

# MATURITY EXTENSION OF MORTGAGE BONDS

## INTRODUCTION

Danmarks Nationalbank is pleased to note that on 11 March 2014, the Folketing (Danish Parliament) adopted a legislative amendment<sup>1</sup> introducing contingent maturity extension for mortgage bonds with shorter maturities than the underlying loans. The extension takes effect if a refinancing auction fails, or if the interest rate on mortgage bonds with an original maturity of less than 2 years rises by more than 5 percentage points within one year. The latter mechanism is called the “interest-rate trigger”.

From the point of view of Danmarks Nationalbank, this legislative amendment fulfils two objectives. Firstly, it represents a robust way of managing refinancing risk for mortgage banks. It leaves no doubt as to what will happen if an auction fails or interest rates suddenly rise very sharply. The refinancing risk is shifted to the investors, and the interest-rate trigger makes it possible to calculate a price for possible maturity extension of the bonds.

Secondly, the legislative amendment re-establishes a credible resolution model for mortgage banks. The prevalence of mortgage bonds with shorter maturities than the underlying loans has made it difficult to identify a clear procedure for resolution of a mortgage bank because the need for ongoing refinancing

is difficult to meet during bankruptcy proceedings. The possibility of maturity extension enables the bankruptcy trustee to wind up a mortgage bank in accordance with loan agreements and bond terms until all mortgage loans have been redeemed.

Bonds with the possibility of maturity extension will automatically become the market standard, since this is a statutory requirement. At the same time, the elements introduced by way of the legislative amendment are already known in the Danish mortgage-credit market. The market for short-term mortgage bonds should thus be expected to continue to attract a broad group of investors demanding short-term, highly liquid bonds with low credit risk, e.g. for liquidity management purposes. In this connection, Danmarks Nationalbank expects the liquidity of mortgage bonds with contingent maturity extension to be so high that they can be classified as extremely high quality liquid assets under the forthcoming European liquidity regulations. Moreover, short-term mortgage bonds can be pledged as collateral for loans from Danmarks Nationalbank – even if the maturity has been extended.

This structure does not affect Danmarks Nationalbank’s role as lender of last resort for mortgage banks, but it ensures that the mortgage banks’ business model does not rely on Danmarks Nationalbank as back stop.

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<sup>1</sup> Act No. 89 of 11 March 2014 to Amend the Act on Mortgage-Credit Loans and Mortgage-Credit Bonds, etc. and the Financial Business Act (Regulation of the refinancing risk inherent in mortgage-credit bonds, covered mortgage-credit bonds and covered bonds, etc.)

## BACKGROUND

The mortgage-credit system plays a key role as a supplier of credit in Denmark. This was highlighted during the financial crisis, when substitution from bank lending to mortgage bank lending contributed to ensuring a stable supply of credit. Whereas some financial markets ceased to function, the mortgage bond market remained in operation throughout the financial crisis and the subsequent European sovereign debt crisis. A key factor was fundamental investor confidence in the creditworthiness and liquidity of mortgage bonds.

Traditionally, the Danish mortgage-credit model has been characterised by symmetry between the maturities of the bonds issued by mortgage banks and the underlying loans, i.e. the loans were pre-financed. As the mortgage banks also have an obligation to observe the balance principle, they had virtually no other risk than the credit risk on the borrower. This changed in step with the increasing prevalence of mortgage bonds with shorter maturities than the underlying loans. The mismatch is

most pronounced when mortgage banks use 1-year bonds to finance 30-year loans. From the investor's point of view, this is a 1-year fixed-rate bond. But for the borrower, this is a 30-year variable-rate loan with annual interest-rate fixing.

