Danish covered bonds

2023/2024

Nykredit markets

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Markets contacts

Research

Jacob Skinhøj
Head of Fixed Income Research, Quant and Valuation
jsi@nykredit.dk, +45 44 55 11 27

Peter Eibye Bache
Fixed Income Research
pbac@nykredit.dk, +45 44 55 13 63

Palle Sørensen
Macro and Strategy
pls@nykredit.dk, +45 44 55 25 20

Svend Greniman Andersen
Macro and Strategy
svga@nykredit.dk, +45 44 55 18 12

Sales, Copenhagen

Morten Schantz Andersen
Markets Fixed Income & Credit
moen@nykredit.dk, +45 44 55 13 87

Björn Marcel Peters
Markets Fixed Income & Credit
bjp@nykredit.dk, +45 44 55 13 40

Website: nykredit.com

Introduction

Nykredit Markets has a continued focus on the Nordic region as our core market, and we are pleased to present our covered bonds handbook for Denmark. With covered bonds having an outstanding amount equivalent of around EUR 420bn (DKK 3,120bn), the Danish market has become the largest in Europe after significant reduction in the outstanding amounts of covered bonds in Germany and Spain. The vast majority (97%) of Danish covered bonds are DKK-denominated, and the remainder (3%) is split between EUR- and SEK-denomination.

The Danish covered bond market is a very transparent market with a 225-year impeccable track record. All major issuers have AAA rated covered bonds, which makes Danish covered bonds attractive in a limited AAA universe.

The handbook starts with a brief overview of macroeconomic fundamentals and housing market trends in Denmark, followed by a description of Denmark's covered bond market and relevant legislation. The handbook also includes a description of the individual profiles of all major Danish covered bond issuers. The issuer profiles address the key factors necessary to evaluate an issuer's covered bonds, namely the issuer (or parent) itself, the underlying cover pool(s), ALM and ratings.

If you have questions regarding the handbook, or covered bonds in general, please do not hesitate to contact us. The handbook is also available for registered users online at nykredit.dk/markets.

Nykredit Markets

Copenhagen, March 2023

Danish economy

- Robust and well-diversified, AAA rated economy
- Healthy public finances and strong fiscal discipline
- Despite high debt levels, households have substantial net wealth

Stable AAA outlook

Denmark is one of only nine countries rated AAA by all of the three largest credit rating agencies. In January, Fitch affirmed its rating despite a weaker global economic outlook due to high inflation and tighter monetary policy.

Danish public finances are healthy, and the country has a long-standing track record of long-term fiscal planning spanning multiple governments across several political parties. Long-term fiscal sustainability has been ensured mainly as a result of past pension reforms linking the retirement age to life expectancy. On top of this, Denmark receives its top rating based on its diversified production structure, a stable and consensus-based political environment, high labour market participation rates, a generally high educational attainment level, banks' strong capital buffers and a flexible labour market combined with a generous social welfare system.

Danish households are financially robust

Danish households have considerable financial wealth. Financial assets total almost DKK 10,679bn, equivalent to 427% of GDP (in 2021) or DKK 3.8m per household. Including housing wealth (2020 data), total wealth stands at DKK 5.5m per household. The high wealth reflects a well-developed pension system. Both asset and debt levels are high relative to other advanced countries. Debt represents some 108% of GDP. Among financial assets, pension savings and shares constitute the main part.

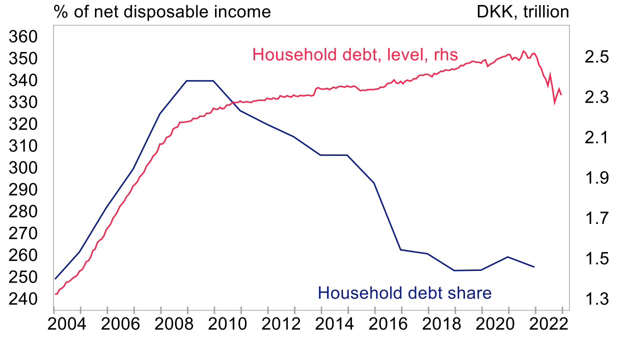
Strong public finances and robust economy

Thanks to Denmark's healthy public finances, a generous social welfare system can cushion households from loss of income over the business cycle. Combined with a flexible labour market this also ensures smoother necessary transitions over the business cycle and as a part of the technological progress and ongoing changing nature of the economy. Danish wage earners are less opposed to changing economic environments than many of their foreign counterparts.

Budgetary discipline is a cornerstone in the conduct of fiscal policy, and the regulatory set-up for fiscal policy ensures continued tight control of public expenditure. This has kept public debt low in Denmark. Few countries faced the pandemic with buffers as solid as Denmark's and in such good position to mitigate the economic consequences. Considering Denmark's economic balances, a downgrade of its top rating should be a long way off.

The Danish economy has recovered impressively from the pandemic without any major imbalances. Households and firms were prudent during the pandemic and reduced their debts. The Danish economy therefore faces any headwinds from weaker European and global growth on a strong footing.

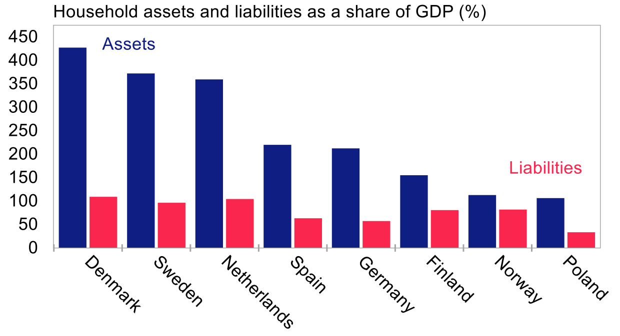
Danish households have reduced their debt share



Household debt has decreased over the past few years, but still accounts for 250% of household disposable income.

Source: Macrobond, Nykredit Markets

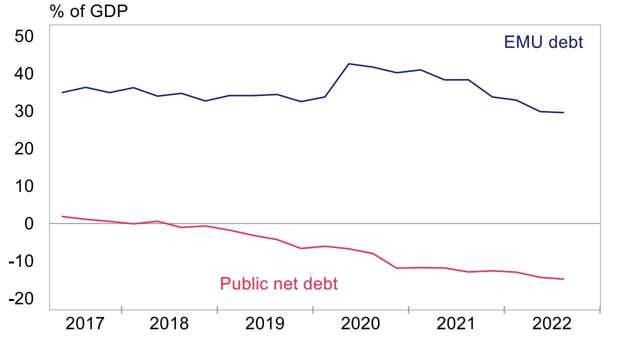
Household debt is matched by high wealth



Despite the high debt levels by international comparison, Danish households have substantial net wealth.

Source: Macrobond, Nykredit Markets

Sound public finances and low public debt

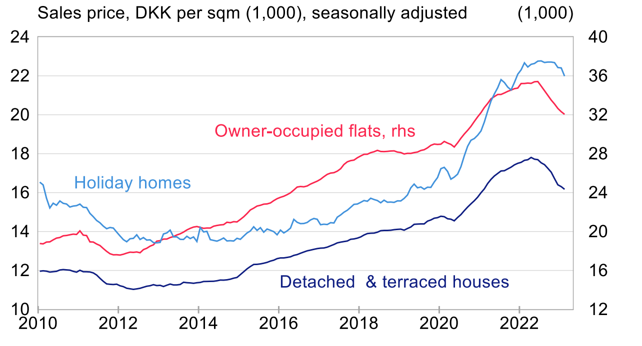


Source: Macrobond, Nykredit Markets

Danish housing market

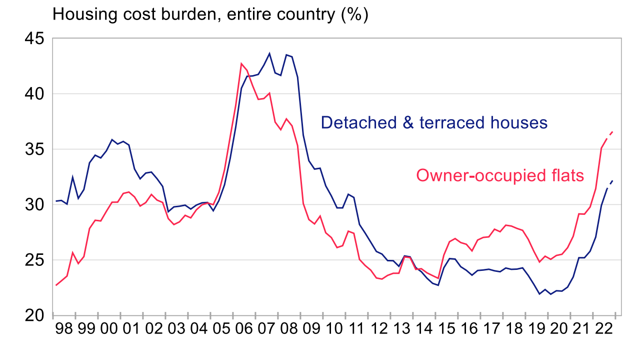
- The Danish housing market is cooling down
- We expect housing prices to decline throughout 2023, although at a slowing pace
- Fortunately, homeowners are well prepared for the future

Housing prices have dropped substantially



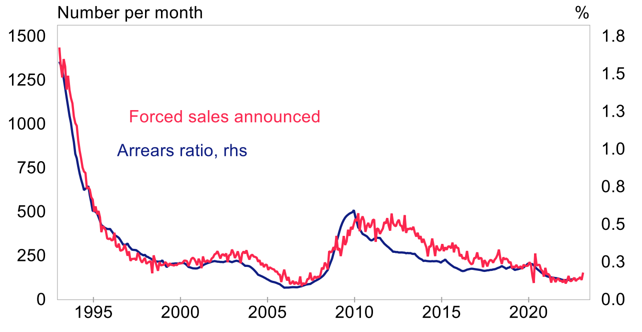
Source: Boligsiden, Macrobond

Housing cost burden has increased



Source: Macrobond

Forced sales and arrears remain at a very low level



The arrears ratio shows the proportion of total mortgage payments at least 105 days past due.

Source: Macrobond, Statistics Denmark, Association of Danish Mortgage Banks

Cooldown of the housing market

Recent years' housing market growth came to an end during the summer of 2022. Since then, the housing market has been cooling down, with plummeting sales and decreasing prices of both houses and flats.

The falling home prices are primarily due to higher interest rates and the past year's surging energy prices and overall inflation. Mortgage rates have gone up from 1.5% at the beginning of 2022 to a current peak of 6% on a 30-year fixed-rate loan. The housing cost burden has surged since 2020 and is now at a level not seen since before the onset of the financial crisis in 2007.

Going forward, we expect further declines in home prices, especially in Copenhagen and suburbs, albeit at a slowing pace. This is because long-term interest rates have most likely peaked, and futures contracts in the energy market suggest lower prices in the year to come. A new housing tax regime implies higher taxes on flats and lower taxes on houses from 2024 onwards. This is expected to further depress flat prices but on the other hand lift house prices.

Decrease in loans with fixed interest rate since 2021

After increasing for several years, the proportion of outstanding fixed-rate mortgage loans has decreased since the end of 2021. The fall has largely been driven by homeowners buying back the bonds behind their fixed-rate mortgage loans at market values well below par and financing such buybacks by taking up a new loan. This exercise, also known as remortgaging, reduces the principal of their loan. For many homeowners not remortgaging, the market value of their fixed-rate mortgage loans has decreased substantially, protecting their home equity against housing price decreases.

One in every three homeowners switches from a fixed-rate loan to a variable-rate loan when remortgaging. However, the ratio of fixed-rate mortgages to variable-rate mortgages remains high compared to 2013, and more than half the borrowers choose to amortise their loans. This helps enhance resilience in the Danish housing market, as high amortisation rates reduce interest-rate sensitivity and housing debt.

Fewer borrowers default and lose their homes

Employment and income growth in combination with lower financing costs have made it easier for homeowners to meet their payment obligations on mortgage loans. Accordingly, the arrears ratio has been at a sustained low level for the last several years. Naturally, this can be seen in the number of houses subject to forced sale, which is at the lowest level since 2008. This also reflects the improvements in the housing market in large parts of Denmark, making it easier to sell a house in the open market and avoid a forced sale.

Danish covered bond market – structure and legislation

- Danish covered bonds are compliant with the EU Covered Bond Directive
- Match funding implies pass-through on a loan-by-loan basis
- Market risk in connection with refinancing is passed directly through to borrowers

Danish covered bonds can be issued either by specialised Danish mortgage banks or by Danish universal banks. Match funded issuance by specialised mortgage banks is by far the most prevalent, and volumes far exceed issuance from the one Danish universal bank that to date has issued covered bonds.

Long history and strong legislation

The first Danish mortgage bonds date back to 1797 and emerged in the wake of the Copenhagen Fire of 1795, where the financing need for reconstruction was huge. Danish mortgage legislation originates from 1851, and together with Germany, Denmark has the oldest mortgage legislation in the world.

In connection with the adaptation of the Danish legislation on covered bond to EU standards in 2007, universal banks gained access to issuing covered bonds. Previously, a specialised banking licence (as mortgage bank) was required for issuers of covered bonds.

Mortgage banks are specialised banks whose business area is limited to the granting of mortgage loans funded by covered bonds. Mortgage banks may not accept deposits, and funding is solely based on issuance of covered bonds. The Danish Financial Supervisory Authority (FSA) supervises compliance with current legislation and regularly conducts on-site inspections. Financial institutions classified as Other Systemically Important Institutions (O-SIIs) are subject to stricter requirements.

Danish covered bonds are issued as either SDOs, SDROs or ROs, which all qualify as European Covered Bonds under the new EU Covered Bond Directive (CBD) – see fact box for more details. The EU Capital Requirements Regulation (CRR) lays down a number of requirements for covered bonds and obtain a low risk weighting. One of the most significant elements of the CRR from a Danish perspective is the requirement of continuous loan-to-value (LTV) compliance – see fact box next page. SDROs and SDOs (but not ROs) comply with the requirements of the CRR, implying a weighting of 10% according to the standardised approach.

Covered bonds from specialised Danish banks

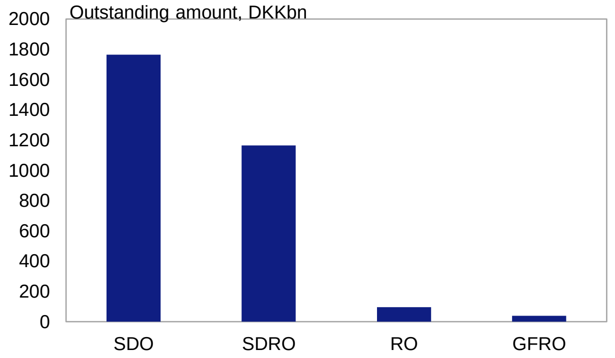
All types of lending provided by Danish mortgage banks are match funded – even lending that is refinanced during the term of the loan. When loans are refinanced, loan rates are reset to match the interest rates at which new funding is obtained. Thus, Danish mortgage banks transfer market risk in connection with refinancing directly to the borrowers.

SDOs, SDROs or ROs

Danish covered bonds are issued as either SDOs, SDROs or ROs, and comply with the EU Covered Bond Directive (CBD), which entered into force in July 2022. SDOs and SDROs also comply with the requirements set out in Article 129 of the EU Capital Requirements Regulation (CRR), thereby qualifying as European Covered Bonds (Premium) and carrying a 10% risk weighting under the standardised approach. This is not the case for ROs, which are European Covered Bonds and carry a 20% risk weighting under the standardised approach. However, ROs issued before 1 January 2008 are grandfathered and thereby secured a 10% risk weighting.

SDO: Covered bond, European Covered Bond (Premium)
SDRO: Covered mortgage bond, European Covered Bond (Premium)
RO: Mortgage bond, European Covered Bond
GFRO: Grandfathered mortgage bond (issued before 1 Jan 2008)

Danish covered bonds by type



96.8% of the funding is in DKK, 1.6% is in EUR, and 1.6% is in SEK. RO covers bonds of types RO, RO2L and RO20.

Source: Nykredit Markets

Eligible assets

Assets eligible as security for Danish covered bonds are restricted to loans granted against mortgages on property, unsecured loans to public authorities, loans guaranteed by public authorities or other non-subordinate claims against and guarantees issued by credit institutions based on the issuance of covered bonds. Claims on credit institutions may not exceed 15% of the total outstanding nominal amount of bonds.

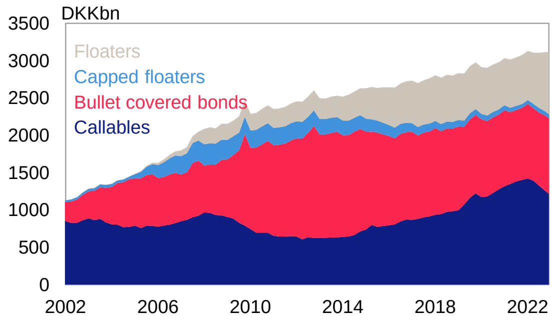
The Danish FSA may allow other CRR-compliant assets. Eligible assets vary depending on the type of issuer and covered bond. SDRO- and RO-eligible assets are restricted to loans secured by mortgages on property and exposure to public authorities.

O-SII requirements

Systemically important financial institutions (O-SIIs) are identified once a year. Identification of O-SIIs are based on an assessment of the systemic importance of the institution, in which the institutions are scored on 12 factors related to eg size, complexity and interconnectedness. O-SIIs are subject to stricter requirements than non-O-SIIs, including a minimum capital buffer requirement of 1-3% of their risk-weighted assets depending on their systemic importance.

As Danish covered bonds are considered systemically important, all issuers of covered bonds in Denmark are deemed to be O-SIIs. The complete list of Danish O-SIIs comprises Danske Bank A/S, Nykredit Realkredit A/S, Nordea Kredit Realkreditaktieselskab, Jyske Bank A/S, Sydbank A/S, DLR Kredit A/S, Spar Nord Bank A/S and A/S Arbejdernes Landsbank.

Segments in the Danish covered bond market



Development of outstanding amount (nominal value) in major segments.

Source: Nykredit Markets

LTV limits

Danish covered bond issuers are subject to LTV limits, which are very similar to the CRR limits. Note that the LTV limits must be complied with at individual loan levels. Issuers must adopt a "haircut" approach and may at any given time only include the part of each loan that is below the LTV limit when determining the value of the cover assets behind the bonds.

Property type	LTV limit
Residential	80%*
Commercial/agricultural	60% (70% against extra collateral)

* Max maturity of 30 years and a max interest-only period of 10 years. Longer interest-only periods are possible under stricter LTV limits.

Issuers of SDOs or SDROs must continuously ensure that the cover assets behind the issued bonds remain intact. If property prices fall, the issuer must contribute additional collateral to the cover pool, eg in the form of government bonds. In determining the value of the cover pool, issuers must apply the market values of the properties provided as security in each cover pool. When issuing ROs, issuers are only subject to LTV limits at the time when loans are issued. The Danish FSA sets out guidelines for the valuation principles.

The Danish covered bond market falls into three major segments: callable bonds, fixed-rate bullets and floaters (with and without caps). Callable bonds and fixed-rate bullets constitute the largest part of the market, although mortgage loans funded by floaters saw a surge in popularity among borrowers in 2022. EUR-denominated bonds make up 1.6% of the Danish covered bond market, with the highest volume in the fixed-rate bullet segment. Detailed descriptions of the three segments are given in the chapters below.

Danish covered bonds are generally issued either on tap or at refinancing auctions. Tap issues satisfy day-to-day funding needs, and issuers thus avoid having to sell large amounts in the market in one single day. As nearly all lending is based on match funding, higher funding costs do not affect issuers but are passed directly on to borrowers. Due to match funding, the offered range of loan products (and their relative attractiveness) is heavily influenced by developments in the funding market.

Long-term callable bonds and long-term capped floaters typically have an opening period of three years with tap issuance on a day-to-day basis. The relatively long opening period enables issuers to build sizeable bond series.

