Danish mortgage bonds provide attractive yields and low risk

New European Union legislation favours Danish mortgage bonds

KEY CONCEPTS

- New legislation favours Danish mortgage bonds
- Attractive yields and low risk
- Credit rating of AAA with only a few exceptions
- No defaults since inception in 1797
- Unique balance principle
- Third-largest mortgage market in the world
- High degree of transparency and standardization
- Strong and sound Danish economy

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Executive summary

The Danish mortgage bond market is one of the largest in the world. It dates back to 1797 and as yet has no record of a single default. Even though the Danish economy was severely affected by the economic turmoil following the financial crisis, the mortgage bond market has shown persistent stability and delivered attractive performance compared to other fixed income assets.

The underlying key to this performance is a fundamentally strong economy with sound balances, and a unique balance principle in the mortgage market that entails a complete match between loans and bonds – a principle that makes the Danish mortgage system unique compared to other well-established mortgage credit systems, and ensures financial stability.

In a world of historically low interest rates, it is difficult to find attractive yields in the bond markets while at the same time insisting on low risk. The upcoming implementation of Solvency II in 2016 in all of the European Union's 27 member states, which involves the introduction of stricter risk-based solvency requirements for insurance companies across Europe, will make this task even more challenging as this involves the introduction of stricter risk-based solvency requirements for insurance companies across Europe. In the following we will demonstrate why Danish mortgage bonds constitute an attractive asset class and why they are favoured by the new legislation.

The balance principle

In the Danish model, mortgage banks supply mortgages to home owners. The funds required are obtained through the simultaneous issuance of bonds. These bonds have the same fixed-interest periods and redemption structure as the underlying mortgages.

This is known as the "balance principle". Basically, mortgage banks act as a conduit between the borrower and the lender. This is a unique key concept in the Danish mortgage model, which means that there is a match between the assets (mortgage loans) and the liabilities (mortgage bonds) of mortgage banks. Each new loan is funded by the issuance of new mortgage bonds of an equal size and with identical

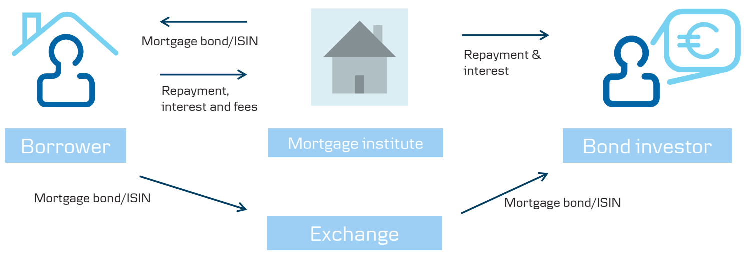
The Copenhagen Fire in 1795

History of the Danish mortgage bond market

The first Danish mortgage bonds date back to the period after the Copenhagen Fire of 1795, which resulted in a huge demand for funds to finance the city's reconstruction. Despite this long history, the Danish mortgage credit regime has never resulted in a default. Payments to investors have only been delayed in a very few cases, with the last example dating back to the 1930s. This underscores the high degree of security inherent in the system. The long tradition in Denmark of using mortgage loans to finance real property has made the Danish covered bond market the third-largest market for covered bonds in the world today, surpassed only by the USA and Germany.

cash flow characteristics. The proceeds from the sale of the bonds are passed to the borrower while, in the same way, interest and repayments of the principal are passed on directly to the investors that hold the mortgage bonds.

The balance principle: unique in Denmark



- Cash flow exactly matches the underlying loan
- All market risks are transferred to the investor/borrower
- The mortgage institute solely serves as a settlement centre
- Borrowers know and sell the exact mortgage bond/ISIN

- Strict limitation of interest and currency risks
- Financial stability and excellent creditworthiness

Three main products

There are three main products in the Danish mortgage market that are designed for match funding:

- Fixed-rate callable annuities with redemptions matching the underlying loans (mainly 20Y and 30Y loans and bonds).
- Short-term fixed-rate bonds subject to refinancing at maturity until the underlying loans have matured. The time to maturity of the issued bonds is primarily one to five years and matches the fixed-rate period of the underlying adjustable-rate mortgages (ARMs).
- Floaters and capped floaters with maturities from five to 30 years.

