Danmarks Nationalbank

Financial stability 2nd half

2013

DANMARKS NATIONAL BANK 2013

FINANCIAL STABILITY, 2ND HALF 2013

The small picture on the cover shows a characteristic section of Danmarks Nationalbank's building, Havnegade 5 in Copenhagen. The building, which was constructed in 1965-78, was designed by the architect Arne Jacobsen (1902-71).

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Explanation of symbols:
- - Magnitude nil
- 0 Less than one half of unit employed
- • Category not applicable
- na. Numbers not available

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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

Overall, Danmarks Nationalbank finds that the banks are currently resilient to severe macroeconomic shocks. Since 2008, the banks have focused on strengthening their capital base. It is important that the banks maintain sound excess capital adequacy. According to Danmarks Nationalbank's stress test of the banks' capitalisation, the five systemic banks comply with the capital requirements in all scenarios and their Common Equity Tier 1 capital remains above 8 per cent as will be required in the coming assessment of credit institutions that will be subject to direct supervision by the European Central Bank.

Three of the nine non-systemic banks that are included in the stress test, cf. Appendix 1, will need to strengthen their capitalisation. In the assessment of Danmarks Nationalbank, any problems arising among non-systemic banks can still be solved through business initiatives or within the current framework for mergers and resolution without affecting financial stability.

The Danish credit institutions are generally well positioned to meet the new capital requirements under the EU Capital Requirements Directive and Regulation, CRD IV/CRR, which will enter into force on 1 January 2014. Furthermore, in Danmarks Nationalbank's assessment, most credit institutions already have sufficient equity capital to meet the fully phased-in EU capital requirements in 2019. However, many credit institutions will need to replace all or part of their subordinated capital with new issuances meeting the new criteria under CRD IV/CRR.

Under the political agreement, Bank Rescue Package 6, cf. Appendix 3, Danish systemically important financial institutions, SIFIs, will be subject to tighter capital requirements. In the short term, the requirements for Common Equity Tier 1 capital for Danish SIFIs will be lower than in Norway and Sweden. In practice, market pressure should be expected to reduce the differences in capital adequacy between the various countries. Under the agreement, follow-up will be performed regarding the final level of the Danish SIFI capital requirements by 2017 at the latest, and if it is not in line with the final level of comparable European countries, it will be adjusted.

The liquidity situation of Danish banks is good. In a stress scenario, where the banks are unable to refinance the 10 largest term deposits

and all long-term senior debt expiring in 2013-16, all systemic and the majority of the non-systemic banks have excess liquidity cover at end-2016 above 50 per cent – even without recognition of loans or loan commitments from Danmarks Nationalbank based on the banks' credit claims and sector company shares as collateral.

Although the banks' loan impairment charges seem to be declining, they remain high. Moreover, earnings are under pressure from the low level of interest rates and weak demand for credit, increasing competition and adding to the pressure on lending margins. In recent years, the banks have implemented various measures to improve earnings, but there is room for further efficiency-boosting measures in future.

There is considerable international focus on the calculation of the banks' risk-weighted assets. This is particularly true of the internal models where the banks base the calculation on their own models. Initiatives that may improve confidence in the banks' calculation of the risk-weighted assets are welcomed. In this connection, Danmarks Nationalbank attaches particular importance to ensuring a high level of disclosure in relation to the banks' risk-weighted assets. Use of the internal models gives the banks an incentive to improve their risk management and portfolio structure. Hence, these models cannot be replaced by simpler calculation methods.

Both internationally and in Denmark work on a simple leverage ratio where the banks' capital is compared with total non-weighted exposures is underway. Under Bank Rescue Package 6, the government is going to set up an expert group to assess the need to introduce a leverage ratio in Denmark. If introduced, a leverage ratio should supplement the risk-based capital requirement, not replace it.