Adjustable-rate mortgages (ARMs) funded by short-term fixed-rate bullets as well as floating-rate mortgages funded by short-term floaters are refinanced through auctions held about one month before the existing funding matures (which is on either 1 January, 1 April, 1 July or 1 October). The auctions give rise to major issuance of mainly 1Y, 3Y and 5Y fixed-rate bullets along with floaters with terms of up to 5 years. However, the total funding needed at the auctions is always lower than the amount maturing (due to amortisation and shifts to other segments). Interest-rate risk and spread risk are passed directly on to the borrowers. Over several years, mortgage banks have worked to make borrowers choose loans with less frequent refinancing.

Loan origination

Since the financial crisis, the Danish regulation of mortgage lending has been tightened several times as an element of a broader effort to reduce the risk of instability in the financial system.

As an example – in addition to the general LTV limits for mortgage lending (see fact box) – households with debt exceeding four times their income and/or an LTV above 60% are restricted in their access to variable-rate and interest-only loans. The households affected are still able to obtain other loan types. Further, private home owners must be able to afford a 5% down payment, and thus may finance no more than 95% of a house purchase by a combination of mortgage and bank loans. Borrowers are credit-scored based on budgets and credit checks. Irrespective of the loan type requested by a borrower, borrowers must credit-qualify for a callable fixed-rate 30Y repayment loan.

The regulation also sets benchmarks for lending growth, the interest-rate risk of borrowers, interest-only lending, short-term funded loans and large exposures at the mortgage lender level (the so-called supervisory diamond for mortgage banks). These benchmarks serve as an early warning system for identifying potential excessive risk-taking by mortgage lenders.

Cover pools

Investors in Danish covered bonds are protected by dual recourse to both the capital of the issuing mortgage bank and to the assets of a cover pool. Assets serving as security for covered bonds must be segregated into independent cover pools, referred to as capital centres in mortgage banks and cover registers in universal banks.

Covered bond holders have a primary preferential claim on all cover assets in case of bankruptcy of the issuer. Covered bond holders rank pari passu with derivatives counterparties, provided that the derivatives contracts are concluded for the purpose of hedging imbalances between lending and funding. Cash flows to covered bond holders and derivatives counterparties must remain unaffected by the bankruptcy of the issuer. Payments cannot be accelerated, just as derivatives counterparties are not entitled to demand termination of the contracts in case of bankruptcy of the issuer.

By virtue of covered bonds being considered systemically important, all issuers of covered bonds in Denmark are deemed to be O-SIIs, and therefore, the regulatory framework is aimed at ensuring restructuring rather than bankruptcy in case of distress.

Borrowers are liable for loans granted against mortgages on real property – personally and with the mortgaged property serving as security. Covered bond issuers may waive the personal liability requirement, but rarely do so.

Overcollateralisation

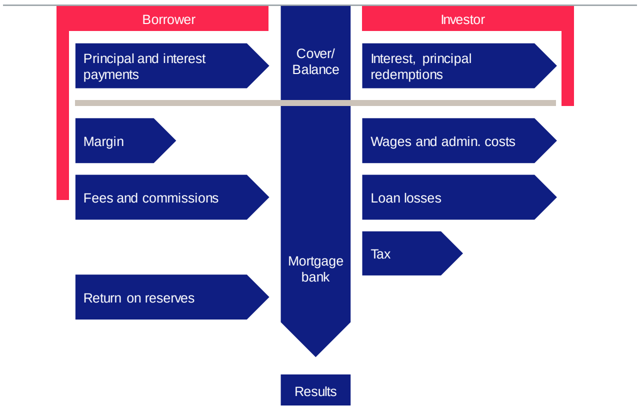
Danish issuers of covered bonds are subject to a mandatory overcollateralisation (OC) corresponding to 2% of the outstanding amount of covered bonds at the capital centre level. Both mortgage banks and universal banks may voluntarily supply additional OC to achieve higher ratings.

Strict ALM rules support match funding

Compared with other European mortgage systems, the Danish system stands out in a number of areas. The biggest difference is the Danish match funding, which is the basis of Danish covered bond legislation, which complies with European standards. Consequently, Danish covered bond legislation is very stringent and among Europe's most restrictive on ALM risk.

Mortgage banks continue to only offer pass-through products, thus completely eliminating market risk. The pass-through principle also implies that Danish mortgage borrowers may terminate their loans by buying back the mortgage bonds funding their loans in the bond market and delivering them to their mortgage bank. This option is referred to as the delivery option or the buyback option and applies to all mortgage bonds, whether callable or non-callable.

Match funding: Pass-through of interest and principal payments



Match funding means that issuers pass through all interest and principal payments from borrowers directly to bondholders. The payments are guaranteed by the mortgage bank and the capital centre.

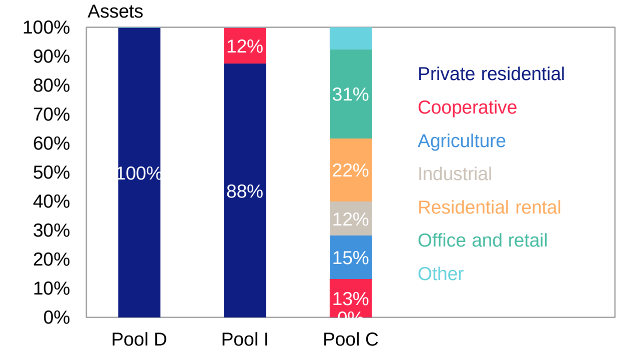
Source: Nykredit Markets

Specific vs general balance principle

The general balance principle is based on stress tests in line with European-style ALM requirements. Besides stress tests, the specific balance principle includes additional restrictions, eg on funding and the use of derivatives.

Under the general balance principle, mortgage banks and universal banks have different risk limits. Mortgage banks' risk limits are generally tighter than those applying to universal banks.

Cover assets in Danske Bank



The nominal value of the cover pools of Capital Centres D, I and C were DKK 25.0bn, DKK 121.2bn and DKK 45.2bn, respectively, at end-Q4/2022.

Source: Danske Bank A/S, Nykredit Markets

Stress tests under the general balance principle

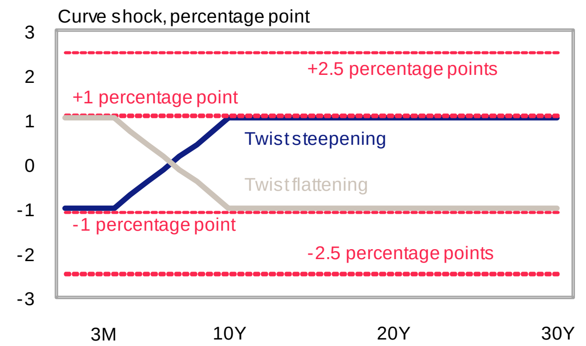
Interest rate risk is stress tested by way of:

- A parallel shift of the yield curve (+/-100bp), risk not to exceed 10% of OC for universal banks.
- A parallel shift of the yield curve (+/-250bp), risk not to exceed 100% of OC for universal banks.
- Curve twist (0-3 months +/-100bp and 10 years or more +/100bp), risk not to exceed 100% of OC for universal banks.

Foreign exchange risk is stress tested against a 10% rise/fall for currencies in the EU, EEA or Switzerland and against a 50% rise/fall for all other currencies. Foreign exchange risk is not to exceed 10% of OC for universal banks.

Option risk is stress tested against a 100bp rise/fall in the volatility structure. Option risk is not to exceed 10% of OC for universal banks.

Stress testing the yield curve



Stress tests applied to the yield curve – the general balance principle.

Source: Nykredit Markets

ALM – the balance principle

The balance principle specifies the extent to which mortgage banks and universal banks may assume interest rate, foreign exchange, option and liquidity risk in relation to mortgage lending (in case it is not match funded). For each cover pool, issuers must choose either the older specific or the newer general balance principle for managing financial risk – see fact box next page. To prevent issuers from changing balance principle at their own discretion, the choice of balance principle must appear from the bond prospectus.

The general and specific balance principles

Universal banks' issuance of covered bonds is subject to the general balance principle. The issuance method is directly comparable with the European model allowing banks to exploit specific market conditions to raise funding. The bank may thus obtain funding on other terms than warranted by the cover assets, eg as regards maturities, interest rates and currencies. This may involve a number of market-related risks, which make certain demands on asset-liability management (ALM). Legislation sets certain risk limits and contains detailed rules for market risk management, including specific rules (stress tests) for interest rate, foreign exchange and option risks.

To date, Danske Bank is the only Danish universal bank to have issued covered bonds. The composition of their cover pools is shown in the figure. The total outstanding amount of these covered bonds is much smaller than the outstanding amount of covered bonds issued by mortgage banks, which are covered more extensively in separate sections below.

Mortgage banks are allowed to issue bonds under the general balance principle used by universal banks, but they will be subject to tighter stress test requirements than universal banks. In practice, Danish mortgage banks comply with the requirements of the specific balance principle due to match funding. Since match funding also implies that they are not exposed to market risk, stress tests are not relevant for mortgage banks in practice.

Stress tests of market risks

All risk factors must be assessed based on differences between future cash inflows and outflows, including derivatives, specifically defined in legislation. Internal models may be applied. Stress tests under the general balance principle are based on six different yield curve shifts along with shocks to currencies and volatilities (see box). These risks must be determined separately for each currency, and generally, risk with opposite signs must not be set off between different currencies. However, set-off between DKK and EUR is allowed by up to 50%. In addition to stress tests, nominal and NPV requirements apply to cash flows. In nominal terms, ingoing interest payments must exceed outgoing interest payments in a cover pool. Add to this that the NPV of future ingoing payments must exceed the NPV of future outgoing payments. Strict requirements for management of liquidity risk also apply.

Under the general balance principle, the risk limits are stricter for mortgage banks than for universal banks. However, as mentioned above, the match funding employed by Danish mortgage banks makes stress tests largely irrelevant.

Danish bullet covered bonds

- Bullet covered bonds with total outstanding amount of EUR 135bn
- Highly liquid short-term market
- The DKK market is by far the largest followed by the EUR

To take advantage of the steep yield curve while still complying with the balance principle, a new loan type was introduced in the Danish covered bond market in 1996: adjustable-rate mortgages (ARMs) funded by issuance of short-term fixed-rate bullet covered bonds. The interest rate on the loan is fixed on a horizon corresponding to the term of the short-term bullet bonds. At maturity of the short-term funding, the remaining debt is refinanced in the market, usually at an auction, and the interest rate on the loan along with the borrower's payments (interest and amortisation) are adjusted to the new market rate achieved at the auction. For example, a 30Y mortgage loan funded by 1Y covered bonds is subject to refinancing 29 times.

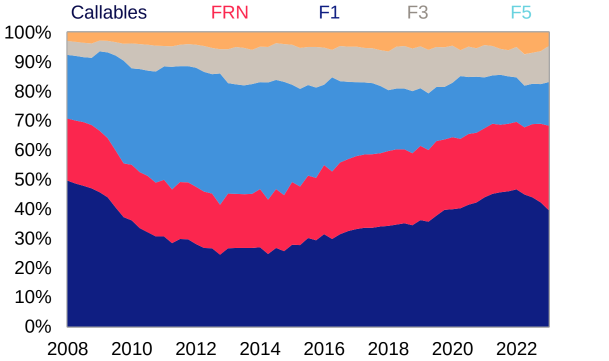
Annuity repayments are recalculated after each refinancing auction assuming that the interest rate will remain unchanged at the new level for the remainder of the loan term. The loans may have times-to-maturity of up to 30 years and interest-only periods of up to 10 years. Mortgage banks typically issue bullet covered bonds with the same combination of coupon and maturity to support a unified domestic market.

Mortgage banks have been spreading their refinancing activity over the year instead of – as was previously the case – only refinancing once a year. All Danish short-term covered bonds funding ARMs mature on 1 January, 1 April, 1 July, or 1 October. Further, the mortgage banks are encouraging borrowers choosing ARMs funded by bullet covered bonds to opt for loans with longer fixed-rate periods (more than one year) to reduce the frequency of refinancing. This has resulted in higher margin fees for ARMs than for 30Y fixed-rate loans as well as a higher price spread at the refinancing auctions.

For several years up to around 2013, ARMs were the most popular mortgage type among Danish household borrowers. In 2013, ARMs funded by bullet covered bonds had a market share of almost 55% with the majority funded by 1Y covered bullet bonds (see figure). Since 2013, the market share of ARMs has declined to 32% as fixed-rate loans funded by callable bonds (re)gained popularity as long-term interest rates fell. Most recently, fixed-rate loans have been on the decline in 2022 as surging interest rates triggered large buybacks in callable bonds. This has not resulted in a resurgence in ARMs however, as most borrowers preferred moving to variable-rate loans.

In 2018 a new type of bullet covered bond – government-guaranteed bonds – was introduced. The new bonds are used to fund public housing loans subsidised by the government and are issued through separate capital centres. Until the introduction subsidised public housing loans have been funded by ordinary covered bonds. Gradually the existing subsidised mortgage loans are transferred to the new capital centres. Danmarks Nationalbank has bought all these new bonds funded by issuing government bonds, and the bonds are priced flat to the government curve.

Segment breakdown, Danish covered bond market



Significant reduction in 1Y bullets since 2013.

Source: Nykredit Markets

DKK-denominated bullet covered bonds at auction

Term	Offer, EURbn	0-2Y	2-4Y	+4Y
01-Apr-23	10	64%	19%	17%
01-Jan-23	6	67%	16%	16%
01-Oct-22	5	69%	10%	21%
01-Jul-22	2	11%	13%	76%
01-Apr-22	10	37%	24%	39%
01-Jan-22	8	62%	15%	23%
01-Oct-21	3	56%	18%	26%
01-Jul-21	2	26%	27%	47%
01-Apr-21	11	42%	27%	31%
01-Jan-21	7	50%	17%	33%

The majority of the amounts auctioned are in 1Y bonds.

Source: Nykredit Markets

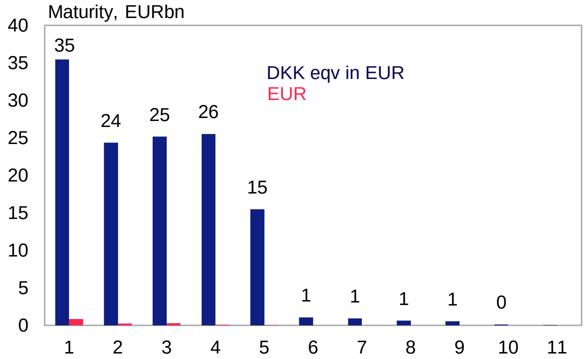
Soft bullet structures in Danish covered bonds

Funding period	Interest rate trigger (+500bp)	Refinancing trigger	Effective from
Fixed rate ≤ 1Y	1Y yield + 500bp	Yes	1 Apr 2014
1Y < Fixed rate ≤ 2Y	2Y yield + 500bp	Yes	1 Jan 2015
Fixed rate > 2Y	None	Yes	1 Jan 2015
Floater ≤ 2Y	Cap at +500bp	Yes	1 Jan 2015
Floater > 2Y	None	Yes	1 Jan 2015

Two types of triggers were introduced with the legislative amendment: The refinancing failure trigger and the interest rate trigger.

Source: Association of Danish Mortgage Banks

Bullet covered bonds typically have short maturities



Compared to earlier, the short-term bullets are more evenly spread out across 1Y-5Y maturities.

Source: Nykredit Markets

Auction procedures

Type of auction
The auctions are held via Nasdaq OMX Copenhagen A/S. The participants are stockbrokers and investors with access to Nasdaq OMX Copenhagen A/S's submarket for mortgage bond issuers. The participants can see their own bids in the Genium INET system, but not the bids of the other participants.

Allotment
As regards bullet covered bonds, bids above the fixing price will be settled in full at the fixing price. Bids at the fixing price may be accepted on a pro rata basis. All executed trades will be published through Nasdaq OMX Copenhagen A/S.

Value date
All bonds will be subject to long settlement. The value date of all trades executed at the auctions will be at the term date. If the term date is not a banking day, the value date will be the first banking day after the term date.

Reverse facility
As the bonds traded will be subject to long settlement, the issuer offers a reverse facility for bullet covered bonds to auction participants whose bids have been accepted and who require the bonds after only two days. By means of the reverse facility, the issuer will offer to sell the allotted bonds subject to the conventional two settlement days and subsequently repurchase the said bonds at the value date. The size of the reverse facility will be determined on an individual basis by the issuer but should not exceed the amount allotted to each individual bidder. The issuer may make the reverse facility conditional on the investor providing a corresponding amount of bonds maturing on the term date. Reverse facilities will be arranged on an individual basis.

Other terms
The issuer reserves the right not to sell the full offering announced at the auctions.

Source: Nykredit Realkredit A/S, Nykredit Markets

New legislation addressing refinancing risk
In spring 2014, a legislative amendment was adopted to contain refinancing risk in the Danish mortgage banking sector. With the amendment, new bonds were introduced to fund loans subject to refinancing. These bonds have a soft bullet structure with extendable maturity if the loans cannot be refinanced (refinancing failure trigger), or – for some bonds – where yields have risen by over 500bp relative to the preceding year.

All loans subject to refinancing with 1Y bullet covered bonds were included as of April 2014, and all other loans subject to refinancing were included as of 2015. When extending the maturity of 1Y and 2Y bullet covered bonds (due to interest rate or refinancing failure trigger), the coupon is fixed at the rate of an equivalent bond at the refinancing one year earlier plus 500bp, while (in case of refinancing failure trigger) the coupon of long-term bonds is fixed at the 1Y rate the previous year plus 500bp.

Tap issuance followed by refinancing auctions
New lending is funded on a daily basis through tap issuance of covered bonds. At the maturity of the short-term funding, the bonds will be refinanced at auctions held by Danish mortgage banks or through tap sales. In 2022, EUR 23bn-worth of 1Y-5Y bonds have been refinanced on auctions held by mortgage banks.

Refinancing auctions of short-term covered bonds come to an end at least 30 days before the maturity of the outstanding bonds (1 January, 1 April, 1 July and 1 October). Prior to the refinancing auctions, the mortgage banks publish the expected amount to be refinanced in each bond over the auction period. The amount may be adjusted due to changes in interest rate reset profiles, refinancing to other loan types or sale of the property behind the loan. The final amount will be published at the auction date.

DKK and EUR funding
The currency of the outstanding bonds reflects the currency of the loans in the cover pool. Therefore, the DKK market is by far the largest (99%) followed by the EUR market (1%).

Investment in bullet covered bonds
Large volumes of the outstanding bonds and natural liquidity in the market from ongoing tap issuance and buybacks from borrowers make the segment very attractive for liquidity purposes. For the Danish banking sector, short-term DKK covered bonds are the most important asset in liquidity management, and the need for short-term covered bonds is underpinned by the fact that the DKK government bond market is too small to fulfil the need for liquid assets in the banking sector. Most covered bonds from Danish issuers are AAA rated and are typically priced quite aggressively against the swap curve in line with EUR covered bonds from for example Sweden and Germany. The 1Y segment trades at a tight spread to the Danish OIS curve (Cita).

Foreign investors familiar with investments in the EUR covered bond market could just as well buy DKK covered bonds. The only risk factors in relation to DKK-denominated bonds compared with the EUR covered bond market are the foreign exchange exposure to DKK and the yield risk (country spread risk). Alternatively, investors can add a basis swap from DKK to EUR.