For all product types, loans with up to 30 years' maturity are available and most products are offered with an interest-only option for up to 10 years. If loans are offered with a 10-year interest-only (IO) period, the loan must be repaid as an annuity profile over the remaining time to maturity – typically 20 years. Around 56% of loans to Danish households currently use the interest-only option.

Advantages of the Danish mortgage model

The Danish mortgage model offers several advantages:

- The market risk is fully transferred to either investors or borrowers, while mortgage banks are only exposed to the risk that the borrower defaults and the risk that the value of the property will not match the outstanding amount of the loan (credit risk).

According to the state institution Statistics Denmark 59% of the population, which is currently around 5.6 million, own their own homes. 1.2 million of these homes are houses, while the rest are apartments.

- Issued mortgage bonds are secured by the mortgage issuer, and by mortgage loans and other collateral in the cover pool.
- Mortgage banks must ensure that the cover pool complies with loan-to-value (LTV) limits on a continuous basis and supply additional collateral if house prices are falling.
- Strict LTV requirements and since mortgage banks are responsible for managing their exposure to credit risk, this creates incentives for lenders to ensure good underlying credit quality.
- Danish home owners pay an interest rate determined by the market, as opposed to a bank.
- The system provides a high degree of transparency and standardization, and keeps transaction costs low.

Danish mortgage banks earn their revenue by receiving an administration fee from borrowers. The fee depends on the choice of loan and the loan to value ratio – reflecting the borrower's market risk and the mortgage value risk. Mortgage banks have the option of increasing administration fees for all borrowers if house prices fall or delinquencies rise. Increasing the administration fees will apply to all borrowers irrespective of their individual credit rating. This is often referred to as the "solidarity principle" inherent in the Danish mortgage bond market. It is an important means to reduce risk in periods of higher credit risk and potentially difficult capital market access.

The proportion of loans subject to refinancing (ARMs) has increased over the past 20 years. Even though the refinancing risk is transferred directly to the borrowers - as they must pay whatever rate the bonds are refinanced at - the refinancing activity does leave some event risk with the issuer. In April 2014, a new law came into effect that will automatically extend bond maturities by 12 months in the unlikely event that a refinancing auction fails. For bonds with a shorter maturity than 2 years, a rate cap also applies at the refinancing auction. If the refinancing rate of the maturing bond is more than 5% higher than the existing loan rate, the maturity will be extended. Should the maturity of the short-term bonds be extended due to a failed auction or due to the rate cap, then the coupon will be stepped up by 5% from the current level, during the extension period.

Traditional long-term fixed-rate callable bonds are not affected by the new legislation and are not subject to any extension of maturity.

The Danish FSA has introduced a new measure for mortgage banks called the Supervisory Diamond, which is aimed at reducing the number of ARMs and IOs. However, mortgage bank guidance to borrowers for fixed-rate mortgages currently has a greater impact. This has already led to a considerable reduction in the number of new ARMs, in favour of fixed-rate mortgages, even though the demand for IOs seems to have been more persistent.

