Danish Financial Supervisory Authority

Mortgage Credit Institutions

Market Developments in 2018

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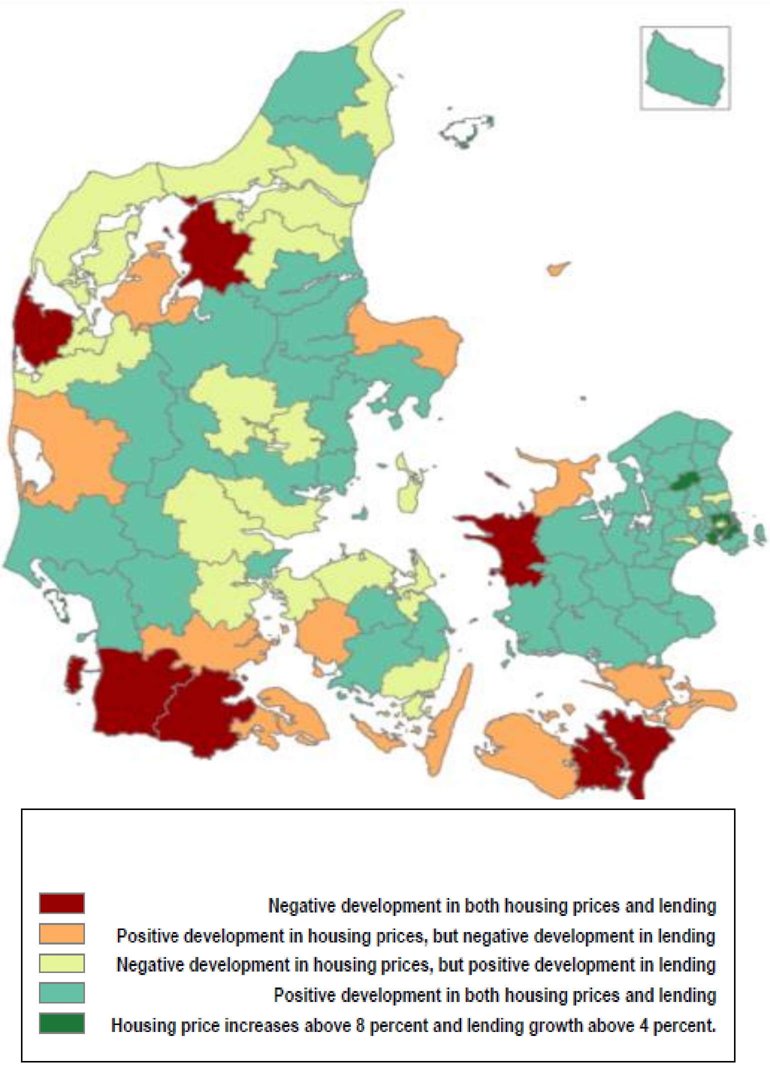
1. Summary

Total profits for mortgage credit institutions fell in 2018 compared to the year before. However, they are still at a high level of DKK 18.5 billion. The drop can be attributed to factors such as negative value adjustments, a fall in earnings from subsidiaries, lower net interest rate earnings, lower net fee earnings and higher impairments on lending[1]. The increase in the latter was especially driven by higher impairments on agriculture.

Total lending by mortgage credit institutions continues to rise, and positive growth in lending and housing prices was prevalent nationwide in local governments (see Figure 1).

Figure 1: Rising housing prices and lending in most of the country



Note: The figure shows the development in square metre prices for detached and terraced houses from the fourth quarter of 2017 to the fourth quarter of 2018, and the mortgage credit institutions' lending growth for owner-occupied housing in 2018. Observations from the Municipalities of Fanø and Læsø are missing.
Source: Reports to the Danish FSA, Finance Denmark's housing market statistics and own calculations.

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1 Earnings from subsidiaries can be attributed to credit institution activities.

Housing prices were generally at a historically high level. Commercial property prices did not generally rise to the same degree as prices for single-family houses and owner-occupied apartments, and tend to be more volatile. There are also signs of a transfer of loans from banks to mortgage credit institutions for private and business lending. Such a transfer generally causes increased risk taking for both types of institutions.

The mortgage credit institutions can sometimes mortgage property with questionable security. This can be due to certain properties being difficult to sell or that their value is uncertain as a result of a lack of real alternative uses. This leads to risks for the system.

Several measures have been introduced to address the risk linked to lending to private individuals, including guidelines for access to risky loans. Reporting to the Danish FSA shows that the proportion of risky new loans has fallen considerably since the guidelines came into effect on 1 January 2018. The drop applies nationwide and across the various regions. Going forward, the Danish FSA will be in dialogue with institutions that have higher proportions of risky new loans, to determine whether they are well-founded or due to failure to implement the rules. The Danish FSA will also have increased focus on the commercial property market, including investigating risk management by mortgage credit institutions when lending against property that is difficult to sell.

The Danish FSA also sees signs of greater risk taking and new risks linked to the actual funding of lending. Payments between borrower and bond investors in the classic mortgage credit system are more or less matched in terms of time and size. In connection with legislation on covered bonds (SDO), in 2007 the old balance principle was continued as the specific balance principle, and a new one was introduced – the general balance principle. There are thus two versions of the balance principle today, and more options for gross imbalances in the funding exist. This has brought new risks to the Danish mortgage credit system when institutions use these options. The mortgage credit institutions can thereby take on significantly greater liquidity risk[2].

Liquidity risk in the mortgage credit system arises, inter alia, from the requirement for supplementary collateral, product development and greater use of derivatives in the funding[3].

The Danish FSA is particularly aware of the liquidity risk and continuous use of the balance principle by institutions. Consequently, the Danish FSA conducted a survey to identify best practice within this area. The Danish FSA is currently following up on which discussions the boards of mortgage credit institutions have had concerning risks linked to avoiding the direct link between loan and bonds, and the increased use of derivatives.

The Commission proposed a new directive in 2018 on covered bonds and revising CRR. The core elements of the Danish mortgage credit system can be accommodated in the proposal. With regard to the Danish mortgage credit system's importance to financial stability, it is important to avoid increased complexity and risk in the system, which can adversely affect investor demand for mortgage credit bonds or constrict lending capacity in times of crisis in some other manner.

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2 The specific balance principle does not contain the same degree of market and liquidity risk for mortgage credit institutions.
3 To fulfil the requirements for net imbalances in the general balance principle.

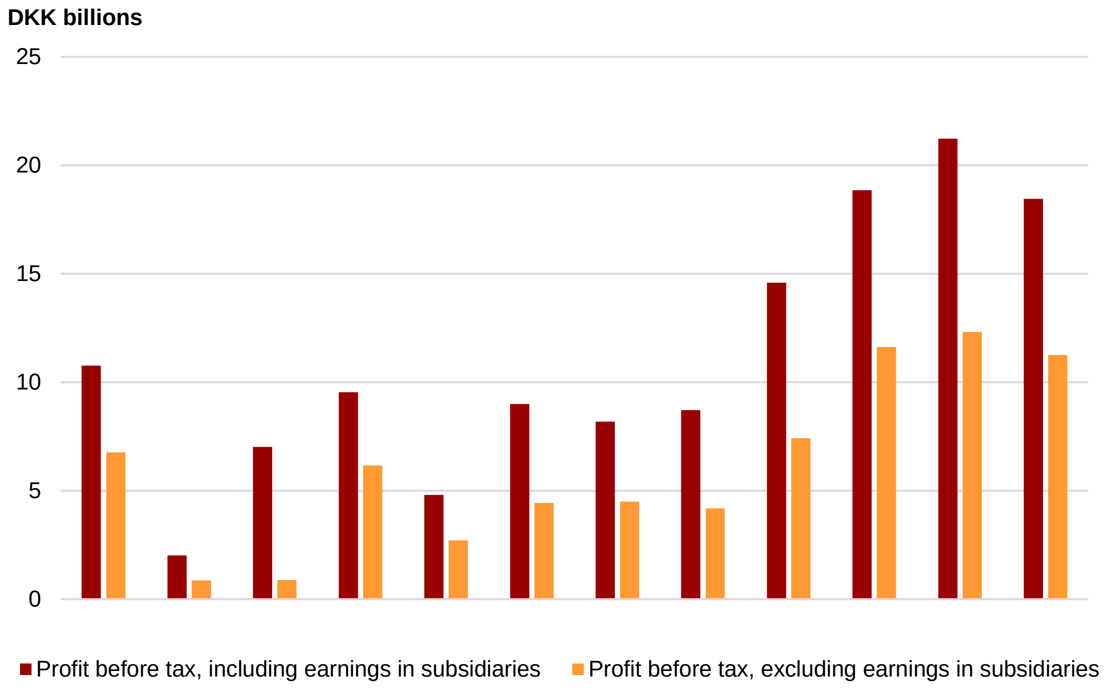
2. Mortgage credit institutions' earnings

Mortgage credit institutions' earnings fell in 2018, but remain at a high level. The following can be seen in their financial statements for 2018[4]:

- Profit before tax fell by 13.1%. Return on equity before tax fell from 10.6% to 8.7%. The drop in profits can, inter alia, be attributed to negative value adjustments, a fall in the earnings of subsidiaries, lower net interest earnings, lower net fee earnings and higher impairments.
- Net interest rate earnings fell by 2.7%, driven by a fall in administration fee earnings.
- Net fee earnings fell by 8.1%, driven by an increase in fee and commission expenses as well as lower fee and commission earnings.
- Impairment on lending rose 3.5%, although from a low starting point. The increase can be primarily attributed to increases in impairments on agriculture.
- Lending increased by 2.3%, which was supported by continued low bond yields and rising housing prices.

Total profit before tax for mortgage credit institutions was DKK 18.5 billion, cf. Figure 2. Earnings fell compared to profit before tax of DKK 21.2 billion in 2017. Adjusted for earnings in subsidiaries, they were however on par with earnings for 2017.

Figure 2: Profit for the year before tax remains high

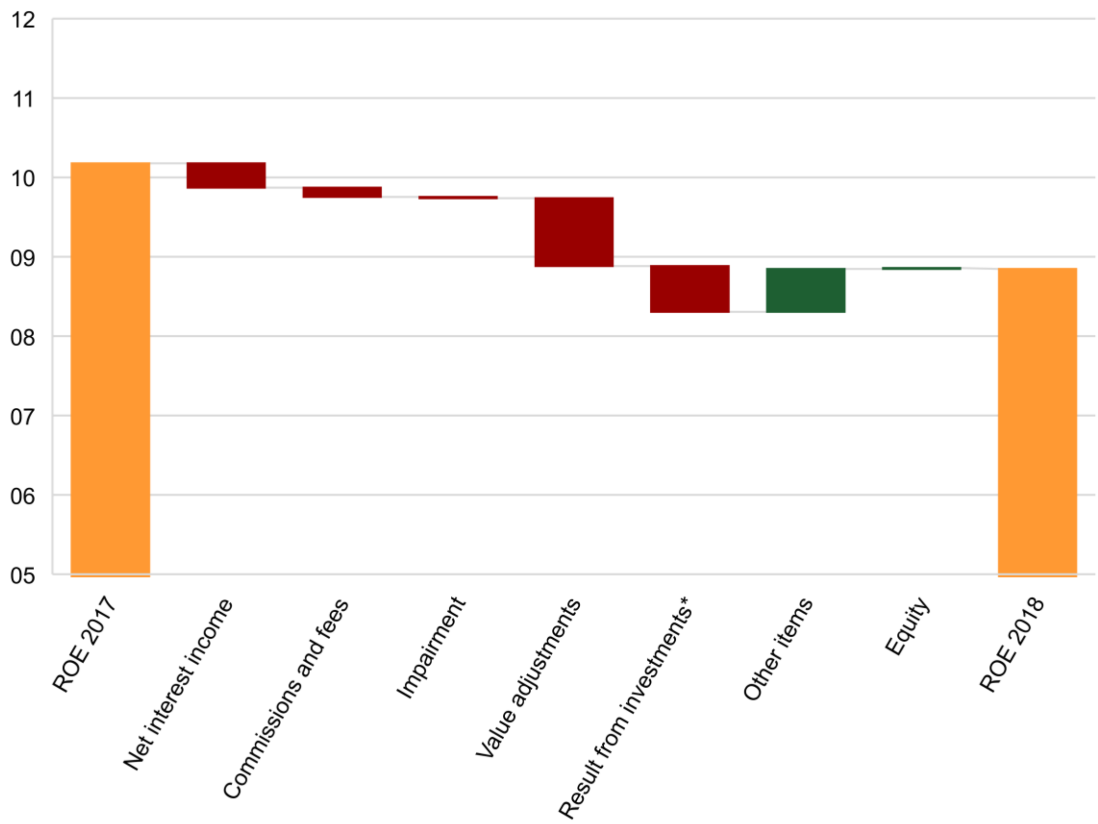


Note: Development in the annual profits of mortgage credit institutions before tax, including and excluding earnings in subsidies.
Source: Reports to the Danish FSA.

4 The full financial statement and key financial ratio table for mortgage credit institutions can be seen in Annex 1, tables 1 and 2.