The foreign exchange risk is, however, very limited as the DKK has been pegged to first the D-mark and then the EUR since 1982. The central parity is DKK 7.46 per EUR with a fluctuation band of +/- 2.25%, but in practice, the DKK has been stabilised at a level much closer to the central rate since the late 1990s. The interest rate risk remains due to the fixed exchange rate policy, which could lead Danmarks Nationalbank to change the policy rate unilaterally – upwards as well as downwards.

Danish floaters and capped floaters

- Total outstanding amount of floaters and capped floaters of EUR 120bn
- High market growth and refinancing activity
- Most floaters and capped floaters are amortising

Danish mortgage banks have a total outstanding amount of floaters and capped floaters of EUR 120bn, of which 89% is DKK-denominated, 7% is SEK-denominated, and 4% is EUR-denominated.

In 2000, borrowers were for the first time offered the opportunity to raise 30Y floating-rate mortgage loans with interest rate caps. The funding behind these loans were capped floaters with maturities of up to five years. At maturity of the 5Y bonds, the loans were refinanced into new 5Y capped floaters, and the interest rate cap was thus only effective for five years at a time.

In 2004, it became possible to raise loans funded by capped floaters with maturities of up to 30 years, enabling borrowers to obtain a fixed interest rate cap covering the entire loan term. Since then, the development and introduction of new floating-rate loan and bond types have continued. As a result, a large number of floating-rate bonds with different features are now being offered.

Floating-rate bonds with embedded caps are denoted capped floaters (CF). Today, 6% of floaters have an embedded cap. Both floaters and capped floaters have been issued with maturities of up to 30 years.

A basic standard for the issuance of floaters and capped floaters has emerged in the Danish mortgage market. Common to the bonds is that they are based on 3M or 6M Cibor/Euribor/Cita rates. The bonds pay coupon in accordance with the Danish bond standards (actual/actual).

Floaters without caps, which are also used to fund pass-through commercial lending, were originally issued with 5Y maturities. However, following the transition to the new legislation in 2007, a fairly large amount of floaters with longer maturities (10 years and 30 years) has been issued. Today, issuance is again mainly in shorter maturities, typically of up to 3-5 years, and without caps. Recently, as the spread between short and long-term interest rates widened in 2022, floater-financing has increased significantly as a share of new mortgages.

There are currently 44 floating-rate bonds (capped or uncapped) with an outstanding amount of over EUR 1bn, and 62 floaters with an outstanding amount of over EUR 500m. Within the segment, the largest bond has an outstanding amount of EUR 3.5bn.

Legislation addressing refinancing risk

As from 2015, the floater segment has been subject to the legislative amendment to contain refinancing risk in the Danish covered bond market. As a result, new floaters are required to fund loans subject to refinancing. The new floaters have a soft bullet structure with extendable maturity if the loans cannot be refinanced (refinancing failure trigger). Short-term floaters with maturities of up to 2 years at refinancing also come with a cap to keep interest rates from rising more than 500bp from the most recently fixed interest rate.

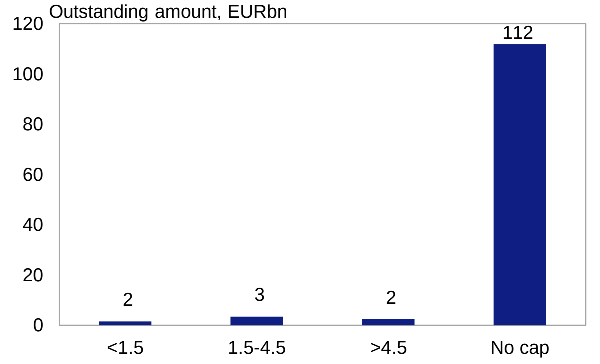
Standard features of Danish floaters

Payment dates p.a.	4
Coupon fixings p.a.	2 or 4
Reference rate	3M or 6M Cibor/Euribor/Cita
Fixing period	From 3 to 8 banking days before a payment
Coupon formula	(Fixing rate + coupon spread) * factor
Factor	365/360 or 1
Maturity	Up to 30 years
Amortisation	Like the underlying loans

The coupons of many bonds are fixed on the basis of a (multiplication) factor of 365/360 to adjust for different day count conventions.

Source: Nykredit Markets

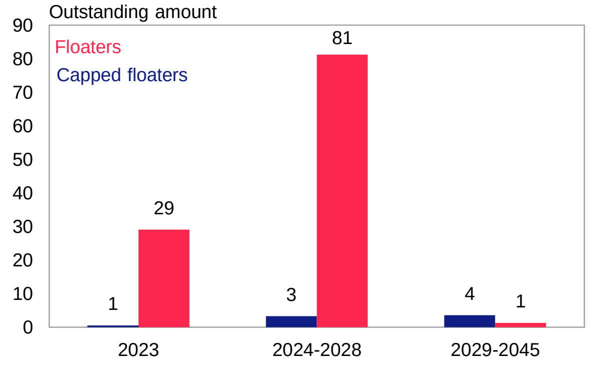
Floating-rate bonds by coupon cap



The coupon cap is the maximum coupon including coupon spread and multiplication factor (365/360).

Source: Nykredit Markets

Floating-rate bonds by maturity



The outstanding amount of floating-rate bonds is concentrated at the shorter end (maturities of around 5 years or less).

Source: Nykredit Markets

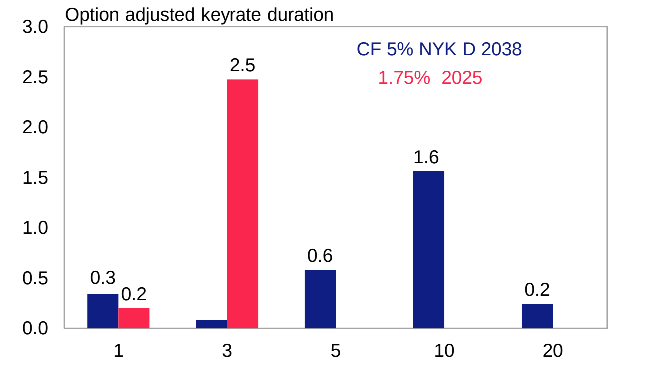
The ten largest bonds of the floater series

ISIN	Name	Outstand. EURbn
DK0004615713	2.99% RD T 2024	3.5
DK0009536286	2.9256% NYK H 2025 IO	3.4
DK0009533697	2.7431% NYK H 2024	3.3
DK0002054006	3.02% NDA 2 2026	3.2
DK0009533853	2.3826% NYK H 2024	3.1
DK0009538142	3.0777% NYK H 2026	3.0
DK0009534588	2.9459% NYK H 2025	2.9
DK0004612298	2.86% RD T 2023	2.9
DK0002050525	2.85% NDA 2 2024	2.8
DK0002041458	2.98% NDA 2 2023	2.7

The Top 10 by outstanding amount is dominated by uncapped floaters at the beginning of January 2023.

Source: Nykredit Markets

Key rates, capped floaters vs government bonds



Key rates reflects the capital loss if yields rise only at a given point. CF 5% NYK 2038 has positive duration at each point.

Source: Nykredit Markets

Negative short-term rates

The large decline in short-term Cita and Cibor rates at the beginning of 2015 led to the introduction of a coupon floor of 0% for some floating-rate bonds. Since most of the existing floaters were launched at a time when negative interest rates were not considered a realistic option, bond terms and base prospectuses lacked provisions on whether a floater may have a negative coupon and, if so, how to proceed. Since then, prospectuses have been updated to generally explicitly allow for negative interest levels and provide the details on how negative rates are handled in practice.

Besides the reference rate level, the value of a coupon floor depends on the maturity and the reference rate spread of the floating rate bond. The longer the maturity and the lower the spread, the greater the value of the floor.

Investment in capped floaters

Despite the floating-rate nature of long-term Danish capped floaters, they cannot be compared with ordinary floaters as their embedded caps involve both interest rate and volatility risk. 30Y capped floaters with 5% caps have a higher sensitivity to changes in 30Y yields than 30Y 5% callable bonds. The Danish long-term capped floaters typically have an annuity cash flow (and some have interest-only (IO) periods). On each coupon fixing date, the annuity profile to maturity is recalculated, and this means that the bond's repayment profile becomes dependent on the reference rate, thereby gaining a stochastic element.

As a result of the special characteristics of capped floaters, ordinary covered/government bond strategies according to which investors buy a capped floater and sell a government bond are problematic. In terms of duration (BPV) alone, it would offhand be most natural to hedge the capped floater by selling a government bond with approx. the same duration, typically between 2 and 5 years. The problem with this strategy is that the capped floater has little or maybe even negative interest rate sensitivity at the 2Y and 5Y points, thereby making investors very vulnerable to curve steepening. A more risk-neutral strategy would be to buy a short-term government bond along with the capped floater, while selling a 20Y government bond (or entering into a 30Y payer swap). Capped floaters are a natural asset class for asset swap investors who can buy the bonds along with an amortising cap.

Investment in Danish covered bond floaters

Uncapped floaters resemble plain vanilla floaters. However, due to a number of features, their pricing differs from that of a plain vanilla product. Firstly, the bonds are not bullet structures but will amortise at the same pace as the sum of the underlying loans (annuities with or without IO options). However, cash flows are delivered from the mortgage banks, whereby the expected redemptions are displayed.

The approximation in the coupon fixing by multiplying by 365/360 to compensate for the difference between the money market and the bond day count convention is generally fairly effective, but will in some quarters produce deviations from the actual holding period return in the money market. Finally, complexity is further increased by some of the floating-rate bonds being callable at par.

Although Danish covered bond floaters are nearly plain vanilla, investors should nonetheless take into consideration the special circumstances in relation to coupon fixing, coupon payments, repayment profile and callability.

Green bonds

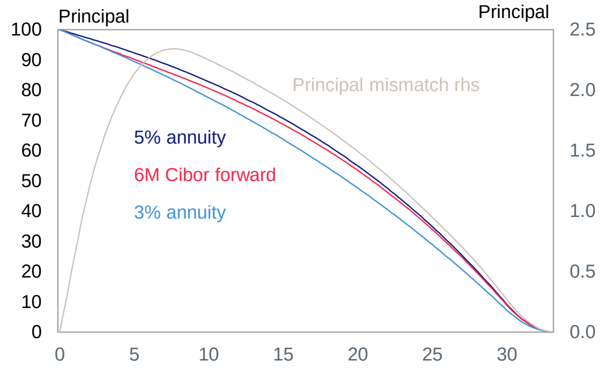
What characterises a green bond? A green bond is a bond where the sales proceeds are used to fund projects that contribute to environmental sustainability. In this context, a transparent process is paramount for project selection, management and ongoing monitoring and reporting.

The green element is relevant to borrowers and investors who want to be associated with sustainability. The focus on sustainability has not diminished in recent years, where climate change has received growing attention. The response to climate change also plays a key role in the 17 UN Sustainable Development Goals. Accordingly, Danish pension managers have announced through Insurance & Pension Denmark, their trade association, that their investment in the green transition will grow from about DKK 126bn in 2019 to DKK 476bn in 2030 – a DKK 350bn rise over a 10-year period. As of 2022, the pension industry in Denmark has invested DKK 240bn.

In May 2019, Nykredit Realkredit issued the first green covered bonds. Since then, Nykredit and other issuers have issued additional green bonds in both SEK and DKK. At the beginning of 2023, Nykredit's total green bond had an outstanding amount of SEK 15.6bn and DKK 19.1bn, while Realkredit Danmark's green bonds amounted to SEK 5.0bn and DKK 18.1bn. Nordea Kredit and Jyske Realkredit have green bonds of DKK 13.1bn and DKK 9.6bn, respectively.

All bonds in issue carry a floating interest rate and mature between April 2023 and July 2026. Issuance of green bonds is expected to grow substantially in the years to come. For now, issuance will only be in short-dated bonds with maturities up to 5 years.

Cash flow of 30Y capped floaters



The repayment profile is dependent on the development in 6M Cibor.

Source: Nykredit Markets

Danish callables

- Long-term fixed-rate bonds – callable by the individual borrower
- Largest covered bond market in Denmark with outstanding amount of EUR 165bn
- Dynamic market with issuance, prepayments and buybacks

The fixed-rate callable bond market is the largest covered bond segment in Denmark. While lower coupons have seen large scale buybacks in 2022, and issuance of new callable bonds has moved towards higher coupons as interest rates have increased, the market still consists mainly of 20Y and 30Y fixed-rate bonds with coupons of between 0.5% and 2%. As of January 2023, callables with coupons of between 0.5% and 2% constitute 75% of the total outstanding amount of callables.

Borrowers' prepayment and buyback behaviour

Callable bonds are callable at par by borrowers at each of the quarterly payment dates (1 January, 1 April, 1 July or 1 October). Borrowers may exercise their prepayment option – which gives rise to prepayments in addition to the ordinary repayments resulting from amortisation – by giving the mortgage bank notice of prepayment at least two months before the next payment date. Mortgage banks calculate total redemptions (prepayments and ordinary repayments), which are paid to investors on a proportionate basis on the subsequent payment date. As a consequence of the pass-through system, the bond cash flow mirrors the repayments from the underlying loans.

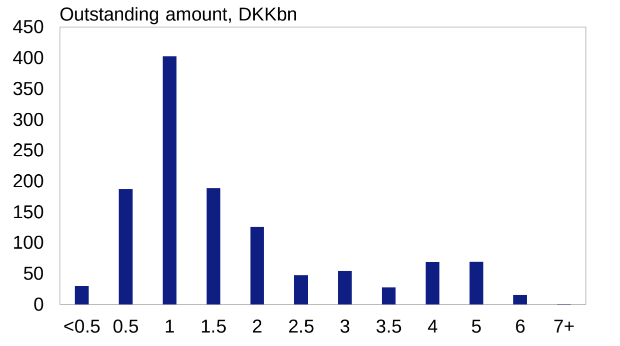
In order for investors to assess the risk inherent in callable bonds, an understanding of the underlying motivation for prepayments is useful. In Denmark, the predominant motive is to obtain a reduction in after-tax payments. If the underlying bonds are trading above par, this can be done by prepaying at par (exercising the in-the-money prepayment option) and switching to loans carrying lower rates. Borrowers tend to exercise their right to prepay loans to a great extent in periods with falling rates, and over the past decade, callable bonds worth DKK 1,672bn have been prepaid at par.

Borrowers can also terminate their loans by buying back the mortgage bonds funding their loans at the market price in the bond market and delivering them to their mortgage bank (the delivery or buyback option). As interest rates increased in 2022, many borrowers bought back the bonds funding their fixed-rate mortgages at market prices well below par and refinanced into a new loan, where the underlying bonds traded close to par, thereby reducing the debt outstanding. In total, buybacks of callable bonds amounted to DKK 466bn in 2022.

The prepayment and buyback activity makes for a dynamic market with relatively high issuance and turnover in the bonds outstanding despite the fact that the bonds are initially issued with a maturity of 30 years (see figures).

Prepayments have a direct effect on bondholders' positions, while all other refinancing methods only have an indirect effect. Prepayments are registered as redemptions, whereas refinancing through the purchase – or buyback – of bonds at market prices (the delivery option) will only increase demand for the bonds. Such market demand may have a positive effect on the prices of the bonds concerned.

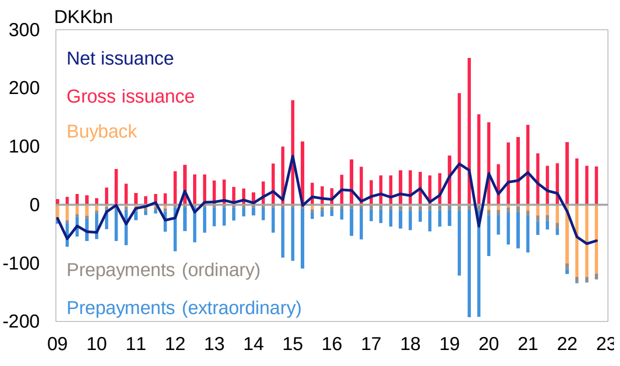
Callables by coupon as of January 2023



The callable market is dominated by lower-coupon bonds.

Source: Nykredit Markets

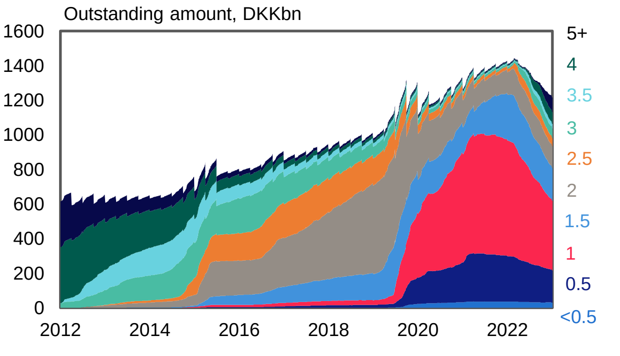
Issuance, buyback and prepayment of callables



High gross issuance of callable bonds in periods with high prepayments.

Source: Nykredit Markets

Coupon dynamics over time

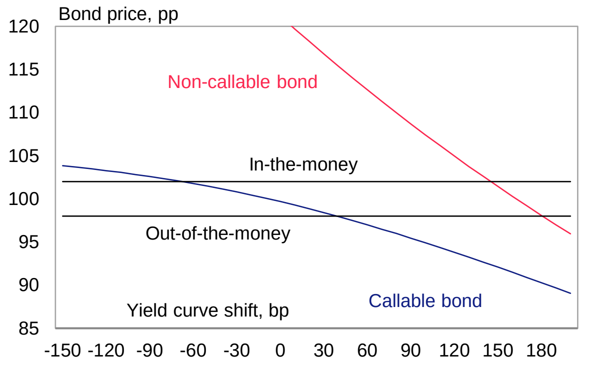


Prepayments and buybacks affect the composition of the callables market.

Source: Nykredit Markets

Investment in callable bonds

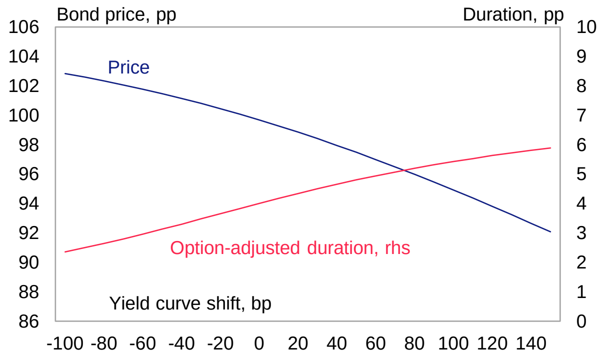
Price-yield structure, Danish callables



The upside potential in the price in connection with yield falls is highly reduced when the price is above the exercise price of 100.

Source: Nykredit Markets

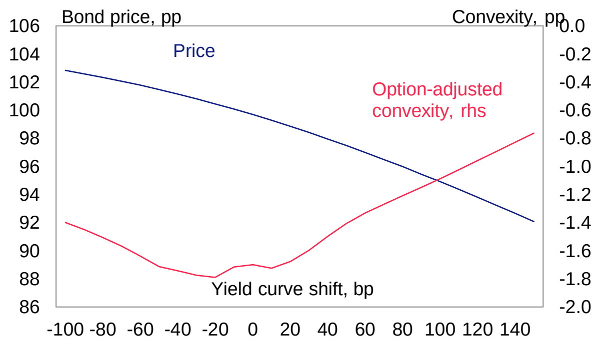
Reduced duration as yield falls



The option-adjusted duration tends to go towards zero as prices go well above 100.