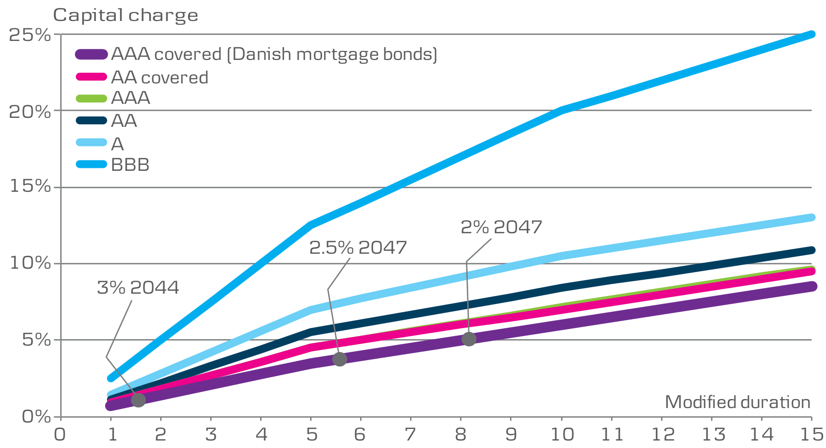
New legislation favours Danish mortgage bonds

Both banks and insurance companies are increasingly motivated to buy Danish mortgage bonds in order to fulfil regulatory requirements.

For banks, Danish mortgage bonds are in the second-best category with regard to the classification of liquid assets in the new liquidity measure, Liquidity Coverage Ratio (LCR). They are perceived to be only slightly less liquid than government bonds.

For insurance companies under Solvency II, Danish mortgage bonds are favoured since they comply with the covered bond definition and have sufficiently high ratings to be in the second-best credit risk category – second only to government bonds. The credit risk capital charge under Solvency II is defined by Solvency Capital Requirement (SCR) Credit. Capital requirements increase with longer duration and lower perceived credit quality, as defined by asset class and rating.

Solvency II Capital Charge



Source: Danske Capital.

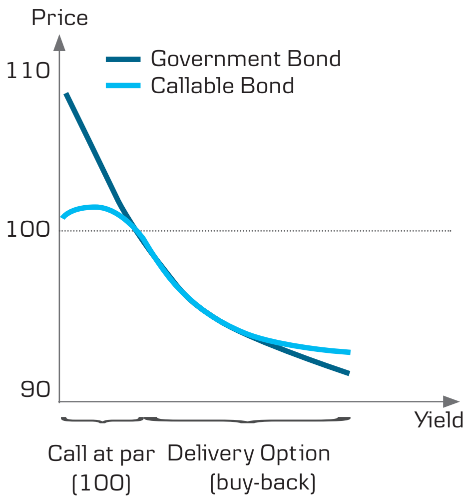
The credit capital charge is dependent on the spread risk (spread duration) of the specific bonds. Regarding Danish callable bonds, the spread risk is measured by the option-adjusted modified duration, which is considerably lower than the time to maturity, as illustrated in the figure above.

The Danish krone (DKK) is pegged to the euro. Before the euro it was pegged to the German mark as from 1982. Under Solvency II, the capital charge on buying DKK assets as a euro-based insurance company is only 0.39% when the currency exposure is unhedged. Hedging DKK positions to EUR currently adds a premium of around 20bps to the spread vs. Euribor.

The complex pricing of callable bonds

For the long-term investor, 30-year callable bonds at fixed interest rates are normally the most attractive (even though it can always be recommended to supplement the portfolio with mortgage bonds of shorter duration and adjustable-rate mortgages).

Irrational behaviour creates opportunities for alpha



Borrowers will not always act rationally when redeeming their loans. This behaviour creates opportunities for active management, but may at the same time cause a buy and hold strategy to erode value over time.

At present, the most widely used benchmark is the Nykredit Danish Mortgage Bond Index. The index is currently yielding 0.88%, or in relative terms 18bp over 6M swap with a duration of 2.8.
Source: Danske Capital.

Callable bonds are more complex than bonds without an embedded call option. The call option entitles mortgage borrowers to prepay the mortgage loan at par prior to maturity. This is important because when interest rates are falling it is possible for the borrower to refinance into a new mortgage loan at a lower rate.

