the law bought all of the government guaranteed issuance. This has been done in order to lower the government's cash deposits with the central bank while at the same time uphold a reasonable issuance of government bonds (the government's cash deposits in the beginning of 2018 were at DKK180bn and thus more than DKK100bn above the target range). Thus, there is no trading activity in this market.

Floating rate/FRNs

Floating-rate loans intended for the corporate market

In recent years, we have seen increasing issuance in floating rate covered bonds (FRNs). The outstanding amount in FRNs amounted to 25% of the total covered bonds issued at the end of 2024, compared with 4% at the end of 2006. Floating rate mortgage loans are issued primarily to corporate borrowers offering a flexible opportunity to change interest rate risk with swaps, but CITA floaters are mostly offered to residential borrowers as CITA swaps do not trade with maturities ranging above two years. We saw a large issuance in CITA floaters in 2022 due to many residential borrowers refinancing from callable loans to floater loan driven by a steep interest rate curve and the fact that borrowers could buy their callable bond to a significant lower price than the face value.

Bond structure

The Danish floating rate covered bond market is very diversified and the bonds have a range of different characteristics (see table below). The majority of floating rate bonds are denominated in DKK or EUR with interest rate fixing against 3M/6M EURIBOR, 3M/6M CIBOR and 6M CITA (6M CITA is the Danish equivalent to the 6M EONIA rate), respectively. However, some bonds are denominated in NOK with interest rate fixing against NIBOR (only RD) or SEK with fixing against STIBOR (NYK and RD).

[28] New capital centres were opened for this purpose in Realkredit Danmark (capital centre A), Nykredit (capital centre J) and Jyske Realkredit (capital centre S).
[29] All new lending (and existing remortgaged debt) will be 30 year loans incl. repayments with a 10 year interest-reset period.

Table 49. Characteristics of floating rate notes (FRNs)

Currency	DKK, EUR, SEK or NOK
Fixing rate	3M/6M EURIBOR, 3M/6M CIBOR, 3M/6M CITA, 3M STIBOR or 3M NIBOR (plus potential interest rate spread)
Cash flow profile	Annuity or bullet
Bond type	RO (20% risk weight), grandfathered RO or SDO/SDRO
Number of terms	2 or 4 terms per year
Interest rate fixing	1-Jan/1-Jul or 1-Apr/1-Oct. or 1-Jan/1-Apr/1-Jul/1-Oct
Fixing date	1st, 2nd, 3rd, 4th, 5th or 6th last banking day of Jun/Dec or Mar/Sep or Mar/Jun/Sep/Dec
Callable?	Callable or non-callable
Coupon multiplier factor	ACT/360 or ACT/ACT
Implied coupon floor	Some floater bonds have an embedded floor on the coupon rates of 0%

Source: Danske Bank.

Coupon multiplication factor

A coupon multiplication is used for some bonds when calculating the coupon rate at the time of fixing. For example, if the fixing is based on 6M CIBOR, the coupon rate is equal to 6M CIBOR multiplied by 365/360. The 365/360 multiplication is to neutralise the differences occurring from deviations in the interest rate conventions in the money market and the bond market; thus making the product suitable for derivatives solutions.

Some FRNs are callable at par

Some floating rate notes issued by Nykredit, DLR and Nordea Kredit are callable at par. Floating rate notes issued by Realkredit Danmark are all non-callable.

RO and SDRO/SDO

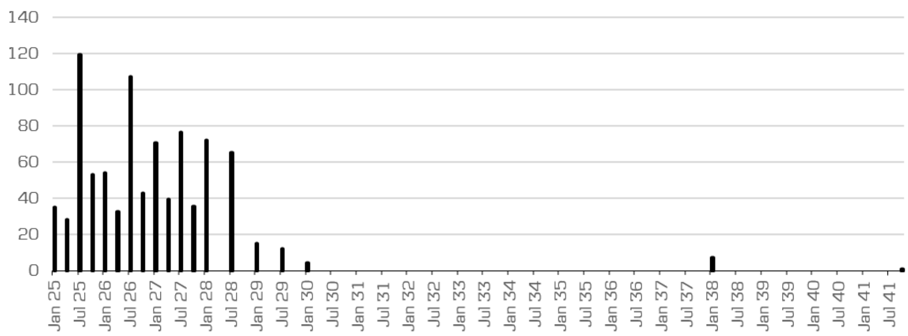
The majority of floating rate bonds are issued as SDO/SDRO bonds. However, some bonds were issued as RO before the implementation of the new Mortgage Act in 2007 and these bonds are grandfathered. There are also new bonds that are issued as RO under the new Mortgage Act. These bonds have a risk weight of 20%.

Embedded floors are phased out except in EUR

Some floater bonds cannot have negative coupon rates and hence the bonds have an embedded coupon floor of 0%. The ‘problem’ of negative coupons appeared for the first time in April 2015 in 3M CIBOR and 6M CITA based issues and all mortgage banks subsequently introduced a de facto floor on floating rate bonds. Thus, floating rate bonds issued before 1 July 2015 generally carry an embedded coupon floor. However, these bonds are almost all matured by now and are refinanced into floaters with no floor and it is currently only in EUR, NOK and SEK floaters where floors are expected to continue to prevail.

Floating rate loans are offered as both annuity loans and bullet loans and the maximum maturity is 35 years. The majority of floating rate notes are issued in the 0- to five-year segment (see chart below), but with few floaters with longer maturies.

Chart 20. Outstanding amount on FLTs December-2024 (DKKbn)



Source: Danske Bank

Green bonds

In April 2019 RD became the first mortgage bank to introduce a green covered bond. The bond funds loans collateralised by commercial property. Nykredit followed in May 2019 (with a DKK and SEK green covered) and Nordea in November 2019 (RD opened a SEK green covered in May 2020 and plans to open a NOK green covered bond at some point in the near future). In 2021 both DLR and Jyske Realkredit said that they would too be opening green covered bond and at the end of 2024 all mortgage institutes have issued Green covered bonds. Currently, approximately DKK90bn is outstanding in DKK green floaters and SEK20bn in SEK green floaters. In 2020, the outstanding amount in both DKK and SEK was below 5bn in respective currencies, indicating that the issuance of green coverds has experienced a massive growth the recent years. Green loans are currently solely offered as floating rate loans, as these loans solely targets a commercial client base. Nevertheless, some mortgage institutions may issue green flex bonds the coming years, while the time horizon on callables is much longer due to the embedded option.

Table 50. Outstanding green covered bonds in DKK

ISIN	Issuer	Maturity	Outstandingamount	Seriestype	Fixing Rate
DK0009405425	BRF	Jul'25	8,100,198,507	SDO	3M CIBOR
DK0009408601	BRF	Jul'25	1,657,766,359	SDO	3M CIBOR
DK0006357744	DLR	Jan'26	5,521,077,572	SDO	6M CIBOR
DK0009539975	NYK	Apr'26	3,946,309,878	SDO	3M CIBOR
DK0009540049	NYK	Apr'26	7,853,799,143	SDO	3M CIBOR
DK0002054279	NDA	Jul'26	8,650,797,299	SDRO	6M CIBOR
DK0004623576	RD	Jul'26	18,589,754,888	SDRO	6M CIBOR
DK0002060672	NDA	Jan'27	7,842,151,789	SDRO	6M CIBOR
DK0009412397	BRF	Jul'27	5,748,344,826	SDO	3M CIBOR
DK0009414682	BRF	Jul'27	1,323,744,411	SDO	3M CIBOR
DK0009546244	NYK	Oct'27	10,705,359,715	SDO	3M CIBOR
DK0004629508	RD	Jul'28	9,371,923,967	SDRO	6M CIBOR

Source: Danske Bank

Handling of negative coupons in floating rate notes

As mentioned above floating rate notes issued today are primarily without an embedded coupon floor meaning that the coupon investors receive can become negative. That can potentially pose a range of issues like for an example what happens if an investor defaults on a negative coupon received? In order to circumvent such issues VP securities offers four models for which negative coupons can be handled towards investors (below we consider an interest-only bond trading at a price of 90 with a notional of 100 and a negative coupon of -1%).

1. The prepayment model at par value. In this model the investor is drawn an extra amount corresponding to the size of the negative coupon at a price of 0. In this case the investor will be drawn 1 (1% times 100) and end up with a notional of 99 after the coupon 'payment'. If the mortgage bank has chosen A. below there is a need for an extra issuance from the mortgage bank in order to balance notional on assets and liabilities. In this instance, the mortgage bank would make a tap in the same bond series with notional of 1.

2. The prepayment model at market value. In this model the investor is again drawn an extra amount corresponding to the negative coupon. However, the amount drawn is now no longer 1 but 1.11 (1%*100/90) and investor will end up with a notional of 98.89. If the mortgage bank has chosen A. below there is a need for an extra issuance from the mortgage bank in order to balance notional on assets and liabilities. In this instance, the mortgage bank would make a tap in the same bond series with notional of 1.11.

3. The liquidity model at par value. In this model investors will not be drawn an additional amount but instead the received payments will be lowered by the size of the negative coupon. So if we assumed there were ordinary repayments on the bond of 2 the payment to investor would be 1. However, as we in this case consider an interest-only bond the liquidity model defaults to the prepayment model at par value.

4. The liquidity model at market value. Same as in 3, however, in this case the model defaults to the prepayments model at market value.

The model chosen by Realkredit Danmark and Nykredit for their floating rate bonds is the prepayment model at par value, where as other mortgage banks have chosen the liquidity model (3 or 4).

Towards borrowers the following two market practices currently exist.