Source: Nykredit Markets

Negative convexity



Convexity expresses the change in duration when yield levels change. Negative convexity indicates that the duration will increase as yields rise.

Source: Nykredit Markets

The prepayment option means that investors' upside potential is limited when interest rates fall, but on the other hand they receive a significantly higher yield relative to non-callable bonds. Successful investment in callable bonds requires an understanding of how prepayment risk affects pricing. The prepayment option sets these bonds apart from non-callable bonds.

Changes in market prices, given changes in yields, vary depending on whether prices are far below or close to 100 (par). This variation in characteristics affects other risk figures as well. Certain bond key figures commonly used, such as the yield-to-maturity (YTM) and yield curve spread (YCS), are of limited use. Instead, investors and risk managers can apply a theoretical (stochastic) pricing model to assess risk and investment potential through option-adjusted key figures, eg option adjusted spreads (OAS).

Callables – out-of-the money

Low-coupon callable bonds trading far below par have characteristics that resemble those of non-callable bonds due to the limited value of their prepayment option. The risk management of these bonds is therefore relatively simple. These bonds are often the first choice of new or non-Danish investors. A very common trading strategy for these investor groups is to buy callable bonds and sell government bonds with the same risk profile. The calculation of hedge ratios will typically be based on the option-adjusted duration (OAD). Such a strategy provides investors with positive carry but also exposure to rising volatility and neutral or negative convexity.

Foreign covered bond investors may establish corresponding investment strategies, eg by selling fixed-rate EUR covered bonds and buying Danish callable bonds.

Callables – at-the-money

Callable bonds trading close to par will have an at-the-money prepayment option. The risk management of these bonds is complex because of their significant negative convexity. The bonds are characterised by limited upside potential and significant downside risk. The downside is attributable to rising yields increasing duration significantly (extension risk). The complexity means that investors typically demand a higher risk premium for buying these bonds, which results in a higher yield. Interest rate derivatives are needed to hedge both extension risk and volatility risk associated with investment in callable bonds. Alternatively, a delta hedging strategy would require continuous adjustment of the hedge ratios.

Callables – in-the-money

High-coupon callable bonds trading far above par have typically been subject to high prepayment rates on a number of past payment dates. As a result, the current outstanding amount only constitutes a small fraction of the original outstanding amount (pool factor below 10%). At present, very few bonds fall into this category. On account of the low pool factor, prepayments have become less dependent on interest rate levels as most rational borrowers have already prepaid their loans. Furthermore, it will take significant yield rises before extension risk becomes a problem. The duration of this type of bond is close to zero, and the bond is traded as an alternative to the money market.

Because of the small outstanding amount, liquidity is low. Investors who prefer investments in high-coupon covered bonds to money market investments must be willing to assume interest rate risk as well as prepayment risk.

Prepayment determinants

It should be emphasised that the prepayment event is not driven by the price of the bond in question, but by the gain achievable by refinancing into a new loan with a lower interest rate. Several factors influence the refinancing gains of individual borrowers.

Due to the fixed costs related to loan prepayment, the size of the debt outstanding and the remaining term of the loan are decisive for borrowers' potential refinancing gains. In bond series with a relatively high number of large loans, prepayments will, other things being equal, exceed those of equivalent series with small loans.

It also plays a role whether the loan is a bond or a cash loan. As a consequence of different tax treatment, cash loans generally tend to be prepaid at a slower pace than the bond loans.

Early repayment by way of buybacks

After a period of rising interest rate levels, many borrowers opt to refinance from low-coupon bonds to higher coupons – or to variable-rate loans. The implication is buybacks by borrowers, which supports the price of low-coupon bonds. Refinancing from low-coupon bonds far below par to higher coupon bonds just below par reduces the residual debt and improves borrowers' opportunity to prepay if yields decrease again.

Although it is possible for homebuyers in Denmark to assume existing mortgage debt, the sale of a property will usually result in loan refinancing (by either prepayment or buyback depending on whether bond prices are above or below par).

Market dynamics add to natural liquidity

Many borrowers with fixed-rate callable loans will refinance into other coupons when yield levels change significantly. This refinancing activity, combined with turnover in connection with new lending, gives rise to natural liquidity in the market – especially in the bonds that are open for issuance or have recently been closed. The standard opening period for a Danish callable bond is up to three years, but due to changing yield levels, the actual opening period is often shorter.

Basic understanding more crucial than complex modelling

The stochastic modelling of prepayment behaviour is a complex task and is outside the scope of most international investors. However, Danish banks are capable of doing the calculations, and relevant key figures can be delivered from Danish counterparties. Therefore, it is important to understand the market, its structure and borrower behaviour before entering the market.

Option-adjusted spread (OAS)

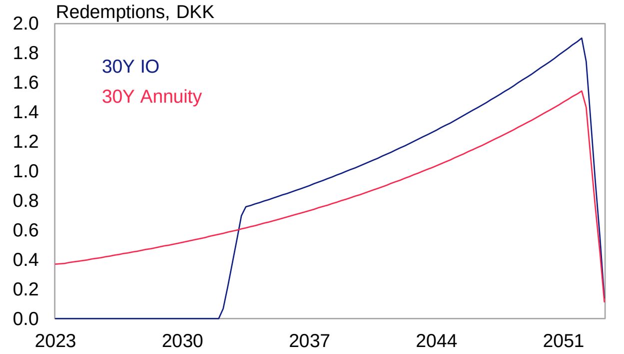
The OAS key figure provides investors with a basis for comparing the value of callable bonds with other investment alternatives. OAS is typically estimated relative to the Danish swap curve and implied swaption volatilities but may also be estimated relative to the government bond yield curve. Current OAS levels play an important role, and trading strategies are often established as a result of OAS changes.

Bond versus cash loans

Bond loan:
The principal of a bond loan equals the nominal value of the bonds issued to fund the loan, and the interest payments will correspond to the coupon payments on the bond.

Cash loan:
The principal of a cash loan equals the market value of the bonds issued, and interest payments will correspond to the yield-to-maturity of the bonds adjusted for compound interest.

Cash flow of annuities with interest-only option (IO)



Loans with an initial 10Y interest-only period will repay the principal as an annuity over the last 20 years.

Source: Nykredit Markets

Issuer profile: Nykredit Realkredit A/S

- The largest mortgage lender in Denmark, dating back to 1851 and 79% owned by Forenet Kredit, an association of customers
- Outstanding covered bonds totalled DKK 1,254bn at fair value by end-Q4/2022
- Nykredit Realkredit's covered bonds are rated AAA by S&P

Nykredit is one of Denmark's leading financial services providers with mortgage lending and banking as its core business. Its staff totalled 4,076 at end-Q4/2022. In contrast to other covered bond issuers, the specialised mortgage bank (Nykredit Realkredit A/S) is the parent company, and the universal bank is its subsidiary.

Nykredit Realkredit is Denmark's leading mortgage lender with a market share of 45%. It is a specialised bank dating back to 1851, whose business is limited to the granting of mortgage loans funded by covered bonds. At end-Q4/2022, Nykredit Realkredit's outstanding covered bonds totalled DKK 1,254bn at fair value. Nykredit Realkredit (Nykredit) is a Danish O-SII.

Cover pools

The two most important Nykredit cover pools are the SDO Capital Centres E and H. All cover pools primarily comprise mortgages on (predominantly Danish) property with additional assets comprising claims against credit institutions and government bonds. Capital Centre E was opened in 2007, and at end-Q4/2022, it accounted for covered bonds worth DKK 564bn (nominal value), mainly comprising fixed-rate callables. Capital Centre H came into use in 2011 for loans requiring refinancing (ARMs and floating-rate loans), and the transfer of these loans from Capital Centre E to Capital Centre H was completed as they were refinanced. At end-Q4/2022, Capital Centre H accounted for covered bonds worth DKK 711bn (nominal value).

ALM and covered bond funding

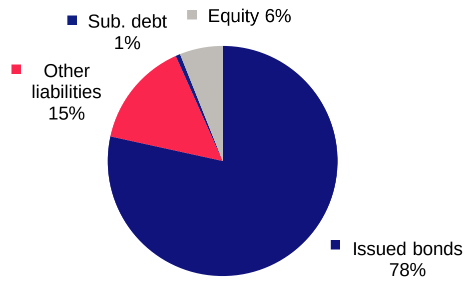
As described above, Danish covered bond issuers are subject to very strict ALM rules. Like other Danish mortgage banks, Nykredit Realkredit offers match-funded (pass-through) products, thereby eliminating market risk and the need for hedging.

Virtually all mortgage loans in Capital Centre E are match funded to maturity. For Capital Centre H, the majority of mortgage loans have much longer maturities than the issued covered bonds. The borrowers bear the refinancing risk associated with the asset/liability maturity mismatches. In 2014, a legislative amendment was made to contain refinancing risk in the Danish mortgage banking sector. Bonds subject to refinancing now have a soft bullet structure with extendable maturity if the loans cannot be refinanced (refinancing failure trigger), or – for some bonds – if interest rates have risen by over 500bp relative to the preceding year (cf above).

Rating

The vast majority of Nykredit's covered bonds are issued out of Capital Centres D, E, G, H and I, all rated AAA with a stable outlook by S&P Global Ratings.

Capital structure of the Nykredit Realkredit Group



Covered bonds are the dominant source of funding (Q4/2022).

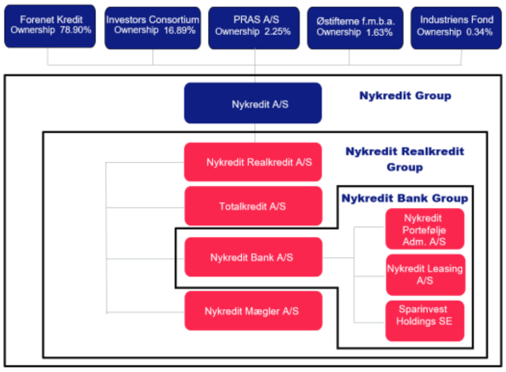
Source: Nykredit Realkredit A/S, Nykredit Markets

Cover pool statistics and ratings, Q4/2022

Capital Centre	D	E	G	H	I
Covered bonds (nom. DKKbn)	11.6	564	66	711	7.1
WAL covered bonds (years)	28	27.7	3.2	4.8	24.1
Fixed-rate callables (%)	14.4	99.8	0	3.8	100
ARMs (%)	3	0	20	43.4	0
Floating rate (%)	37	0.2	79.6	47.6	0
Capped floating rate (%)	45.8	0.1	0.4	5.2	0
Risk weighting CRD (%)	10/20	10	20	10	20
Eligible for central bank repo			Yes		
CBD/CRR-compliant			Yes/Yes		
Cover pool (nom. DKKbn)	16.2	582	78	734	11.7
OC ratio (%)	40	3.3	18	3.2	65
WAL cover pool (years)	28.6	27.7	25.1	26.9	24.1
Match-funded loans (%)	100	100	100	100	100
Avg. LTV of loans (%)	40	57	58	54	58
Residential mort. assets (%)	65.6	92.9	27.4	76.9	29.3
Commercial mort. assets (%)	34.4	7.1	72.6	23.1	70.7
Amortising/IO loans (%)	66/33	70/30	77/23	36/64	100/0
Ratings (M/S&P/F)	D	E	G	H	I
Issuer (S&P / Fitch / Moody's)			A+ / A / A1(u)**		
Covered bonds (S&P)	AAA	AAA	AAA	AAA	AAA
S&P unused notches uplift	4	4	4	4	4
Bloomberg ticker/website			NYKRE/www.nykredit.com		

Source: Nykredit Realkredit A/S, rating agencies
Note: The table is not exhaustive with respect to cover pools. Covered bonds and cover pools at nominal value. Moody's has assigned unsolicited ratings to Nykredit. Here, the Long-Term Counterparty Risk Rating is reported.

Nykredit Group



Nykredit A/S was previously named Nykredit Holding A/S.

Source: Nykredit Realkredit A/S, Nykredit Markets

Key figures – Nykredit Realkredit Group

DKKbn	2022	2021	2020
Total assets	1,600	1,673	1,666
Mortgage loans (fair value)	1,292	1,383	1,351
Bank loans	87	75	71
Equity	97	94	90
Deposits	107	93	88
Income	16.8	16.5	14.6
Profit (loss) before tax	11.5	10.7	6.8
Profit (loss) after tax	9.5	8.9	5.7
CET 1 capital ratio	19.5%	20.6%	20.2%
Total capital ratio	23.3%	24.7%	24.3%

Source: Nykredit Realkredit A/S, Nykredit Markets

Key figures – Nykredit Bank Group

DKKbn	2022	2021	2020
Total assets	237	215	198
Bank loans	87	75	71
Equity	34	31	26
Deposits	107	93	88
Income	6.1	5.9	5.1
Profit (loss) before tax	3.5	3.5	2
Profit (loss) after tax	2.7	2.8	1.6
CET 1 capital ratio	23.9%	23.0%	20.5%
Total capital ratio	24.4%	23.5%	22.7%

Source: Nykredit Bank A/S, Nykredit Markets

Nykredit Realkredit Group

Nykredit ultimately has five owners: Forenet Kredit, an association of customers, holds 79%, and combined, an investor consortium consisting of PFA Pension, PensionDanmark, PKA, AP Pension and AkademikerPension holds 17%. Further, PRAS A/S owns 2%, Foreningen Østifterne owns 2%, and Industriens Fond holds 0.34%.

Nykredit runs a number of customer benefit programmes, which are sponsored by Forenet Kredit. In 2022, Nykredit returned more than DKK 1.89bn to its customers under these programmes in the form of personal customer discounts (KundeKroner) and business customer discounts (ErhvervsKroner).

The Nykredit Realkredit Group delivered a record-high profit before tax of DKK 11.5bn and DKK 9.5bn after tax for 2022 – an increase from profit before tax of DKK 10.7bn and profit after tax of 8.9 bn for 2021. Income totalled DKK 16.8bn for 2022 versus DKK 16.5bn for 2021. Impairment charges for loans and advances grew to -80m for 2022 against DKK -115m for 2021. The cost/income ratio decreased from 38.4% in 2021 to 37.6% in 2022.

Nykredit Realkredit A/S

As a specialised bank licensed to carry on mortgage banking, Nykredit Realkredit must not accept deposits but is required to fund its mortgage lending solely through the issuance of covered bonds.

Nykredit has a nationwide sales and advisory centre, Nykredit Direkte®, which originates mortgages to personal and SME customers under the Nykredit brand.

Further, Nykredit has a strategic alliance with 44 Danish local and regional banks, through which Totalkredit A/S, a wholly-owned subsidiary mortgage bank of Nykredit, offers Totalkredit-branded mortgage loans. Of the Nykredit Realkredit Group's total mortgage loans of DKK 1,292bn (fair value) at end-2022, Totalkredit A/S accounted for DKK 774bn.

Nykredit Bank A/S

Nykredit Bank is a universal bank and a wholly-owned subsidiary of Nykredit Realkredit. It was established in 1994 and has 1,021 FTEs. Nykredit Bank is a relatively small part of the Nykredit Realkredit Group, representing 15% of total Group assets. However, it is the Group's main organic growth driver, and in many ways, it reflects the mortgage business. In 2022, the Nykredit Bank Group reported a profit before tax of DKK 3.5bn and after tax of DKK 2.7bn against DKK 3.5bn and DKK 2.8bn in 2021.

Covered bond issuer

Nykredit Realkredit issues covered bonds in the form of SDOs or ROs from its capital centres (cover pools). SDOs are issued under the latest Danish covered bond legislation, comply with the EU CBD and qualify as European Covered Bonds (premium).

Covered bond investors benefit from dual recourse

In accordance with Danish covered bond legislation, investors in Danish covered bonds benefit from dual recourse: recourse in general to the issuer's assets and recourse to the segregated capital centres, comprising mortgage loans, substitute assets and supplementary collateral. Consequently, in the event of the issuer's bankruptcy, investors have a preferential right to the cover assets along with derivative counterparties, if any. Capital centres are not part of the bankruptcy estate of the issuer.

Overcollateralisation

Legislation dictates that all Danish mortgage banks must comply with a mandatory OC requirement of 2% at the capital centre level. Valuation of covered bonds and cover pool assets is regulated by the Danish FSA. For Capital Centres E and H, Nykredit supplied additional OC of 1.3% and 1.2%, respectively.

Further, issuers of SDOs and SDROs must ensure that cover assets continuously fulfil LTV requirements. In Nykredit's case, this concerns SDOs issued out of Capital Centres E and H.

If lending at a given time exceeds statutory LTV limits at the individual loan level (80% for residential and 60% for business lending) based on current market values, supplementary collateral is required, which can be provided through the issuance of Senior Secured Bonds (SSBs) or other non-covered bond instruments. Average LTVs at end-Q4/2022 for Capital Centres E and H were 57% and 54%, respectively. The majority of loans have an LTV below 60%.

Cover pool (capital centre) composition

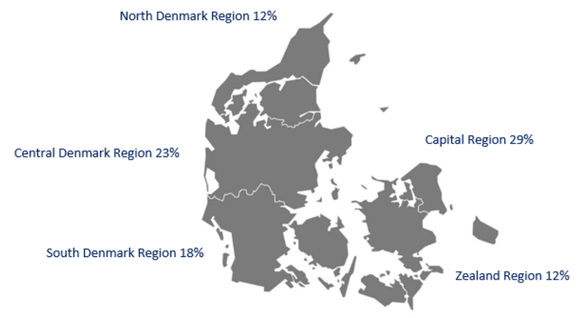
The issuer manages the capital centres, which may only contain eligible assets (defined by the CRR, cf above), eg loans secured by mortgages on residential or commercial properties, derivative contracts and substitute assets.

Due to match funding, the value of covered bonds in Nykredit's Capital Centres is matched by the value of loans (OC is ensured by other assets). Domestic lending accounts for 94% of loans, while international lending amounts to 6%. Compared with the other mortgage banks with a large share of residential properties, the concentration in the capital region is low.

Loan origination

Customers are credit-scored based on budgets and credit checks. Irrespective of the loan type requested by a borrower, granting of a loan is subject to confirmation that the borrower can afford to service a callable fixed-rate 30Y amortising loan. Customers are personally liable for their mortgage loans.

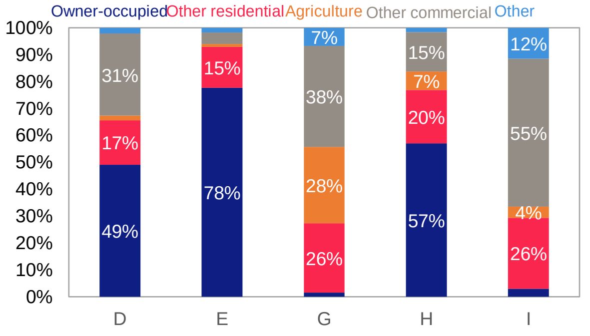
Geographic location of mortgage lending



Share of mortgage lending (nominal value) in CapitalCcentres D, E, G, H and I. 6% of mortgages fund properties located outside of Denmark. End-Q4/2022.

