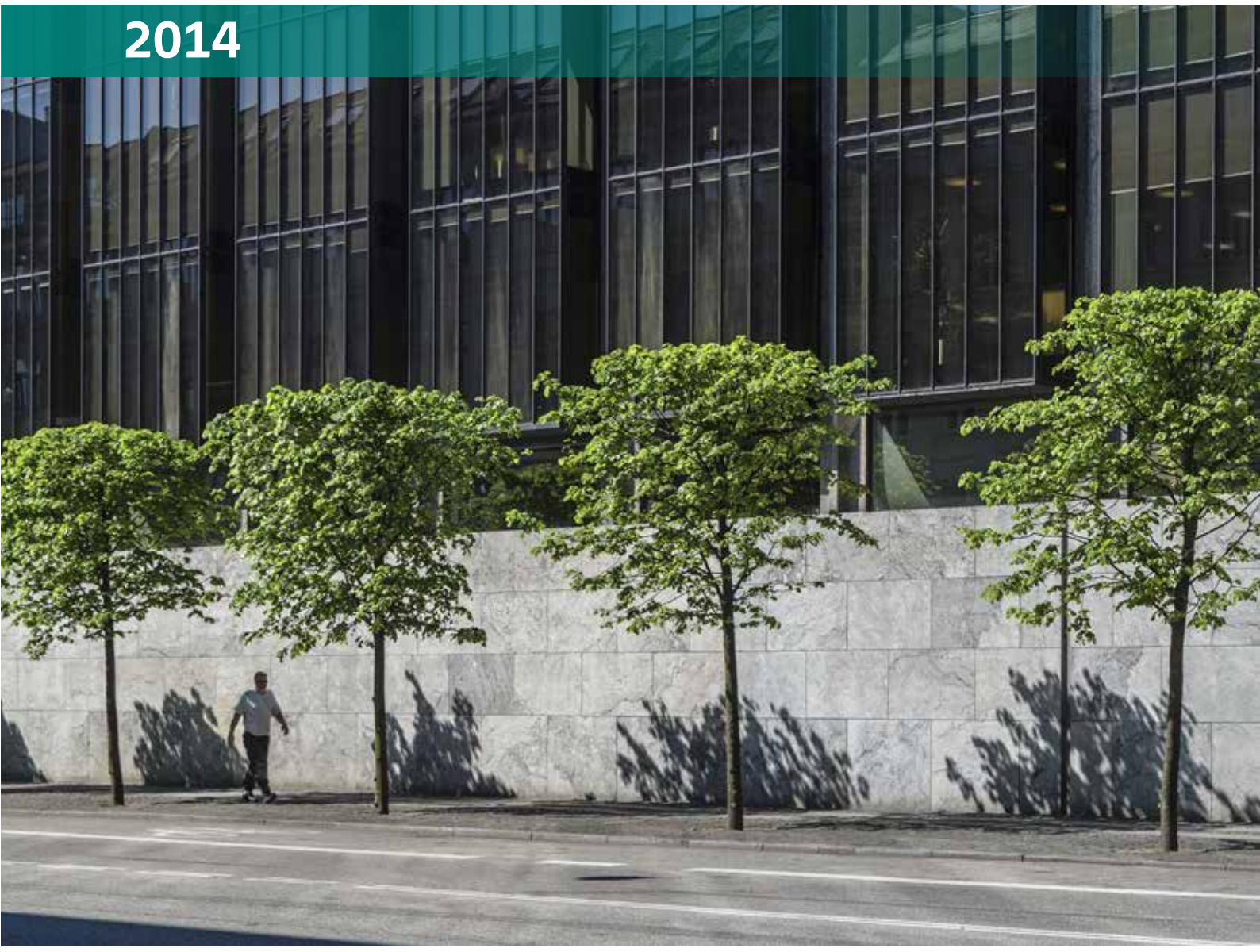
DANMARKS
NATIONALBANK

FINANCIAL STABILITY
1 HALF

2014



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Financial stability is available on Danmarks Nationalbank's website: www.nationalbanken.dk under publications.

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FOREWORD

Under the 1936 Danmarks Nationalbank Act, Danmarks Nationalbank must maintain a safe and secure currency system and facilitate and regulate the traffic in money and the extension of credit. One of Danmarks Nationalbank's main objectives is thus to contribute to the stability of the financial system.

Danmarks Nationalbank defines financial stability as a condition whereby the overall financial system is robust enough for any problems within the sector not to spread and prevent the financial system from functioning as an efficient provider of capital and financial services.

In its *Financial stability* publication, Danmarks Nationalbank assesses financial stability in Denmark and presents its views and recommendations on measures that may contribute to enhancing financial stability. Furthermore, the publication is intended to stimulate debate about topics of relevance to financial stability and provide input for public authorities, individual financial institutions and financial sector organisations in relation to risk-assessment issues.

1

ASSESSMENT AND RECOMMENDATIONS

ASSESSMENT

The accommodative monetary policies in the USA and the euro area have resulted in historically low monetary policy interest rates. Unusually low interest rates in prolonged periods imply a risk of unhealthy search for yield and asset bubbles building up. There are no signs of Danish credit institutions accumulating risks due to the low level of interest rates, which destabilises the system, viewed in isolation. However, it is important to monitor developments closely.
Danmarks Nationalbank finds that the Danish banks overall are well-capitalised, are resilient to severe macroeconomic shocks and have excess liquidity.

A more specific assessment of the areas discussed in the other chapters of the report is given below.

LENDING, EARNINGS AND LIQUIDITY
Most banks have come through the crisis, but many banks still have a low return on equity and high costs. Earnings are under pressure from lower demand for new lending, resulting in increasing competition and declining lending margins. Given the generally low level of interest rates, this makes it difficult for the banks to achieve a reasonable return on excess liquidity. This may give banks an incentive to invest in riskier assets or ease credit standards in order to increase their lending volume. The demographic development with underlying structural urban migration poses special challenges for banks with large exposures in the areas from which people migrate.

Looking ahead, earnings are expected to remain under pressure from low demand for new loans and low margins. In order to protect financial stability in future, capacity adjustment in the sector is necessary, e.g. via mergers, with the aim of generating more profitable businesses. The banks' high lending growth prior to the financial crisis was achieved at the expense of credit quality, and it is important to ensure that this is not repeated.

CAPITAL
All banks except one non-systemic bank were able to meet the new stricter capital requirements of CRD IV/CRR, which entered into force in the 1st quarter of 2014. The requirements will be increased further in the coming years, and the banks should continually ensure a suitable level of excess capital adequacy in relation to the new requirements.

The new rules imply stricter requirements as regards the composition and quality of credit institutions' own funds. In future, credit institutions' Common Equity Tier 1 capital must be substantially higher than under the previous rules. In addition, credit institutions may still include two types of interest-bearing capital instruments in the calculation of own funds, namely Additional Tier 1 capital and Tier 2 capital.

Common Equity Tier 1 capital in the form of common equity is still capital of the highest quality, and the credit institutions may choose to meet all capital requirements using Common Equity Tier 1 capital. Additional Tier 1 capital is a possible supplement to Common Equity Tier 1 capital and is converted into Common Equity Tier 1 capital if the Common Equity Tier 1 ratio falls below a predetermined trigger level. Additional Tier 1 capital is thus able to absorb losses in going concern situations equally to common equity and may therefore improve the resilience of credit institutions during periods of financial stress. The trigger for Additional Tier 1 capital could be seen as an implied capital requirement, which the institution has made a commitment to the market to meet. Moreover, this gives the issuing institution an incentive to ensure that it is, at all times, able to meet the capital buffer requirements and continue to pay coupons to investors. Hence, Additional Tier 1 capital can contribute to enhancing market discipline.

CRD IV/CRR introduces a reduction of risk weights for lending to small and medium-sized enterprises, entailing an easing of capital requirements. Since there is no apparent justification, from a risk perspective, for a general reduction of the risk weights for these loans, the institutions should not include such reduction in their capital planning.

STRESS TEST

Danmarks Nationalbank's stress test shows that the systemic banks are robust and resilient to severe macroeconomic shocks. The five systemic banks will have excess capital adequacy in all stress test scenarios. Moreover, their Common Equity Tier 1 capital will remain above 8 per cent, which will be the toughest requirement in the European Banking Authority's, EBA, current stress test of the largest European credit institutions.

In the most severe stress test scenario, some non-systemic banks will need to strengthen their capitalisation. The total capital shortfall for these banks will correspond to approximately 4 per cent of the non-systemic banks' total risk-weighted exposures. In Danmarks Nationalbank's assessment, the size of the capital shortfall and its distribution among individual banks will not pose any threat to financial stability in Denmark, not even in the most severe stress scenario.

The stress test model projects profit and loss accounts and balance sheets in various macroeconomic scenarios. The model consists of stylised relations between macroeconomic developments in Denmark, on the one hand, and bank earnings and loan impairment charges, on the other. The model does not take into account any interconnectedness between the banks or their individual liquidity risks.

MORTGAGE BANK BUSINESS MODEL

It is important for borrowers to build up a certain distance to the loan to value, LTV, limits over time, even in the event of strong drops in house prices, in order to further underpin the high degree of security in the mortgage credit system. Danmarks Nationalbank therefore finds that a more cautious approach is warranted in future as regards deferred amortisation by reducing the LTV limit for deferred amortisation loans as a ratio of the value of the property at the time of borrowing. This should apply to deferred amortisation loans underlying covered bonds, covered mortgage bonds or mortgage bonds issued by banks and mortgage banks. Experience shows that changes in the amortisation profile, particularly the first-year payments, have an introductory effect on house prices and hence the macroeconomy. So the timing and dosage of restrictions on deferred amortisation should be considered carefully. Moreover, mortgage banks with large bond series should continue their efforts to spread their refinancing auctions.

HOUSEHOLDS

The high gross debt of Danish households is no direct threat to financial stability, but may have an indirect effect on financial stability via a decline in household consumption. Danmarks Nationalbank finds that a softer course of house prices in the years preceding the financial crisis would have dampened the strong increase in private consumption before the

crisis and subsequent fall after the crisis. More stable house price development therefore plays a key role. The current housing tax scheme has a destabilising effect on house prices. When house prices rise, taxes fall relative to property values – and vice versa when prices decrease. In recent years, price patterns in the housing market have varied geographically, i.e. real price increases in the large towns and cities, while other parts of the country have not yet seen a reversal. Restoring the link between housing taxes and property values may help counter this distortion. This underlines the necessity of quickly restoring the link between property values and housing taxes in a way that contributes to stabilising the development in house prices, both regionally and over time.

LEVERAGE RATIO

Prior to the financial crisis, many credit institutions, both in Denmark and internationally, had financed too small a share of their assets with equity relative to their risks. Against that background, both quantitative and qualitative requirements of credit institutions' capital relative to risk-weighted exposures have been increased considerably, and several measures have been implemented to ensure that risk-weighted exposures give a true and fair picture of the risk of losses on the credit institutions' exposures. Moreover, internationally and in Denmark, a simple leverage ratio is being developed, relating the equity of credit institutions to their non-weighted exposures.

Thorough analysis of the effects of a leverage ratio is important, especially as regards the interplay with the risk-based capital requirement. Risk-based capital requirements – including use of internal models – give the credit institutions an incentive to manage their risk and portfolio structure in an appropriate way. A binding requirement for the leverage ratio could mean that institutions with low average risk weights are given an incentive to take on more risk.

It is positive that thorough analyses are carried out, both internationally and nationally, before any leverage ratio is introduced as a binding EU requirement. Under Bank Rescue Package 6, the Danish government is going to set up an expert group to assess the need to introduce a leverage ratio in Denmark. A requirement to publish the leverage ratio, without the ratio being a binding requirement, is a good idea as it may help to support the risk-based requirement and strengthen market discipline. In the event of high leverage, the market can be expected to require further information describing whether the risk-based capital requirement is unnaturally low – e.g. due to over-optimistic modelling of risk weights.

BANKING UNION

Since the banking union ensures a common supervisory standard and common supervisory and resolution practices for credit institutions in all participating member states, it will reduce competition-distorting differences in these areas. This is an obvious advantage for cross-border institutions, but in an overall perspective a better-functioning single market for financial services will benefit all competitive institutions and their customers. This positive effect will be more pronounced, the more member states participate in the banking union. Moreover, the banking union will promote financial stability, both in the participating member states and in the EU as a whole, especially by ensuring that the link between credit institutions and government finances is weakened.

The institutional framework for the banking union is aimed primarily at the euro area member states in view of the ECB's role as both central bank and supervisor, among other factors. This has been mitigated by the establishment of the Supervisory Board where all participating member states are represented, and by the introduction of special protective measures, allowing non-euro area member states to participate on reasonable terms.

The Single Supervisory Mechanism will entail more and also external eyes on the large institutions. Presumably, the ECB's new supervisory standard will be perceived as a quality stamp and hence the benchmark, against which the supervision of non-participating EU member states will also be compared. This could prompt international investors to demand higher ex-

cess capital and liquidity for credit institutions outside the banking union.

The harmonisation of standards and practices for the participating member states may, however, imply that some existing national standards will be phased out. On the other hand, participation in the banking union increases Denmark's opportunities of having ECB supervisory practices adapted to Danish conditions and experience, for instance as regards the Danish mortgage credit system.

The Single Resolution Mechanism will play an important role as regards the practical implementation of the two key aspects of the Crisis Management Directive (BRRD). One is to minimise distortion of competition based on actual or expected state aid to weak banks, and the second is to address the "too big to fail" issue concerning very large, systemic banks. A common resolution authority will guarantee common resolution practices, in particular by ensuring uniform and consistent use of the bail-in rules across credit institutions and countries.

The Single Resolution Fund constitutes an important insurance element in the event of a very severe financial crisis. However, this insurance scheme should also include a common backstop. Denmark's large and concentrated financial sector would give the country relatively greater advantages from participating in a common insurance scheme. These advantages should be weighed against the possible additional costs for Danish credit institutions related to participation in the banking union. However, Danmarks Nationalbank finds that application of the bail-in rules as regards failing institutions would considerably reduce the risk of extra costs for other institutions, ordinary customers as well as public finances.

Moreover, prior to the establishment of the banking union, the ECB will assess the soundness of the large institutions. This is an essential step to ensure that the institutions to be subject to the ECB's supervision are robust as a starting point. It is worth noting that the ECB itself has a strong interest in ensuring that this will be the case, and the assessment seems both promising and ambitious in Danmarks Nationalbank's opinion.

The overall structure of the banking union is now in place. Some sub-elements still remain to be developed. Whether Denmark should participate is a political decision. Overall, in Danmarks Nationalbank's opinion, Denmark's interests are best served by participating in the banking union. Participation will, to some extent, reduce the scope for national supervisory measures, but on the other hand, Denmark can both contribute to and benefit from the banking union.

RECOMMENDATIONS

On the basis of Danmarks Nationalbank's analyses, the assessment is that the following recommendations will contribute to strengthening financial stability in Denmark.

MANY BANKS SHOULD CONTINUE TO FOCUS ON THEIR EARNINGS AND CAPITAL

The banks' earnings are under pressure from low demand for new loans, increased competition and low margins. In order to protect financial stability in future, capacity adjustment in the sector is necessary, e.g. via mergers, with the aim of generating more profitable businesses.

The new, stricter capital requirements will be phased in gradually from 2014 to 2019. The banks should ensure that they continually have a suitable level of excess capital adequacy in relation to the new requirements.

HOUSING TAXES SHOULD BE CHANGED SO THAT THEY AUTOMATICALLY REFLECT PROPERTY AND LAND VALUES

Stable development in house prices is an important condition for stable macroeconomic development and thus financial stability. The freeze on property value tax and the adjustment rate for property taxes (land tax) destabilise house prices. When house prices rise, taxes fall relative to property values – and vice versa when prices decrease. Restoring the link between housing taxes and property values may also help counter the regional distortion of house price developments. This highlights the importance of quickly restoring the link be-

Overview of Danmarks Nationalbank's current recommendations Table 1.1

Area	Recommendation
The banks' earnings and capital	Many banks should continue to focus on their earnings and capital.
Curbing fluctuations in house prices	Housing taxes should be changed so that they automatically reflect property and land values.
Mortgage bank business model	The loan to value ratio for deferred amortisation housing loans should be reduced in order to protect the mortgage credit system.
Denmark's participation in the banking union	Denmark should participate in the banking union.
Asset encumbrance	The level of disclosure should be high in connection with encumbrance of bank assets, including contingent encumbrance.
Liquidity of non-systemic banks	The banks should prepare for the phasing-in of new liquidity regulation.

tween property values and housing taxes in a way that contributes to stabilising the development in house prices, both regionally and over time.

THE LTV RATIO FOR DEFERRED AMORTISATION HOUSING LOANS SHOULD BE REDUCED IN ORDER TO PROTECT THE MORTGAGE CREDIT SYSTEM

Reducing the LTV ratio for deferred amortisation loans ensures that borrowers build up a certain distance to the LTV limits over time. This should apply to deferred amortisation loans underlying covered bonds, covered mortgage bonds or mortgage bonds issued by banks and mortgage banks. Reducing the LTV ratio for deferred amortisation loans will further underpin the high degree of security in the mortgage credit system, even in the event of plummeting house prices. Experience shows that changes in the amortisation profile, particularly the first-year payments, have an introductory effect on house prices and hence the macroeconomy. So the timing and dosage of restrictions on deferred amortisation should be considered carefully.

DENMARK SHOULD PARTICIPATE IN THE BANKING UNION

The overall structure of the banking union is now in place. Some sub-elements still remain to be developed. Whether Denmark should participate is a political decision. Overall, in Danmarks Nationalbank's opinion, Denmark's interests are best served by participating in the banking union. Participation will to some extent reduce the scope for national supervisory measures, but on the other hand, Denmark can both contribute to and benefit from the banking union.

OVERVIEW OF DANMARKS NATIONALBANK'S RECOMMENDATIONS

As from *Financial stability 2011* Danmarks Nationalbank has explicitly listed a number of recommendations which, in the assessment of Danmarks Nationalbank, address significant risks to the Danish financial sector. The recommendations are aimed at strengthening financial stability in Denmark. Danmarks Nationalbank's current recommendations can be grouped into six areas, cf. Table 1.1.

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DEVELOPMENT AND TRENDS

PERSPECTIVES

International economic activity is gradually accelerating, although there are considerable variations across countries. Growth has been slightly positive in the euro area in the past year, largely driven by Germany, but more subdued or slightly negative in other large euro area economies. Recoveries are seen in both the USA and the UK, although US economic activity slowed down slightly early this year due to the extraordinarily cold winter. In the emerging economies, economic activity has eased somewhat.

In the advanced economies, growth is expected to gain momentum in 2014 driven by private domestic demand, which is fuelled by, inter alia, very accommodative monetary policies. At the same time, the pace of fiscal consolidation is decelerating. However, both private and government debt remains very high in many countries, dampening economic activity. Also, the currently low inflation rates impede the reduction of debt ratios as nominal wages and profits rise slowly.

After some years of private sector consolidation and weak economic growth, the Danish economy is now picking up. There are positive signs in the labour market and parts of the housing market. Combined with the low level of interest rates and a substantial savings surplus in the private sector, especially among firms, this provides the basis for a self-sustaining upswing with continued growth in domestic demand.

In the USA, the Fed has started to taper its quantitative easing programme. Monthly bond purchases have been reduced from 85 billion dollars in December 2013 to 45 billion dollars in May 2014. At an unchanged pace, the asset purchase programme will be completed by the end of the year. In the euro area, government yields have declined in the past few years and yield spreads have narrowed, reflecting more positive market sentiment and increased risk appetite following the economic reversal. Bank lending rates have also declined, albeit only slightly, and still vary greatly.

Euro area money market rates rose in March and April 2014, resulting in a more negative interest-rate spread between Denmark and the euro area as well as krone weakening. On 25 April 2014, Danmarks Nationalbank raised the rate of interest on certificates of deposit by 0.15 percentage point, whereby it moved back into positive territory after having been negative since the beginning of July 2012. Danish government bond yields have mirrored their German equivalents and, hence, been declining since the turn of the year. The interest rate level is low but slightly higher than in mid-2012 when investor demand for government bonds issued by countries with strong economies and healthy balances, including Denmark, was strong. Strong investor demand was also seen for Danish mortgage bonds.

The extraordinarily accommodative monetary policy has resulted in historically low interest rates. Unusually low interest rates for prolonged

periods imply a risk of an unsound search for yield and asset bubbles building up. Some asset prices in the USA and the euro area are currently at the high end of what is warranted by fundamentals. This applies to, for instance, euro area equity prices measured by the price/earnings ratio or the spread between high yield corporate bonds and government yields, which is at the pre-crisis level. Measured by the historical average, the ratio between house prices and income is high in a number of European countries. There are no general signs that prices have accelerated during the period with very low interest rates, although prices have risen fairly sharply in the past few years in some countries and cities. If US monetary policy is tightened faster than expected, market risk perception may reverse and lead to price declines for high risk equities. In addition, there is a risk that the upcoming stress test of European banks will uncover significant problems. Both factors may have implications for international financial stability since sudden shocks may trigger fire sales and a credit crunch. Depending on the shock and the robustness of the international financial system, this could have serious implications. Conversely, a positive assessment of the outcome of the stress test could boost confidence.

As far as the risk-taking of Danish credit institutions is concerned, there are no indications that the unusually low interest rates have resulted in an unsound search for yield to any significant extent through, for instance, increased leverage or accelerated credit growth. Danish banks have reduced their assets while increasing their Tier 1 capital and the total lending by banks has declined. Insurance and pension companies and investment funds have purchased international equities and corporate bonds, a sign of increasing risk appetite although the holdings are fairly small. This also applies to Danish banks whose holdings of, for instance, international corporate bonds are at a low level. Therefore, it is assessed that the banks have not accumulated risks due to the low level of interest rates. Viewed in isolation, the low level of interest rates destabilises the Danish financial system. However, it is important to monitor the development closely.

LENDING, EARNINGS AND LOAN IMPAIRMENT CHARGES

LENDING

Total lending by Danish banks and mortgage banks was largely unchanged in 2013, cf. Chart 2.1 (left). Even under improved cyclical conditions, demand for new lending may remain low in future as firms and households have consolidated and increased their savings in the past few years.

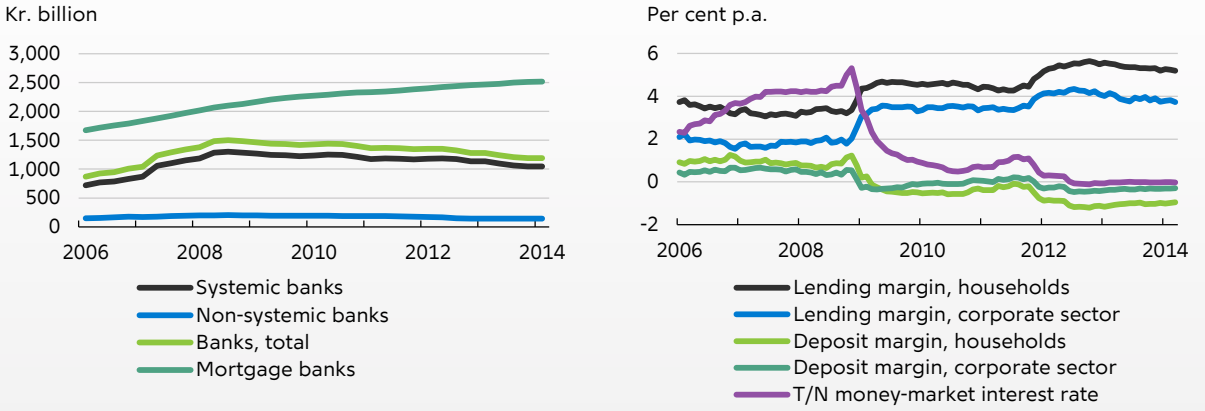
Danmarks Nationalbank's lending survey for the 1st quarter of 2014 shows that new customers' demand for lending from banks has increased slightly while existing customers' demand for credit has declined a little, indicating that customers to a greater extent examine the market and currently consider alternative suppliers and/or products. The lending survey also shows that the credit institutions' credit standards were unchanged overall in the quarter.[1] However, the banks eased their borrowing conditions for corporate customers slightly in 2013 and the 1st quarter of 2014 due to the competitive situation in the sector. The development is reflected in a declining lending margin defined as the difference between the average lending rate and the short-term money market rate, cf. Chart 2.1 (right).

A survey undertaken by the Danish Financial Supervisory Authority of the past year's development in credit standards for new lending to selected segments of the corporate sector also suggests growing competition and an easing of credit terms among banks.[2] The analysis concludes that the growing competition for large corporate customers has led to an easing of credit standards for the best and most robust customers. Credit standards for

1 Danmarks Nationalbank's lending survey is fairly recent and does not form the basis for an assessment of the development in credit conditions during an economic cycle. Experience from other countries shows that credit policies have been tightened far more frequently than they have been eased. Consequently, according to the results of the lending survey credit policies may appear to be more restrictive than they actually are, cf. Kim Abildgren and Andreas Kuchler, Banks, credit and economic trends, Danmarks Nationalbank, Monetary Review, 2nd Quarter 2013, Part 2.

2 The analysis of developments in credit standards for new lending was published on the Danish Financial Supervisory Authority's website on 30 April 2014.

Lending by banks and mortgage banks (left) and average deposit and lending margins (right) Chart 2.1



Note: The left-hand chart shows quarterly observations of lending to the corporate sector and households. In the right-hand chart the lending margin is calculated as the difference between the average lending rate and the T/N money market rate (monthly average). The deposit margin is calculated as the difference between the T/N money market interest rate (monthly average) and the average deposit rate. The calculation is based on the full reporting banks' input to Danmarks Nationalbank's interest rate statistics and comprises deposits and loans in kroner. The most recent observations for the charts are from March 2014. As of September 2013, the charts are based on new and more detailed MFI statistics. The effect of the transition to the above data series is limited.
Source: Danmarks Nationalbank.

the best located rental properties have also, to a certain extent, been eased. Moreover, the banks' willingness to assume risk appears to have increased, according to the Danish Financial Supervisory Authority's survey.

Looking ahead, earnings are also expected to be under pressure from low demand for new loans and low margins. In consideration of future financial stability, capacity adjustment in the sector is necessary, e.g. via mergers, with the aim of generating more profitable businesses. The banks' high lending growth prior to the financial crisis was achieved at the expense of credit quality, and it is important to ensure that this is not repeated.

EARNINGS

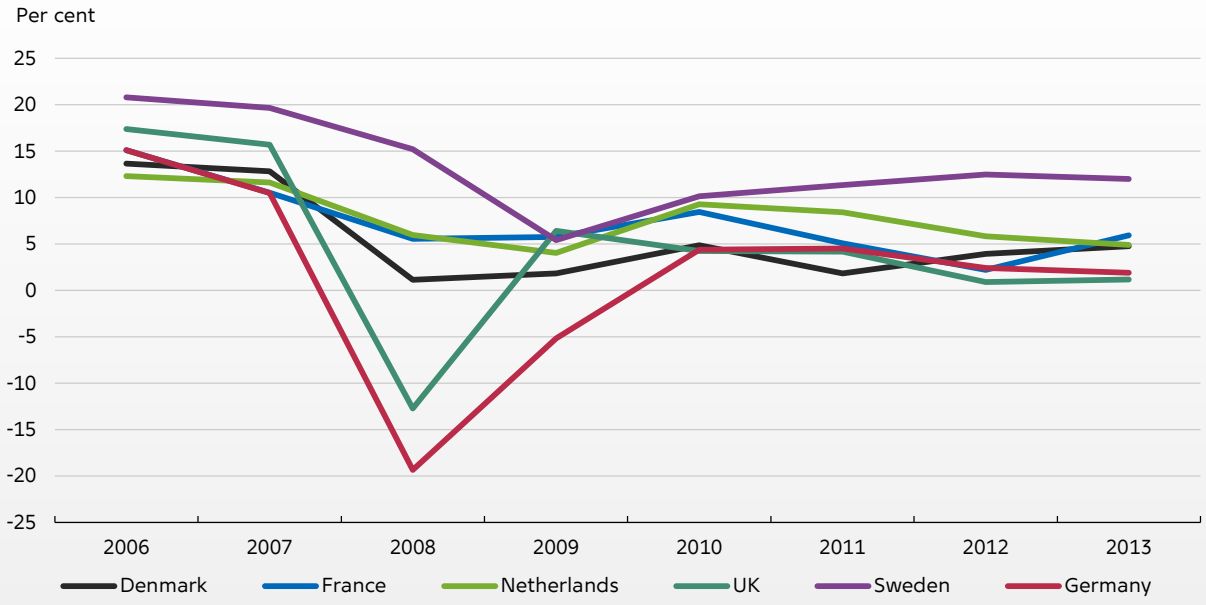
Earnings in Danish credit institutions improved overall in 2013 on 2012. In terms of return on equity, the Danish credit groups are in the middle of the range compared to other European credit groups, cf. Chart 2.2. The Swedish groups still have the highest return on equity due to lower cost-to-income ratios and lower loan impairment charges, among other factors.

Going forward, the market expects that especially the Swedish groups will achieve higher return on equity than the Danish groups. The price/book value (i.e. the relationship between the market value of the share capital and the book value of equity) of the Swedish groups is at a considerably higher level than those of the other groups, and the difference between the Nordic groups has widened over the past years, cf. Chart 2.3. The price/book values of the Danish groups moved higher during the period, reflecting market expectations of an improved return on equity in future.

