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Optimism in the banking sector provides breeding ground for increased risk-taking

- The largest banks achieved their best ever performance in 2016, boosted by very low loan impairment charges.
- The banks comply with the current capital requirements, but a few systemic banks will fall short of the buffer requirement in the stress test.
- The combination of low interest rates, high asset prices and an emerging boom may increase risk-taking and put pressure on the banks' credit standards.

The banks' targets

for return on equity seem high

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have less capital than other Nordic banks

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Summary and assessment

Record high bank earnings underpinned by very low loan impairment charges

The largest banking groups achieved their best ever overall performance in 2016. The level of earnings has risen substantially over the last three years, and the banks' financial statements for the 1st quarter of 2017 also recorded sound profits. As a result of the high earnings, the banks also recorded the highest return on equity, ROE, since 2007. The banks' higher earnings are underpinned by very low loan impairment charges, which are mainly attributable to a high level of reversals of previous years' loan impairment charges. As losses will naturally be incurred on part of the lending portfolio in connection with the banks' current lending, the low level of impairment is expected to be temporary.

High ROE targets

The managements of several Danish banks have announced target returns of up to 12.5 per cent p.a. on the book value of equity. The ROE targets appear high, given the very low level of interest rates. Moreover, in their ROE targets, the banks should take into account the temporary nature of the positive effect on earnings of the low level of loan impairment charges.

Adjustment to low interest rate environment continues

The banks' net interest income is under pressure from continued limited demand for new loans and a low interest rate level. To a certain degree, the banks have been able to compensate for this by increased income from administration margins payable on mortgage loans and other fees. On the expenditure side, there has been strong focus on increasing efficiency and reducing costs.

Large disbursements to shareholders

In step with their earnings growth, the large listed banks have considerably increased their disbursements to shareholders in recent years. In 2016, Danske Bank and Sydbank disbursed virtually their entire profit for the year after tax to their shareholders as both dividends and share buy-backs.

Lower capital base for large Danish banks than for other Nordic banks

The capital adequacy of Danish banks grew substantially from 2008 to 2013, when the largest Danish banks met the fully phased-in EU 2019 requirements. Since then, the banks overall have not increased their Tier 1 ratio to any notable extent. By Nordic comparison, the large banks in Sweden and Norway have continued to build up their capital adequacy. This should be seen in the context of those countries tightening capital requirements and activating the countercyclical capital buffer.

A few systemic banks close to buffer requirement in stress test

Results from Danmarks Nationalbank's accounts-based stress test show that, in a severe recession scenario until 2019, all systemic banks will still observe the current minimum requirements. In the same scenario, a few of the systemic banks will have a small capital shortfall relative to their total requirement, including capital buffers. In the event of non-compliance with the buffer requirements, banks become subject to a number of limitations, e.g. limitations of dividend payments. Moreover, the banks should expect that their access to external funding in the financial markets may be challenged.

Liquidity requirements observed with a margin

All banks observe the liquidity coverage ratio, LCR, with a considerable margin. That is appropriate as the LCR may be highly volatile. The systemic banks must also observe LCR requirements in the currencies that are significant for the individual bank. The foreign exchange requirement is 80 per cent from 1 April and 100 per cent from 1 October 2017.

Less liquidity in the repo markets

Both market participants and international organisations are focusing on declining repo market liquidity in the light of accommodative monetary policies and the structural changes in the market, e.g. as a result of new regulation. A well-functioning repo market is important to liquidity in other financial markets. There were significant fluctuations in prices in the repo market in euro at the most recent turn of the year, while the fluctuations in the repo market in kroner seem to be more limited.

Favourable market developments foster vulnerability in case of changes in risk perception

The stress level in the financial markets has been low over the last half year despite periods of heightened political uncertainty. The markets are generally characterised by optimism triggered by the incipient boom, the low level of interest rates and the high asset prices. In such a situation, increased risk-taking in their market exposures may make investors and banks vulnerable to a sudden change in the perception of risk. It is important for financial sector participants to take this risk into account.

Banks' credit standards challenged

Demand for new loans remains limited. Overall, the banks cannot expect to considerably increase their lending in the coming years. The economic upswing, rising house prices and the continued low level of interest rates may lead to a general perception of low credit risk. This may intensify the pressure on the banks' credit standards. Now is the time for the banks to avoid providing the loans that will result in higher loan impairment charges when the economic cycle reverses and the stress level in the financial markets intensifies.

Developments in Copenhagen housing market similar to pre-crisis level

Unlike the pre-crisis period, so far only Copenhagen has seen significant increases in house prices and mortgage lending in recent years. If house price developments and hence credit growth were to spread to the rest of the country in the coming years, this would lead to growing concerns about build-up of systemic risks.

Housing taxation once again has a stabilising effect

The new housing taxation agreement concluded in May restores the link between housing taxes and property values from 2021. This will have a stabilising effect on house prices and hence the economy. The agreement will also enhance taxation equality geographically and across housing types, thereby dampening the current regional differences in house price developments. Expectations of housing tax adjustments may already impact house prices now and until the agreement becomes effective.

As part of the agreement, any permanent structural additional revenue from housing taxation should be reversed to homeowners in the form of lower housing tax rates. If so, there is risk that this would be a procyclical easing which would reduce the stabilising effects of housing taxation.

Steep rise in prices of rental properties

Having risen strongly, the prices of rental properties are now back at the 2007 level immediately before the financial crisis set in and prices dropped considerably, resulting in substantial losses for some banks. The requirements for return in the rental property market have generally decreased. Besides the low level of interest rates this may reflect a perception among investors of property investments as less risky. The financial market participants appear to be more robust than previously. One reason is that solvency is generally increasing in the property companies to which the banks are exposed.

Low price for viable crisis management of mortgage banks

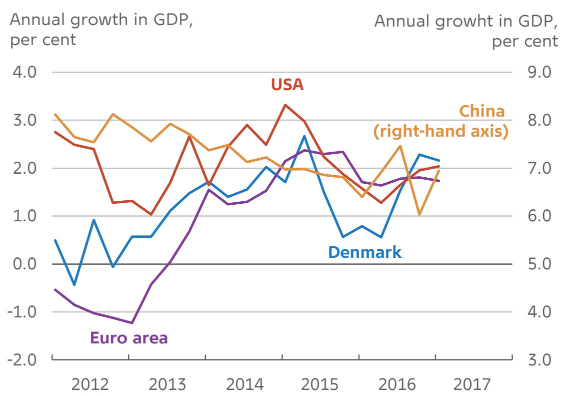
In the Danish implementation of the new recovery and resolution regime, BRRD, mortgage banks are exempted from having to meet a minimum requirement for own funds and eligible liabilities, MREL. According to an analysis by Danmarks Nationalbank, viewed in isolation, the introduction of an MREL for mortgage banks of 8 per cent of total liabilities would correspond to an increase in administration margins of between 0.02 and 0.11 percentage point. That is a low price for protecting households, firms and the general economy if a mortgage bank were to become distressed.

Macroeconomic and financial background

The global economy is recovering
The global economy is in a broad upswing, cf. Chart 1. Growth in industrial production and world trade has increased among the advanced economies and the emerging market economies alike. Consumer and business confidence is high in the euro area, the USA and China. While the US labour market is tightening and wage increases are mounting, the euro area still has spare resources and low nominal wage increases.

The Danish economy is in a balanced upswing and gradually heading towards a boom. The recovery has led to increased pressure on labour resources and other production capacity. After a couple of years of very low increases in consumer prices, inflation is now rising. In the Danish housing market overall, prices have flattened in recent months. In Copenhagen, price growth remains high and may be driven by self-fulfilling expectations.

The global economy is recovering Chart 1

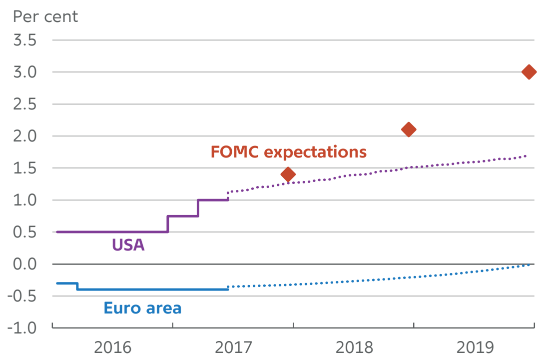


Note: The most recent observations are from the 1st quarter of 2017.
Source: Macrobond.

Interest rates raised in the USA and maintained in the euro area
In March 2017, the Federal Reserve raised the Fed funds target rate by 0.25 percentage point. This is the third raising of interest rates in the USA since the financial crisis. Accordingly, the target interval for the monetary policy rates is 0.75-1 per cent, cf. Chart 2. The members of the Federal Open Market Committee, FOMC, expect to gradually raise interest rates over the next years. The market also expects a gradual, but more limited rise in interest rates.