A. Lower the total payment to the mortgage bank. In the example above this would mean that borrowers would receive 1. However, as most borrowers either pay fees and/or repayments on top of interest rate payments, it only happens on very rare occasions that borrowers actually receive cash from the mortgage bank. All mortgage banks except Nykredit have chosen this model.

B. Make an extra redemption on the remaining principal of the borrower. If the borrower has a remaining principal of 100 the negative coupon of -1% means that the borrower's principal will be 99 after the 'payment' of the coupon. Only Nykredit makes use of this model.

In August 2019, Jyske Realkredit opened the first callable bond with a negative coupon (-0.5%) (DK0009398893) for which model 3 was chosen.

Capped floaters

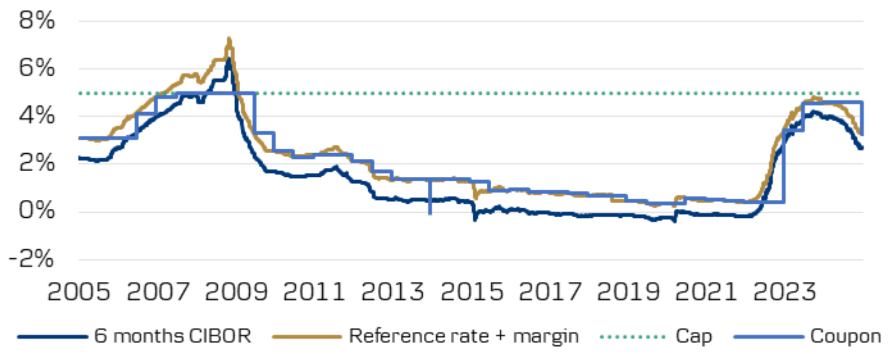
Capped floaters are floating rate bonds with embedded caps applying to the entire maturity of the loans maximised at 30 years. Capped floaters are based on a traditional cap structure in which interest rates are floating for the entire term of the bond, although they are maximised at the cap rate.

Interest rates for DKK-denominated bonds are fixed semi-annually based on six-month CIBOR plus a fixed margin each 1 April and 1 October or 1 January and 1 July. However, interest payments and redemptions fall due on 1 January, 1 April, 1 July and 1 October.

The funding of capped floating rate loans were done in 30Y bonds matching profile of the underlying loans (as is done by the funding of callable loans) until 2014. Since then the funding of capped floating rate loans has been done in bonds with up to seven year maturities, which are then refinanced on an ongoing basis as is the case with FRNs.

Some of the capped floaters issued up until 2014 are callable at 105 for the entire term to maturity. Market pricing of capped floaters has so far suggested that the call premium will be insignificant due to the cap structure rendering market prices substantially above par unlikely. The capped floaters' cap structure is illustrated below.

Chart 21. Capped floaters' cap structure, cap rate 5%



Note: Past performance is not a reliable indicator of current or future results

Source: Danske Bank

Junior covered bonds (section 15 senior debt[30])

Introduced in 2007

[30] Section 33e was changed to section 15 in December 2012. Hence, Junior covered bonds were issued under section 33e in the Danish Mortgage Act before December 2012.

Junior covered bond (JCB) is a bond type introduced into the Danish bond market in connection with the new Mortgage Act in July 2007. Mortgage banks may issue senior debt in order to raise supplementary capital or over-collateralisation requirement for rating purposes. It must be clearly stated in the loan documentation what capital centre the obtained funds are posted into and funds obtained this way must be placed in assets as set out in the Capital Requirements Regulation Article 129(1)a-f and 129(3).

Secured in the cover pool

Section 15 senior debt is secured in the cover pool but is subordinated to ROs and SDOs/SDROs. In the event of bankruptcy, payments to holders of section 15 senior debt will be deferred until senior covered bondholders and counterparties in certain derivatives agreements can be guaranteed payment in full. Also, although section 15 senior debt is collateralised by the entire cover pool, the bonds rank pari passu with senior unsecured debt holders of the mortgage bank in case there is insufficient funds left in the cover pool to pay off both senior and junior covered bondholders. Hence, junior covered bonds are not gilt-edged (‘guldrandet’) and do not fulfil UCITS.

Given that Danish mortgage banks are exempted from bail-in the secondary preferential claim on cover assets will be upheld for section 15 senior debtholders in resolution and can thereby not be converted or written down[31]. This implies that holders of such debt will not experience payment deferral so long as the proceeds from the cover pool are sufficient to meet the payments on the senior covered bond. Hence, the debt class is not suitable to fulfil the debt buffer requirement and it can be expected that the issuance of ordinary senior unsecured debt will partly substitute the need for JCB issuance.

Limited outstanding amount

Nykredit and Jyske Realkredit were the only issuers of junior covered bonds until March 2012, when Realkredit Danmark announced that it had decided to issue junior covered bonds. DLR started to issue junior covered bonds in November 2012. Currently only DLR have issued publicly traded JCBs (under the name Senior Secured Bonds). RD’s outstanding JCB’s matured in 2019 (DKK 6bn), but have since raised DKK 4bn with the parent group in order to fulfil rating agencies OC requirements. This funding is used in Capital Centre T.

Senior debt from a mortgage bank is different from senior debt from a bank

Section 15 senior debt from a mortgage bank can be compared with traditional senior debt from a bank but there are a number of differences.

The proceeds from traditional senior debt from a bank are not placed in the cover pool, even though the bank is permitted to issue SDOs. However, just like a mortgage bank, the bank must top up with supplementary collateral if the value of the assets in the cover pool does not match the value of the SDOs issued.

Direct link to the cover pool

Hence, traditional bank debt has no ‘direct link’ to the cover pool and does not necessarily have to be used to buy assets that can serve as supplementary collateral. There is also a difference in the event of bankruptcy, as investors in traditional bank debt get their money back once the assets of the bankrupt estate have been added up and it can often take several years to settle an estate.

In the table below, we list some of the features that characterise SDO/SDRO and section 15 senior debt from a mortgage bank and traditional senior debt from a bank.

[31] The ‘no-creditor-worse-off’ principle means that holders of section 15 senior debt would be eligible to claim compensation from a resolution fund. They are therefore not suited for bail-in.

Table 51. Characteristics of SDO/SDRO bonds and senior debt

	SDO/SDRO	Senior debt (mortgage)	Senior debt (bank)
Gilt-edged	Yes	No	No
UCITS	Yes	No	No
BIS capital weight	10% or lower	20%	20%
Proceeds from issuance	Funding of home loans	Purchase of assets	No specific requirements regarding use of proceeds
Security in case of bankruptcy	Security in cover pool	Security in cover pool but subordinate to, e.g. SDO/SDRO investors	Subordinate to, e.g. all depositors
Payout in case of bankruptcy	No acceleration of cover pool	After covered bond investors, if there is money in cover pool	Immediately after bankruptcy, if there is money in the estate

Source: Danske Bank

6. Issuing and trading Danish covered bonds

Unlike most other types of bond issuance, which occur through a single auction or series of auctions (tranches), the majority of Danish covered bonds are issued by means of 'taps'. A tap issue refers to an ongoing type of periodic issuance, typically daily, in response to loan origination and refinancing.

Daily tap issuance

Specifically, during the day the funding units of the specialist mortgage banks (Danske Bank and Danmarks Skibskredit do not conduct taps in this way – see issuer profile on Danmarks Skibskredit for more) will provide market makers with a nominal amount and an ISIN for which market makers can make bids or offers – the latter if the mortgage bank intends to buy back some of its own outstanding bonds. This takes place through electronic auction or chat systems. The number of such 'tap auctions' during a single day can easily reach 20-plus for the larger mortgage banks among callables, floaters and non-callables and in the most liquid bonds multiple taps will be conducted in the same bonds at different times of the day. The funding units in each of the mortgage banks can take various amounts of risk, meaning that funding need not to be obtained on the very same day as a loan is originated. However, risk limits are in general very strict and funding will be obtained within a matter of days giving rise to the ongoing tap issuance.

Bonds issued directly to borrowers until the 1980s

Until the 1980s, Danish covered bonds were issued directly to individuals in need of mortgage finance. For example, if a customer needed DKK50,000 to purchase a house, that customer would enter into a borrowing agreement with the mortgage bank and receive a mortgage bond in return, which the customer would then sell in order to obtain the funds needed to purchase the property.

During the changeover from a bearer bond system to a registered bond system, this practice changed and the mortgage associations began to issue covered bonds on behalf of a pool of mortgage borrowers. However, the practice of regular and periodic issuance continued, with bonds issued in larger denominations and the underlying mortgage borrowers retaining a call option on their borrowings, allowing them the right to repay the funds advanced. Tap issuance today occurs on a daily basis in very large amounts. The set-up differs slightly among mortgage banks and there are differences in the amount of risk limits that each funding unit can take on. Overall, however, these limits are very low meaning that loan payments are typically matched by issuance on the same or next day of business.

Auction of non-callable bullet bonds

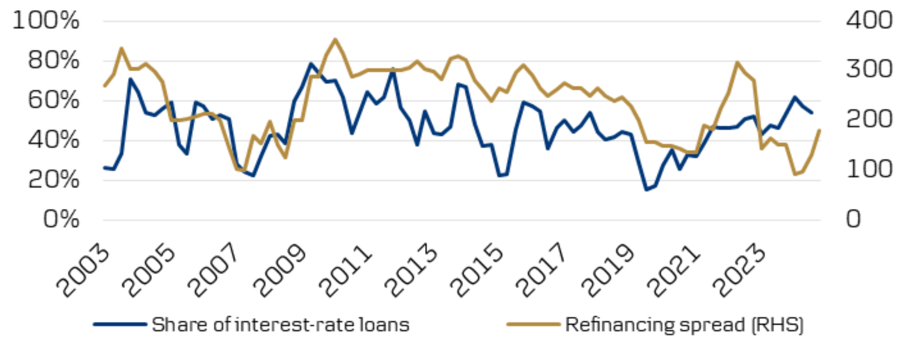
Subsequently, as issuance volumes grew, an auction system was introduced for non-callable bullet bonds and floaters (see Chapter 5). Traditionally, Danish covered bond issuers held a single annual refinancing auction. However, in recent years, Danish mortgage banks have increased the number of refinancing auctions to two, three or four per year in response to volume growth.