The return on equity after tax in the Danish systemic banks rose from 3.6 per cent in 2012 to 6.1 per cent in 2013, cf. Chart 2.4, primarily driven by lower loan impairment charges. While revenue has declined in recent years, the level of costs has been unchanged despite branch closedowns and staff reductions, cf. Chart 2.5 (left). However, cost measures are expected to lead to lower costs as the measures take effect. There are initial signs of this in, for instance, Danske Bank where costs were lower in the 1st quarter of 2014 than in the preceding quarters.

Net interest income in the systemic banks declined by 6 per cent from 2012 to 2013, reflecting a combination of lower lending and declining interest margins on loans due primarily to increased competition. At the same time, trading income was lower overall than in 2012

Return on equity in European credit groups Chart 2.2

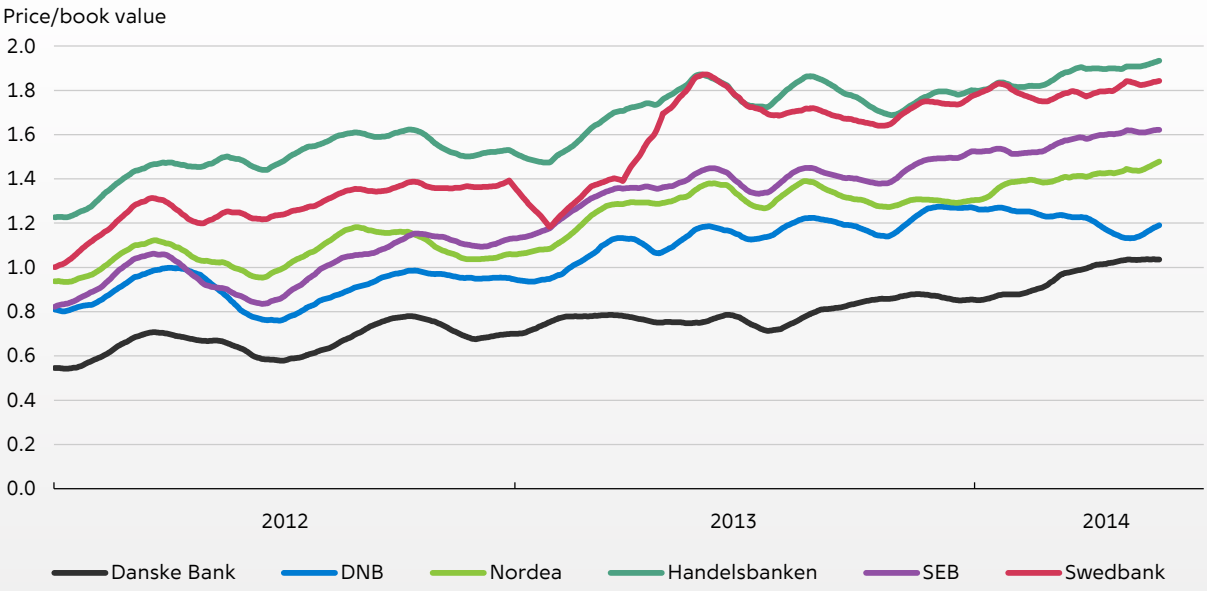


Note: Return on equity is calculated as profit for the year after tax as a percentage of average equity. Average equity is calculated as an average of equity at the beginning and end of the year. Calculations are based on aggregate data for the credit groups included in EBA's capital test for 2012, cf. Box 4.1 in *Financial stability*, 2nd half 2013.
Source: Own calculations based on data from SNL.

and the continued low interest rate level meant that the banks only achieved a low return on their liquidity positions. The deposit margin, i.e. the difference between the short-term money market interest rate and the average deposit rate, was still negative, cf. Chart 2.1 (right).

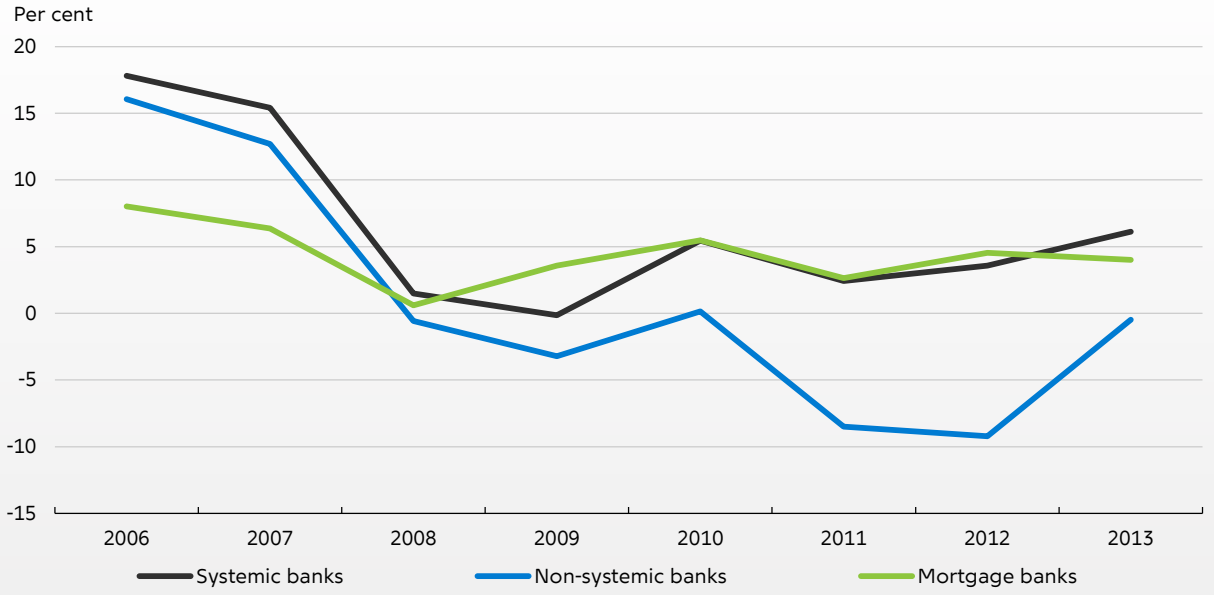
On 30 April 2014, the Danish Competition Council approved the merger between Jyske

Price/book values in Nordic credit groups Chart 2.3



Note: Price/book value is calculated as one month moving average of daily observations and indicates the relationship between the market value of the share capital and the book value of equity. The most recent observations are from 27 May 2014.
Source: Bloomberg.

Return on equity in banks and mortgage banks Chart 2.4

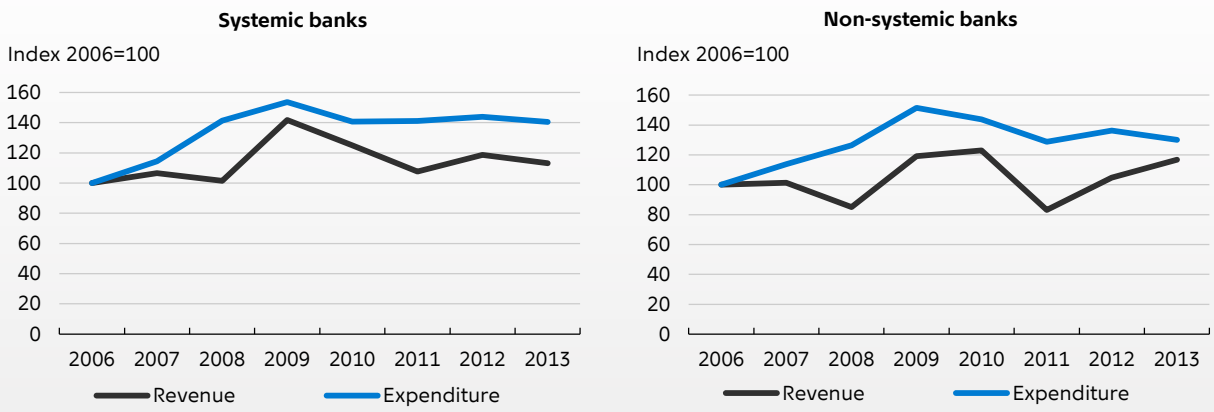


Note: Return on equity is calculated as profit for the year after tax as a percentage of average equity. Average equity is calculated as an average of equity at the beginning and end of the year.
Source: Danish Financial Supervisory Authority.

Bank and BRFkredit, i.e. Denmark's third largest bank and fourth largest mortgage bank, respectively. In the opinion of the Danish Competition Council, the merger will strengthen the position of Jyske Bank and BRFkredit in the competition with large financial groups. This may strengthen the competitive environment in, notably, the mortgage credit market and eventually lead to lower prices and a larger product range.

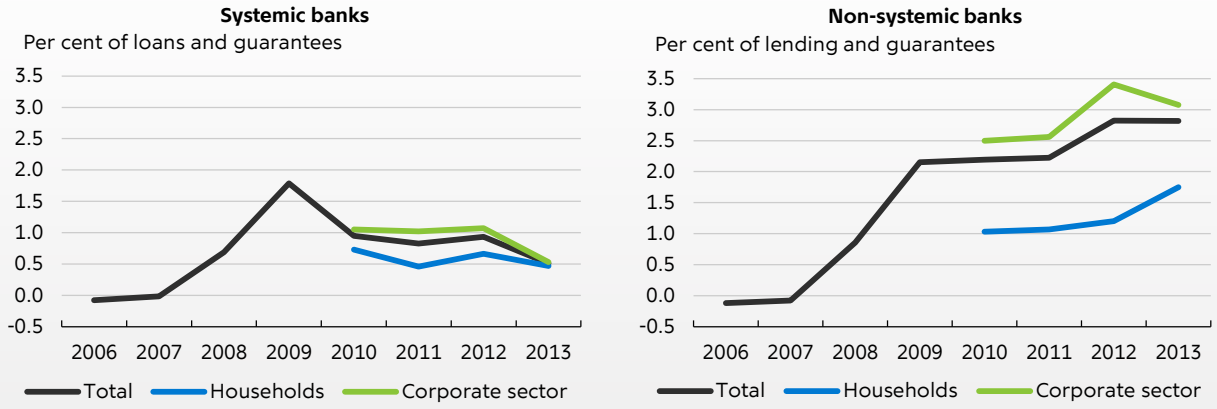
On 21 May 2014, FIH Erhvervsbank and Spar Nord Bank announced that FIH Erhvervsbank would transfer exposures of around kr. 4.0 billion to Spar Nord Bank. Against the backdrop of high financing costs and growing competition in the corporate lending market, FIH Erhvervsbank has not managed to create satisfactory long-term profitability. In consequence, FIH Erhvervsbank has decided to wind up its credit activities over a span of years.

Revenue and expenditure, index 2006 = 100 Chart 2.5



Source: Danish Financial Supervisory Authority and own calculations.

Annual impairment charge ratio for systemic and non-systemic banks Chart 2.6



Note: Households comprise employees, old-age pensioners, etc. but not self-employed persons.
Source: Danish Financial Supervisory Authority and own calculations.

The return on equity among non-systemic banks continues to vary greatly. Some banks obtained a return on equity of 11-13 per cent in 2013, but overall the return continued to be negative (-0.5 per cent in 2013 versus -9.2 in 2012). In overall terms, the development in costs has been flat in recent years, cf. Chart 2.5 (right).

The return on equity of mortgage banks declined from 4.5 per cent in 2012 to 4.0 per cent in 2013 despite higher earnings from administration margins and a slight rise in lending. The drop in earnings is attributable to lower fee and commission income reflecting lower remortgaging activity and a slight increase in loan impairment charges.

LOAN IMPAIRMENT CHARGES

The loan impairment charge ratio of systemic banks dropped from 0.9 per cent in 2012 to 0.5 per cent in 2013, the lowest level since 2007, cf. Chart 2.6 (left). The development is chiefly attributable to lower impairment charges on corporate lending and was driven by a drop in new impairment charges while the level of reversals was largely unchanged on 2012. The decrease is particularly pronounced for loans to building and construction as well as transport, cf. Table 2.1.

The level of loan impairment charges is somewhat higher for non-systemic banks than for systemic banks and was unchanged from 2012 to 2013 in spite of six out of 10 banks having lower loan impairment charge ratios in 2013 than in 2012. This development masks a lower impairment charge ratio for loans to the corporate sector but a higher ratio for loans to households, cf. Chart 2.6 (right).

The lower impairment charges on corporate loans for both systemic and non-systemic banks should be viewed in the context of an 8 per cent drop in the actual number of failures in 2013. The downward trend in failures continued in the first months of 2014, but the level remains high in a longer perspective. Over the past year, failures mainly occurred within trade, primarily retail trade. This trend is mirrored in the estimated failure rates for 2014 (based on Danmarks Nationalbank's failure rate model), which shows a generally weak decline on 2013 in all industries – also the most exposed firms – still with the highest estimated failure rates within trade, particularly retail trade.[3] An explanatory factor of the development in retail trade could be that retail stores in small towns are suffering from changed consumption patterns and migration from the peripheral areas to the cities.

Any problems in retail trade would not only have an impact on the impairment charges on loans to this industry but could also result in impairment losses on commercial properties

3 Here, the most exposed sectors are measured by the 90th percentile.

Loans, guarantees and loan impairment charges by sector and industry Table 2.1

	Loans and guarantees 2013, per cent	Impairment charges for the year as a percentage of loans and guarantees		Loans and guarantees 2013, per cent	Impairment charges for the year as a percentage of loans and guarantees	
		2012	2013		2012	2013
	Systemic banks			Non-systemic banks		
Agriculture, hunting, forestry and fisheries	3	2.5	2.5	11	6.9	4.5
Manufacturing industry and raw materials extraction	6	0.3	0.9	5	6.6	2.9
Energy supply	2	0.3	0.2	4	0.2	0.8
Building and construction	1	10.1	1.7	3	2.6	3.7
Trade	5	1.2	0.8	7	4.1	2.2
Transport, hotels and restaurants	3	3.3	0.4	4	2.5	3.4
Information and communications	1	0.9	-0.4	0	1.7	1.0
Finance and insurance	33	0.1	0.0	10	1.8	2.2
Commercial properties	9	1.9	1.2	13	3.4	5.4
Other industries[1]	8	0.9	0.4	8	3.1	2.7
Corporates, total	**71**	**1.1**	**0.5**	**66**	**3.7**	**3.4**
Households, total	**29**	**0.7**	**0.5**	**34**	**1.2**	**1.8**
Total	**100**	**0.9**	**0.5**	**100**	**2.9**	**2.9**

Note: Households comprise employees, old-age pensioners, etc. but not self-employed persons. Impairment charges on loans to private individuals against real property as collateral are included under households, not commercial properties.
Source: Danish Financial Supervisory Authority.
1. Other industries also comprise public authorities.

as result of vacant retail trade premises. The national vacancy rate for retail trade premises is more than twice as high as that for Copenhagen. Several non-systemic banks continue to have high impairment charges on loans for commercial properties while the systemic banks' impairment charges on loans for commercial properties have declined overall.

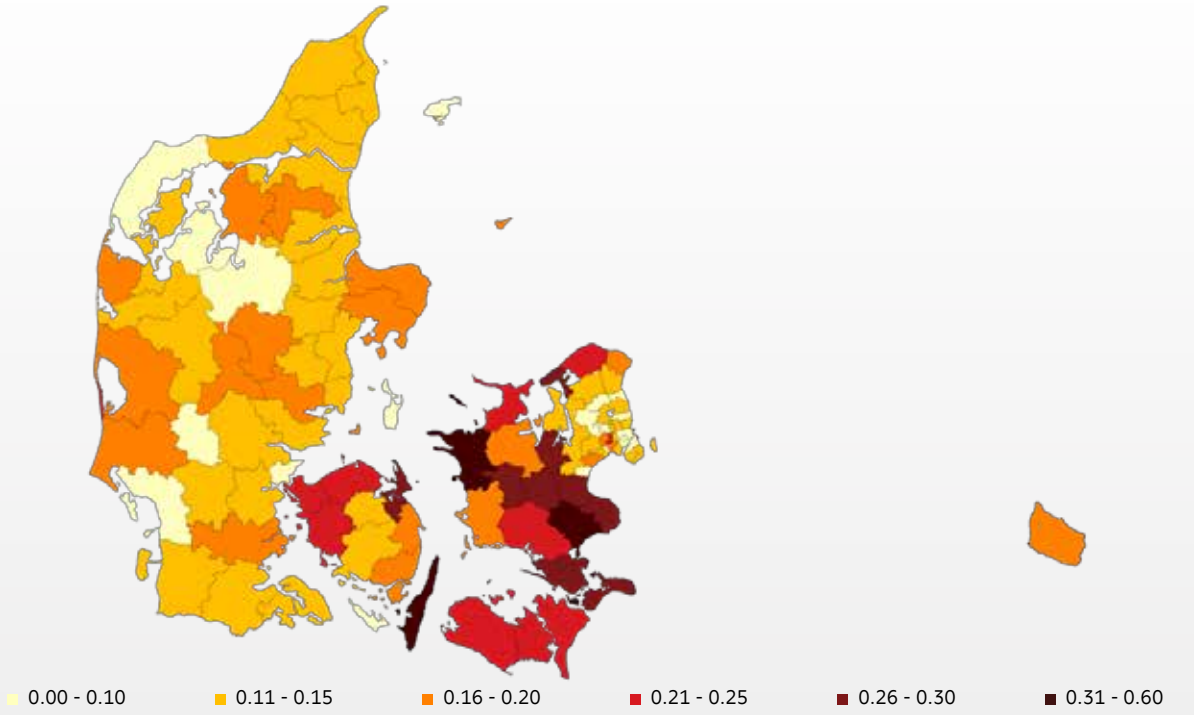
Overall, the agricultural sector is challenged by low earnings and high debt.[4] A few of the non-systemic banks have a high exposure to the agricultural sector and continued high impairment charges on agricultural loans. The systemic banks' lending to the agricultural sector account for a mere 3 per cent of their total loans and guarantees and loan impairment charges are lower than those of the non-systemic banks. On average, the systemic banks' loans to the agricultural sector have been written down by 12 per cent, entailing that the banks have already made major loan loss provisions to cover potential future losses on impaired loans. It is the overall assessment of Danmarks Nationalbank that the challenges faced by the agricultural sector do not pose a threat to financial stability.

The mortgage banks' loan impairment charge ratio moved up from 0.15 to 0.19 per cent in 2013, mainly in respect of loans to households and small corporate customers. Nevertheless, the number of households in arrears declined in the period and has been more than halved since 2009. However, there is an overrepresentation of mortgage arrears and enforced sales in some areas of the country, such as in western and southern Zealand

4 An analysis of the agricultural sector is available in Erik Haller Pedersen, Birgitte Vølund Buchholst and Peter Askjær Drejer, Danish agriculture, Danmarks Nationalbank, *Monetary Review,* 2nd Quarter 2014.

Households in mortgage arrears, 2013

Chart 2.7



Note: Number of households with mortgage loans in 105-day arrears by more than kr. 1,000 for the June 2013 settling period based on the municipality of residence at 1 January 2014.
Source: Own calculations based on data from mortgage banks and from Statistics Denmark.

and western Funen, cf. Chart 2.7. This should be viewed against developments in the housing market in recent years, i.e. an underlying urban migration trend, resulting in higher house prices in the cities and declining house prices in the peripheral areas. This involves a risk of continued impairment charges on loans to these areas in the years ahead.

CAPITALISATION

DEVELOPMENT IN EXCESS CAPITAL ADEQUACY

The excess capital adequacy of the systemic banks remains high and in 2013 their capital was positively affected overall by profit for the year. Risk-weighted exposures grew by 4 per cent in 2013 despite a reduction in lending. The increase partly reflects the Danish Financial Supervisory Authority's order to Danske Bank in the summer of 2013 to increase the risk weights of the bank's corporate exposures.

The excess capital adequacy of the non-systemic banks continues to vary strongly with some banks having a very low excess capital adequacy while others are well-capitalised. Slightly more than half of the banks increased their capital on the back of positive results for 2013. The majority of the banks reduced their risk-weighted exposures as a result of a decrease in lending.

In 2009, Danish banks and mortgage banks raised government Additional Tier 1 capital totalling kr. 46 billion, more than 90 per cent of which has now been redeemed. Today, none of the systemic banks have government capital injections. Redemptions by non-systemic banks are expected to continue until the end of 2014 due to built-in redemption incentives. Redemption in 2015 will be made at a price of 105, while redemption in 2016 and onwards will be made at a price of 110.

In January 2014, Vestjysk Bank converted government Additional Tier 1 capital for the second time and the government now owns approximately 81 per cent of the bank. In March 2014, Vestjysk Bank issued a press release stating that the bank's solvency ratio had dropped from 10.9 per cent to 10.0 per cent

following the implementation of CRD IV/CRR. In consequence, the bank has been ordered to file a recovery plan with the Danish Financial Supervisory Authority with a description of the measures that the bank intends to take to lift the actual solvency above the individual capital need. Also, transaction restrictions have been imposed on the bank concerning the payment of divided and interest on subordinated capital.

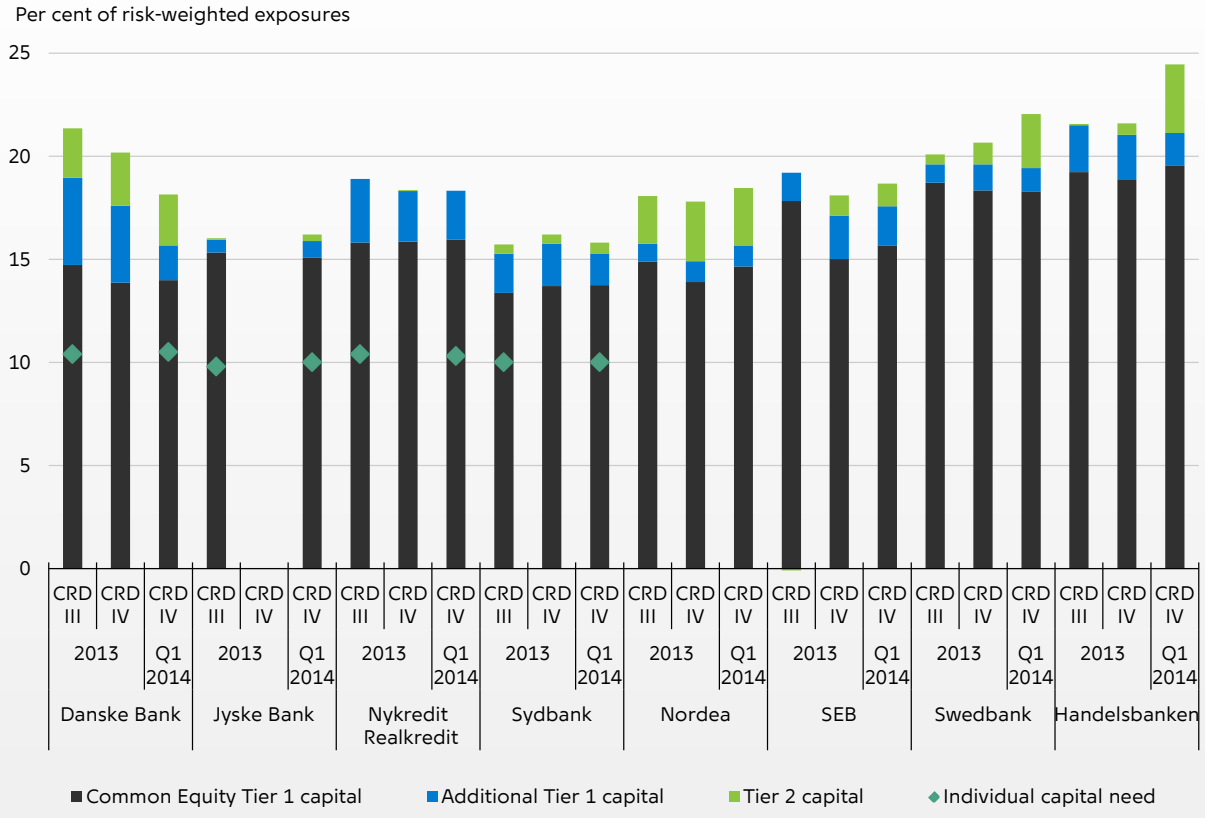
NEW CAPITAL REQUIREMENTS

All systemic banks and mortgage banks are able to observe the new stricter capital requirements in CRD IV/CRR, which entered into force in the 1st quarter of 2014. The same applies to all the non-systemic banks except Vestjysk Bank, which, as mentioned, does not comply with the individual capital need. The new rules under CRD IV/CRR, some of which will be phased in gradually, have an impact on the calculation of the banks' capital and risk-weighted exposures. Several banks are replacing existing capital instruments with new issuances of Additional Tier 1 capital and Tier 2 capital, which fully meet the new criteria, cf. Chapter 4 about capital instruments.

For Danish and Nordic systemic credit groups, the implementation of CRD IV/CRR has generally led to a reduction of the Common Equity Tier 1 capital as a percentage of the risk-weighted exposures, cf. Chart 2.8. In nearly all cases this is due to a combination of changed rules of deductions in the capital and an increase in risk-weighted exposures. The rise in risk-weighted exposures is attributable to the introduction of new rules for the calculation of counterparty risk on derivatives exposures and changes concerning investments in financial sector entities.

Calculation of capital for Nordic credit groups as at 31 December 2013 in accordance with CRD III and CRD IV and as at 31 March 2014 in accordance with CRD IV

Chart 2.8



Note: The CRD III bars show the calculation of capital in accordance with the applicable rules for capital adequacy at end-2013. The CRD IV bars show the calculation of capital in accordance with the new rules for capital adequacy (CRD IV/CRR). Jyske bank does not publish a pro forma calculation of capital in accordance with CRD IV/CRR at end-2013. DNB is not included in the comparison as Norway has not yet implemented CRD IV/CRR. Individual capital need is only shown for Danish groups as publication is not required in Sweden.
Source: Annual reports for 2013, risk reports for 2013 and interim reports for 1st quarter 2014.

New rules for reduced risk weighting of loan exposures to small and medium-sized enterprises will, all else equal, reduce risk-weighted exposures and entail an easing of the capital requirements. A few banks have announced that the generally reduced risk weighting of loan exposures to small and medium-sized enterprises more than offsets the other effects of the new rules. Since there is no apparent foundation, in a risk perspective, for a general easing of the risk weights for these loans, the banks should not factor in such easing in their capital planning.[5]

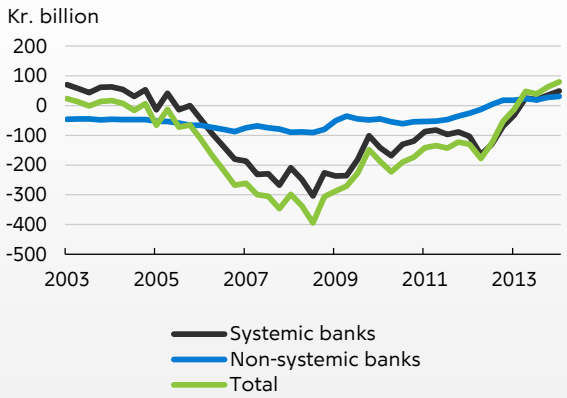
THE BANKS' LIQUIDITY

The Danish banks have ample liquidity and at the end of March 2014 all the banks' excess liquidity cover was significantly above the Supervisory Diamond limit value of 50 per cent.[6] The banks have prematurely redeemed a large portion of the 3-year loans that were offered by Danmarks Nationalbank in 2012. On 27 May, kr. 5.8 billion of the kr. 53.2 billion offered remained to be redeemed.

The aggregate customer funding gap of the systemic and non-systemic banks has been improved since end-2008 and was reversed to a surplus in mid-2013, cf. Chart 2.9. This development is primarily driven by a decline in lending. The return on the liquidity surplus is low due to the subdued demand for new lending and the low rates of interest.

The stable development in the financial markets and the sector has prompted Danmarks Nationalbank to phase out the measures to support liquidity that were introduced during the financial crisis. As of 1 July 2014 the banks can no longer raise 6-month loans with Danmarks Nationalbank, and sector company shares and the banks' lending will no longer form part of Danmarks Nationalbank's collateral basis.

Customer funding surplus Chart 2.9



Note: Lending and deposits exclude repo transactions in the domestic banks but, due to data restrictions, include repo transactions in the Danish banks' foreign branches. The most recent observations are from March 2014. As of September 2013, the chart is based on new and more detailed MFI statistics.
Source: Danmarks Nationalbank and own calculations.

To assess the sustainability of the banks' liquidity situation, the development is analysed in a stress scenario where the banks' 10 largest term deposits and all long-term senior debt maturing in 2014-17 cannot be refinanced and loans or loan commitments from Danmarks Nationalbank based on the banks' lending or sector company shares as collateral can no longer be included in excess liquidity cover. In this scenario, all the systemic and by far the majority of the non-systemic banks will still have excess liquidity cover of more than 50 per cent at end-2017.