In the euro area, the ECB has maintained the monetary policy interest rate at -0.4 per cent, and despite the slight increase in market participants' interest rate expectations since the beginning of 2017, interest rates are still expected to be negative until the end of 2019. The current low level of interest rates is supplemented by the bond purchase programme, which was reduced from 80 to 60 billion euro from April 2017 and runs until December 2017 with the option of extension. In Denmark, Danmarks Nationalbank's rate of interest on certificates of deposit is still lower than the ECB's deposit rate. Due to low volatility in money market rates both in the euro area and in Denmark, the money market spread has been very stable for an extended period of time.

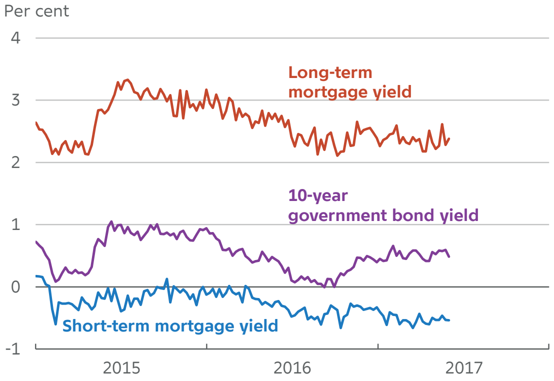
Expectations of rising interest rates Chart 2



Note: The Fed funds target rate shows the upper limit for the target interval, currently 0.75-1 per cent. FOMC expectations are from March. The broken lines indicate the market expectations as at 6 June 2017.
Source: FOMC, Macrobond and Scanrate Rio.

Development in Danish bond yields

Chart 3



Note: The short-term mortgage yield is the average of yields on 1- and 2-year non-callable bonds, while the long-term mortgage yield is the yield on 30-year callable bonds. The 10-year government bond yield is the 10-year yield to maturity. The most recent observations are from 6 June 2017.
Source: Finance Denmark and Nordea Analytics.

The yield curve has steepened

In the autumn of 2016, long-term government bond yields in the USA and the euro area rose, e.g. due to higher market-based inflation expectations, and have been kept at the same level since then. During the same period, short-term bond yields have remained unchanged at a low level, resulting in a steeper yield curve. Long-term Danish government bond yields have mirrored those of the euro area and the USA, while mortgage bond yields have been more stable, cf. Chart 3. Short-term mortgage yields have fallen since the beginning of 2017, in the context of the gradual decline in the supply of the shortest fixed bullets. The supply has declined as changes in Danish mortgage banks' administration margins have increased the incentive for borrowers to choose loans with longer fixed-interest periods.

Capital losses for bond market investors on normalisation of interest rates

Long-term interest rates remain very low, viewed in a longer perspective. As a result, the price sensitivity of long-term bonds is very high, cf. Box 1. The prospects of higher growth and inflation indicate that, in the longer term, interest rates will rise to levels well above the current ones. The consequences for the financial markets of an increase in the level of interest rates depend on the adjustment process. If interest

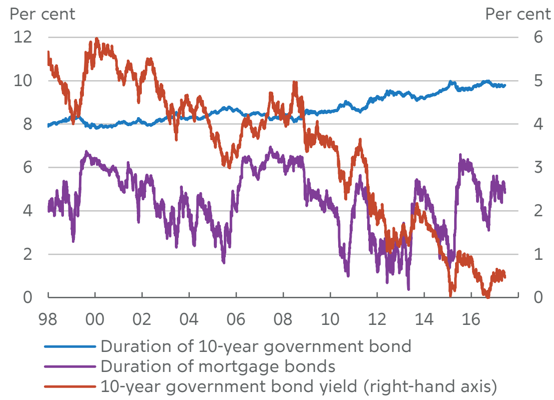
Bond price sensitivity to interest rates

Box 1

The very low level of interest rates implies high price sensitivity of long-term bonds to changes in interest rates. In the Danish bond market, long-term government bonds and mortgage bonds account for around 10 per cent and 26 per cent of the market, respectively[1]. The price sensitivity of a bond to changes in interest rates is often expressed by the duration concept. The duration measures how much a change in the level of interest rates impacts the bond price. For a non-callable bond, there is a negative relationship between interest rate and duration, implying high price sensitivity at the current level of interest rates. At the level of interest rates in April 2017, an investor who has invested e.g. kr. 100 in a 10-year government bond would lose just under kr. 10 at a rise in interest rates of 1 percentage point, cf. Chart A.

Interest rates and duration

A



Note: For the 10-year Danish government bond, the Macaulay duration is shown. The duration of mortgage bonds is the option-adjusted duration (OABPV) in the Nykredit Total Index, consisting of only callable mortgage bonds. The most recent observations are from 6 June 2017.
Source: Nykredit, Nordea Analytics and own calculations.

For callable mortgage bonds, the relationship between interest rates and duration may be both negative and positive. That is why the duration of such bonds has both increased and decreased during the period of falling interest rates. The reason is the borrower's option to redeem the loan at par at any time. The call option causes the price around par to become less interest rate sensitive, cf. Chart B. It also means that a positive relationship between interest rate and price may occur at prices just above par. If interest rates increase from the current low level, the duration of callable mortgage bonds may rise substantially. This was seen e.g. in connection with the substantial interest rate hike in the 2nd quarter of 2015.
Continues

1. Long-term bonds are bonds with remaining maturities of 5 years and above. Mortgage bonds include fixed-rate callable bonds. The shares were calculated in April 2017.

rates increase gradually in step with continued economic recovery and higher inflation, the adjustment process may be smooth. The risks are linked to a situation of unexpected and sudden interest rate hikes due to a shift in market expectations. In such a scenario, strong price adjustments and high volatility in the financial markets may lead to considerable capital losses on portfolios of long-term bonds, with negative implications for highly leveraged market participants who regularly have to post margin requirements.

Limited banking sector exposure to capital losses
The relatively substantial rise in long-term yields in the 2nd quarter of 2015 caused Danish government and mortgage bond holders to incur total capital losses of just over kr. 100 billion, cf. Chart 4. The most recent interest rate increases in the autumn of 2016 resulted in correspondingly lower losses. The capital losses are mainly absorbed by insurance and pension companies taking on a high interest rate risk in order to match their long-term commitments. In recent years, pension companies have increasingly tended to provide market rate schemes rather than pension schemes with guarantees, which is why the pension companies to a lesser extent bear the direct risk in case of substantial price drops.

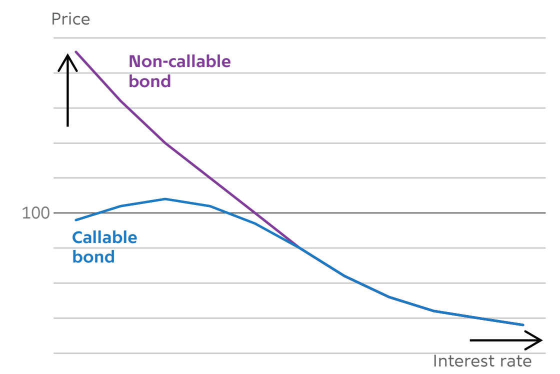
The banks' interest rate risk in the bond markets is limited as they invest mainly in short-term bonds with lower interest rate risk. There are no general signs of increased risk-taking in the banks' bond investments because of a search for yield.[1] There is great variation across banks, however, especially among the non-systemic banks. It is important for banks with risky investment strategies to ensure sound excess capital adequacy or a suitably broad-based business model to enable coverage of negative price fluctuations out of the earnings from other business activities without burdening the capital.

Low stress level in financial markets
The financial markets have been characterised by a low stress level in the last half year. According to Danmarks Nationalbank's composite financial stress indicator, the level has declined since the summer of 2016, cf. Chart 5. The stress level in the financial markets has also been low in both the euro area and

Bond price sensitivity to interest rates Box 1
Continued

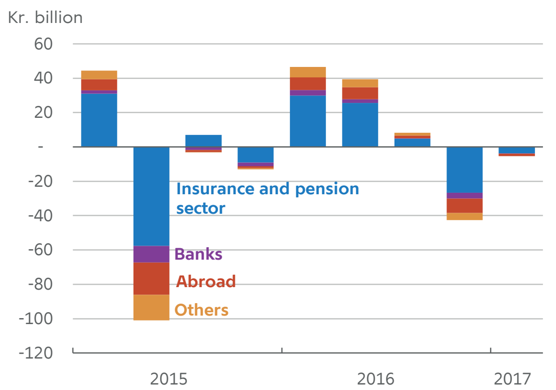
A sudden increase in the duration of callable bonds may have a self-reinforcing effect. This is attributable, inter alia, to portfolio allocations by investors, e.g. pension companies, often using a duration target for their portfolios. An increase in the duration may be reduced by divesting bonds, which will push up interest rates further.[2]

Price effects on callable bonds **B**



2. See Mogensen, Louise (2002), Market dynamics at low interest rates, Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2002.