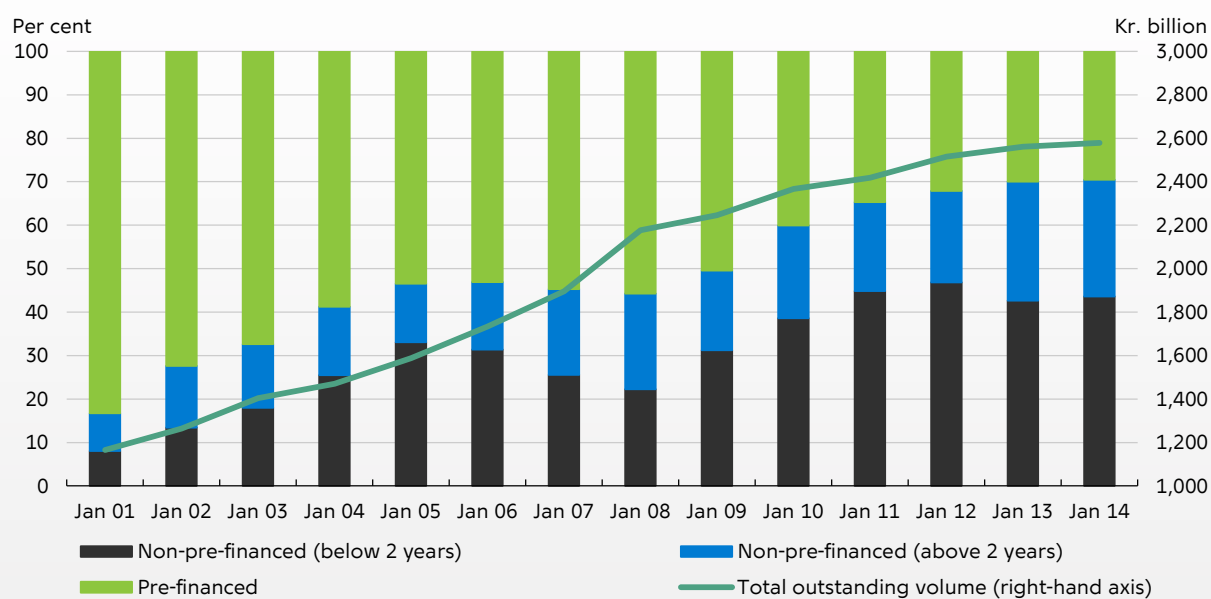
The volume of non-pre-financed loans has increased steadily since the mid-1990s, accounting for around 70 per cent of all mortgage loans, or around kr. 1.800 billion, today, cf. Chart 1.

For non-pre-financed loans, the difference in maturity between the bonds and the underlying loans entails a requirement for continuous refinancing, typically by auction. No auction of Danish mortgage bonds has failed yet, but the situation cannot be ruled out entirely. The probability is very small, but the consequences might be very serious.

On several occasions, Danmarks Nationalbank has called attention to the refinancing risk and recommended that the mortgage banks take steps to reduce it. To some extent, the mortgage banks have tried to follow the recommendation by spreading the refinancing

**Mortgage bonds broken down by pre-financed and non-pre-financed loans**

Chart 1



Note: An accurate calculation of the volume of non-pre-financed loans is not possible since the maturities of the underlying loans are unknown. The volume of non-pre-financed loans has been estimated on the basis of bonds with an original maturity of up to 20 years. The non-pre-financed loans have been subdivided into terms to maturity of below and above 2 years. The chart contains both fixed-rate and variable-rate bonds.

Source: Danmarks Nationalbank.

auctions over the whole year in order to avoid refinancing of all bonds at the same time. This risk has also prompted credit rating agencies to tighten the requirements for mortgage banks. As a result, the mortgage banks have incurred costs which must be assumed to have been covered wholly or partly by the homeowners.

The introduction of contingent maturity extension addresses the refinancing risk. It applies to all mortgage bonds used to finance non-pre-financed loans. The legislative amendment is the output of a working group established in the autumn of 2013, with participants from the Ministry of Business and Growth, the Ministry of Finance, Danmarks Nationalbank, the Ministry of Economic Affairs and the Interior and the Danish Financial Supervisory Authority.

Since the legislative amendment comprises new bond issuances only, existing bond holders will not be affected. As regards the underlying loans, there are no changes to the principal, redemption profile or maturity. Consequently, the borrowers will automatically be covered by the new rules, without having to conclude new agreements with their mortgage banks.

## MATURITY EXTENSION

The legislative amendment introduces contingent maturity extension for bonds issued by Danish mortgage banks with shorter maturities than the underlying loans, cf. Box 1. Based on the distribution of loan types as at 31 December 2013, the legislative amendment, when fully phased in, will comprise around two thirds of the mortgage banks' total issuance. The interest-rate trigger will apply only to bonds with an original maturity of up to 2 years, which require the most frequent refinancing.

The legislative amendment also addresses the refinancing risk in connection with compulsory liquidation. During bankruptcy proceedings for a mortgage bank, the bankruptcy trustee will be able to extend the maturities of bonds with shorter maturities than the underlying loans, cf. Box 2.