Return on equity before tax indicates the return on investment the owners have received on capital invested[5]. Figure 3 illustrates how expenditure and income items for mortgage credit institutions influenced return on equity before tax between 2017 and 2018. Falling earnings generally affected return on equity negatively.

Figure 3: Return on equity driven down by lower earnings and value adjustments



Note: The figure shows the factors that have affected return on equity (ROE) before tax from 2017 to 2018. Other items include other operational net earnings, personnel costs and administration, income from activities during liquidation, and amortisation and impairment on intangible and tangible assets.
* Indicates result from investments in associates and affiliates.
Source: Reports to the Danish FSA

The drop in value adjustments was mainly driven by lower currency gains on the institutions securities portfolio. The increase in impairment was especially driven by higher impairments on agriculture. The mortgage credit institutions are also using new impairment rules, IFRS9 (see Box 1).

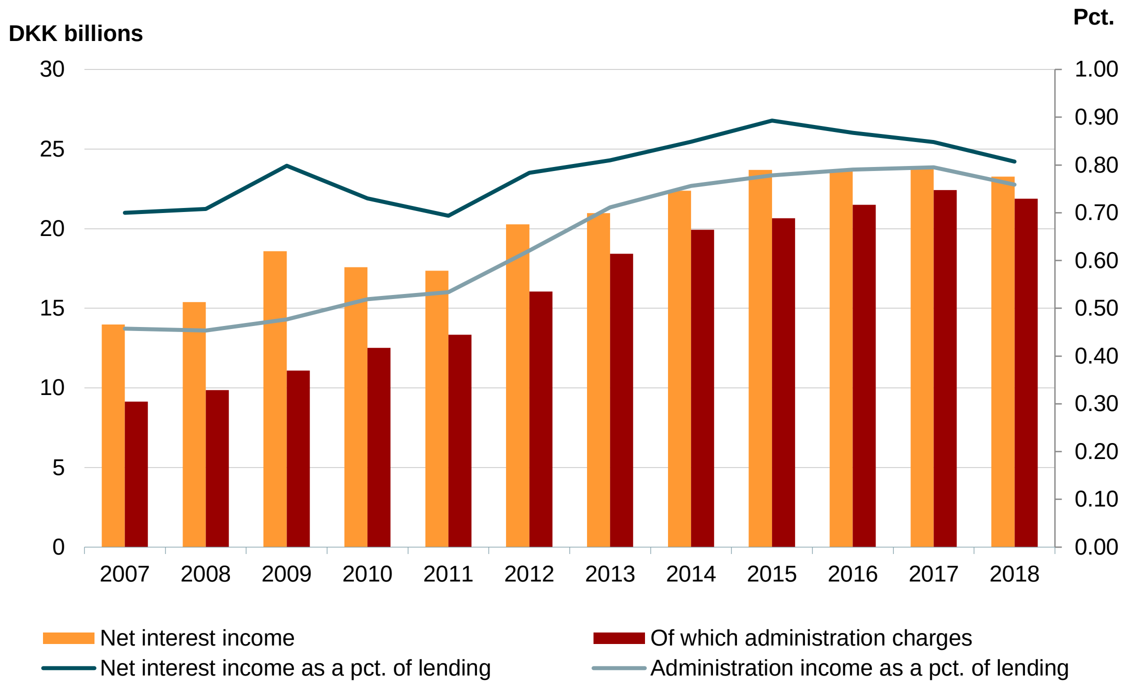
5 Profit before tax/equity

Box 1: IFRS9

The new IFRS9 rules on financial statements came into effect on 1 January 2018. One of the things they impose is that impairments now have to be entered earlier and based on expected loss on all exposures, referred to as a 'caution principle'. Previously, there had to be objective signs of credit deterioration (the neutrality principle) before the institution should perform impairment.

Movement in the net interest and administration charges for mortgage credit institutions is shown in Figure 4. Despite continued lending growth, the drop in administration charges is due to a change in the composition of lending profiles towards more loans with repayments and fixed interest, where the administration rate is generally lower, and an increase in disbursement of customer funds from Nykredit and Totalkredit.

Figure 4: Net interest and administration charges fell in 2018



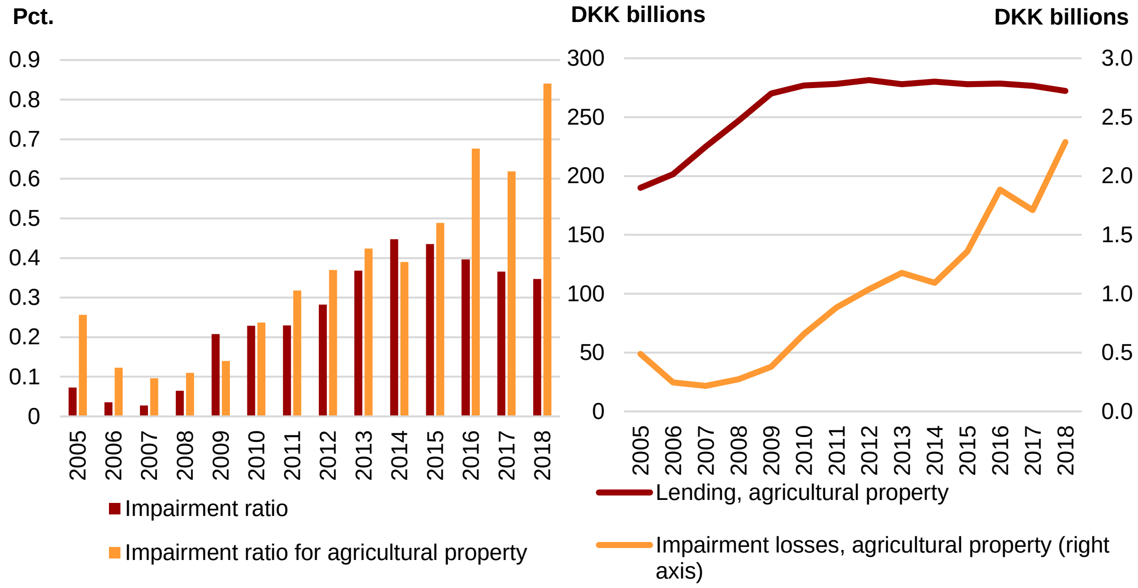
Note: Lending is calculated including repo lending, excluding guarantees, after impairments and excluding lending to other MFIs. Net interest earnings as pct. of lending and administration earnings as pct. of lending are shown on the right axis.
Source: Reports to the Danish FSA.

Lending to agriculture

The Danish agriculture industry came out of 2018 with a significant drop in profit. To a large degree, it was caused by the summer drought. The earnings of mortgage credit institutions were affected directly through higher arrears and impairments on agriculture. The mortgage credit institutions' accumulated impairments on agriculture rose in 2018 by DKK 577 million, making this the property category with the second highest accumulated impairments. 22.8% of accumulated impairment can be attributed to agriculture.

Figure 5 illustrates the development of mortgage credit institution impairment percentage for total lending and lending to agriculture. The impairment percentage for agriculture has risen overall since 2007 and reached a historically high level in 2018[6]. The figure shows that the high increases in impairment percentages for farms can be attributed to a combination of rising impairment and relatively stable lending.

Figure 5: Increasing impairment percentages for agriculture

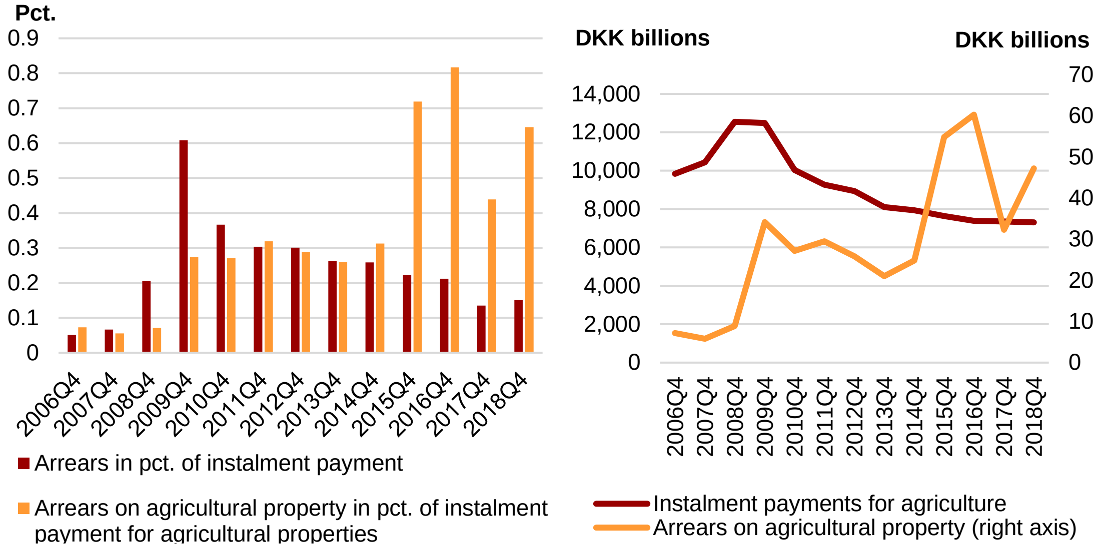


Note: Impairments are calculated as the mortgage credit institutions' total/accumulated impairments at year end. Lending is calculated as lending by mortgage credit institutions before impairments at year end.
Source: Reports to the Danish FSA.

The arrears percentage of mortgage credit institutions for lending with a mortgage on agriculture has been at a high level in recent years, cf. Figure 6. The high level of arrears compared to the instalment payments for agriculture was driven by the high level of mortgage arrears combined with weakly declining mortgage instalment repayments. The latter can, inter alia, be attributed to a slight decline in lending to instalment during the period, cf. Figure 5. The low interest rate also exacerbates the declining tendency in mortgage instalment repayments for instalment since 2009.

6 However, this should be seen in the light of the impairment percentage for mortgage credit institution lending to agriculture being much lower than that for banks, which for comparison was 16.6% in 2018. The mortgage credit institutions impair much less than banks, as they only provide loans against a mortgage pledge up to a lending limit of max. 70% of the property's value.

Figure 6: Significant development in arrears for farms



Note: Arrears are calculated as total arrears after 3.5, 6.5 and 12.5 months.
Source: Reports to the Danish FSA.

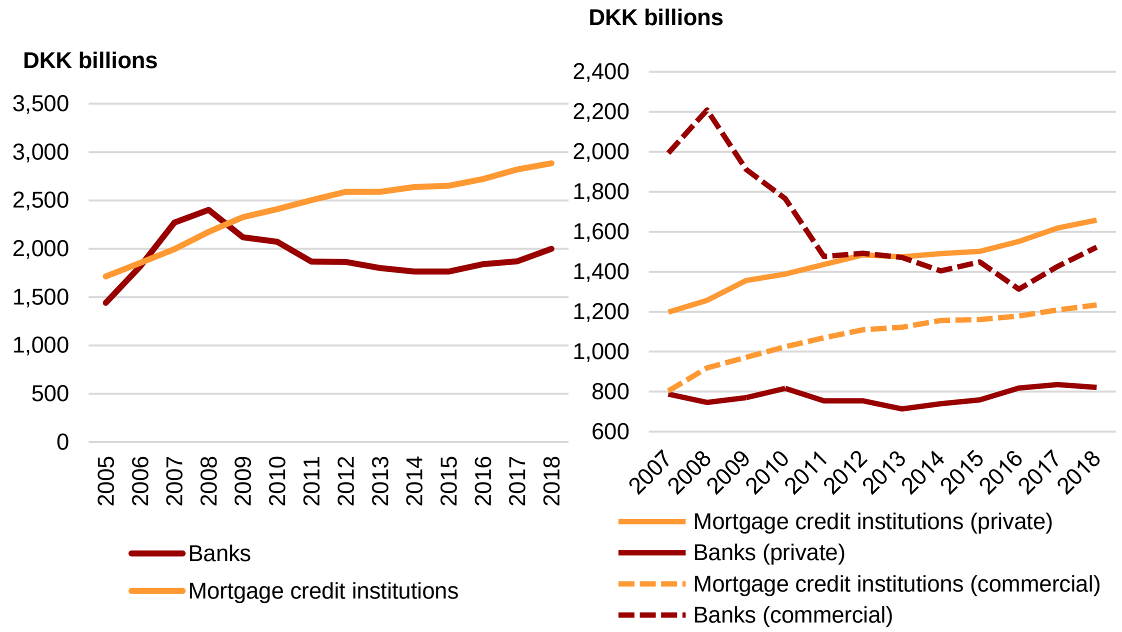
3. Credit risk

Credit risk is the most substantial risk for mortgage credit institutions. It represents the risk of an institution suffering loss as a result of the customer being unable to meet its loan obligations. The proportion of loans with variable interest[7], interest-only[8] and risky loans[9], which are generally linked to higher credit risk for the institution continued to decline. However, there were signs of increased risk taking through transfer of loans from banks to mortgage credit institutions, developments on the property market and declining risk weighting for commercial properties.

Lending moved from banks to mortgage credit institutions

There have been indications ever since the financial crisis that some of the banks' lending moved to mortgage credit institutions, cf. Figure 7. The trend can be seen for lending to private individuals and businesses.

