



MEMORANDUM

**The Danish Financial
Supervisory Authority and
Danmarks Nationalbank**

Danish Mortgage Credit and International Regulation

Proposals for quantitative liquidity standards are being considered internationally as part of the follow-up on the financial crisis. The Danish Financial Supervisory Authority and Danmarks Nationalbank support the efforts to improve international regulation of the financial sector and find that the proposal contains many positive elements and is a step in the right direction. The proposal also gives cause for concern, however.

Danish mortgage credit is a key element of the Danish financial system. There is a risk that current deliberations concerning new international regulation may undermine parts of the system. These are primarily:

1. A new definition of liquid assets that fails to allow for the fact that Danish mortgage-credit bonds are just as liquid as many government bonds.
2. Liquidity requirements that make it impossible to maintain the present adjustable-rate loan model.
3. A leverage restriction that does not take into account the collateral pledged for mortgage-credit loans.

This memorandum describes the above three challenges in more detail. The Danish Financial Supervisory Authority and Danmarks Nationalbank have positions on other aspects of the proposal, but the focus here is on the above three.

Danish mortgage credit

The Danish mortgage-credit system is of major significance to the entire Danish financial sector and thus also to financial stability in Denmark. Its significance can be illustrated by the fact that the market value of all mortgage-credit bonds is approximately kr. 2,300 billion. In comparison, Denmark's GDP is approximately kr. 1,700 billion. The market value of the bonds is thus approximately 1.4 times Denmark's GDP.

The Danish mortgage-credit system is highly efficient and transparent. Borrowers pay the market rate on the mortgage-credit bonds plus a fee of approximately 0.5 percentage point to the mortgage-credit institute. The yield spread between government bonds and mortgage-credit bonds is normally limited as the real property pledged as collateral gives mortgage-

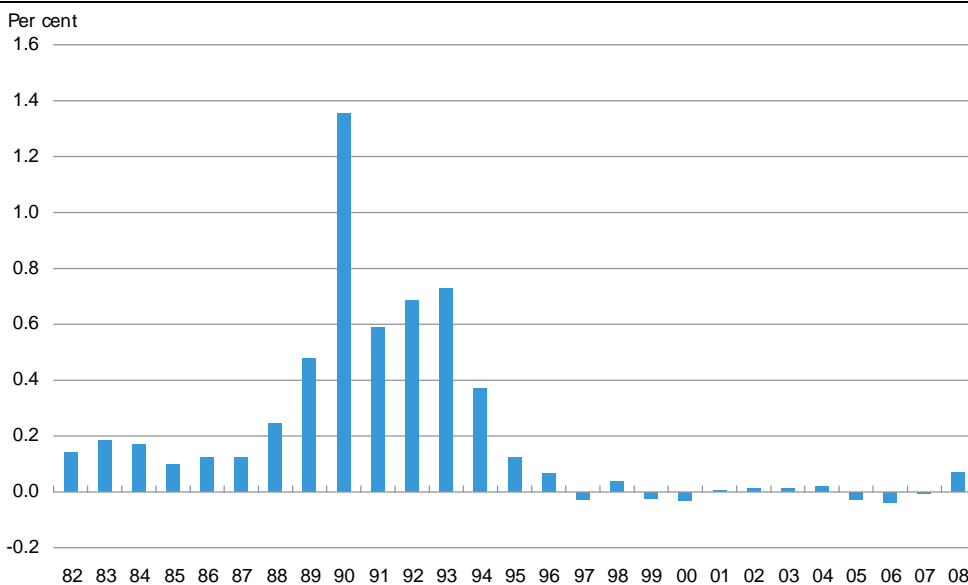
credit bonds a very high degree of security. During periods without market turmoil the yield spread may be as low as 0.1 percentage point in e.g. the 2-year segment and 0.25 percentage point in the 5-year segment. This means that during such periods the overall borrowing rate will only be up to 0.75 percentage point higher than the government-bond yield.

