Special Report 2012/17

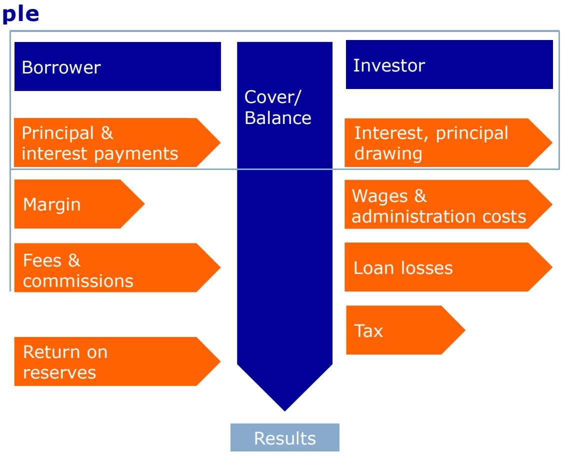
A slice of Danish: are there reasons to follow the Danish mortgage model?

Dutch gross mortgage debt totals 106% of GDP, which is higher than in any other EU country. Apart from the Netherlands, Denmark is the only other EU country whose mortgage debt exceeds its GDP (101% of GDP). However, the mortgage models in the two countries differ widely. The traditional Danish mortgage model is being heralded as an important element of housing market reform in the Netherlands. In this Special Report we argue that the financing of mortgages based on this model will not solve structural problems in the Dutch housing market.

Danish mortgage system

In the traditional Danish model, mortgages are financed by the issuance of covered bonds, with the bondholders directly investing in the underlying mortgages. The 'balance principle' is a key concept in the Danish mortgage model, which means that there is a close match between the assets (e.g., mortgage loans) and the liabilities (e.g., mortgage bonds) of mortgage banks. Each new loan is in principle funded by the issuance of new mortgage bonds of equal size and identical cash flow and maturity characteristics. The proceeds from the sale of the bonds are passed to the borrower and similarly, interest and principal payments are passed directly to investors holding mortgage bonds (figure 1).

Figure 1: Danish pass-through balance principle



Source: Nykredit (2010)

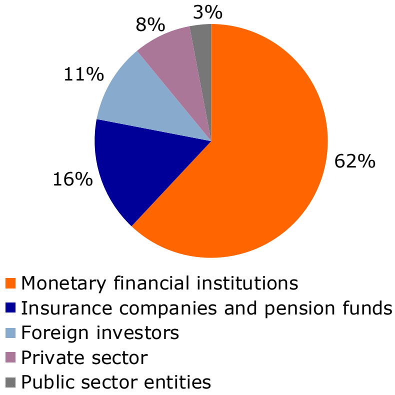
According to this 'balance principle' the market risk is fully transferred to the investor, while mortgage banks are only exposed to the risk that the borrower defaults and the risk that the value of the property will not match the outstanding amount of the loan (credit risk). Basically, mortgage banks act as a conduit between the borrower and the lender. Therefore, the mortgage banks need to hold additional collateral for each mortgage issued, because any credit losses could lead to payment liabilities vis à vis the bondholders. The great benefit of the traditional Danish model is that mortgage banks are not dependent on short-term market funding, and as result, are not exposed to refinancing risks.

However, over the past two decades, Denmark changed the funding of its mortgages. As a result of the liberalisation of the Danish mortgage banking sector product development gained momentum, and adjustable-rate mortgage loans, interest-only loans and capped floating-rate loans followed in quick succession.[1] Especially, the introduction of adjustable-rate mortgages (ARMs) in 1996 has led to a huge shift in the private residential lending. According to Association of Danish Mortgage Banks (2011) these mortgages accounted for 49% of total private residential lending at the end of 2010. By comparison, ten years ago, this was only some 10%. Contrary to the situation in the traditional model, the Danish mortgage banks are now liable for a considerable part of the refinancing risk in addition to the credit risk, because the mortgage bonds issued

[1] In 2003 interest-only mortgages were introduced with a maximum interest-only period of 10 years. In 2007 the interest-only period was extended to 30 years, provided the loan-to-market value ratio does not exceed 75%.

have a shorter maturity than the mortgages on which they are based. This has also led to a decline in long-term investors' appetite for the mortgage bonds. Only 16% of Danish mortgage bonds is held by pension funds and insurance companies. By comparison, ten years ago, the figure was some 30%. As a result, Danish commercial banks now largely buy the mortgage bonds themselves (figure 2). Consequently, the Danish banks have a large funding requirement and, like their Dutch counterparts, to a large extent depend on short-term market funding (box 1).