Issuance activity is driven largely by the slope of the refinancing curve

Issuance activity in the different covered bond segments is to some extent driven by the slope of the refinancing curve, especially for 30-year callable annuity bonds and the non-callable bullet bonds used to fund interest-reset loans. For example, in an interest environment with a steep refinancing curve, with low yields at the short end of the curve and high yields on 30-year callable annuity bonds, we usually see an increase in the gross lending of interest-reset loans relative to 30-year callable annuity loans.

The chart below shows the correlation between the steepness of the covered bond refinancing curve (the yield on a 30-year callable annuity bond minus the yield on a one-year non-callable bullet bond) and the lending amount of interest-reset loans as a share of the total volume of loans granted by Danish mortgage banks. Since 2012, mortgage banks have increased the contribution fees on interest-reset loans relative to 30-year callable annuity loans in order to increase the incentive for borrowers to choose a 30-year callable annuity loan. This has, to some extent, reduced the correlation between the refinancing spread and the share of interest-reset loans.

Chart 22. Correlation between share of interest-reset loans and refinancing spread



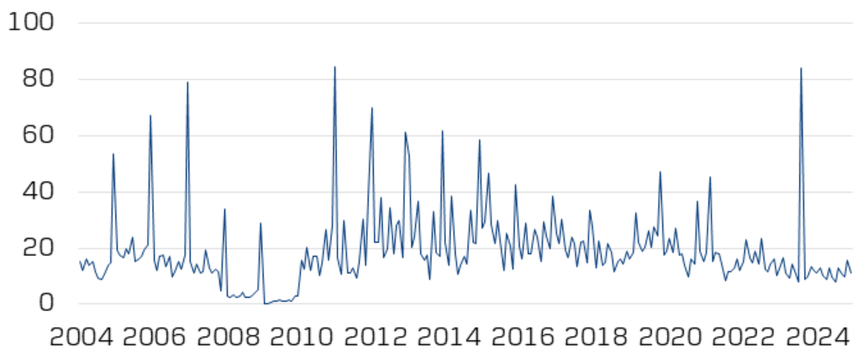
Note: Past performance is not a reliable indicator of current or future results
Source: Finance Denmark, Danske Bank

Trading Danish covered bonds

When trading covered bonds, the investor must allow for several practical elements. In this chapter, we also focus on the liquidity of covered bonds compared with that of government bonds and where to find current bond prices.

The Danish covered bond market has historically enjoyed deep secondary market liquidity with a high average daily turnover but, as the chart below shows, daily turnover reduced significantly during the financial crisis in 2008 and 2009. However, the low turnover did not hinder tap issuance in Danish covered bonds by the mortgage banks during the financial crisis. As shown in the chart below, there tends to be a spike in the turnover rate for Danish covered bonds in November/December, February/March, May and August/September, which is due to the refinancing auctions. The decline in turnover reflects that liquidity in callable bonds has been declining the recent years. For details, see: *Preview - Danske Bank Research*.

Chart 23. Daily average turnover of Danish covered bonds (DKKbn)



Note: Past performance is not a reliable indicator of current or future results

Source: Nasdaq Nordic Exchange, Danske Bank

Turnover of Danish bonds

In the past decade, the liquidity of covered bonds has exceeded government bond liquidity due to high levels of mortgage prepayments, high issuance activity and refinancing auctions, as covered bonds experience increased liquidity in such periods.

The table below shows the average daily turnover of selected Danish covered bonds throughout three months in 2024. Note the very large daily turnover in the 1'50 and 1'50io through March where spreads widened significantly.

Table 52. Average daily turnover (nominal), DKKm

DKKm	Oktober 2024	November 2024	December 2024
NYK 4% 2056 callable	707	808	573
NYK 4% 2056 IO callable	195	251	150
NYK 4% 2046 callable	37.8	23.0	56.9
NYK 1% Jan-27	278	41.4	264

Source: NASDAQ OMX Nordic Exchange, Danske Bank

Highly liquid and diversified issuance, prices quoted by Danske Bank

Danske Bank quotes prices for the most liquid covered bonds. The prices are available from Bloomberg (DBDK).

Difference in prices of otherwise identical series

A bond series of the same type but issued by different mortgage banks may see a slight difference in price when close to or above par because of different debtor distributions and differences in the borrowers' prepayment behaviour. A price difference may also be attributable to differences in liquidity and ratings differences.

Repo facility at the Danish central bank and the ECB

It is possible to do repos with Danmarks Nationalbank, the Danish central bank, against collateral in Danish covered bonds. The maximum loan limit depends, among other things, on the value of the collateral (after margin and haircuts). In addition, EUR-denominated covered bonds issued through VP securities and complying with the ECB's eligibility criteria are ECB eligible when they are approved by Danmarks Nationalbank and are entered on the ECB's list of eligible assets.

Market-maker schemes

With over 2,000 Danish covered bonds listed on the Nasdaq Nordic Exchange, it is evident that they are not equally liquid. Previously a market-maker scheme existed in some callable cash bonds, however, today that is only the case among listed futures on Nasdaq. See chapter 11 titled 'Danish covered bond futures'.

7. Prepayment

Borrowers raising a callable mortgage loan are entitled to prepay the mortgage at par prior to maturity. A borrower's right to prepay is embedded in one or two prepayment options.

- Callable loans have an embedded call option and a delivery option.
- Non-callable loans have an embedded delivery option only.

To comply with the specific balance principle described in Chapter 2, the borrower's call option must be embedded in issued covered bonds in order to achieve a perfect hedge, i.e. the mortgage banks do not suffer a loss when call options are exercised. The delivery option is embedded in almost all loans originated by Danish mortgage banks. It should be stressed that a loan does not necessarily have to be terminated or prepaid when a property changes hands. Accordingly, when a property is sold, the mortgage bank decides whether the new owner can take over the loan.

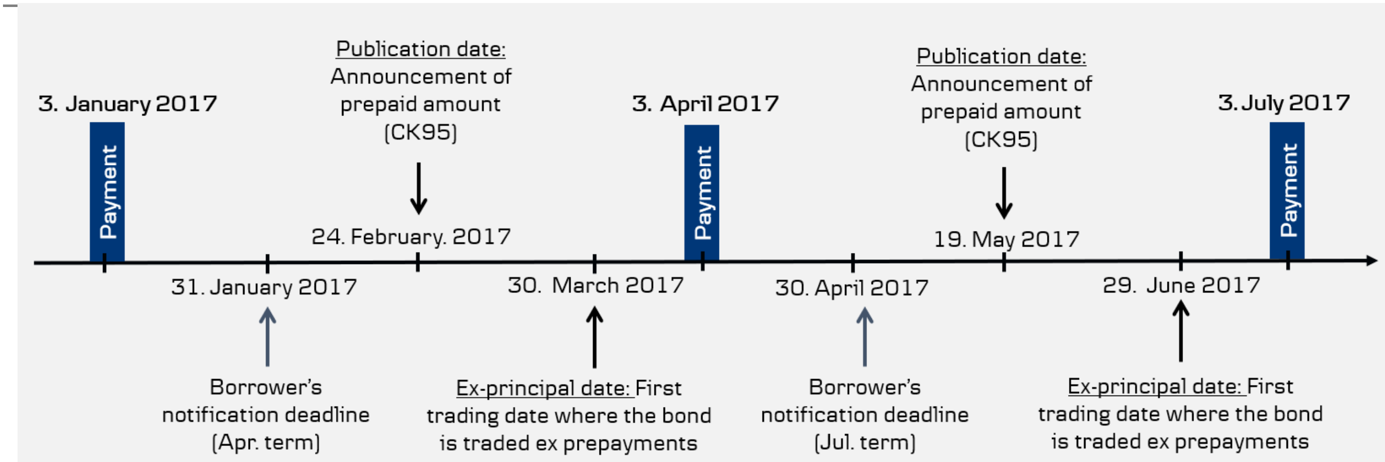
How to refinance a mortgage

Using the call option

If a borrower wants to exercise the call option and prepay a loan at par, he may choose between immediate prepayment and prepayment on the payment date. The former is the most common choice. Borrowers must give two months' notice before exercising the call option, i.e. notification dates are 31 January, 30 April, 31 July and 31 October.

About 40 days prior to the payment date, accurate information on the prepayment volumes for the individual bond series is available on the publication date. Extraordinary prepayments are distributed among investors according to the same principle of drawing as described above for ordinary repayments (see Chapter 5). The bond trades ex-principal (ex-prepayment) two days before the term date[32].