From the investor's point of view it is a very secure product that has never led to credit losses. In practice, the mortgage-credit institutes achieve this level of security by solely granting loans against real property as collateral, financed by issuing mortgage-credit bonds. Furthermore, the "balance principle" limits the institutes' ability to assume risks other than credit risks. This ensures a close link between loans and bonds. Credit risk is limited by restricting the extent to which the properties can be pledged as collateral and laying down detailed rules on property valuation. In addition, bond investors have priority in the event of failure, and borrowers are personally liable for the loans. The lack of personal liability for the loans is a major explanatory factor behind the substantial losses on mortgage-credit loans in the USA. Finally, Denmark has a highly effective enforcement system.

The above characteristics make the bonds particularly secure investments while supporting Denmark's financial stability, cf. Chart 1, which shows the institutes' write-downs as a percentage of loans.

WRITE-DOWNS AS A PERCENTAGE OF LOANS, MORTGAGE-CREDIT INSTITUTES

Chart 1



The robustness of Danish mortgage credit can be illustrated by the fact that it was possible to sell bonds for refinancing of adjustable-rate loans in the amount of approximately kr. 350 billion during the financial crisis, albeit with a certain widening of the yield spread to government bonds. The

mortgage-credit institutes were able to do this without incurring higher costs, as the higher yield is passed on to the borrowers. For further details, reference is made to an article in *BIS Quarterly Review*, March 2004¹ on the Danish mortgage market.

International regulation

Both the Basel Committee and the EU are preparing proposals for new regulation to address some of the weaknesses revealed by the financial crisis.

As illustrated above, the mortgage-credit institutes are important to financial stability in Denmark. Substantial changes in the rules applying to "covered bonds" – the European term for mortgage-credit bonds – and their use as liquidity instruments for the banks could have significant consequences, not only for Danish mortgage-credit institutes, but also for Danish banks and Denmark as such.

New definition of liquid assets

In the liquidity area, the introduction of new strict definitions of liquid assets is being considered. The proposal distinguishes between three types of assets: 1) Fully liquid securities, including government bonds. 2) Corporate bonds and covered bonds, which may under certain circumstances be included in the stock of liquid assets. 3) Other securities, which may not be included. The assets under item 2 must not exceed 50 per cent of the overall stock and can be included at no more than 60 or 80 per cent of their market value (40 or 20 per cent haircut).

For corporate bonds and covered bonds to be included under item 2, they must meet a number of requirements. A good many government bonds (e.g. low-rated government bonds) will not be able to meet those requirements, although they are immediately eligible for inclusion in the stock of liquid assets as a result of item 1.

Since the breakdown between the first group of liquid assets and covered bonds relates to the issuer, it does not take into account the liquidity of the asset concerned. Most Danish covered bonds are fully liquid securities as they have remained liquid even during the financial crisis. Nevertheless, covered bonds can only be included as a limited share of the overall stock and at maximum 80 per cent of their value. The same applies to other groups of securities that are not eligible for inclusion in the stock of liquid assets despite the fact that they are liquid.

¹ Frankel, A, Gyntelberg, J, Kjeldsen, K and Persson, M (2004): The Danish mortgage market, *BIS Quarterly Review*, March, pp. 95-109