Figure 7: Indicators for lending as moved from banks to mortgage credit institutions over time



Note: The figure shows trends in total lending, lending to private individuals and to commercial undertakings for Danish banks (including subsidiaries in Denmark of foreign credit institutions) and Danish mortgage credit institutions. Total lending is calculated including repo lending, excluding guarantees, after impairments and excluding lending to other MFIs. Lending to private individuals and commercial undertakings for banks is calculated including repo lending, before impairments, including guarantees and without lending to other MFIs. Lending to private individuals for mortgage credit institutions consists of loans before impairment mortgaged on owner-occupied residences and holiday homes. Lending to commercial undertakings for mortgage credit institutions consists of loans before impairment mortgaged not on an owner-occupied residence or a holiday home.
Source: Reports to the Danish FSA.

For example: priority loans have moved from banks to mortgage credit institutions, which take over and finance them through bond issues[10]. Such a move can imply greater risk taking

7 See Figure 21 in annex 2.
8 See Figure 22 in annex 2.
9 Defined through the guidelines for best practice for mortgage credit.
10 This form of switching loans from banks to mortgage credit institutions is referred to as 'joint funding'.

for the banks and mortgage credit institutions, even if the customer portfolio as a whole does not change (see Box 2).

Box 2: How can an institution increase credit risks without changing the overall customer portfolio?

Example: A bank and mortgage credit institution have a total of eight equally large customers, four each. The risk linked to each customer is rated 1 (low) to 4 (high), with the mortgage credit institution's customers being less risky than the bank's. The average of the risk values indicates the overall risk for the institutions.

Before transferring of loans:

- The mortgage credit institutions exclusively had customers with low risk values of 1-2.
- The bank exclusively had customers with high risk values of 2-4.

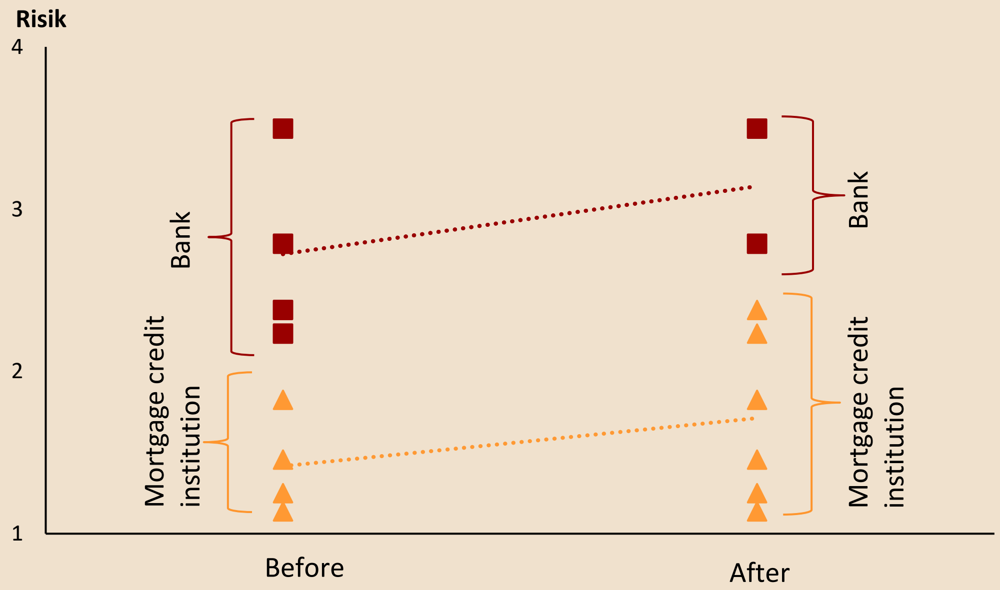
Transferring the loans:

- The bank moves its two least risky customers over to the mortgage credit institution.

After transfer of the loans:

- The mortgage credit institution's overall risk rises because the bank's best customers are, on average, not as good as the average level of the mortgage credit institution's original customers.
- The overall risk for the bank rises, as it has lost two of its best customers.

Figure 8: Example of transferring loans



Note: The first column indicates the scenario before transferring the loan and the second shows after. Bank customers are marked by red squares, mortgage credit institution customers by yellow triangles. The second column shows the two most risky bank customers transferred to the mortgage credit institution (two squares have become triangles). The dotted lines show the general (average) risk for the bank and mortgage credit institution in each scenario.
Source: The Danish FSA.

Status of reports – best practice, addressing risky loans
The guidelines for best mortgage credit practice define a number of loans as risky (see Box 3). Credit institutions should not, in principle, offer risky loans to customers with high debt combined with the desire to borrow heavily against their property. Risky lending is generally associated with higher credit risk for institutions. The fact that this proportion has fallen is therefore good news. The proportion of risky new loans may be positive because the institutions can deviate from the guidelines for certain specific exceptions. However, a positive proportion can also indicate that the institutions have not fully implemented the guidelines.

Box 3: Best practice for risky loans
The Minster for Industry, Business and Financial Affairs announced the framework of the new guidelines for home loans in October 2017. Through the new guidelines for best practice within mortgage credit that came into effect on 1 January 2018, credit institutions were generally prevented from offering home loans to households with high debt.

According to the new guidelines, a loan is regarded as risky if the lender has a debt factor of over 4 and an LTV ratio of over 60%, as well as one of the following loan types:

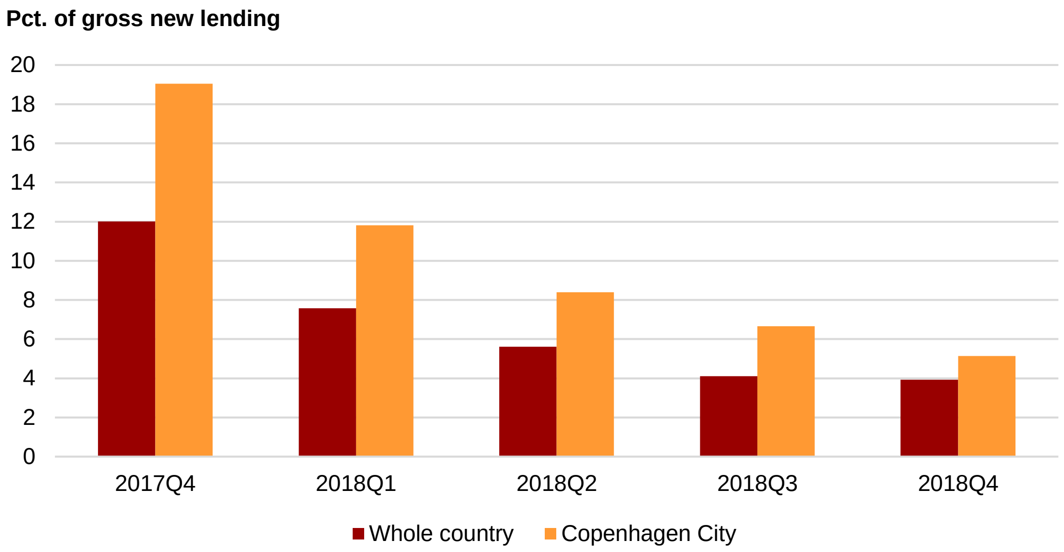
- Loans with variable interest rates with a fixed-interest period of less than five years, with or without repayments
- Loans with interest-only and variable interest rates with a fixed-interest period of five years or more.

The objective of the new guidelines is to protect households with high debt so that they are able to withstand interest rate increases without getting into financial problems. Concurrent with publication of the new guidelines, the Minister for Industry, Business and Financial Affairs asked the Danish FSA to monitor trends in risky loan types. The first report was for the reference period of Q4, 2017.

The Danish FSA observed that the proportion of risky new loans fell to 3.9% in Q4, 2018, compared to 12% in Q4 2017[11], cf. Figure 9. The proportion for Copenhagen alone fell from 19% to 5.1% in just one year. Meanwhile, the Danish FSA has not generally observed any significant switch from risky new loans to fixed interest, interest-only loans not covered by the restriction.

11 Covers mortgage credit lending and similar loans made by banks.

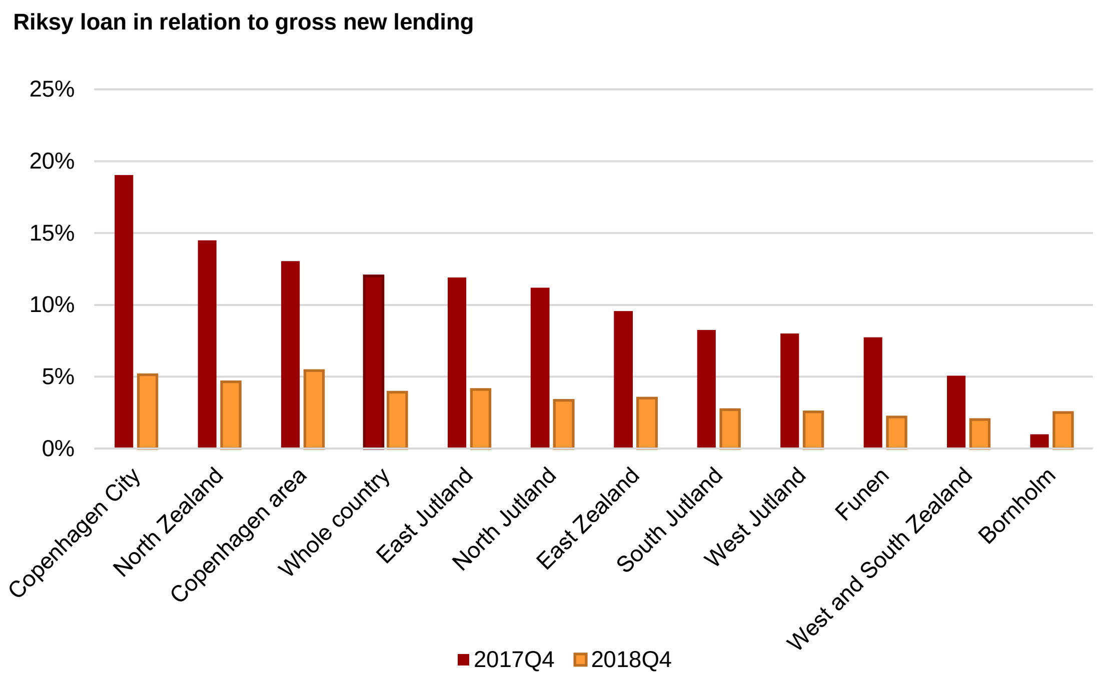
Figure 9: Fewer risky new loans



Note: Gross new lending is calculated according to the guide on mortgage lending for customers with high debt factors: https://www.finanstilsynet.dk/Ansoeg-og-Indberet/Indberetning-for-finansielle-virksomheder/System/KGFS.
Source: Reports to the Danish FSA.

The proportion of risky new loans in Q4 2018 continued to be higher in parts of the country associated with Copenhagen and Aarhus than with the rest of the country. However, the proportions did fall significantly across the country, with the exception of Bornholm, and are approaching the same level, cf. Figure 10.

Figure 10: Significant reduction in risky new loans across the country



Note: Gross new lending is calculated according to the guide on mortgage lending for customers with high debt factors: https://www.finanstilsynet.dk/Ansoeg-og-Indberet/Indberetning-for-finansielle-virksomheder/System/KGFS.
Source: Reports to the Danish FSA.

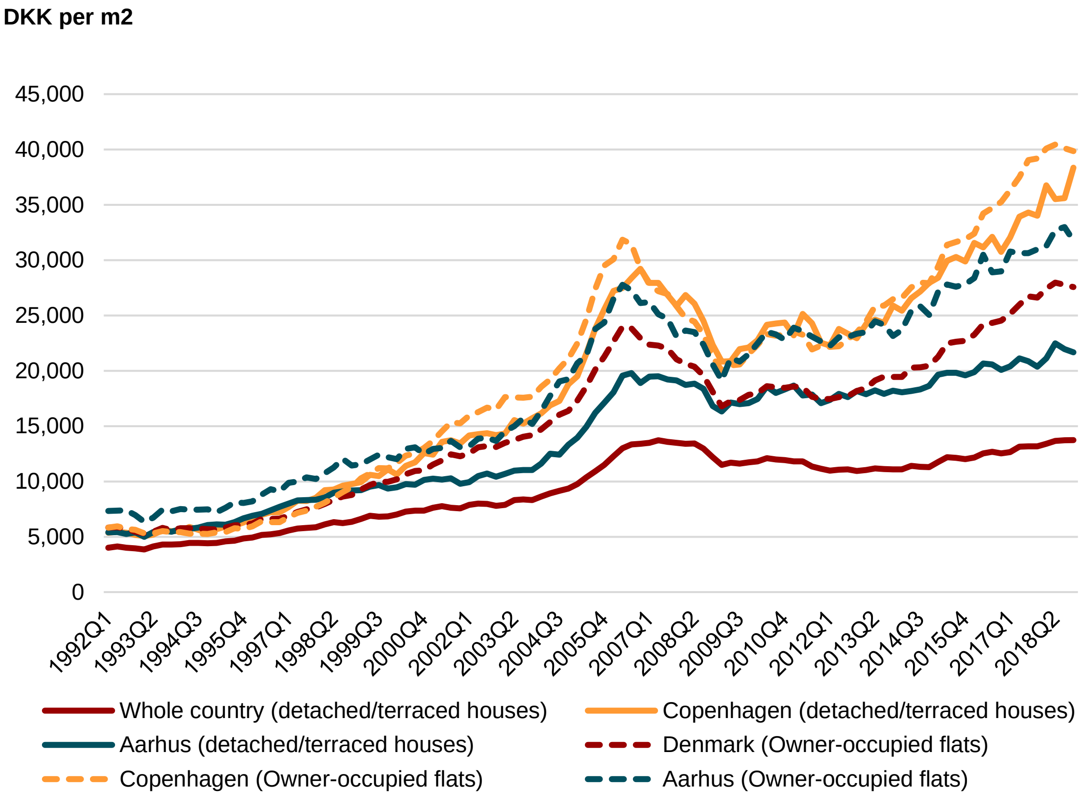
Going forward, the Danish FSA will be in dialogue with institutions that have higher proportions of risky new loans to determine whether they are well-founded or due to failure to implement the rules. Supervisory response will be implemented by the Danish FSA against the latter.