LCR

In 2015, the common European liquidity measure, Liquidity Coverage Ratio, LCR, will be a binding requirement for credit institutions. The purpose of the LCR is to ensure that the credit institutions have adequate high quality liquid assets to cover the outflow of liquidity in a 30-day intensive liquidity stress scenario. The minimum requirement is 60 per cent in 2015, rising to 100 per cent in 2018, and in the longer term the requirement will replace the current regulatory requirement, Section 152. Danish systemic banks are expected to be required to

5 In this connection it should be noted that in a consultation response of 6 May 2014 Norges Bank seconds a motion from the Norwegian Financial Supervisory Authority not to implement the reduced risk weighting of loan exposures to small and medium-sized enterprises in Norwegian law.

6 Excess liquidity cover is calculated according to Section 152 of the Danish Financial Business Act, which states that a bank should have adequate liquid funds to cover at least 10 per cent of its total debt and guarantee exposures or 15 per cent of its short-term debt exposures.

meet an LCR of 100 per cent by 2015. However, the phasing-in will depend on the European Commission's final design of the LCR, including the classification of Danish mortgage bonds.[7]

According to CRD IV/CRR, the European Commission must adopt a delegated act defining the LCR no later than at end-June 2014. The classification of covered bonds, including Danish mortgage bonds, will appear from this. A preliminary proposal of May 2014 from the European Commission classifies the majority of Danish mortgage bonds as highly liquid and others as liquid.[8] The classification into highly liquid and liquid assets is based on a number of quality requirements, including requirements for series size and credit rating. Highly liquid and liquid assets are subject to various haircuts and a ceiling is imposed to ensure that a maximum of 70 per cent of a credit institution's liquidity buffer can be made up of mortgage bonds.

It is important that the credit institutions have a well-diversified portfolio of liquid assets to counter liquidity risks. Empirical analyses show that highly liquid Danish mortgage bonds were nearly as liquid as Danish government bonds during the crisis.[9] Therefore, it is positive overall that the European Commission's proposal enables credit institutions to hold both mortgage bonds and government bonds as highly liquid assets.

Compared to the Basel Committee's definition of LCR, the European Commission's proposal entails an improved LCR for Danish credit institutions given that it will enable them to a greater extent to include mortgage bonds in their liquidity buffer. Based on the European Commission's proposal, it is Danmarks Nationalbank's assessment that some of the systemic credit groups already comply with or are close to complying with an LCR of 100 per cent.[10] The other systemic banks have time to make the necessary adjustments by 2015. Also, it is important that the non-systemic banks prepare for the phasing-in of a new liquidity regulation.

MORTGAGE BANK BUSINESS MODEL

In order to act as a provider of loans between investors and borrowers, the mortgage banks depend on bond issuance. The opportunity to issue bonds depends on an existing efficient market as well as confidence in the individual mortgage bank and the mortgage system in general. Therefore, it is essential that the mortgage banks apply a cautious business model with an appropriate margin to the regulatory limits for the benefit of investor confidence and financial stability. The Danish Financial Supervisory Authority is working on a supervisory diamond for mortgage banks that will lay down the overall framework for the mortgage banks' risk profile. Even if a supervisory diamond is introduced, the mortgage banks will still be responsible for their own risk management.

DEFERRED AMORTISATION

The use of deferred amortisation mortgage loans for owner-occupied homes and summer cottages grew strongly from the introduction in 2003 to the outbreak of the financial crisis, accounting for close to 50 per cent of total mortgage lending at end-2008. Since then, this share has increased to over 55 per cent, and the majority of the loans have been granted as variable rate loans, cf. Chart 2.10 (left). Around half the loans have a loan-to-value (LTV) ratio of more than 80 per cent and by far the largest share of loans have an LTV ratio of more than 60 per cent, cf. Chart 2.10 (right).

In order to further underpin the high degree of security in the mortgage system, even in the event of plummeting house prices, it is

7 Cf. Appendix 3 on Bank Rescue Package 6, *Financial stability*, 2nd half 2013.

8 Described in the Capital Requirements Regulation as "assets of extremely high liquidity and credit quality" and "assets of high liquidity and credit quality".

9 Cf. Dick-Nielsen, Jens, Jacob Gyntelberg and Thomas Sangill (2012), Liquidity in government versus covered bond markets, *Danmarks Nationalbank, Working Paper* No. 83/2012 and Buchholst, Birgitte Vølund, Jacob Gyntelberg and Thomas Sangill (2010), Liquidity of Danish government and covered bonds – before, during and after the financial crisis – preliminary findings, *Danmarks Nationalbank, Working paper*, No. 70/2010.

10 Here, systemic credit groups are defined as banks in the Danish Financial Supervisory Authority's group 1, including the mortgage activities of the groups.

important for borrowers to build up a certain distance to the LTV limits over time. Danmarks Nationalbank therefore recommends that a more cautious approach be taken in future as regards deferred amortisation by reducing the LTV limit for deferred amortisation loans as a ratio of the value of the property at the time of borrowing. This should apply to deferred amortisation loans underlying covered bonds, covered mortgage bonds or mortgage bonds issued by banks and mortgage banks.

Experience shows that changes in the amortisation profile, particularly the first-year payments, have an introductory effect on house prices and hence the macroeconomy. So the timing and dosage of restrictions on deferred amortisation should be considered carefully.

Norway and Sweden have introduced measures that may contribute to reducing the credit institutions' risks in relation to home loans. The measures should be viewed in the context of the trends in house prices and household debt in the relevant countries and comprise LTV ratios, limits on deferred amortisation, etc., cf. Box 2.1.

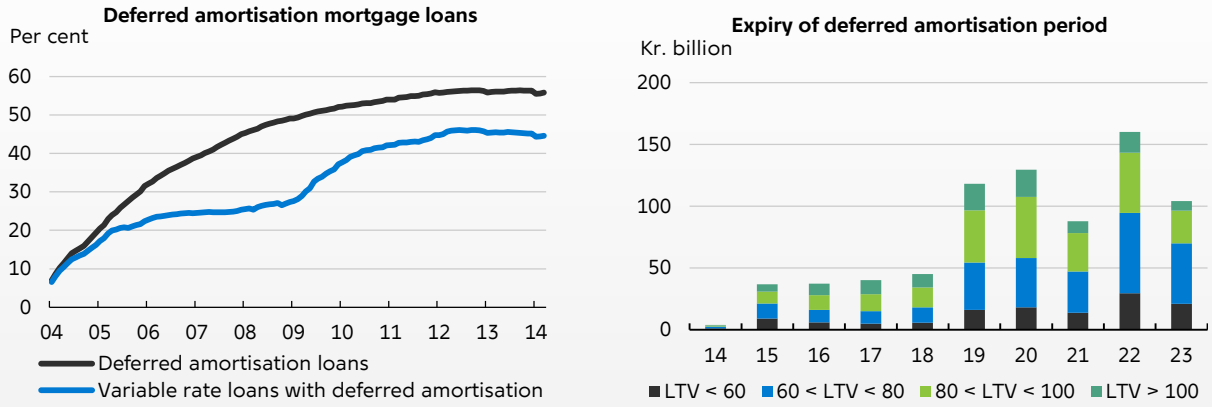
MATURITY EXTENSION OF MORTGAGE BONDS

On 11 March 2014, the Folketing (Danish parliament) adopted a legislative amendment introducing contingent maturity extension for mortgage bonds with shorter maturities than the underlying loans. The extension takes effect if a refinancing auction fails, or if the yield on mortgage bonds with an original maturity of less than 2 years rises by more than 5 percentage points within one year. The latter mechanism is called an "interest rate trigger".[11] The various scenarios of maturity extension and interest rate fixing are illustrated for a 1-year fixed rate bond in Box 2.2.

Bonds with an option of maturity extension will automatically become the market standard, since this is a statutory requirement. At the same time, the elements introduced by way of the legislative amendment are known in the

Deferred amortisation mortgage loans for owner-occupied homes and summer cottages (left) and expiry of deferred amortisation period (right)

Chart 2.10



Note: In the left-hand chart, deferred amortisation loans and deferred amortisation loans with adjustable interest rates are shown as a share of the mortgage banks' total loans to owner-occupied homes and summer cottages. The most recent observations are from March 2014. As of September 2013, the chart is based on new and more detailed MFI statistics. The effect of the transition to the above data series is limited. The right-hand chart is based on outstanding deferred amortisation mortgage loans as at end-2013 and shows the distribution of expiries of deferred amortisation periods by LTV ratios for homes underlying the mortgage loans. The expiry year of the deferred amortisation period is calculated based on the starting date of the most recent deferred amortisation period assuming that the total deferred amortisation period is 10 years.
Source: Mortgage banks, Danmarks Nationalbank and own calculations.

11 For a more comprehensive description of the legislative amendment and model calculations of the effects of the interest rate trigger, see Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2014, Maturity extension of mortgage bonds.

House prices and measures regarding mortgage loans in Norway and Sweden

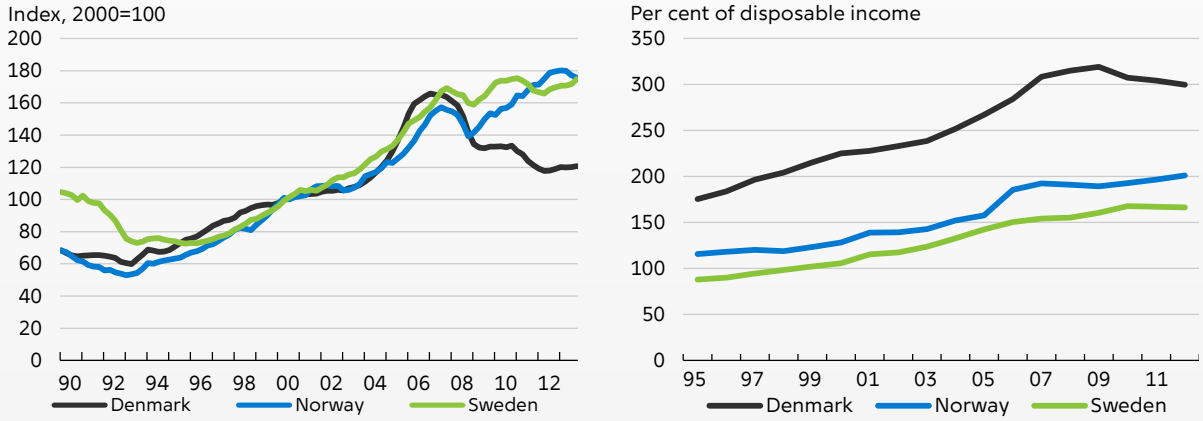
Box 2.1

Macroprudential policy is a new element of the regulatory and institutional framework. It is aimed at the financial system as a whole and should contribute to financial sector behaviour overall being more in line with the interests of society. In recent years, Norway and Sweden have introduced macroprudential measures that may contribute to reducing the banks' risks in relation to mortgage loans.

Following the financial crisis, house prices have declined in Denmark but have continued to climb in Norway and Sweden. In Norway, house prices have surged since 2008, while the price trend in Sweden has been more subdued. At the same time, household debt relative to disposable income continued to rise in both Norway and Sweden by 10.2 percentage points and 10.8 percentage points, respectively, from 2008 to 2012.

Danish banks granting loans against real property as collateral in Norway and Sweden are exposed to increasing vulnerabilities in these countries and, in consequence, potential losses. Therefore, in the assessment of Danmarks Nationalbank it is appropriate that the measures also comprise Danish banks' business activities in these countries.

Development in real house prices (left) and household debt (right)



Source: OECD.

In May 2013, the Swedish Financial Supervisory Authority, Finansinspektionen, introduced a requirement that the risk weights for loans secured on real property must be at least 15 per cent on average for banks using the IRB approach to calculate risk weights. Finansinspektionen assessed that the risk weights used – around 5 per cent on average in the case of several of the largest banks – underestimated the actual credit risk on mortgage loans. In May 2014, Finansinspektionen announced that the minimum requirement would expectedly be raised to 25 per cent from the autumn of 2014. The requirement was introduced as a Pillar II requirement. As at 30 June 2013, the Danish banks' average risk weights for loans secured on real property in Denmark was 12.8 per cent calculated on the basis of four of the largest credit groups in Denmark.[1]

In September 2010, Finansinspektionen introduced a rule that loans secured on real property must not exceed 85 per cent of the market value of the property. The rules apply to extensions of existing loans and new loans secured on real property. No similar LTV limits for the value of total mortgage loans exist in Denmark. However, there is a limit for the mortgaging of owner occupied homes underlying covered bonds which must not exceed 80 per cent of the value of the property.

In October 2013, Finansinspektionen recommended that individual amortisation schedules be prepared in connection with new loans. The trade organisation for banks supported the proposal and issued a similar recommendation. The trade organisation also recommended that loans accounting for more than 75 per cent of the value of the property be repaid over a 10-15-year period. In March 2014, the recommendation to introduce restrictions on deferred amortisation was expanded to include loans exceeding 70 per cent of the value of the property. Finansinspektionen's report on the Swedish mortgage market from March 2013 shows that close to 90 per cent of borrowers with an LTV ratio in excess of 75 per cent amortise on their loans while this is only the case for 29 per cent of those with an LTV ratio below 75 per cent. The average repayment period for loans with amortisation and an LTV ratio below 75 per cent is 43 years. In the case of new loans with an LTV ratio below 75 per cent, 40 per cent amortise on their loans, while the average repayment period for loans with amortisation is 140 years.

Continued on next page

continued Box 2.1

Measures in respect of loans secured on real property

	Requirements on ability to service debt	LTV limits	Amortisation	Capital adequacy requirement
Sweden	-	85 per cent[2]	Loans over 70 per cent of property value (sector recommendation)	Avg. risk weights of 15 per cent for mortgage loans (Pillar II)
Norway	Tighter guidelines[2]	85 per cent[2]	Loans over 70 per cent of property value[2]	Increased risk weights - 20 per cent LGD on mortgage loans (Pillar I)

Source: Swedish authorities and trade organisation for banks.

In December 2011, the Norwegian Financial Supervisory Authority established new guidelines for responsible mortgaging of homes, the aim of which is to protect consumers and financial stability in Norway. A key element of the guidelines is a thorough assessment of and requirement for the borrower's ability to service debt. Among other factors, this assessment should be based on a minimum increase in interest rates of 5 percentage points from the current level of interest rates. The LTV, including all loans secured on real property, must not exceed 85 per cent and the share of the loans that exceeds 70 per cent of the market value of the property must be amortised. This is a tightening of the previous rules when deferred amortisation was unlimited and the LTV limit was 90 per cent.

The Norwegian government raised the minimum requirement for the estimated Loss Given Default, LGD, for housing exposures from 10 to 20 per cent in October 2013 with a view to improving financial stability. LGD expresses the expected loss ratio in the event of default and is included in the IRB institutions' calculation of risk weights.[3] The government expects that the resultant capital increase will be limited in the short term due to the transition rules.[4] Following a review of the institutions' risk weights for home loans, the Norwegian Financial Supervisory Authority published a proposal in January 2014 for additional tightening of the institutions' calculation of risk weights for home loans, involving a requirement for a more conservative calculation of Probability of Default, PD, which estimates the probability of default on loans in the year ahead.

1. Danske Bank, Nykredit, Jyske Bank and Sydbank, cf. EBA Transparency Exercise 2013.
2. The measures were introduced as guidelines for healthy banking operations in Sweden and responsible lending practice in Norway, respectively, fixed by the national supervisory authorities.
3. For a description of the banks' calculation of risk weights using the IRB method, see Danmarks Nationalbank, Financial stability, 2nd half 2013, Chapter 5.
4. The capital adequacy rules contain a Basel I floor for the IRB institutions' calculation of risk-weighted assets, according to which the risk-weighted exposures cannot be lower than 80 per cent of the institutions' risk-weighted exposures calculated in accordance with the Basel I rules. The floor applies until 31 December 2017 with an option of extension.

Danish mortgage credit market. The market for short-term mortgage bonds is therefore expected to continue to attract a broad group of investors demanding short-term highly liquid bonds with low credit risk, e.g. for liquidity management purposes. This is supported by the fact that the credit rating agencies' reception of this amendment has been predominantly positive. Only minor bond series with an option of maturity extension have yet been issued, but so far the premium required by investors to carry the risk of maturity extension seems to be around 5 basis points.

Danmarks Nationalbank is satisfied with the legislative amendment, which serves a dual purpose. Firstly, it represents a robust way of managing refinancing risk for mortgage banks. It leaves no doubt as to what will happen in the event that an auction fails or interest rates suddenly rise sharply. The refinancing risk is shifted to the investors, and using the interest rate trigger, it is possible to calculate a price for possible maturity extension of the bonds.

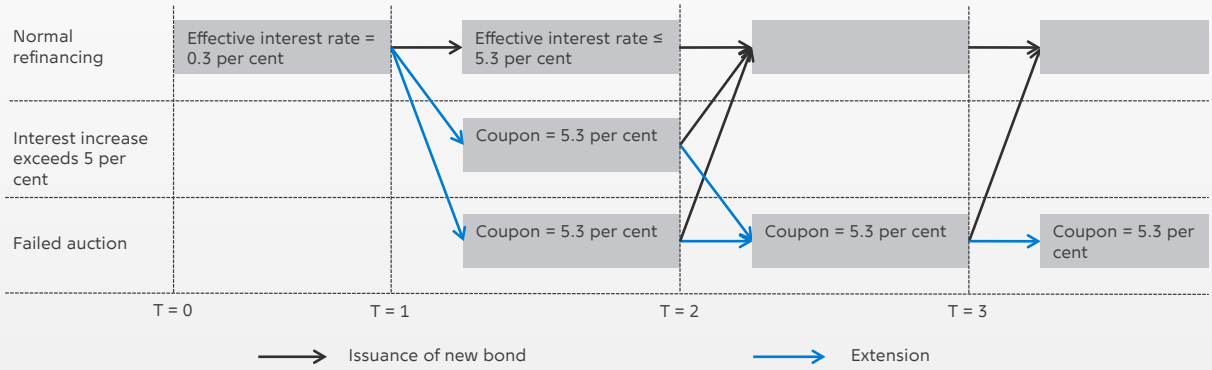
Secondly, the legislative amendment re-establishes a credible resolution model for mortgage banks. The prevalence of mortgage bonds with shorter maturities than the underlying loans has previously made it difficult to identify a clear procedure for resolution of a mortgage bank because it would be difficult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

Example: 1-year bond with contingent maturity extension Box 2.2

Assume that a mortgage bank at time 0 sells a 1-year bond with a yield to maturity of 0.3 per cent. One year after, at time 1, the mortgage bank attempts to issue a new bond to replace the bond issued at time 0. One of the following three situations may follow:

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

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



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

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

maturity extension enables the bankruptcy trustee to wind up a mortgage bank in accordance with loan agreements and bond terms until all mortgage loans have been redeemed.

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

REFINANCING

In recent years the sector has aimed to reduce the volume of bonds that are refinanced every quarter by increasingly spreading the auctions over the year. Previously, refinancing of the bonds underlying adjustable rate loans was concentrated in December. Around half of the refinancing now takes place in other months than December. It is essential that the mortgage banks with large bond series continue their efforts to spread out the auctions. This reduces the risk that many borrowers will see their yields fixed at a high level at the same time, while also reducing the volume of bonds that could be extended at any given time, cf. the legislative amendment on contingent maturity extension.

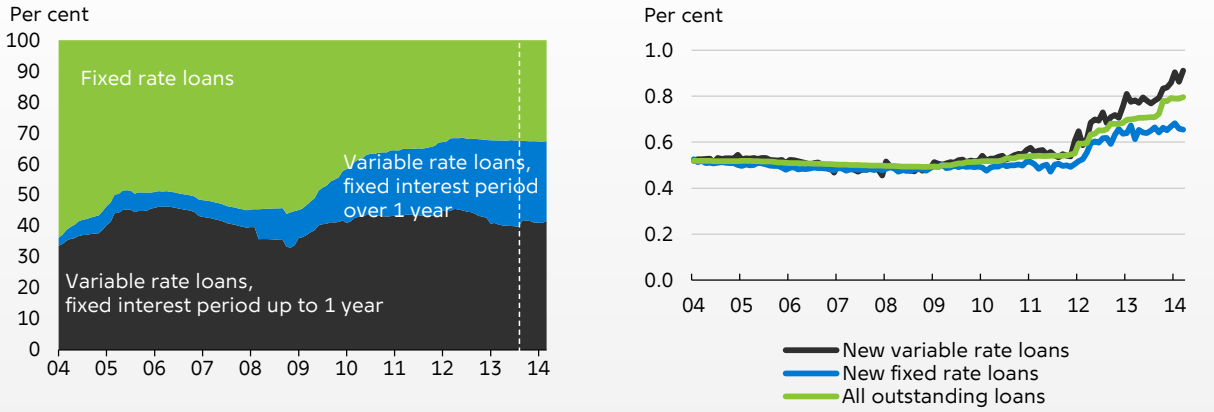
The share of loans with fixed interest periods up to one year has shown a slight downward trend since the spring of 2012, cf. Chart 2.11 (left). This should be viewed in the light of the mortgage banks' efforts to persuade customers to opt for loans with longer fixed interest periods. For instance, the mortgage banks have given their customers a price incentive to remortgage short-term adjustable rate loans into loans with longer fixed interest periods. In recent years, the difference between the administration margins for new fixed rate and variable rate loans has widened sharply, accounting for approximately 0.25 percentage point in March 2014, cf. Chart 2.11 (right).

HOUSEHOLDS

By international standards Danish households have a high level of debt relative to income.

Mortgage banks' lending to owner-occupied homes and summer cottages by fixed interest period (left) and mortgage banks' average administration margins by loans to households (right)

Chart 2.11



Note: In the left-hand chart, variable rate loans cover adjustable rate loans and loans linked to a variable interest rate. The transition to the new MFI statistics in September 2013 involves a minor data break; the share of variable rate loans with a fixed interest period up to 1 year increases by more than 2 percentage points while the share of variable rate loans with a fixed interest period over 1 year declines by more than 2 percentage points. In the chart, the fixed interest period is defined based on the remaining term to maturity. In the right-hand chart, variable rate loans cover adjustable rate loans with a fixed interest period of up to 10 years and loans linked to a variable interest rate. As of September 2013, the chart is based on new and more detailed MFI statistics, but the effect on administration margins is limited. The most recent observations for the charts are from March 2014.
Source: Danmarks Nationalbank.

However, bank loan impairment charge ratios on loans and guarantees to households are low and have been so throughout the crisis even though loans to households account for a major share of the credit institutions' total lending. Moreover, analyses made by Danmarks Nationalbank show that households with high income and wealth account for the majority of the debt.[12] Also, most households would be able to service their debts even during an economic downturn, and the high gross debt does not pose a serious direct threat to financial stability, one reason being that the households also have considerable financial assets.

An analysis made by Danmarks Nationalbank indicates that the link between gross household debt and household consumption aggravated the overheating of the Danish economy and the subsequent cyclical downturn. Households with high LTV ratios had higher consumption relative to income than other households in the years leading up to the financial crisis and reduced consumption more during the crisis, cf. Box 2.3. At the same time, the reduction in consumption at a given LTV ratio was most pronounced for households with the highest debt-to-income ratios.

Thus, high LTV ratios amplify the cyclical fluctuations in the Danish economy with potential indirect implications for financial stability through an impact on, for instance, firms which could be facing financial difficulties in case of a contraction in consumption. During the most recent boom, borrowing by households surged, rising more sharply than previously seen. The surge went hand in hand with an even stronger rise in housing wealth, which increased homeowners' opportunities to raise loans against the home as collateral. For many families, the higher price level also meant that they took out larger loans in order to enter the housing market. When house prices subsequently began to fall, LTV ratios increased substantially. Therefore, it is assessed that more subdued house price developments in the years before and after the financial crisis would have resulted in a less pronounced fall in private consumption during the crisis.

12 See also Danmarks Nationalbank, *Financial stability* 2013 and Danmarks Nationalbank, *Financial stability,* 2nd half 2013.

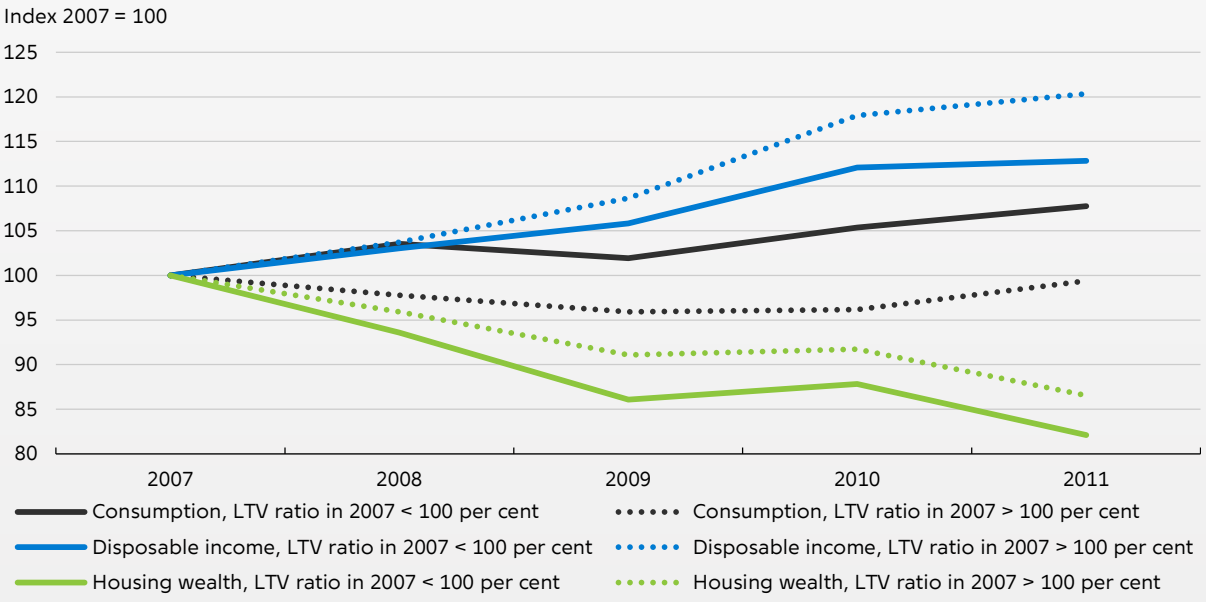
Relationship between LTV ratio and development in consumption

Box 2.3

The significance of the LTV ratio to household consumption is supported by sound theoretical arguments as loans secured on real property are the key source of credit for most homeowners. If the debt exceeds the value of the home, obtaining further credit via this channel is not possible, however, and this may cause the household to reduce its consumption. The risk of this situation arising may be sufficient to affect household consumption decisions. Hence, some households will insure against unexpected events by creating a buffer with a suitable distance to any upper LTV limits. Accordingly, a high LTV ratio may affect consumption negatively long before these upper limits are reached.

An analysis by Danmarks Nationalbank investigates the relationship between LTV ratios among Danish homeowner households before the most recent financial crisis and the households' consumption patterns during the crisis.[1] Homeowner households with high LTV ratios before the financial crisis reduced their consumption more than the other homeowner households during the crisis, even though they experienced a more favourable development in both disposable income and housing wealth during the same period, cf. the chart below. The drop in mortgage rates during this period is a contributory factor to the more favourable development in disposable incomes, which was particularly beneficial to households with large debts. Housing wealth declined in the period under review for both groups of homeowners due to a drop in house prices, which, however, was relatively smaller for the group of homeowners with high debts than for other homeowners. Nonetheless, consumption showed a weaker trend among households with high LTV ratios than among the other homeowners. For the median household in the former group consumption in 2009 was almost 5 per cent below the level of 2007, while the median household in the group of other homeowners experienced consumption growth of close to 2 per cent from 2007 to 2009. The same conclusion applies when a number of family-specific factors are taken into account such as age, income and wealth. The variable used is consumption relative to income so the fall in consumption does not reflect changes in income. The relation is also seen within a wide size-related spectrum of net wealth, indicating that the development is not due to a tightening of credit conditions. The above conclusions are closely related to the financial crisis. The relation is less pronounced if the same analysis is made for the LTV ratio in 2004 and the development in consumption in 2004-07. This indicates that the major impact on private consumption rather reflects widespread crisis awareness and greater uncertainty about future economic conditions than either an entirely normal consumption and savings pattern, with periods of high consumption often being followed by periods of more subdued consumption, or a tightening of credit conditions.

Development in disposable income, housing wealth and consumption: households with high LTV ratios compared with other homeowners



Note: Nominal development in disposable income, housing wealth and consumption, indexed relative to 2007, for two different groups: 1. Homeowners with LTV ratios of less than 100 per cent in 2007 (solid lines). 2. Homeowners with LTV ratios above 100 per cent in 2007 (dotted lines). The median value of the three indexed variables within each group is shown for every year. The chart only includes households that existed in every year of the period 2007-11 and were not involved in property transactions during the period under review.
Source: Own calculations based on register data from Statistics Denmark.

1. Asger Lau Andersen, Charlotte Duus and Thais Lærkholm Jensen, Household Debt and Consumption during the Financial Crisis Household debt and consumption during the financial crisis, Danmarks Nationalbank, *Monetary Review*, 1st Quarter 2014 and Asger Lau Andersen, Charlotte Duus and Thais Lærkholm Jensen (2014), Household debt and consumption during the financial crisis – evidence from Danish microdata, *Danmarks Nationalbank, Working paper*, No. 89/2014.