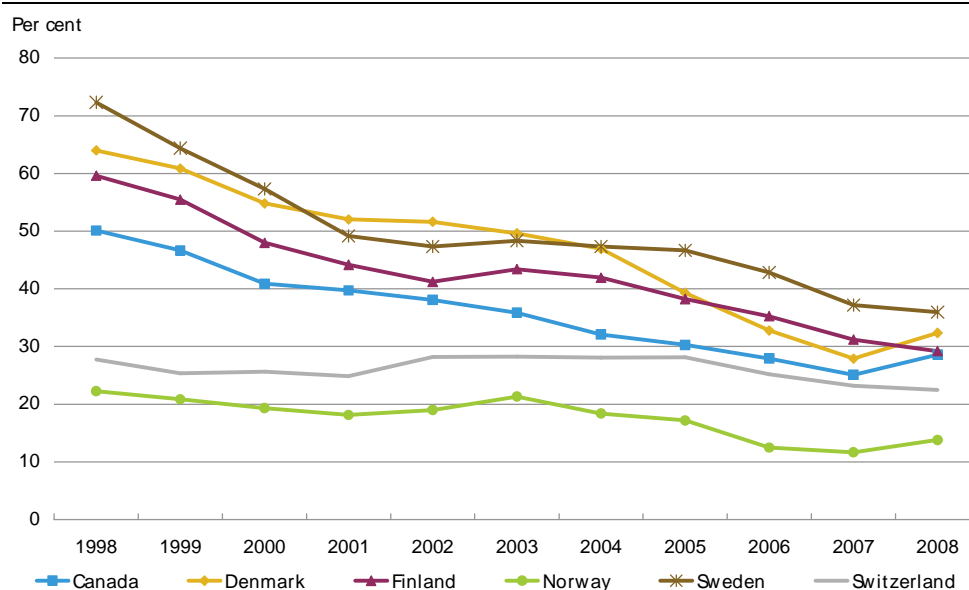
Danmarks Nationalbank includes mortgage-credit bonds in its collateral base at a value reflecting the considerable liquidity of the securities. This was also the case before the crisis. Restricting the share of covered bonds that can be included in the stock of liquid assets and applying large haircuts may give the institutes an incentive to pledge covered bonds as collateral to Danmarks Nationalbank rather than keeping the securities on their own books, so that they can hold assets that can be fully included instead. All other things being equal, this will make the institutes more dependent on Danmarks Nationalbank, which will be contrary to the object of the new rules.

The proposed limits will also create problems for both banks and mortgage-credit institutes, which currently use covered bonds to a considerable extent in their liquidity management. It will be very difficult to replace Danish krone-denominated covered bonds by krone-denominated government bonds. At present, the volume of circulating Danish government securities constitutes only around one fourth of the circulation of covered bonds. This issue is particularly relevant if the liquidity requirement includes a currency match requirement.

Other countries have also significantly reduced their government debt, cf. Chart 2. In such a situation with a limited supply of government bonds, a definition of liquid assets that is too narrow may therefore have an undesirable impact on prices in the local markets.

GOVERNMENT DEBT AS PERCENTAGES OF GDP

Chart 2

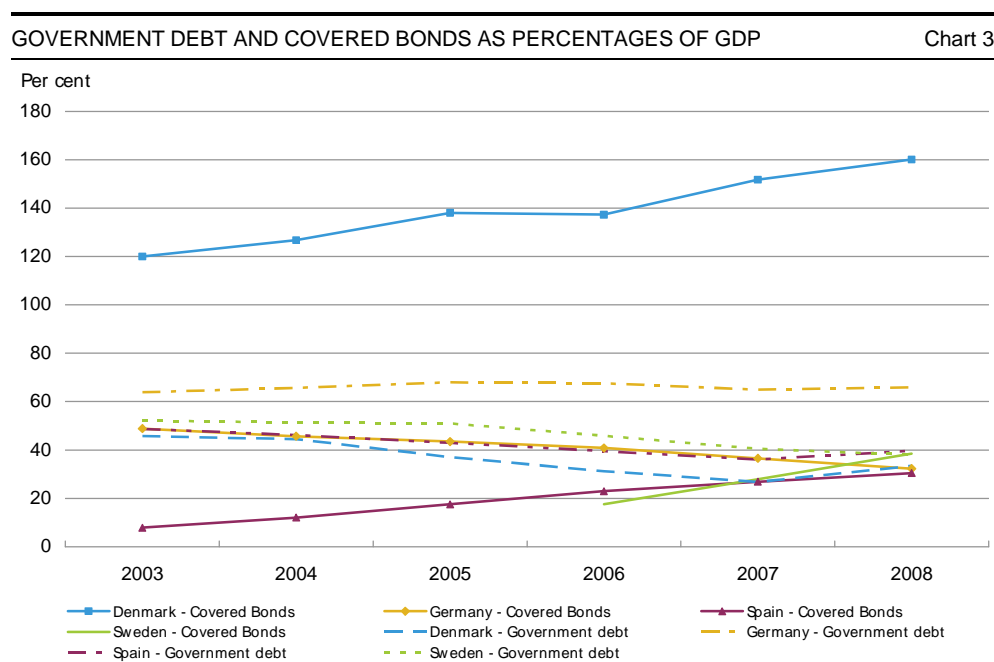


Note: Selected OECD countries.
Source: OECD.