Source: Nykredit Realkredit A/S

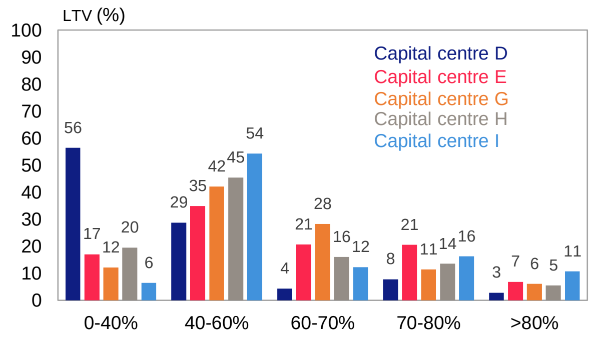
Mortgage assets in Capital Centres D, E, G, H and I



Other residential excludes owner-occupied, and other commercial excludes agriculture (end-Q4/2022).

Source: Nykredit Realkredit A/S, Nykredit Markets

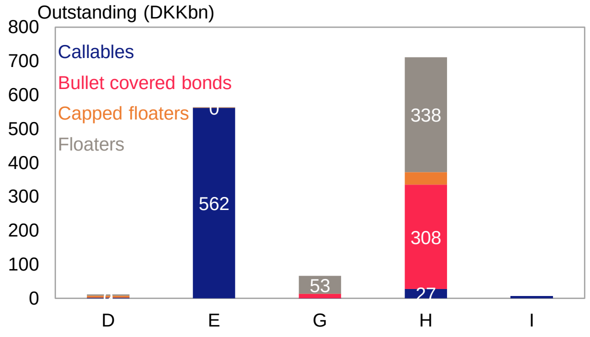
LTV distribution, current property value



The majority of loans have a relatively low LTV value (end-Q4/2022).

Source: Nykredit Realkredit A/S, Nykredit Markets

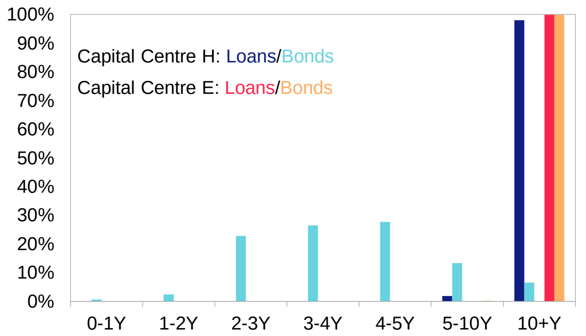
Covered bond types in Capital Centres D, E, G, H and I



Capital Centre E contains both loans match funded to maturity, and Capital Centre H contains loans subject to refinancing.

Source: Nykredit Realkredit A/S, Nykredit Markets

Amortisation profile of loans and maturity of covered bonds



Loans subject to refinancing generally have maturities exceeding those of the underlying bonds (end-Q4/2022).

Source: Nykredit Realkredit A/S, Nykredit Markets

S&P ratings, Q4/2022

Capital Centre	D	E	G	H	I
Covered bonds	AAA	AAA	AAA	AAA	AAA
Available OC(%)	53.44	3.33	18.79	3.66	65.89
Unused notches of uplift	4	4	4	4	4
S&P OC in line with current rating (%)	15.95	2.50	15.94	2.50	34.85
Issuer: Nykredit Realkredit A/S (long-term/short-term/outlook)	A+ / A-1 / stable				

The OC that rating agencies rely upon can deviate from what is reported in Q4/2022 cover pool reports from the issuers.

Source: S&P, Nykredit Markets

Funding – covered bond programmes

Covered bonds are Nykredit's core funding source. Of the covered bonds in issue by end-Q4/2022 (DKK 1,254bn at fair value), 94.7% are issued in DKK, and the remainder is issued in EUR (2.8%) and in SEK (2.5%).

Danish covered bonds are generally issued either on tap to satisfy day-to-day funding needs or at refinancing auctions. Long-term callable bonds and long-term capped floaters typically have an opening period of three years, which enables issuers to build sizeable bond series. ARMs or floating rate loans, funded by either fixed-rate or floating-rate bonds, are refinanced at auctions in February, May, August and November. The funding needed at refinancing auctions is always lower than the amount maturing, due to amortisation on the underlying loan portfolio.

Today, Nykredit issues covered bonds mainly through Capital Centres E and H. Until 2008, issuance was mainly from Capital Centre D, but in connection with the implementation of the Capital Requirements Directive and the transition to the new covered bond legislation, new lending was transferred to the new SDO Capital Centre E. Subsequently, ARMs were transferred to the new SDO Capital Centre H, starting at refinancing auctions in September 2011, and Capital Centre E is now dominated by fixed-rate callables.

Capital Centres I and G are primarily used for the top tier of two-tier loans. This is a model where mortgages split into a base loan up to a certain LTV threshold (60 for private and 45 for commercial), and a top loan covering the remainder of the total LTV is financed with bonds not subject to a continuous LTV requirement (ROs). The higher OC ratio of Capital Centres I and G when compared with E and H reflects this. The two-tier model is no longer used for new loans to personal customers.

ALM

Match funding implies a direct connection between customers' choice of loan type and the bonds issued to fund the loans. Nykredit is not exposed to interest rate or foreign exchange risk, and funding costs are passed directly on to customers.

In contrast to fixed-rate annuity loans, which are match funded to maturity (by callables), ARMs and floating-rate loans are typically longer than the maturities of the funding bonds (bullets and floaters). This is reflected in a close relationship between the amortisation profile of loans and the maturity of covered bonds in Capital Centre E, which is not the case for Capital Centre H. Interest rate and refinancing risk on ARMs and floating-rate loans are passed directly on to customers, and loan payments are recalculated when yields are adjusted.

Covered bonds are rated by S&P

The vast majority of Nykredit's covered bonds are issued out of rated capital centres, all rated AAA with a stable outlook by S&P Global Ratings. The largest capital centres are D, E, G, H and I. Nykredit's issuer credit rating can be downgraded by four notches without the covered bonds necessarily losing their AAA rating.

Issuer profile: Realkredit Danmark A/S

- Second-largest mortgage lender in Denmark and subsidiary of Danske Bank, Denmark's largest financial institution
- Outstanding covered bonds totalled DKK 724bn at fair value by end-Q4/2022
- Realkredit Danmark's covered bonds are rated AAA by S&P and Fitch

Realkredit Danmark is a subsidiary of Danske Bank, the largest financial institution in Denmark. The Group focuses on personal banking, including banking, insurance and mortgage products for personal and business customers. Danske Bank is a Danish O-SII.

Realkredit Danmark is the second-largest mortgage bank in Denmark with a market share of 24%. Realkredit Danmark provides the majority of the Danske Bank Group's lending to personal and business customers in Denmark. At end-Q4/2022, Realkredit Danmarks outstanding covered bonds totalled DKK 724bn at fair value.

Cover pools

The two most important cover pools are Capital Centres S and T. The loan portfolio chiefly finances private residential properties, residential rental properties and commercial properties. The remaining lending is to the agricultural sector.

Capital Centre S came into use in connection with the implementation of the Capital Requirements Directive and the transition to the new covered bond legislation. At end-Q4/2022, it accounted for covered bonds of DKK 281bn (nominal value). Capital Centre T was opened in 2011 for funding of loans requiring refinancing (ARMs and floating-rate loans), and accounted for covered bonds of DKK 443bn (nominal value) at end-Q4/2022.

The OC requirements in the capital centres are covered by RD's equity.

ALM and covered bond funding

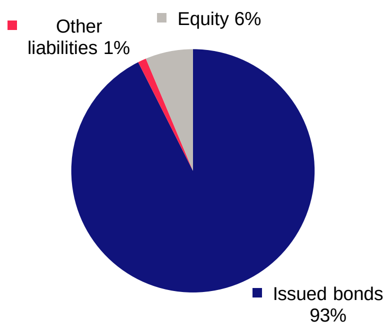
As described above, Danish covered bond issuers are subject to very strict ALM rules. Like other Danish mortgage banks, Realkredit Danmark offers match funded (pass-through) products, thereby eliminating market risk and the need for hedging.

Almost all mortgage loans in Capital Centre S are match funded to maturity, while loans in Capital Centre T have much longer maturities than the issued covered bonds. The borrowers bear the refinancing risk associated with the asset/liability maturity mismatches. In 2014, a legislative amendment was made to contain refinancing risk in the Danish mortgage banking sector. Bonds subject to refinancing now have a soft bullet structure with extendable maturity if the loans cannot be refinanced (refinancing failure trigger), or – for some bonds – if interest rates have risen by over 500bp relative to the preceding year (cf above).

Ratings

RD's covered bonds are rated AAA by both S&P and Fitch. Both ratings have a stable outlook.

Capital structure of Realkredit Danmark A/S



Covered bonds are the dominant source of funding (Q4/2022).

Source: Realkredit Danmark A/S, Nykredit Markets

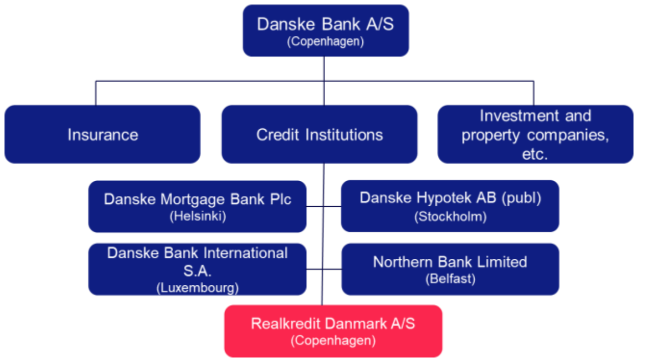
Cover pool statistics and ratings, Q4/2022

Capital Centre	S	T
Covered bonds (nom. DKKbn)	281	443
WAL covered bonds (years)	27	2
Fixed rate (%)	99.5	0
ARMs (%)	0	69.6
Floating rate (%)	0.1	30.4
Capped floating rate (%)	0.4	0
Risk weighting CRD (%)	10/20	10
Eligible for central bank repo	Yes	
CBD/CRR-compliant*	Yes /Yes	
Cover pool (nom. DKKbn)	300	472
OC ratio (%)	6.8	6.5
WAL cover pool (years)	24	22
Match-funded loans (%)	100	100
Avg. LTV of loans (%)	40.2	46.7
Residential mort. assets (%)	80	70
Commercial mort. assets (%)	20	30
Amortising/IO loans (%)	67/33	32/68
Ratings (Moody's/S&P/Fitch)	S	T
Covered bonds (S&P / Fitch)	AAA / AAA	AAA / AAA
S&P unused notches of uplift	4	4
Fitch unused notches of uplift	3	3
Issuer: Realkredit Danmark A/S (S&P / Fitch / Moody's)	- / A / -	
Parent: Danske Bank A/S (S&P / Fitch / Moody's)	A+ / A / A3*	
Bloomberg ticker/website	RDKRE/rd.dk	

Source: Moody's, S&P, Fitch, Realkredit Danmark A/S, Nykredit Markets

* The Long-Term Debt Rating of Moody's is reported.

Danske Bank Group



Danske Bank Group 2022.

Source: Danske Bank A/S, Nykredit Markets

Key figures – Danske Bank Group

DKKbn	2022	2021	2020
Total assets	3,763	3,936	4,109
Loans	1,803	1,834	1,838
Equity	160	171	160
Deposits	1,170	1,168	1,193
Income	41.2	42.6	40.9
Profit (loss) before tax	-2.3	16.6	6.3
Profit (loss) after tax	-5.1	12.9	4.6
CET 1 capital ratio	17.8%	17.7%	18.3%
Total capital ratio	22.1%	22.4%	23.0%

Source: Danske Bank A/S, Nykredit Markets

Key figures – Realkredit Danmark

DKKbn	2022	2021	2020
Total assets	782	877	891
Mortgage loans	724	810	817
Equity	49	49	50
Income	6.0	6.0	6.2
Profit (loss) before tax	4.7	4.7	5.0
Profit (loss) after tax	3.6	3.7	3.9
Tier 1 capital ratio	28.6	24.9	26.9
Total capital ratio	29.1	25.3	27.4

Source: Realkredit Danmark A/S, Nykredit Markets

The Danske Bank Group

The Danske Bank Group is one of the largest Nordic banking groups. The Group has banking activities in eight countries with a customer base of 3.3 million and 21,022 employees.

The Danske Bank Group dates back to the founding foundation of Den Danske Landmandsbank in 1871. Over the years, a number of mergers have shaped the Group into its current form. In 1990, three of Denmark's largest banks merged (Den Danske Bank, Handelsbanken and Provinsbanken). BG Bank and Realkredit Danmark became part of the Group in 2001, and the Irish operations Northern Bank and National Irish Bank were acquired in 2004. The Finnish Danske Mortgage Bank became part of the Danske Bank Group in 2007.

In 2022, the Danske Bank Group recorded a total income of DKK 41.2bn – a decrease of DKK 1.4bn on 2021. Profit before tax came to DKK -2.3bn and a net profit of DKK -5.1bn. The negative result was driven primarily by an additional provision of DKK 13.8bn related to the final resolutions reached on the investigations by US and Danish authorities into failings and misconduct related to the non-resident portfolio at Danske Bank's former Estonia branch.

Realkredit Danmark A/S

Realkredit Danmark is the second-largest mortgage bank in Denmark. At end-Q4/2022, issued mortgage bonds amounted to 724bn at fair value, against DKK 810bn at end-Q4/2021. Realkredit Danmark provides the majority of the Group's lending to personal and business customers in Denmark. Realkredit Danmark posted a profit after tax of DKK 3.6bn in 2022, which was a slight reduction compared with 2021.

Realkredit Danmark's distribution channels include mortgage product sale through the Group's bank branches, and the Home estate agency chain, a call centre and online services. Home, which is wholly owned by Realkredit Danmark, is a franchise chain comprising 185 estate agencies, which handle the Group's estate agency activities. Home's largest business area is residential estate agency services with Realkredit Danmark as the main provider of home loans.

Cover pool

Covered bond issuer – Realkredit Danmark A/S
Realkredit Danmark issues covered bonds in the form of SDROs or ROs out of its capital centres (cover pools). SDROs are issued under the latest Danish covered bond legislation and comply with the CBD and qualify as European Covered Bonds (premium).

Covered bond investors benefit from dual recourse
In accordance with Danish covered bond legislation, investors in Danish covered bonds benefit from dual recourse: recourse in general to the issuer's assets and recourse to the segregated capital centres, comprising mortgage loans, substitute assets and supplementary collateral. Consequently, in the event of the issuer's bankruptcy, investors have a preferential right to the cover assets along with derivative counterparties, if any. Capital centres are not part of the bankruptcy estate of the issuer.

Overcollateralisation
Legislation dictates that all Danish mortgage banks must comply with a mandatory OC requirement of 2% at the capital centre level. Valuation of covered bond and cover pool assets is regulated by the Danish FSA. For Capital Centres S and T, Realkredit Danmark supplied additional OC of 4.8% and 4.5%, respectively.

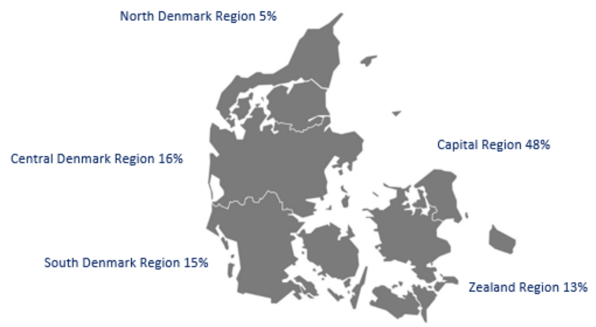
Further, issuers of SDROs must ensure that cover assets always fulfil LTV requirements, which applies to Capital Centres S and T. If lending at a given time exceeds statutory LTV limits at the individual loan level (80% for residential and 60% for business lending) based on current market values, supplementary collateral is required, which can be provided through the issuance of Senior Secured Bonds (SSBs) or other non-covered bond instruments. Average LTVs at end-Q4/2022 for Capital Centres S and T were 40.2% and 46.7%, respectively. The vast majority of loans have an LTV below 60%.

Cover pool (capital centre) composition
The issuer manages the capital centres, which may only contain eligible assets (defined by the CRR, cf above), eg loans secured by mortgages on residential or commercial properties, derivative contracts and substitute assets.

Due to match funding, the value of covered bonds in Realkredit Danmark's capital centres are matched by the value of loans (OC is ensured by other assets). 74% of lending is secured by mortgages on residential properties, including holiday homes, and the rest is secured by mortgages on commercial, agricultural and multi-family properties. Geographically, almost half (48%) of lending is in the Capital Region. The rest is spread out with 13% in the Sealand Region, 16% is in the South Denmark Region, 16% is in the Central Denmark Region, and 5% is in the North Denmark Region. The remaining 2% fund properties located outside of Denmark. 1445

Loan origination
Customers are credit-scored based on budgets and credit checks. Irrespective of the loan type requested by a borrower, granting of a loan is subject to confirmation that the borrower can afford to service a callable fixed-rate 30Y amortising loan. Customers are personally liable for their mortgage loans.

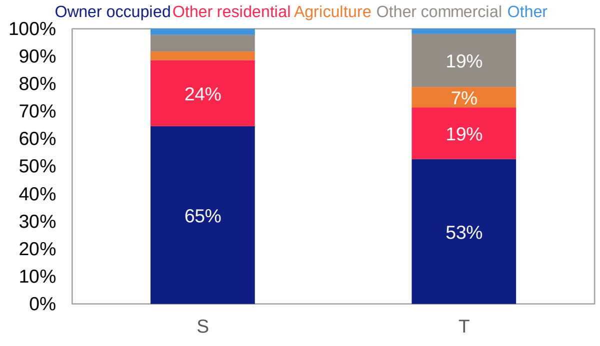
Geographic location of mortgage lending



Share of mortgage lending (nominal value) in Capital Centres S and T. 2% of mortgages fund properties located outside of Denmark. End-Q4/2022.

Source: Realkredit Danmark A/S, Macrobond, Nykredit Markets

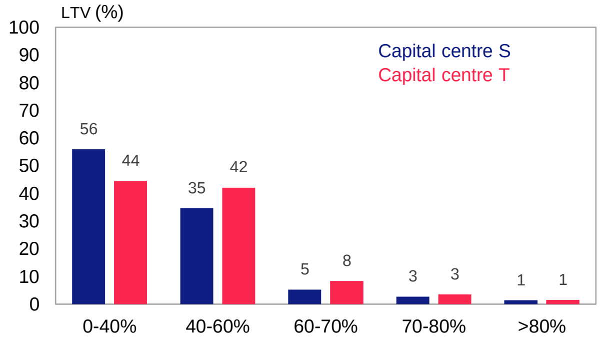
Mortgage assets in Capital Centres T and S



Other residential excludes owner occupied, and other commercial excludes agriculture (end-Q4/2022).

Source: Realkredit Danmark A/S, Nykredit Markets

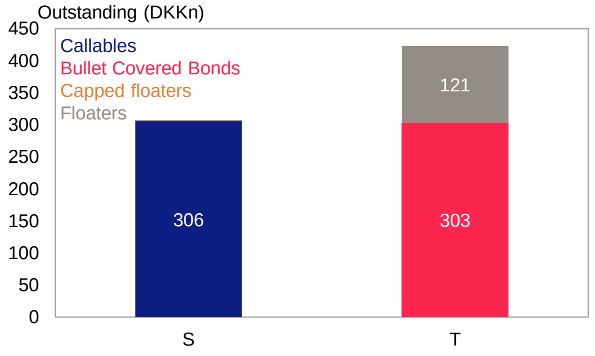
LTV Distribution, current property value



The majority of loans have a relatively low LTV value (end-Q2/2022).