Largest price fluctuations on bond portfolios in the insurance and pension sector Chart 4

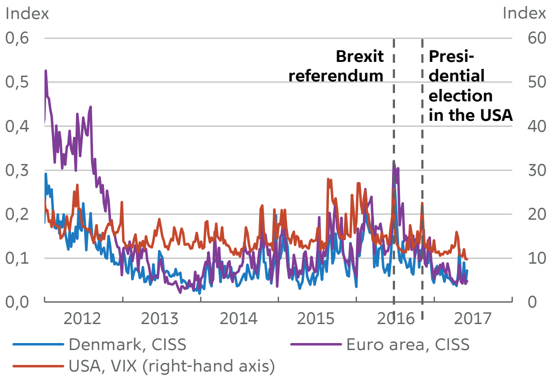


Note: The bars indicate the sum of price changes for each quarter by the sectors' bond portfolios. The most recent observations are from the 1st quarter of 2017.
Source: Danmarks Nationalbank and own calculations.

1 See Danmarks Nationalbank, *Financial stability*, 2nd Half 2016 (*link*).

Low stress level in financial markets

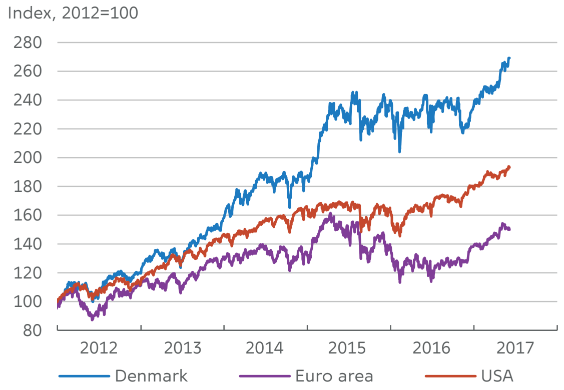
Chart 5



Note: CISS for the euro area is the ECB's Composite Indicator of Systemic Stress showing the degree of stress in the financial markets in the euro area. CISS for Denmark is a similar indicator, cf. Danmarks Nationalbank, *Financial stability*, 2nd Half 2014. VIX for the USA is a volatility index based on implied volatilities on S&P 500 index-linked bonds. The most recent observations are from 2 June 2017.
Source: Danmarks Nationalbank, ECB and Bloomberg.

Equity prices are at a high level

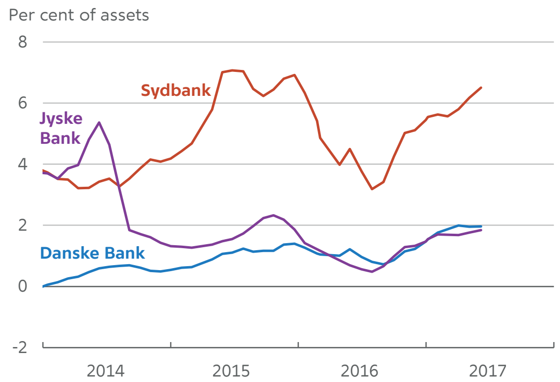
Chart 6



Note: The equity indices are: OMX C20 CAP for Denmark, Eurostoxx 50 for the euro area and S&P 500 for the USA. The most recent observations are from 6 June 2017.
Source: Bloomberg and own calculations.

Market-based stress test shows higher resilience of systemic banks

Chart 7



Note: The chart shows the market-based excess capital adequacy under stress. It is defined as the difference between the market value of assets, calculated under stress, and the book value of liabilities, excluding equity, less a capital requirement of 3 per cent of the assets measured by the market value. The most recent observations for the financial statements are from the 1st quarter of 2017 and for equity prices 6 June 2017.
Source: Bloomberg, SNL Financials and own calculations.

the USA. Brief episodes with higher stress levels have coincided with political uncertainty, e.g. in connection with the Brexit referendum and the US presidential election. The stress indicators measure the current stress level and cannot be used to measure the build-up of systemic risks.

Global equity prices are high and have risen further since the 4th quarter of 2016, cf. Chart 6. The high level reflects factors such as the continued search for yield in the current low interest rate environment, and the most recent price rises are based on expectations of economic recovery.

In the current situation, with the economy heading towards a boom and with high asset prices, risks to financial stability may potentially build up. Increased risk-taking in their market exposures may make investors and banks vulnerable to a sudden change in the perception of risk. A reversal of the risk perception may lead to substantial falls in asset prices, resulting in large losses. It is important for financial market participants to take this risk into account.

The general upswing also has a positive impact on the Danish banks' equity prices. The development in equity prices can be used to get an indication of the market's view of the banks' resilience under stress. For that purpose, Danmarks Nationalbank uses the market-based stress test, SRISK.[2] The test shows the banks' market-based excess capital adequacy in a severe stress scenario with a drop in equity prices of at least 40 per cent over six months. According to SRISK, the listed systemic banks currently have positive excess capital adequacy in the stress scenario. The excess capital adequacy has been going up since mid-2016, driven mainly by rising equity prices, cf. Chart 7.

Liquidity

Banks' LCR comfortably above the minimum requirement

All banks observe the minimum requirement for the liquidity coverage ratio, LCR, with a certain margin. The short-term liquidity requirement set out in EU regulation is to ensure that the banks have adequate high-quality liquid assets to cover a net outflow of liquidity in an intensive 30-day stress scenario. The systemic banks must comply with an LCR of minimum 100 per cent, while the non-systemic banks must have an LCR of minimum 80 per cent in 2017 and 100 per cent from 2018. Excess cover relative to the requirement is expedient as the LCR may be highly volatile.

Foreign exchange LCR for systemic banks

The systemic banks must also observe LCR requirements in the currencies that are significant for the individual bank. A currency is significant for a bank if the bank's total commitments in that currency constitute 5 per cent or more of its total liabilities. The requirement is 80 per cent from 1 April and 100 per cent from 1 October 2017.[3] All Danish systemic banks must observe LCR requirements in euro, while Danske Bank must also comply with LCR requirements in dollars. While Swedish kronor and Norwegian kroner are not comprised by the foreign exchange LCR requirement, the banks must ensure a sufficient currency match between the portfolio of liquid assets and the net outflow of liquidity, cf. the Capital Requirements Regulation, CRR.

Less liquidity in the repo markets

Market liquidity developments have attracted increasing attention in recent years. Market participants and international organisations alike are focusing on declining repo market liquidity. The markets are used for short-term placement or borrowing of liquidity, allowing financial market participants with a short-term liquidity shortfall to borrow quickly against collateral, typically government or mortgage bonds, and banks with excess liquidity to provide loans against collateral.

A well-functioning repo market is of significance to liquidity in other financial markets, e.g. the mortgage bond market. A new report from the Bank for International Settlements, BIS, concludes that the international repo markets are affected by the current situation of monetary policy easing in the form of negative interest rates and central banks' purchases of bonds in the euro area, among others.[4]

In addition to cyclical factors, the structural development towards the banks' lower risk appetite and new regulation could also affect the repo markets.[5] Turnover in the repo market in kroner has fallen substantially since 2012. A slight increase has been seen since 2016, but turnover remains low compared with the level in previous years, cf. Chart 8.

In many countries, the size of the banks' balance sheets around the turn of the month, quarter and year affects the banks' tax payments, payments to resolution funds and determination of regulatory key ratios such as the leverage ratio. Repo transactions expand the banks' balance sheets. Hence, they may be less inclined to conclude such transactions around the reporting days, which affects the repo

2 See Grinderslev, Oliver J. and Kristian L. Kristiansen (2016), Systemic risk in Danish banks: Implementing SRISK in a Danish context, Danmarks Nationalbank, Working Paper No. 105 (*link*).

3 The foreign exchange LCR requirement has been modified relative to the requirement for all currencies taken as one. This applies, inter alia, in relation to limitations in the composition of the liquidity buffer and the treatment of derivatives.

4 See Bank for International Settlements, *Repo Market Functioning*, April 2017.

5 See Danmarks Nationalbank, *Financial stability*, 2nd Half 2015 (*link*).

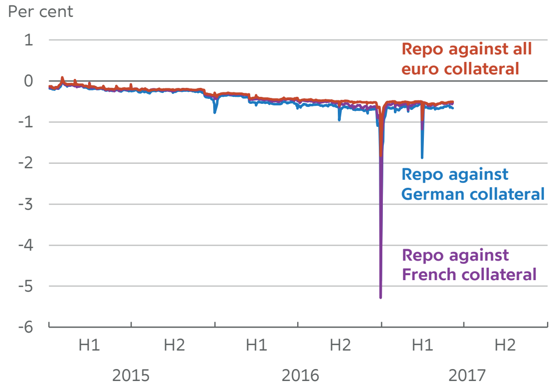
Falling turnover in the repo market in kroner

Chart 8

Note: The chart shows the daily turnover in the market for short-term repo transactions in kroner reported by market participants. The most recent observations are from 6 June 2017.
Source: Danmarks Nationalbank.