Figure 2: Ownership of Danish mortgage bonds, 2012



Source: Danmarks Nationalbank, Nykredit

The availability of capital is all the more pressing, since the financial crisis led to a roughly 20% drop in real house prices in Denmark between the summer of 2008 and the summer of this year, compelling the Danish mortgage banks to deposit extra capital in order to compensate the covered bond holders for losses incurred (see hereafter). In 2010 the Danish central bank said that the market for long-term covered bonds was worst affected as a result, leading the Danish government to take steps to prevent an exodus of investors from this market (Danmarks Nationalbank, 2010).

Danish mortgage bond market

In contrast to the Dutch market, which is characterised by considerable diversity of mortgage products and a large number of non-bank mortgage lenders, chiefly brokers, the Danish mortgage market is highly standardised.

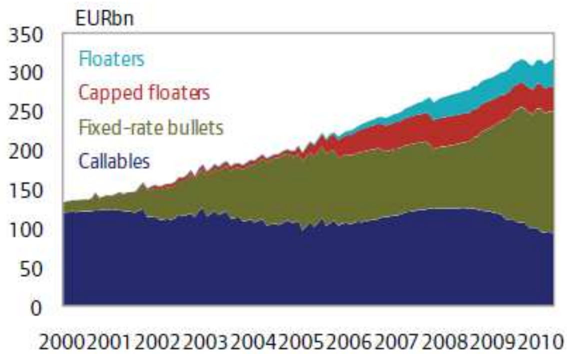
Box 1: Covered bonds and Basel III

Basel III introduces internationally harmonised liquidity requirements in which the *liquidity coverage ratio* (LCR) and the *net stable funding ratio* (NSFR) are central. The LCR requires that banks hold sufficient highly liquid assets that are capable of absorbing an outflow of capital for a thirty-day period in a severe stress scenario. The NSFR requires that banks finance their assets with more (stable) long-term capital. According to these new liquidity requirements, Danish mortgage bonds and covered bonds are considered (more) illiquid and risky, and adjustable rate mortgage bonds (with a fixed interest term of less than one year) are not regarded as stable financing. Consequently Danish mortgage banks will be permitted to make only limited investments in these products. Currently, the Danish banking system holds nearly two-thirds of outstanding covered bonds, which are mainly used for liquidity management.

One of the possible consequences of Basel II is that the yield on covered bonds may rise, in order to attract other - possibly foreign - investors, resulting in more expensive mortgage financing. Currently only 15% of Danish covered bonds are bought by foreign investors. More importantly, this restricts the availability of liquidity. The Danish central bank and the financial regulator (Finanstilsynet) have calculated that the Danish financial sector will require a total of some € 60-75 billion worth of government bonds in order to meet the liquidity requirements (Association of Danish Mortgage Banks, 2011). Currently, the Danish government has issued some € 90 billion worth of bonds, a quarter of the total outstanding amount of covered bonds (€ 339 billion). Only 15% of public debt outstanding would fit into the liquidity management of financial institutions (Nykredit, 2012).

Before 2007 specialist mortgage banks – at present seven – were the only financial institutions in Denmark allowed to provide loans against mortgage on real property by issuing traditional mortgage bonds (ROs).[2] They offer fixed-rate loans, ARMs and floating-rate loans (with or without interest rate cap) as the main types of mortgage loan. All loan types are offered with interest-only periods. Traditionally, fixed-rate bonds with a maturity of up to 30 years predominated, mirroring the dominance of callable fixed-rate mortgage loans in the Danish property market. According to Nykredit (2010) ARMs funded by short-term fixed rate bullets became popular in the past decade at the expense of callables and capped floaters mainly due to a steepening of the yield curve (figure 3).