## MATURITY EXTENSION ON ACTIVATION OF THE INTEREST-RATE TRIGGER

Fixed-rate bonds with an original maturity of up to 1 year used to finance non-pre-financed loans will be subject to requirements of maturity extension if the effective interest rate on refinancing is more than 5 percentage points higher than the interest rate on the previous refinancing. For fixed-rate bonds with maturities of 1-2 years, the change in the effective interest rate on refinancing should be compared with the effective interest rate on a corresponding bond one year earlier. Consequently, maturity extension takes effect only in the event of an increase in interest rates by more than 5 percentage points over the 12 months up to the refinancing.

When the trigger is activated, the maturity will be extended by 1 year. During the extension period, the interest rate on the bond will correspond to the interest rate on the last refinancing plus 5 percentage points. For bonds with an original maturity of more than 1 year, the rate of interest in the extension period is fixed at the effective interest rate on a corresponding bond one year earlier plus a premium of 5 percentage points. On expiry of the 1-year extension period, the extended bonds must be refinanced. The interest rate on refinancing may be the rate clearing the auction, irrespective of the general level of interest rates. If, after 1 year, it is possible to conduct an auction with sufficient demand, the interest-rate trigger will thus not constitute a permanent cap on interest rates. If the refinancing on expiry of the 1-year extension fails, the maturity will be extended by another year at a time, while the interest rate remains unchanged. If the refinancing fails repeatedly, this will probably be due to mortgage bank-specific problems with credit quality, and at some point the mortgage bank will become subject to resolution under the relevant rules regarding fixing of interest rates, cf. Box 2.

The various scenarios for maturity extension and interest-rate fixing are illustrated for a 1-year fixed-rate bond in Box 3.

Variable-rate bonds with an original maturity of up to 2 years will also be subject to an interest-rate trigger. The maturity is extended

## Who and what are covered?

Box 1

When the Act enters into force, bonds issued by the mortgage banks listed below will be subject to contingent maturity extension if the maturities of the bonds are shorter than the maturities of the underlying loans:

	Total outstanding bonds, kr. billion	Of which for "non-pre-financed" loans, kr. billion.	Per cent
Nykredit (including Totalkredit)	1,136	824	73
Realkredit Danmark	728	497	68
Nordea Kredit	364	239	66
BRFkredit	201	135	67
DLR Kredit	135	113	84
LR Realkredit	15	8	55
Total	2,579	1,817	70

Note: Calculated as at end-January 2014. An accurate calculation of the volume of non-pre-financed loans is not possible since the maturities of the underlying loans are unknown. The volume of non-pre-financed loans has been estimated on the basis of bonds with an original maturity of up to 20 years.

Source: Danmarks Nationalbank.

The bonds will be subject to contingent maturity extension irrespective of whether they are classified as mortgage bonds, covered mortgage bonds or covered bonds. Bonds for which the maturity is identical to that of the underlying loan are not included. This applies to both fixed-rate and variable-rate bonds.

Several of the mortgage banks have currently issued junior covered bonds, JCB. JCB issued after 1 April 2014 will also be subject to contingent maturity extension requirements. If a mortgage bond issued by the capital centre associated with the JCB in question is extended, and the ordinary expiry of the JCB falls within the extension period, the maturity of the JCB will be extended accordingly.

At the same time, a new provision means that banks can only issue covered bonds with an original maturity of at least 2 years. In practice, banks only use covered bonds as a stable long-term source of financing, since short-term financing requirements are covered by other sources, e.g. deposits, unsecured senior debt or money-market loans. Danske Bank is currently the only Danish bank issuing covered bonds. According to the associated political agreement, the legislative amendment is not intended to alter the competitive relationship between banks and mortgage banks. Hence, the Minister for Business and Growth will appoint a working group to monitor whether the regulation leads to shifts in competition.

The conditions for maturity extension for various types of mortgage bonds are summarised in the table below. The legislative amendment will enter into force in two stages, on 1 April 2014 and 1 January 2015. Bonds issued before 1 April 2014 will not be comprised by the new requirements.

Original maturity	Coupon	Maturity extension if an auction fails	Interest-rate trigger	Applies to bonds issued after
1 year	Fixed	Yes	Yes	1 April 2014
1 year	Variable	Yes	Yes	1 January 2015
2 years	Fixed/variable	Yes	Yes	1 January 2015
3 years and above	Fixed/variable	Yes	No	1 January 2015

if the effective interest rate on refinancing is more than 5 percentage points higher than the interest rate on the last interest-rate fixing. The maturity is extended by 1 year at a time. The legislative amendment also introduces a temporary interest-rate cap for this type of bonds, meaning that interest rates cannot rise by more than 5 percentage points between two interest-rate fixings.