The risk on mortgage pledges

Mortgage credit institution lending is secured against a mortgage pledge on real estate. In principle therefore, the institutions will first suffer a significant loss on their exposure in a situation in which the debtor has been unable to meet his obligations, and the collateral pledged can only be realized to a value below that of the exposure. The risk of loss increases if property prices have generally fallen since the time the mortgage was raised or if the property pledged is difficult to sell.

Housing prices have risen for some time, and are generally around or even above the level they were before the financial crisis, cf. Figure 11. In particular, apartments in Copenhagen and Aarhus have seen very strong growth, although they have begun to level off in recent quarters. The price of apartments nationwide fell over the last two quarters.

Figure 11: Price rises are levelling-off for apartments in Copenhagen

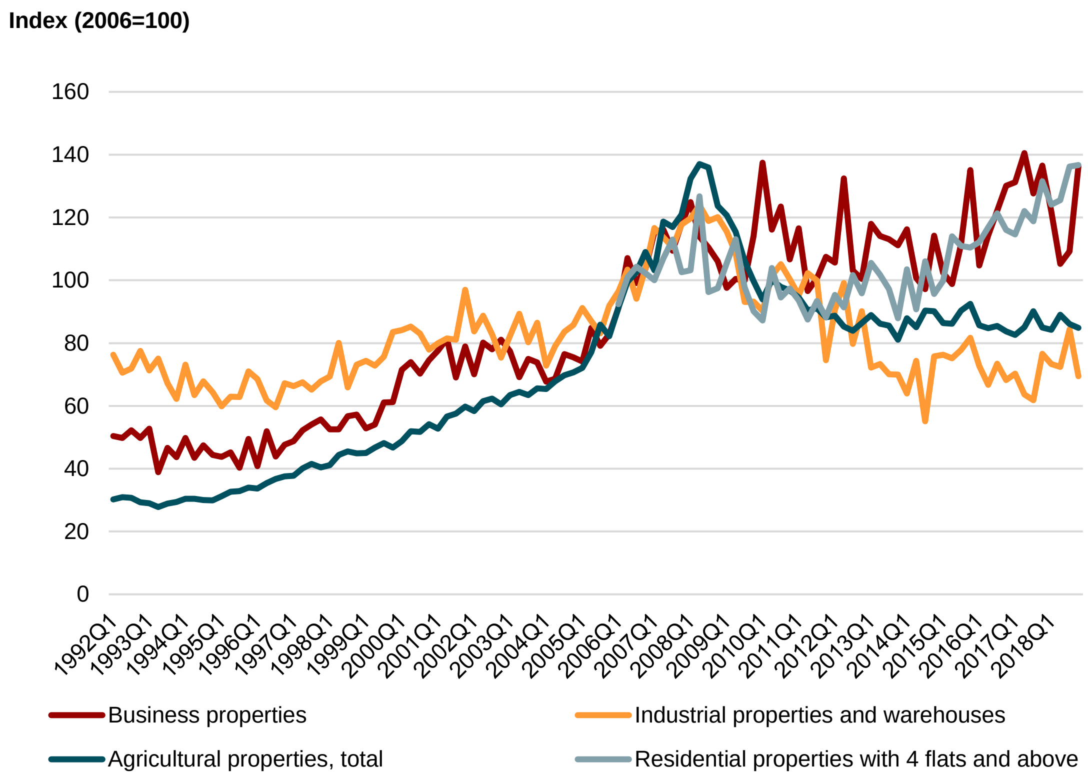


Note: The figure shows the development in square metre prices (realised sales price) for detached and terraced houses and owner-occupied apartments for the entire country, the municipality of Copenhagen, the surrounding area of Copenhagen and the municipality of Aarhus.
Source: Finance Denmark, Housing Market Statistics.

A number of measures have already been introduced to address risks on the housing market, among other things. The growth guideline is one example[12]. Another are the aforementioned guidelines for access to risky loans and activation of the counter-cyclical capital buffer[13]. The objective of these measures is not to slow down rapidly-rising housing prices, but to make the institutions and borrowers more robust.

Commercial property prices have not increased to the same degree as those of homes. Please note that the price of commercial properties is generally volatile, cf. Figure 12. Volatile prices and a more illiquid market are often linked to higher risk, and there are signs of this starting. Requirements for returns on rental properties are low, and foreign investors play a significant role, particularly in Copenhagen. The price for project financing has risen, and the high volatility increases the vulnerability of borrowers to drops in property prices during the construction phase. Lending on properties that are difficult to sell also means significant risk for the mortgage credit institutions.

Figure 12: Highly volatile prices for several types of commercial property



Source: Statistics Denmark

In the future, the Danish FSA will enhance focus on commercial property. This includes a survey of risk management by mortgage credit institutions in relation to lending against property having poor negotiability/being difficult to sell (see Box 4).

12 Guidance on caution in credit rating when mortgaging homes in growth areas etc.: "The 7 good habits".
13 The counter-cyclical capital buffer increases capital robustness for institutions in good times, can be released in bad times and thus helps counter the reluctance of institutions to lend during crises as a result of insufficient capital.

Box 4: Forthcoming survey of commercial properties

Risk for mortgage credit institutions is limited through regulation. Traditionally, their biggest risk is credit risk. Collateral for a loan in the form of a mortgage pledge against property, loan limits etc., helps limit that risk.

However, mortgage credit institutions can mortgage properties when the collateral for the loan is limited. For example: a property can be difficult to sell or the value can be uncertain due to the lack of any real alternative use.

The options for mortgaging such property types by mortgage credit institutions have been expanded in recent years. For example, the rules in the Mortgage Credit Act and Land Registration Act have been more closely defined for digital infrastructure.

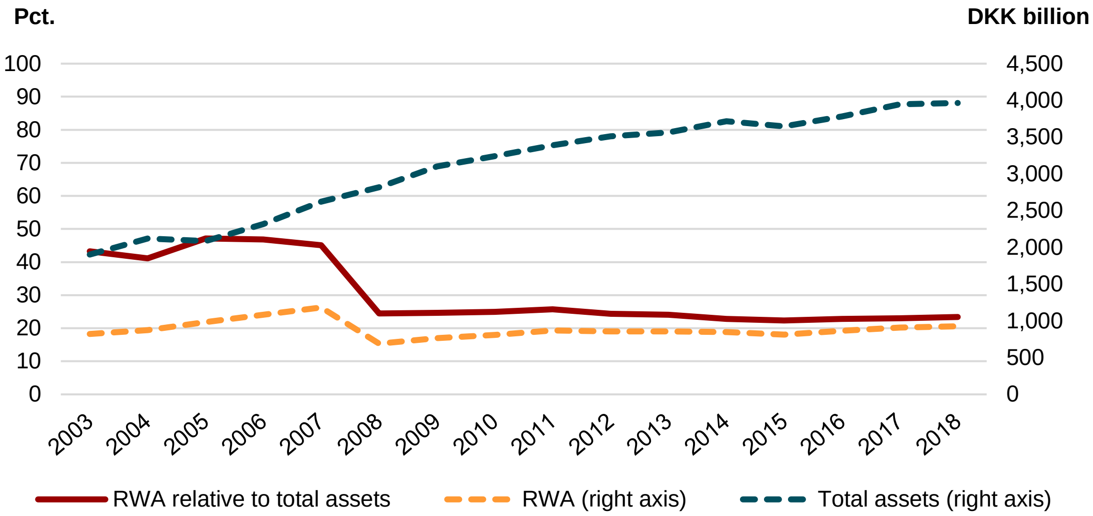
The Danish FSA will survey risk management by the mortgage credit institutions when mortgaging properties are difficult to sell or have no real alternative use. The survey is expected to identify best practice for mortgaging property with these or similar characteristics.

The development in risk weighting for mortgage credit institutions

The development in mortgage credit institutions' risk weighted assets in relation to total assets indicates the overall risk weighting for an institution. Low risk weighting is a characteristic of institutions or areas with low risk assets (e.g. mortgage credit lending). High risk weighting, on the other hand, is a characteristic of institutions or areas with high risk assets (e.g. in the form of lending to customers with lower collateral value or weaker creditworthiness). Mortgage credit institutions can choose to either use predefined risk weighting – the standard method – or use internal data to calculate individual risk weighting – the IRB method. However, the institution will have to fulfil a range of requirements and obtain prior authorization from the Danish FSA to use the IRB method. Following an authorization, the institution will also be subject to regular supervision.

Overall risk weighting for mortgage credit institutions is low and the trend has been generally flat, cf. Figure 13.

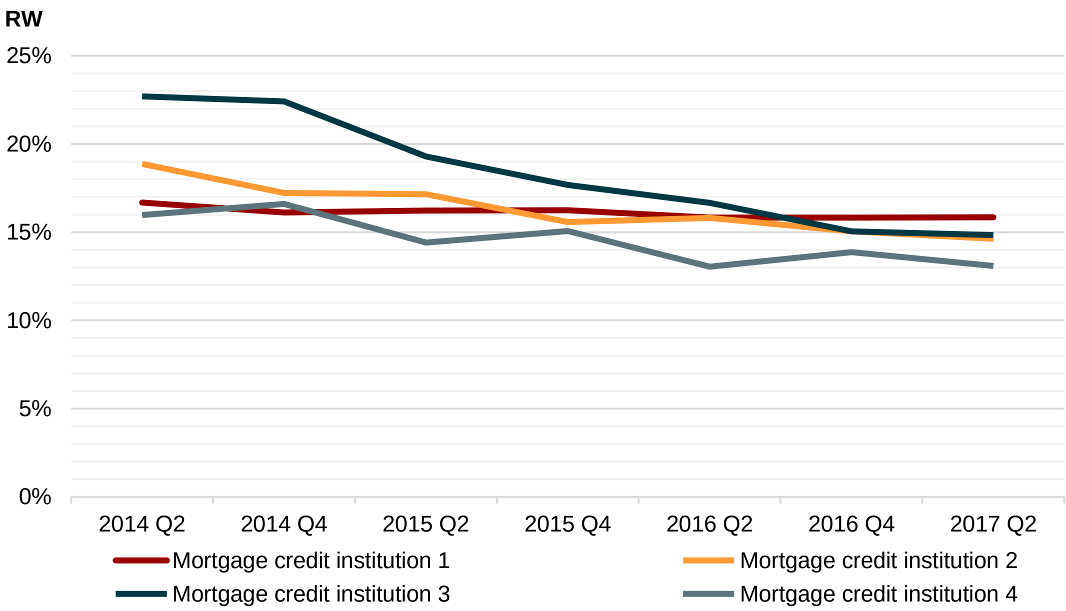
Figure 13: Flat trend in overall risk weighting for mortgage credit institutions



Note: The drop in risk-weighted assets (RWA) from 2007 to 2008 can primarily be attributed to some institutions adopting the IRB method (Basel II).
Source: Reports to the Danish FSA.

Risk weighting for rental properties under commercial properties is falling, cf. Figure 14, which inter alia, can be attributed to the pro-cyclicality of risk weighting by the institutions. 'Pro-cyclicality' states that risk weighting change in line with economic cycles. This can occur if the IRB models to a high degree are based on information that varies with the cycles (e.g. property prices).

Figure 14: Falling risk weighting for rental properties



Note: The figure shows trends in risk-weighting for lending to rental properties for non-defaulted exposures for four anonymised mortgage credit institutions.
Source: Reports to the Danish FSA.

Changes in risk weighting under the IRB method should be due to changes in the underlying risk. Cyclical fluctuations should be limited so that the capital requirements for institutions are not as volatile as a result of economic fluctuations. Neither should technical changes in models used by the institutions lead to a change in their risk weighting. There must be no incentive to choose adjustments in the areas that can give lower capital weighting, while refraining from making adjustments in those areas that can give higher capital weighting. The basic principle should be that when something falls, something else ought to rise. The Danish FSA therefore expects that the effect of technical changes in overall risk weighting over time should be close to zero. This should also be seen in light of institutions generally being able to look forward to rising risk weighting, as a result of the tougher requirements from the Basel Committee, along with comprehensive guidelines and technical standards from the European Banking Authority (EBA).