An alternative to the Basel proposal would be to base the assessment of all assets on their actual liquidity rather than whether they are government bonds or covered bonds. More specifically, this may entail that covered bonds become eligible for inclusion in the first group if they have been admitted to trading on a regulated market, if the markets where they are traded are of a considerable size, and if the markets have shown stable pricing (but not necessarily price stability) throughout the crisis. To the extent that it is necessary to make a distinction between securities with differing price stability, this can be done via the haircuts applied.

Liquidity of Danish mortgage-credit bonds

Several countries have a long-standing tradition for issuing covered bonds, and the outstanding volume of covered bonds is substantial compared to government debt, cf. Chart 3. In Denmark the volume of covered bonds is more than 4.5 times as large as the government debt. Germany, Spain and Sweden also have considerable volumes of covered bonds, however.



Note: The data has been compiled on a comparable basis across countries, but it is not necessarily fully comparable with other Danish statistics.

Source: Eurostat and European Covered Bond Fact Book 2009.

In addition to the considerable size of the market, Danish covered bonds have a broad investor base. Table 1 shows the ownership distribution from 2005 to 2009. As can be seen, the distribution is very stable over time. Although a tendency for foreign divestment of Danish covered bonds could be seen in 2008, the volume was only reduced from 14 to 11 per cent and was offset by an increased ownership share for MFIs (monetary financial institutions), which hold around one third of the issued bonds. This very large MFI ownership share is also reflected in the fact that covered bonds

currently make up a considerable share of their liquid assets, cf. the section below on the liquidity of banks.

MORTGAGE-CREDIT ISSUE BY OWNER Table 1

Per cent	Non-financial corporations	MFIs (excl. own holdings)	Other financial intermediaries, etc.	Insurance and pension	General government	Households, etc.	Unallocated	Abroad
2005	6	30	13	27	3	6	2	14
2006	5	30	13	28	2	5	1	15
2007	5	31	14	27	2	6	1	14
2008	5	35	11	28	2	6	2	11
2009	5	36	11	26	3	5	2	11

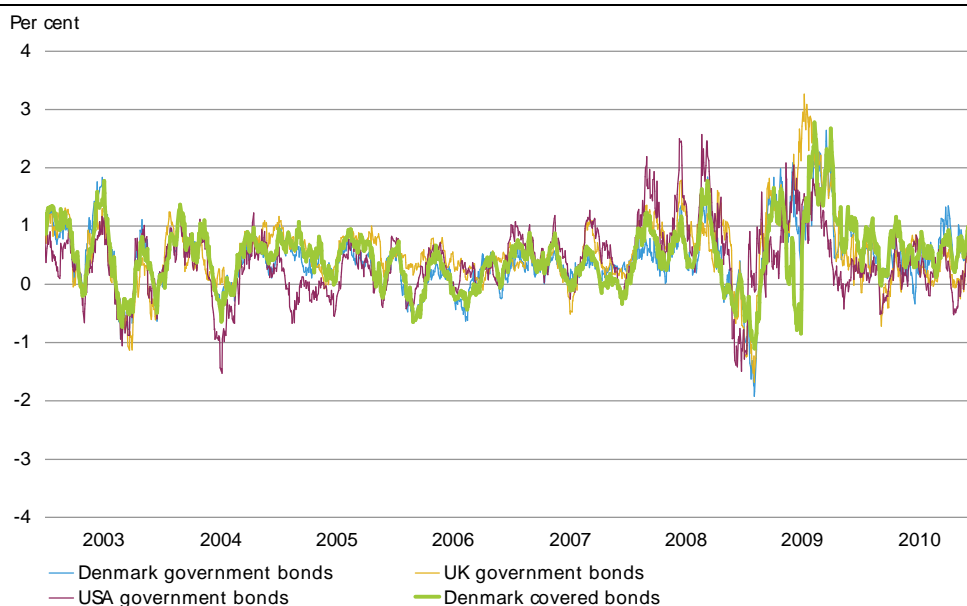
Note: Calculated on the basis of market values at year-end.
Source: Danmarks Nationalbank.