## MATURITY EXTENSION IN THE EVENT OF FAILED AUCTION

Bonds with shorter maturities than the underlying loans will be subject to a requirement for maturity extension if there are not enough buyers at a refinancing auction. The maturity will be extended by 1 year at a time until refinancing can take place with buyers for all the necessary bonds.

There are special rules governing the management of a mortgage bank in bankruptcy proceedings. These rules have never been applied in practice.

The collateral for bond holders' claims on a mortgage banks consists of the mortgage bank's loans secured on real property. The collateral is linked with the bonds in special capital centres, bond holders ranking before unsecured creditors. The administration of capital centres is subject to special rules in order to provide a high degree of protection for the bond holders if a mortgage bank fails.

If a mortgage bank fails, its capital centres are separated from the bankruptcy estate. As far as possible, the centres will be continued as normal mortgage banks in order to ensure resolution with minimal losses for the bond holders. A mortgage bank subject to bankruptcy proceedings may not issue new loans.

There is no acceleration, either on the bond side or on the loan side, when a mortgage bank becomes subject to bankruptcy proceedings. Consequently, the bond holders may not demand early redemption of their bonds; neither may the mortgage bank demand early redemption from the borrowers. This enables, to the highest possible degree, normal payment flows to and from a mortgage bank in bankruptcy proceedings. In order to protect bond holders' priority regarding the collateral in the capital centres, it is not possible to transfer funds between the individual capital centres after the mortgage bank has been declared bankrupt.

During the bankruptcy proceedings, the mortgage bank should, whenever possible, continue to meet its payment obligations in the form of interest and redemptions to the bond holders. The mortgage bank may conclude contracts on financial instruments, or raise loans, pledging collateral for the loans, if this is required in order to raise liquidity.

If there is a need for ongoing refinancing of existing mortgage loans, the bankruptcy trustee may issue "refinancing bonds" on condition that there is deemed to be full dividend for all creditors, irrespective of the maturities of their investments. Before the legislative amendment it was not clear what the possible consequences would be for borrowers and bond holders if this could not be achieved or if the trustee found it impossible to issue refinancing bonds without violating the principle of equal treatment of creditors.

After the legislative amendment, the maturities of existing bonds may be extended by 1 year at a time if refinancing is unsuccessful, or if the trustee finds it impossible to issue refinancing bonds without violating the principle of equal treatment of creditors. The interest rate on the extended bonds is fixed by the trustee as a variable reference rate plus a premium of up to 5 percentage points. Maturity extension by 1 year at a time may continue for the whole remaining term to maturity.

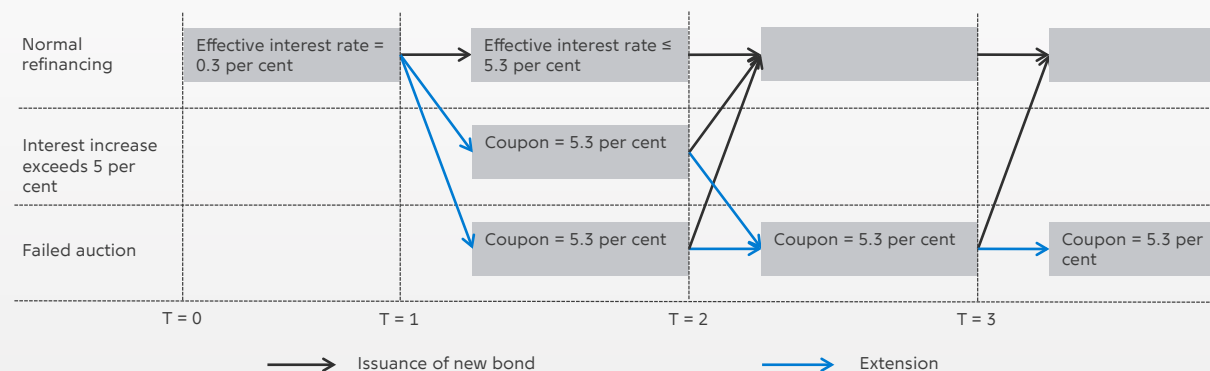
Without any current need for refinancing the loans in the market the mortgage bank may, as far as possible, be wound up in accordance with loan agreements and bond terms until all mortgage loans have been redeemed.

Example: 1-year bond with contingent maturity extension

Assume that a mortgage bank at time 0 sells a 1-year bond with an effective interest rate of 0.3 per cent. One year later, at time 1, the mortgage bank attempts to issue a new bond to replace the bond issued at time 0. One of the following three situations may arise:

1. The mortgage bank succeeds in issuing a new bond with an effective interest rate of less than 5.3 per cent.
2. The mortgage bank receives sufficient bids to issue a new bond, but with an effective marginal rate above 5.3 per cent.
3. The mortgage bank does not receive sufficient bids to issue a new bond.