Chart 24. Important dates for mortgage bond refinancing



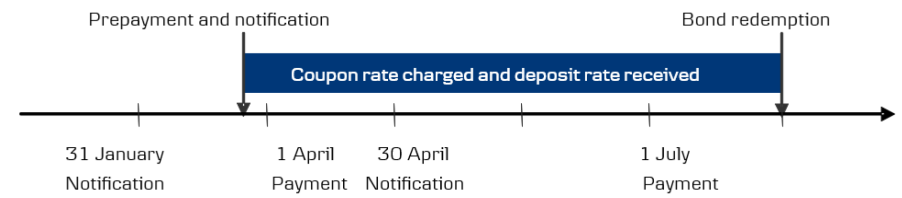
Source: Danske Bank

Immediate prepayment means that the remaining debt and interest payments are payable to the mortgage bank within three days, i.e. prior to the payment date. However, as investors are still entitled to their coupon payments, the borrower still has to pay the coupon until the payment date (1 January, 1 April, 1 July and 1 October), which, in principle, is the first date on which the loan may be prepaid.

[32] A new redemption model for callable bonds was introduced in October 2015. Before October 2015, the bonds traded ex-principal one day before the publication date.

Thus, the borrower prepays the remaining principal plus the coupon payment for the period until the payment date. The borrower is compensated for making the funds available to the mortgage bank until the payment date (see chart below). This compensation is normally calculated at a rate close to the current money-market rate.

Chart 25. Notification and payments in connection with extraordinary prepayment



Source: Danske Bank

Prepayment on the payment date means that the borrower does not have to prepay the remaining principal and the coupon due until the payment date.

When a borrower prepays a loan, it usually raises a new one. This involves two separate transactions and the borrower is therefore free to raise a mortgage loan with a different mortgage bank than the one with which the repaid loan was raised.

Using the delivery option

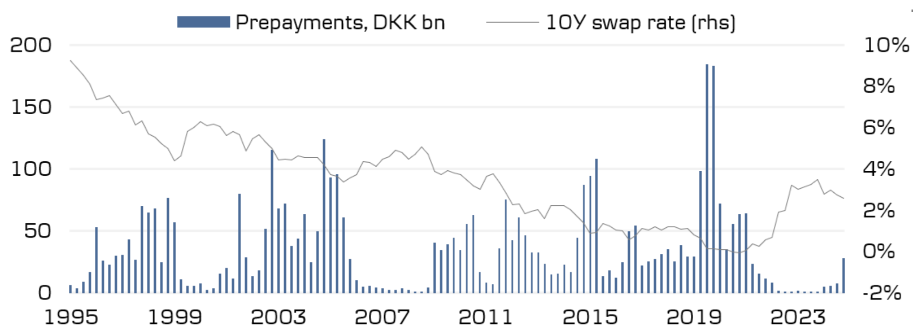
When a borrower exercises the delivery option, the underlying bonds are purchased at market price. By delivering the bonds to the mortgage bank, the loan is – fully or partially – redeemed. The borrower runs the hypothetical risk of not being able to buy the bond due to lock-in effects and the mortgage banks suffer no loss when the option is exercised.

Borrowers will exercise the delivery option only if the bond price is below par and will be charged a trading fee typically of 0.10-0.30% depending on the loan size.

Observed prepayment rates

Observed prepayment rates are indicated in the chart below and include both delivery and call option prepayments. As can be seen, observed prepayments are closely correlated to a decline in long-term interest rates, suggesting that remortgaging at a lower interest rate is the main reason for prepayment.

Chart 26. Correlation between long-term interest rates and prepayments



Note: Past performance is not a reliable indicator of current or future results
Source: Danske Bank

Calculating prepayment gains

Most Danish mortgage loans are prepaid in connection with remortgaging (debt management) or in connection with the sale of a house (though prepayment is not compulsory, as the loan may be taken over by the new owner).

The advisory services provided by banks and mortgage banks focus on the gain on the first year's net payments and on the net present value of the old loan and the new loan alternative.

Today, borrowers focus primarily on liquidity savings in the form of lower net payments and their required gains are therefore measured mainly in terms of the difference between the first year's net payments on the existing loan and the new loan. In some cases, the first year's net payments are reduced but the gain measured in terms of the net present value of future payments is negative. This would typically be the case if the borrower chooses to raise a loan with a longer term to maturity than the old loan. Under such circumstances, some borrowers will want to refinance, while others prefer to wait until the net present value gain is positive and above a threshold level.

The second parameter in the advisory service is the difference in net present values, also called the prepayment gain.

The calculation of the prepayment gain is very sensitive to the yield curve applied. In practice, a flat yield curve corresponding to the after-tax yield on the refinancing alternative is often applied. The prepayment gain can be calculated using the following formula.

$$Prepayment\ gain = \frac{NPV(old\ loan) - (rem.debt + costs) \cdot Disc}{NPV(old\ loan)}$$

NPV (old loan) is the net present value of the old loan, corresponding to the remaining after-tax payments discounted at the after-tax yield of the new refinancing alternative. The *rem. debt* is the remaining debt to be refinanced and *costs* are the refinancing costs. *Disc* is the discounting factor from the payment date to the actual date on which the borrower decides to prepay the loan (no later than the notification date).

The borrower will most often be advised to refinance the mortgage based on a financial gain calculated in percent (as shown above) but also in absolute value.

Different types of remortgaging strategies

Borrowers have gradually become more conscious of managing their debt and increasingly use different remortgaging strategies to optimise their home financing.

Their choice of remortgaging strategy is heavily dependent on interest rate movements since the existing loan was raised and, in certain cases, the borrower's expectations with regard to future changes in interest rates. Below we set out a brief description of the most commonly used remortgaging strategies.

Remortgaging to a lower coupon

Following a substantial decline in interest rates, borrowers will benefit from remortgaging an existing loan to a new loan with a lower nominal rate of interest, as described above. The borrower will receive a gain in the form of lower future net payments and thus lower first-year net payments due to the lower interest rate. However, this type of remortgaging typically results in an increase in outstanding debt, depending on the price of the bonds underlying the new loan.

Remortgaging to a higher coupon

Following substantial increases in long-term interest rates, the borrower is able to reduce the outstanding debt by redeeming the old loan at a low market price and refinancing it through new bonds at a higher coupon than that of the original loan. However, this type of remortgaging leads to rising future payments because of the higher interest payments. Such remortgaging is therefore profitable only if interest rates decline again within a shorter time period. Borrowers initially achieve a reduction in their outstanding debt at the expense of higher payments, which they hope to be able to reduce by remortgaging to a lower coupon later.

Remortgaging to interest-reset mortgages

The introduction of interest-reset loans (see Chapter 5) formed the basis of a new type of remortgaging strategy. In periods of rising long-term interest rates and a substantial steepening of the yield curve and in periods of plunging short-term interest rates, borrowers holding a loan funded by long-term fixed rate bonds may remortgage their loans by redeeming the loan and refinancing it by raising a loan based on short-term bonds. The gain achieved from adopting this strategy is a reduction in the outstanding debt and lower future mortgage payments, assuming that future short-term refinancing rates remain low. In the opposite case, where long-term interest rates have plummeted and short-term interest rates are higher than long-term interest rates, the borrower is able to reduce his mortgage payments by remortgaging from an interest-reset loan based on short-term bonds to a fixed interest rate loan based on long-term bonds.

Following the introduction of interest-reset loans, borrowers have greater opportunities for achieving future remortgaging gains because redemption of the existing loan and disbursement of the new loan may take place at interest rates across the yield curve.

Remortgage gain depends on several factors

Prepayment gain depends on the borrower and size of the remaining principal

The remortgaging gain generally depends on several debtor-specific factors. Hence, it is of significance whether the borrower is a private individual or a corporate borrower because the tax deduction rate for interest paid by the borrower varies. However, in recent years, the tax deduction rate for private borrowers has been gradually.

In ‘The Whitsun Package’, which was part of the 1998 tax reform, the tax deduction rate for private individuals was reduced from an average of 46% to 33% and in the most recent tax reform, ‘Forårspakken 2.0’ from February 2009, the tax deduction rate was reduced yet again from 33% to 25% over a transitional period from 2012 to 2019. The deductible rate for businesses has also been reduced in recent years and stands at 22% today, compared with 34% in 1998.

Moreover, the size of the remaining principal typically determines the remortgaging gain. If the remaining principal is small, the refinancing costs in the form of a fixed fee weigh more. The gain is therefore relatively smaller than for a large remaining principal.

Finally, the remortgaging gain may depend on the term to maturity. Hence, the achieved gain is typically greater when refinancing a 30-year loan than when financing a shorter-term loan.

Refinancing campaigns by mortgage banks

In recent years, greater attention in the media and campaigns launched by mortgage banks have resulted in borrowers responding more quickly to the opportunities for a remortgaging gain.

Advisory services have also become more sophisticated and borrowers are able to have their refinancing opportunities monitored, meaning they are contacted when the remortgaging gain exceeds a pre-agreed level.

8. Estimating prepayments

Estimating prepayments is essential to the pricing of callable covered bonds — not just for the coming payment date but also for all future payment dates. Prepayments are important to investors as they affect cash flows. As a result, the duration of callable bonds is affected by changes in the estimated prepayment rates.

Estimating prepayments using traditional models

There are several different models for estimating prepayments, one of the most commonly used being the so-called capital gain requirement model where the parameters of the model are estimated based on historical prepayment data. This model assumes that a given debtor will refinance his loan if the obtainable remortgaging gain is greater than his debtor-specific required gain. Furthermore, the model allows for different debtor patterns by assuming that the various groups in the debtor distribution behave differently when it comes to borrowers' inclination to refinance at various rates. Before 1 January 2016, Danske Bank also used such a model to estimate the risk of callable bonds. In the section *Danske Bank's old model for callable bonds (traditional model)*, we have described our old model, which in many ways is similar to other banks' models for callable bonds.