Strong end-of-period effect in the repo market in euro

Chart 9



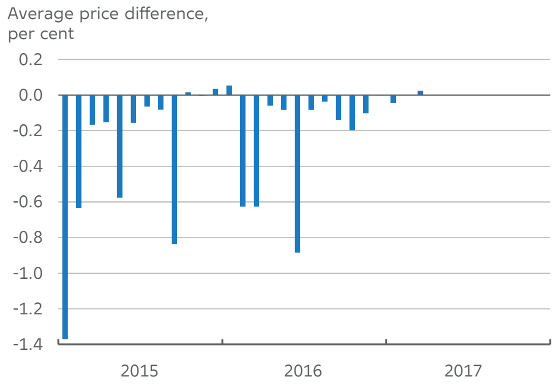
Note: The interest rate indicates the daily interest rate achieved by lending liquidity secured on government bonds. The interest rate is shown for euro against German and French government bonds and the average for the government bonds of all euro area member states. The most recent observations are from 6 June 2017.
Source: RepoFunds Rate.

markets. This is reflected in end-of-period effects with low volumes and higher prices for repo lending.

End-of-period effects have been observed in the repo markets for a number of years, but they have been particularly pronounced in the repo market in euro at the most recent turn of the year, cf. Chart 9.[6] End-of-period effects have also been observed in the repo market in kroner,[7] but they seem to have been declining over the last year, cf. Chart 10.

Declining end-of-period effects in the repo market in kroner

Chart 10



Note: The chart shows the difference between the interest rate on a repo transaction concluded on the last day of the month and the average interest rate on repo transactions concluded on the remaining days of the month. The most recent observations are from March 2017.
Source: Nordea Analytics and own calculations.

Bank earnings

Very low loan impairment charges boost bank earnings

The largest banking groups achieved their best ever overall performance in 2016. The level of earnings

6 See Danmarks Nationalbank, *Monetary and financial trends – Stable krone and calm money markets*, March 2017 (*link*).

7 Statistical tests show a significant difference between the interest rate on the last day of the month compared to the other days of the month.

has risen substantially over the last three years, cf. Chart 11. Part of the increase in the result from 2015 to 2016 is attributable to the effect on the financial statements in 2015 of Danske Bank and Nykredit booking goodwill impairments of approximately kr. 7 billion. The banks' financial statements for the 1st quarter of 2017 also generally recorded sound profits and earnings appear to continue to increase.

The earnings of medium-sized banks have also increased considerably in recent years, and earlier this year, several of the banks presented very good financial statements for 2016. There is still substantial variation across the banks.

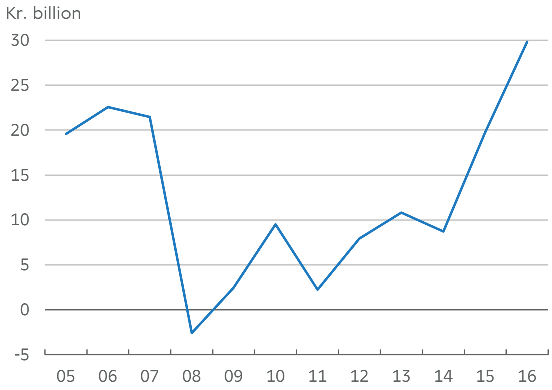
The banks' earnings were mainly boosted by very low loan impairment charge provisions, cf. Chart 12. The low loan impairment charges are partly attributable to the fall in new loan impairment charges in recent years due to the improved economic situation and the low level of interest rates. Moreover, some reversal of the banks' previous large loan impairment charges is taking place. This resulted in total loan impairment charges close to zero in 2016. The effect of reversal of loan impairment charges is temporary, and as losses will from time to time be incurred on part of the lending portfolio, the loan impairment charges[8] can be expected to increase in the long run. Normalisation of the level of interest rates could lead to higher current loan impairment charges in the banks.

Banks' ROE targets seem high

In 2016, the largest banks recorded the highest return on equity, ROE, overall since 2007, cf. Chart 13. The return on equity has increased considerably since 2014, but less than the banks' earnings in current prices, because the banks have, overall, been increasing their equity since the financial crisis.

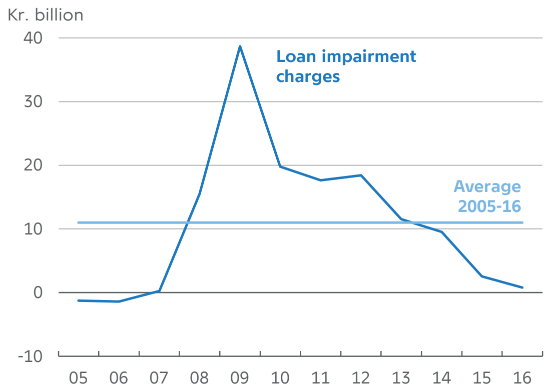
The managements of several Danish banks have announced target returns of up to 12.5 per cent p.a. on the book value of equity. For some banks, these targets are for the current period, while others have set a later date, e.g. 2018. In 2016, the banks achieved their targets.

High earnings in the largest banks Chart 11



Note: The chart shows financial statements for the Danske Bank, Nykredit, Jyske Bank and Sydbank groups.
Source: Danish Financial Supervisory Authority and own calculations.

Very low loan impairment charges in 2016 Chart 12



Note: The chart shows financial statements for Danske Bank, Nykredit, Jyske Bank and Sydbank.
Source: Danish Financial Supervisory Authority and own calculations.

8 The rules on loan impairment charges will be changed by IFRS 9, which is expected to take effect on 1 January 2018. The new rules on loan impairment charges in IFRS 9 are described in Box 2.4 in *Financial stability*, 2nd Half 2014.

The ROE targets appear high, given the very low level of interest rates. If the targets are to be achieved, the banks must have a considerable excess return relative to an investment in a Danish government bond, which is regarded as (almost) risk-free. Moreover, the banks should take into account the temporary nature of the positive effect on earnings of the low level of loan impairment charges. Adjusting for cyclical fluctuations in provisions for loan impairment charges, the return on equity in favourable macroeconomic periods like now will be lower.

In a previous analysis,[9] Danmarks Nationalbank assessed that shareholders' expected rate of return was somewhat below the banks' own targets. This indicates that the banks can deliver lower returns than the targets announced and still comply with the shareholders' requirement for a return on their investment.

Banks' adjustment to low interest rate environment continues

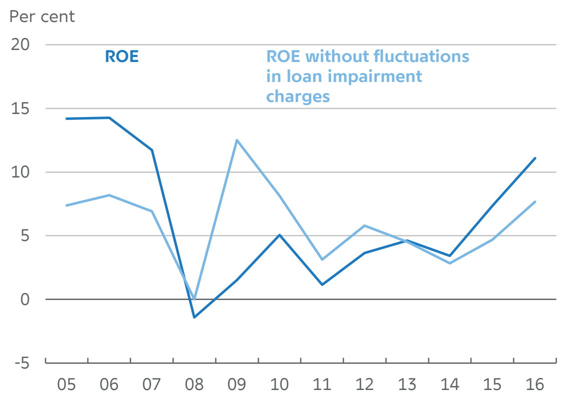
The banks' business models are being challenged by the low level of interest rates, cf. Chart 14. Their net interest income is under pressure from continued low demand for new loans and a low interest rate level. To a certain degree, the banks have been able to compensate for this by increased income from administration margins payable on mortgage loans and other fees. On the expenditure side, there has been strong focus on increasing efficiency and reducing costs.

Looking ahead, market participants expect interest rates to remain low for a prolonged period, and although the volume of new loans has increased slightly, the prospect of lending growth is still limited in the Danish market.

Up to the financial crisis, the banks' earnings growth was mainly the result of rising lending volumes, while their interest margins, i.e. the difference between the banks' interest rates on lending and deposits, fell and administration margins payable on mortgage loans were more or less stable.

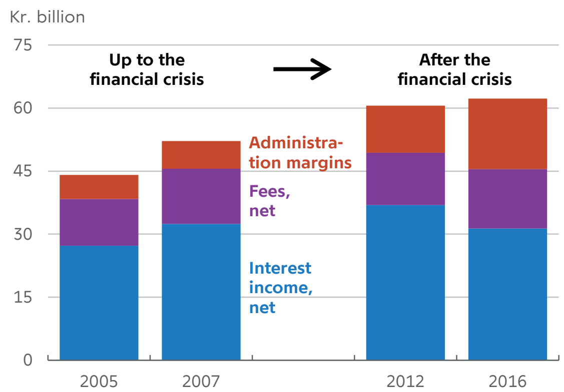
Since 2009, the banks' deposits have increased considerably, while their lending has generally declined.

ROE boosted by low loan impairment charges Chart 13



Note: Return on equity is calculated as profit after tax for the year as a percentage of the annual average equity. The chart has been calculated on the basis of financial statements for Danske Bank, Nykredit, Jyske Bank and Sydbank.
Source: Danish Financial Supervisory Authority and own calculations.

Fee income and income from administration margins make up an increasing share of earnings Chart 14



Note: The chart shows financial statements for Danske Bank, Nykredit, Jyske Bank and Sydbank.
Source: Danish Financial Supervisory Authority and own calculations.