Risk weighting in certain segments of commercial property for some mortgage credit institutions has fallen to a much lower level than for other mortgage credit institutions[14]. Based on discussions with the Danish FSA, the institutions have addressed this issue by implementing initiatives designed to reduce dependence on economic cycles and by raising levels that are excessively low.

The Danish FSA does not believe that risk weighting for commercial property has generally fallen to an unacceptable low level. However, there is a significant risk that the falling trend will continue. If, in the future, the Danish FSA finds that risk weighting is too low, it can address it through, for example, announcements on expectations of a risk weighting floor[15]. Raising the pillar II supplement for institutions can also be used.

The Danish FSA will regularly monitor trends in risk weighting and has expressed clear expectations to the institutions, inter alia concerning technical changes in the models. It is also working to promote counter-cyclical attributes in risk weighting models.

14 Includes geographic areas (Copenhagen, Aarhus and the rest of the country) and property types (private rental, housing associations, public housing as well as youth residences and senior housing).
15 For example, in line with the announcement on excessively low risk weighting for housing loans for private customers in growth areas: https://www.finanstilsynet.dk/Nyheder-og-Presse/Pressemeddelelser/2018/boliglaan-veakstomraader-150118

4. Liquidity risk

Liquidity risk refers to the risk of an undertaking being unable to honour its financial obligations that fall due for payment on an ongoing basis[16]. The liquidity risk for mortgage credit institutions has risen as a result of product development and the regulation on covered bonds (SDO) in 2007.

Traditional liquidity risks for mortgage credit institutions
Liquidity risks for mortgage credit institutions differ from the traditional liquidity risks we know from banks. This is primarily due to the fact that mortgage credit institutions are regulated according to the balance principle, which only permits very small differences in the risk characteristics between assets and liabilities in the core business (i.e. mortgage credit loans and bonds). That means that Danish mortgage credit loans with a fixed interest rate of 2% will be financed in practice under direct match funding, with a matching bond with a fixed interest rate of 2%. This avoids the situation where there is a shortage of funds for due payments because of market fluctuations. Additionally, it follows from regulation that payments received from the borrower in the form of interest and instalments are contractually due before the institution has to pay the bond owner.

Liquidity risks for the traditional mortgage credit institution thus stem from arrears, for example. If a lender defaults on its loan, for whatever reason, the mortgage credit institution will have no incoming payment to match the liability to the bond investors. In such an instance, the institution will have to cover the shortfall from its own liquid funds.

Floating-rate loans
Over time, product development has introduced liquidity risks into the mortgage credit system. For example, floating-rate loans.

The main feature of such loans is that the bonds financing lending have a shorter term than the customer's actual loan. The institution therefore has to continuously sell new bonds as the old ones expire to be able to maintain financing of the loan. For example, if the institution has provided a thirty-year F1 loan, it has to sell new bonds every year to investors to finance it.

Even though there has always been high demand historically for mortgage credit bonds, this construction does imply a certain risk of a lack of investor interest when a large number of loans have to be financed. If there are not enough investors to buy new bonds, the auction will fail. This situation is dealt with in the law by the opportunity for mandatory extension of such bonds one year at a time. However, extension will probably also have a deterrent effect on future investors.

SDOs and the requirement for supplementary collateral
The introduction of SDOs as a new, regulatory bond type also introduced the requirement of continuous provision of supplementary collateral. The requirement obliges mortgage credit institutions issuing SDOs to furnish compensatory collateral to bond owners if housing prices

16 Mortgage credit institutions have multiple types of these risks – more than this article discusses. This chapter is not exhaustive concerning the Danish FSA's perception of liquidity risks for mortgage credit institutions

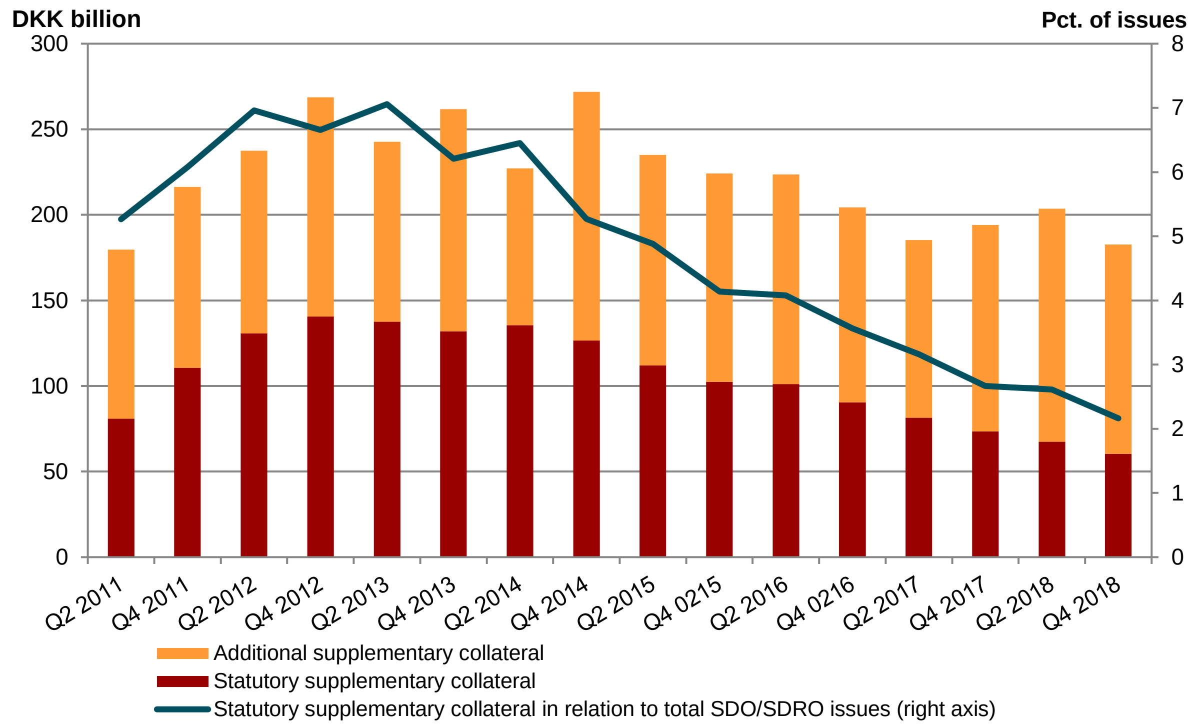
fall so much that the loan limit is exceeded (e.g. 80% for a standard owner-occupied residence). The legislation thus addresses (at least in theory) a risk to bond owners of the collateral for the loan falling if housing prices fall[17].

If housing prices do fall, the mortgage credit institution must provide collateral in the form of assets that meet the requirements to be able to function as collateral for SDOs[18]. If housing prices fall drastically, individual mortgage credit institutions can be forced to obtain financing from the market to meet the requirement for supplementary collateral. This implies a liquidity risk because it can be difficult to find financing or because the prevailing market conditions can make it expensive to finance the necessary supplementary collateral.

The vast majority of mortgage credit loans are financed using SDOs nowadays. The requirement on provision of supplementary collateral in the event of a fall in housing prices thus affects virtually all mortgage credit institutions.

Good economic times with rising housing prices will lead to a lower statutory requirement in structural terms for supplementary collateral for mortgage credit institutions. Figure 15 shows that the statutory requirement for supplementary collateral has declined since late 2012.

Figure 15: The statutory supplementary collateral has declined



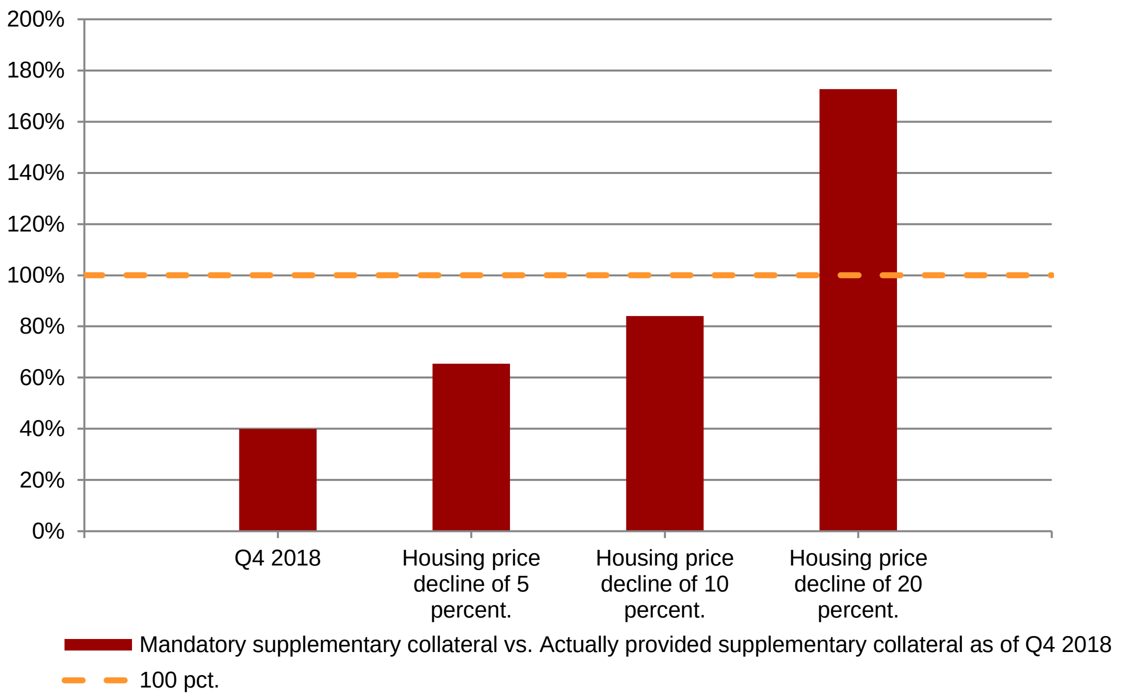
Source: Reports to the Danish FSA.

17 In traditional mortgage credit bonds, the lending limits only have to be observed when the loan is granted, and therefore not on a continuous basis. That reduces liquidity risk in the mortgage credit system. On the other hand, it increases the risk for owners of mortgage credit bonds. The mortgage credit system has historically been structured such that all risks except credit risks are passed on to the investors. The requirement for supplementary collateral introduces a liquidity risk for mortgage credit institutions, but also helps reduce the credit risk for investors in mortgage credit bonds.
18 These are only particularly secure asset types, and in practice, they are predominantly government bonds and exposures to credit institutions, including (on certain conditions) guarantees from credit institutions.

Furthermore, mortgage credit institutions provide additional supplementary collateral to achieve satisfactory investor evaluations of bonds, inter alia. Additional supplementary collateral for Q4 2018 comprised DKK 122 billion and is thus at the same level as the same period the preceding year.

Mortgage credit institutions stress test and annually assess the impact of a housing price drop on their statutory supplementary collateral. Figure 16 shows the impact that a fall in housing prices of 5, 10 and 20% respectively is expected to have on the statutory requirement for supplementary collateral in relation to actual supplementary collateral as at Q4 2018, when all other factors are retained. This is compared to the total supplementary collateral of the fourth quarter of 2018.

Figure 16: Statutory supplementary collateral in case of a drop in housing prices



Note: The figure shows mandatory vs. actually provided supplementary collateral as at Q4 2018, and the mandatory supplementary vs. actually provided supplementary collateral in the event of a price drop of 5, 10 and 20% respectively, estimated by selected mortgage credit institutions.
Source: Reports to the Danish FSA.

At the sector level, mortgage credit institutions continue to expect to be able to absorb a drop in housing prices of more than 10% with their most recently reported supplementary collateral, when all other factors are maintained.

The balance principle

Greater degrees of freedom have introduced liquidity risks that were never previously part of classic mortgage credit. These include the opportunity for expanded use of derivatives[19].

19 A derivative is a contract in which a counterpart takes on the risk via another underlying instrument for payment. Derivatives can therefore be regarded as a form of insurance against the risk they concern.

The increased degrees of freedom were also introduced in connection with the SDO regulation in 2007. In the classic mortgage credit system, payments between borrower and bond investors largely coincide in terms of timing and size. The classic perception is therefore also that, basically, there is no market or liquidity risk for mortgage credit institutions[20]. This approach used to be referred to as the balance principle and, since the introduction of the SDO regulation, as the 'specific balance principle'. An extra version of the balance principle was also formulated in 2007, the 'general balance principle,' which has brought new risks to the Danish mortgage credit system[21].

The specific balance principle still exists and is used extensively by mortgage credit institutions. The general balance principle is designed for banks issuing SDOs, but it is also used by mortgage credit institutions. Both versions provide the possibility of gross imbalances between borrower and bond investor payment flows. The general balance principle does, however, provide more options for gross imbalances that increase risks for mortgage credit institutions. Both versions of the balance principle apply narrow constraints for net imbalances in funding on mortgage credit institutions. To a certain extent, the mortgage credit institutions can use derivative contracts to even out any imbalances, so that they avoid violating the balance principle, even if there is disparity between loan and bonds.

The institutions have a tendency to explore the use of derivatives in their business, which is primarily driven by competition between them.