Danske Bank has introduced a new SuperFly model

Instead of using a traditional method/model to estimate future levels of prepayments for callable bonds, Danske Bank has chosen a new path. Our new model approach (SuperFly) is not to *estimate future prepayments* based on historical prepayments data (as we did before with the traditional model), but to *estimate the prepayments implied* by the market. Hence, this is a new and unique method to calculate the risk of callable bonds.

Data for estimating prepayments

One of the most important factors affecting a borrower's prepayment decision is the gain from refinancing as described in Chapter 7. Historical prepayment rates and debtor distributions are used in the estimation of the parameters in traditional capital gain requirement models (traditional models).

Historical prepayment rates

Historical prepayment rates for each series give a first impression of the remortgaging sensitivity of a bond series. Traditionally, series that have experienced significant prepayments can be characterised as 'having lost their prepayment potential' as the remaining borrowers have presumably been able to realise decent refinancing gains at an earlier date. However, we increasingly see so-called burned-out series continuing to experience high prepayment rates.

Debtor distributions

The debtor distribution of a bond series is a breakdown of the total underlying remaining debt. A debtor distribution table breaks down loans into five groups according to the size of the remaining debt in DKKm, the share of cash and bond loans and the share of corporate and private loans. Prior to 2023, largest loan group in debtor distribution was only available up to +DKK3m, but was expanded by the mortgage institutions with further three groups: DKK3-10m, DKK10-50m, and >DKK50m.

Corporate versus private loans

In traditional models, large corporate loans are generally assumed to have a higher remortgaging rate than small private loans, because these loans, due to the higher remaining principal, have a lower percentage cost when prepaying. The size of the remaining principal is important due to both its relation to fixed remortgaging costs and the psychological factor that makes a gain of DKK100,000 more tempting than a gain of DKK1,000.

Chart 27. Debtor distribution: loan size – 5’53- and 5’56-series (December 2024)

	Distribution of loan sizes				
	0-1m	1-3m	3-10m	10-50m	>50m
NYK 5'53	17%	70%	12%	1%	1%
RD 5'53	12%	54%	20%	7%	7%
NDA 5'53	17%	63%	16%	3%	0%
DLR 5'53	11%	63%	23%	3%	0%
NYK 5'56	15%	66%	18%	1%	0%
RD 5'56	12%	54%	24%	9%	1%
NDA 5'56	15%	64%	19%	1%	0%
JYSK 5'56	10%	55%	15%	11%	9%
DLR 5'56	9%	52%	18%	20%	0%
NYK 5'53io	10%	61%	23%	4%	3%
RD 5'53io	6%	47%	33%	9%	5%
NDA 5'53io	6%	48%	29%	5%	12%
DLR 5'53io	3%	23%	37%	28%	9%
NYK 5'56io	9%	55%	27%	4%	4%
RD 5'56io	5%	42%	35%	11%	7%
NDA 5'56io	6%	51%	36%	6%	0%
JYSK 5'56io	6%	41%	18%	11%	23%
DLR 5'56io	1%	16%	29%	30%	23%

Note: Past performance is not a reliable indicator of current or future results
Source: Danske Bank

Chart 28. Debtor distribution: private versus corporate on 5’53- and 5’56-series (December 2024)

Name	Private v commvercial		Cash v bond	
	Private	Commercial	Bond	Cash
NYK 5'53	99%	1%	99%	1%
RD 5'53	89%	11%	95%	5%
NDA 5'53	94%	6%	97%	3%
DLR 5'53	0%	100%	65%	35%
NYK 5'53io	97%	3%	100%	0%
RD 5'53io	92%	8%	100%	0%
NDA 5'53io	93%	7%	100%	0%
DLR 5'53io	0%	100%	100%	0%
NYK 5'56	99%	1%	99%	1%
RD 5'56	91%	9%	96%	4%
NDA 5'56	95%	5%	98%	2%
JYSK 5'56	94%	6%	95%	5%
DLR 5'56	0%	100%	66%	34%
NYK 5'56io	97%	3%	100%	0%
RD 5'56io	93%	7%	100%	0%
NDA 5'56io	96%	4%	100%	0%
JYSK 5'56io	92%	8%	100%	0%
DLR 5'56io	0%	100%	100%	0%
NYK 5'56io30	96%	4%	100%	0%
RD 5'56io30	96%	4%	100%	0%
NDA 5'56io30	98%	2%	100%	0%
JYSK 5'56io30	98%	2%	100%	0%

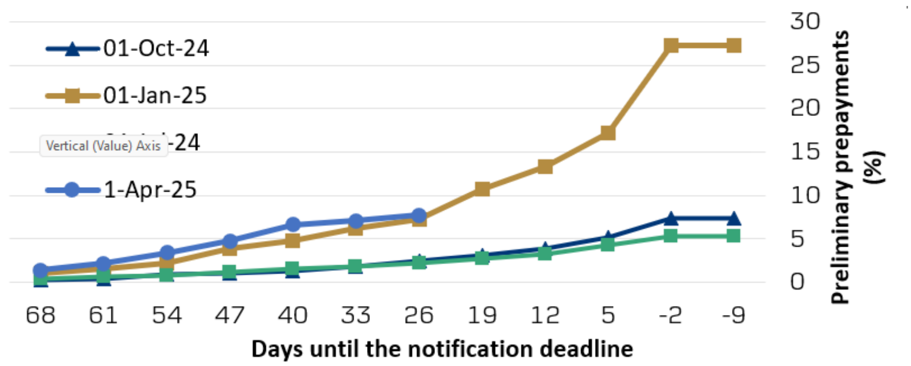
Note: Past performance is not a reliable indicator of current or future results
Source: Danske Bank

Preliminary prepayments

Every week, the individual mortgage banks publish preliminary prepayments for each series for future, non-published payment dates. These prepayments allow for an estimation of the volume of prepayments for the next payment date (comparison with previous payment dates). They also allow for a calculation of the share of total prepayments for a given announced preliminary prepayment by using prepayment data at the same time prior to the previous payment date. The preliminary prepayment rates are used in Danske Bank’s new model (SuperFly) and in the old model (Danske Analytics).

Typically, preliminary prepayments are characterised by a strong exponential increase up to expiry of the notification period. Any expectation based on announced prepayments therefore becomes more reliable as the expiry of the notification period approaches. One may also track any differences between the institutions up to the notification date.

Chart 29. Evolution in preliminary prepayment rates



Note: Past performance is not a reliable indicator of current or future results. It is not possible to invest directly in an index
Source: Danske Bank

SuperFly – a unique model for estimating implied prepayments

Instead of using a traditional method/model based on historical data to estimate future levels of prepayments for callable bonds, Danske Bank has chosen to implement a new model approach (called **SuperFly**) where the future prepayments are estimated as *prepayments implied* by the market. This is a new and unique method to calculate the risk of callable bonds. There are several reasons why we have chosen this new method, but the most important are the following.

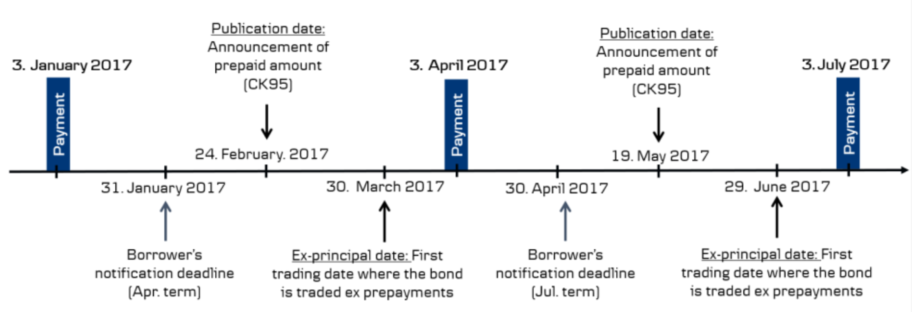
- The implied prepayment approach offers much greater flexibility in the model, which ensures more stable risk key figures. Hence, we do not expect to re-calibrate our model every quarter to align the model's expected prepayments to the actual prepayments, which was the case for our old, traditional model.
- The model provides risk key figures that are more in line with markets' expectations of prepayments instead of our own model's expected prepayments.

So how do we estimate the implied prepayments? The price of the callable bond and the market interest rate are used to do the following.

- Determine whether the callable bond could see prepayments (mostly determined by the difference in the bond's coupon and the yield of an alternative mortgage loan).
- Determine how many prepayments the callable bond could see in order to be fairly priced (mostly determined by the price of the bond).

Hence, if the callable bond is trading well above par, this could indicate that the implied prepayments are high, whereas a lower price would indicate that the implied prepayments have declined. All the risk key figures are calculated on the back of the implied prepayments.

Chart 30. Overview of the inputs and outputs in a traditional model and the new SuperFly mortgage bond pricing model



Source: Danske Bank

Compared with our old, traditional model (and the standard for other banks still) the main difference is that the prepayments in our new model are *implied* by the market and not our *expected* prepayments.

Below we list some of the other important features of our new model.

- The SuperFly mortgage bond model uses a 1-factor Cheyette model for generating rate scenarios. The Cheyette model is calibrated to an underlying European option model (typically a shifted SABR model). The mortgage bond model also includes a mortgage bond credit curve that measures the effective credit of the Danish mortgage bond market. It is expected that liquid mortgage bonds will trade close to levels of this curve.