In both case 2 and case 3, the maturity of the bond issued at time 0 is extended by 1 year at a coupon of 5.3 per cent, cf. the chart.



If case 2 or case 3 has been realised at time 1, one of the following two situations may arise at time 2: either the mortgage bank receives a sufficient number of bids to sell a new bond, and it then sells a new bond at this marginal rate, or it does not receive a sufficient number of bids, so the maturity of the bond issued at time 0 is extended by another year at a coupon of 5.3 per cent.

If it is assumed that the auction fails at time 2, there are, again, two possibilities at time 3: normal refinancing or failed auction.

During the extension period, the interest rate on the bond will be equivalent to the interest rate on the last refinancing (fixed-rate bonds with an original maturity of up to 1 year) or interest-rate fixing (variable-rate bonds to be refinanced) plus a premium of 5 percentage points. For fixed-rate bonds with an original maturity of more than 1 year, the rate of interest in the extension period is fixed at the effective interest rate on a corresponding bond on year earlier plus a premium of 5 percentage points. The interest rate is fixed in connection with the first maturity extension for the bond. The interest rate is maintained at this level in the event of further maturity extensions.

## EFFECTS OF THE INTEREST-RATE TRIGGER

The interest-rate trigger clearly defines when the maturity of a bond will be extended. The trigger makes it clear what investors can expect if interest rates go up by more than 5 percentage points. In the absence of an objective criterion, determination of when an auction fails requires a discretionary decision. With the introduction of the interest-rate trigger, it is not up to the authorities, in practice, to decide whether or not an auction has failed. Consequently, the interest-rate trigger works as an automatic stabiliser that takes effect without any need for active (political) decision-making.

The interest-rate trigger entails maturity extension for a bond if interest rates rise by 5 percentage points, i.e. at a level where there is normally no significant doubt about the borrower's ability to service the loan.<sup>2</sup> Investors know in advance that the borrowers will be protected by the trigger in a short-lived crisis.

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<sup>2</sup> Danmarks Nationalbank has calculated the households' ability to service their debts in a scenario where interest rates rise by 5.7 percentage points, while unemployment increases by 4 percentage points, and house prices fall by 14 per cent. Even in this very negative scenario, arrears on housing loans from mortgage banks remain at a low level, according to Danmarks Nationalbank's calculations, cf. Asger Lau Andersen and Charlotte Duus, Danish families in mortgage arrears, Danmarks Nationalbank, *Monetary Review*, 3rd Quarter 2013, Part 2.

This allows investors to focus on modelling the probability of activation of the trigger – rather than a total market collapse.

In this connection, it is worth noting that the probability of an interest-rate increase by 5 percentage points within one year is very low. In Denmark, such an increase has been seen only a few times within the last 150 years.

## MODELLING PRICE AND INTEREST-RATE SENSITIVITY (DURATION)

The interest-rate trigger will impact on the price and duration of bonds. To illustrate this, a 1-year bond with an interest-rate trigger is compared with a corresponding bond without an interest-rate trigger (existing short-term fixed-rate bonds). These model calculations are based on historical experience. The actual market reaction also depends very much on investor behaviour, which may be driven by other factors than financial value, such as risk management, regulation and expectations. While some investors will want to sell bonds with interest-rate triggers in the event of sharply increasing interest rates, others will demand short-term securities – given the rising interest rates – and in this connection 1-year and 2-year bonds with interest-rate triggers will still be regarded as relatively short-term securities. Moreover, the market reaction will also be affected by borrower behaviour. A unique feature of the Danish mortgage-credit model is that borrowers may redeem their loans by buying back the underlying bonds. If the borrowers find that the market has overreacted in the pricing of the possibility of extension, they will have an incentive to buy back bonds with an interest-rate trigger, taking out loans financed by new bond issuances or bank loans instead.

Both the 1-year bond with an interest-rate trigger and the corresponding bond without an interest-rate trigger are observed six months before the next refinancing. If the interest rate increases by 5 percentage points at the next refinancing auction, it is assumed that the maturity of the bond with an interest-rate trigger is extended by 1 year and then replaced by a new bond sold by auction. In other words, investors are not concerned about the possibilities

of refinancing the bond in eighteen months. Similarly, it is assumed that the bond without an interest-rate trigger can be continuously refinanced on expiry.