Figure 3: Mortgage bond segments



Source: Nykredit (2010)

In 2007 new legislation came into force ensuring that Danish mortgage bonds would continue to qualify as covered bonds under the stricter European Capital Requirements Directive (CRD) rules and offering commercial banks access to covered bond market as well. As a consequence ROs did not fulfill the CRD requirement of continuous loan-to-value (LTV) compliance because the maximum LTV limit of 80% applied only at the time when the loan is granted. However, ROs issued before 2008 retained their covered bonds status and a 10% risk weighting. In replacement of ROs, Danish mortgage banks have issued covered bonds (SDOs) and covered mortgage bonds (SDROs). Contrary to ROs, mortgage loans funded by SDOs and SDROs must remain within a statutory lending limit throughout the lifetime of the loan (continuous LTV compliance).[3] This means that if house prices decline, covered bond issuers need to contribute additional collateral to the so called cover register, for instance government bonds. In case LTV limits are exceeded Danish mortgage banks may issue junior covered bonds to provide additional capital for the cover pool.[4]

The grass seems greener up north

The traditional Danish mortgage model offers a number of advantages. Firstly, strict LTV requirements and the fact that the mortgage banks are responsible for managing their exposure to credit risk create incentives for the lenders to ensure that the quality of the underlying credit is good. Furthermore, almost direct pass-through balance principle of market risks to investors keeps transaction costs low and makes the cost structure of the mortgage more transparent for Danish home owners. Besides, Danish mortgage borrowers raising a callable fixed-rate mortgage loan are entitled to prepay the mortgage at par prior to maturity. For example, buying back the loan in a high-interest-rate environment reduces the risk of negative equity by refinancing into a loan closer to the property value.[5] And finally, the most important benefit, according to those in favour of introducing the Danish model into the Netherlands, is that Danish home owners currently

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[2] The specialist mortgage banks are not allowed to fund their activities with deposits.

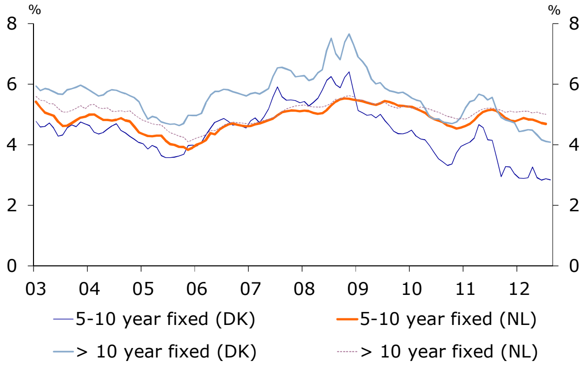
[3] Both commercial banks and specialist mortgage banks may issue SDOs, but only specialist mortgage banks may issue SDROs and ROs. In practice, there is no significant difference between the two types of covered bonds.

[4] Junior covered bonds are secured with underlying assets and issuer's capital and have a 20% risk weighting. Approximately € 2 billion is expected to be issued until the end of 2012 (Nykredit, 2012). Holders of junior covered bonds have a secondary preferential claim on all assets of the cover pool in case of bankruptcy.

[5] In this case Danish mortgage borrowers will have to accept larger coupon payments in return. According to Nykredit (2010) borrowers exercise their right to prepay loans to great extent. Falling interest rates in the period from 2001 to 2005 led to almost 100% prepayment.

pay a lower average interest rate on their mortgages than the Dutch. Data from both the Danish and Dutch central bank show that the interest on Danish mortgages with a relatively short fixed interest period (up to five years) has been 0.6% point lower on average since 2003 than is the case in the Netherlands. The question is however, to what extent is this kind of relatively short fixed interest mortgage representative of the traditional Danish model, in which the maturity of the mortgage bond is the same as that of the mortgage. Currently there is little difference between mortgage interest rates with a relatively long fixed period in both countries (figure 4). In addition and contrary to the Netherlands, where the maximum loan-to-market value ratio is 108%, Danish mortgage borrowers are obliged to finance at least 20% of the purchase price of their house from their own means, or else with a second mortgage.

Figure 4: Danish versus Dutch mortgage rates (new mortgages)



Source: Danmarks Nationalbank, DNB

This second mortgage is issued by commercial banks, generally has a maturity of 20 years and interest rates that average 3 to 4%-points higher than for mortgages with a loan-to-market value ratio of up to 80%. The difference in the financing structure determines to only a limited extent the difference in the composition of mortgage interest rates in Denmark versus the Netherlands.[6] Besides, the combination of lower LTVs and relatively strict default procedures[7] in Denmark makes it more difficult for the first time buyers and high-risk groups such as the self-employed to gain access to the Danish mortgage market. This is not surprising, since Danish mortgage banks are exposed to credit risk and act as a conduit between the borrower and the lender, they effectively guarantee the lender's asset.