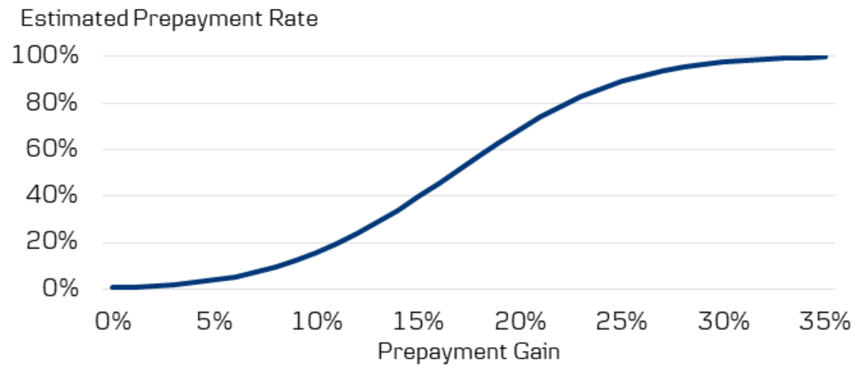
- When pricing a callable mortgage bond, the Cheyette model is calibrated to a strip of swaptions reflecting the prepayment schedule of the bond in question. The strike and duration of the calibration swaptions are initially set to the coupon and maturity of the bond but then adjusted for the notional structure and the credit of the bond. This calibration then gives risk key figures, both delta and vega, that are consistent with the underlying rate and volatility models.
- The model shifts focus between the OAS and the implied prepayments depending on the yield level and the prepayment risk of the bond. For low coupon callable bonds with no prepayments the market (and our model) focuses on the OAS for input to relative value. For high coupon callable bonds the focus is instead on the prepayments, since investors price the bonds given their expectations of the level of future prepayments. Hence, the model also focuses on implied prepayments.
- Given the above, the weight on OAS for high coupon callables with high prepayments risk is very close to zero and the focus should instead be on the levels of implied prepayments. In simple terms, if investors expect lower prepayments than the implied prepayments given by the model, the bond looks cheap.
- We provide a new key figure (OASWeight), which tells how much focus investors should put on the OAS rather than the implied prepayments.

Danske Bank's old model for callable bonds (traditional model)

Required gain model

In a traditional model, the relationship between prepayment gains and prepayments is often described using a normal distribution function where the estimation of the parameters of the model is based on historical prepayment data. The mean value indicates how large the modelled prepayment gain must be if the series has a prepayment rate of 50%. Based on a stochastic model of the yield curve, it is possible to calculate prepayment gains (for each debtor group) for the entire term of the bond in different interest rate scenarios.

Chart 31. Normal distribution of estimated prepayments



Source: Danske Bank

Before 1 January 2016, Danske Bank used a traditional model (Danske Analytics) based on a capital gain requirement model and a Gaussian term structure model of interests. The required gain model used the refinancing gain, the pool factor[33] and the time to maturity of the existing loan as explanatory variables. The refinancing gain was the NPV gain the borrower could achieve by refinancing to a loan with the same time to maturity as the existing loan. The refinancing rate was assumed to be equal to the swap rate for the given time to maturity plus a debtor spread.

[33] Outstanding mortgage pool principal as percentage of the original principal balance.

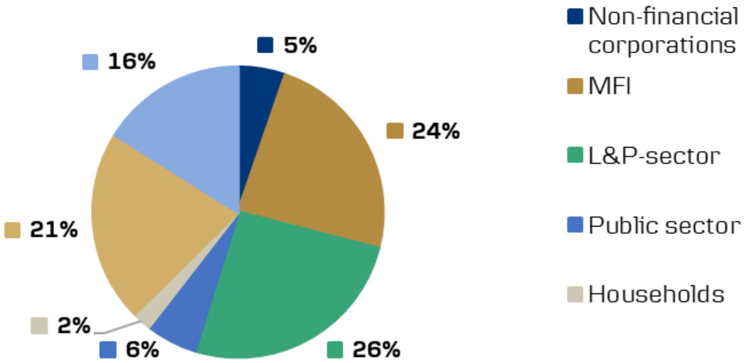
A debtor spread was added as the model is estimated using historical data. An extraordinary widening of spreads between mortgage bonds and swaps could cause inconsistencies between the assumed refinancing rate and the actual refinancing rate if no correction using the debtor spread was made. The debtor spread was estimated as the extraordinary spread between the mortgage bonds and swaps. Debtors were split into three groups – debtors with small loans, debtors with medium-sized loans and debtors with large loans. This was changed to five groups in 2023 as mentioned above.

The term-structure model of interest rates was a Gaussian Hull & White model. It was calibrated to the DKK swap curve and swaption volatilities. The calibration to swaption volatilities incorporated the entire range of at-the-money swaptions.

9. Investors in Danish covered bonds

The largest resident investor group in Danish covered bonds is financial institutions, holding 26% of the total volume of covered bonds. The second-largest domestic investor group in the Danish covered bond market is pension sector (L&P-sector) at 26%, who has taken over this position from foreigners that was the largest investor group at the end of 2020.

Chart 32. Investors in Danish covered bond market -- November 2024

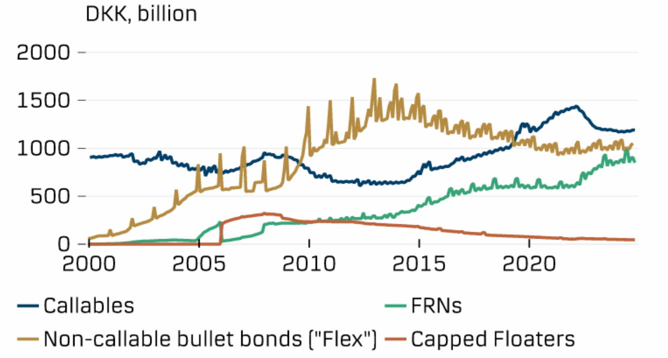


Source: Danmarks Nationalbank, Danske Bank.

Life insurance companies and pension funds are characterised by their long-term investment horizon and the greater part of this sector's total bond holdings consists of Danish covered bonds in both the long and short end of the curve. Short dated non-callable bullets are useful for liquidity management whereas the longer duration callable bonds provide excess carry to alternatives. The holdings of banks and mortgage banks are also concentrated in Danish covered bonds and amount to a nominal DKK802bn. This investor group is characterised by a relatively short-term investment horizon.

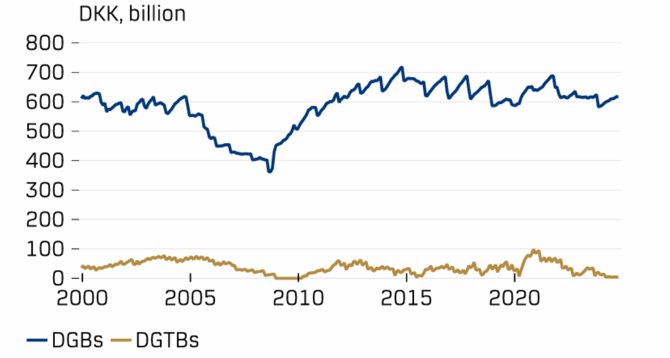
Traditionally, foreign investors have been significant players in the Danish government bond market but over the past decade they have also shown an increased interest in Danish covered bonds. Based on statistics from November 2024, foreigners own around nominal DKK720bn worth of Danish covered bonds, equivalent to 21% of the total volume of Danish covered bonds. For comparison purposes, foreigners' holdings of government bonds at the time amounted to a nominal DKK180bn, or 29% of the total volume of Danish government bonds. The development has been especially noteworthy in the callable bond segment where foreigners own ed 35% of the market at end of 2020 (which was not least made up of Japanese investors), but has declined significantly the recent years and only constituted around 27.5% in November 2024. Foreingers investors decision to buy callables depends on the FX-adjusted return relative to similar alternatives, like US treasuries, etc.

Chart 33. Foreign ownership of Danish covered bonds



Source: Danmarks Nationalbank, Danske Bank

Chart 34. Foreign ownership of Danish government bonds



Source: Danmarks Nationalbank, Danske Bank

10. Performance

Danish covered bonds have traditionally provided a yield pickup compared with, for example, Danish swaps or government bonds. This yield difference is estimated by the asset swap spread (ASW) for non-callable bonds and floater bonds and option-adjusted spread (OAS) for callable bonds. Moreover, general risk measures such as the Macaulay duration do not apply to callable mortgage bonds, but instead the duration can be described using option-adjusted duration or OA-BPV. For a description of all key figure see our key figure description here: *Danish Mortgage Bonds: Key figure descriptions*, 28 January 2021.

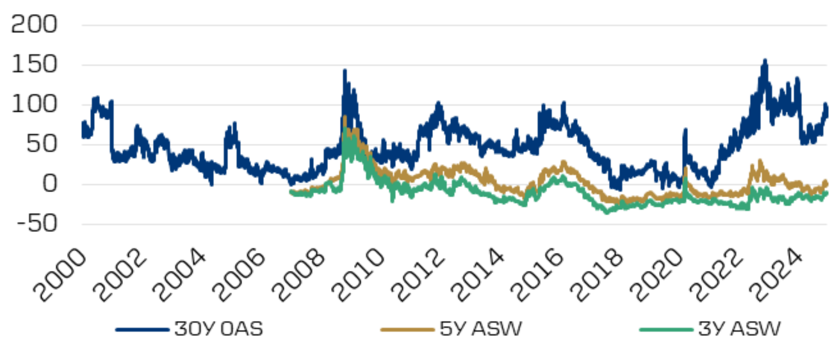
Option-adjusted spread (OAS)

The OAS specifies the additional yield compared with the Danish swap curve when the callable covered bond have been adjusted for estimated prepayments. The OAS is an indicator of the additional yield that can be obtained by holding the callable covered bond and reflects the prepayment and credit risks as well as liquidity considerations. A widening OAS indicates that the bond has become cheaper relative to swaps and vice versa. Note that the OAS depends on the model used for forecasting future prepayments.