9 See the chapter *The cost of equity* in Danmarks Nationalbank, *Financial stability*, 1st Half 2016 (*link*).

In recent years, the banks' interest margins have also been under pressure from the very low level of interest rates. Lending rates have followed the monetary policy interest rates down, while deposit rates are being adjusted with a certain lag. So far, the banks have chosen not to let interest rates on deposits from households fall below zero.

Since 2009, the largest banks have increased their earnings from fees and administration margins payable on mortgage loans, raising the administration margins for selected loan types on several occasions. The three largest mortgage banks last raised their administration margins for selected loan types in 2016. Fee income for securities trading, e.g. asset management, has also been going up since 2010.

Adjusting the business model so as not to rely on net interest income may be more of a challenge for small and medium-sized banks, as their deposits make up a larger share of their funding. But fee income for small and medium-sized banks has also increased. For example, they receive fee income from their cooperation with mortgage banks where they facilitate mortgage lending. To some extent, the fees are compensation for the banks' incurring a significant part of the credit risk on the loan.

Banks' capital adequacy

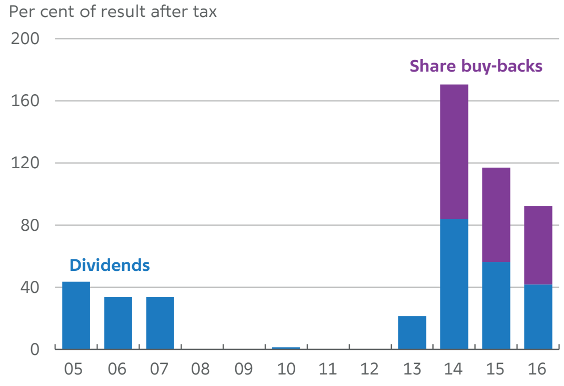
Banks disbursing record results

In step with their earnings growth, the large listed banks have increased their disbursements to shareholders. Overall, the disbursements to shareholders are considerably higher than ever before, including in the years leading up to the financial crisis, cf. Chart 15. In 2016, Danske Bank and Sydbank disbursed virtually their entire profit for the year after tax to their shareholders.

In addition to paying dividends, the banks have also bought back shares in recent years. Buy-backs of shares cause the value of the remaining shares to go up, thereby generating equivalent capital gains for the shareholders.

Listed banks disburse most of their profits

Chart 15



Note: The chart shows financial statements for Danske Bank, Jyske Bank and Sydbank. A year's total buy-back programme is calculated relative to the result after tax for the previous year.
Source: Thomson Reuters, financial statements, company announcements and own calculations.

The reduction in the disbursement share of the banks' profits from 2014 to 2016 should be seen in the context of the profits rising at a faster pace than dividend payments and buy-backs of shares. Danske Bank booked goodwill impairments of about kr. 9 billion in 2014.

Large Danish banks' capital base lower than that of other Nordic banks

In the wake of the financial crisis it became clear that the capital adequacy of banks had generally been too low, including in Denmark. High capital adequacy helps to ensure the banks' robustness, as they have a buffer in the event of losses that cannot not be covered by current earnings. From 2008, the capital adequacy of Danish banks grew substantially as a result of government Additional Tier 1 capital, among other factors, cf. Chart 16. In 2013, the largest Danish banks already complied with the fully phased-in EU 2019 requirements.[10] Since then, the banks overall have not increased their Tier 1 ratio to any notable extent. If the capital level at end-2016

10 See Danmarks Nationalbank, *Financial stability*, 2013 (*link*).

takes into account the share buy-back programmes already adopted this year, the level would remain unchanged from 2015 to 2016.

The large banks in both Sweden and Norway have continued to build up their capital adequacy. At the same time, the Swedish and Norwegian authorities introduced national minimum requirements for capital adequacy behind collateralised housing loans effective from 2013 and 2014, respectively. The national measures have been implemented in various ways. In Sweden, this is a supplement to the banks individual solvency need with a view to building up capital for housing loans issued with risk weights below 25 per cent. In Norway, the authorities introduced parameter floors in the calculation of risk weights for housing loans.

The capital requirements have not been increased in Denmark, but the authorities have implemented tighter requirements and guidelines on the banks' credit assessment, e.g. for home financing.

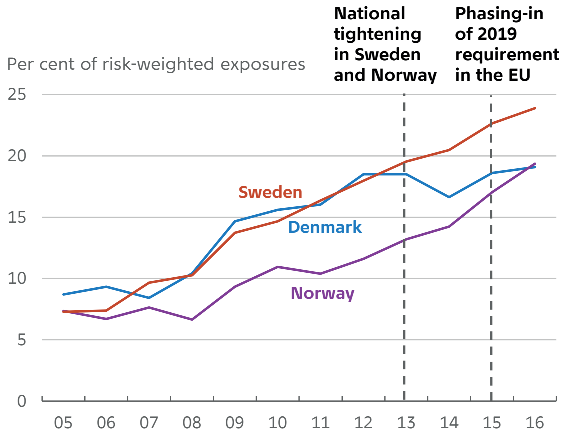
While the largest Danish banks have lower capital adequacy than the other Nordic banks, their capital adequacy is high compared to that of most other large banks in Europe. At end-2016, the largest Danish banks had a Tier 1 capital relative to risk-weighted exposures, the Tier 1 capital ratio, of 17-20 per cent, cf. Chart 17.

The current capital adequacy requirements for banks are calculated as a percentage of their risk-weighted exposures. It is important that the capital requirements reflect actual risks. This gives the banks an incentive to improve their risk management and portfolio structure, and it also contributes to ensuring appropriate capital allocation to the benefit of the economy. Risk-weighted exposures fluctuate over time due to changes in the risks compiled. In their capital planning, the banks must ensure that they have an adequate buffer in addition to the regulatory capital requirements for current fluctuations in their risk-weighted exposures.

The banks must also calculate their leverage ratio as a supplement to the risk-based capital adequacy. While the Tier 1 capital ratio is calculated as Tier 1 capital relative to risk-weighted exposures, the leverage ratio is calculated as Tier 1 capital relative to unweighted exposures.

The largest Danish banks have stopped building up Tier 1 capital

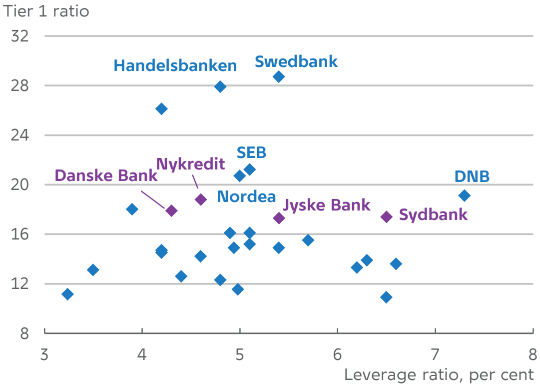
Chart 16



Note: The chart shows Tier 1 capital calculated relative to the fully phased-in requirements. The Danish banks are Danske Bank, Jyske Bank, Nykredit and Sydbank. The Swedish banks are Handelsbanken, Nordea, SEB and Swedbank. The Norwegian bank is DNB.
Source: SNL, financial statements and own calculations.

Nordic banking groups have the highest capitalisation in Europe

Chart 17



Note: The chart shows calculations of capital relative to the fully phased-in requirements calculated at end-2016. Other banks in the chart are ABN Amro, Santander, Barclays, BBVA, BNP Paribas, Commerzbank, Crédit Agricole, Deutsche Bank, Erste, BPCE, HSBC, ING, Intesa Sanpaolo, Lloyds, Nationwide, Raiffeisen, RBS Société Générale and UniCredit.
Source: SNL and financial statements.

At end-2016, the variation in the leverage ratios of the Danish banks was relatively high. To some extent this reflects differences in their business models. The leverage ratios of banks with a large share of exposures to low risk customers are often relatively low. Low risk exposures weigh more heavily in the leverage ratio than e.g. the banks' Tier 1 ratios. For several banking groups, exposures to e.g. mortgage customers, large firms and market risk account for a large share of exposures and they often have low risk weights.

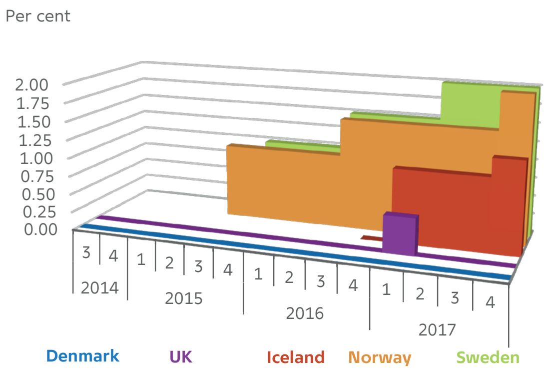
In 2016, the European Commission presented its proposal for a 3 per cent minimum leverage ratio requirement in the EU as from 2018.