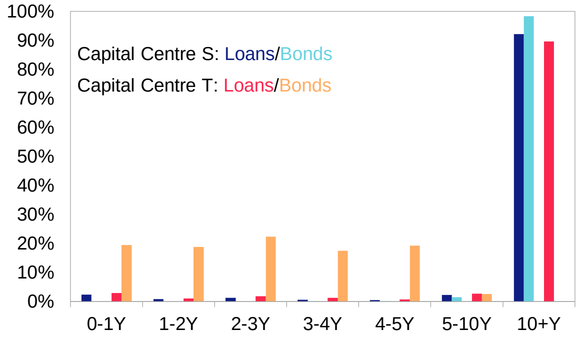
Source: Realkredit Danmark A/S, Nykredit Markets

Covered bond types in Capital Centres S and T



Capital Centre S contains both loans match funded to maturity, and Capital Centre T contains loans subject to refinancing.

Amortisation profile of loans and maturity of covered bonds



Loans subject to refinancing generally have maturities exceeding those of the underlying bonds (end-Q4/2022).

Funding – covered bond programmes

Covered bonds are Realkredit Danmark's core funding source. Of the total customer loans by end-Q4/2022, 97.7% are issued in DKK, and the remainder are issued in EUR (0.4%) and in SEK (1.9%).

Danish covered bonds are generally issued either on tap to satisfy day-to-day funding needs or at refinancing auctions. Long-term callable bonds and long-term capped floaters typically have an opening period of three years, which enables issuers to build sizeable bond series. ARMs or floating rate loans, funded by either fixed-rate or floating-rate bonds, are refinanced at auctions in February, May, August and November. The funding needed at refinancing auctions is always lower than the amount maturing, due to amortisation on the underlying loan portfolio.

Today, Realkredit Danmark raises funding through two capital centres, S and T, which contain all the assets underlying the issued bonds. The match-funding model ensures a direct match between borrowers' choice of loan type and the distribution of bond types in each capital centre.

Until 2008, funding was mainly issued out of the General Capital Centre, but in connection with the implementation of the Capital Requirements Directive and the transition to the new covered bond legislation, new lending was placed in the new SDRO Capital Centre (S). In 2011, another SDRO Capital Centre (T) was opened, which is used for the funding of loans subject to refinancing during the loan term. Bonds issued from Capital Centre T are used for the financing of ARMs (FlexLån®) and other loans with a refinancing element.

ALM

Due to match funding, there is a direct connection between customers' choice of loan type and the bonds issued to fund the loans. Realkredit Danmark is therefore not exposed to interest rate or foreign exchange risk, and funding costs are passed directly on to customers.

In contrast to fixed-rate annuity loans, which are match funded to maturity (by callables), ARMs and floating-rate loans are typically longer than the maturities of the funding bonds (bullets and floaters). This is reflected in a close relationship between the amortisation profile of loans and the maturity of covered bonds in Capital Centre S, which is not the case for Capital Centre T.

Interest rate and refinancing risk on ARMs and floating-rate loans are passed directly on to customers, and loan payments are recalculated when yields are adjusted.

Covered bonds are rated AAA by S&P

Both S&P Global Ratings and Fitch Ratings have assigned AAA ratings to covered bonds issued out of RD's Capital Centres S and T.

S&P

The AAA ratings from S&P of RD's Capital Centres S and T all have a stable outlook.

RD's issuer credit rating can be downgraded by four notches without the covered bonds necessarily losing their AAA rating.

Fitch

The AAA ratings from Fitch of RD's Capital Centres S and T both have a stable outlook.

RD's issuer default rating can be downgraded by three notches without the covered bonds necessarily losing their AAA rating.

S&P ratings, Q4/2022

Capital Centre	S	T
Covered bonds	AAA	AAA
Available OC (%)	5.70	7.07
Unused notches of uplift	4	4
OC in line with current rating (%)	2.72	2.50
Issuer: Realkredit Danmark A/S	Not disclosed	
Parent: Danske Bank A/S	A+ / stable / A-1	

The OC that rating agencies rely upon can differ from what is reported in Q4/2022 cover pool reports from the issuers.

Source: S&P, Nykredit Markets

Fitch ratings, Q4/2022

Capital Centre	S	T
Covered bonds	AAA	AAA
Available OC (OC Fitch relies upon)	5.7%	6.4%
Unused notches of uplift	3	3
AAA breakeven OC (Dec 2021)	3.0%	3.5%
Issuer: Realkredit Danmark A/S (long-term/outlook/short-term)	A / stable / F1	
Parent: Danske Bank A/S (long-term/outlook/short-term)	A / stable / F1	

The OC that rating agencies rely upon can deviate from what is reported in Q4/2022 cover pool reports from the issuers.

Capital Centre T (loans subject to refinancing) was upgraded to AAA from AA+ in January 2021.

Source: Fitch, Nykredit Markets

Issuer profile: Nordea Kredit Realkreditaktieselskab

- The third largest mortgage lender in Denmark
- Outstanding covered bonds totalled DKK 393bn at fair value by end-Q4/2022
- Nordea Kredit Realkreditaktieselskab's covered bonds are rated AAA by S&P

Nordea Kredit Realkreditaktieselskab (Nordea Kredit) is part of the Nordea Group, which is the largest financial group in the Nordic region and the Baltics with a balance sheet total of EUR 595bn in Q4/2022. Nordea has approx. 320 branches serving some 10 million customers, of which 9.4 million personal customers and 600,000 business customers. Nordea Kredit is a Danish O-SII.

Nordea Kredit is a Danish subsidiary of the Nordea Group, granting mortgage loans to Nordea's customers in Denmark. Nordea Kredit's activities exclusively include mortgage lending funded by covered bonds, which totalled DKK 393bn (fair value) at end-Q4/2022. Nordea Kredit is Denmark's third largest mortgage bank with a market share of 14%.

Cover pools

Nordea Kredit has two cover pools, with new loans being issued out of the SDRO Capital Centre 2, which is also by far the largest. Both cover pools primarily comprise mortgages on Danish property with additional assets comprising claims against credit institutions and government bonds.

ALM and covered bond funding

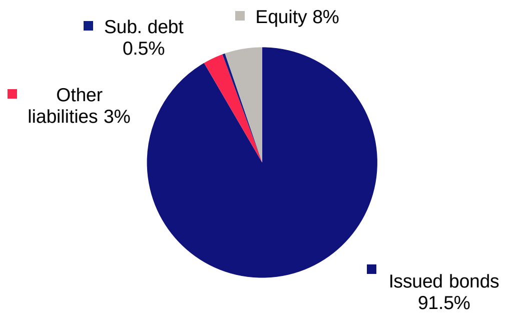
As described above, Danish covered bond issuers are subject to very strict ALM rules. Like other Danish mortgage banks, Nordea Kredit offers match-funded (pass-through) products, thereby eliminating market risk and the need for hedging.

Capital Centre 2 comprises both mortgage loans match funded to maturity and mortgage loans that have much longer maturities than the issued covered bonds. The borrowers bear the refinancing risk associated with the asset/liability maturity mismatches. In 2014, a legislative amendment was made to contain refinancing risk in the Danish mortgage banking sector. Bonds subject to refinancing now have a soft bullet structure with extendable maturity if the loans cannot be refinanced (refinancing failure trigger), or – for some bonds – if interest rates have risen by over 500bp relative to the preceding year (cf above).

Ratings

Covered bonds issued by Nordea Kredit are rated AAA by S&P.

Capital structure of Nordea Kredit



Covered bonds are the dominant source of funding (Q4/2022).

Source: Nordea Kredit Realkreditaktieselskab, Nykredit Markets

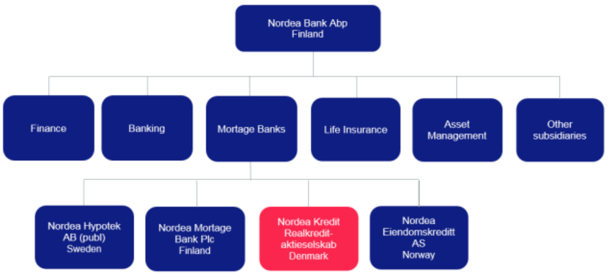
Cover pool statistics and ratings, Q4/2022

Capital Centre	1	2
Covered bonds (nom. DKKbn)	1.2	440
WAL covered bonds (years)	14	12.6
Fixed rate (%)	62	38
ARMs (%)	0	36
Floating rate (%)	0	27
Capped floating rate (%)	38	0
Risk weighting CRD (%)	10	10
Eligible for central bank repo		Yes
CBD/CRR-compliant*		Yes /Yes
Cover pool (nom. DKKbn)	2.5	471
OC ratio (%)	104	7.1
WAL cover pool (years)	7.6	14.7
Match-funded loans (%)	100	100
Avg. LTV of loans (%)	35	46
Residential mort. Assets (%)	92.1	81.6
Commercial mort. Assets (%)	7.9	18.4
Amortising/IO loans (%)	100/0	47/53
Ratings	1	2
Covered bonds (S&P)	AAA	AAA
S&P unused notches uplift	5	5
Issuer: Nordea Kredit		none
Parent: Nordea Bank Abp (S&P / Fitch / Moody's)		AA- / AA- / Aa3*
Bloomberg ticker/website		NDASS/33ordea.com

Source: Moody's, S&P, Fitch, Nykredit Markets, Nordea Bank A/S

* The Long-Term Debt Rating of Moody's is reported.

Nordea Group



Nordea Kredit carries on mortgage lending on behalf of Nordea Bank Abp.

Source: Nordea Bank A/S, Nykredit Markets

Key figures – Nordea Group

EURbn	2022	2021	2020
Total assets	595	570	552
Loans to the public	327	345	330
Equity	31	34	34
Deposits from the public	217	206	183
Income	10.3	9.6	8.5
Profit (loss) before tax	5.4	4.9	3.0
Profit (loss) after tax	4.2	3.8	2.3
CET 1 capital ratio	16.4%	17.0%	17.1%
Total capital ratio	20.8%	21.2%	20.5%

Source: Nordea Bank A/S, Nykredit Markets

Key figures – Nordea Kredit

DKKbn	2022	2021	2020
Total assets	426	481	468
Mortgage loans	434	437	410
Equity	22	22	22
Income	2.8	2.7	2.7
Profit (loss) before tax	1.4	1.4	1.6
Profit (loss) after tax	1.1	1.1	1.3
Tier 1 capital ratio	28.4%	24.7%	25.0%
Total capital ratio	30.5%	26.6%	29.6%

Source: Nordea Bank A/S, Nykredit Markets

The Nordea Group

Nordea Kredit is a wholly-owned subsidiary of Nordea Bank Abp. Nordea Bank Abp has approx. 30,000 employees serving about 9 million households and 6,500 business customers in the Nordic. At end-2022, Nordea's lending to the public totalled EUR 327bn. Nordea Kredit's mortgage loan portfolio accounted for EUR 58.3bn of the Group's total lending.

In 2022, the Nordea Group's total income amounted to EUR 10.3bn. Profit before tax was EUR 5.4bn, and profit after tax was EUR 4.2bn, which represents increases over 2021- and 2020-levels.

Nordea Kredit Realkreditaktieselskab

Nordea Kredit was set up in 1993 and had 116 employees at end-Q4/2022. Nordea Kredit is a specialised bank licensed to carry on mortgage lending activities, funding mortgage loans on behalf of Nordea Bank Abp. The mortgage bank is not authorised to accept deposits and funds its lending through issuance of covered bonds.

Nordea Kredit reported a profit before tax of DKK 1.4bn in 2022 – the same as in 2021. Profit after tax amounted to DKK 1.1bn in both 2022 and 2021.

Nordea Kredit has a guarantee from Nordea Danmark, branch of Nordea Bank Abp, which covers the first losses on Nordea Kredit's lending. The first 25% of losses incurred on loans to most property categories – including owner-occupied dwellings – is covered by a guarantee in respect of the individual loans, which is in force throughout the term of the loan. Guaranteed amounts are not reduced in the course of the guarantee term until the guarantee exceeds the remaining balance of the loan. From then on, the guarantee is equal to the remaining balance on the loan. The guarantee is renewed on remortgaging.

Covered bond issuer

Nordea Kredit issues covered bonds in the form of SDROs out of its Capital Centre 2 (cover pool). SDROs are issued under the latest Danish covered bond legislation and comply with the CBD and qualify as European Covered Bonds (premium).

Covered bond investors benefit from dual recourse

In accordance with Danish covered bond legislation, investors in Danish covered bonds benefit from dual recourse: recourse in general to the issuer's assets and recourse to the segregated capital centres comprising mortgage loans, substitute assets and supplementary collateral. Consequently, in the event of the issuer's bankruptcy, investors have a preferential right to the cover assets along with derivative counterparties, if any. Capital centres are not part of the bankruptcy estate of the issuer.

Overcollateralisation

Legislation dictates that all Danish mortgage banks must comply with a mandatory OC requirement of 2% at the capital centre level. Valuation of covered bond and cover pool assets is regulated by the Danish FSA. At end-Q4/2022, additional OC in Capital Centre 2 was 5.1%.

Further, issuers of SDROs (Capital Centre 2 in Nordea Kredit's case) must ensure that cover assets always fulfil LTV requirements.

If lending at a given time exceeds statutory LTV limits at the individual loan level (80% for residential and 60% for business lending) based on current market values, supplementary collateral is required, which can be provided through the issuance of Senior Secured Bonds (SSBs) or other non-covered bond instruments. The average LTV at end-Q4/2022 for Capital Centre 2 was 46%. The vast majority of loans have an LTV below 60%.

Cover pool (capital centre) composition

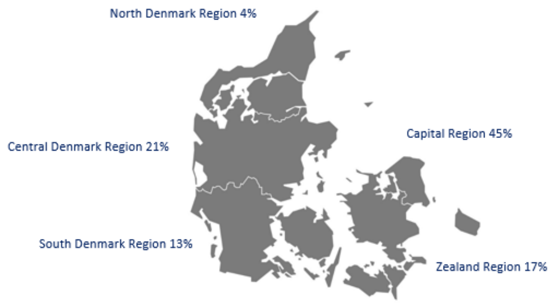
The issuer manages the capital centres, which may only contain eligible assets (defined by the CRR, cf above), eg loans secured by residential or commercial properties, derivative contracts and substitute assets.

Due to match funding, the value of covered bonds in Nordea Kredit's capital centres is matched by the value of loans (OC is ensured by other assets). 80% of loans in Capital Centre 2 are secured by mortgage over residential properties including holiday homes, and the rest is secured by mortgage over commercial, agricultural and multi-family properties. Geographically, 45% of lending is in the Capital Region, 17% is in the Sealand Region, 21% is in the Central Denmark Region, 13% is in the South Denmark Region, and 4% is in the North Denmark Region.

Loan origination

Customers are credit-scored based on budgets and credit checks. Irrespective of the loan type requested by a borrower, granting of a loan is subject to confirmation that the borrower can afford to service a callable fixed-rate 30Y amortising loan. Customers are personally liable for their mortgage loans.

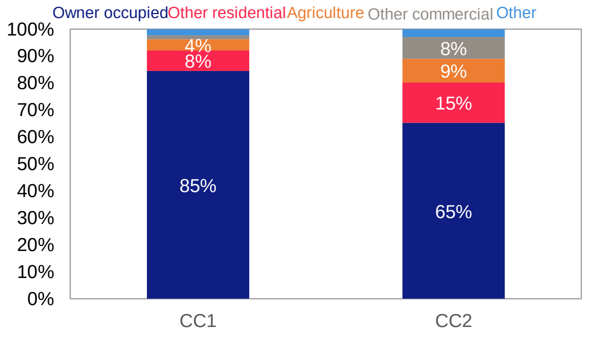
Geographic location of mortgage lending



Share of mortgage lending (nominal value) in Capital Centres 1 and 2. End-Q4/2022.

Source: Nordea Kredit Realkreditaktieselskab

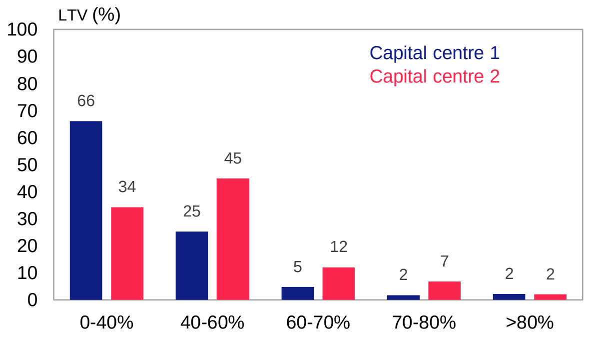
Mortgage assets in Capital Centres 1 and 2



Other residential excludes owner occupied, and other commercial excludes agriculture (end-Q2/2022).

Source: Nordea Kredit Realkreditaktieselskab

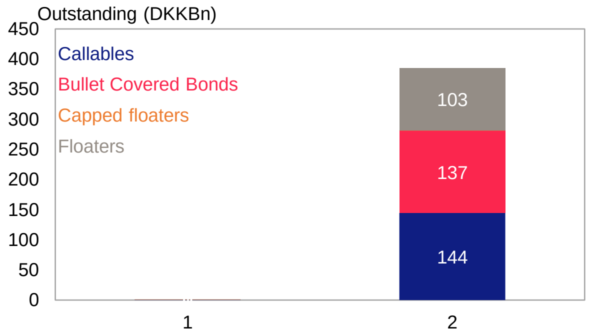
LTV distribution, current property value



The majority of loans have a relatively low LTV value (end-Q2/2022).

Source: Nordea Kredit Realkreditaktieselskab

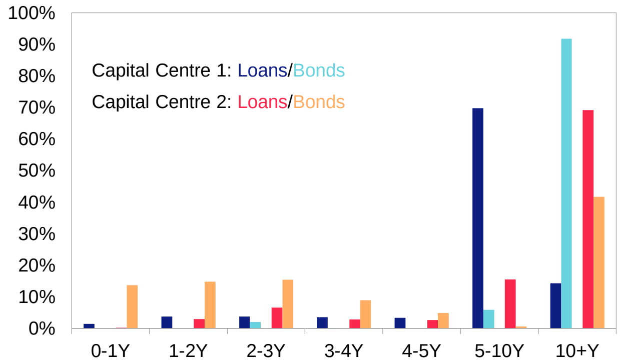
Covered bond types in Capital Centres 1 and 2



Capital Centre 2 contains both loans match funded to maturity and loans subject to refinancing.

Source: Nordea Kredit Realkreditaktieselskab

Amortisation profile of loans and maturity of covered bonds



Loans subject to refinancing generally have maturities exceeding those of the underlying bonds (end-Q4/2022).

Source: Nordea Kredit Realkreditaktieselskab

Funding – covered bond programmes

Nordea Kredit solely applies covered bonds as its source of funding. Of the total customer loans by end-Q4/2022, 99.2% of bonds are DKK-denominated, the rest are EUR-denominated.

Danish covered bonds are generally issued either on tap to satisfy day-to-day funding needs or at refinancing auctions. Long-term callable bonds and long-term capped floaters typically have an opening period of three years, which enables issuers to build sizeable bond series. ARMs or floating rate loans, funded by either fixed-rate or floating-rate bonds, are refinanced at auctions in February, May, August and November. The funding needed at refinancing auctions is always lower than the amount maturing, due to amortisation on the underlying loan portfolio.