In the event of maturity extension, the investor receives a 1-year bond with a lower coupon than the market rate. At the time of auction, this will result in a loss on recovering the principal. The calculated price of the bond reflects the difference between the trigger interest rate and the market rate at the time of auction. Correspondingly, the price of traditional callable bonds implies a loss for the investor if interest rates fall and the borrower opts for conversion.

Initially, it is assumed that interest rates have not risen since the most recent refinancing six months ago. Hence, the prices of the two bonds are virtually identical, since the probability that interest rates will rise by 5 percentage points within the next six months is negligible.<sup>3</sup> The low probability of the interest-rate trigger taking effect – with resultant maturity extension – is also reflected in the expected duration of around 6 months for both bonds.

Conversely, in the event of a strong interest-rate increase since the last auction, the price of the bond with an interest-rate trigger will fall by more than the price of the bond without a trigger. This is because higher interest rates imply an increased probability of maturity extension. A substantial interest-rate increase will also entail higher interest-rate sensitivity (longer duration) for the bond with an interest-rate trigger. The price and duration of the two bonds will, however, diverge, depending on whether there is a parallel shift or twist in the yield curve.

At first a *parallel shift* in the yield curve is considered, cf. Chart 2, top. Not until the yield curve has risen by almost 4 percentage points is the probability of activating the interest-rate trigger so high that the duration increases and the price falls for the bond with a trigger. The prices of the two bonds even continue to be rather close in the event of an interest-rate increase by up to 5 percentage points.

When the yield curve has risen by around 6 percentage points, the duration of the bond with an interest-rate trigger is by and large 1.5 years, since the probability of maturity extension is almost 100 per cent. If that happens, it will take 1.5 years for the investor to recover the investment. At higher interest rates, the interest-rate sensitivity is greatest for the bond with a trigger, since it is gradually beginning to look like a bond with a term to maturity of 1.5 years. However, its price is considerably more stable than that of e.g. a 5-year fixed-rate bond, cf. Chart 3.

Then *inversion* of the yield curve is considered, with a stronger increase in short-term than in long-term interest rates. Specifically, when the very short-term interest rate, i.e. the spot rate – as shown in the x-axis in Chart 2, middle – rises by e.g. 8 percentage points, the 1.5 year term interest rate is assumed to rise by only 5.6 percentage points. In this scenario the spot rate must increase by almost 6 percentage points before the duration of the bond with an interest-rate trigger begins to rise. This reflects that the spot rate must be higher than the trigger before it begins to be probable that the trigger will be activated in six months. Even if the spot rate increases by 8 percentage points, the expected duration will increase to only around 1 year – corresponding to a 50 per cent probability that the trigger will be activated.