The considerable volume and broad investor base support very stable pricing of Danish covered bonds. Chart 4 shows the 30-day price change (in per cent) for an investment in a portfolio of non-callable covered bonds with a duration of two years compared with investments in two-year benchmark government securities in three Aaa-rated countries: Denmark, the UK and the USA. It appears from the chart that in terms of prices the portfolio of covered bonds is just as stable an investment as Aaa-rated government securities. Accordingly, the negative return on the covered bond portfolio only exceeded that on government bonds in the autumn of 2008. Even then, the loss measured over 30 days was smaller than the losses on government bonds seen in mid-2008.

Chart 4 compares Danish covered bonds with government bonds from Aaa-rated countries. Government bonds are not required to be Aaa-rated in order to be included in the banks' stock of liquid assets, however. A comparison of Danish covered bonds with lower-rated government bonds will show that Danish covered bonds are periodically a *more* stable investment in terms of prices than such government bonds.

GOVERNMENT BONDS AND DANISH COVERED BONDS

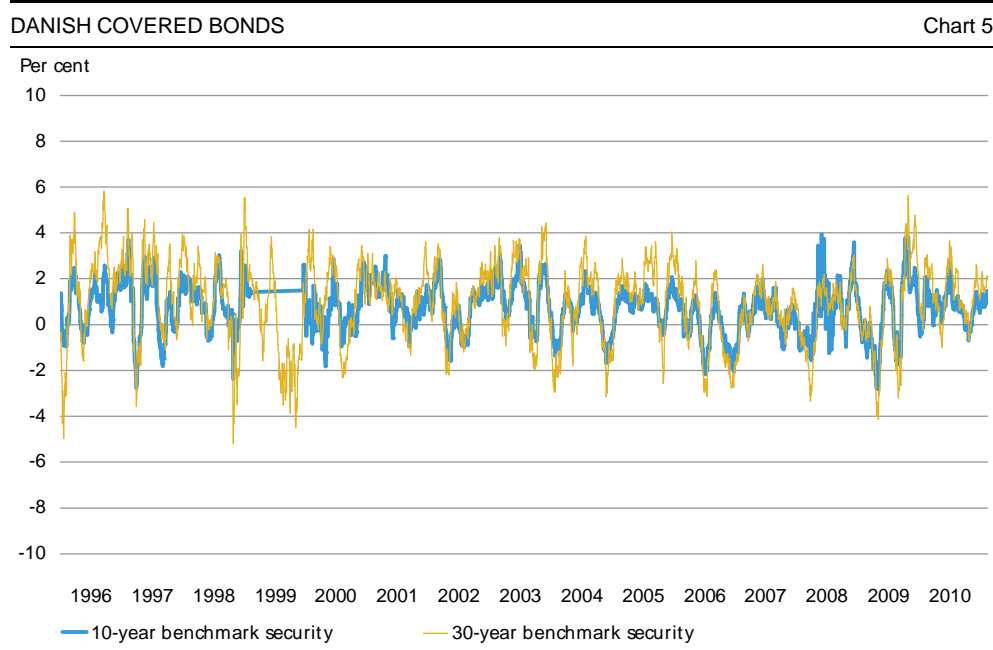
Chart 4



Note: Return over 30 trading days. 2-year benchmark government bond. Covered bonds is a portfolio of non-callable bonds with a constant duration of two years.