Several countries have activated the countercyclical capital buffer

The countercyclical capital buffer is a tool that national authorities may use to change the banks' capital requirements as the risk of financial sector losses is increased or reduced. In order to be prepared for the next period of severe financial stress, Sweden, Norway and Iceland, among other countries, have chosen to build up the buffer well in advance, cf. Chart 18. The reason for activating the buffer in Norway and Sweden was build-up of financial imbalances. The buffer rate has been raised recently based on growing concerns about increasing credit growth and as a result of rising house prices. In Iceland, the buffer was implemented early in the financial cycle. This means that build-up of the buffer was started well in advance of risks increasing. The UK also activated the buffer early in the financial cycle, but chose to release it again after the Brexit referendum.

In Denmark, the Minister for Industry, Business and Financial Affairs sets the countercyclical capital buffer rate on a quarterly basis. If the Systemic Risk Council finds that the buffer rate should be raised, it will submit a recommendation to that effect to the Minister. In March 2017, the Council recommended that the countercyclical capital buffer rate should remain at 0 per cent in Denmark. This year, the Council will make an evaluation of its method for assessment of the buffer rate.[11]

Several countries have already activated the countercyclical capital buffer Chart 18



Note: The chart shows the time when the individual countries' decisions regarding the countercyclical capital buffer enter into force. The UK decision to raise the buffer rate to 0.25 per cent in March 2017 was not implemented as the decision was cancelled following the Brexit referendum.
Source: ESRB.

It is assessed that the countercyclical capital buffer can primarily be used to enhance the banks' resilience to losses in periods of financial stress. Release of the buffer should prevent situations in which the banks tighten their credit conditions and reduce the supply of credit so much that a credit crunch occurs with negative implications for the real economy. Since the buffer is implemented in good times when the banks are generally able to meet the buffer requirement by using retained profit, the buffer is expected to curb lending growth only to a limited extent. In an analysis, Danmarks Nationalbank has assessed how the bank's capital accumulation impacts lending growth.[12] According to that analysis, more capital only leads to a limited and brief decline in lending growth.

11 See press release (*link*) from meeting of the Systemic Risk Council, March 2017.

12 See Mikkelsen, Jakob Guldbæk, Banks' capital accumulation does not hurt GDP growth, Analysis No. 10, June 2017 (*link*).

A few systemic banks close to buffer requirement in stress test
At end-2016, all systemic groups complied with the current and fully phased-in capital requirements. The capital requirements for banks in the EU will be gradually tightened towards 2019. The capital conservation buffer is being phased in for all banks, and in addition, the systemically important banks, SIFIs, are subject to a SIFI capital buffer, the size of which depends on the bank's systemic importance. To this should be added the countercyclical capital buffer rate, which is currently set at 0 per cent, cf. above.

Danmarks Nationalbank's accounts-based stress test assesses the banks' excess capital adequacy over the next three years under various macroeconomic scenarios. Under the baseline scenario, the banks' capitalisation remains more or less unchanged towards 2019, but their excess capital adequacy falls due to the phasing-in of capital buffers, cf. Chart 19.

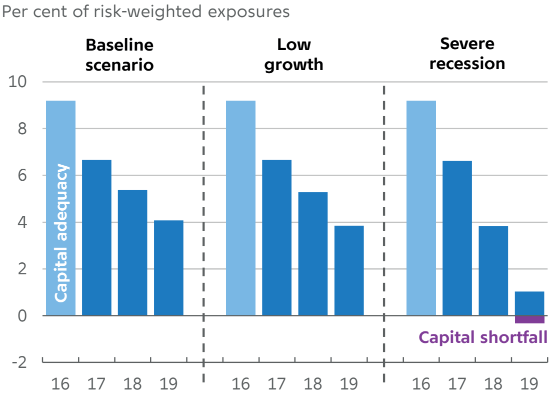
Since the banks' capital adequacy, assets and asset composition are unchanged in the stress test over the period, it cannot be taken for granted that they will also comply with the requirements in 2019.

The stress test shows that, in a severe recession scenario until 2019, all systemic banks will still observe the statutory minimum requirement of 8 per cent of risk-weighted exposures. In the same scenario, a few of the systemic banks will have a small capital shortfall relative to the total requirement, including capital buffers. In the event of non-compliance with the buffer requirements, banks become subject to a number of limitations, e.g. limitations of dividend payments. Moreover, the banks should expect that their access to external funding in the financial markets may be challenged.

The stress test covers only the banking activities of a group – not any other business areas such as affiliated mortgage banks.

A few of the non-systemic banks are seriously challenged in the severe recession stress test scenario, and some are unable to comply with their minimum requirements. In that case they will be resolved by the authorities. Before it comes to that, breach of the buffer requirements will enable the Danish Financial Supervisory Authority to intervene. The authorities have sufficient tools to address this situation, and therefore it is not assessed to be a risk to financial stability. However, the owners and creditors of the banks affected may suffer losses if the banks are to be recovered or resolved.

A few systemic banks close to buffer requirement Chart 19



Note: The chart shows the systemic banks' total excess capital adequacy or capital shortfall as percentages of risk-weighted exposures in the stress test and its three scenarios. Excess capital adequacy and capital shortfalls have been calculated relative to the total capital requirement, including buffers.
Source: Danmarks Nationalbank and own calculations.

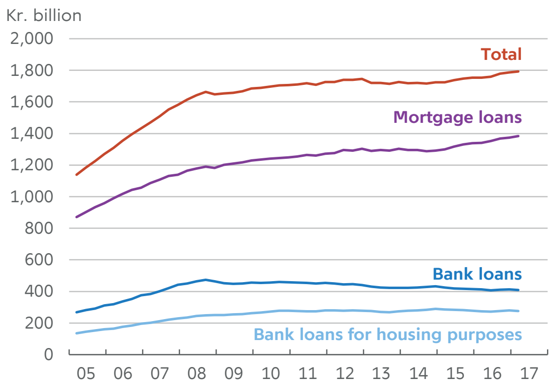
Banks' exposures to the housing market

Limited household demand for new loans
Household demand for new loans remains limited. Overall, the banks cannot expect to considerably increase their lending to households in the coming years. In recent years, the modest credit growth has been driven by rising lending by mortgage banks, while households customers have reduced their bank loans over a longer period, cf. Chart 20.

Since 2008, loans secured on the home have constituted an increasing share of banks' lending to private customers. Mortgage lending in particular has increased considerably, but lending for housing purposes also continues to represent a rising share of bank lending. In contrast, households are reducing other unsecured bank debt, e.g. consumer loans. Overall, developments are reducing the banks' credit risk, but increasing their exposure to fluctuations in the housing market.

Limited growth in lending to households driven by rising lending by mortgage banks

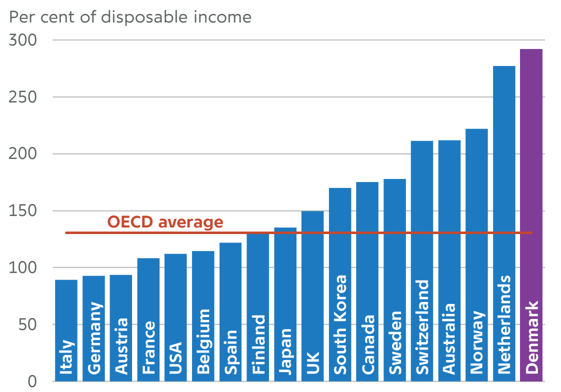
Chart 20



Note: Bank loans funded by mortgage bonds issued, are placed in the mortgage loan category. The most recent observations are from the end of the 1st quarter of 2017.
Source: Danmarks Nationalbank.

Gross debt of Danish households is high

Chart 21



Note: The chart shows the simple average for all OECD countries and the Loan-to-Income, LTI, of selected OECD countries. Observations are from end-2015.
Source: OECD and own calculations.

House prices generally rise faster than lending for housing purposes, especially in the large towns and cities. A lower Loan-to-Value, LTV, ratio of households helps enhance the banks' resilience to losses.

The Danes' total indebtedness soared in the years leading up to the financial crisis and the level remains high. In 2015, the gross debt of the Danes was high compared to other OECD countries, cf. Chart 21. At the same time, Danish households have considerable assets, e.g. in the form of sizeable pension wealth invested through pension companies.

On the one hand, lower debt service costs increase the possibility of reducing debt, but, on the other, lower costs may increase the incentive to raise further debt or omit to reduce existing debt.

It is important for banks to maintain their credit standards

There is a basis for increased pressure on the banks' credit standards in the current situation. The finances of both households and firms are supported by the general economic upswing, rising house prices and the continued low level of interest rates. Now is the time for the banks to avoid providing the loans that will result in higher loan impairment charges when the economic cycle reverses and the stress level in the financial markets increases.

According to the latest lending survey by Danmarks Nationalbank, the credit managers of the largest banks point out that they are keeping their credit standards virtually unchanged as regards both bank loans and mortgage loans, cf. Chart 22. Some medium-sized banks expect to continue easing their credit standards due to stronger competition from other banks. Moreover, they are reducing their requirements for earnings on customers through lower margin requirements and fees.

A number of smaller banks have recently chosen to open new branches in the large towns and cities to attract new customers. The branches are opened in a period when banks are generally closing many branches. In connection with the opening of new branches, it is important for the banks not to ease their credit quality requirements for new customers.