All new covered bonds from Nordea Kredit are currently issued out of Capital Centre 2. Up to 2008, ROs were issued out of Capital Centre 1, but since the implementation of new Danish covered bond legislation in 2008, bonds funding new loans have been exclusively issued out of the SDRO Capital Centre 2. At end-Q4/2022, covered bonds outstanding amounted to DKK 1.2bn in Capital Centre 1 and DKK 440bn in Capital Centre 2.

ALM

Due to match funding, there is a direct connection between customers' choice of loan type and the bonds issued to fund the loans. Nordea Kredit is therefore not exposed to interest rate or foreign exchange risk, and funding costs are passed directly on to customers.

In contrast to fixed rate annuity loans, which are match funded to maturity (by callables), ARMs and floating-rate loans are typically longer than the maturities of the funding bonds (bullets and floaters). In the primary capital centre (Capital Centre 2), ARMs funded by short-term fixed-rate bullets account for 36% of total lending, and floaters fund another 27% of total lending.

Interest rate and refinancing risk on ARMs and floating-rate loans are passed directly on to customers, and loan payments are recalculated when yields are adjusted.

Covered bonds are rated AAA by S&P

The covered bonds issued out of Nordea Kredit's Capital Centres 1 and 2 are rated AAA by S&P. The ratings have a stable outlook.

Nordea Bank Abp's issuer credit rating can be downgraded by five notches without the covered bonds necessarily losing their AAA rating.

S&P ratings, Q4/2022

Capital Centre	1	2
Covered bonds	AAA	AAA
Available OC (%)	98.00	13.04
Unused notches of uplift	5	5
OC in line with current rating (%)	2.50	2.50
Issuer: Nordea Kredit		Not disclosed
Parent: Nordea Bank Abp (long-term/outlook/short-term)		AA- / stable / A-1+

Source: S&P, Nykredit Markets

Issuer profile: Jyske Realkredit A/S

- Fourth largest issuer of covered bonds in Denmark
- Outstanding covered bonds totalled DKK 334bn at fair value by end-Q4/2022
- Jyske Realkredit's covered bonds are rated AAA (stable outlook) by S&P

Jyske Realkredit a wholly-owned subsidiary of Jyske Bank A/S, which is a Danish O-SII. Jyske Realkredit A/S is the fourth largest mortgage bank in Denmark with a market share of 12%. At end-Q4/2022, Jyske Realkredit's outstanding covered bonds totalled DKK 334bn at fair value.

Cover pools

Jyske Realkredit A/S has two active cover pools for private and commercial mortgage lending: ROs are issued out of Capital Centre B, while SDOs are issued out of the much larger Capital Centre E. Both cover pools comprise loans granted against mortgages on property, claims against credit institutions and government bonds. At end-Q4/2022, total lending from Capital Centre B was DKK 16.2bn (nominal value), while total lending from capital centre E was DKK 311.3bn.

ALM and covered bond funding

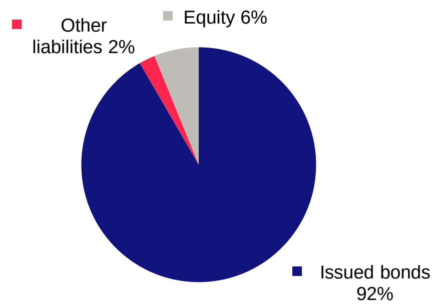
As described above, Danish covered bond issuers are subject to very strict ALM rules. Almost all Danish mortgage banks still only offer fully match-funded (pass-through) products, which eliminates market risk and hedging needs. In 2016, Jyske Realkredit started to issue European market standard EUR covered bonds under the joint funding agreement with Jyske Bank. While this implies that not all loans in cover pool E are formally match funded, the market risk on the remainder is fully hedged by derivatives.

Capital Centre E comprises both mortgage loans funded to maturity and mortgage loans that have much longer maturities than the issued covered bonds. The borrowers bear the refinancing risk associated with the asset/liability maturity mismatches. In 2014, a legislative amendment was made to contain refinancing risk in the Danish mortgage banking sector. Bonds subject to refinancing now have a soft bullet structure with extendable maturity if the loans cannot be refinanced (refinancing failure trigger), or – for some bonds – if interest rates have risen by over 500bp relative to the preceding year (cf above).

Ratings

Covered bonds issued by Jyske Realkredit are rated AAA by morS&P.

Capital structure of the Jyske Realkredit



Covered bonds are the dominant source of funding (Q4/2022).

Source: Jyske Realkredit A/S, Nykredit Bank

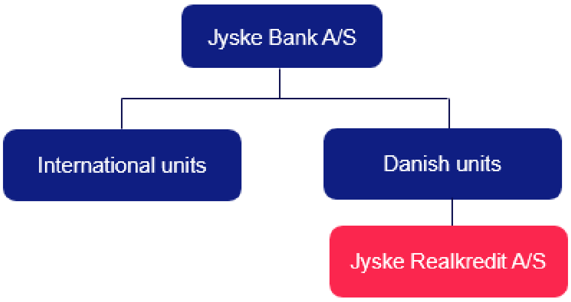
Cover pool statistics and ratings, Q4/2022

Capital Centre	B (RO)	E (SDO)
Covered bonds (nom. DKKbn)	16.2	311.3
WAL covered bonds (years)	13.98	11.83
Fixed rate (%)	2.5	36.4
ARMs (%)	67.2	43.5
Floating rate (%)	18.2	15.5
Capped floating rate (%)	12.1	4.3
Risk weighting CRD (%)	10/20	10
Eligible for central bank repo	Yes	
CBD/CRR-compliant*	Yes/Yes	
Cover pool (nom. DKKbn)	17.5	331.3
OC ratio (%)	8.2	6.4
WAL cover pool (years)	23.24	24.38
Match-funded loans (%)	100	91
Avg. LTV of loans (%)	48.7	47
Residential mort. Assets (%)	98.5	84.5
Commercial mort. Assets (%)	1.5	15.5
Amortising/IO loans (%)	57/43	48/52
Ratings	B (RO)	E (SDO)
Covered bonds (S&P)	AAA	AAA
S&P unused notches of uplift	3	3
Issuer: Jyske Realkredit A/S (S&P / Fitch / Moody's)	A / - / -	
Parent: Jyske Bank A/S (S&P / Fitch / Moody's)	A / - / A2(u)*	
Bloomberg ticker/website	JYKRE/www.jyskerealkredit.dk	

Source: Jyske Realkredit A/S, S&P, Nykredit Markets

* Moody's assigns unsolicited ratings to Jyske Bank. Here, the Long-Term Debt Rating is reported.

Jyske Bank Group



Source: Jyske Bank A/S, Nykredit Bank

Key figures – Jyske Bank Group

DKKbn	2022	2021	2020
Total assets	750	647	673
Bank loans	156	103	96
Equity	37	35	33
Bank deposits	189	122	128
Income	9.1	8.7	8
Profit (loss) before tax	4.7	4	2.1
Profit (loss) after tax	3.8	3.2	1.6
CET 1 capital ratio	15.2%	18.2%	17.9%
Total capital ratio	19.5%	22.8%	22.9%

Source: Jyske Realkredit A/S, Nykredit Bank

Key figures – Jyske Realkredit

DKKbn	2022	2021	2020
Total assets	360	369	377
Mortgage loans	366	339	334
Equity	22	21	20
Income	1.9	1.8	2
Profit (loss) before tax	1.7	1.3	1.2
Profit (loss) after tax	1.4	1	0.9
CET 1 capital ratio	28.3%	26.8%	25.4%
Total capital ratio	28.3%	26.8%	25.4%

Source: Jyske Realkredit A/S, Nykredit Bank

Jyske Bank Group

Jyske Realkredit A/S is wholly owned by Jyske Bank A/S, which is the third largest Danish bank and a Danish O-SII. At end-Q4-2022, Jyske Bank had 3,854 FTEs.

Core income of the Jyske Bank Group rose from DKK 8.7bn in 2021 to DKK 9.1bn in 2022. In 2022, the Jyske Bank Group achieved a profit before tax of DKK 4.7bn and a profit after tax of DKK 3.8bn.

In June 2022, Jyske Bank entered into an agreement to buy the activities of Svenska Handelsbanken in Denmark. The transaction comprises more than 130,000 customers, loans and advances of DKK 66bn and deposits of DKK 36bn. The acquisition will increase the business volume of Jyske Bank by about a fifth. The transaction was completed on 1 December 2022 following approval from the Danish Competition and Consumer Authority in October.

Jyske Realkredit A/S

Jyske Realkredit A/S is the fourth largest mortgage bank in Denmark with a market share of 12%. As of 21 June 2018, the company changed its name to Jyske Realkredit A/S from BRFkredit A/S, which remains the secondary name of the company.

Jyske Realkredit's employees are either employed directly by Jyske Realkredit, or their employment is split between Jyske Bank and Jyske Realkredit. At end-2022, 25 persons were employed directly by Jyske Realkredit, and for 594 employees, employment was split between the two companies, where the proportion relating to Jyske Realkredit was calculated at 239 FTEs.

Jyske Realkredit reported income of DKK 1.9bn in 2022, which is around the same level as in 2021 and 2020. Profit before tax amounted to DKK 1.7bn, while profit after tax was DKK 1.4bn.

Covered bond and SSB issuer – Jyske Realkredit A/S

Jyske Realkredit's covered bonds are issued as SDOs or ROs out of capital centres (cover pools). SDOs are issued under the latest Danish covered bond legislation and comply with the CBD and qualify as European Covered Bonds (premium).

Covered bond investors benefit from dual recourse

In accordance with Danish covered bond legislation, investors in Danish covered bonds benefit from dual recourse: recourse in general to the issuer's assets and recourse to the segregated capital centres comprising mortgage loans, substitute assets and supplementary collateral. Consequently, in the event of the issuer's bankruptcy, investors have a preferential right to the cover assets along with derivative counterparties, if any. Capital centres are not part of the bankruptcy estate of the issuer.

Overcollateralisation

Legislation dictates that all Danish mortgage banks must comply with a mandatory overcollateralisation requirement of 2% at the capital centre level. Valuation of covered bond and cover pool assets is regulated by the Danish FSA. For Capital Centres B and E, Jyske Realkredit supplied additional OC of 6.2% and 4.4%, respectively.

Further, issuers of SDOs must ensure that cover assets always fulfil the LTV requirements that apply to Capital Centre E. If lending at a given time exceeds statutory LTV limits at the individual loan level (80% for residential and 60% for business lending) based on current market values, supplementary collateral is required, which can be provided through the issuance of Senior Secured Bonds (SSBs) or other non-covered bond instruments. Average LTVs at end-Q4/2022 for Capital Centres B and E were 48.7% and 47%, respectively. The vast majority of loans have an LTV below 60%.

Cover pool (capital centre) composition

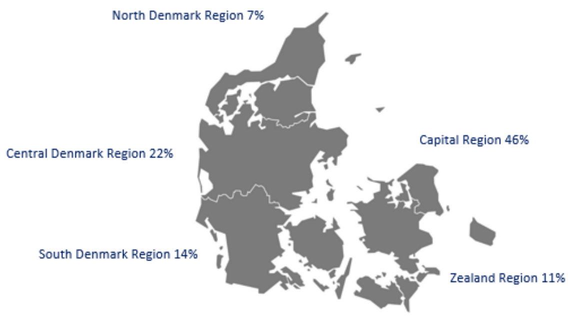
The issuer manages the capital centres, which may only contain eligible assets (defined by the CRR, cf above), eg loans secured by mortgages on residential or commercial properties, derivative contracts and substitute assets.

Jyske Realkredit A/S mainly offers mortgage loans to three segments: private residential, commercial and subsidised housing. Geographically, almost half (46%) of lending is in the Capital Region. The rest is spread out with 11% in the Sealand Region, 14% in the South Denmark Region, 22% in the Central Denmark Region, and 7% in the North Denmark Region. The remaining 0.6% fund properties located outside of Denmark.

Loan origination

Customers are credit-scored based on budgets and credit checks. Irrespective of the loan type requested by a borrower, granting of a loan is subject to confirmation that the borrower can afford to service a callable fixed-rate 30Y amortising loan. Customers are personally liable for their mortgage loans.

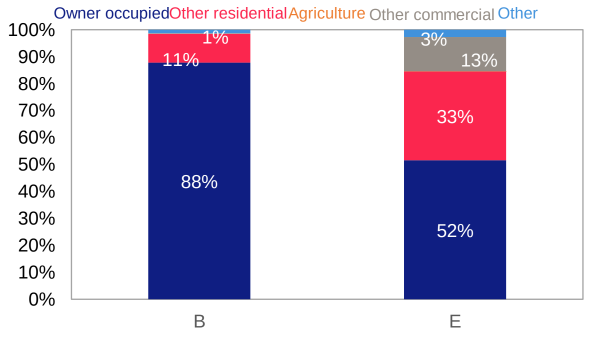
Geographic location of mortgage lending



Share of mortgage lending (nominal value) in Capital Centres B and E.

Source: Jyske Realkredit A/S

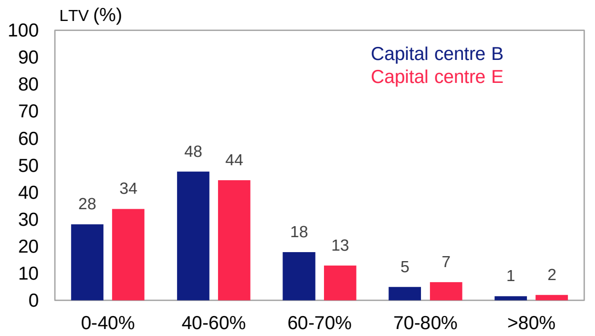
Mortgage assets in Capital Centres B and E



Other residential excludes owner occupied, and other commercial excludes agriculture (end-Q4/2022).

Source: Jyske Realkredit A/S, Nykredit Bank

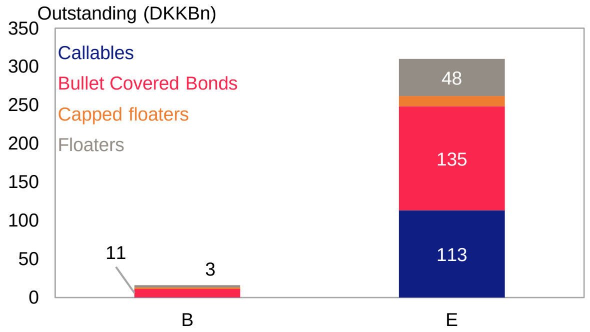
LTV distribution, current property value



The majority of loans have a relatively low LTV value (end-Q4/2022).

Source: Jyske Realkredit A/S, Nykredit Bank

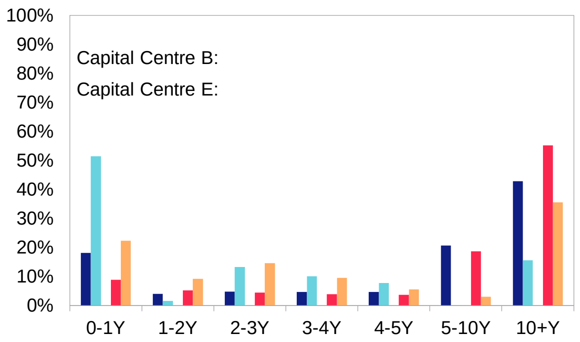
Covered bond types in Capital Centres B and E



Capital Centre E contains both loans match funded to maturity and loans subject to refinancing.

Source: Nykredit Bank

Amortisation profile of loans and maturity of covered bonds



Loans subject to refinancing generally have maturities exceeding those of the underlying bonds (end-Q4/2022).

Source: Jyske Realkredit A/S, Nykredit Markets

Funding – covered bond programmes

Covered bonds are Jyske Realkredit's primary funding source. Of the outstanding covered bonds by end-Q4/2022, 94% is issued in DKK, and the remainder in EUR (6%).

Danish covered bonds are generally issued either on tap to satisfy day-to-day funding needs or at refinancing auctions. Long-term callable bonds and long-term capped floaters typically have an opening period of three years, which enables issuers to build sizeable bond series. ARMs or floating rate loans, funded by either fixed-rate or floating-rate bonds, are refinanced at auctions in February, May, August and November. The funding needed at refinancing auctions is always lower than the amount maturing, due to amortisation on the underlying loan portfolio.

Today, Jyske Realkredit issues covered bonds mainly through Capital Centre E (SDOs), while ROs are issued out of Capital Centre B. The decision in 2017 to issue all new bonds as covered bonds (SDOs) from Capital Centre E was made in order to establish as large a series as possible. To the extent possible, Jyske Realkredit chose to move the funding of mortgage loans from Capital Centre B to Capital Centre E when refinancing the mortgages. By end-Q4/2022, covered bonds with a nominal value of DKK 16.2bn were outstanding in Capital Centre B, and bonds with a nominal value of DKK 311.3bn were outstanding in Capital Centre E.

The General Capital Centre, which is inactive, comprises mortgage bonds that were grandfathered under the former legislation. The same applies to ROs issued out of Capital Centre B before 1 Jan 2008.

In 2016, Jyske Realkredit was the first Danish mortgage provider to issue EUR-denominated bonds to fund 1Y ARMs in DKK. These bonds have 5Y to 10Y maturities. The DKK and EUR interest rate risk is fully hedged by swaps.

ALM

Due to match funding, there is a direct connection between customers' choice of loan type and the bonds issued to fund the loans. Jyske Realkredit is therefore not exposed to interest rate or foreign exchange risk (if loans are not fully match funded, the market risk is fully hedged), and funding costs are passed directly on to customers.

In contrast to fixed-rate annuity loans, which are match funded to maturity (by callables), ARMs and floating-rate loans are typically longer than the maturities of the funding bonds (bullets and floaters). In the primary capital centre (Capital Centre E), ARMs funded by short-term fixed-rate bullets account for 43.5% of total lending, and floaters fund another 15.5% of total lending. Interest rate and refinancing risk on ARMs and floating-rate loans are passed directly on to customers, and loan payments are recalculated when yields are adjusted.

Covered bonds are rated AAA by S&P

The covered bonds issued out of Jyske Realkredit's Capital Centres B and E are rated AAA by S&P. The ratings have a stable outlook.

Jyske Realkredit's issuer credit rating can be downgraded by three notches without the covered bonds necessarily losing their AAA rating.

S&P ratings Q4/2022

Capital Centre	B (RO)	E (SDO)
Covered bonds	AAA	AAA
Available OC (%)	22.30	6.47
Unused notches of uplift	3	3
OC in line with current rating (%)	5.87	2.50
Issuer: Jyske Realkredit A/S (long-term/outlook/short-term)	A / stable / A-1	

The OC that rating agencies rely upon can deviate from what is reported in Q4/2022 cover pool reports from the issuers.

Highest ratings assigned to covered bonds.
Source: S&P, Nykredit Markets

Issuer profile: DLR Kredit A/S

- The fifth largest mortgage bank in Denmark with a focus on agricultural and commercial properties
- Outstanding covered bonds totalled DKK 158bn at fair value by end-Q4/2022
- Covered bonds issued by DLR Kredit A/S are rated AAA by S&P

DLR Kredit A/S (DLR Kredit) primarily offers mortgage financing of agricultural and urban commercial properties. Loans are distributed through the branch network of DLR Kredit's shareholders, which are Danish local and nationwide banks. DLR Kredit is Denmark's fifth largest mortgage bank with a market share of 6%, and DLR Kredit is a Danish O-SII.