Source: Nordea Analytics.

However, it is not only the pricing of short-term covered bonds that is very stable. Chart 5 shows the return over 30 days for investments in benchmark Danish covered bonds with a remaining maturity of 10 and 30 years, respectively. According to the chart, the financial crisis has not resulted in negative returns of much more than 4 per cent, viewed over a 30-day period. This is much less than the benchmark price fluctuations of 10 per cent in the proposal. Despite the fact that the spread between covered bonds and government securities has widened slightly during the financial crisis, this has not resulted in negative returns that are larger in a historical perspective than previously observed based on general yield fluctuations. In the light of the price development, it is therefore difficult to see why covered bonds should not be included in liquidity on an equal footing with government bonds.



Note: Return over 30 trading days.
Source: Nordea Analytics.

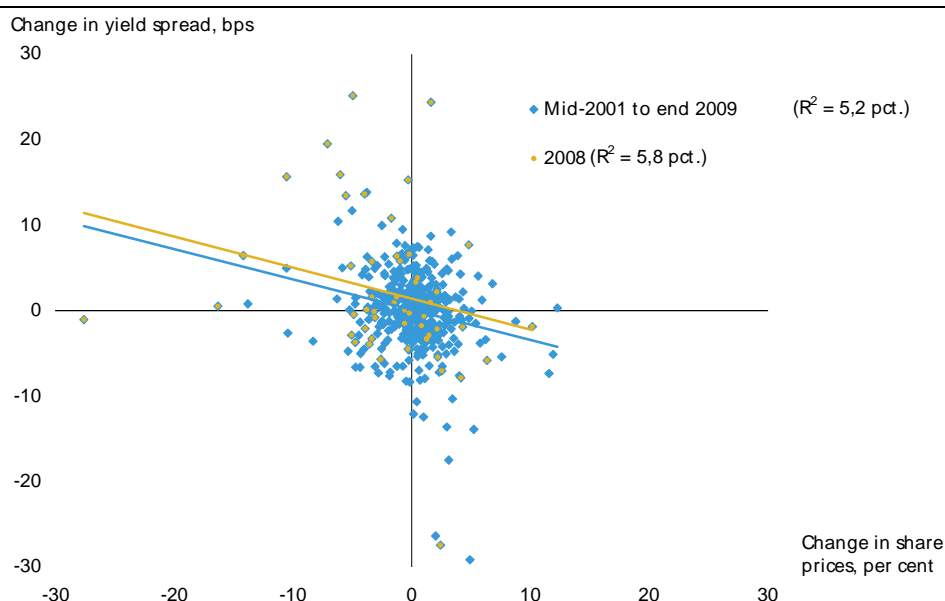
One argument against using covered bonds as liquidity on an equal footing with government bonds might be that the return on the securities relative to government bonds is correlated with the market's confidence in the financial sector. If this is the case, the yield spread between covered bonds and government bonds and the price development for financial corporations must be expected to be negatively correlated, i.e. falling prices will lead to higher yield spreads.

Chart 6 shows the weekly changes in the yield spread between a 10-year Danish benchmark covered bond and a 10-year Danish government bond for the period from mid-2001 to end-2009 and for 2008, respectively. The yield spread changes are plotted against the weekly price changes for Danish financial shares. The chart indicates a weak tendency for the yield spread to widen in connection with a decline in the prices of financial shares. The coefficient of determination is very low, however.

It is clear that the changes in the yield spread were greater in 2008 than previously observed – particularly with regard to widening of the spread – which must be attributed to the financial crisis. Even during the peak of the financial turmoil, the correlation with the development in financial shares remains weak, so there is no reason to restrict the use of covered bonds as liquidity against this background. Again, the yield spreads of certain government bonds – measured relative to Germany – show a somewhat greater correlation with the development in financial shares quoted in the country in question.

CORRELATION BETWEEN THE YIELD SPREAD AND FINANCIAL SHARES

Chart 6



Note: Changes in yield spreads are weekly option-adjusted changes. Changes in share prices are weekly changes in an index of financial shares in Denmark.