As a consequence of a number of changes in the past years the risks associated with the Danish mortgage model have increased. Continuously compliance with LTV puts Danish mortgage banks in a difficult situation, as they need to raise the necessary supplementary capital at a time when the broader economy is weakening and house prices are declining.[8] At the same time, Danish mortgage banks are confronted with the aforementioned refinancing risk due to the mismatch between maturity on ARMs and the bonds funding these loans. And, last but not least, the proposed international liquidity requirements have significant negative consequences for the Danish mortgage model and financial system as whole, if implemented.

Redistribution of risk

Advocates of the Danish system emphasise that the implementation of the Danish mortgage model in the Netherlands would offer Dutch institutional investors an attractive investment option. This would close the deposit financing gap (€ 480 billion) of the Dutch

[6] Other factors that play a major role are the institutional context of national housing markets, developments on national savings markets, international competitiveness and the question of access for other (foreign) financial institutions.

[7] It typically takes no more than six months between a borrower's default on a loan and the forced sale (Danske Bank, 2012).

[8] In order to reduce the financial risk introduced by the continuous LTV compliance a reversion model was introduced. According to this model covered bonds may change status from SDOs to ROs during difficult economic periods. However, the covered bonds retain the characteristics of SDOs regarding the statutory investment rules to prevent institutional investors from exiting the market. As soon as market conditions have improved and the security behind the bonds has been restored, the bonds may be reclassified as SDOs (Association of Danish Mortgage Banks, 2011).

banks by means of long-term financing.[9] Currently, Dutch pension funds have invested less than 5% of their assets in Dutch mortgages. The question is, however, whether Dutch institutional investors would have much appetite for procuring high-risk long-term financing and if they want greater exposure to domestic risks. After all the market risk in the traditional Danish model is fully for the account of the investors. The prepayment option means that investors obtain only limited upside potential when interest rates fall.[10] The prepayment option makes the pricing of the bonds relatively complex and places demands on investors' risk management (Nykredit, 2010). More importantly, from the perspective of the Dutch mortgage issuer, or (future) pensioner, this is merely shifting the risk: in exchange for lower mortgage costs, the risk will be a greater risk concentration in pension income in the future.

Furthermore, by issuing covered bonds when financing a mortgage, banks give part of the mortgage portfolio as collateral, which means the bondholders incur virtually no credit risk. As the current developments in Denmark have shown, during a period of declining house prices, it can be difficult for banks to issue covered bonds, while at the same time credit losses can lead to payment liabilities vis à vis the covered bondholders. Although covered bonds may improve the banks' funding profile, overcollaterisation can lead to losses among other creditors if a bank should go bankrupt. In the worst case scenario, part of the losses would be passed on to the deposit guarantee system. Within this context, DNB (2012) alleges the following: "*As a result, an excessive dependence on this form of funding could restrict the banks' opportunities for raising unsecured funding. Hence, issues of covered bonds should remain subject to restrictions*." This problem is not so pressing in Denmark, because Danish mortgage banks are prohibited from attracting funding via savings deposits. Apart from that, mortgage financing by means of covered bonds that have the same characteristics as the mortgage is already possible in the Netherlands.[11]

Conclusion

Although the traditional Danish mortgage model offers benefits for mortgage borrowers, such as transparency, market-based pricing and repayment terms for the loans, it would be both impossible and undesirable to try to copy it directly. The basis for this model was laid over 200 years ago, and since then the model has been further modified for adaptation to the changing economic and institutional climate in Denmark. It would be more important to explore ways in which (Dutch) institutional investors could be induced to invest in the domestic mortgage market. For that we don't need a traditional Danish mortgage model.

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[9] According to DNB (2011a) savings deposits make up a stable one-third of Dutch banks' financing.
[10] Yield-to-maturity on bonds with this so-called call option is higher than a yield-to-maturity on bonds that don't have this option. Nonetheless, for long-term investors, traditional mortgage bonds are relatively low-yield investments with an uncertain maturity. The yield on Danish 30-year mortgage bonds fluctuates around 3.5% to 4%.

[11] According to DNB (2011b) long-term financing through the issue of covered bonds is on the rise. However, one third of mortgage lending is still financed through residential mortgage-backed securities (RMBS). A crucial difference between covered bonds and RMBS is that covered bondholders have recourse against a bank, not only the underlying assets transferred to a special purpose vehicle as in case of RMBS. Mainly due to typically high asset liability mismatches between cover assets and outstanding fixed bullet covered bonds, overcollateralisation requirements by rating agencies for covered bonds are much higher than credit enhancements for senior tranches of RMBS, what results in strong investor protection (ECBC, 2012).

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