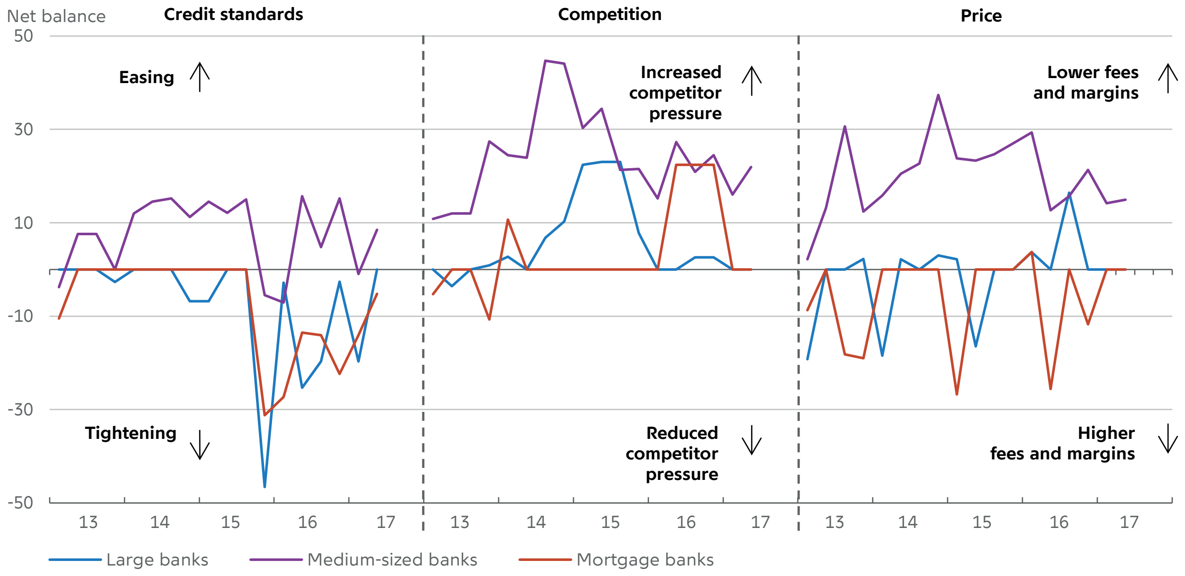
Developments in Copenhagen housing market similar to the pre-crisis level

Mortgage lending growth is concentrated around Copenhagen where lending increased by almost 10 per cent in both 2015 and 2016, cf. Chart 23 (left). Copenhagen has also seen the fastest growth in house prices, cf. Chart 23 (right).

In some respects, current developments in Copenhagen are similar to the developments leading up

Some banks report competitor pressure and reduction of fees and interest margins

Chart 22

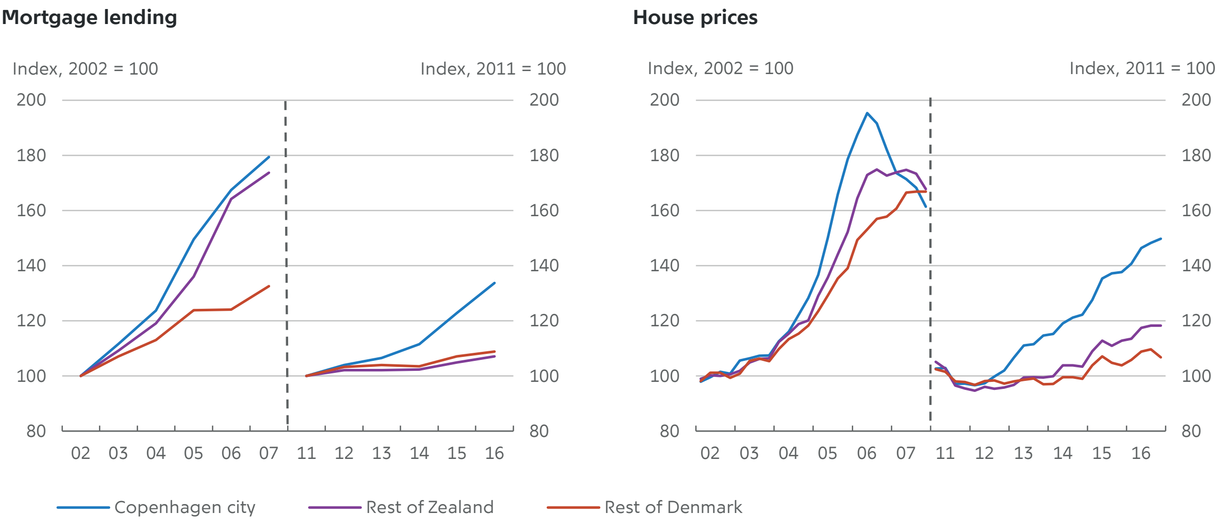


Note: The net balance lies within the interval -100 to 100. A positive (negative) net balance means that credit managers of the surveyed banks have, overall, i.e. in lending-weighted terms, stated that competition has contributed to an easing (tightening) relative to the preceding quarter. The observations for the 2nd quarter of 2017 denote credit managers' expectations of the quarter based on their responses in the 1st quarter of 2017.

Source: Danmarks Nationalbank.

The Copenhagen housing market outperforms the rest of Denmark

Chart 23



Note: House prices are based on the average price per square metre at the municipal level for terraced houses/one-family houses and owner-occupied flats. House prices have been weighted together across housing types and geography by the number of trades of each housing type in each municipality. The most recent observations are from the 4th quarter of 2016 for house prices; from end-2016 for mortgage lending.

Source: Mortgage banks, Finance Denmark, Statistics Denmark, Danmarks Nationalbank and own calculations.

to the financial crisis. Due to a strong rise in house prices in step with homeowners increasing their mortgage debt, the extent of homeowners' accumulation of further home equity was limited. When house prices fell, many homeowners became technically insolvent.

Unlike the situation back then, so far only Copenhagen has seen significant increases in house prices and mortgage lending in recent years. In the pre-crisis period, house prices rose throughout the country, and growth in new mortgage loans spread to the rest of Zealand and large towns and cities across Denmark. Copenhagen accounts for approximately 10 per cent of total mortgage lending to households.

Credit growth prior to the crisis was also driven in part by a larger share of supplementary loans, which is not currently the case to the same extent.

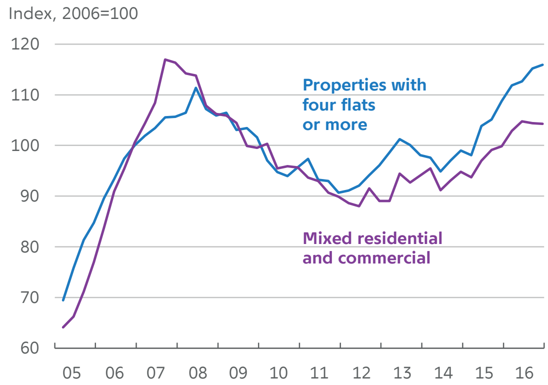
If house price developments and hence credit growth were to spread to the rest of the country in the coming years, this would lead to growing concerns about build-up of systemic risks. In its annual review of the Danish economy in May, the IMF emphasised continued house price increases in towns and cities as a risk to financial instability calling for further macroprudential measures as well as reduced tax deductibility of interest costs relating to mortgage loans.

In March, the Systemic Risk Council submitted a recommendation to the government on limiting residential mortgage lending at variable rates or with deferred amortisation if the borrower's total debt is more than four times the income in Copenhagen and environs and in Aarhus. The recommendation is based on the Danish Financial Supervisory Authority's existing guidelines with credit rating recommendations on mortgaging of homes in growth areas, currently Copenhagen and environs and Aarhus.[13]

Housing taxation once again has a stabilising effect
The new housing taxation agreement concluded in May restores the link between housing taxes and property values from 2021. This will have a stabilising effect on house prices and hence the economy. The agreement will also enhance taxation equality

Steep rise in rental property prices since 2014

Chart 24



Note: 4-quarter moving averages. The most recent observations are from December 2016.
Source: Statistics Denmark.

geographically and across housing types, thereby dampening the current regional differences in house price developments. Expectations of housing tax adjustments may already impact house prices now and until the agreement becomes effective.

As part of the agreement, any permanent structural additional revenue from housing taxation should be reversed to homeowners in the form of lower housing tax rates. If so, there is risk that this would be a procyclical easing which would reduce the stabilising effects of housing taxation.

Financing of rental properties

The prices of rental properties are now back at the 2007 level immediately before the financial crisis set in, cf. Chart 24. The trading volume in the market remains lower than it was at that time, but estate agents are reporting growing investor interest in the market. The requirements for return in the rental property

13 See recommendation (*link*) from the Systemic Risk Council, March 2017.

market have generally decreased. Besides the low level of interest rates this may reflect a perception among investors of property investments as less risky.