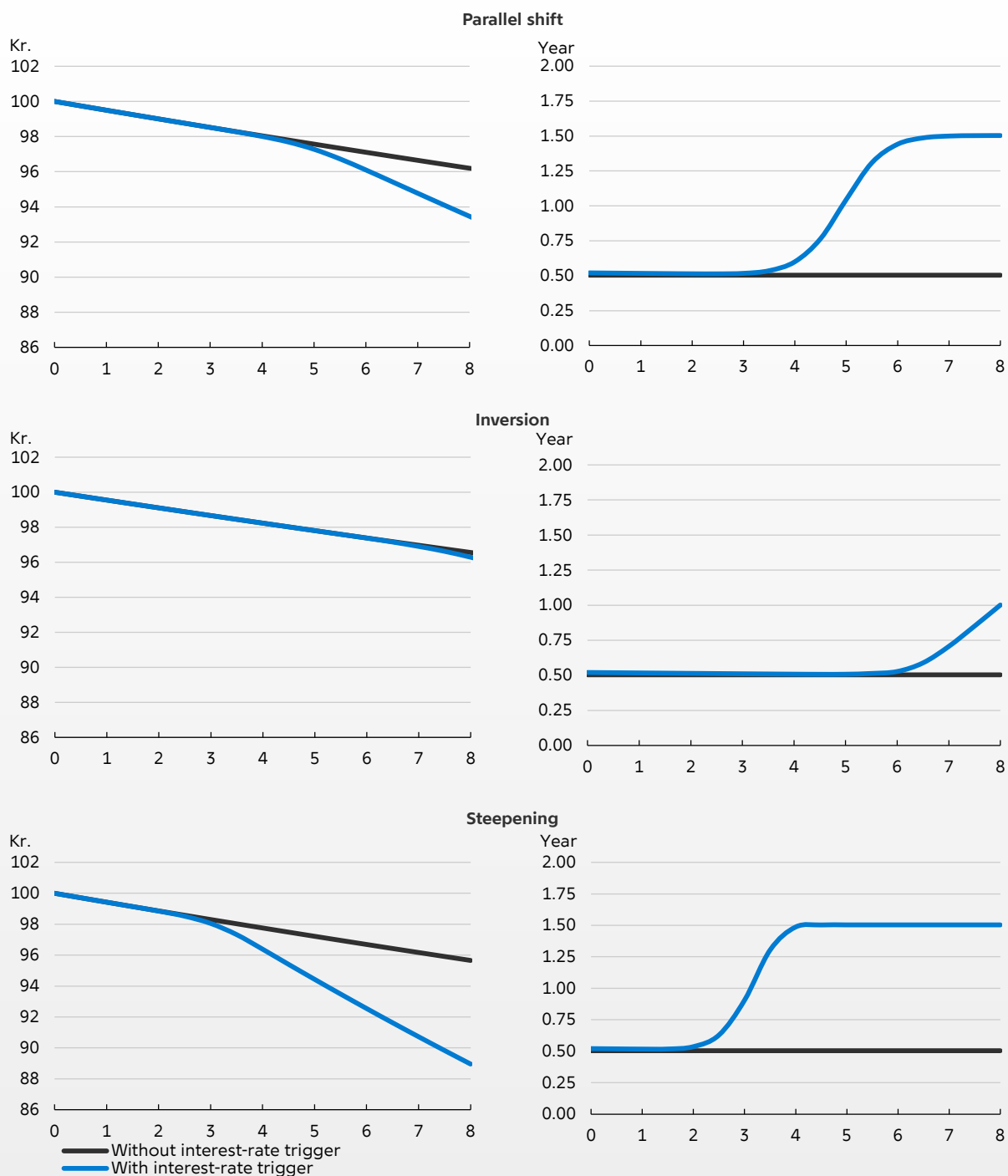
In the event of inversion, the two bond prices will be almost identical. The spot rate has to increase by more than 7 percentage points for a small difference to emerge. The small difference in price sensitivity reflects two factors, i.e. that the probability of maturity extension is small, and that the investor's loss on maturity extension is very limited. The reason is that the interest rate at the next auction is not likely to be very much higher than the interest-rate trigger, making major losses less probable.

The example of inversion of the yield curve is interesting, because it is probably the most obvious scenario that can result in sharp and sudden interest-rate increases, e.g. as a result of a short-lived liquidity crisis in the financial system or speculation against the fixed-exchange-rate policy.

<sup>3</sup> The calculations are based on interest rates on 30 January 2014. A one-factor Vasicek model has been applied, using CITA rates as the underlying term structure. The calculations have been performed using the RIO system supplied by Scanrate Financial Systems A/S.

1-year bond in various interest-rate scenarios, price (left) and duration (right)

Chart 2



Note: The x-axis shows increases in the spot rate in percentage points. The calculations are based on interest rates on 30 January 2014. A one-factor Vasicek model has been applied, using CITA rates as the underlying term structure. The calculations have been made on a bond 6 months from maturity.  
 Source: Own calculations on the RIO system from Scanrate.

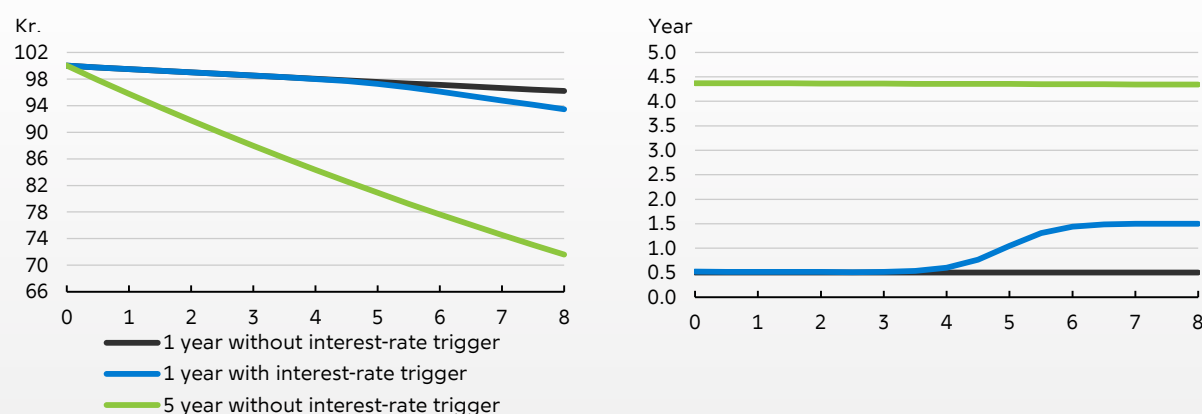
Finally, *steepening* of the yield curve is considered, long-term interest rates being assumed to rise more strongly than short-term interest rates. Specifically, it is assumed that an increase in the spot rate of e.g. 8 percentage points leads to a rise of 11.6 percentage points