3

STRESS TEST OF THE BANKS' CAPITALISATION

SUMMARY

Danmarks Nationalbank's stress test shows that the systemic banks are robust. The five systemic banks will have excess capital adequacy in all stress test scenarios. Moreover, their Common Equity Tier 1 capital will remain above 8 per cent, which will be the toughest requirement in the European Banking Authority's, EBA's, current stress test of the largest European credit institutions.

In the most severe stress test scenario, some non-systemic banks will need to strengthen their capitalisation. The total capital shortfall for these banks will correspond to approximately 4 per cent of the non-systemic banks' risk-weighted exposures. In Danmarks Nationalbank's assessment, the size of the capital shortfall and its distribution among individual banks will not pose any threat to financial stability in Denmark, not even in the most severe stress scenario.

DANMARKS NATIONALBANK'S STRESS TEST MODEL

Danmarks Nationalbank's stress test model provides the basis for a general assessment of the robustness of Danish banks in terms of capitalisation in various scenarios. The five systemic and nine non-systemic banks included in the stress test accounted for 85 and 8 per cent, respectively, of Danish banks' lending and guarantees at end-2013.[1]

The stress test model projects the profit and loss accounts and balance sheets in various macroeconomic scenarios. The model consists of stylised relations between macroeconomic developments in Denmark on the one hand and bank earnings and loan impairment charges on the other. The development in the banks' capitalisation is assessed within the framework of the model. The model does not take into account any interconnectedness between the banks or their individual liquidity risks. At present, the banks have ample liquidity, and their excess liquidity cover by far exceeds the current regulatory requirement, cf. Chapter 2.

The capitalisation of banks is assessed in three scenarios, cf. Chart 3.1. The baseline scenario is based on Danmarks Nationalbank's macroeconomic projection, cf. *Monetary Review*, 1st Quarter 2014. As the model applies a number of conservative assumptions in the projection of the banks' capitalisation, this scenario does not represent a projection of the banks' capitalisation.[2]

The other two scenarios assume negative shocks to the economy, i.e. a low-growth scenario and a severe recession scenario, cf. Table 3.1 and Box 3.1. The scenarios have been

1 The report population is described in Appendix 1. Jutlander Bank is not included in the stress test population due to lack of data.

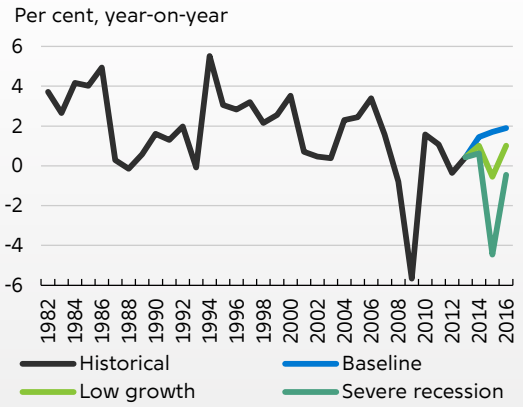
2 Cf. *Financial stability* 2012, Box 11.

Stress scenarios Box 3.1

Low growth
The scenario implies a continuation of the low economic activity seen in recent years. The development in private consumption, private investment and house prices is less favourable than in the baseline scenario.

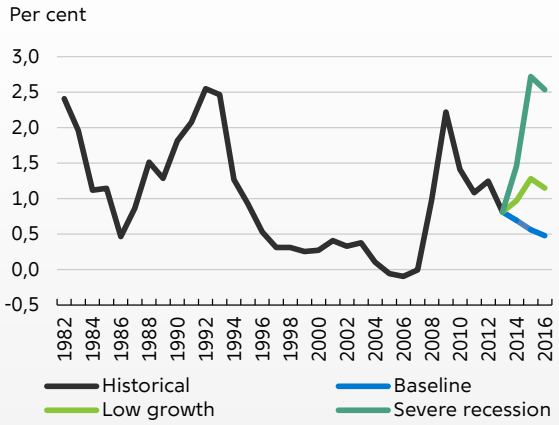
Severe recession
The scenario implies a strong global shock to business and consumer confidence. Export market growth is reduced relative to the baseline scenario. The Danish economy is affected by an erosion of business and consumer confidence, leading to negative shocks to private consumption, private investment and house prices.

Growth in GDP Chart 3.1



Source: Statistics Denmark and own calculations.

Annual loan impairment charge ratios Chart 3.2



Note: Loan impairment charges are calculated as a ratio of lending and guarantees before loan impairment charges. The historical series until 2013 is based on banks in the Danish Financial Supervisory Authority's groups 1-3. The estimated loan impairment charge ratios for 2014-2016 are calculated as a weighted average for the 14 banks in the stress test. Bank-specific loan impairment charge ratios have been used in the calculations, cf. Danmarks Nationalbank, *Financial stability*, 2012, Chapter 8.
Source: Cato Baldvinsson, Torben Bender, Kim Busch-Nielsen and Flemming Nytoft Rasmussen, *Dansk Bankvæsen*, (Danish banking – in Danish only), 5th edition, Forlaget Thomson, 2005, Danish Financial Supervisory Authority and own calculations.

prepared in cooperation with the Danish Financial Supervisory Authority and are described in more detail in Appendix 2.

STRESS TEST RESULTS

The analysis is based on the banks' financial statements for 2013. The stress test period runs for three years, so the banks' profit and loss accounts and balance sheets have been projected forward until and including the 4th quarter of 2016.

EARNINGS AND LOAN IMPAIRMENT CHARGES

Bank earnings generally improved in 2013, cf. Chapter 2. In the stress test period, earnings before loan impairment charges increase slightly for the majority of banks in all scenarios as a result of marginally rising interest rates. This should be viewed in light of the fact that the banks hold more interest-bearing assets than liabilities.

The banks' total loan impairment charges fell from 1.2 per cent in 2012 to 0.8 per cent in 2013. This tendency continues in the baseline scenario, with the annual loan impairment charge ratio declining to 0.5 per cent in 2016 as the economy picks up, cf. Chart 3.2. In the low-growth scenario, on the other hand, the annual loan impairment charge ratios are at the same level as in 2010-12.

Against the background of the strong macroeconomic shock, loan impairment charges increase considerably in the severe recession scenario. In 2015, the annual loan impairment charge ratio is 2.7 per cent, which is the same level as in the early 1990s.

CAPITAL REQUIREMENTS

The new capital adequacy rules, CRD IV/CRR, entered into force in the 1st quarter of 2014. These rules introduce new requirements for the composition of the banks' own funds. Under the new rules, the minimum Common Equity Tier

Scenarios, selected key variables Table 3.1

Baseline scenario	2014	2015	2016
GDP, per cent year-on-year	1.4	1.7	*1.9*
Private consumption, per cent year-on-year	1.4	2.0	1.9
Export market growth, per cent year-on-year	4.2	5.2	5.7
Unemployment rate, per cent	4.0	3.8	3.5
House prices, per cent year-on-year	2.2	2.7	2.9
Low growth			
GDP, per cent year-on-year	1.0	-0.6	1.0
-, deviation from baseline scenario, percentage points	*-0.4*	*-2.3*	*-0.9*
Private consumption, per cent year-on-year	0.8	-0.9	0.3
-, deviation from baseline scenario, percentage points	*-0.6*	*-2.9*	*-1.6*
Export market growth, per cent year-on-year	4.2	5.2	5.7
-, deviation from baseline scenario, percentage points	*0.0*	*0.0*	*0.0*
Unemployment rate, per cent	4.0	4.6	5.0
-, deviation from baseline scenario, percentage points	*0.0*	*0.8*	*1.5*
House prices, per cent year-on-year	0.5	-5.2	-0.1
-, deviation from baseline scenario, percentage points	*-1.7*	*-7.9*	*-3.0*
Severe recession			
GDP, per cent year-on-year	0.6	-4.5	-0.5
-, deviation from baseline scenario, percentage points	*-0.8*	*-6.2*	*-2.4*
Private consumption, per cent year-on-year	0.7	-3.7	-0.5
-, deviation from baseline scenario, percentage points	*-0.7*	*-5.7*	*-2.4*
Export market growth, per cent year-on-year	2.1	-7.9	4.0
-, deviation from baseline scenario, percentage points	*-2.1*	*-13.1*	*-1.7*
Unemployment rate, per cent	4.1	6.0	8.2
-, deviation from baseline scenario, percentage points	*0.1*	*2.2*	*4.7*
House prices, per cent year-on-year	-0.5	-12.4	-7.0
-, deviation from baseline scenario, percentage points	*-2.7*	*-15.1*	*-9.9*

Note: Annual averages. Unemployment is expressed as a percentage of the labour force.

1 requirement will increase to 4.5 per cent of risk-weighted exposures in 2015. Tier 1 capital must account for at least 6 per cent and total capital for at least 8 per cent of risk-weighted exposures. Non-compliance with one of the three minimum requirements will prompt the Danish Financial Supervisory Authority to revoke the banking licence, unless the bank restores its capital within a fixed short deadline.

Danish banks must meet the Pillar II add-on requirement using Common Equity Tier 1 capital or other capital with loss-absorbing characteristics.[3] Furthermore, Bank Rescue Package 6 introduced additional buffer requirements,

3 Cf. the Danish Financial Supervisory Authority's guide to section 124(5) of the Danish Financial Business Act – Capital requirements for meeting Pillar II add-on under the 8+ method (in Danish only).

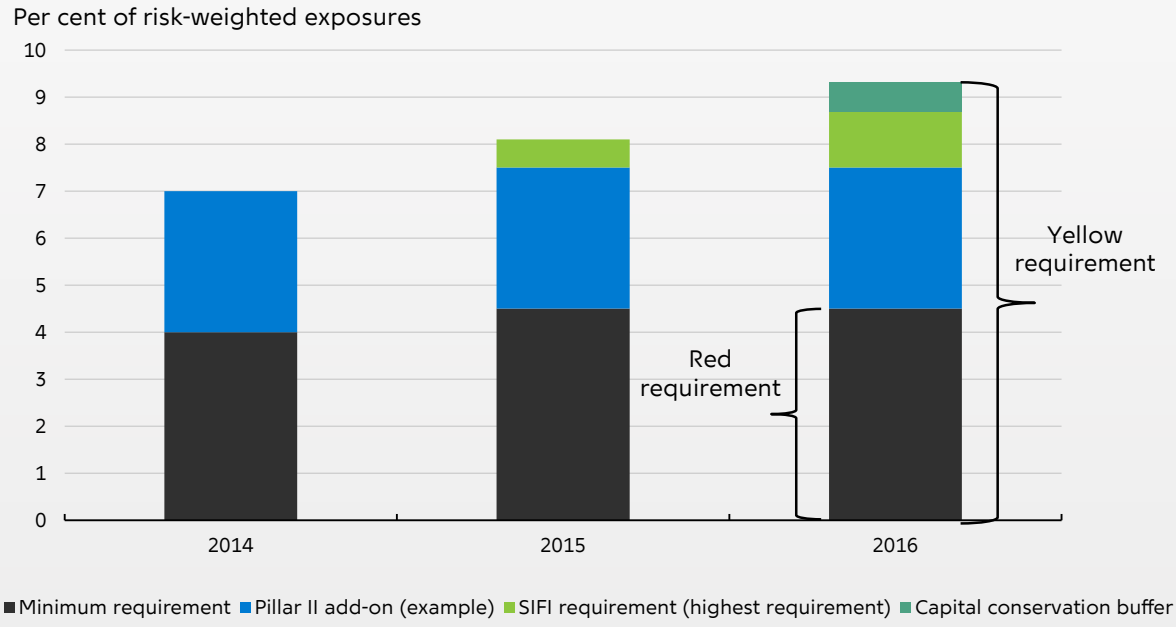
Capital requirements in the stress test

Box 3.2

In the stress test, the banks' Common Equity Tier 1 capital is assessed in relation to two requirements, i.e. red and yellow, cf. the table below. The red requirement is the minimum requirement under CRD IV/CRR. The yellow requirement is the red requirement plus the Pillar II add-on requirement and the buffer requirements, cf. the illustration below.

Red requirement	Yellow requirement
• Common Equity Tier 1 capital must be at least 4.0 and 4.5 per cent, respectively, in 2014 and 2015-16	• The Pillar II add-on requirement must be met using Common Equity Tier 1 capital and is assumed to be constant over the period. • Phasing-in of the SIFI capital requirement will commence in 2015. Additional Common Equity Tier 1 capital requirements for the systemic banks are 0.2-0.6 per cent in 2015 and 0.4-1.2 per cent in 2016. • In 2016, phasing-in of the capital conservation buffer will commence. It is to be met using Common Equity Tier 1 capital.

Illustration of capital requirements in the stress test



Note: The Pillar II add-on has been set at 3 per cent for illustration purposes.

which must also be covered by Common Equity Tier 1 capital.[4]

In the event of non-compliance with the Pillar II add-on requirement or a buffer requirement, the Danish Financial Supervisory Authority may impose transaction restrictions and implement a number of supervisory processes.

Capital requirements in the stress test

The focus of the stress test is on the development in banks' Common Equity Tier 1 capital.

The minimum Common Equity Tier 1 requirement of 4 per cent in 2014 and 4.5 per cent in 2015-16 is defined in the stress test as a red requirement. The total Common Equity Tier 1 requirement, i.e. the minimum requirement plus the Pillar II add-on and the buffer requirements, is defined in the stress test as a yellow requirement, cf. Box 3.2.

Consequently, the minimum requirement of Tier 1 capital equivalent to 6 per cent and total capital equivalent to 8 per cent of risk-weighted exposures is neither included in the red nor in the yellow requirement, but these requirements

4 Cf. *Financial stability*, 2nd half 2013, Appendix 3.

are not decisive to the results of the stress test. All banks with excess capital adequacy in relation to the red and yellow requirements have sufficient Common Equity Tier 1 capital to meet the total capital requirement of 8 per cent of risk-weighted exposures. As regards the banks with a capital shortfall, the minimum Common Equity Tier 1 requirement, and not the other two minimum requirements, is the binding requirement.

CAPITALISATION

In the stress test, the results for the banks' Common Equity Tier 1 capital are tested against the red and yellow requirement, respectively. In the event of a bank's non-compliance with one of the requirements, that bank's capital shortfall relative to the requirement is calculated. The capital shortfall can be interpreted as the capital injection the bank in question needs in the stress test period to ensure compliance with the given requirement. For the banks with more Common Equity Tier 1 capital than is needed for compliance with one of the requirements, the excess capital adequacy in relation to the requirement is also calculated.

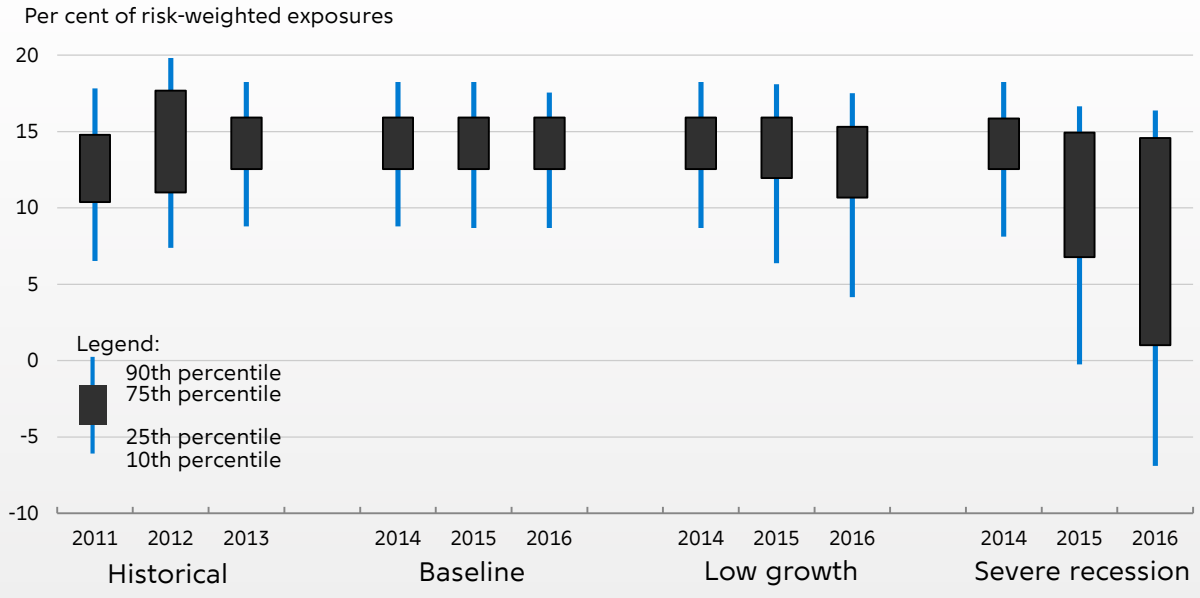
In the severe recession scenario, the Common Equity Tier 1 capital of most banks will decline as a result of substantial loan impairment charges, cf. Chart 3.3.

In the severe recession scenario, the five systemic banks will still have considerable excess capital adequacy in relation to the yellow and red requirement, cf. Chart 3.4 (left). Moreover, the Common Equity Tier 1 capital for all systemic banks will remain above 8 per cent, which will be the toughest requirement in the EBA's current stress test of the largest European credit institutions, cf. Box 6.1.

In the baseline scenario, the non-systemic banks will have excess capital adequacy in relation to the red requirement and a modest capital shortfall in relation to the yellow requirement, cf. Chart 3.4 (right). The capital shortfall rises a little in the low-growth scenario. In the severe recession scenario, the total capital shortfall of the non-systemic banks will be approximately kr. 8 billion in relation to the yellow requirement in 2016, and around kr. 5 billion in relation to the red requirement. This corresponds to approximately 4 per cent and around 3 per cent, respectively, of the non-systemic banks' total risk-weighted exposures.

In Danmarks Nationalbank's assessment, the size of the capital shortfall and its distribution among individual banks will not pose

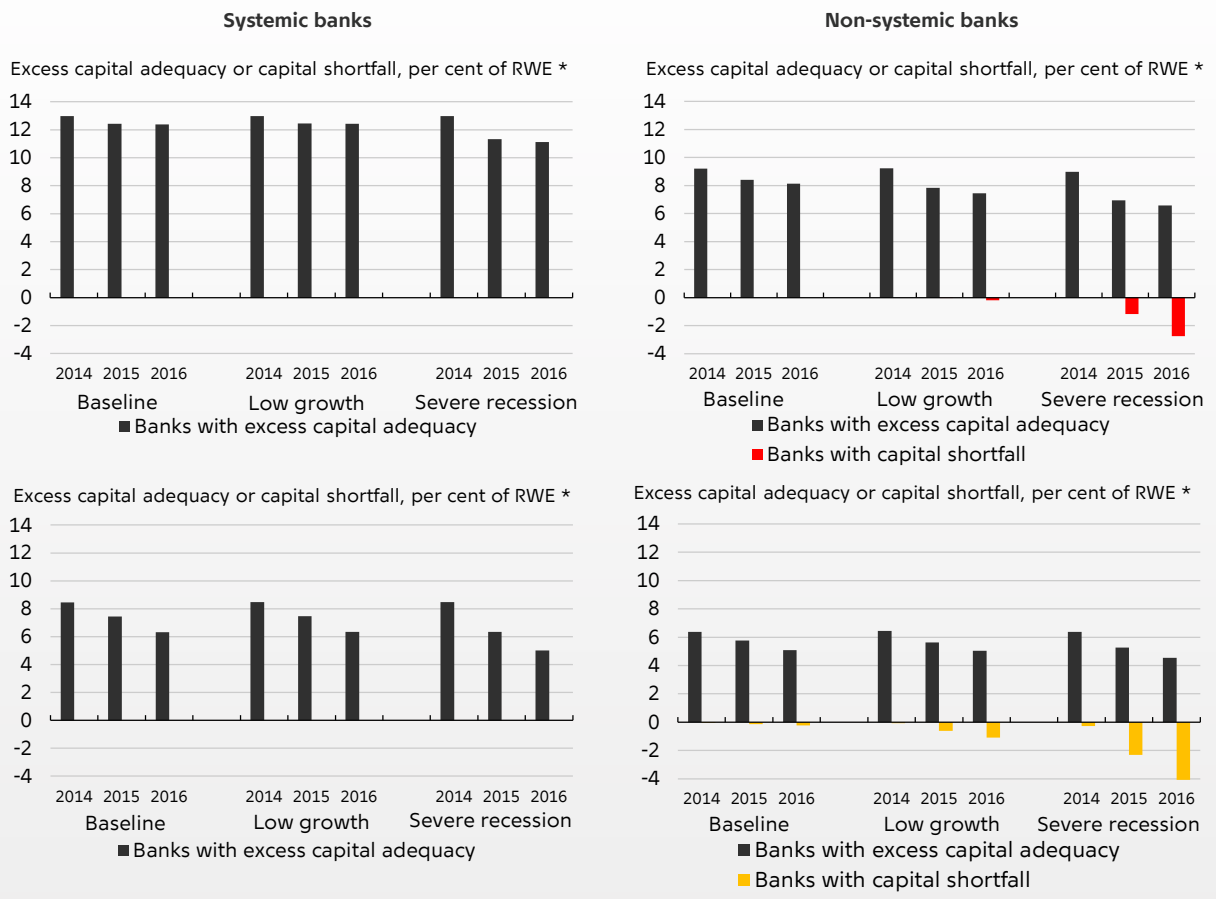
Common Equity Tier 1 capital Chart 3.3



Note: The chart shows the development in Common Equity Tier 1 capital for the five systemic and the nine non-systemic banks.
Source: Danish Financial Supervisory Authority and own calculations.

Excess capital adequacy and capital shortfall against red (top) and yellow (bottom) requirement

Chart 3.4



Note: * RWE = Total risk-weighted exposures of systemic and non-systemic banks, respectively.
Source: Danish Financial Supervisory Authority and own calculations.

any threat to financial stability in Denmark, not even in the most severe stress scenario.

Banks have various options when it comes to increasing their capital, such as retaining dividends, raising capital in the market, reducing balance sheets or risks, or improving cost efficiency. Subsidiary banks in financial groups also have the option of obtaining a capital injection from the parent company. For some banks, a merger may also be an option.

FINANCIAL SECTOR ASSESSMENT PROGRAM, FSAP

During 2014, the International Monetary Fund, IMF, will review the financial sector in Denmark under the Financial Sector Assessment Program, FSAP.[5] In an FSAP review, the IMF assesses the following:

- The soundness of banks and other financial institutions
- The ability of the authorities to oversee the financial markets
- The authorities' crisis management ability.

The IMF will conduct various stress tests in cooperation with Danmarks Nationalbank, the Danish Financial Supervisory Authority and selected banks and insurance companies.

The FSAP is voluntary for the IMF's non-systemic member countries. The last time Denmark participated in an FSAP was in 2005-06. In future, Denmark will participate

5 A brief outline of the FSAP is contained in IMF, *The Financial Sector Assessment Program – a Factsheet*, March 2014.

IMF: Denmark plays a role in global financial stability

Box 3.3

Since 2010, the IMF has identified countries with systemically important financial sectors as systemic countries which could have a considerable impact on global financial stability. In 2010, the IMF identified 25 systemic countries and another four, including Denmark, were added in January 2014.

The purpose of identifying systemic countries is to provide for special surveillance of their financial stability and hence early identification of threats to global financial stability.

The original methodology for identification of systemic countries puts great emphasis on the size of their financial sectors and to a lesser extent their interconnectedness with other countries. However, the financial crisis and the European sovereign debt crisis showed that even small countries may play an important role in the global economy if their financial sectors are strongly interconnected with those of other countries. With the aim of incorporating the effect of such interconnection into the assessment, the IMF has introduced a new method, which attaches more importance to various types of connections between countries. Specifically, four types of bilateral financial connections are considered:

- Banks' claims (e.g. bank deposits) on banks in another country (bank network)
- A country's ownership of debt securities issued by another country (debt network)
- Ownership of portfolio shares between two countries (equity network)
- Spillover effects between share prices in two countries, measured as the correlation between stock market returns in the two countries (price correlation network).

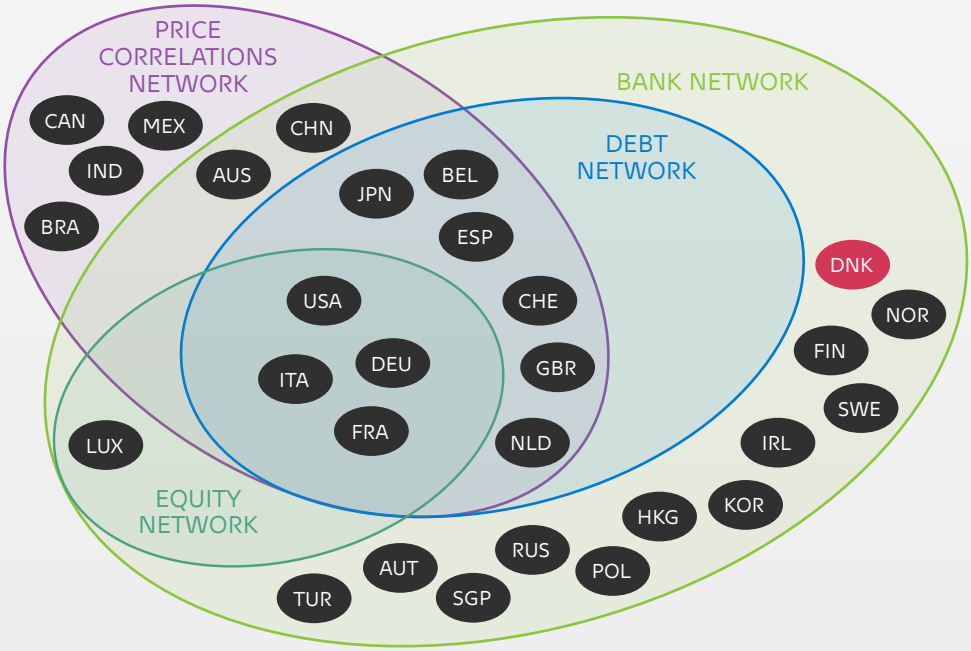
On the basis of the bilateral connections between all the countries, it is possible to establish an overall network showing the interconnection of the various countries' financial sectors. In the weighting of the connections, the size of the relevant country's economy and the complexity of its financial sector are taken into account. Moreover, a threshold is introduced, meaning that only connections of a certain size are considered.

Dividing the countries into "cliques" makes it possible to determine which countries play a key role in each of the four networks. A clique is a network theory concept identifying a group of countries where each member has bilateral connections with all other members of the group. A network may contain several cliques, just as a country may be included in several cliques. For instance, the country may be a link between two cliques.

Countries that are included in one or more cliques with at least four other countries are deemed systemic. Consequently, all countries that in at least one of the four financial networks have a connection of sufficient size with at least four other countries, which are also interconnected, are assessed to be systemically important.

After the introduction of this network approach in 2014, all of the original 25 countries are still assessed to be systemic. Four more countries are also identified as systemic. These are Denmark, Norway, Finland and Poland. 91 per cent of the total assets in the global financial system are held in the 29 systemic countries. Denmark is assessed to have a systemically important financial sector due to its participation in the claims network, cf. the chart. The reason is that Danish banks have many claims on other countries, just as other countries have many claims on Danish banks. Denmark's close banking connections with the other Nordic countries and the UK and Germany are behind Denmark's systemic importance. A crisis in the Danish financial sector may thus impact on these countries and vice versa.

Systemic countries in each of the four financial networks



Note: The coloured ellipses represent the four financial networks. The countries in an ellipse are those that are systemically important to the network in question.
Source: IMF, *Mandatory Financial Stability Assessments Under the Financial Sector Assessment Program: Update*, November 2013.

in an FSAP every five years, because in January 2014, Denmark was classified as a systemically important country due to the IMF's increased focus on cross-border interconnectedness between financial sectors, cf. Box 3.3. Interconnections within the Danish financial sector may also impact on financial stability. Annex 1 to this chapter contains an example of how network theory can be used to identify key participants in a network of Danish financial institutions.

ANNEX 1: FINANCIAL NETWORKS AND FINANCIAL STABILITY

FINANCIAL INSTITUTIONS INFLUENCE EACH OTHER

Financial institutions are interconnected through many different transactions. In other words, they constitute a network. The overall financial network consists of many different sub-networks, e.g. concerning payment systems, uncollateralised or collateralised loans, bond holdings and derivatives.

In normal times, financial institutions benefit from being interconnected in a network. One advantage is that payments may be exchanged between customers and liquidity and risk may be transferred between banks. This allows the movement of liquidity to the banks that need it most, and risks can be shared by several banks.

In a crisis, there is a risk that one bank's default may spread to other banks via networks – in other words spillover effects. For example, the turmoil after Lehman Brothers' collapse escalated into a financial crisis. Some Lehman Brothers counterparties suffered losses because Lehman Brothers was no longer able to service its debt. Other banks encountered liquidity problems because the uncertainty as to which banks would be affected, among other factors, caused the money market to contract.

Consequently, financial networks can play a key role in financial stability. It is possible to use mathematical network theory methods to identify the participants that may trigger the strongest spillover effects.