Lending to the real estate industry constitutes a major share of total lending by banks. In April, their mortgage and bank lending to the industry amounted to kr. 671 billion and kr. 103 billion, respectively.

During the financial crisis, prices of properties with four or more flats fell by around 20 per cent on average. Exposures to the real estate industry entailed large losses for the banks, resulting in the resolution of several small and medium-sized banks. If prices were to fall considerably during a new period of crisis, it is important that the companies owning the properties have sufficient equity to absorb the loss. If a company does not have sufficient equity funding to cover a loss, the bank will incur a certain loss on its lending.

Solvency is generally increasing in the property companies to which the banks are exposed, cf. Chart 25. The solvency ratio shows a firm's equity relative to its total assets.

Since 2007, an increasing share of the real estate industry's assets has been held in subsidiaries of the Danish pension companies. Because of their access to self-financing through investment of household pension wealth, they are less dependent on debt financing.

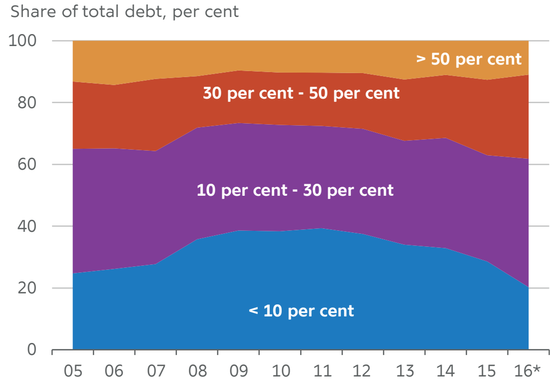
However, a higher solvency ratio is not necessarily an insurance against losses for the bank. Up to the financial crisis, the financial statements of the property companies also generally indicated high solvency, but then the value of their assets in the properties turned out to be overestimated.

In the event of a property company's default, the risk of losses on bank loans is considerably higher than on mortgage loans. The reason is that it is only possible to raise mortgage loans against up to 80 per cent of the value of residential rental properties and 60 per cent of other commercial properties, while bank loans may be secured on the remaining value of the properties. In case of the borrower's default, the value of the estate initially covers repayments to the mortgage bank, and subsequently to the bank.

In the last three years, most of the properties owned by the real estate industry have had home equity in

Loans to property companies with high solvency ratios make up an increasing share

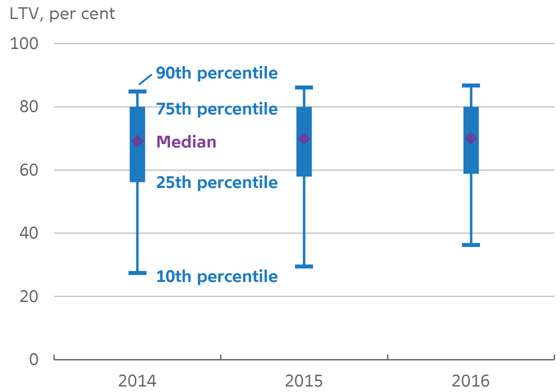
Chart 25



Note: The chart shows the distribution of total debt to banks and mortgage banks in the financial statements of the property companies by solvency ratio. Solvency has been calculated as equity as a ratio of total assets. At present, accounting information for 2016 is only available for a subset of all property companies.
Source: Experian, NN markedsdata and own calculations.

Only few registered commercial properties with high LTV ratios

Chart 26



Note: LTV is that part of a property for which a mortgage has been registered. At present, the property companies may not have borrowed against the entire mortgage. The chart only includes mortgages on properties owned by the real estate industry. Data from the Land Registry does not support a longer historical time series.
Source: Land Registry and own calculations.

addition to the registered mortgage on the property, cf. Chart 26. For most of the properties total security in both banks and mortgage banks accounts for no more than 80 per cent of the property value at the time of registration.

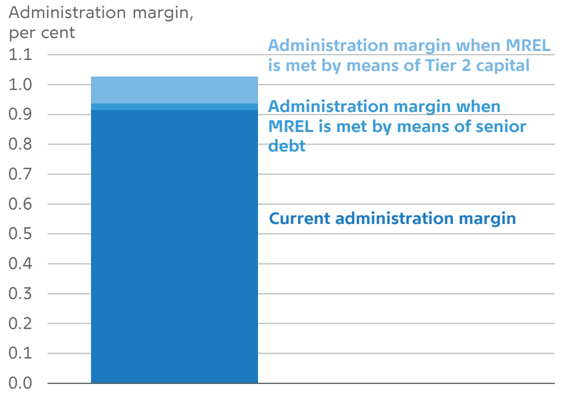
Low price for viable crisis management of mortgage banks

On 1 January 2016, the EU implemented a new recovery and resolution regime,[14] the BRRD, which provides the framework for enabling recovery and resolution of any bank, irrespective of its size and functions, without substantial negative implications for the real economy and financial stability. The new framework gives the authorities a number of tools to resolve credit institutions credibly and without central government interference.

For the systemically important banks, a core element of the resolution planning is the bail-in tool, which can be used to write down the value of liabilities or to convert them into equity. In that connection, the authorities must impose a minimum requirement concerning the volume of eligible liabilities, MREL, to be observed by the banks. An MREL prepares the banks to have sufficient funds to bear the losses in a resolution situation, as MREL is debt that can be converted to equity. This ensures that the bank becomes solvent and may continue functions that are critical to society.

In the Danish implementation of the BRRD, mortgage banks are exempted from having to meet an MREL, however. This means that the banks must be resolved without using the bail-in tool. Without an MREL, distressed mortgage banks must be closed down, which prevents continuation of the distressed bank's functions that are important to society. This implies that the central government is compelled to rescue the mortgage bank(s) in difficulties. Hence, it is Danmarks Nationalbank's clear recommendation that an MREL be set for the systemically important mortgage banks.

The borrower's average administration margin after introduction of MREL Chart 27



In January 2017, Danmarks Nationalbank published an analysis of the consequences of introducing an MREL for mortgage banks.[15] It showed that, viewed in isolation, an MREL of 8 per cent of their total liabilities and own funds would correspond to an increase in administration margins of between 0.02 and 0.11 percentage point, cf. Chart 27. That is a low price for protecting households, firms and the general economy if a mortgage bank were to become distressed. Moreover, it ensures consistent regulation of Danish and European mortgage banks.

14 See New recovery and resolution regime, Danmarks Nationalbank, *Financial stability*, 2nd Half 2015 (*link*).

15 See Too-big-to-fail can be solved inexpensively, Danmarks Nationalbank, Analysis No. 1, January 2017 (*link*).

Appendix to the financial stability analysis: Data

The analysis is based on the six banks classified by the Danish Financial Supervisory Authority in 2016 as systemically important financial institutions, SIFIs, and the non-systemic banks grouped by the Danish Financial Supervisory Authority in 2017 as group 2, cf. Table 1. Nordea Bank Danmark is no longer a SIFI, as it was converted from a subsidiary into a branch from 1 January 2017. In that connection, Nordea Kredit was classified as a SIFI. Unlike the Danish Financial Supervisory Authority's group 2, Saxo Bank has been omitted from the population due to its business model. The grouping also applies back in time. Moreover, all banks and mortgage banks are covered by the analysis and assessment of lending.

The analysis uses the term banking group or bank when the topic comprises both the bank and mortgage bank activities of the business. The terms bank and mortgage bank are used when discussing specific activities of the business.

Banks and mortgage banks in the analysis by total assets as at 31 December 2016, kr. million Table 1

Systemic financial institutions	Amount
Danske Bank (including Realkredit Danmark)	3,157,793
Jyske Bank (including BRFkredit)	586,703
Nykredit Realkredit (including Nykredit Bank)	1,400,606
Sydbank	146,686
Nordea Kredit	437,012
DLR Kredit	155,737
Systemic financial institutions, total	5,884,537

Systemic banks	
Danske Bank	2,168,239
Jyske Bank	318,452
Nykredit Bank	193,978
Sydbank	148,949
Systemic banks, total	2,829,618

Non-systemic banks	
Spar Nord Bank	79,758
Arbejdernes Landsbank	44,340
Vestjysk Bank	19,895
Ringkjøbing Landbobank	24,258

Non-systemic banks (continued)	Amount
Sparekassen Kronjylland	21,823
Den Jyske Sparekasse	15,168
Nordjyske Bank	19,444
Lån & Spar Bank	16,945
Jutlander Bank	15,733
Sparekassen Sjælland	19,845
Sparekassen Vendsyssel	15,135
Non-systemic banks, total	292,344
Ikke-systemiske pengeinstitutter i alt	329,715

Mortgage banks	
Nykredit Realkredit	1,305,554
Realkredit Danmark	862,705
Totalkredit	690,527
Nordea Kredit	437,012
BRFkredit	307,027
DLR Kredit	155,737
LR Realkredit	22,519
Mortgage banks, total	3,781,081

Note: The total assets of systemic banks, non-systemic banks and mortgage banks are stated at bank-specific level, while the total assets of the systemic groups are stated at group level.
Source: Bank financial statements database and annual reports.

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