Asset swap spread (ASW)

The ASW specifies the spread against 3M or 6M CIBOR for non-callable bullet covered bonds, floaters and capped floaters. The ASW for the capped floaters is calculated under the assumption that the cash flow of the capped floaters can be hedged using an amortising cap.

Chart 35. Danish covered bonds OAS/ASW v/ DKK6M (bp)



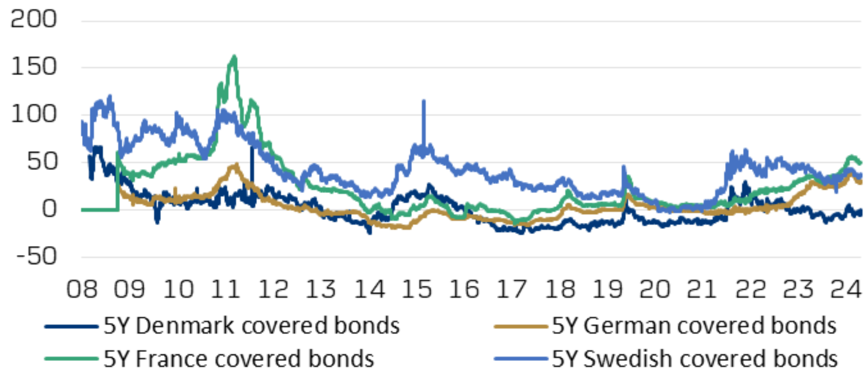
Note: Past performance is not a reliable indicator of current or future results
Source: Danske Bank

Historical development in spreads

The spreads (OAS and ASW) for the Danish covered bonds experienced a quite significant widening in autumn 2008 due to the increased risk aversion in the market. However, compared with other European covered bonds, the spread widening in Denmark was moderate (see the chart below). In addition, the Danish bond market was fairly unaffected by the European debt crisis in 2011-2012, as investors used the Danish bond market as a 'safe haven'.

Since 2012, we have seen a significant tightening of the (local) ASW spreads on European covered bonds driven partly by the ECB's CBPP. Over the same period, spreads on Danish covered bonds traded in a relatively stable range until 2015, when we saw a gradual widening of spreads. The drivers of the spread widening in 2015 were uncertainty about the impact of regulation (for example the implementation of the LCR as of 1 October 2015, uncertainty regarding leverage ratio and risk weights) and increased volatility in financial markets. In recent years, we have seen a significant tightening of the spreads (OAS and ASW) for the Danish covered bonds only halted by a sharp widening of spreads in March 2020 where OAS widened 60bp in just a week following world-wide lockdowns in face of the COVID-19. Spreads, however, returned to pre-crisis levels in a matter of two months. We saw also a significant spread widening during 2022 driven by the inflation crisis that led to a massive increase in interest rate volatility following the 4.5%-point rate hikes by ECB. Spreads have gradually tightened during 2023-2024 as inflation came under control by the central banks.

Chart 86. ASW-spreads on 5Y Danish Noncallable vs. ASW-spread on EU covered and Pfandbriefe 5-7Y (bp)



Note: Past performance is not a reliable indicator of current or future results
Source: Danske Bank

Cross-currency swapped ASW spread

SEK covereds typically trade slightly wider in local ASW terms as compared to alternatives. Danish hedge funds are generally very active switching in and out of DKK and SEK covered bonds when spreads diverge too much. Danish investors active in EUR covereds are mostly with a longer term investment horizon due to the lower liquidity.

However, looking at the cross-currency swapped ASW spread where the ASW 3M CIBOR spread is swapped into 3M EURIBOR, the spreads of the Danish covered bonds currently trade with a pickup relative to European peers due to a wide cross currency basis swap.

Risk

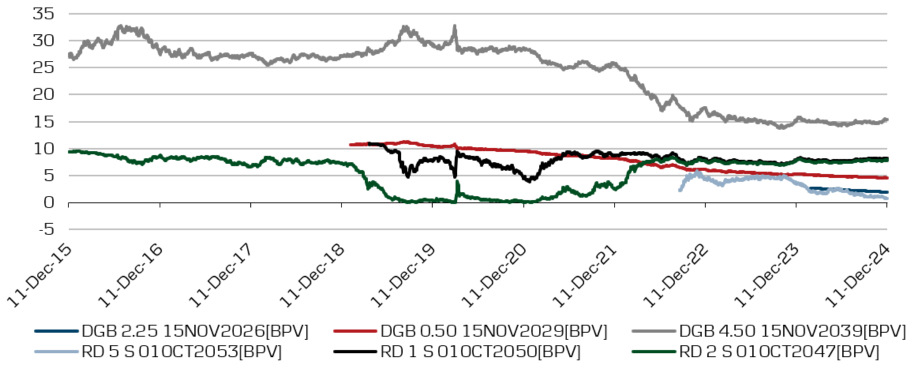
Option-adjusted risk measures

As suggested by the name, option-adjusted BPV (OA-BPV) adjusts for the embedded option when calculating the interest rate risk of the callable covered bonds. The OA-BPV may thus be slightly negative for bonds far above par. This is the case when the effect of prepayments being influenced by interest rate changes is greater than the mere discounting effect. This means the price may fall even though interest rates are falling.

The charts below show the BPV for Danish government bonds DGB'26, DGB'29, DGB'39 and OA-BPV for the callable bonds RD 5'53, RD 1'50 and RD 2'47. The OA-BPV for Danish callable covered bonds has decreased in the recent year due to the decreasing interest rate level and increasing prepayment risk, but the BPV of the 1'50 is more or less unchanged.

BPV government bonds and non-callable covered bonds and OA-BPV for callables

Chart 37. BPV for Danish covered bonds and Danish government bonds



Note: Past performance is not a reliable indicator of current or future results
Source: Danske Bank

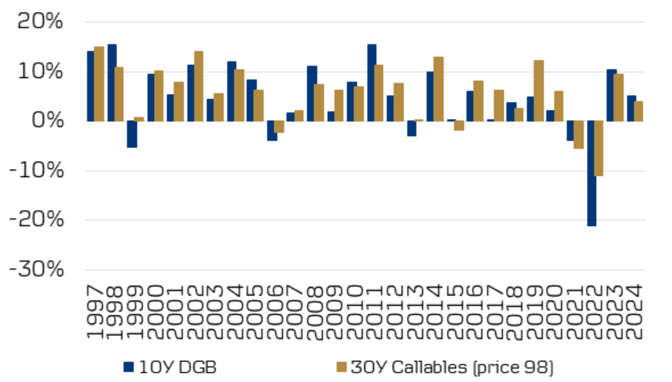
Historical returns

The charts below illustrate developments in the annual return on the 30-year covered bond benchmark index and the 10-year government benchmark index since the end of 1996. As the chart below right shows, 30-year Danish covered bonds in general outperform 10-year government bonds.

However, in 2004, 2005 and later on in 2008, 2011, 2015, 2021, 2023 and 2024 the 10-year government benchmark outperformed the 30-year covered bond benchmark. This is partly a consequence of the 30-year covered bond benchmark simply having lower duration compared with the 10-year government benchmark over this period. Combined with an environment of decreasing interest rates, it led to a larger capital gain for the 10-year government benchmark.

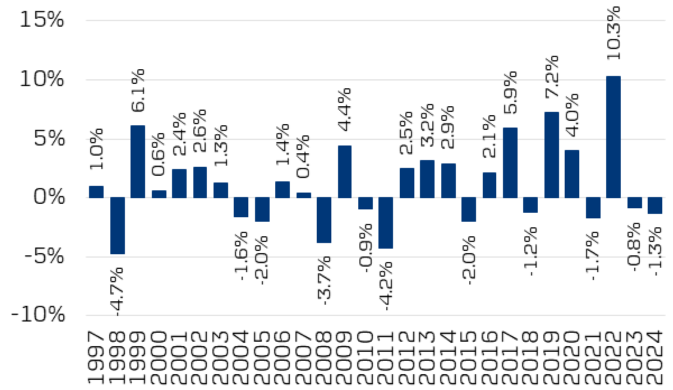
In 1998 and 2008, the Danish covered bond underperformed against the 10-year government bond due to financial turmoil. The underperformance was increasing volatility and significant spread (OAS) widening – 1998 was dominated by the bankruptcy of Long Term Capital Management and 2008 was the peak of the financial crisis. However, the negative performance in 1998 and 2008 was followed by very high positive performances in 1999 and 2009, as the market turmoil eased and the spread tightened. In 2015 government bonds generally performed well when compared to callables due to very high interest rate volatility and prepayments.