There are several types of spillover effects:

- One spillover effect is losses spreading through a network because a failing bank is unable to service its debt. If this bank is a key participant in the network, such losses may have consequences for other banks, resulting in threats to financial stability. A default may have an impact even if loans are fully collateralised as there is a risk of fire sale of assets pledged as collateral. This may trigger a price drop, whereby other investors in the same security may incur losses or find it difficult to raise loans since the value of their collateral has been eroded. The more liquid the assets, the lower the risk of detrimental fire sale. Liquidity buffers, as proposed under CRD IV /CRR, contribute to reducing losses relating to fire sale by minimising the risk of liquidity shortage.
- Alternatively, the spillover effect can stem from a reduction of the number and size of the network's connections so that it will no longer provide liquidity or share risk. For instance, if some banks reduce their lending, the connections in the network shift, possibly preventing other institutions from funding in the usual way. This effect is due to increased uncertainty as to who may encounter problems. Since it may be difficult, expensive and time-consuming to replace key participants, especially in a crisis, it may be critical if major lenders drastically reduce their lending.

The key participants in a network are important to financial stability since they may potentially create systemic effects if they become distressed or reduce their activities. The most extensive effects on the network will be seen where connections between such key participants are affected. Consequently, it is important to identify the key participants and their interconnections. Network theory enables identification of the participants that are most

important over time and hence also of the network they form.[6]

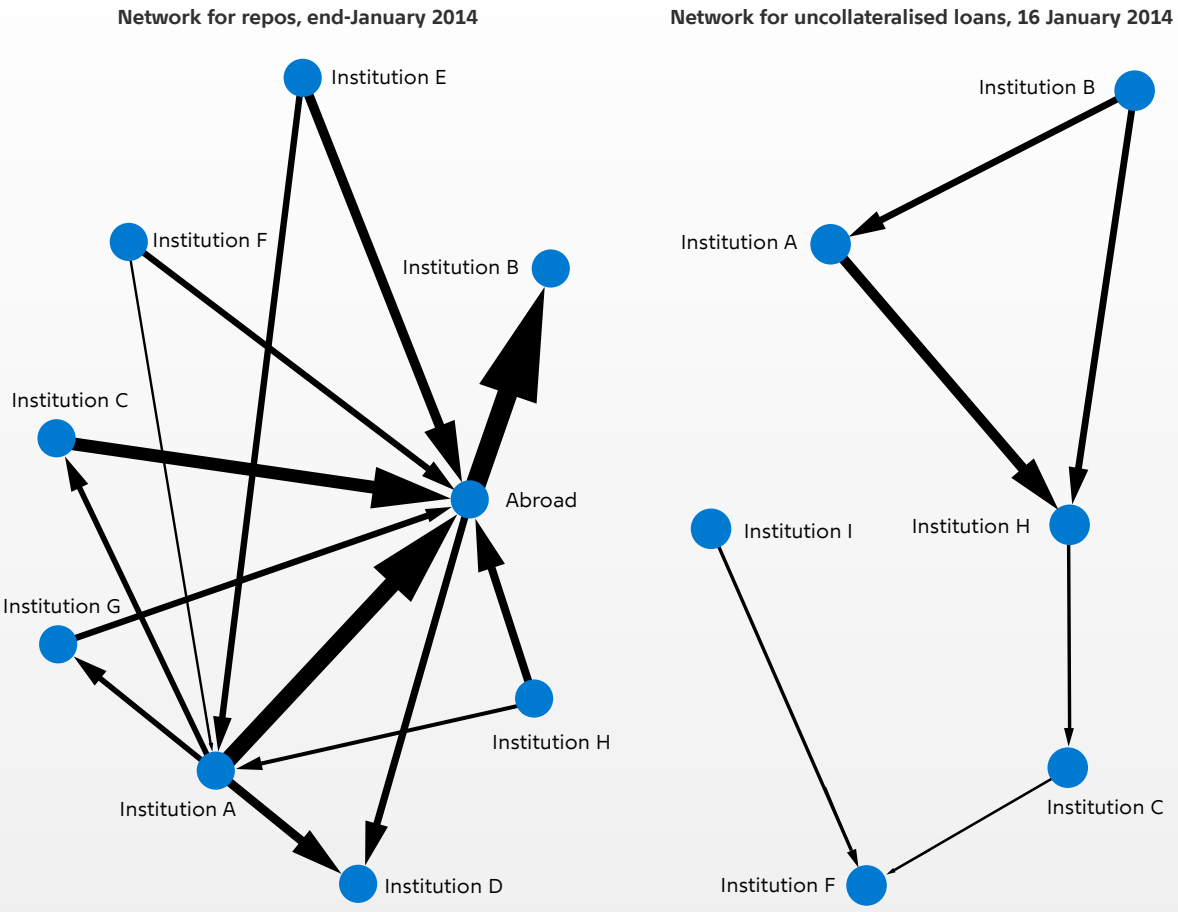
EXAMPLE OF APPLICATION OF NETWORK THEORY TO THE DANISH MONEY MARKET

On the basis of data for the banks' mutual exposures, the most important participants have been identified in two segments of the Danish money market: i. the interbank market for uncollateralised krone loans and ii. the repo market.

A repo is a transaction between two parties, one party borrowing from the other against securities as collateral. The loan can be in Danish kroner, foreign currency or specific securities. In repos where the loan is in kroner or foreign currency, the transaction is used as a funding source. If the loan is in a specific security, it may be to a bank which has promised that it would buy the security on behalf of a customer, but has not been able to do so. When collateral is

Networks between key participants in the repo market and the market for uncollateralised interbank loans, respectively

Chart 3.5



Note: The arrows show the size and direction of the net exposures, going from lender to borrower. The names in the two charts are consistent. As regards the repo data, banks resident abroad are gathered in one entity as individual identification is not possible. It is possible to identify all banks in the data for the uncollateralised interbank market. The data for the repo market stems from the monthly reporting by financial institutions to Danmarks Nationalbank concerning outstanding repo transactions at month-end. The most important banks have been identified on the basis of data from December 2004 to January 2014. The network between these institutions is illustrated for end-January 2014. The data for the market for uncollateralised interbank loans has been derived from the banks' payments. For the period 1 January 2003 to 17 January 2014, daily data has been used for identification of the most important banks in this market. The network for the most important banks is shown for 16 January 2014.
Source: Danmarks Nationalbank and own calculations.

6 There are many different network theory measures to identify the most important participants in a network. Here, the most important banks have been selected using PageRank, which is an algorithm used by Google for ranking websites in search results. A number of other measures of participant importance were also tested, but more or less identified the same banks.

pledged in one of the two examined markets, but not in the other, the type of risk varies between these two markets. With uncollateralised loans, it is more likely that a default leads to direct losses for other banks. This risk is less pronounced for repo transactions, since it is possible to sell the collateral in the event of default on the loan. In the repo market, the risk may be related to a large participant reducing its activity, entailing liquidity problems for other participants, or to fire sale of collateral.

The size of the two markets has changed over time. In 2011-12, the uncollateralised interbank market was the larger one in terms of daily turnover, but in 2013 the repo market was the larger one.

The data analysed for uncollateralised krone loans includes only overnight deposits, which make up most of this market. Just as the institutions included are solely institutions with accounts at Danmarks Nationalbank. The data for the repo market is not limited to specific agents.

Identification of the most important institutions shows that it is to a large extent the same institutions that are important to both the uncollateralised interbank market and the repo market as both borrowers and lenders, cf. Chart 3.5. The largest institutions dominate. The names of the institutions have been anonymised for confidentiality purposes.

In the repo market, the connections among the key institutions change from one month to the next. But certain general patterns are repeated. Abroad is consistently a central agent, as almost all the other key entities undertake cross-border transactions. In recent years one institution in particular has traded large amounts with practically all the other key participants. The remaining participants typically have fewer important connections with the other key participants. Consequently, abroad and the key institution play a decisive role in the functioning of the repo market. The connections are far more volatile in the interbank market, and in the first instance it is not possible to discern any clear pattern, except that the amounts traded are higher for large institutions than for small ones.

SPECIAL TOPIC SECTION

4

CAPITAL INSTRUMENTS

INTRODUCTION AND SUMMARY

The new Capital Requirements Directive IV/ Capital Requirements Regulation (CRD IV/CRR) sets out new own funds requirements for credit institutions in terms of composition and quality. In future, institutions' Common Equity Tier 1 capital must be substantially higher than under the previous rules. In addition to their Common Equity Tier 1 capital, institutions may still include two types of interest-bearing capital instruments in the calculation of own funds, i.e. Additional Tier 1 capital and Tier 2 capital. Common Equity Tier 1 capital in the form of common equity is still capital of the highest quality.

In many respects, Additional Tier 1 capital is similar to a debt instrument, but also has some of the characteristics of equity. This type of capital is a possible supplement to Common Equity Tier 1 capital and is converted into Common Equity Tier 1 capital if the Common Equity Tier 1 ratio falls below a predetermined trigger level. Additional Tier 1 capital is thus able to absorb losses in going concern situations equally to common equity and may therefore improve the resilience of institutions to withstand periods of financial stress.

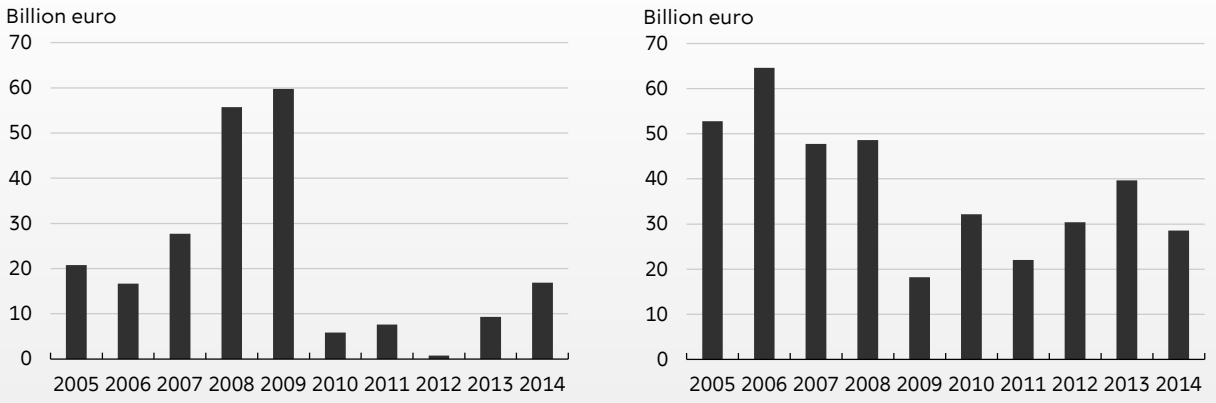
Tier 2 capital is usually not loss absorbing in going concern situations, but provides protection for depositors and other general creditors in connection with resolution or failure. However, institutions may decide to issue Tier 2 capital where the principal – similarly to Additional Tier 1 capital – is converted into Common Equity Tier 1 capital if the Common Equity Tier 1 ratio falls below a predetermined trigger level. Since Tier 2 capital absorbs losses in going concern situations, this may help the institution obtain a better rating from credit rating agencies. Moreover, as a result, the capital may qualify for the Pillar II add-on.

In addition to improving the resilience of institutions, the two types of capital may help to strengthen market discipline. The trigger point for Additional Tier 1 capital could be seen as an implied capital requirement which the institution has made a commitment to the market to meet. Moreover, Additional Tier 1 capital will incentivise the institution to ensure that, at any time, it will be able to meet the combined capital buffer requirement, allowing it to continue to pay interest to investors.

Tier 2 capital will still have a fixed maturity date. Thus Tier 2 capital does not have the same permanent nature as equity or Additional Tier 1 capital. But the need for continuing refinancing does give the institution an incentive to maintain a reasonable risk profile and a high level of Common Equity Tier 1 capital to be able to refinance Tier 2 capital on attractive terms.

The complex terms for Additional Tier 1 capital, in particular, make issuances difficult to price. Consequently, it may be difficult to assess whether or not Additional Tier 1 capital offers an attractive return/risk trade-off relative to alternative investments.

Issuances of Additional Tier 1 capital (left) and Tier 2 capital (right) by European credit institutions Chart 4.1



Note: Data until 27 May 2014.
Source: Dealogic.

RENEWED ISSUANCE ACTIVITY

The market for Additional Tier 1 capital has been relatively quiet in recent years, but new issuances at fairly low rates by, *inter alia*, Credit Agricole, Banco Santander and Danske Bank show that interest in this type of capital has been rekindled among international investors. In the 1st quarter of 2014 alone, European credit institutions issued Additional Tier 1 capital worth just under 10 billion euro, which is equivalent to the level of total issuances of Additional Tier 1 capital for all of 2013, cf. Chart 4.1 (left). Issuance activity for Tier 2 capital has also been on the rise, cf. Chart 4.1 (right).

There are several explanations for the strong increase in new issuances. Many institutions have presumably been biding their time, awaiting the final texts of CRD IV/CRR. The regulation establishes new requirements for both Additional Tier 1 capital and Tier 2 capital. As a result, Additional Tier 1 capital and Tier 2 capital issued under the previous rules and not meeting the requirements of CRD IV/CRR, may no longer be fully included in the calculation of institutions' own funds, cf. Box 4.1. At the same time, the low level of interest rates means that investors are keen on investments that offer higher potential yields than traditional fixed-income investments.

Transitional provisions for old issuances Box 4.1

As a result of new requirements for Additional Tier 1 capital and Tier 2 capital, a large number of subordinated capital instruments previously issued by institutions no longer qualify as Additional Tier 1 capital or Tier 2 capital under CRD IV/CRR. Capital instruments issued before 31 December 2012, which are not State aid instruments, will be covered by transitional provisions to ensure gradual phasing out towards the end of 2021. State aid instruments will be covered by transitional provisions under which government capital injections may be fully included until end-2017. In a Danish context, the transitional provisions are likely to be of limited significance, since most of the government capital injections raised under Bank Rescue Package 2 either have been repaid or are expected to be repaid in the course of 2014, cf. Chapter 2. Capital instruments qualifying as Additional Tier 1 capital under the previous rules, but which do not fully meet the requirements under CRD IV/CRR may be included as Tier 2 capital if they meet the Tier 2 requirements.

COMPOSITION OF CAPITAL

CRD IV/CRR imposes new requirements for the composition of institutions' own funds. In future, institutions are required to hold *Common Equity Tier 1 capital* of at least 4.5 per cent, *Tier 1 capital* of at least 6 per cent and *own funds* of at least 8 per cent of their risk-weighted exposures. This allows institutions to issue Additional Tier 1 capital and Tier 2 capital equivalent to 1.5 and 2 per cent, respectively, of their risk-weighted exposures to meet the capital requirements, cf. Chart 4.2. But institutions are

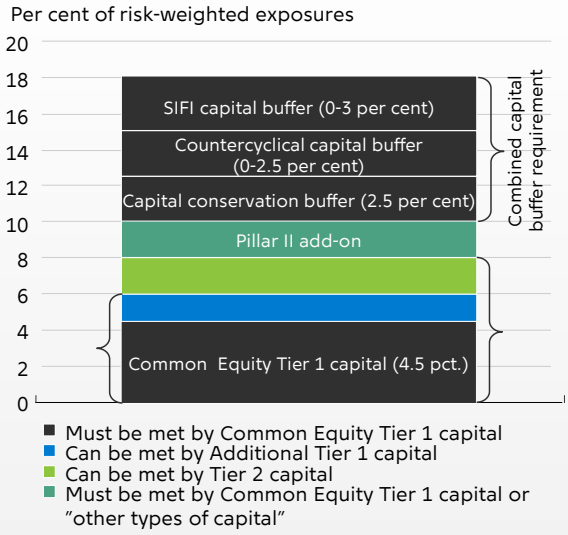
not required to use these types of capital, since all capital requirements can be met using Common Equity Tier 1 capital.

If all listed credit institutions in Europe choose to issue *Additional Tier 1 capital* equivalent to 1.5 per cent of their risk-weighted exposures, the total issuance amount will exceed 130 billion euro.[1] Similarly, the potential of *Tier 2 capital* may be calculated at more than 170 billion euro, corresponding to 2 per cent of risk-weighted exposures. Danish banks (including mortgage banks) may potentially issue Additional Tier 1 capital worth a total amount of kr. 35 billion and Tier 2 capital worth a total amount of kr. 47 billion in order to meet their own funds requirement.[2]

CRD IV/CRR imposes requirements in terms of a higher percentage of Common Equity Tier 1 capital than previously. Consequently, CRD IV/CRR provides *less* scope for meeting the capital requirements by using Additional Tier 1 and Tier 2 capital than the previous capital adequacy rules.[3] Under CRD IV/CRR, institutions must increasingly be able to absorb losses in going concern situations – and not only in connection with resolution or failure. Since any operating losses will reduce an institution's equity, Common Equity Tier 1 capital in the form of equity is fully loss absorbing. The institution may continue its operations as long as losses can be absorbed by equity, provided it is able to meet the capital requirements.

If the Common Equity Tier 1 capital requirement is met, CRD IV/CRR imposes no cap on the amount of Additional Tier 1 capital permitted to be included in Tier 1 capital. Thus there is nothing to prevent an institution from issuing Additional Tier 1 capital for an amount exceeding 1.5 per cent of its risk-weighted exposures. This could be relevant in terms of the future leverage ratio, which envisages including all Tier 1 capital, also Additional Tier 1 capital, in the numerator, cf. Chapter 5. Accordingly, an institution will be able to improve its leverage ratio by issuing further Additional Tier 1 capital.

Capital requirements under CRD IV/CRR Chart 4.2



Note: The capital requirements will not be fully phased in until 2019. The Danish Financial Supervisory Authority defines "other types of capital " as capital which is automatically converted into Common Equity Tier 1 or written down in case of non-compliance with the individual capital need or in case of breach of a trigger level of at least 7 per cent Common Equity Tier 1 capital. The capital must otherwise meet the requirements of either Additional Tier 1 capital or Tier 2 capital.

ADDITIONAL TIER 1 CAPITAL

In many respects, Additional Tier 1 capital is similar to debt, but also has some of the characteristics of equity. In other words, it is a relatively complex instrument. Danish institutions have been able to include Additional Tier 1 capital in Tier 1 capital since 2003, but this type of capital did not gain popularity with Danish institutions until 2009 when they were allowed to apply for government capital injections in the form of Additional Tier 1 capital (Bank Rescue Package 2).[4]

CRD IV/CRR substantially increases requirements for Additional Tier 1 capital. The inten-

1 Based on risk-weighted exposures as at 31 December 2013 for listed European credit institutions.

2 Based on risk-weighted exposures as at 31 December 2013 for Danish banks (including mortgage banks).

3 Under the previous rules, Tier 2 capital could account for up to 50 per cent of total capital, and Additional Tier 1 capital could account for up to 50 per cent of Tier 1 capital. Consequently, a credit institution could meet the minimum capital requirement by Common Equity Tier 1 capital of 2 per cent, Additional Tier 1 capital of 2 per cent and Tier 2 capital of 4 per cent of its risk-weighted exposures.

4 A total of 43 institutions received capital injections worth a total of kr. 46 billion under Bank Rescue Package 2.

Qualitative requirements for Additional Tier 1 capital and Tier 2 capital under CRD IV/CRR

Table 4.1

	Additional Tier 1 capital	Tier 2 capital
Position in the ranking of creditors	Subordinated to all other debt (including Tier 2 capital)	Subordinated to any non-subordinated debt
Maturity	Perpetual	Minimum 5 years
Incentives to redeem	Not permitted	Not permitted
Earliest redemption	5 years after issuance	5 years after issuance
Automatic conversion or write-down in case of trigger breach	Yes	-
Minimum trigger level	Common Equity Tier 1 capital below 5.125 per cent	-
The institution has discretion to cancel coupon payments	Yes	-
Restrictions on coupon payments in case of non-compliance with combined capital buffer requirement	Yes	No
Scaling down of amount eligible for inclusion in own funds	No	Amount is reduced on a straight-line basis over the last 5 years before maturity

tion is to increase the loss absorbing capacity of this type of capital. An institution must have the discretion to cancel coupon payments for an indefinite period of time, and the Additional Tier 1 contract can neither stipulate a maturity date nor provide incentives to redeem the instrument. Moreover, the contract must contain terms under which the principal is either written down or converted into equity in case of a trigger event, cf. Table 4.1.[5]

The trigger

Conversion or write-down of the principal is triggered if an institution's Common Equity Tier 1 ratio falls below 5.125 per cent. Contractually, a trigger level higher than 5.125 can be established. The contract may also contain other trigger events to supplement the Common Equity Tier 1 trigger. The amount to be written down or converted must at least be equal to the amount required to restore a Common Equity Tier 1 ratio of 5.125 (provided that the necessary amount does not exceed the total principal). Conversion or write-down is to ensure that the institution is automatically provided with equity when the institution needs it most. Thus conversion or write-down is triggered when the institution is experiencing solvency issues, i.e. at a time when a share issue could be difficult.

The minimum trigger level (5.125 per cent) is higher than the minimum Common Equity Tier 1 capital requirement (4.5 per cent). This supports the notion that Additional Tier 1 capital should have going concern loss absorbing capacity, given that it is converted into equity at a time when the institution has not yet breached the 4.5 per cent requirement. Institutions usually do not calculate their Common Equity Tier 1 ratio on a daily basis, and the breach of the trigger may not be ascertained precisely when their Common Equity Tier 1 capital falls below the trigger level. Consequently, the write-down or conversion may not be initiated until it is, in fact, too late to restore the institution. Other things being equal, this risk will be lower, the higher the trigger level.

Danish institutions are required to meet the Pillar II add-on requirement, i.e. the difference between the individual capital need and the 8

5 A number of the Additional Tier 1 capital requirements are detailed in the Commission Delegated Regulation (EU) No. 241/2014 of 7 January 2014. The delegated regulation defines what constitutes incentives to redeem, conditions under which a write-down of the principal amount on a temporary basis can be followed by a subsequent write-up and the procedures and timing to be used to determine whether or not a trigger event has occurred. The delegated regulation is based on the European Banking Authority's (EBA) draft Regulatory Technical Standards (RTS).

per cent requirement, by means of Common Equity Tier 1 capital or other capital that is automatically converted into equity or is written down in case of breach of the capital need or breach of a trigger level of at least 7 per cent Common Equity Tier 1 capital.[6] By issuing Additional Tier 1 capital with a trigger of 7 per cent, an institution obtains some flexibility in its capital planning, since the capital may be used either to meet the minimum Tier 1 capital requirement or the Pillar II add-on.

Write-down or conversion

CRD IV/CRR implies that write-down or conversion must generate Common Equity Tier 1 capital under the applicable accounting framework. Since in both cases the principal is converted into Common Equity Tier 1 capital, a principal write-down has the same effect on an institution's capital as a conversion. In case of a conversion, investors will receive a number of shares to replace their capital instruments, making the investors shareholders of the institution. In case of a principal write-down, investors will receive neither shares nor any other form of compensation. In the accounting balance sheet, the amount by which the principal is reduced will be offset by a similar increase in the institution's reserves. The institution's reserves ultimately belong to its shareholders, who "win" by a full or partial principal write-down of Additional Tier 1 capital.

A principal write-down may be permanent or temporary. In case of a temporary write-down, subsequent coupon payments must be based on the reduced amount of the principal. The institution must not be obliged to write up the reduced principal at a later time or under specific circumstances.

Cancellation of coupon payments

An institution must have the discretion, at any time, to cancel coupon payments for an indefinite period. Coupon cancellation must be non-cumulative, entailing that investors are not entitled to subsequent compensation for cancelled coupon payments. Coupon cancellation cannot be regarded as default, and no restrictions may be imposed on the institution as a result of such cancellation.

Additional Tier 1 investors must also be aware that the institution may be subject to distribution restrictions, including restrictions on coupon payments on Additional Tier 1 capital, if it is unable to meet the combined capital buffer requirement, cf. Chart 4.2. In other words, coupon payments may be cancelled at a Common Equity Tier 1 level that substantially exceeds the trigger level for conversion or write-down. The combined capital buffer requirement must be met by means of Common Equity Tier 1 capital in addition to Common Equity Tier 1 capital used to meet the 4.5 per cent requirement and in addition to Common Equity Tier 1 capital used to meet the individual capital need. An institution that fails to meet the combined capital buffer requirement may not make any Additional Tier 1 capital payments until it has calculated the maximum distribution amount and has notified the Danish Financial Supervisory Authority (FSA) accordingly.[7] The institution is also required to submit a capital conservation plan to the Danish FSA. Should the Danish FSA assess that the capital conservation plan cannot reasonably be expected to enable the institution to meet the combined capital buffer requirement, the FSA may impose more stringent restrictions on distributions than those provided by the rules.

An institution's discretion to cancel coupon payments has several implications. Firstly, it questions whether, for tax purposes, a debt instrument is involved. In several EU member states, there has been doubt as to whether the issuing institution would qualify for tax deductibility of coupon payments. As far as Danish

6 Danish Financial Supervisory Authority's guide to section 124(5) of the Danish Financial Business Act – Capital requirements for meeting the Pillar II add-on under the 8+ method (in Danish only).

7 The maximum distribution amount caps the institution's potential distributions regarding Common Equity Tier 1 capital, entry into agreements on variable components of remuneration and payments on Additional Tier 1 capital. The Danish FSA will introduce detailed rules for the calculation and reporting of the maximum distribution amount. According to the explanatory notes to L133, Common Equity Tier 1 capital used to meet the individual capital need may be included in the calculation of the maximum distribution amount. Thus an institution may face a situation in which it fails to meet the combined capital buffer requirement without being imposed restrictions on distribution.

institutions are concerned, this uncertainty was removed with the adoption by the Folketing (Danish Parliament) of act no. 268 of 25 March 2014. This act implements an amendment to the Danish Tax Assessment Act, ensuring that Danish institutions may continue to deduct coupon payments on Additional Tier 1 capital although they have the discretion to cancel these payments.

Secondly, the accounting treatment is questioned. Additional Tier 1 capital is a mix of debt and equity, and whether this type of capital is to be entered as a debt item or as part of equity in the balance sheet depends on a specific interpretation of the accounting rules. If Additional Tier 1 capital is classified as equity, coupon payments will not be regarded as an expense, but as a profit allocation in line with dividends to the institution's shareholders.

However, the classification of Additional Tier 1 capital as part of equity does not change this capital's position in relation to the institution's solvency statement. In the solvency statement, Additional Tier 1 capital will continue to be included as Tier 1 capital, but not as Common Equity Tier 1 capital.

Pricing of Additional Tier 1 capital

Additional Tier 1 capital is a complex instrument, difficult to price. The history of Additional Tier 1 capital that fully meets the new requirements is still very short, and therefore the effects during a financial crisis remain to be seen.

Interest on Additional Tier 1 capital is to reflect, firstly, that this instrument is subordinate to all other debt in case of an institution's failure. Consequently, the credit premium is higher than for senior debt. The instrument also contains three option elements: the institution may choose to redeem the principal at the *first call date*; coupon payments may be cancelled if the institution no longer meets the combined capital buffer requirement or decides to cancel coupon payments; and the principal will be written down or converted into shares if the institution's Common Equity Tier 1 ratio falls below the trigger level.

The individual option elements are difficult to price, since the underlying variables are observable based on market data to a limited extent only. The probability that the issuer will redeem the principal at the first call date depends, *inter alia*, on the institution's possibilities at this point of issuing new Additional Tier 1 capital at a lower rate of interest than the interest rate of the original issuance. The probability that coupon payments are cancelled will depend on the size of the institution's excess capital adequacy consisting of Common Equity Tier 1 capital relative to the combined capital buffer requirement. However, the underlying risk concerning the institution's assets also plays a role in this respect. If the institution has invested in high-risk assets or has a high-risk loan portfolio, the probability of loss – and thus a decline in the Common Equity Tier 1 level – will be higher than if the institution had adopted a more conservative risk profile. Similarly, the probability of principal conversion or write-down depends both on the excess capital adequacy consisting of Common Equity Tier 1 capital relative to the trigger level and on the underlying risk of an institution's assets.

Previous issuances show that a clear relationship exists between the credit rating of each institution and its credit spread, cf. Chart 4.3 (right). The relationship between the distance to the trigger and the credit spread is less evident, cf. Chart 4.3 (left). According to a study conducted by the Bank of International Settlements (BIS) , Additional Tier 1 capital with a low trigger (5.125 per cent) and with conversion into shares has the lowest coupon.[8] If the trigger is breached, the investor will generally be better off receiving shares than receiving nothing at all. However, it cannot be ruled out that some investors would prefer a write-down on a temporary basis with the possibility of a subsequent write-up of the principal to receiving shares.