Danmarks Nationalbank is pleased to note that the government has presented a bill on compulsory, contingent maturity extension for mortgage bonds, which implies that the refinancing risk will be borne by the bond investors. A credible resolution mechanism for mortgage banks is created at the same time.

Danmarks Nationalbank generally takes a positive view of the banking union outlined. It is an important step towards strengthening the single market for financial services and hence cross-border competition. Competition forces both banks and firms to improve, which is healthy and beneficial to everyone. It is important that euro area and non-euro area member states can participate in the banking union on equal terms. Otherwise, there is a risk that the single market for financial services becomes fragmented. In addition, Danmarks Nationalbank finds it essential that the banking union includes an insurance element in relation to the systemic institutions in Denmark. A single, strong bank resolution fund could ensure that. For the euro area member states, the ESM – the

European Stability Mechanism – provides extra insurance and will act as the ultimate back stop when all other funds have been depleted. Again, it is important to ensure equal treatment of participating euro area and non-euro area member states.

RECOMMENDATIONS

On the basis of Danmarks Nationalbank's analyses in this report, 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 capitalisation. In their capital planning, Danish systemically important financial institutions, SIFIs, should be aware that the market may expect their capitalisation to match that of SIFIs in comparable countries in which the capital requirements are higher than in Denmark.

Declining business volumes create the need for cost adjustments in the sector. Many of the smaller institutions have a low return on equity and high costs. For these institutions, it may be relevant to look into the possibilities of mergers in order to obtain synergy effects and provide a basis for a more profitable business.

The mortgage banks should opt for a prudent business model. Under the bill on contingent maturity extension presented, the refinancing risk is borne by the bond investors, if refinancing in the market is not possible. However, the institutions should still maintain a suitable distance to the statutory limits to safeguard investor confidence and financial stability.

Denmark should work towards completion of and participation in a forthcoming banking union, which can serve as an insurance scheme in relation to systemic banks. The consolidated assets of Danish banks amount to almost four times Denmark's GDP. In addition, the consolidated assets of the largest bank as a ratio of GDP are among the highest in the EU.

OVERVIEW OF DANMARKS NATIONALBANK'S RECOMMENDATIONS

As from *Financial stability 2011*, on the basis of analyses in *Financial stability* and in Danmarks Nationalbank's other publications, Danmarks Nationalbank has explicitly listed a number of recommendations which address significant risks in the financial sector. The recommendations are aimed at strengthening financial stability in Denmark. Danmarks Nation-

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 capitalisation.
Mortgage banks' business model	The mortgage banks should opt for a prudent business model with a suitable distance to the statutory limits.
Denmark's participation in a banking union	Denmark should work towards completion of and participation in a forthcoming banking union, which can serve as an insurance scheme in relation to systemic banks.
Curbing fluctuations in house prices	Housing taxes should be changed so that they automatically reflect property and land values.
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.

albank's current recommendations can be grouped into six areas, cf. Table 1-1.

Previous recommendations

In *Financial stability 2013*, Danmarks Nationalbank recommended that the recommendations of the Committee on Systemically Important Financial Institutions in Denmark should be implemented as soon as possible. The agreement on Bank Rescue Package 6 means that the recommendations of the Committee have been considered politically. The agreement roughly complies with the SIFI Committee's recommendations to identify and impose additional requirements on SIFIs. The contracting parties are going to discuss the implementation of the EU rules on crisis management, including crisis management buffers, and the parties will follow up on the final level of Danish SIFI requirements by 2017 at the latest.

In *Financial stability 2012*, Danmarks Nationalbank recommended that an institutional framework be established for developing, assessing and implementing macroprudential instruments. In late 2012, the Folketing (Danish parliament) passed a bill to establish a Systemic Risk Council, and the Systemic Risk Council was established in February 2013. In connection with Bank Rescue Package 6, the Minister for Business and Growth is appointed as the designated authority for macroprudential instruments. Danmarks Nationalbank would have preferred compliance with international recommendations regarding the designated authority.[1]

[1] For a description of the international recommendations, see Box 2 in Danmarks Nationalbank, *Monetary Review*, 3rd Quarter 2013, Part 1.