in the 1.5 year term interest rate. In this scenario the spot rate needs only to increase by around 2 percentage points for the expected duration to grow and the price of the bond with an interest-rate trigger to start declining, cf. Chart 2, bottom. Compared with the parallel



**1-year bond with and without interest-rate trigger and 5-year bond without interest-rate trigger on parallel shift in the yield curve, price (left) and duration (right)**

Chart 3



Note: The x-axis shows increases in the spot rate in percentage points. The calculations are based on interest rates on 30 January 2014. A one-factor Vasicek model has been applied, using CITA rates as the underlying term structure. The calculations have been made on bonds 6 months and 4.5 years, respectively, from maturity.  
Source: Own calculations on the RIO system from Scanrate.

shift scenario, this scenario requires a smaller increase in the spot rate before the probability of the trigger being activated rises markedly. This reflects that slightly longer-term interest rates tend to rise more than very short-term interest rates, increasing the probability of the trigger being activated. The steepened yield curve implies an expectation of a further increase in interest rates. Hence, it begins to be probable that the trigger will be activated already before the spot rate reaches the level of the interest-rate trigger. An increase in the spot rate by 4 percentage points means that it is almost 100 per cent certain that the trigger will be activated.

As appears from Chart 2, the two bond prices diverge most strongly when the yield curve steepens. The divergence is clear already when the spot rate has increased by 3 percentage points. The divergence reflects partly that maturity extension is regarded as highly probable, partly that investors risk more substantial losses on extension. The reason is that in the extension period interest rates may be somewhat higher than the trigger level.

Considerable steepening of the yield curve should be regarded as an extreme scenario: A situation with not only a marked increase in short-term interest rates, but also expectations of a further increase. This situation may arise

if market participants expect both high and accelerating inflation. Alternatively, the marked steepening may be mortgage-bank specific and related to concerns about gradual deterioration of a mortgage bank's credit quality (i.e. investors feel less certain about credit quality and the ability to service loans in 1.5 years than in six months).

Besides changes in the interest-rate level, the pricing of the possibility of maturity extension also depends very much on turbulence in the market – interest-rate volatility. In a very volatile market, the price of the bond with an interest-rate trigger falls because there is a higher probability of the trigger being activated. But it would take quite strong volatility fluctuations for the price to be markedly affected. A doubling relative to the current level implies a price fall of 0.2 per cent, at most, relative to the calculations shown. The maximum effect is obtained when the interest rate is close to the trigger.

## OVERALL ASSESSMENT

Overall, the legislative amendment on contingent maturity extension re-establishes a sound financing model for the mortgage banks, irrespective of whether the loans are pre-financed.

The interest-rate trigger clearly defines when the maturity of a bond will be extended. This enables the investor to calculate a price for the possibility of maturity extension. At the time of issuance, the price effect is expected to be very small, given the very low probability of a 5 percentage point increase in interest rates. In Denmark's Nationalbank's assessment, the interest premium will not exceed 0.1 percentage point. The interest-rate trigger heightens interest-rate sensitivity in the event of substantial interest-rate increases, but for a solvent mortgage bank enjoying investor confidence in its long-term credit quality, the effect is expected to be limited.

The price effect may be stronger for a mortgage bank facing rising interest rates due to waning investor confidence in its long-term credit quality. Any uncertainty as to whether the next, as well as future auctions can be carried out may indeed impact investor behaviour already at the next auction. But the same dynamics may also be seen in the current system without maturity extension.

The interest-rate trigger is designed to address temporary liquidity problems, but not solvency problems caused by poor credit quality. It is therefore essential for the mortgage banks to maintain sound credit policies also after the legislative amendment. If the problem is related to credit quality and the mortgage bank is failing and has to be wound up, the key factor is the bankruptcy trustee's scope for meeting the refinancing need – and not the interest-rate trigger. In other words, the interest-rate trigger provides clarification in a situation with short-lived market turmoil, in which investors continue to have confidence in the long-term credit quality of mortgage bonds, but interest rates rise for other reasons.