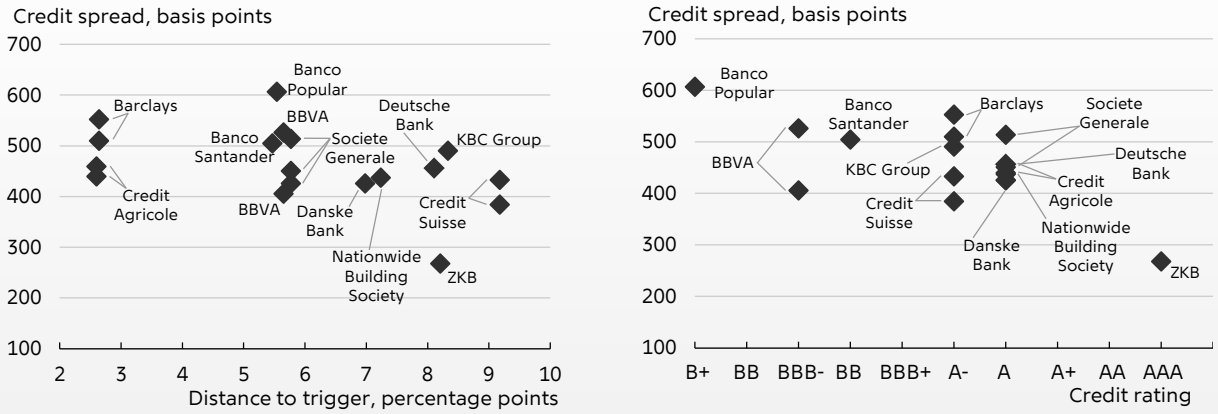
Example: Danske Bank and Banco Santander

This spring, Danske Bank and Banco Santander both issued Additional Tier 1 capital. Both issuances were conducted in March 2014 and met

8 See Stefan Avdjiev, Anastasia Kartasheva and Bilyana Bogdanova: *CoCos: a primer*, BIS Quarterly Review, September 2013

Relationship between credit spread and distance to trigger (left) and credit rating, respectively (right)

Chart 4.3



Note: Credit spreads have been calculated as Z-spreads. These spreads are calculated by parallel shifting the swap curve until the value of the future payments of a bond discounted by the shifted swap curve is equal to the market price of the bond. This method facilitates comparison of bonds with different coupons and some variation in the remaining maturity. In the left-hand chart, the distance to the trigger is the difference between the most recent observation of the Common Equity Tier 1 ratio and the trigger level. In the right-hand chart, the credit rating is the institution's most recent long-term rating with S&P. Calculated on 27 May 2014.
Source: Bloomberg, Dealogic, SNL and own calculations.

with an enthusiastic investor response. According to Danske Bank's company announcement of 5 March, Danske Bank had received indications of interest from close to 700 investors totalling just over 13 billion euro. Prior to the issuance, Danske Bank had announced that it planned to issue Additional Tier 1 capital worth at least 500 million euro, but due to the strong investor response the bank decided to issue Additional Tier 1 capital worth 750 million euro. Danske Bank was the first major Nordic bank to issue Additional Tier 1 capital in full compliance with the CRD IV/CRR requirements.

The issuances by Danske Bank and Banco Santander differ in two key aspects. Firstly, the trigger for the Danske Bank issuance is 7 per cent, while the trigger for the Banco Santander issuance is 5.125 per cent. Secondly, breach of the trigger of the former will result in a temporary principal write-down, while a trigger breach of the latter will lead to conversion of the principal into shares, cf. Table 4.2.

In principle, any conversion into shares of the Banco Santander issuance will be effected at the current market price of the shares at the time of conversion (but not lower than 4.34). While the conversion price will determine the number of shares to be received by each investor at the conversion, the price will not have any impact on the size of the institution's Common Equity Tier 1 capital. The minimum conversion price of 4.34 will protect existing investors from dilution in a situation of very low prices of the institution's shares.

The coupon rate of the Danske Bank issuance was set at 5.75 per cent p.a., or 0.5 percentage points lower than the Banco Santander issuance although the Danske Bank issuance has a trigger of 7 per cent. This reflects that Danske Bank has a higher level of Common Equity Tier 1 capital than Banco Santander and a better long-term rating with both S&P and Fitch. The high level of Common Equity Tier 1 means that, although the trigger has been set at 7 per cent, the distance between the Common Equity Tier 1 ratio and the trigger is greater for the Danske Bank issuance. In connection with the issuance, Danske Bank announced that a coupon rate lower than that of other European issuances could be explained by Danske Bank being quite well cushioned by European standards.[9] The rate of the Danske Bank issuance is considerably lower than the rate paid by Danske Bank on

9 Cf. article on Finanswatch 7 March 2014.

Terms and conditions for Additional Tier 1 capital issuances Table 4.2

	Danske Bank	Banco Santander
Date of issuance	5 March 2014	5 March 2014
Currency	Euro	Euro
Volume	750 million	1,500 million
Coupon	5.75 per cent	6.25 per cent
Institution's credit rating at issuance	A-/Baa1/A	BBB/Baa1/BBB+
Common Equity Tier 1 capital, end-2013	14.7 per cent	11.7 per cent
Trigger	Common Equity Tier 1 capital below 7 per cent	Common Equity Tier 1 capital below 5.125 per cent
Distance to trigger	7.7 percentage points	6.6 percentage points
Write-down/conversion	Write-down	Conversion into shares
Price per share at conversion	-	Market price, not below 4.34
First call date	1 April 2020	1 March 2019
Rate after first call date	6-year mid-swap + 4.64 per cent	5-year mid-swap + 5.41 per cent
Coupon payments	Semi-annual	Quarterly

Note: The institution's credit rating shows the institution's long-term ratings with S&P, Moody's and Fitch, respectively.
Source: Prospectuses from Danske Bank and Banco Santander as well as SNL.

Additional Tier 1 capital raised from the government under Bank Rescue Package 2.[10]

TIER 2 CAPITAL

Tier 2 capital is a debt instrument with a relatively long maturity; if an institution fails, its Tier 2 capital is subordinate to the claims of general creditors such as depositors and senior debt investors. However, any Additional Tier 1 claims are subordinate to Tier 2 claims. Tier 2 capital usually cannot absorb losses in going concern situations and, accordingly, is regarded as "gone concern capital", able to absorb losses only in connection with resolution or failure. Tier 2 capital has been a prevalent type of capital both in Denmark and internationally for many years.

CRD IV/CRR tightens the qualitative requirements for Tier 2 capital in several respects, but the requirements are still less stringent than the Additional Tier 1 capital requirements, cf. Table 4.1. In future, Tier 2 capital must be issued for a minimum original term to maturity of five years. At the same time, the amount eligible for inclusion in own funds will be scaled down already five years prior to maturity. This incentivises institutions to issue Tier 2 capital with a substantially longer maturity than the prescribed five year minimum. Since Tier 2 capital instruments cannot be called within five years of issuance, new issuances will typically be issued with a minimum maturity of 10 years. Tier 2 capital must not contain incentives to redeem such as step-ups or similar incentives. But in practice, the scaling down of the amount eligible for inclusion in own funds may be expected to set a precedent for Tier 1 capital to be called five years before maturity.

Although this is not a requirement under CRD IV/CRR, an institution may decide to issue Tier 2 capital where – similarly to Additional

10 On 11 April 2014, Danske Bank redeemed Additional Tier 1 capital borrowed from the government of kr. 24 billion. The loan was raised on 11 May 2009 at a rate of interest of 9.765 per cent p.a.

Tier 1 capital – the principal is either written down or converted if its Common Equity Tier 1 ratio falls below a predetermined level. If the trigger is breached before the fixed maturity date, Tier 2 capital thus has the capacity to absorb losses on a going concern basis. In itself, this mechanism will not change the regulatory status of the instrument, but it may help the institution obtain a better rating from credit rating agencies. For Danish institutions, Tier 2 capital that is automatically written down or converted into Common Equity Tier 1 capital if the trigger of at least 7 per cent of Common Equity Tier 1 is breached also qualifies for meeting the Pillar II add-on. Tier 2 capital with a built-in trigger for conversion or write-down may be a cheaper alternative to Additional Tier 1 capital where there is no fixed maturity date and where coupons may be cancelled due to distribution restrictions or a discretionary decision by the institution. In May 2014, Nykredit Realkredit issued Tier 2 capital with a built-in trigger mechanism under which the principal is written down if the Common Equity Tier 1 ratio falls below 7 per cent.

PERSPECTIVES

The financial crisis has highlighted the importance of institutions maintaining a robust level of own funds. Common Equity Tier 1 capital in the form of common equity is still capital of the highest quality, and therefore the majority of an institution's own funds must be composed of Common Equity Tier 1 capital. Since it immediately qualifies for meeting all capital and capital buffer requirements, including the individual capital need, Common Equity Tier 1 capital allows institutions maximum flexibility in capital planning. At the same time, institutions will presumably suspend the distribution of dividends to shareholders earlier than coupon payments on Additional Tier 1 capital. The shareholders of a viable institution will not suffer any long-term financial loss if dividends are temporarily suspended, given that non-distributed dividends will increase the institution's reserves, which ultimately belong to its shareholders. Additional Tier 1 investors, on the other hand, stand to suffer a financial loss if coupon payments are cancelled, and they will receive no subsequent compensation.

Additional Tier 1 capital and Tier 2 capital possess expedient qualities that make these types of capital suitable for inclusion in own funds to supplement a high level of Common Equity Tier 1 capital. From a financial stability perspective, the quality ranking of the three types of capital is clear: Common Equity Tier 1 capital is the best capital, Additional Tier 1 capital is the second best capital and Tier 2 capital is the third best.

Increased resilience

Additional Tier 1 capital and Tier 2 capital can help to improve the resilience of institutions. For Additional Tier 1 capital, the combination of perpetual maturity and the absence of incentives to redeem means that these capital instruments may be considered a permanent part of institutions' own funds. Additional Tier 1 capital is converted into Common Equity Tier 1 capital if the Common Equity Tier 1 ratio falls below the predetermined trigger level and is thus able to absorb losses in going concern situations equally to common equity. Cancellation of coupon payments may also help save capital in financial stress situations.

Tier 2 capital usually does not have going concern loss absorbing capacity, but provides protection to depositors and other general creditors in connection with resolution or failure. Under the new Crisis Management Directive, cf. Appendix 3, the new resolution authority will be able to use the bail-in tool to recapitalise an institution that is failing, provided there is a reasonable chance of restoring the institution's viability. As part of a bail-in, Tier 2 capital may be either written down or converted into shares. Thus, Tier 2 capital will be loss absorbing, although the activities of the institution are carried on. However, it is a precondition that the Danish FSA has assessed in advance that the institution is failing or likely to fail.

Increased market discipline

Additional Tier 1 capital can also help to improve market discipline. If an institution faces a situation in which it has to cancel coupon payments on Additional Tier 1 capital, this will send a negative signal to the financial markets. Therefore, an institution which has issued Additional Tier 1 capital has an incentive to ensure that it will at all times be able to meet the combined capital buffer requirement and thus continue to pay coupons to investors.

Market participants' confidence in the institution will be eroded further if, at some point, the principal is written down or converted following a trigger breach. The exact structure of the trigger mechanism may be significant when it comes to shareholders' incentive to inject further share capital in a situation where Common Equity Tier 1 capital is close to the trigger level. A trigger mechanism where *the principal is converted into shares* may be conducive to shareholder commitment if they risk dilution in connection with the conversion.[11] But in practice, this effect will be limited if the contract terms stipulate a minimum conversion price, given that this will protect shareholders from such dilution. On the other hand, it could be argued that a trigger mechanism where *the principal is written down* could distort the incentives of the shareholders – and the institution – in this situation. The reason is that Additional Tier 1 investors will share a potential loss if the trigger level is breached.[12] But this is a very short-sighted view. Credit institution activity is essentially based on trust, and later it could be difficult to regain the trust of disappointed investors. The trigger could therefore be seen as an implied capital requirement which the institution has made a commitment to the market to meet.

Tier 2 capital will continue to have a fixed maturity date. Thus Tier 2 capital is not of the same permanent nature as equity or Additional Tier 1 capital. But the need for continuing refinancing does give the credit institution the incentive to maintain a reasonable risk profile and a high level of Common Equity Tier 1 capital to be able to refinance Tier 2 capital on attractive terms.

Increased complexity

The complex terms of Additional Tier 1 capital, in particular, make issuances difficult to price. Given that coupon payments may be cancelled even at a relatively high level of Common Equity Tier 1 capital, investors in this type of capital will suffer losses at a time when shareholders may have suffered only fairly limited losses. And if the principal amount of Additional Tier 1 capital is written down following a trigger breach, Additional Tier 1 capital investors stand to lose their receivables although the institution's equity remains positive. These mechanisms turn the general ranking of creditors upside down and make it difficult for investors to assess whether or not Additional Tier 1 capital offers an attractive return/risk trade-off relative to alternative investments, including ordinary shares.

Investment in capital instruments with such complex terms involved is generally suitable only for professional investors. But it is not expedient if these capital instruments are acquired in large numbers by other credit institutions, since this will contribute to increased interconnectedness between institutions. Thus, the capital instruments are issued on terms under which investors incur an increased risk of loss relative to e.g. senior debt. To counter a situation of increased interconnectedness, CRD IV/CRR contains provisions to reduce the incentive of institutions to invest in capital instruments issued by other credit institutions. If an institution has made significant investments in another credit institution, or if the institution's total holdings of shares, Additional Tier 1 capital and Tier 2 capital exceed 10 per cent of its Common Equity Tier 1 capital, the institution will be subject to a deduction from own funds. If the Danish Financial Supervisory Authority assesses that an institution has increased its own funds through reciprocal cross holding of such capital instruments, this will also trigger a deduction from own funds.

11 Cf. Andrew G. Haldane's speech to the American Economic Association in Denver, Colorado, 9 January 2011.

12 See Tobias Berg and Christoph Kaserer: *Does contingent capital induce excessive risk-taking and prevent an efficient recapitalization of banks?*, February 2014.

5

LEVERAGE RATIO

INTRODUCTION AND SUMMARY

Introduction and Summary In relation to credit institutions, the term leverage is used to describe the relationship between equity and non-weighted exposures. If an institution's exposures are large relative to its equity, the institution is said to be highly leveraged. If leverage is high, a small change in the value of exposures has a large impact on equity.

Prior to the financial crisis, many credit institutions, both in Denmark and internationally, had financed too small a share of their assets with equity relative to their risks. As risks that had built up in the pre-crisis period began to materialise, this led to financial instability, deleveraging and risk of a credit crunch, which in many countries compelled the authorities to use public funds to support the financial sector.

Against that background, both the quantitative and qualitative requirements for credit institutions' capital relative to risk-weighted exposures have been increased substantially.[1] In addition, a number of initiatives have been launched to ensure that the risk-weighted exposures provide a true and fair view of the risk of losses on the credit institutions' exposures.[2] Some countries have also raised the lower limits for risk weights in relation to certain exposures.[3] Finally, internationally and in Denmark work is underway to introduce a simple leverage ratio, i.e. the equity of credit institutions as a ratio of their non-weighted exposures.[4] This should be seen in the context of the risk-based capital requirement, under which equity is related to risk-weighted exposures.

According to Basel III, the purpose of a leverage ratio is to limit both on- and off-balance sheet leveraging, thereby mitigating the risk of a deleveraging process that could have a negative impact on the financial system and the real economy. Furthermore, the aim is that the leverage ratio, being a simple and transparent requirement, should provide protection against model uncertainty and measuring errors when calculating risk weights for the risk-based capital requirement. It is a kind of back stop in relation to the risk-based requirement.

Internationally, there has been some focus on how the leverage ratio will affect large banks with many market activities that have low risk weights. In Denmark, focus has mainly been on the leverage ratio as protection against model uncertainties when calculating the risk weights in the risk-based capital requirement. For example, the Committee on the causes of the financial crisis expressed concerns about uncertainties linked to the estimation of risk

1 For a description of the enhanced capital requirements, see Chapter 4 and Danmarks Nationalbank, *Financial stability*, 2nd Half 2013, Appendix 3.

2 See Danmarks Nationalbank, *Financial stability*, 2nd Half 2013, Chapter 5.

3 See Box 2.1 about house prices and initiatives in relation to mortgage loans in Norway and Sweden.

4 See Annex 1 to this chapter for a description of the international background to and process of preparing the leverage ratio.

weights in the credit institutions' internal models and stressed the back stop function of the leverage ratio in that connection.

It is important that the effects of a leverage ratio, particularly its interaction with the risk-based capital requirement, are analysed thoroughly before any leverage ratio is introduced as a binding requirement. Risk-based capital requirements – including use of internal models – give the credit institutions an incentive to manage their risk and portfolio structure in an appropriate way. A binding requirement for the leverage ratio could mean that institutions with low average risk weights are given an incentive to take on more risk. Furthermore, a leverage ratio does not necessarily mean that the need for deleveraging during a crisis decreases.

A requirement to disclose the leverage ratio, without the ratio being a binding requirement, is a good idea as it may help to support the risk-based requirement. If the disclosed leverage is high, the market can be expected to require further information describing whether the risk-based capital requirement is unnaturally low – e.g. due to too optimistic modelling of risk weights.

At the EU level, the leverage ratio will be a disclosure requirement from 2015 and possibly a binding requirement from 2018. Under Bank Rescue Package 6, the Danish government is going to set up an expert group to assess the need to introduce a leverage ratio in Denmark. The report from the Committee on the causes of the financial crisis also recommended that such a group be set up. It is positive that thorough analyses are carried out, both internationally and nationally, before any leverage ratio is introduced as a binding requirement.

This chapter considers some of the effects of the interaction between a leverage ratio as a binding requirement and the risk-based capital requirement. The examples are stylised, based on a credit institution that only has loans on its balance sheet. There are many other effects – e.g. in relation to interconnectedness within the financial system and interaction with other regulation – which are important to consider going forward, including in the Danish government's group of experts.

HOW IS THE LEVERAGE RATIO CALCULATED?

In a leverage ratio, non-weighted exposures are related to own funds, cf. Chart 5.1. This means that high leverage is reflected in a low leverage ratio. The point of departure in Basel III is that the lower threshold for the leverage ratio should be 3 per cent.

In practice the capital requirements are more complex than illustrated in Chart 5.1. Firstly, the numerator comprises both equity and various types of subordinated debt. In the Basel III proposal, the leverage ratio numerator comprises Tier 1 capital – i.e. both Common Equity Tier 1 and Additional Tier 1 capital, cf. Chart 5.2. In the period up to the possible introduction of a leverage ratio as a binding requirement in 2018, the Basel Committee on Banking Supervision, BCBS, will monitor the effects of defining the numerator as Common Equity Tier 1 capital or as total capital instead.

The denominator is also far more complex than illustrated in Chart 5.1. While the denominator in the risk-based capital requirement

Stylised capital requirements Chart 5.1

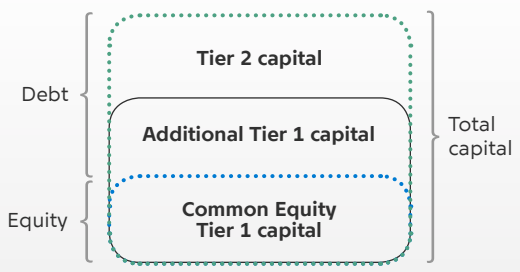
Risk-based capital requirement:

$$\frac{\text{Own funds}}{\text{Exponsures x Risk weights}} > X$$

Leverage ratio requirement:

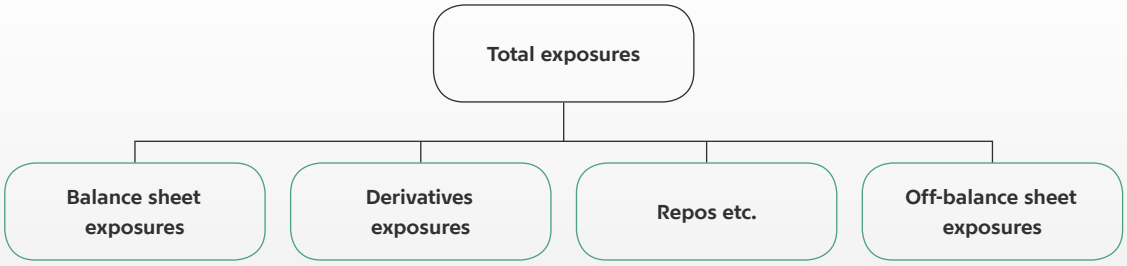
$$\frac{\text{Own funds}}{\text{Exposures}} > Y$$

Leverage ratio numerator Chart 5.2



Note: The black box shows the proposed definition of the leverage ratio numerator in Basel III. The broken-line boxes illustrate alternative definitions being considered.

Leverage ratio denominator Chart 5.3



Anm.: Balance sheet exposures are included on a one-to-one basis in the leverage ratio denominator. However, exposures for which deductions are made when calculating the Tier 1 capital are deducted. Derivatives exposures are included at the replacement cost plus an add-on for potential future exposures. Netting is permitted if a number of conditions are met, and cash variation margins may be deducted. Special rules apply to credit derivatives. Repos etc. are included with some netting possibilities. Off-balance sheet exposures are included by multiplying their nominal value by various credit conversion factors. Depending on the exposure type, the factors vary from 10 to 100 per cent.

comprises credit, market and settlement risks as well as operational risk, the denominator in the leverage ratio comprises balance sheet exposures, derivatives, repos etc. and off-balance sheet exposures, cf. Chart 5.3. Within each of the four categories, there are separate rules for calculating the value of exposures. Among other things, these calculation methodologies are intended to ensure that the leverage ratio is calculated in a comparable manner across different countries with separate accounting regulations. Balance sheet exposures are predominantly included on a one-to-one basis in the leverage ratio denominator.

INCENTIVES AND BEHAVIOUR EFFECTS

In connection with any kind of financial regulation it is important to consider how it may affect incentives and behaviour. If one of the various key ratios regulating credit institutions becomes binding – or the excess capital adequacy becomes lower than the institutions' internal targets or the market requirements – institutions can adjust either the numerator or the denominator. This also applies to the leverage ratio. The Tier 1 capital can be increased or the exposures reduced.

However, the various regulatory key ratios cannot be viewed in isolation. If, say, Tier 1 capital is increased by changing the composition of liabilities, so that more Tier 1 capital is issued while a corresponding volume of debt is redeemed, this will have an impact on observance of both the leverage ratio and the risk-based capital requirement. Depending on e.g. the maturity of the debt redeemed, it may also affect observance of liquidity requirements.

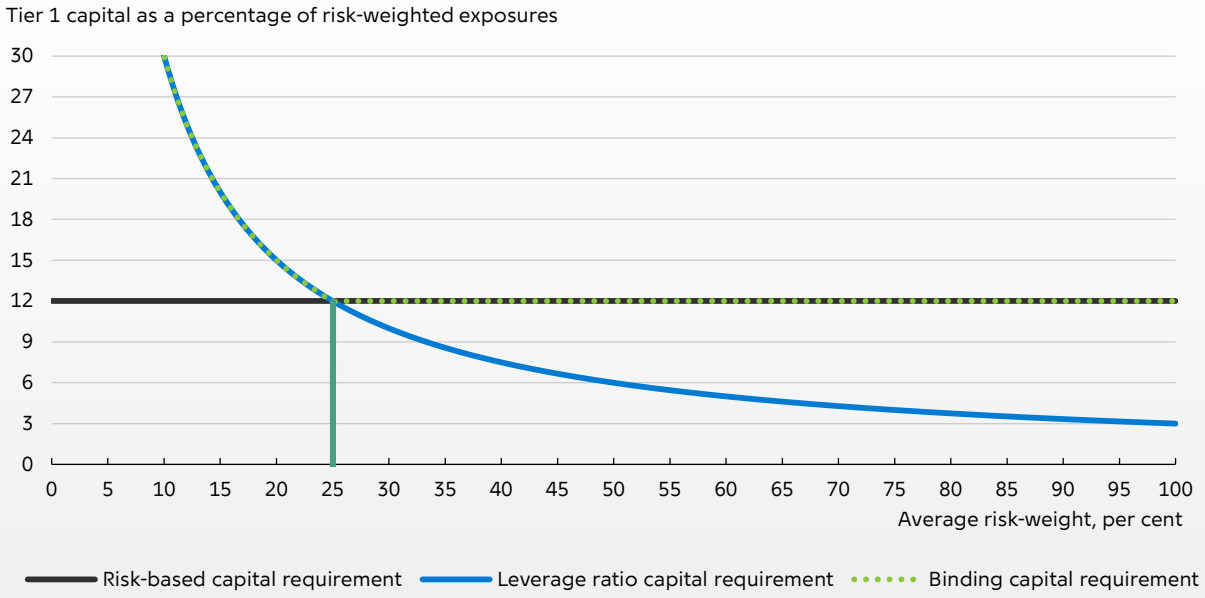
Conversely, if the leverage ratio is improved by reducing exposures and reducing debt correspondingly on the liabilities side, the impact on observance of the risk-based capital requirement will depend on the risk weights of the assets sold. Likewise, observance of liquidity requirements will depend on the liquidity of the assets sold and the maturity of the debt redeemed.

WHEN IS THE LEVERAGE RATIO THE BINDING CAPITAL REQUIREMENT?

Whether the leverage ratio is the binding capital requirement depends on a credit institution's need for Tier 1 capital as a percentage of risk-weighted exposures and the ratio of risk-weighted exposures to total exposures as calculated in the denominator of the leverage ratio.

This relationship can be illustrated using an example with a credit institution for which both risk-weighted exposures and exposures in the leverage ratio are purely related to a loan portfolio on the institution's balance sheet. In other words, the risk-weighted exposures can be calculated as the exposures calculated in the leverage ratio multiplied by the average

Capital requirement as a function of average risk weight Chart 5.4



Note: It is assumed that the Tier 1 requirement resulting from the risk-based capital requirement is 12 per cent of the risk-weighted exposures, while the requirement resulting from the leverage ratio is 3 per cent of total exposures.
Source: Own calculations.

risk weight.[5] Assume that the institution's Tier 1 requirement is 12 per cent of the risk-weighted exposures, while the leverage ratio requirement is 3 per cent of total exposures.

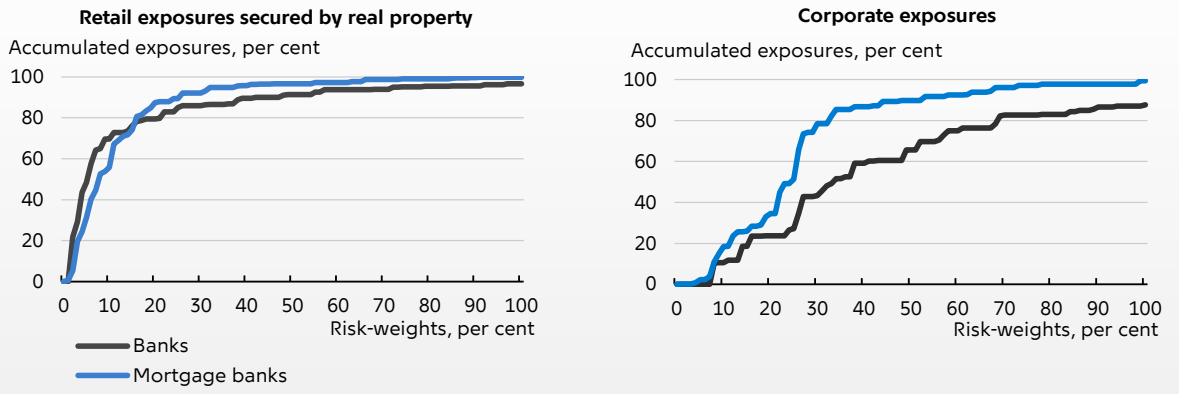
The risk-based capital requirement is the binding requirement if the average risk weight is higher than 25 per cent. Conversely, if the average risk weight is lower than 25 per cent, the leverage ratio is the binding requirement, cf. Chart 5.4. Hence, the leverage ratio takes effect only if the average risk weight is lower than 25 per cent.

If the leverage ratio is the binding capital requirement for a credit institution and the institution increases its balance sheet by adding new business with risk weights below 25 per cent, the leverage ratio entails that the Tier 1 capital must constitute a larger share of the funding of new business than the risk-based capital requirement would entail. On the other hand, if the institution increases its balance sheet by adding new business with risk weights exceeding 25 per cent, the leverage ratio entails that Tier 1 capital can constitute a smaller share of the funding of the new business than the risk-based capital requirement would entail.

Many credit institutions have a specific target for the return on equity. If the risk weights provide a true indication of the systematic risk on all assets – i.e. the risk of losses when the economy is hit by a severe negative shock – and the expected return reflects the systematic risk on the assets, then the expected return on equity will be determined solely by excess capital adequacy relative to the risk-based capital requirement. The higher the excess capital adequacy, the lower the expected return. The low return if excess capital adequacy is high reflects that equity has become a safer investment. In other words, a credit institution not regulated by a leverage ratio will be indifferent to investing in assets with high or low risk weights. Assets with high risk weights will entail a need to fund a larger share of the balance sheet via equity. But since the asset side is also more strongly exposed to severe negative shocks to the economy and hence yields a higher expected return, this will not affect the expected return on equity.

5 It is assumed that no deductions have been made from Tier 1 capital which must be deducted from the balance sheet exposures when calculating the leverage ratio.

Accumulated exposures relative to risk weights Chart 5.5



Note: Calculated at end-2013. Corporate exposures have been adjusted so that repos are not included. The adjustment is subject to some uncertainty.
Source: Danish Financial Supervisory Authority and own calculations.

If a credit institution has announced high targets for its return on equity and its average risk weights are so low that the leverage ratio is the binding requirement, the ratio will provide an incentive to conclude new business with relatively high risk weights or to discontinue existing business with relatively low risk weights until the average risk weight becomes so high that the leverage ratio is no longer the binding capital requirement. Obviously, the purpose of the leverage ratio is not that institutions with low risk weights should restructure their lending portfolios towards more risky exposures. Instead the institutions should accept that due to the leverage ratio they must have higher excess capital adequacy relative to the risk-based capital requirements and that they must therefore set lower targets for return on equity since the higher excess capital adequacy makes equity a safer investment.