Chart 38. Annual total return for 10Y DKK government and 30Y fixed-rate mortgage bond



Note: Past performance is not a reliable indicator of current or future results
Source: Danske Bank

Chart 39. Excess return on 30Y fixed rate mortgage bond relative to 10Y DKK government

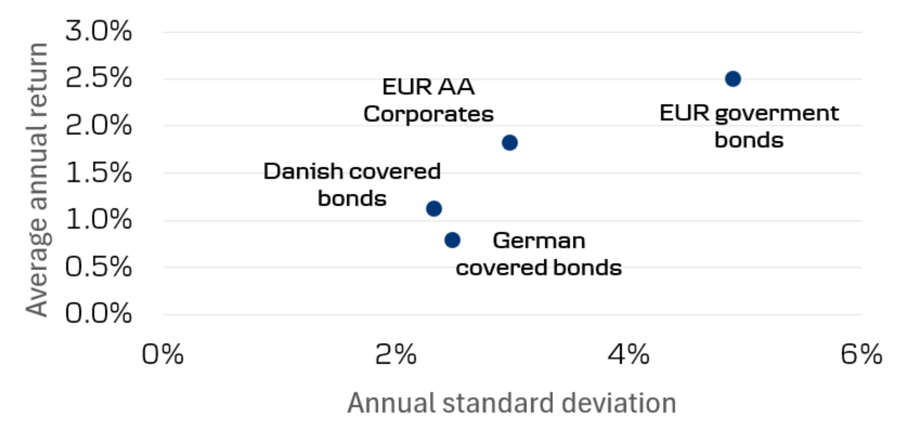


Note: Past performance is not a reliable indicator of current or future results
Source: Danske Bank

Returns on the Danish and euro bond markets

The chart below illustrates returns on various European asset types measured against the standard deviation of the return. The asset types include the following indices: EUR government bonds (Bloomberg Barclays EuroAgg Treasury index), Pfandbriefe (Iboxx five to seven years), Danish government bonds (Danske Bank Danish government bond index), Danish covered bonds (Nykredit Danish mortgage bond index) and EUR AA-corporates (Iboxx five to seven years). The listed returns are calculated as average annual returns for the period from the end of 2006 to the end of 2023. Over this period, Danish covered bonds offered the least volatility and an average annual return marginally lower than other European asset types.

Chart 40. Historical return on Danish and EUR bonds from Dec-11 to Dec-24



Note: Past performance is not a reliable indicator of current or future results. It is not possible to invest directly in an index.
Source: Bloomberg data and Danske Bank

11. Futures on Danish covered bonds

The Nasdaq Nordic Exchange introduced a bond future on a basket of underlying Danish covered bonds in October 2009 and at the same time established a market-maker scheme in the future (initial spread of DKK0.10 for DKK50m). It is only Nykredit bonds that are a part of the basket for callable futures. The future is settled daily on a marked-to-market basis and the settlement amount is fixed by the Nasdaq Nordic Exchange as the difference between the current future price and the future price of the previous trading day. Settlement is made via the Nasdaq Nordic Exchange, which is where netting of positions between market makers is carried out.

The basis of the agreement under the market-maker regime is a CSA plus any premiums or alternatively a clearing account with the Nasdaq Nordic Exchange. The market maker agreement obliges the banks in the agreement to respond to other banks' request for quotes in the futures contract. Currently seven banks are working subject to the regime: Danske Bank, Nykredit, Jyske Bank, Sydbank, Spar Nord (will potentially be acquired by Nykredit), SEB and Nordea.

Table 53. Settlement procedure for market makers

Settlement	Daily settlements via Nasdaq Nordic Exchange
Netting	Yes
Agreement base	CSA plus any premiums, or a clearing account with Nasdaq Nordic Exchange

Source: NASDAQ Nordic Exchange, Danske Bank

Characteristics similar to government bond futures

Danish covered bond futures (MBF) expire every third month at the end of March, June, September and December and settlement day is 1 April, 1 July, 1 October and 1 January (or the first business day thereafter). New future contracts are opened about a month before the existing contract expires; thus, positions in one future contract can always be rolled into the next future contract – just like, for example, German government bond futures (Bunds, Bobl, etc.).

There are currently three bond futures on Danish covered bonds. There are two bond futures on 20Y and 30Y callable covered bonds and one bond future on three- to five-year non-callable covered bonds. The contracts have a contract size of DKK1m and a tick size of DKK0.001.

Table 54. Danish mortgage bond futures with expiry 27 December 2024

ISIN	SE0022504106	SE0022504122	SE0022504114
Name	3YMBZ4	30YMBFZ4	20YMBFZ4
Expiry	27-Dec-24	27-Dec-24	27-Dec-24
Contract size (DKKm)	1	1	1
Tick size (DKK)	0.001	0.001	0.001
Underlying basket	1'27 (Apr) (25%) 1'28 (Jan) (25%) 1'28 (Jul) (25%) 1'29 (Jan) (25%)	4'56 (75%) 456 IO (25%)	4'46 (50%) 4'43 (25%) 5'43 (25%)

Source: Nasdaq Nordic Exchange, Danske Bank

The Danish covered bond futures each consist of a basket of underlying unit bonds. Each underlying unit bond usually consists of more than one covered bond series, but this only applies to future on non-callable bonds (i.e. from different mortgage banks or 'colours'). The future contract (3YMBZ4) on three- to five-year non-callable covered bonds consists of four unit series (1% Apr-27, 1% Jan-28, 1% Jul-28 and 1% Jan-29), each weighted 25%. At delivery, the seller of the future contract can choose freely which of the different underlying bond series (which issuers) to deliver.

Thus, a delivery option is included in the future similar to that seen in, for example, German government bond futures (Bunds, Bobl, Schatz, Buxl).

It is the market maker regime committee that decides which bonds enter as deliverables before a new futures contract is opened.

The table below lists the bonds in the underlying basket of the 3YMBFU0 that are due to be delivered when the future expires.

Table 55. Bond series to be delivered on the 3YMBFZ7 bond future

Series	ISIN code	Name	Volume (DKKbn)
1% Apr-27	DK0004602570	RD 1'27 (Apr)	32.6
	DK0009391534	JYSK 1'27 (Apr)	22.5
	DK0002051929	NDA 1'27 (Apr)	19.8
1% Jan-28	DK0009515363	NYK 1'28 (Jan)	17.4
	DK0004603891	RD 1'28 (Jan)	12.4
1% Jul-28	DK0009542334	NYK 1'28 (Jul)	12.4
1% Jan-29	DK0009519357	NYK 1'29 (Jan)	17.3
	DK0004606993	RD 1'29 (Jan)	12.,0

Source: Nasdaq Nordic Exchange, Danske Bank

Delivery, fixing and calculation

Delivery is at the fixing price on the coupon day of the underlying bonds or else the next business day. The fixing price is calculated by Nasdaq Nordic Exchange immediately after 10:00 CET on the expiry day of the future contract. The calculation is based on the prices quoted by the various market makers (published by Reuters) for the underlying covered bonds. The fixing is calculated as an average of the middle prices of the various market makers after ignoring the highest and lowest price. The fixing is calculated to three decimal places and published at 11:30 CET on the day of expiry.

The seller of the future contract can freely choose among the various issuers ('colours') in the basket of unit bonds when delivering, though delivery must be in accordance with the weights stated above. Therefore, the seller of the future contract has a delivery option on the underlying bonds, while the buyer of the future contract has implicitly sold this delivery option.

Trading in the futures contracts is not very liquid and is a market traded solely on a voice base and not electronically, which means building large positions in the contract is cumbersome.

12. Available information

The Danish mortgage banks provide information to investors via the Nasdaq Nordic Exchange (Nasdaq). Nasdaq publishes data on Danish covered bonds according to specified guidelines. These data are released on specific dates and at specific times. If one of these specific dates fall on a non-business day, publication generally takes place on the next business day.

Nasdaq publishes cash flows for each individual bond. These specify principal and interest payments for all coming payment dates until the bond expires. For open series, cash flows are calculated according to the principles of the Nasdaq, while actual cash flows for the closed series are published by the mortgage banks. The cash flows are published no later than 12 working days after the term date.

Cash flows: on a quarterly basis

Details concerning debtor distribution are provided by the mortgage banks and separate the underlying loans into borrower groups, remaining debt groups and loan types. The debtor distribution data are published no later than four days before the fourth Thursday of the month.

Debtor distribution: on a monthly basis

Mortgage banks publish on a weekly basis data on preliminary prepayments comprised of nominal extraordinary repayments for coming, non-published payment dates. Data are based on registered loan terminations for coming payment dates, including immediate prepayments but excluding repayments by delivery of bonds.

Preliminary prepayments: on a weekly basis

On a quarterly basis, mortgage banks publish data on final prepayments (ordinary as well as extraordinary) for the next payment date comprised of nominal repayments as well as total repayment and prepayment percentages. The final prepayment amounts are published on the publication date and provincial prepayment/redemption rates are announced. The final prepayment/redemption percentages are published one working day before the term date.

Final prepayments: on a quarterly basis

Table 57. Available information

Data	Calculated	Sent to Nasdaq Nordic Exchange	Available from Nasdaq Nordic Exchange
Cash flows Payment date, instalment, interest	Quarterly	12 working days after the term date	12 working days after the term date
Debtor distribution Borrower group, remaining debt, loan type	Monthly	Fourth Thursday of every month	Same day
Preliminary prepayments Payment date, nominal amount	Every Friday	Monday after the calculation day	Same day
Final prepayment amount Payment date, nominal amount, total repayment amount., prepayment amount	Quarterly	One working day before the publication date	Publication date
Final prepayment percentage Payment date, nominal amount, total repayment percent., prepayment percent	Quarterly	Two working days before the term date	One working day before the term date

Source: Nasdaq *Nordic* Exchange, Danske Bank

Sources

- Bloomberg.
- Jyske Realkredit.
- Danish FSA.
- Danmarks Nationalbank.
- Danske Bank.
- DLR Kredit.
- European Covered Bond Council (ECBC).
- European Mortgage Federation (EMF).
- Finance Denmark.
- Fitch Ratings.
- iBoxx.
- LR Realkredit.
- MacroBond Financials.
- Moody's Investor Service.
- Nasdaq Nordic Exchange.
- Nordea Kredit.
- Nykredit.
- Realkredit Danmark.
- Standard & Poor's.
- Statistics Denmark.

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