For the borrower, the prepayment option comes at a price. The borrower must pay the bondholder a slightly higher interest rate than for a comparable non-callable mortgage bond. Callable bond valuations take account of the value of the embedded option for the borrower, which increases the closer the bond is to trading at par (100) or above. The Option Adjusted Spread (OAS) measures the extra yield, compared to risk-free government bonds, required by an investor as compensation for the prepayment risk.

It is important to understand a callable bond's price behaviour as it approaches par value or above, since the call option will be in-the-money. The closer the bond trades to par, the less attractive it is for investors as the prepayment risk increases. If interest rates fall enough for a callable mortgage bond's price to rise above 100, the bond's price will not rise at the same speed as that of a comparable non-callable bond, i.e. the convexity becomes negative. The prepayment risk is significant and therefore the callable bond's value is less than that of a comparable non-callable bond.

There are several factors to be aware of when estimating the prepayment risk. The bond price must be above 100 for the benefit of calling the bond to exceed the costs of redemption and refinancing. The exact amount above 100 differs according to the borrower and is dependent on the specific refinancing alternatives available to the borrower. In general, commercial borrowers and private borrowers with large loans will prepay most aggressively. Some private borrowers might not consider this worthwhile for personal reasons, such as that their debt is too small, they will be moving out within a few years, or that they just never get around to it. Some behave rational, some do not. It is therefore important to understand the market, the types of borrowers and the bond series in order to estimate the most likely behaviour of mortgage borrowers.

The Danish economy

The crisis in 2008 was hard on the Danish economy and the impact is still being felt – real GDP has not yet returned to the pre-crisis level. Private consumption is the most significant factor that has not fully recovered – it has not yet managed to climb to pre-crisis levels, and the number of bankruptcies is significantly above the average during the 30 years before the crisis.

However, this weakness is not reflected in Danish mortgage loans, and the number of forced sales of homes is only a little above the average from the mid-1990s to 2008. This is probably driven primarily by very low interest rates and the availability mix of adjustable-rate and interest-only mortgages. Amongst the good news, the housing market is

The largest segment in the Danish mortgage market is the short-term fixed-rate bonds that fund adjustable-rate mortgages (ARMs) with a market share of around 50%. The second largest segment is the callable market (30%) and, finally, floaters and capped floaters (20%).

affordable when you compare income with housing costs, and the housing market in general is improving.

Denmark has a less flattering issue when it comes to debt in the private sector. Danish households are the most indebted in the world, viewing their debt level as a ratio of disposable income. Three quarters of this debt is related to home purchases.

But the picture is different when the households' savings and assets are taken into account. Danes save more than their Scandinavian cousins in financial assets and pension funds, and less in their homes. On an accumulated basis, however, when all debt and savings are compared on an aggregate basis, Danes have the highest net wealth among the Nordic countries.

The European Commission expects the Danish budget deficit to be around 1% of GDP in 2014 and 2.3% of GDP in 2015, which is well below the 3% threshold. As far as public debt is concerned, Denmark is one of the least indebted countries in the EU at 45% of GDP (2013 level), compared to an EU-member-state average of 90.9%.

Going forward the market is going back to basics

The long-term trend for the issuance pattern in the Danish mortgage market is going back to basics. This means a higher market share of classical fixed-rate callable bonds and a smaller share of floating-rate loans. At the same time the growth in interest-only loans have stopped and the market share is expected to fall in the years ahead. A higher share of fixed-rate callable loans means a larger supply of long-term bonds, leaving more room for new investors in the segment.

In a global market with low yields and spreads, Danish mortgage bonds seem increasingly attractive – not only for domestic investors. The Danish mortgage system is transparent and the bonds have the highest credit rating of AAA, with only a few exceptions. The bonds offer a yield pickup compared to core-EUR covered bonds measured both in outright and in relative terms. There is a significant volume in the market, with around EUR 330 billion outstanding, and the bonds are in the top brackets when it comes to the regulatory classification of both credit risk and liquidity.