Risk weights in Danish credit institutions

Danish banks and mortgage banks have a considerable share of their exposures in loans with low risk weights. More than 80 per cent of the banks' and mortgage banks' retail exposures secured by real property have a risk weight below 25 per cent, cf. Chart 5.5. If the leverage ratio initially becomes the binding requirement for some institutions, and these institutions – in order to achieve a certain return on equity – choose to change their portfolio composition so that this ratio is no longer the binding requirement, they may have an incentive to reduce a considerable share of their lending or to expand the balance sheet by adding high-risk exposures which can increase the average risk weight. Whether the leverage ratio will be the binding requirement for Danish banks and mortgage banks will depend not only on the risk weights of their lending portfolios, but also on the share of other exposures in the risk-weighted exposures and the total exposures calculated in the leverage ratio, respectively.

DOES THE LEVERAGE RATIO PROTECT AGAINST MODEL UNCERTAINTY AND MEASUREMENT ERRORS?

One of the purposes of the Basel III leverage ratio is that it should protect against model uncertainty and measurement errors when calculating the risk-based capital requirement. The Committee on the causes of the financial crisis has highlighted similar issues. As explained above, the leverage ratio applies only if the average risk weight is sufficiently low. For credit institutions with high average risk weights, the leverage ratio has no immediate effect and hence cannot protect against measurement errors in the risk weights – even though some exposures may have too low risk weights. Only if the average risk weight is sufficiently low will the leverage ratio protect

against measuring errors in the risk weights. Institutions with low average risk weights are also the ones that may be very highly leveraged. So, in the absence of a leverage requirement, even small changes in the risk weights of these institutions may lead to a substantial need to deleverage.[6] In that case the leverage ratio will ensure that a shock to the risk weights will not result in a situation where the institution is short of capital. This is partly because the leverage ratio requires considerable excess capital adequacy relative to the risk-based capital requirement and partly because the leverage ratio's capital requirement is independent of the risk weights.

The above can be illustrated by an example. If a credit institution solely has retail loans secured by real property for kr. 100 billion and an average risk weight of 10 per cent, and the risk-based capital requirement is 12 per cent, then the institution must fund kr. 1.2 billion of its lending via equity while the rest can be funded via debt. But if the institution is also subject to a leverage requirement of 3 per cent, the required equity funding will be kr. 3 billion. Now assume that it becomes obvious during a crisis that the risk weights have been estimated incorrectly – e.g. because they have been estimated on the basis of a period when the housing market and the households were not hit by simultaneous severe negative shocks. If the average risk weight therefore rises to 15 per cent, the risk-based capital requirement will rise from kr. 1.2 billion to kr. 1.8 billion. But since the binding requirement from the leverage ratio remains unchanged at kr. 3 billion, the institution need not take any action. On the other hand, if the institution had not been subject to a leverage ratio and had not had a sufficient buffer relative to the risk-based capital requirement, it would either have had to issue Tier 1 capital in the market for kr. 0.6 billion or to reduce its lending by approximately kr. 33 billion in order to observe the risk-based capital requirement of 12 per cent once again.[7]

LEVERAGE AND DELEVERAGING

According to Basel III, one of the purposes of the leverage ratio is to reduce leveraging, thereby mitigating the risk of a deleveraging process that could have a detrimental effect on the financial system and the real economy.

The risk of deleveraging as a result of high leverage can be illustrated using a simple example. Assume that a credit institution's funding is 5 per cent equity and 95 per cent debt – i.e. a leverage ratio of 5 per cent. If the institution loses 1 per cent of its assets, and hence 20 per cent of its equity, equity as a ratio of assets will fall to approximately 4 per cent. If the institution wishes to restore equity funding to 5 per cent by reducing its assets, it must sell approximately 19 per cent of the assets. Assume instead that the institution's funding is 2 per cent equity and 98 per cent debt – i.e. a leverage ratio of 2 per cent – and that the institution loses 1 per cent of its assets, i.e. 50 per cent of its equity. In that case, if the institution wishes to restore equity funding to 2 per cent by reducing its assets, it must sell around half of the assets.

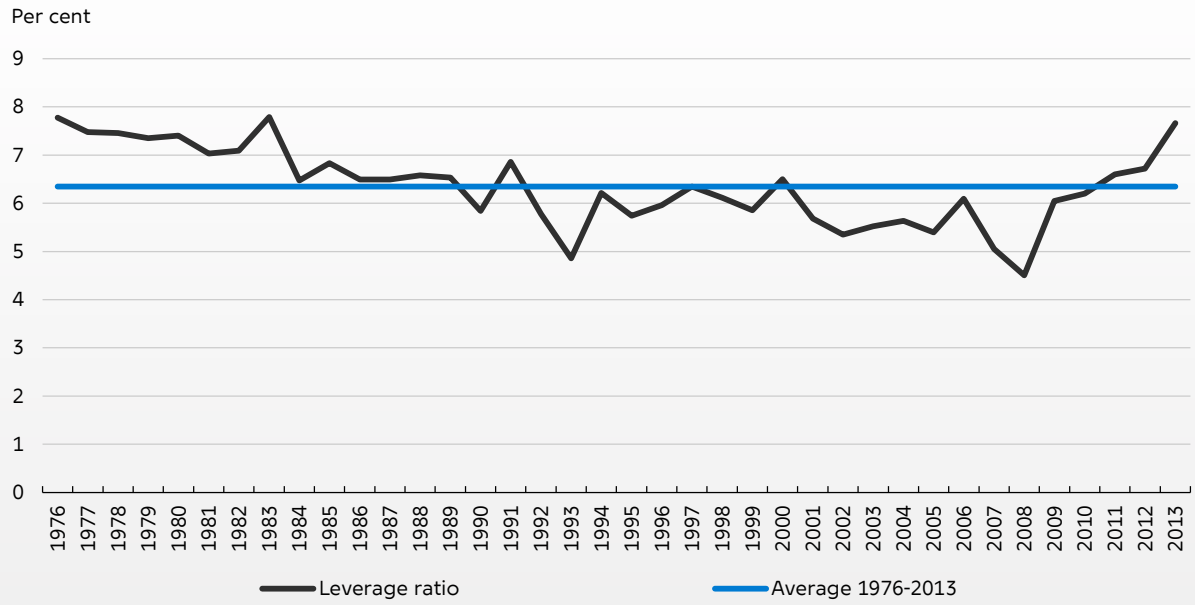
In other words, the leverage ratio protects against the risk of deleveraging by setting a limit to how highly leveraged credit institutions may be. For institutions with low risk weights, where the leverage ratio is the binding requirement, the ratio caps the deleveraging requirement.

According to Basel II, accumulation of excessive leverage on and off the banks' balance sheets was one of the underlying characteristics of the international financial crisis. During the crisis, pressures from the market compelled the banks to reduce their leverage and this led to downward pressure on asset prices, which amplified the negative spiral of losses, banks'

6 The effect is further amplified by the functional relationship between the probability of default on a loan and the loan's risk weight in the Basel formula for calculation of risk weights. For low risk weights, the sensitivity of the risk weight to a change in the probability of default is far greater than for high risk weights, cf. the chapter Risk-weighted assets and internal models in Danmarks Nationalbank, *Financial stability*, 2nd Half 2013.

7 It is assumed that the risk weight of the loans reduced corresponds to the average risk weight. If most of the loans reduced have higher-than-average risk weights, the reduction will be lower than kr. 33 billion, cf. the section "Does the leverage ratio always provide protection against deleveraging?".

Simple leverage ratio for Danish banks Chart 5.6



Note: The leverage ratio is calculated as the banks' total Tier 1 capital divided by total assets. The chart comprises banks in the Danish Financial Supervisory Authority's groups 1-3.
Source: Danish Financial Supervisory Authority and own calculations.

excess capital adequacy and the supply of credit.

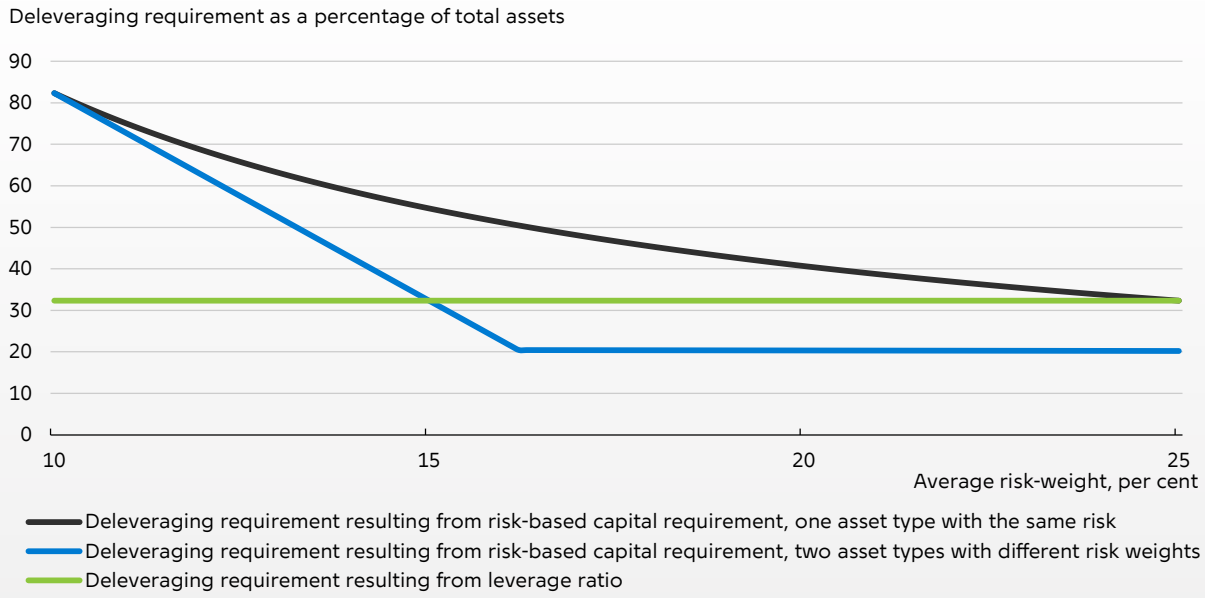
In a Danish context, there was a risk that the financial crisis would evolve into a credit crunch at the end of 2008. On the basis of the Danish banks' average lending-to-equity ratio (lending divided by equity) at end-2007, Danmarks Nationalbank concluded that a return to the historical average would require a reduction of lending by 24 per cent with unchanged equity, or an increase in equity of 30 per cent (approximately kr. 75 billion).[8] Calculated as a simple leverage ratio, i.e. the Tier 1 capital of Danish banks relative to total assets, leverage was also high at end-2008, cf. Chart 5.6. But this simple leverage ratio was already in 2009 restored to a level close to the historical average. Much of the pronounced increase in 2009 was attributable to capital injections in the form of Additional Tier 1 capital from the government (Bank Rescue Package 2). This capital was specifically aimed at mitigating the risk of a credit crunch due to deleveraging. Subsequently the leverage ratio has continued to rise (leverage has declined) as a result of increases in Tier 1 capital and decreasing assets.

8 Danmarks Nationalbank, *Financial stability*, 2nd Half 2008.

DOES THE LEVERAGE RATIO ALWAYS PROVIDE PROTECTION AGAINST DELEVERAGING?

As previously mentioned, the leverage ratio caps the deleveraging requirement for institutions with low risk weights. However, credit institutions do not have just one type of exposures that all have the same risk weight. They have a mixture of exposures with different risk weights, such as corporate loans with relatively high risk weights and mortgage loans with low risk weights. For an institution with several types of exposures with different risk weights, it may be necessary to deleverage more if the institution is subject to a leverage ratio than if the institution is subject to a risk-based capital requirement only. The reason is that the leverage ratio requires sale of the same volume of assets irrespective of their risk weights, while the risk-based capital requirement distinguishes between assets with different risk weights. Since the funding of assets with high risk weights can

Deleveraging requirement on loss of 1 per cent of total assets Chart 5.7



Note: It is assumed that the Tier 1 requirement resulting from the risk-based capital requirement is 12 per cent of the risk-weighted assets, while the requirement resulting from the leverage ratio is 3 per cent of total assets. In the calculation of the deleveraging requirement resulting from the risk-based capital requirement in the example with two asset types with different risk weights, it is assumed that the risk weight of each asset is either 10 or 40 per cent. It is also assumed that the deleveraging requirement is met by selling assets with a risk weight of 40 per cent to the extent that this is possible.
Source: Own calculations.

be leveraged less under the risk-based capital requirement than under the leverage ratio, the need for deleveraging will also be lower. So in practice the leverage ratio may lead to a greater deleveraging requirement than a risk-based capital requirement alone would.

To illustrate the above, consider an institution with a portfolio comprising two asset types. Assets of one type all have a risk weight of 10 per cent, while assets of the other type all have a risk weight of 40 per cent. If the institution suffers a loss, it can deleverage by selling assets with high risk weights, assets with low risk weights or a combination of the two. If the institution loses 1 per cent of its assets and chooses only to sell assets with a risk weight of 40 per cent, it can sell some 20 per cent of its total assets in order to observe the risk-based capital requirement once again. For an institution also subject to a leverage ratio, the deleveraging requirement would be approximately 32 per cent, cf. Chart 5.7.

If the portfolio of the institution includes a large overweight of assets with a risk weight of 10 per cent, it will not be able to deleverage sufficiently to meet the risk-based capital requirement by only selling assets with a risk weight of 40 per cent. If the average risk weight is below 16 per cent, less than 20 per cent of the assets have a risk weight of 40 per cent, so it will also be necessary to sell some assets with a risk weight of 10 per cent. However, four times as many of these assets must be sold to achieve the same improvement of the risk-based capital requirement as when selling assets with a risk weight of 40 per cent. So the deleveraging requirement increases substantially.

LEVERAGING EXTERNALITIES

In addition to the direct negative effects of a situation where a credit institution is forced to deleverage and the potential spillover effect on asset prices for other institutions, high leverage may also have a negative effect on the financial system via increased interconnectedness.

Transactions between credit institutions often have low risk weights. Consequently, the

institutions may have a very large and complex network of internal relations without a resultant requirement for a high degree of equity funding. In good times, this supports an efficient financial system in which institutions can easily exchange liquidity and hedge various risk types among themselves. But problems may arise when the system is hit by a negative shock. Due to the high number of relations in a complex network, it can be very difficult for the individual institution to gain an overview of its actual counterparty risk as it may be indirectly connected with distressed parts of the network without knowing it. So even relatively robust institutions may become reluctant to take on risk and, in the worst case, start to deleverage because they are afraid of being affected if a counterparty experiences problems.[9]

Whether a leverage ratio provides protection against excessive complexity within the financial system to a large extent depends on how derivatives exposures, repos and off-balance sheet liabilities are treated. It should be an important element of the work to analyse the need for a leverage ratio to assess whether the leverage ratio can help to ensure that the institutions contributing most strongly to the complexity of the financial network are sufficiently well-capitalised.[10] In this context it should be analysed whether the leverage ratio is the right instrument for addressing interconnectedness. For example, it is possible that the use of central counterparties, CCPs, could in some cases be more efficient in terms of reducing the risk resulting from high complexity. Furthermore, the LCR will require credit institutions to hold fairly large liquidity buffers relative to exposures to financial counterparties.

ANNEX 1: INTERNATIONAL BACKGROUND AND PROCESS

BASEL III

The idea of a leverage ratio was presented as an element of Basel III back in 2010. In June 2013, the Basel Committee on Banking Supervision, BCBS, published a consultative paper with a number of suggestions for amendment of the leverage ratio and requirements for credit institutions' disclosure of their leverage. In January 2014, the BCBS published its revised definition of the leverage ratio and disclosure requirements. It is envisaged that from 2015 credit institutions are to disclose the leverage ratio with more than 20 subcomponents, showing the calculations from the total assets in the financial statements to the total exposures in the leverage ratio, as well as the calculations of exposures in the four categories (cf. Chart 5.3). Based on reporting by credit institutions, the BCBS will, in the coming years, monitor developments in the leverage ratio and its subcomponents and the development in the leverage ratio relative to the risk-based capital requirement. Taking the experience gained into account, the BCBS will possibly make final amendments to the definitions and calibration of the leverage ratio – including of the 3 per cent threshold – in 2017, before the ratio is scheduled to be a Pillar I requirement (binding minimum requirement) in 2018.

EU

At the EU level, the Capital Requirements Directive, CRD IV, which was adopted in 2013, imposes an obligation on the national supervisors to ensure that credit institutions monitor and consider the risk of excessive leverage.[11] In addition, a leverage ratio as a reporting and disclosure requirement is part of the Capital Requirements Regulation, CRR. The CRR allows the

9 For a formal model of the interaction between complexity and the risk of fire sales, see Caballero, Ricardo J. and Alp Simsek (2013), Fire Sales in a Model of Complexity, *The Journal of Finance*, Vol. LXVIII, No. 6, December 2003.

10 For a description of financial networks and financial stability, see also Annex 1 to Chapter 3 of this publication.

11 In Denmark, this has been implemented via the Executive Order on Management and Control of Banks, etc. and the Executive Order on the Calculation of Risk Exposures, Capital Base and Capital Need.

Timeline for EU leverage ratio Chart 5.8

June 2013	The EU Capital Requirements Regulation, which includes a non-binding leverage ratio (Pillar III requirement), is adopted.
July 2013	A draft Implementing Technical Standard on reporting of the leverage ratio is sent from the EBA to the European Commission (adopted by the European Commission in April 2014).
June 2014	The EBA is to submit a Draft Implementing Technical Standard on disclosure of the leverage ratio to the European Commission.
2014	The European Commission may amend the definition of the leverage ratio via a delegated legal act.
2015	Credit institutions are to start disclosing their leverage ratios.
October 2016	The EBA is to report to the European Commission on whether the leverage ratio has the desired effect, cf. Box 5.1.
December 2016	The European Commission is to report to the European Parliament and the Council on the impact and effectiveness of the leverage ratio and, where appropriate, present a legislative proprosal for a binding leverage ratio.
2018	The leverage ratio may become a binding requirement (Pillar I requirement).

European Commission, via a delegated legal act, to amend the definition of the CRR leverage ratio before credit institutions must begin to disclose their leverage ratios in 2015, cf. Chart 5.8. The European Banking Authority, EBA, has published a report recommending that the Commission amend the CRR definition to align it more with the Basel definition.[12]

Whether the leverage ratio will in future be a Pillar I requirement for EU credit institutions will not be decided until 2017. By end-2016 at the latest, the Commission must submit a report on the consequences and effects of the leverage ratio. If the Commission finds it necessary, the report is to be accompanied by a legislative proposal with an appropriate number of leverage ratio levels that must be met by institutions following different business models. In other words, the CRR makes it possible to apply different leverage ratio requirements to different business models. Furthermore, if the Commission finds it necessary, it must propose amendments to the CRR so that the leverage ratio may be included as one of the elements which the national macroprudential authorities may tighten at times in order to reduce or counter the build-up of systemic risk in the financial system. Tightening the leverage ratio in

Report from the EBA to the European Commission on a leverage ratio Box 5.1

By 31 October 2016, the EBA must submit a report on the leverage ratio, shedding light on the following, among other things:

- Whether the leverage ratio is the appropriate tool to suppress the risk of excessive leverage.
- Whether it is necessary to change the calculation methodology for the leverage ratio so as to ensure that it counters excessive leverage.
- Whether the use of either Common Equity Tier 1 capital or total capital is more appropriate than Tier 1 capital as the leverage ratio numerator.
- Definition of business models reflecting various risk profiles and required leverage ratio levels for the various business models – including whether the level should differ for different business models.
- Consequences of introducing the leverage ratio for e.g. the credit institutions' solvency, business models, balance sheet structures, risk behaviour and lending activities. And the consequences for the financial markets, financial innovation, development of instruments with embedded leverage, migration of exposures to shadow banking entities and interaction between the leverage ratio, risk-based capital requirement and liquidity requirement.

Source: CRR article 511.

12 European Banking Authority, Report on impact of differences in leverage ratio definitions – leverage ratio exposure measure under Basel III and the CRR, 4 March 2014.

periods when systemic risks are building up will make it possible to ease the ratio if the economy is hit by a negative shock. This will reduce the potential need to deleverage as a result of the leverage ratio in periods when systemic risk materialises. The Commission's report and legislative proposal, if any, will be supported by a report submitted by the EBA to the Commission in October 2016 at the latest, cf. Box 5.1.

USA

In the USA, as simple leverage ratio has been part of the regulation of commercial banks for several decades. This will also be the case under the Dodd-Frank Reform, which imposes a "general leverage ratio" of 4 per cent on all US banks. In the general leverage ratio, Tier 1 capital is related to total assets as stated in the banks' financial statements less deductions from the Tier 1 capital.

In addition, the Dodd-Frank Reform introduces a new leverage ratio, called the supplementary leverage ratio. The US authorities envisage that total exposures (the denominator) in the supplementary ratio are defined as in the revised version of the Basel leverage ratio from January 2014. Phasing-in of the supplementary leverage ratio will also follow Basel III since it will be a disclosure requirement from 2015 and a binding requirement from 2018.

Large US banks (total consolidated assets of at least USD 250 billion or at least USD 10 billion in foreign assets on the balance sheet) must observe the supplementary ratio with a threshold of 3 per cent, corresponding to the – preliminary – threshold announced in Basel III. In addition, very large US banking groups, equivalent to the eight groups identified by the Financial Stability Board as globally systemically important, must observe the supplementary leverage ratio with a threshold of 5 per cent if restrictions are not to be imposed on their dividend and bonus payments. Finally, subsidiary banks of the eight globally systemically important banking groups covered by the US depositor guarantee scheme must observe the supplementary leverage ratio with a threshold of 6 per cent in order to be regarded as well-capitalised under the "prompt corrective action framework". Under this framework, the authorities step in with gradually more extensive measures if a bank drifts away from the best category, well-capitalised, towards a lower category.

Whether more capital is required to meet the general or the supplementary leverage ratio depends on the individual bank's exposures. For example, off-balance sheet exposures are not included in the denominator of the general leverage ratio, while they are included in the denominator of the supplementary ratio. The US authorities have calculated that for a large bank with an average mix of exposures the supplementary leverage ratio will require more capital than the general ratio.

6

BANKING UNION

INTRODUCTION

The framework for the banking union is almost in place.[1] Important steps have been taken in terms of preparations for the *Single Supervisory Mechanism,* under which responsibility for the most important supervisory tasks in the participating member states will be conferred on the European Central Bank, ECB, on 4 November 2014.[2] Moreover, the Regulation on the *Single Resolution Mechanism* is now final, supplementing the Single Supervisory Mechanism by a scheme under which resolution of failing systemically important credit institutions must be effected centrally at European level.[3] This chapter refers to the Single Supervisory Mechanism and the Single Resolution Mechanism jointly as the banking union.

A common supervisory standard and common supervisory and resolution practices for the credit institutions of participating member states – and thus uniform application of the EU capital requirements and crisis management regulations – are expected to strengthen the single market for financial services. Moreover, the banking union will promote financial stability, both in the participating member states and in the EU as a whole, especially by ensuring that the link between credit institutions and government finances is weakened.

THE SINGLE SUPERVISORY MECHANISM – IMPLEMENTATION

The Single Supervisory Mechanism is an integrated system composed of the ECB and the national supervisors. Overall, the ECB is responsible for the effective and consistent functioning of the supervisory mechanism in all participating member states. The ECB has some specific supervisory tasks in relation to all credit institutions in the participating member states (including authorising and withdrawing authorisations). Apart from those tasks, the supervisory competence is shared between the ECB, which will undertake direct supervision of the largest credit institutions, and national supervisors, which will supervise all other institutions. In practice, the supervisory tasks will, in both cases, be performed in close cooperation between the ECB and the national supervisors. As part of the organisation of the Single Supervisory Mechanism, the ECB has adopted a number of implementing legal acts, including the ECB's revised Rules of Procedure, which allow for the establishment of the new ECB body, the Supervisory Board, and a Framework

1 The chapter is based on the description of the banking union in Chapter 6 of *Financial stability,* 2nd half 2013.

2 Cf. Council Regulation (EU) No. 1024/2013 of 15 October 2013 conferring specific tasks on the European Central Bank concerning policies relating to the prudential supervision of credit institutions.

3 Regulation of the European Parliament and of the Council establishing uniform rules and a uniform procedure for the resolution of credit institutions and certain investment firms in the framework of a Single Resolution Mechanism and a Single Bank Resolution Fund and amending Regulation (EU) No. 1093/2010 of the European Parliament and of the Council. The Regulation was adopted by the European Parliament on 15 April 2014 and is expected to be adopted by the Council in summer 2014.

Regulation on cooperation within the Single Supervisory Mechanism.[4]

The Framework Regulation provides, among other things, detailed rules for determining whether an institution will be subject to direct supervision by the ECB. This assessment is based on a number of criteria, including the value of the institution's assets (threshold 30 billion euro) and an assessment of the institution's importance for the economy of the relevant member state or the EU as a whole. If the institution meets one of the criteria listed, it will be subject to direct supervision by the ECB. This is estimated to be the case for approximately 130 groups, representing almost 85 per cent of total bank assets in the euro area. If Denmark decides to participate in the banking union, Danske Bank, Nordea Bank Danmark, Nykredit, and Jyske Bank will be subject to direct supervision by the ECB. In addition, it would be natural for the ECB to undertake supervision of all other designated SIFIs in Denmark. Even if Denmark does not participate, Danske Bank and Nordea will be subject to direct supervision by the ECB in relation to large subsidiaries in the euro area.

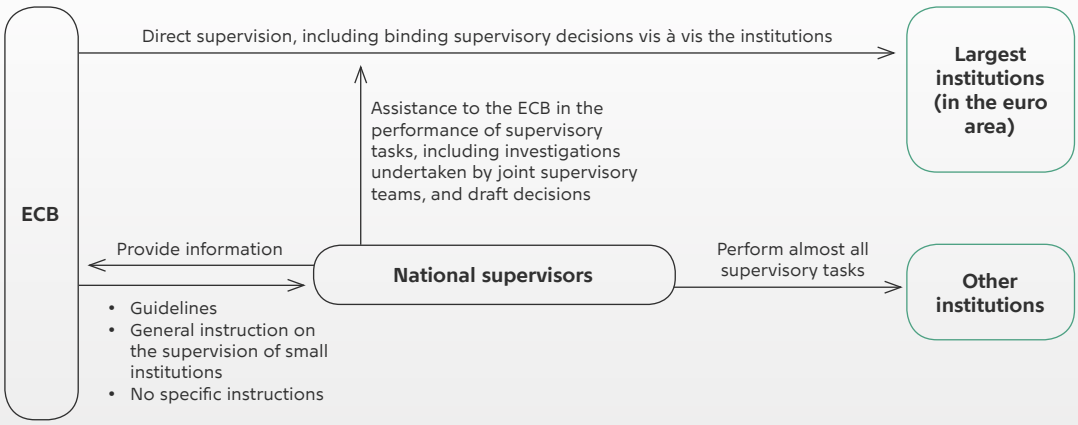
The ECB's decision identifying the institutions that will be subject to direct supervision will be reviewed annually. However, the ECB can decide at any time to take over the direct supervision of an institution, independently of the above criteria, if deemed necessary to ensure consistent application of high supervisory standards.

The ECB and the national supervisors are subject to a duty of cooperation in good faith and must exchange all information necessary for the performance of their respective tasks, given that the national supervisors will, to a great extent, be involved in the supervisory decisions made by the ECB. The general principles for the division of responsibilities at the national and EU levels (for euro area member states) are illustrated in Chart 6.1.

In general, similar procedures apply to supervisory cooperation in relation to institutions in a non-euro area member state choosing to participate in the banking union, albeit with the difference that the ECB cannot make binding decisions directly vis à vis individual institutions, but can instead issue instructions to the respective national authority, which will implement these towards the institutions.

Framework for a common supervisory standard – cooperation between the ECB and national supervisors

Chart 6.1



4 Regulation No. 2014/17 of the European Central Bank of 16 April 2014 establishing the framework for cooperation with the Single Supervisory Mechanism between the European Central Bank and national competent authorities and with national designated authorities (SSM Framework Regulation).

Review and assessment of risks Box 6.1

Before assuming responsibility for the direct supervision of the largest credit institution groups in the banking union, the ECB will conduct a review of the financial health of these groups, a Comprehensive Assessment, cf. Box 6.1 in *Financial stability*, 2nd half 2013. The Comprehensive Assessment includes the following three elements:

- An analysis of key risks, including the institution's liquidity and funding situation.
- An Asset Quality Review, AQR.
- A stress test of the institution's adjusted Common Equity Tier 1 capital based on the results of the AQR.

Overall results of the three elements will be published in October 2014.

In March 2014, the ECB published a manual on the methodology for the AQR.[1] This manual is to ensure that the ECB, national supervisors and external consultants assisting with the AQR apply a consistent and uniform approach to the AQR across institutions.

Portfolios covering approximately 58 per cent of the affected groups' risk-weighted exposures have been selected. If the assessment identifies issues that need to be addressed, the AQR could result in two reactions:

- In previously presented and in future accounts, the groups must make adjustments for revaluations if issues are identified that are not compliant with accounting legislation or accounting principles in the individual member states.
- The groups must adjust their Common Equity Tier 1 capital equivalent to the revaluation if issues are identified that necessitate a new valuation of assets although they are not non-compliant with accounting legislation or principles. This adjustment is relevant only in connection with the Comprehensive Assessment and will not be used after the completion of the Comprehensive Assessment.