Mortgage credit institutions compete on the price of loans. A major component is therefore interest on the bonds used to finance lending. If a mortgage credit institution can sell its bonds at a low interest rate, it indicates high demand from investors. One of the things investors in mortgage credit are particularly interested in is the negotiability (market liquidity) of the bonds. They will therefore tend to be interested in bonds that are common on the market. This is further supported by the liquidity rules for credit institutions. Mortgage credit institutions issue bonds in series, which are groups of bonds with the same characteristics. Investors tend to be most interested in bonds from large series, as they are more negotiable. This often results in a slightly lower interest rate on the bonds, and thus also on the loans that belong to large bond series.

There are several ways that a mortgage credit institution can achieve large series. They can try to increase the balance through regular competition for mortgage credit customers. They can also offer fewer products on the market, which will then reduce the need to have many different bond series. Finally, they can have many different products, but only a few bond series, if the derivative contracts even out the differences between loan and bonds.

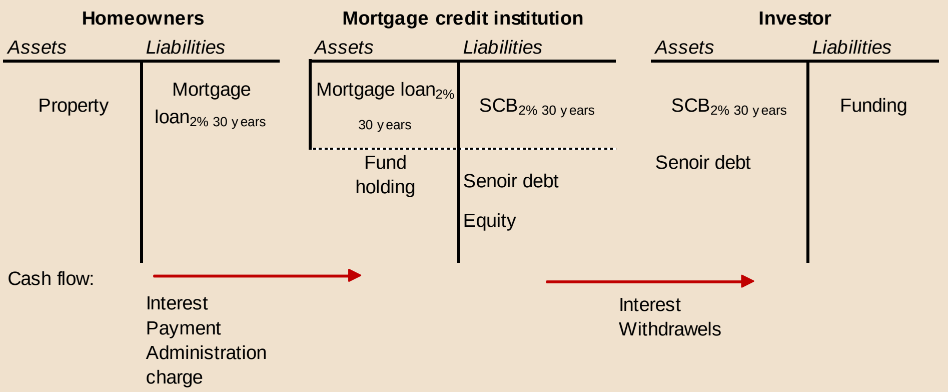
Using derivatives technically allows an institution to be able to offer mortgage credit loans with fixed interest rates in Danish kroner, financed by a variable interest rate bond in Euros (see the example in Box 5). By arranging an interest rate swap and a currency swap, the institution can stay within the balance principle on condition that the contracts and counterparts fulfil the requirements in the legislation. An institution can therefore comply with the balance principle, even though it sells a high number of loan products and issues few bond series.

20 Market risks refer to risks related to interest rates, options, currency exchange rates, etc.
21 See annex 3 for a more detailed description of SDO legislation and its significance to the balance principle.

Box 5: Example of imbalances under the balance principle

Borrower are presumed to take a 2% fixed interest loan with repayments. In the classic version (Figure 17), interest rate and instalment payments to the institution match withdrawals and interest payments to the investor. The mortgage credit institution retains the administration payments.

Figure 17: Classic mortgage credit – mainly credit risk

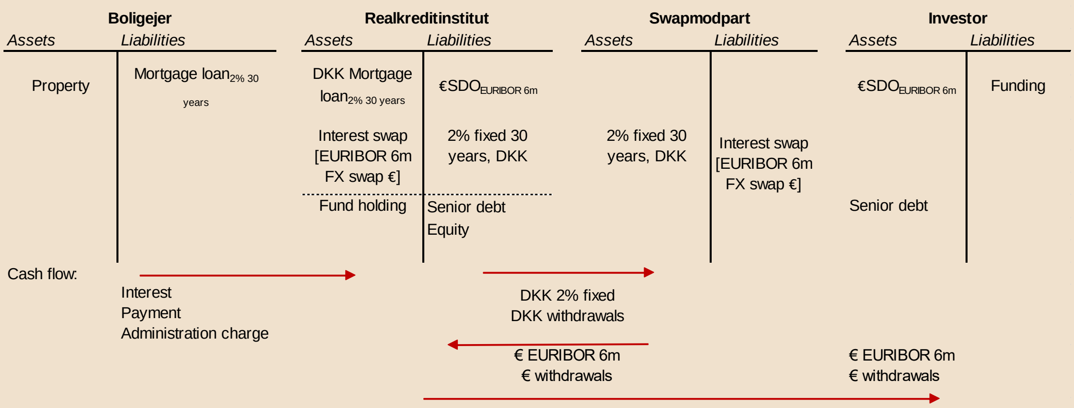


The payment flows in Figure 18 are much more complex:

1. Borrower pay interest, instalment payments and contributions equivalent to the payments on a 30-year fixed interest loan, with an interest rate of 2% to the mortgage credit institution.
2. The institution now issues a € SDO with variable interest rate given by EURIBOR 6M, which is bought by an investor. The institution simultaneously enters into an interest rate and currency swap with a counterpart.
3. The counterpart receives from the mortgage credit institution what corresponds to interest rate income and withdrawals on a 30-year fixed interest SDO at an interest rate of 2%. The mortgage credit institution receives from the counterpart what corresponds to the interest rate income and withdrawals on a variable interest € SDO given by EURIBOR 6M.
4. The institution pays the investor what corresponds to interest rate income and withdrawals on a variable interest € SDO given by EURIBOR 6M.

The net payment flow from the mortgage credit institution's side is then matched. However, there are significant gross imbalances, funding is complex and non-transparent, and the mortgage credit institution is exposed to counterpart risk through the swap counterpart.

Figure 18: Mortgage credit – greater use of the balance principle



This incurs a significant counterpart risk in the mortgage credit business, which has not traditionally existed. The risk consists of derivative contracts only serving a function as long as the counterpart can honour the contract. If the counterpart goes bankrupt, the mortgage credit institution is left with an imbalance that is not covered. This risk is particularly high for currency swaps, as they are not only linked to the interest payments, but to the entire principal of the loan. In addition, it can be hard to find counterparts in a tense market situation, especially counterparts with a certain rating. Finally, market fluctuations can mean that the market value of the contracts changes so much that the institution infringes the law's limits for exposures to other credit institutions.

In other words, there is considerable liquidity risk linked to the use of derivatives for funding loans compared to direct match funding. A weaker link between loan and bonds also clouds the transparency of the institution's business. That can particularly mean less demand from investors in times of crisis.

The Danish FSA is particularly aware of the liquidity risk and continuous use of the balance principle by institutions. It has conducted a survey to identify best practice in this field (see Box 6), which did not give rise to any specific supervisory response or demonstrate a need for the regulation to be any different. However, with regard to the importance of the problem to the stability of the financial system, the Danish FSA is however currently following up on what the boards of mortgage credit institutions have discussed, as a result of the survey, concerning risks linked to waiving the direct relationship between loan and bonds and the increased use of derivatives.

Box 6: Survey of the use of the balance principle by mortgage credit institutions

In the autumn of 2017, the Danish FSA asked mortgage credit institutions and relevant banks to respond to questions in relation to the use of the general balance principle.

The purpose of the survey was to identify best practice. The survey has not given rise to any specific supervisory responses.

The majority of mortgage credit institutions have decided to use the classic, specific version of the balance principle. The general version is currently only used in connection with niche lending, where there is a particular need for flexibility, or to reduce total funding risks.

The possibility of imbalances occurring is greater under the general balance principle. Use of derivative counterparts is therefore more common under this principle. Derivative use for limiting risks will generally be positive, seen in isolation. The need to use derivatives to comply with the risk limits in the balance principle can, however, reach such an extent that the operational and credit exposure risks can disrupt the stability of the foundation under the mortgage credit system. The Danish FSA believes that the institutions ought to limit derivative counterpart exposure in both versions of the balance principle, with regard to ensuring a solid foundation under the Danish mortgage credit system.

Based on its survey, the Danish FSA identified the following as an expression of best practice:

1. Mortgage credit institutions should only use the general balance principle when there are special grounds for doing so, and should not therefore use it to obtain short-term, cheap financing.
2. Institution boards should define parameters for how large an element of the issued SDOs has to be linked to derivatives to reduce imbalances, and to ensure that this element should only represent a minor part of all issues.
3. The mortgage credit institutions should apply tight risk management, focusing on derivative counterparts and the chances of renewing derivative contracts.
4. They should increase the number of derivative counterparts in the event of an increase in the need for derivatives. Their boards should define specific limits for this purpose.
5. The mortgage credit institutions should continuously consider options for concluding agreements with other derivative counterparts, including in instances when the credit quality of a counterpart falls to a level at which it can no longer be used.
6. Derivatives should be used in a manner in which the expiry date coincides with a possible refinancing date for bonds.

Capital requirement in a resolution situation
When BRRD was implemented in Denmark, it was decided to exempt the mortgage credit institutions from having to fulfil an MREL requirement (see Box 7). A debt buffer requirement of 2% of unweighted loans was introduced instead for the mortgage credit institutions. A minimum requirement was introduced for SIFI groups in May 2018, which means that the sum of the MREL requirement for the bank element and the capital and debt buffer requirement for the mortgage credit element must comprise at least 8% of the group's total liabilities.

Box 7: The debt buffer and MREL requirement
To ensure that a distressed credit institution does not cause simple creditor loss, a requirement has been introduced for eligible liabilities (MREL). Simple creditors are depositors (and the Guarantee Fund for Depositors), bondholders and the like. The requirement stipulates that there must be liabilities on the balance sheet, which in the event of serious difficulties, can be written-down and converted to core capital (bail-in).

The requirement for SIFI institutions is set at twice the regulatory capital requirement, so that they can continue to fulfil the capital requirement after a loss equivalent to the regulatory capital requirement and a bail-in. Non-SIFI institutions with a balance sheet worth less than EUR 3 billion of risk exposures are subject to an MREL requirement of between 3.5% and 6% above the regulatory capital requirements, calculated on their exposures. There is a supplement for non-SIFI institutions with a balance sheet value higher than EUR 3 billion of between 1.25% and 5% of RWA, depending on their size.

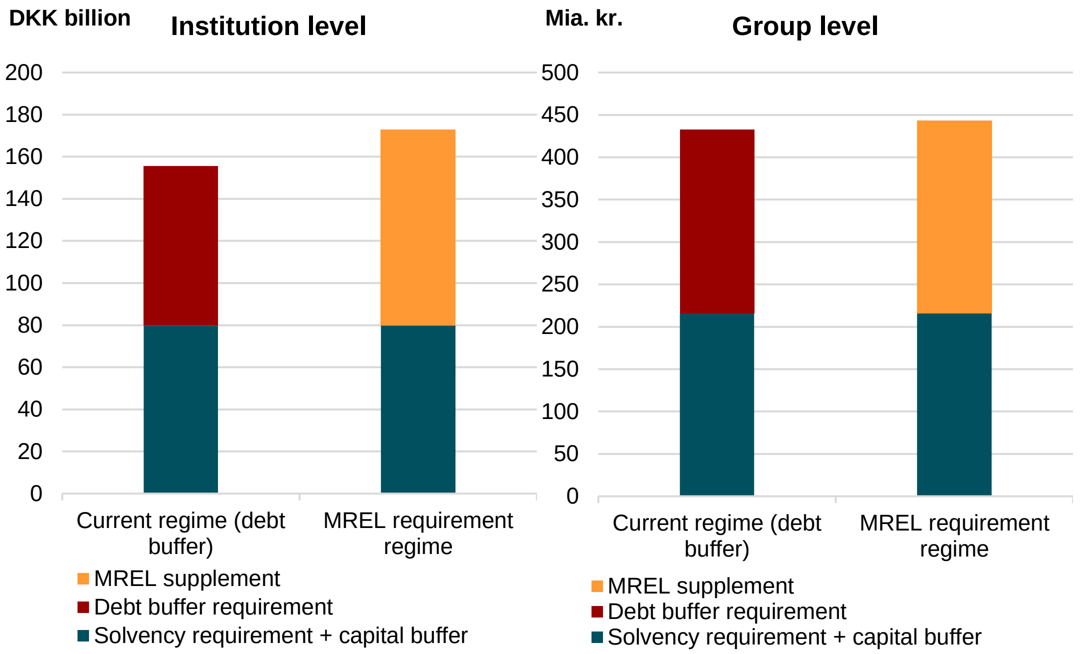
The MREL requirement can be fulfilled by a number of capital and debt types, e.g. non-preferential senior debt. Capital and debt must incur loss before simple creditors.

There is no MREL requirement applied to mortgage credit institutions. A debt buffer of 2% of non-weighted lending has been introduced instead. When the debt buffer requirement is calculated for groups with a mortgage credit institution, the liabilities used to fulfil the debt buffer cannot be concurrently used to fulfil the MREL requirement.

A minimum requirement was introduced for SIFI groups, which means that the sum of the MREL requirement for the bank element and the capital and debt buffer requirement for the mortgage credit element must comprise 8% of the group's total liabilities.

The Danish FSA's analyses show that an MREL requirement or a capital and debt buffer requirement for the biggest SIFI groups (which includes mortgage credit institutions) will be largely the same at group level (given a range of predetermined assumptions), cf. Figure 19. The intention is that the group must be retained in a resolution situation, which is why this is the most important methodology. At institution level, the MREL requirement will be a little higher than the capital and debt buffer requirement.