Source: Nordea Analytics and Bloomberg.

As a general rule, Danish covered bonds are all admitted to trading at NASDAQ OMX Copenhagen and registered in VP Securities. This means they are eligible as collateral for loans from Danmarks Nationalbank and are traded in large volumes in secondary markets (securities denominated in euro and registered in VP Lux S.à r.l., VP Securities' subsidiary in Luxembourg, are also eligible as collateral for loans from the European Central Bank).

When covered bonds are pledged as collateral for loans from Danmarks Nationalbank, the collateral value is calculated according to rules laid down by the European Central Bank. Covered bonds with a circulating volume exceeding 1 billion euro or the equivalent amount in Danish kroner that are comprised by the Danish Securities Dealers Association's market maker arrangement² and have at least three price quoters are placed in liquidity category 2, while the other covered bonds are placed in liquidity category 3, cf. Table 2. Compared with the haircuts used for covered bonds by the European Central Bank and Danmarks Nationalbank, the proposal from the Basel Committee for a haircut of 20 per cent at a rating of minimum AA seems to be an extremely conservative approach.

² The Danish Securities Dealers Association's market maker arrangement is a voluntary arrangement between members of the Association for trading among themselves in a number of mortgage-credit bonds.

**HAIRCUTS FOR "COVERED BONDS" WITH A FIXED COUPON RATE AT DANMARKS
NATIONALBANK**

Table 2

Remaining maturity	Category 1	Category 3
0-1 year	1.0 pct.	1.5 pct.
1-3 years	2.5 pct.	3.0 pct.
3-5 years	3.5 pct.	4.5 pct.
5-7 years	4.5 pct.	5.5 pct.
7-10 years	5.5 pct.	6.5 pct.
> 10 years	7.5 pct.	9.0 pct.

Note: For eligible securities with a zero coupon rate, a floating coupon rate or an inverse floating rate, the haircuts appear from "The implementation of monetary policy in the euro area", ECB, November 2008.

When Danish covered bonds are pledged as collateral for loans in Danish kroner, no rating requirement is applied to the bonds. In practice, the bonds would be able to meet an exceedingly stringent rating requirement, however. The most important bond issuances from the three largest issuers have thus been given the highest possible rating by both Moody's and Standard & Poor's, while issuances from the other rated institutes have been given the second-highest rating by Moody's. A comparison of these ratings with the government debt of various EU countries clearly shows that despite the fact that they are generally beginning to show a more conservative approach to covered bonds, rating agencies continue to rate Danish covered bonds as a class of assets with a very low credit risk.

Consequences of the proposed change for the banks' liquidity

The liquidity requirements must also take into account the banks' ability to acquire a sufficient volume of assets that are defined as liquid. It would therefore seem obvious that the most liquid covered bonds should be eligible for inclusion in the same group as government bonds. This would also allow for the fact that in terms of credit risk and liquidity these bonds have more features in common with government bonds than with corporate bonds.

At end-2008, the banks' liquidity calculated according to national rules amounted to kr. 940 billion. The Basel proposal restricts the definition of liquidity. In the strictest interpretation of the proposal, where no types of securities other than government bonds are eligible for inclusion in the stock of liquid assets, Danish banks will have "secure" liquidity of only kr. 174 billion.

The Basel proposal provides the option of including covered bonds and corporate bonds in liquidity, albeit with a number of restrictions. They are not allowed to make up more than 50 per cent of the overall stock of liquid assets. Considerable haircuts will be applied, and the bonds will have to meet a number of requirements as regards market structures, bid-ask spreads, etc.

At end-2008, the banks' securities amounted to approximately kr. 900 billion, cf. Table 3.

THE BANKS' HOLDINGS OF SECURITIES AT END-2008		Table 3
Kr. billion		
Mortgage-credit bonds	443	
Government bonds	70	
Other bonds	370	
Bonds, total	882	
Shares, etc.	22	

Assuming that mortgage-credit bonds meet the criteria for inclusion as covered bonds, and that they must not exceed 50 per cent of stock of liquid assets, the overall stock will amount to kr. 348 billion, cf. Table 4.