Cover pools

DLR Kredit has two cover pools. Both cover pools comprise loans secured by mortgage over property in Denmark and other eligible assets, such as claims on credit institutions and government bonds. Almost all loans are in cover pool B.

About 52% of lending is secured by mortgage over agricultural properties, the rest by mortgage over commercial, residential rental and private residential properties. Because of the geographical distribution of DLR's loan distributing banks, lending is concentrated outside the Capital Region. 5% of lending was granted in the Capital Region.

ALM and covered bond funding

As described above, Danish covered bond issuers are subject to very strict ALM rules. Like other Danish mortgage banks, DLR Kredit offers match-funded (pass-through) products, thereby eliminating market risk and the need for hedging.

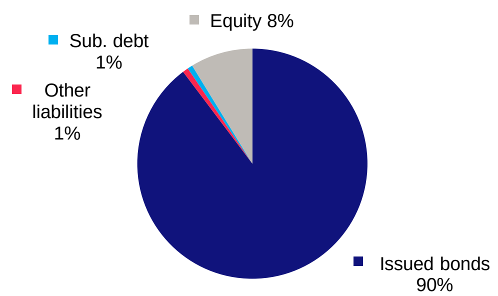
Capital Centre B comprises both mortgage loans match funded to maturity and mortgage loans that have much longer maturities than the issued covered bonds. The borrowers bear the refinancing risk associated with the asset/liability maturity mismatches.

In 2014, a legislative amendment was made to contain refinancing risk in the Danish mortgage banking sector. Bonds subject to refinancing now have a soft bullet structure with extendable maturity if the loans cannot be refinanced (refinancing failure trigger), or – for some bonds – if interest rates have risen by over 500bp relative to the preceding year (cf above).

Ratings

DLR Kredit's covered bonds are rated AAA by S&P.

Capital structure of DLR Kredit A/S



Covered bonds are the dominant source of funding (Q4/2022).

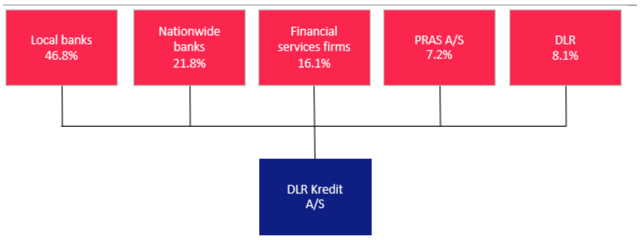
Source: DLR Kredit A/S, Nykredit Markets

Cover pool statistics and ratings, Q4/2022

Capital Centre	General	B
Covered bonds (nom. DKKbn)	0.7	183
WAL covered bonds (years)	13.8	8.2
Fixed rate (%)	33	25
ARMs (%)	0	26
Floating rate (%)	0	48
Capped floating rate (%)	68	0
Risk weighting CRD (%)	10	10
Eligible for central bank repo	Yes	
CBD/CRR-compliant*	Yes/Yes	
Cover pool (nom. DKKbn)	0.8	194.5
OC ratio (%)	11.6	12.2
WAL cover pool (years)	10.8	21.1
Match-funded loans (%)	100	100
Avg. LTV of loans (%)	29.3	52
Residential mort. assets (%)	40	30.5
Commercial mort. assets (%)	60	69.5
Amortising/IO loans (%)	100/0	64/36
Ratings	General	B
Covered bonds (S&P)	AAA	AAA
S&P unused notches of uplift	2	2
Issuer: DLR Kredit A/S (S&P / Fitch / Moody's)	A- / - / -	
Bloomberg ticker/website	LANDBR/dlr.dk	

Source: S&P, Nykredit Markets

DLR Kredit A/S



DLR Kredit A/S was primarily owned by local and nationwide banks in 2022.

Source: DLR Kredit A/S, Nykredit Markets

Key figures – DLR Kredit A/S

DKKbn	2022	2021	2020
Total assets	180	184	181
Loans	170	175	167
Equity	16	15	14
Income	1.5	1.4	1.4
Profit (loss) before tax	0.9	1.1	1
Profit (loss) after tax	0.7	0.9	0.7
CET 1 capital ratio	22.5%	17.1%	17.1%
Total capital ratio	24.3%	18.6%	18.8%

Source: DLR Kredit A/S

Loss-controlling agreements

As of 1 January 2015, all loans offered by DLR Kredit are subject to a uniform guarantee concept, regardless of the property category. The concept is structured so that the originating bank on the granting of a loan provides an individual loss guarantee covering 6% of the debt outstanding on the individual loan for the duration of the loan term and in addition it includes a loss-offsetting facility, whereby losses in excess of the 6% guarantee are offset in commissions payable to the individual banks. Due to these schemes, DLR Kredit's risk of loan losses is fairly limited. DLR offset losses totalling DKK 1m in 2022.

DLR Kredit A/S

DLR Kredit is a specialised credit institution licensed to carry on mortgage banking. It does not accept deposits and funds; lending is exclusively provided through issuance of covered bonds.

DLR Kredit is mainly owned by local and nationwide banks. DLR Kredit only provides loans through its shareholders, which are local and regional Danish banks. Therefore, DLR Kredit has no branches of its own. DLR Kredit has mitigated its credit risk through loss-controlling agreements with its shareholders, ie the loan-arranging banks, see fact box.

DLR Kredit primarily offers mortgage financing of agricultural and commercial properties. Home loans are only granted to residential farms and in the Faroe Islands and Greenland. DLR Kredit's staff counted 229 FTEs on average in 2022. In addition, DLR has 23 agricultural valuers.

Dansk Landbrugs Realkreditfond (DLR) was founded in 1960 as a mutually owned institution, and until 1 July 2000, DLR had its own legal framework and thereby an exclusive right to provide mortgage loans for agricultural properties secured by mortgages in the range of 45-70% of the property value. This exclusivity was abolished on 1 January 1999, and in July 2000, DLR became subject to the Danish Mortgage-Credit Loans and Mortgage-Credit Bonds, etc. Act. On 1 January 2000, DLR became subject to the supervision of the Danish FSA.

In 2022, DLR Kredit reported a profit before tax of DKK 927m compared with DKK 1,138m in 2021. Administration margin income was up by DKK 83m to DKK 1,895m on 2021. Fee and commission income rose to DKK 306m from DKK 244m, while fee and commission expenses increased by DKK 51m to DKK 797m in comparison with 2021. Impairment charges for loans and receivables etc decreased from DKK 109m to DKK 10m relative to total lending of DKK 170bn.

Covered bond issuer – DLR Kredit A/S

DLR Kredit issues covered bonds in the form of SDOs out of its Capital Centre B (cover pool B). SDOs are issued under the latest Danish covered bond legislation and comply with the CBD and qualify as European Covered Bonds (premium).

Covered bond investors benefit from dual recourse

In accordance with Danish covered bond legislation, investors in Danish covered bonds benefit from dual recourse: recourse in general to the issuer's assets and recourse to the segregated capital centres comprising mortgage loans, substitute assets and supplementary collateral. Consequently, in the event of the issuer's bankruptcy, investors have a preferential right to the cover assets along with derivative counterparties, if any. Capital centres are not part of the bankruptcy estate of the issuer.

Overcollateralisation

Legislation dictates that all Danish mortgage banks must comply with a mandatory overcollateralisation requirement of 2% at the capital centre level. Valuation of covered bond and cover pool assets is regulated by the Danish FSA. At end-Q4/2022, additional OC in Capital Centre B was 10.2%.

Further, issuers of SDOs (ie Capital Centre B in DLR Kredit's case) must ensure that cover assets always fulfil LTV requirements. If lending at a given time exceeds statutory LTV limits at the individual loan level (60% for agricultural and commercial lending) based on current market values, supplementary collateral is required, which can be provided through the issuance of Senior Secured Bonds (SSBs) or other non-covered bond instruments. The average LTV at end-Q4/2022 for Capital Centre B was 52%.

Cover pool (capital centre) composition

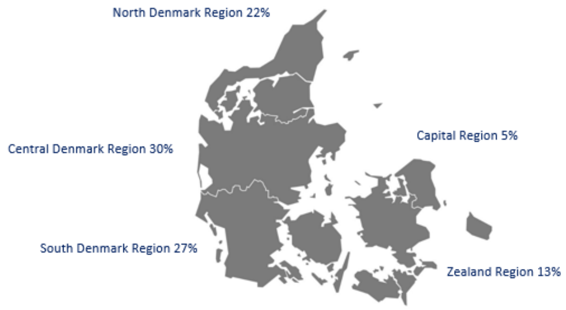
The issuer manages the capital centres, which may only contain eligible assets (defined by the CRR, cf above), eg loans secured by residential or commercial properties, derivative contracts and substitute assets.

Due to match funding, the value of covered bonds in DLR Kredit's capital centres are matched by the value of loans (OC is ensured by other assets). About 52% of lending from Capital Centre B is secured by mortgage on agricultural properties, and lending is in general concentrated outside the Capital Region. Only 5% of lending is in the Capital Region, 13% is in the Sealand Region, 27% is in the South Denmark Region, 30% is in the Central Denmark Region, and 22% is in the North Denmark Region. The remaining 2% funds properties located outside of Denmark.

Loan origination

DLR Kredit assesses loan applications and conducts credit scoring of applicants at the lending department in Copenhagen. Property valuations are subject to the rules of the Danish FSA and are carried out by DLR Kredit's own valuers. Thus, property valuation and credit scoring are two separate functions.

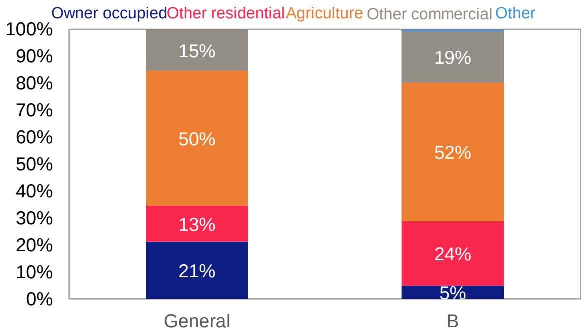
Geographic location of mortgage lending



Share of mortgage lending (nominal value) in Capital Centres General and B. 2% of mortgages fund properties located outside of Denmark. End-Q4/2022.

Source: DLR Kredit A/S, Nykredit Markets

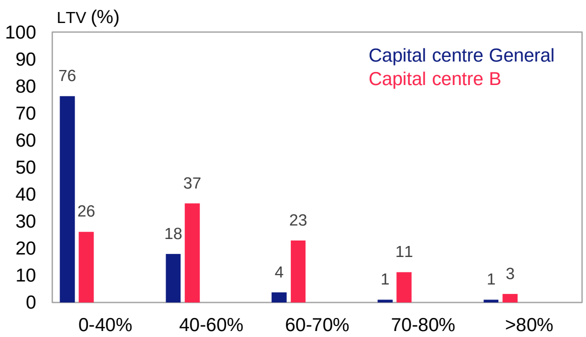
Mortgage assets in Capital Centres General and B



Other residential excludes owner occupied, and other commercial excludes agriculture (end-Q4/2022).

Source: DLR Kredit A/S

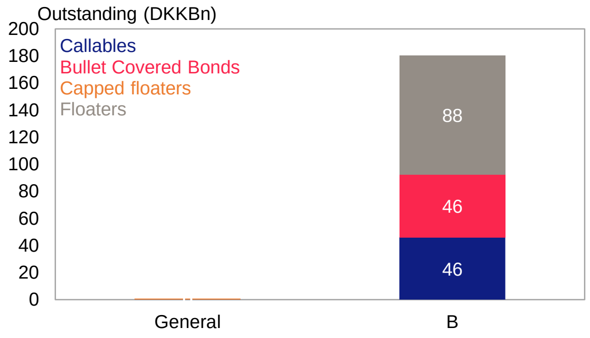
LTV distribution, current property value



The majority of loans have a relatively low LTV value (end-Q2/2022).

Source: DLR Kredit A/S

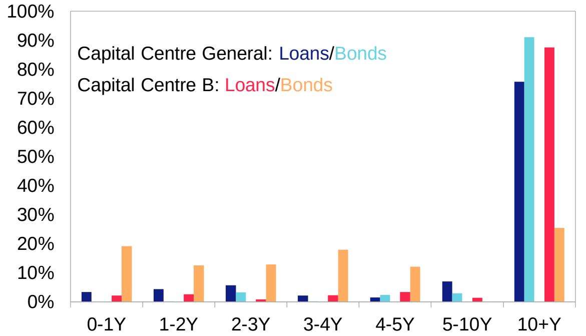
Covered bond types in Capital Centres General and B



Capital Centre B contains both loans match funded to maturity and loans subject to refinancing.

Source: DLR Kredit A/S

Amortisation profile of loans and maturity of covered bonds



Loans subject to refinancing generally have maturities exceeding those of the underlying bonds (end-Q4/2022).

Source: DLR Kredit A/S

Funding – covered bond programmes

Covered bonds are DLR Kredit's only source of funding. All bonds are issued in Denmark, and at end-Q4/2022, 99.4% of the bonds were DKK-denominated; the remaining bonds were EUR-denominated.

Danish covered bonds are generally issued either on tap to satisfy day-to-day funding needs or at refinancing auctions. Long-term callable bonds and long-term capped floaters typically have an opening period of three years, which enables issuers to build sizeable bond series. ARMs or floating rate loans, funded by either fixed-rate or floating-rate bonds, are refinanced at auctions in February, May, August and November. The funding needed at refinancing auctions is always lower than the amount maturing due to amortisation on the underlying loan portfolio.

The funding structure of DLR Kredit's lending has changed markedly in the last ten years, as the proportion provided as adjustable-rate mortgages (ARMs) with 1Y funding has been reduced considerably. This is a result of DLR Kredit's targeted refinancing campaigns since 2014 aimed at reducing the refinancing frequency. In 2014-2016 focus was on 1Y and 2Y ARMs, while in 2017, the campaigns were extended to comprise also 3Y ARMs.

Since the implementation of new Danish covered bond legislation in 2008, bonds funding new loans are exclusively issued out of the SDO Capital Centre B. Up to 2008, ROs were issued out of the General Capital Centre. At end-Q4/2022 covered bonds outstanding amounted to DKK 0.7bn in the General Capital Centre and to DKK 183.4bn in Capital Centre B (nominal value).

ALM

Due to match funding, there is a direct connection between customers' choice of loan type and the bonds issued to fund the loans. DLR Kredit is therefore not exposed to interest rate or foreign exchange risk, and funding costs are passed directly on to customers.

In contrast to fixed rate annuity loans, which are match funded to maturity (by callables), ARMs and floating-rate loans are typically longer than the maturities of the funding bonds (bullets and floaters). In the primary capital centre (Capital Centre B), ARMs funded by short-term fixed-rate bullets account for 26% of total lending, and floaters fund another 48% of total lending.

Interest rate and refinancing risk on ARMs and floating-rate loans are passed directly on to customers, and loan payments are recalculated when yields are adjusted.

Ratings

DLR Kredit's covered bonds are rated AAA by S&P. S&P has also assigned DLR Kredit an official issuer rating of A-. The issuer rating can be downgraded two notches without DLR Kredit's covered bonds in the Capital Centre B losing their AAA rating.

S&P ratings, Q4/2022

Capital Centre	General	B
Covered bonds	AAA	AAA
Unused notches of uplift	2	2
OC in line with current rating (%)	2.50	8.98
Issuer: DLR Kredit A/S (long-term/outlook/short-term)	A- / stable / A-2	
Bloomberg ticker/website	LANDBR/dlr.dk	

The OC that rating agencies rely upon can deviate from what is reported in Q4/2022 cover pool reports from the issuers.
Source: S&P, Nykredit Markets

DISCLOSURE

This research is non-independent research prepared by Fixed Income & Nordic Research in Nykredit Markets. Non-independent research is a marketing communication and does not constitute independent, objective investment research and is thus not subject to the legal requirements applicable to independent investment research. Therefore, it is not subject to any prohibition on dealing ahead of the dissemination of the marketing communication.

Recommendation and risk assessment structure for government bonds and bonds issued by financial institutions, including covered bonds
Bond recommendations
The research of Fixed Income & Nordic Research generally focuses on isolating relative value in bond and derivatives markets. Therefore, the interest rate and/or volatility risk of the strategy is generally hedged through other bonds or derivatives (swaps, swaptions, caps, floors, etc). In contrast to outright recommendations, our research often includes both a buy and a sell recommendation.

BUY: In our view, the bond is fairly inexpensive relative to comparable alternatives in either the bond or derivatives markets. We expect that the bond will offer a higher return than the alternatives on a horizon of usually three months.
SELL: In our view, the bond is fairly expensive relative to comparable alternatives in either bond or derivatives markets. We expect that the bond will offer a lower return than the alternatives on a horizon of usually three months.

Recommendations on portfolio allocation
The recommendations of Fixed Income & Nordic Research are based on a portfolio investor (long-only investor) in government bonds and bonds issued by financial institutions. Click on the following link to see a list of all recommendations on financial instruments or issuers disseminated by Fixed Income & Nordic Research in Nykredit Markets over the past 12 months.

OVERWEIGHT: In our view, the return on the bond segment will be higher than the return on the total Danish bond market (Danish government bonds and bonds issued by financial institutions) in the next three months.
NEUTRAL: In our view, the return on the bond segment will be in line with the return on the total Danish bond market (Danish government bonds and bonds issued by financial institutions) in the next three months.
UNDERWEIGHT: In our view, the return on the bond segment will be lower than the return on the total Danish bond market (Danish government bonds and bonds issued by financial institutions) in the next three months.

Distribution of recommendations
The distribution of the direct investment recommendations from Fixed Income & Nordic Research within the past quarter is shown in Table 1 and Table 2. Proportion I is the distribution of our recommendations and it therefore sums to 100%. Proportion II is the share of issuers within each category above for which Nykredit Bank A/S has carried out major investment bank transactions in the past 12 months.

Table 1: Recommendations – fixed income	Proportion I	Proportion II
Buy	50	0
Sell	50	0
Table 2: Recommendations – portfolio allocation	Proportion I	Proportion II
Overweight	0	0
Neutral	0	0
Underweight	0	0
Source: Nykredit Markets		

Historical returns and price developments
To the extent that this material contains information on historical prices and/or returns, reference is made to historical returns and prices at nykredit.dk, which provides information on price developments and returns for the past five years (or the life of the instrument concerned, if less than five years) of the financial instruments for which Fixed Income & Nordic Research has made direct investment recommendations.

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This investment research was finished and released for distribution for the first time on the date stated on the front page.

Financial models and methods applied

Calculations and presentations are based on ordinary econometric and financial tools and methods as well as publicly available sources. Assessments of Danish callable mortgage bonds are modelled using a proprietary model consisting of a stochastic yield structure model and a statistical refinancing model calibrated to borrowers' historical prepayment behaviour. The models have been approved by the Danish Financial Supervisory Authority.

Risk warning

Assessments and recommendations, if any, made in this publication may involve substantial risks. Such risk, including a sensitivity analysis based on relevant assumptions, is described in this research. All investors should consider the purpose of their investment and make their own decisions as regards any kind of investment in financial instruments mentioned in this research.

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Nykredit Markets – Kalvebod Brygge 47 – DK-1780 Copenhagen V – Tel +45 44 55 18 00 – Fax +45 44 55 18 01

Nykredit Markets
Kalvebod Brygge 47
1780 København V
Danmark
Tel +45 44 55 10 00

Nykredit Bank A/S · CVR no 10 51 96 08