Figure 19: The debt buffer requirement is on a par with an MREL requirement



Note: The figure to the left contains data at institution level for Realkredit Danmark, Jyske Realkredit, DLR Kredit and Nykredit Realkredit (joint calculation for Nykredit Realkredit and Totalkredit). The figure on the right contains data for the Danske Bank group, Jyske Bank group, Nykredit Realkredit group and DLR Kredit. A debt buffer requirement of 2% and minimum requirement of 8% of the group's total liabilities applies to both figures. The minimum requirement of 8% of the group's total liabilities is also presumed to apply during the MREL requirement regime. The capital requirement was calculated as at mid-2018, with fully phased-in SIFI buffers and capital retention buffers. The counter-cyclic capital buffers is set to 0 in Denmark, while for foreign exposures it is set at the level at the time of reporting.
Source: The Danish FSA's own calculations

The debt buffer requirement is less volatile than an MREL requirement. This is because the debt buffer requirement depends on unweighted lending, whereas the MREL requirement depends on risk-weighted assets held by the institutions. The risk-weighted assets are more sensitive to economic cycles than unweighted lending, which can mean greater need to raise capital in the event of a recession. All things being equal, the liquidity risk is thus increased for mortgage credit institutions under an MREL requirement in relation to a debt buffer requirement.

5. The Supervisory Diamond

The Supervisory Diamond for mortgage credit institutions is a supervisory instrument designed to prevent excessive risk taking for individual institutions. Among other things, its benchmarks reduce some of the credit and liquidity risk for mortgage credit institutions. It was introduced in 2014 with effect from 2018, but only from 2020 for the benchmarks for interest-only and short-funded loans. At this point, mortgage credit institutions are already within all benchmarks at the sector level[22]. The Supervisory Diamond's benchmarks are described in Box 8.

Box 8: Supervisory Diamond benchmarks

The Supervisory Diamond for mortgage credit institutions contains five benchmarks which indicate what the Danish FSA considers a mortgage credit institution with an elevated risk.

1. **Lending growth**

Lending by mortgage credit institutions cannot increase by more than 15% per year in four areas since doing so may be at the cost of credit quality.

2. **Debtor's interest rate risk**

The proportion of variable rate loans with a fixed-interest term of up to two years and exceeding 60% of the property's value must be below 25% of total lending. This limits the amount of risky loans. The benchmark applies only to loans to private persons and tenanted residential properties.

3. **Restriction of interest-only loans for private individuals**

The proportion of interest-only loans which exceeds 60% of the value of the property must be less than 10% of total lending. This limits the credit risk for mortgage credit institutions.

4. **Limitation of loans with short-term funding**

Mortgage credit institutions cannot refinance more than 25% of their total lending portfolio each year, and no more than 12.5% per quarter. This limits the risk of debt at extraordinarily high interest rates being issued on refinancing.

5. **Concentration risk**

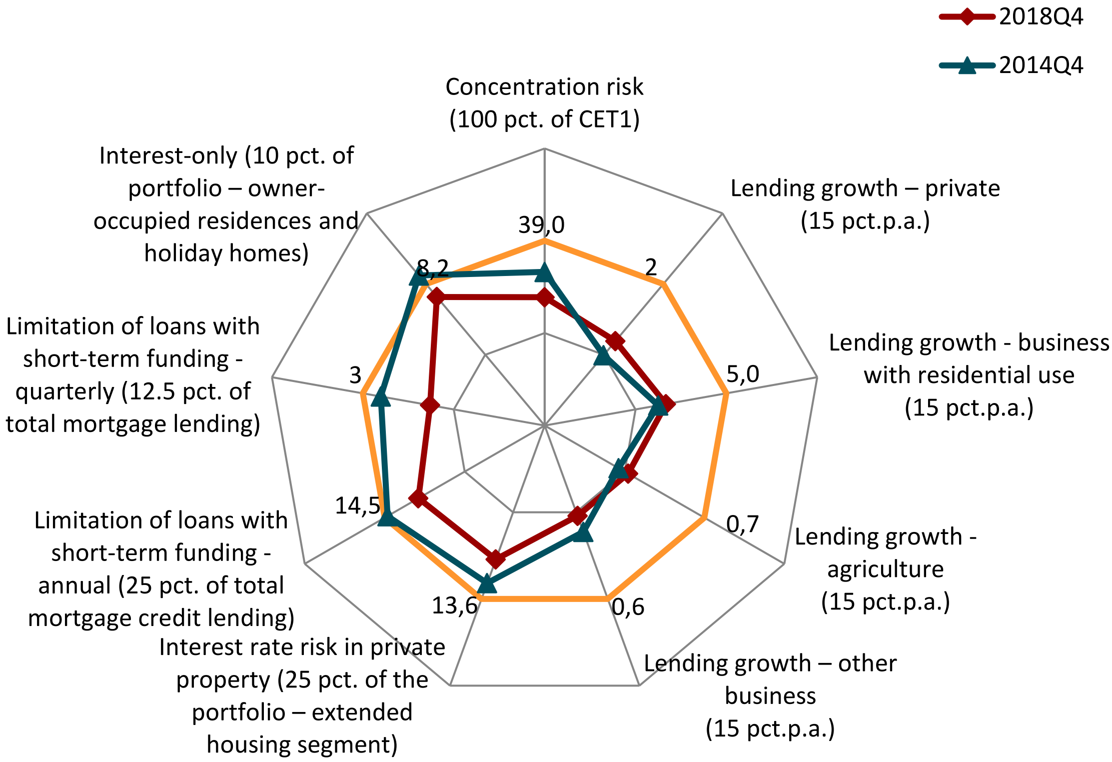
The sum of the 20 biggest net exposures must be lower than the institution's actual core capital. This reduces the risks associated with having a significant portion of lending distributed across a few large customers.

Although the Supervisory Diamond did not come into force until January 2018, the mortgage credit institutions have adapted to the benchmarks over a longer period of time. Figure 20 indicates that since 2014, mortgage credit institutions at sector level have moved further

22 Sector level is calculated as all mortgage credit institutions taken together.

within the framework for the majority of benchmarks. So far, two institutions have received a risk warning, both as a result of exceeding lending growth.

Figure 20: At the sector level, all benchmarks in the supervisory diamond for mortgage credit institutions are respected



Note: The figure shows where mortgage credit institutions are placed at sector level in 2014 and 2018 (blue and red bands), in relation to the benchmarks in the supervisory diamond (yellow band). The benchmark for lending growth and loans with short-term funding is divided into subcategories. The values in the figure belongs to the red band – Q4 2018.
Source: Reports to the Danish FSA.

On the one hand, the benchmarks have been set to counter excessive risk taking. On the other hand, they make it possible for healthy institutions to run a profitable business, so that the necessary credit can continue to be supplied to undertakings and households. The supervisory diamond is insufficient in itself to address the risks of mortgage credit institutions. It is a supplement to other regular monitoring and to the guidelines and rules laid down through regulation.

6. New rules on covered bonds on the way

'Covered bonds' is a term used for the type of bonds issued by Danish mortgage credit institutions and others to finance mortgage credit loans to Danish homeowners. The new EU rules on covered bonds lay down common rules for financial undertakings that use them. The proposal has potentially significant implications for Danish mortgage credit institutions, and Denmark therefore has a significant interest in how the rules are formulated. The Commission's proposal is based to a large extent on the Danish mortgage credit model, and largely protects Danish interests in retaining the mortgage credit system.

The Commission published a proposal for a new directive on 12 March 2018 on the issuing and special public supervision of covered bonds, as well as for a change of the regulation on supervisory requirements for credit institutions and investment undertakings (the CRR regulation). The proposals should be regarded as a cohesive package and are part of the action plan for the Capital Market Union (CMU), which is a collective term for a number of measures within the EU's financial field.

Their purpose is to create a common basis for regulation of covered bonds in the EU. The proposals are based on fundamental elements in well-functioning national covered bonds systems, including Danish mortgage credit.

The Council of Ministers and the EU Parliament concluded a political agreement on their content on 26 February 2019. The ECON committee approved the agreed text on behalf of the European Parliament on 1 April 2019. Parliament adopted the matter during a plenary session on 18 April 2019.

The directive will have most significance outside Denmark
It specifies core elements of covered bonds, thus creating a definition that can be used across EU financial regulation. This also implies that the directive determines the basic characteristics of covered bonds, the special supervision when they are issued, the rules governing the designation of European covered bonds and the requirements for competent authorities within the field of covered bonds. Below is a list of selected requirements in the directive.

Given that the directive is based to a great degree on basic elements from the Danish (and other) mortgage credit system, the new rules will primarily affect financial undertakings in other EU states. For example:

- Authorisation is required from the competent financial supervisory authority to issue covered bonds, which has not been the case everywhere until now.
- Owners of covered bonds are guaranteed legal recourse to the institution by the directive, plus they can issue a claim against the capital centre and bankruptcy estate in the event of the issuer going bankrupt.
- The guidelines for what can be financed using covered bonds have been tightened to being assets that are either very secure in their own right or are secured by a pledge against a physical asset, e.g. immovable property.
- The institution is made subject to a liquidity cover requirement and a cover requirement at capital centre level. However, this is regulated in Denmark by the balance principle and the Mortgage Credit Act.

- National authorities shall appoint a special public supervision with the new covered bonds rules.

Changes in the Capital Requirement Regulation
Changes in the regulation also imply a change in the CRR (Capital Requirement Regulation), which tightens requirements for when covered bonds can achieve capital-related priority handling. This, then, is also an indirect regulation of the characteristics of covered bonds. The new requirements introduced in this manner include:

- a requirement on capital adequacy for assets of at least 2% of the bonds, which entails that the institution must have more collateral behind issued bonds than the bond owner can require in principle. This further protects the bond owner in the event of the assets falling in value, e.g. if homeowners default on their loan. The requirement for capital adequacy is also new in Denmark. But Danish mortgage credit institutions have always had a certain amount of capital adequacy, including as a result of Danish legislation and with regard to the credit rating bureaus
- a requirement on observing the lending limit (e.g. 80% for an ordinary mortgage credit loan for owner-occupied homes) for the full term of the loan. This implies that the institution needs to regularly monitor the property's value. This is a closer specification of applicable law
- that the requirement for the quality of exposures to other credit institutions providing collateral for covered bonds is relaxed a little.

The implications for Denmark
The core elements of the Danish mortgage credit system can be contained by the directive, and therefore retained. This is of vital importance to the Danish mortgage credit system staying as it is. However, the institutions will have to adapt to new requirements. These include in relation to the above requirements on capital adequacy.

The directive includes a large number of options for member states when implementing it into national law. These are the result of the political process, where it has been important to be able to accommodate the well-functioning and very different national mortgage credit systems found in Europe. What it means for Denmark is that there are opportunities to use those options to relax financial regulation of the mortgage credit sector.

The Danish mortgage credit system is currently subject to extensive regulation, which has traditionally limited risk in the system. As described in Chapter 4, this regulation has been relaxed by the introduction of the general balance principle. In addition, regulation has also been relaxed in other areas. Improved opportunities have been introduced for mortgage credit institutions to offer interest-only loans and longer terms, higher loan limits for holiday homes and better opportunities for pledging assets without alternative possible uses, e.g. digital infrastructure such as fibre net cables.

With regard to the Danish mortgage credit system's importance to financial stability; it is important to avoid more complexity and risk in the system, which can adversely affect investor demand in times of crisis.

7. Administration charges – notification rules to protect the consumer

Administration charges on housing loans have risen considerably for a number of years. Increases in administration charges can mean steep rises in customer payments and affect their disposable income. Customers with fixed interest rate are therefore not guaranteed a fixed instalment payment for the full term of the loan, and customers with variable interest rates can risk an increase in instalment payments additional to an increase in interest rates. Several institutions introduced large increases in administration charges in 2016. Since then, administration charges have been relatively stable[23]. New notification rules within this area were introduced in 2017, intended to ensure that institutions cannot make increases in administration charges without good reason.

The rules mean comprehensive and complex requirements for notification, statements and explanations that mortgage credit institutions must incorporate into notices of increases in e.g. administration charges. The requirements are intended to help ensure transparency concerning the decision made by the institutions. They also ensure greater awareness of whether institutions issue their notifications correctly.

The rules have been changed to ensure transparency for consumers. For example, it must be clearly explained why increases are being notified, what justifies the increase and the basis on which it will be made (see Box 9). Consumers are thereby ensured a real chance to understand the basis for the increase and to act if they feel they cannot accept it. They will also gain an overview of what options they have concerning the notification. The legal repercussions in the event of failure to notify have also been tightened, along with an extension of notification periods. The institutions face major consequences if they fail to comply with the notification rules, as they cannot, in such instances, charge increases in e.g. administration charges from customers.

23 https://www.kfst.dk/media/54082/2019-realkreditredegoerelse.pdf

Box 9: Notification rules

A political agreement was made in January 2017, which tightened the rules for notification of changes in terms and conditions concerning administration charges and other fees to the detriment of customers. The agreement was made against a background of a number of contentious increases for existing loans in mortgage credit institution administration charges in the spring of 2016. The new measures were implemented via the Financial Business Act and the Executive Order on Best Practices for Mortgage Credit.