THE BANKS' STOCK OF LIQUID ASSETS, INCLUDING MORTGAGE-CREDIT BONDS, END-2008		Table 4
Kr. billion		
"Secure" liquidity	174	
Mortgage-credit bonds, including haircuts of 20 per cent	354	
Total liquidity, max. 50 per cent mortgage-credit bonds	348	

Hence, there seems to be a risk that the proposal will reduce the banks' liquidity from kr. 940 billion according to the existing local rules to just under kr. 350 billion.

The immediate conclusion is therefore that the banks will have to perform extensive rebalancing, including portfolio restructuring from mortgage-credit bonds, etc. to government bonds, in order to comply with the Basel proposal.

Requirement for stable funding – net stable funding ratio

The Basel proposal also operates with a requirement concerning funding stability. According to the definition of stable funding, Danish covered bonds with a remaining maturity of less than one year are not regarded as stable funding. At the same time, loans with a maturity of more than one year are subject to a 100 per cent stable funding requirement. This will create considerable problems in relation to Danish adjustable-rate loans that are financed by short-term bonds.

The same problem will occur – even without the stable funding requirement – in the last 30 days before the short-term bonds mature. The reason is that a new short-term liquidity coverage ratio is also being considered, which would require institutes to hold liquid assets that, as a minimum, match their liquidity requirements over a 30-day horizon.

With regard to Danish mortgage-credit institutes, it should be noted that any increases in interest rates in connection with refinancing are borne by the borrower rather than the mortgage-credit institute. The Basel Committee's liquidity target does not allow for the fact that this reduces the refinancing risk.

Leverage restriction

Finally, it should be noted that placing a restriction on leverage – total activities as a ratio of equity – is currently being considered. This is to be done by introducing a leverage ratio as an actual capital requirement. Unlike the usual capital requirement, such a leverage ratio would disregard whether the loans granted by the institute are good or bad. Particularly for the Danish mortgage-credit institutes, which are characterised by a very low credit risk, a universal capital requirement that does not take into account the specific circumstances of the institute may result in much higher levels that do not reflect the actual underlying, more limited risks of the mortgage-credit institutes.

Assuming a capital requirement of 4 per cent of unweighted assets, the immediate result would be much stricter capital requirements than today. For several institutes this would raise the capital requirement by 100-200 per cent.

Given the mortgage-credit institutes' existing capital base, such a requirement would result in the capital base of a few institutes no longer being sufficient. For other institutes it would lead to a substantial reduction of the existing excess cover.

In view of the limited risk that mortgage-credit institutes are allowed to assume as a result of considerable restrictions on market and credit risk, as well as the borrower's personal liability, etc., such a substantial leverage restriction therefore seems unreasonable for mortgage-credit institutes.

If the requirement is maintained, leaving it up to the supervisory authority to determine such a target based on the specific history and risk profile of the individual institute should be considered.

Alternatively, it may be considered to set a reduced target for mortgage-credit institutes in the light of historical experience in the area – with no bond investors ever having suffered credit losses – e.g. a low minimum requirement such as 2 per cent of the balance sheet/loan stock.

As a negative consequence of a requirement of e.g. 4 per cent, the mortgage-credit institutes may choose more risky corporate loans over more secure retail mortgage loans. Having to hold so much equity capital might give the institutes an incentive to take on more risky and profitable business of this

nature in order to achieve a return on equity. This will not benefit the security of covered bonds, and in view of the importance and volume of covered bonds in Denmark it may also ultimately have a negative impact on financial stability.

An alternative consequence might be that the institutes increase the contribution rates (corresponding to the interest-rate margin) and thus the borrowers' costs.

Leverage ratios should therefore not constitute specific independent capital requirements. Instead, they should be included in the calculation of the institutes' capital (solvency) need, which should, obviously, be supervised by the Financial Supervisory Authority.