The AQR must be completed in August 2014, and the Danish Financial Supervisory Authority will conduct a similar review of the largest Danish credit institutions participating in the stress test.

As previously, the EU stress test will be conducted under the auspices of the European Banking Authority, EBA. The methodology of the stress test largely complies with earlier EU stress tests. The stress scenario has been designed by the European Systemic Risk Board, ESRB, and includes a major slowdown in the European economy following the resurgence in global risk aversion, reflected e.g. in increasing interest rates and falling investment and private consumption.

In the assessment of the findings of the AQR and the baseline stress test scenario, groups are compared with a Common Equity Tier 1 requirement of 8 per cent of risk-weighted exposures. Capital shortfalls arising in the AQR or in the baseline stress test scenario must be covered by Common Equity Tier 1 capital within six months from October 2014. In the adverse stress test scenario, the requirement is 5.5 per cent, and capital shortfalls must be covered within nine months. In addition to Common Equity Tier 1 capital, other loss absorbing capital may be used, to a limited extent, to cover the capital shortfalls arising from the stress test.[2]

In general, the groups must strengthen their capital e.g. by withholding dividends, issuing shares or selling assets. If it is not possible for a group to raise the capital required, resolution or national measures such as government capital injections may be necessary. Until the end of 2014, handling of any government capital injections must comply with EU state aid rules. After 1 January 2015, any government capital injections will be subject to the provisions of both the Crisis Management Directive and the state aid rules.

1. European Central Bank, Asset Quality Review, Phase 2 manual, March 2014.
2. European Central Bank, Note on the Comprehensive Assessment, April 2014.

The Framework Regulation also provides detailed procedures for close cooperation between the ECB and national authorities on macroprudential tasks and use of the macroprudential instruments of CRD IV/CRR, i.e. primarily more stringent capital and liquidity requirements. Both national authorities and the ECB may decide to apply more stringent macroprudential measures within the framework of CRD IV/CRR. The highest requirement will apply. In this context, the ECB must take into account special national circumstances, including the economic situation, and, when making its decision, must consider any objections raised by national authorities. Conversely, when making decisions involving macroprudential measures, national authorities must consider any objections raised by the ECB.

As part of the preparations for the Single Supervisory Mechanism and concurrently with the implementation of the necessary legal acts, the ECB is reviewing the financial health of the largest credit institutions, cf. Box 6.1.

THE SINGLE RESOLUTION MECHANISM – MAIN ELEMENTS

The Regulation on the *Single Resolution Mechanism* (the SRM Regulation) establishes a com-

The Single Resolution Mechanism – structure and division of competence Box 6.2

The Single Resolution Mechanism consists of:

1. The Resolution Board

The Resolution Board will be established as an EU agency, located in Brussels. Thus, the Resolution Board will be an independent legal entity, but not a Treaty-based EU institution. The Resolution Board will comprise

- A Chairman
- A Vice Chair
- Three other permanent, independent members
- A member from each participating member state (to represent the national resolution authority)

Furthermore, a secretariat will be set up supporting the Board in the execution of its tasks.

The Resolution Board will operate in two sessions: a plenary session and an executive session.

- In its *plenary session*, the Resolution Board makes decisions of a general nature and certain specific decisions, including resolution decisions involving the use of the Single Resolution Fund above a 5 billion euro threshold (if at least one member requires a plenary decision), and decisions involving the raising of *ex-post contributions* for the Fund, i.e. supplementary contributions by the institutions in addition to the contributions paid to reach the target funding level of the Fund. In general, decisions are made by a simple majority of votes; each participating member has one vote.
- In its *executive session*, only the Chairman, the Vice Chair and the three other permanent members participate – and where a specific resolution scheme is involved – members representing the relevant national resolution authorities. In the executive session, all decisions to be made in the plenary session are prepared. If agreement cannot be reached, the Chairman, the Vice Chair and the three permanent members make a decision by a simple majority of votes.

2. The Commission

The Commission has final decision-making powers when it comes to a specific resolution scheme, since the Commission will assess elements in the Resolution Board's proposal for resolution involving some discretion.

3. The Council

The Council has some specific powers, at the proposal of the Commission, to object to the Resolution Board's decision to resolve an institution and approve or object to a material modification of the amount of the Fund to be used as part of the resolution scheme.

4. The Single Resolution Fund

A Single Resolution Fund will be established to be owned and managed by the Resolution Board. For the participating member states, the Fund will replace the national resolution funds to be established by all EU member states under the Crisis Management Directive, cf. Appendix 3.

5. National resolution authorities

The relevant national resolution authorities are in charge of implementing a resolution scheme, based on the decisions of the Resolution Board. The Resolution Board monitors the execution of its decisions at national level and may request all necessary information about an institution under resolution. Should a national resolution authority not comply with the decisions of the Resolution Board, the Board can directly (i.e. without involving the national authorities) address executive orders to an institution under resolution.

6. Appeal Panel

Any natural person or legal entity, including national resolution authorities, may appeal certain decisions made by the Resolution Board and of significance to the person in question, to a special appeal panel consisting of five people from EU member states with expertise on bank resolution. In appeal cases, the decision of the Appeal Panel is binding on the Resolution Board. Where the Appeal Panel has no competence, the case may be brought before the European Court of Justice.

mon resolution authority, the Resolution Board, which will prepare resolution plans for and effect resolution schemes in relation to credit institutions subject to direct supervision by the ECB and institutions with subsidiaries in at least one other participating member state.

The national resolution authorities will draw up resolution plans for and effect resolution schemes in relation to other institutions. However, if it is decided to use funding from the Single Resolution Fund as part of a resolution scheme for a failing institution, the Resolution Board will assume responsibility for that resolution. Moreover, at its own initiative and after consulting with the national resolution authority, the Resolution Board may decide to assume responsibility for the resolution of a failing institution. The national resolution authority may also decide to delegate this responsibility to the Resolution Board. Box 6.2 describes the

division of competence within the Single Resolution Mechanism.

The SRM Regulation is based on the main elements of the Crisis Management Directive.[5] This ensures that the crisis management framework is the same both inside and outside the banking union, including possible resolution tools, cf. Appendix 3 on the Crisis Management Directive. Crisis management of cross-border groups with subsidiaries inside and outside the banking union must be undertaken in cooperation between the Resolution Board and relevant national resolution authorities. Detailed rules for this cooperation must be established in memoranda of understanding.

DECISION TO RESOLVE A FAILING INSTITUTION

In accordance with the Crisis Management Directive, the Regulation establishes three conditions for making a decision to resolve an institution:

(i) The institution is failing or likely to fail.
(ii) There is no reasonable prospect that any alternative private sector measures or supervisory action would prevent the failure of the institution within a reasonable timeframe.
(iii) Resolution action is necessary in the public interest.

As a main rule, the ECB – in its capacity as single supervisory authority – assesses whether an institution is failing (i) and notifies the Resolution Board and the Commission accordingly. Subsequently, the Resolution Board, in close cooperation with the ECB, assesses whether the situation can be prevented (ii). If not, and if the Resolution Board also assesses that resolution is necessary in the public interest (iii), the Resolution Board decides to resolve the institution, including the resolution tools to be applied, and the extent to which means from the Resolution Fund are required.[6] The Commission must approve or object to this decision within 24 hours and, within the same time frame, involve the Council as required. This procedure is designed to allow a resolution decision to be taken over a single weekend.

If it is decided that the institution will not be subject to resolution under the Single Resolution Mechanism, the crisis management of the institution will be subject to national insolvency proceedings.

THE SINGLE RESOLUTION FUND

In the negotiations on the final structure of the Single Resolution Fund, a key issue was the build-up of the Fund's available means and the gradual transition from a system of national compartments to the Single Resolution Fund.[7] These matters will be governed by an intergovernmental agreement, which has been signed but not ratified by the participating member states as an addendum to the Regulation.

Contributions from institutions in participating member states will be raised at least annually and calculated pro-rata to the amount of the institutions' liabilities (excluding equity) less covered deposits. Moreover, contributions will be differentiated on the basis of the risk-based approach of the Crisis Management Directive, building on principles established by the Commission in a delegated act. Participating member states that have already set up similar industry-funded national funds for this purpose may choose to use these to compensate their institutions for contributions to the Single Resolution Fund to avoid double payments.

The Single Resolution Fund's target funding level has been set at 1 per cent of the covered deposits of all credit institutions in the participating member states. According to calcula-

5 Cf. Directive of the European Parliament and of the Council no. 2014/59 of 15 May 2014 establishing a framework for the recovery and resolution of credit institutions and investment firms and amending Council Directive 82/891/EEC, and Directives 2001/24/EC, 2002/47/EC, 2004/25/EC, 2005/56/EC, 2007/36/EC and 2011/35/EU, 2012/30/EU and 2013/36/EU and Regulations (EU) No. 1093/2010 and (EU) No. 648/2012 of the European Parliament and of the Council. The Directive has not yet been published in the Official Journal.

6 Before a resolution decision involving the use of means from the fund can be finally adopted, the Commission must have considered and approved such decision based on the criteria applying to the state aid rules.

7 The creation and use of the industry-funded single resolution fund is described in Chapter 6 of *Financial stability,* 2nd half 2013, Box 6.2.

Bail-in: Ranking of creditors Chart 6.2

tions by the Commission, this is an estimated 55 billion euro, based on institutions in the euro area.

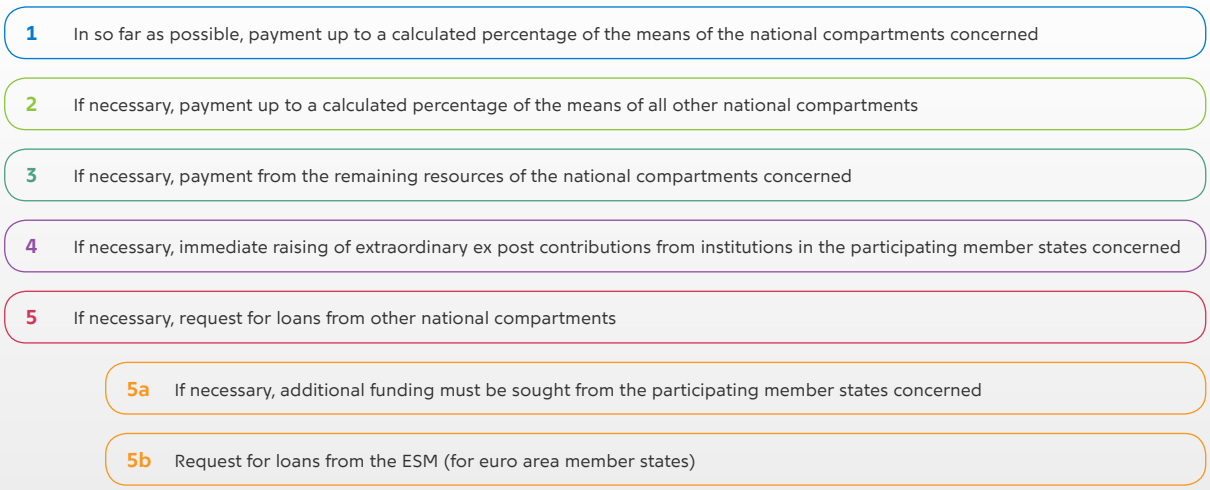
In addition to the Fund's primary purposes (providing guarantees to potential buyers of a failing institution, granting loans to or purchasing assets from an institution under resolution and supporting the establishment of a bridge institution, etc.), the Fund may only in exceptional circumstances be used to absorb losses of a failing institution or contribute to its recapitalisation. Strict conditions apply to the effect that bail-in in the form of write-down and/or conversion of the institution's liabilities shall be executed prior to the use of the Fund, applying a specified priority ranking, cf. Chart 6.2. Only when bail-in measures equal to at least 8 per cent of the institution's total liabilities have been applied can the Fund contribute an amount equivalent to 5 per cent of the institution's total liabilities. Due to their funding structure, mortgage banks are exempt from a minimum requirement for own funds and eligible liabilities. Against that backdrop, it is assessed that they will not be able to be recapitalised using means from the Fund. If additional resources are needed from the Fund or alternative financing sources, this will be possible only if all unsecured non-preferential claims have already been fully written down or converted.[8] More details on the bail-in mechanism are described in Appendix 3 on the Crisis Management Directive and its similar requirements.

Transitional period

The Single Resolution Fund will be built up over a period of eight years, starting on 1 January 2016. Initially, the Fund will consist of national compartments for each of the participating member states, with gradual mutualisation, i.e. during the eight years a contribution scale will determine the amount to be contributed to a specific resolution by the affected national compartments before the national compartments of other member states may be used. If the financial means of the affected national compartments are not sufficient to cover the funding requirement of a resolution, recourse may be taken to the financial means of other national compartments by 40 per cent of these compartments, already during the first year. During the second year, 60 per cent of the financial means of the affected national compartments are initially used, and if this is not suf-

8 The bail-in provisions will apply from 1 January 2016. The other provisions of the SRM Regulation on the Resolution Board's application of resolution tools will also apply from 1 January 2016, while the fundamental provisions on the structure of the Single Resolution Mechanism will apply from the entry into force of the Regulation, presumably autumn 2014.

Sequence of measures if further recapitalisation is needed after bail-in Chart 6.3



ficient up to 60 per cent of the other national compartments' financial means may be drawn. Subsequently, gradual mutualisation of the remaining means of the national compartments will be triggered until the expiry of the 8th year. Chart 6.3 illustrates the overall sequence of measures available during the transitional period in the exceptional situation that a failing institution needs further recapitalisation after bail-in.

At the expiry of the transitional period, the national compartments will be merged into one single fund. Subsequently, contributions must to be raised on an ongoing basis if needed to maintain the Fund's target funding level.

Entry into force and special provisions for non-euro area member states

The intergovernmental agreement commits participating member states to pay the institutions' contributions into the Single Resolution Fund; consequently, it is a condition for the Fund to be used that the intergovernmental agreement has entered into force. The agreement will enter into force once ratified by participating member states that represent at least 90 per cent of the aggregate weighted votes of all participating member states. If the agreement has not been ratified by 1 January 2016, the date of application of the provisions of the SRM regulation on the Resolution Board's preparation of resolution plans and application of the various resolution tools, etc. will be postponed by periods of one month.

The provisions on non-euro area member states' joining and leaving the banking union are defined in the Regulation on the Single Supervisory Mechanism, cf. below. In addition, the intergovernmental agreement establishes a framework for the agreement on contributions to the Single Resolution Fund to be concluded in connection with a non-euro area member state subsequently joining the banking union, while the framework for restitution of contributions paid in the event of a non-euro area member state leaving the banking union is defined in the SRM Regulation.

Common back stop arrangement

The establishment of a common ultimate back stop to ensure that the Single Resolution Fund has access to additional resources in a systemic crisis, including through loan guarantees to the Fund, is anchored in a political agreement reached at the Ecofin meeting in December 2013 (and reproduced in the preamble of the intergovernmental agreement). This means that a back stop arrangement to ensure equivalent treatment of participating euro area member states and non-euro area member states must be in place before the expiry of the Fund's transitional period. It is assumed that institutions from all participating member states will ultimately cover any payments under the back

stop. However, the back stop arrangement, including conditions for disbursement, is not specified, nor is the back stop governed by the SRM Regulation. Until the common back stop arrangement is in place, participating member states will need to use national funding or, as far as euro area member states are concerned, apply for loans through the European Stability Mechanism, ESM.

PARTICIPATION IN THE BANKING UNION BY NON-EURO AREA MEMBER STATES

The Regulation on the Single Supervisory Mechanism applies directly to euro area member states, while non-euro area member states that wish to participate in the banking union are required to join the union by establishing close cooperation between the national supervisor and the ECB. The SRM Regulation automatically applies in member states participating in the Single Supervisory Mechanism. The procedure for the establishment of close cooperation comprises a request from the non-euro area member state concerned, including, *inter alia*, an undertaking to adopt relevant national legislation, and an ECB decision by which the ECB acknowledges that the non-euro area member state fulfils the conditions for participation, thereby extending the scope of the Single Supervisory Mechanism to include the respective non-euro area member state.[9] A request to enter into close cooperation must be submitted at least five months before the expected entry date.

For a participating non-euro area member state, it follows from national legislation (and not directly from EU law) that the ECB's supervisory decisions are binding and will be implemented through the national supervisor. Consequently, non-compliance with ECB decisions cannot be sanctioned at EU level under the provisions of the treaty, but only through a decision to suspend or terminate the cooperation.

When non-euro area member states participate in the Single Supervisory Mechanism, they are represented on the Supervisory Board, but not on the ECB's Governing Council. Special protective measures apply if a non-euro area member state disagrees with the Supervisory Board's draft decisions or disagrees with the Governing Council's objection to a Supervisory Board draft decision. In relation to the Single Resolution Mechanism, both euro area member states and participating non-euro area member states are represented on the Resolution Board.

The Danish government's decision on Danish participation is pending further analysis of the pros and cons presently being undertaken by the ministries involved.

9 Cf. the SSM Regulation and the decision of the European Central Bank of 31 January 2014 on close cooperation with the national competent authorities of participating Member States whose currency is not the euro.

APPENDIX

APPENDIX 1: POPULATION IN THE REPORT

The analyses of banks are based on the banks included in the Danish Financial Supervisory Authority's groups 1 and 2 as classified in 2014. The analyses of mortgage credit include all mortgage banks, cf. Table B1.1. The five banks in the Danish Financial Supervisory Authority's group 1 are called systemic banks in the report. In contrast to the Danish Financial Supervisory Authority's group 2, Saxo Bank has been omitted from the population due to its business model. The report refers to the other banks in group 2 as non-systemic banks. The grouping also applies back in time.

Banks and mortgage banks in the population by total assets as at 31 December 2013, kr. million

Table B1.1

	Beløb
Systemic banks	
Danske Bank	2,126,382
Nordea Bank Danmark	590,895
Jyske Bank	260,222
Nykredit Bank	223,134
Sydbank	143,763
Systemic banks, total	3,344,397
Non-systemic banks	
Spar Nord Bank	74,850
Arbejdernes Landsbank	37,568
FIH Erhvervsbank	28,245
Vestjysk Bank	26,112
Ringkjøbing Landbobank	19,583
Den Jyske Sparekasse	17,203
Sparekassen Kronjylland	16,947
Alm. Brand Bank	15,615
Sparekassen Sjælland	14,830
Jutlander Bank1	13,905
Non-systemic banks, total	264,858
Mortgage banks	
Nykredit Realkredit	1,267,720
Realkredit Danmark	848,176
Totalkredit	639,824
Nordea Kredit	417,039
BRFkredit	228,653
DLR Kredit	146,894
LR Realkredit	17,487
Mortgage banks, total	3,565,792

Note: Total assets are stated at bank-specific level.
Source: Danish Financial Supervisory Authority.
1. The total assets of Jutlander Bank are stated for the 1st quarter of 2014.

APPENDIX 2: STRESS TEST SCENARIOS

Specification of scenarios for the Danish economy, 2014

Table B2.1

	Baseline scenario	Low growth	Severe recession
Real growth, per cent year-on-year			
GDP	1.4	1.0	0.6
Private consumption	1.4	0.8	0.7
Public consumption	1.0	1.0	1.0
Housing investment	3.3	0.7	0.1
Business investment	3.7	0.9	0.6
Public investment	-1.1	-1.1	-1.1
Inventory investments (contribution to GDP growth)	0.0	0.1	0.2
Exports	2.8	2.8	1.8
- of which industrial exports	4.0	4.0	2.3
Imports	3.3	2.9	2.4
Export market growth	4.2	4.2	2.1
Nominal growth, per cent year-on-year			
Private sector disposable income	0.6	0.2	-0.2
HICP	1.2	1.2	1.2
Hourly wages (industry)	2.1	2.1	2.1
House prices	2.2	0.5	-0.5
Average level for the year			
Bond yield, per cent p.a .	1.6	1.6	1.6
3-month money market interest rate, per cent p.a.	-0.1	-0.1	-0.1
Unemployment, thousands	114	116	118
Total employment, thousands	2,752	2,748	2,745
- of which private sector, thousands	1,758	1,754	1,751
Labour force, thousands	2,866	2,864	2,863
Unemployment rate, per cent	4.0	4.0	4.1
Net borrowing/net lending, private sector, kr. billion	128	135	130
Government budget balance, kr. billion	-20	-24	-26
B.o.p. current account, kr. billion	107	111	104
Crude oil, dollar/barrel	107	107	107

Specification of scenarios for the Danish economy, 2015

Table B2.2

	Baseline scenario	Low growth	Severe recession
Real growth, per cent year-on-year			
GDP	1.7	-0.6	-4.5
Private consumption	2	-0.9	-3.7
Public consumption	0.6	0.6	0.6
Housing investment	2.6	-10.1	-16
Business investment	4.2	-8	-11.4
Public investment	-5.6	-5.6	-5.6
Inventory investments (contribution to GDP growth)	0	-0.3	-0.8
Exports	2.6	2.7	-4.4
- of which industrial exports	3.4	3.8	-5.5
Imports	2.7	0.1	-4.8
Export market growth	5.2	5.2	-7.9
Nominal growth, per cent year-on-year			
Private sector disposable income	6.4	4.6	2.1
HICP	1.7	1.7	1.6
Hourly wages (industry)	2.6	2.4	2
House prices	2.7	-5.2	-12.4
Average level for the year			
Bond yield, per cent p.a .	2.1	2.1	2.1
3-month money market interest rate, per cent p.a.	0	0	0
Unemployment, thousands	110	132	170
Total employment, thousands	2,768	2,732	2,668
- of which private sector, thousands	1,770	1,734	1,671
Labour force, thousands	2,877	2,863	2,838
Unemployment rate, per cent	3.8	4.6	6
Net borrowing/net lending, private sector, kr. billion	168	222	215
Government budget balance, kr. billion	-56	-79	-105
B.o.p. current account, kr. billion	112	143	110
Crude oil, dollar/barrel	102	102	102

Specification of scenarios for the Danish economy, 2016

Table B2.3

	Baseline scenario	Low growth	Severe recession
Real growth, per cent year-on-year			
GDP	1.9	1	-0.5
Private consumption	2	0.3	-0.5
Public consumption	0.7	0.7	0.7
Housing investment	2.2	-3.6	-7.4
Business investment	4.9	-1.6	2
Public investment	0.5	0.5	0.5
Inventory investments (contribution to GDP growth)	0.1	0.2	-1.2
Exports	3	3.1	0.9
- of which industrial exports	4.3	4.6	5.2
Imports	3.3	2	-0.6
Export market growth	5.7	5.7	4
Nominal growth, per cent year-on-year			
Private sector disposable income	3.8	3.5	2.1
HICP	1.8	1.7	1.1
Hourly wages (industry)	2.7	1.9	0.2
House prices	2.9	-0.1	-7
Average level for the year			
Bond yield, per cent p.a .	2.6	2.6	2.6
3-month money market interest rate, per cent p.a.	0	0	0
Unemployment, thousands	102	143	231
Total employment, thousands	2,789	2,725	2,586
- of which private sector, thousands	1,787	1,723	1,584
Labour force, thousands	2,890	2,868	2,817
Unemployment rate, per cent	3.5	5	8.2
Net borrowing/net lending, private sector, kr. billion	170	255	266
Government budget balance, kr. billion	-50	-87	-132
B.o.p. current account, kr. billion	120	168	134
Crude oil, dollar/barrel	99	99	99

APPENDIX 3: THE CRISIS MANAGEMENT DIRECTIVE

The EU Directive establishing a framework for the recovery and resolution of credit institutions and investment firms, the Directive, was finalised in December 2013 and has now been finally adopted.[1] The Directive is a minimum directive establishing common rules for the recovery and resolution of credit institutions in the EU as a whole. It must be transposed into national law by 1 January 2015, however, the bail-in provisions are not applicable until 1 January 2016.

The Directive shall apply to all banks, mortgage banks, investment firms and financial holding companies. The framework shall, however, be applied subject to principles of appropriateness and proportionality, since the Directive is, in several respects, especially aimed at large cross-border groups.

The principal elements of the Directive are as follows:

- Each member state shall designate a special resolution authority that is empowered to apply the various resolution tools when a financial institution is failing or likely to fail. In Denmark, the Financial Stability Company, in an adapted form, is to be the national resolution authority.
- Each institution or group shall draw up and maintain a recovery plan, and the resolution authority shall draw up a resolution plan for each institution or group. These recovery and resolution plans shall guide the authorities' specific crisis management measures.
- When an institution cannot be regarded as failing or likely to fail under the Directive, but when that institution does not comply with or is assessed to fail, in the near future, to comply with the capital adequacy rules in force, the national supervisor shall be empowered to apply a number of special recovery tools in order to supplement its ordinary supervisory powers, including implementation of the institution's recovery plan.
- The resolution authority shall take all appropriate measures to ensure that a number of resolution principles are observed, including:
  (i) that the shareholders bear the first loss,
  (ii) that the creditors bear losses in accordance with the order of priority,
  (iii) that the management of the institution is generally replaced,
  (iv) that creditors of the same class are generally treated in an equitable manner,
  (v) that no creditor incurs greater losses as a result of the resolution than would have been incurred if the institution had been handled under the normal insolvency proceedings, and
  (vi) that covered deposits are fully protected.

1 Cf. Directive of the European Parliament and of the Council no. 2014/59 of 15 May 2014 establishing a framework for the recovery and resolution of credit institutions and investment firms and amending Council Directive 82/891/EEC, and Directives 2001/24/EC, 2002/47/EC, 2004/25/EC, 2005/56/EC, 2007/36/EC and 2011/35/EU, 2012/30/EU and 2013/36/EU and Regulations (EU) No. 1093/2010 and (EU) No. 648/2012 of the European Parliament and of the Council. The Directive has not yet been published in the Official Journal.

In the specific case, the control of the failing institution is transferred to the resolution authority, implying that – contrary to current Danish rules – resolution is not a voluntary alternative to being wound up. The authorities' decision on resolution shall be made on the basis of an assessment of whether the three following conditions for resolution are met: (i) The institution is failing or likely to fail. (ii) There is no reasonable prospect that any alternative private sector measures or supervisory action would prevent the failure of the institution within a reasonable timeframe. (iii) Resolution action is necessary in the public interest.

- The Directive stipulates the following four resolution tools for the resolution authority to apply, the member states being entitled to establish supplementary tools in national legislation.

  1) *The sale of business tool*: Sale of all or any assets of the institution, as far as possible on commercial terms.

  2) *The bridge institution tool*: Sale of all or any of the institution's assets, rights and liabilities to a bridge institution, which is subsequently sold as part of an orderly resolution.

  3) *The asset separation tool*: Sale of impaired assets from the failing institution or the bridge institution to a state-owned company with a view to sale or winding up of such assets, restructuring of the selling institution being a condition hereof.

  4) *The bail-in tool*: Write-down and/or conversion of the institution's liabilities according to a specified order of priority, cf. Chart 6.2. It can be applied as part of a "going concern" solution or a "gone concern" solution. In order to ensure the effectiveness of the tool, the resolution authority may in advance set a minimum level for the institution's equity and eligible liabilities. However, this does not apply to mortgage banks, cf. Chapter 6.

  Special priority ranking for depositors shall apply to the effect that national deposit guarantee schemes and deposits exceeding 100,000 euro from natural persons and small and medium-sized enterprises rank higher than other unsecured creditors, whereby they will be subject to bail-in only when the claims of other unsecured creditors have been fully written down or converted, cf. Chart 6.2. The deposit guarantee scheme may continue to contribute funds for the resolution at an amount corresponding to the deposit guarantee scheme's loss if the institution had been wound up.

  Certain liabilities are exempted from bail-in, including secured liabilities (e.g. mortgage bonds), liabilities to employees and liabilities arising from participation in payment and settlement systems. In addition, in exceptional circumstances the resolution authority may exclude or partially exclude liabilities from bail-in on the basis of a specific assessment.
- Furthermore, member states may choose to implement the Directive's provisions on government financial stabilisation tools, which provide for public capital injection to a failing institution in an extraordinary systemic crisis situation, and where this is not sufficient provide for temporary public ownership of the institution. Government financial stabilisation tools are subject to specified procedures and conditions, including that any other resolution tools have proved to be insufficient.
- A sector-financed national resolution fund should be established, which is controlled by the resolution authority and used together with the described resolution tools. As a main rule, the target level of the fund's financial means should be at least 1 per cent of all institutions' covered deposits and it should be built up over 10 years. This means that the target level for a Danish fund will be approximately kr. 8.3 billion or around 1.1 billion euro (based on figures for deposits as at 31 March 2014). The institutions' contributions are fixed on the basis of their liabilities and a risk adjustment, i.e. the same principles as for the Single Resolution Fund.
- Use of financial means from the national resolution fund for absorbing losses in/re-

capitalising an institution under resolution always presupposes prior bail-in equivalent to at least 8 per cent of the institution's total liabilities. The fund can then contribute an amount corresponding to 5 per cent of the institution's total liabilities, cf. also Chapter 6 and Chart 6.2.

As a result of the adoption of the Directive, the international credit rating agency Standard & Poor's has reviewed the credit ratings of European banks. In this connection, a number of banks were given a "negative outlook" due to expectations of reduced extraordinary government support for failing banks, once the Directive has been transposed into national law.