The new rules in brief

Notification for increases in administration charges, interest rate supplements and fees was increased from three to six months. The debtor was thus given time to consider the private economic consequences, investigate alternatives and possibly terminate the loan within the notice period. It was also ensured that the mortgage credit institutions could still be able to adjust their earnings when they needed to do so.

The full reason for an increase must be comprehensively stated in the notification. Mortgage credit institutions and banks have to explain the specific circumstances causing an increase. They also have to explain the key issues that have influenced the extent of the increase, and the relative importance in relation to each other they may have.

The legal effect of failure to give notification

Failure by an institution to fulfil the requirements for justifying or notifying an increase is subject to civil law. That means notifications have no legal status if the formalities are not observed. There will be significant financial consequences for mortgage credit institutions and banks if they fail to observe the notification rules. They can only charge correctly-notified, fully-justified increases in administration charges and interest rate supplements.

Ensuring mobility

A ban was introduced concurrently on the charging of redemption charges during the notification period in the event of an increase in administration charges and interest charges. Consequently, brokerage fees and spread cannot be applied in the event of redemption of a loan due to receiving a notification. Such supplements are intended to enhance mobility for debtors who want to change institution as result of notification of an increase.

8. Annex 1: Mortgage credit institutions, financial ratios

Table 1: Financial statements of mortgage credit institutions 2014 – 2018

						Change
DKK millions	*2014*	*2015*	*2016*	*2017*	*2018*	*2017-2018*
Income statement						
Interest income	93,677	86,939	78,223	73,150	69,524	-5.0%
Interest expenses	71,302	63,252	54,625	49,236	46,251	-6.1%
Net interest income	22,375	23,686	23,599	23,914	23,274	-2.7%
Dividends from shares, etc.	74	134	173	177	252	42.8%
Fee and commision income	2,603	3,186	3,013	2,973	2,833	-4.7%
Fees paid and commision expenses	4,689	5,595	5,542	6,197	6,380	2.9%
Net interest and fee income	20,363	21,412	21,243	20,866	19,980	-4.2%
Value adjustments	-746	-1,132	805	870	-916	-205.2%
Expenses for staff and administration	4,780	4,828	5,876	5,561	5,373	-3.4%
Amortisation and impairment of intangible and tangible assets	1,050	2,155	176	237	99	-58.1%
Impairment losses on loans and receivables etc.	4,707	1,868	1,209	874	905	3.5%
Result from investments in associates and affiliates	-374	3,195	3,206	5,134	3,933	-23.4%
Profits before tax	8,713	14,591	18,853	21,236	18,453	-13.1%
Tax	2,336	3,098	3,359	3,417	2,980	-12.8%
Profit for the year	6,378	11,493	15,494	17,820	15,473	-13.2%
Balance sheet items						
Receivables from credit institutions and central banks	781,905	731,966	793,107	851,461	844,379	-0.8%
Loans	2,636,353	2,652,662	2,720,556	2,819,304	2,883,600	2.3%
Loans ex. repo	2,636,353	2,652,662	2,720,556	2,819,304	2,883,600	2.3%
Bonds	234,826	199,649	204,058	205,372	167,003	-18.7%
Shares	4,379	5,021	5,630	6,095	6,961	14.2%
Investments in associates and affiliates	31,709	36,406	39,464	47,522	49,904	5.0%
Other assets	22,739	17,154	14,976	12,594	10,174	-19.2%
Total assets	3,717,482	3,647,170	3,781,081	3,945,763	3,964,820	0.5%
Debt to credit institutions and central banks	698,974	665,453	676,904	711,303	727,340	2.3%
Issued bonds	2,782,031	2,749,817	2,859,033	2,971,770	2,970,099	-0.1%
Liabilities, total	3,532,623	3,452,839	3,569,879	3,720,646	3,734,095	0.4%
Subordinated debt	15,205	12,907	19,278	15,792	15,861	0.4%
Equity	168,931	180,804	191,416	208,651	214,350	2.7%
Total liabilities	3,717,482	3,647,170	3,781,081	3,945,763	3,964,820	0.5%

Note: The figures are based on the institutions that existed in the individual years. The table shows only selected items. In 2018, the mortgage credit sector consisted of Nykredit Realkredit, Realkredit Danmark, Totalkredit, Jyske Realkredit, DLR Kredit, LR Realkredit and Nordea Kredit. In the results of investments and equity, Totalkredit is a double entry due to it being part of the Nykredit Group. The result of investments can mainly be attributed to subsidiaries in Nykredit Realkredit: Totalkredit and Nykredit Bank. Subsidiaries are included with their net earnings. This means that, in the part of the result attributable to Totalkredit, contribution margin income and expenditure is included with banks in connection

with the dissemination and administration of the mortgage credit institution. In Nykredit Bank, the net result is also affected by the mortgage credit business and customer relations, e.g. value adjustments of interest rate swap agreements entered into to hedge customers' interest rate risk.
Source: Reports to the Danish FSA.

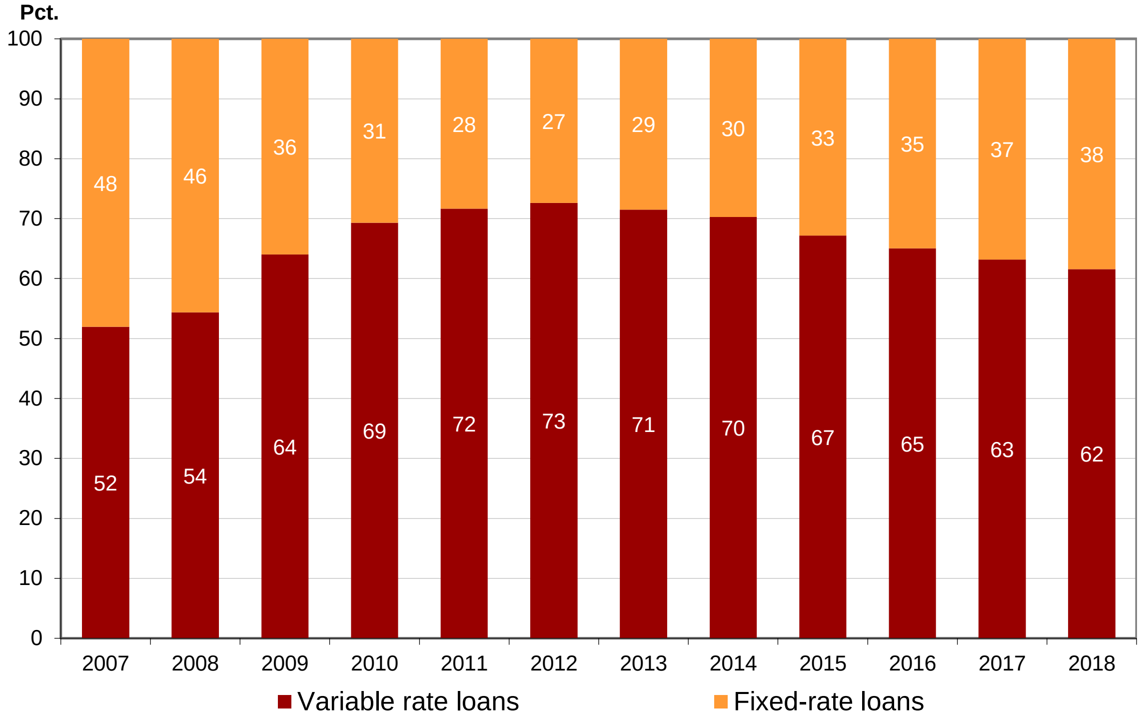
Table 2: Mortgage credit institutions, financial ratios 2014 – 2018

	2014	*2015*	*2016*	*2017*	*2018*
Capital ratio	20.8	23.1	23.6	23.5	23.7
Core capital ratio	20.0	21.5	21.8	21.6	21.9
Common Equity Tier 1 capital ratio	19.1	20.9	20.7	20.8	21.1
Return on equity before tax for the year	5.2	8.4	10.1	10.2	8.7
Return on equity after tax for the year	3.8	6.6	8.3	8.9	7.3
Income/cost ratio	1.8	2.6	3.5	4.1	4.2
Accumulated impairment ratio	0.5	0.4	0.4	0.4	0.4
Impairment ratio for the year	0.2	0.1	0.0	0.0	0.0
Lending relative to equity	15.6	14.7	14.2	13.4	13.4

Note: The table shows only selected items. The figures are based on the institutions that existed in the individual years.
Source: Reports to the Danish FSA.

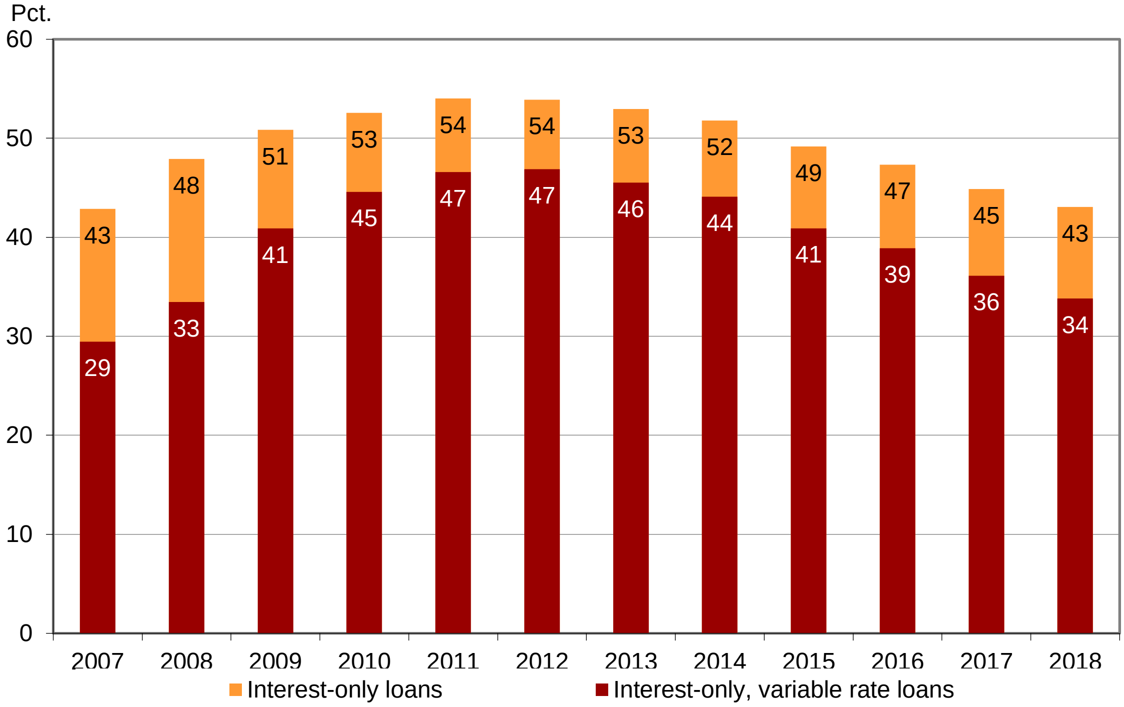
9. Annex 2: Mortgage credit institutions, breakdown of lending

Figure 21: Percentage of fixed-rate loans in relation to variable rate loans has risen since 2012



Note: The figure shows the mortgage credit institutions' share of variable and fixed-rate loans.
Source: Danmarks Nationalbank, MFI statistics

Figure 22: Proportion of interest-only loans and, among these, variable interest loans is declining



Note: The figure shows the total share of interest-only loans, relative to the mortgage credit institutions' total lending. The red column indicates the percentage of interest-only loans that also have variable interest rates.
Source: Danmarks Nationalbank, MFI statistics.

10. Annex 3: SDO legislation and the significance of the balance principle

A major change in the legal basis for mortgage credit institutions was implemented in 2007, when the Danish Parliament adopted the Act on Covered Bonds, SDOs, as a result of an EU directive. As with traditional mortgage credit bonds, SDOs are issued on the basis of loans secured by real estate mortgages. The introduction of SDOs allowed banks to issue them. In addition, SDOs allowed greater flexibility in the products than traditional mortgage credit bonds, which have a greater direct link between the loan taken out and the issued bonds.

The greater flexibility was the result of the balance principle being changed and divided into two versions. The original version of the balance principle was only tailored to mortgage credit institutions. The new additional version, the general balance principle, was designed for banks. Mortgage credit institutions were also given the opportunity to use the new version, in order to counter any possible competition on bond issuance from banks.

The classic, original balance principle is called the 'specific balance principle,' and is difficult to comply with in practice without an almost one-to-one relationship between payment flows to and from borrower and bond investors.

The general balance principle has looser constrictions concerning future imbalances. This avoids a one-to-one relationship between payment flows to and from borrower and bond investors to the same degree as the specific balance principle. Subordinate financial instruments etc. can be used to maintain imbalances between incoming and outgoing payments within risk guidelines determined by regulation.

The general balance principle is not only used by banks issuing SDOs, but has also become more common in certain mortgage credit institutions. This is due to joint funding of priority loans based on bank balances and for other commercial reasons. The risk of switching even further to the use of the general balance principle is that transparency is reduced, and that counterpart and resolution risk increase.