2. Development and Trends

Development in lending

Weak demand for loans in the 1st half of 2013 contributed to fiercer competition in relation to bank lending rates. Lending margins generally narrowed a little for both corporate customers and households, while deposit margins remained virtually unchanged.[1]

Total lending by banks and mortgage banks to firms and households fell by 0.5 per cent in the 1st half of 2013, cf. Chart 2-1. Particularly for systemic banks lending, especially to households, declined, while lending by mortgage banks rose by 0.7 per cent. Since the end of 2008, there has been an increase in the outstanding volumes of corporate bonds and intrasectoral loans and trade credits. Moreover, corporate savings have been higher than usual during this period.

In 2013, the mortgage banks have increased and differentiated their administration margins in order to obtain a greater match between risk and price, thereby giving customers an incentive to choose more secure products. In a situation with low overall demand for loans, higher administration margins might make it attractive for banks to attempt to win market shares from mortgage banks. The increase in administration margins may improve earnings and thus help to ensure low credit risk on mortgage banks, and hence low yields on mortgage bonds, which contributes to low total mortgage payments.

Earnings

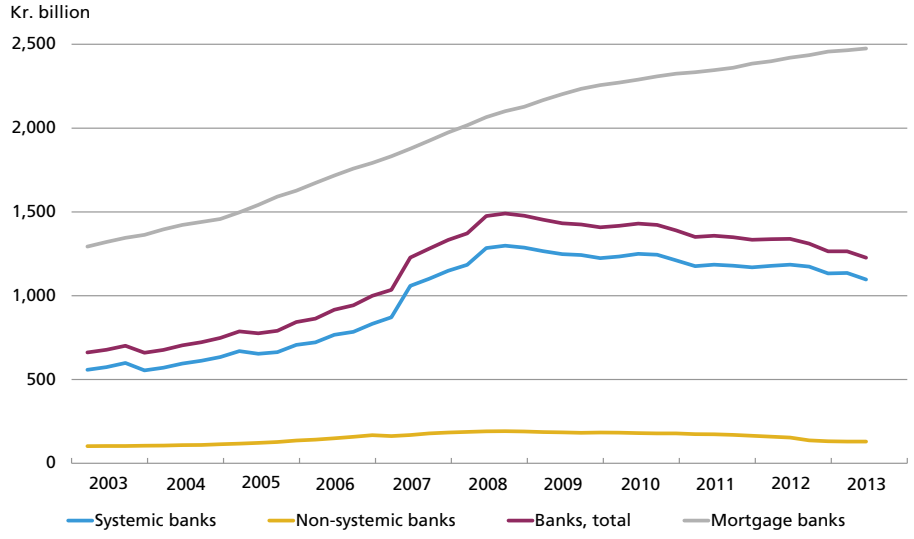
Bank earnings generally improved in the 1st half of 2013, cf. Chart 2-2. The main reason was a substantial decrease in impairment charges on loans and guarantees, while a reduction of net interest income was only partially offset by cost adjustments.

Measured on a half-year basis, impairment charges on loans and guarantees have shown a downward trend for the banks overall since the end of the 2nd half of 2011. This trend continued in the 1st half of 2013, when the actual number of companies failing reached the lowest level since the 2nd half of 2008. Danmarks Nationalbank's failure-rate model also shows signs of a slight decline in estimated failure rates from 2013 to 2014.[2]

1 Deposit and lending margins have been calculated relative to the day-to-day interest rate in the money market, the T/N rate.

2 Danmarks Nationalbank's failure-rate model, KIM, is used for estimating the probabilities of default among Danish firms based on information on their return on assets, debt, size, capital base, form of ownership, age, industry, geographical location, as well as real GDP growth in the Danish economy.

LENDING BY DANISH BANKS AND MORTGAGE BANKS — Chart 2-1

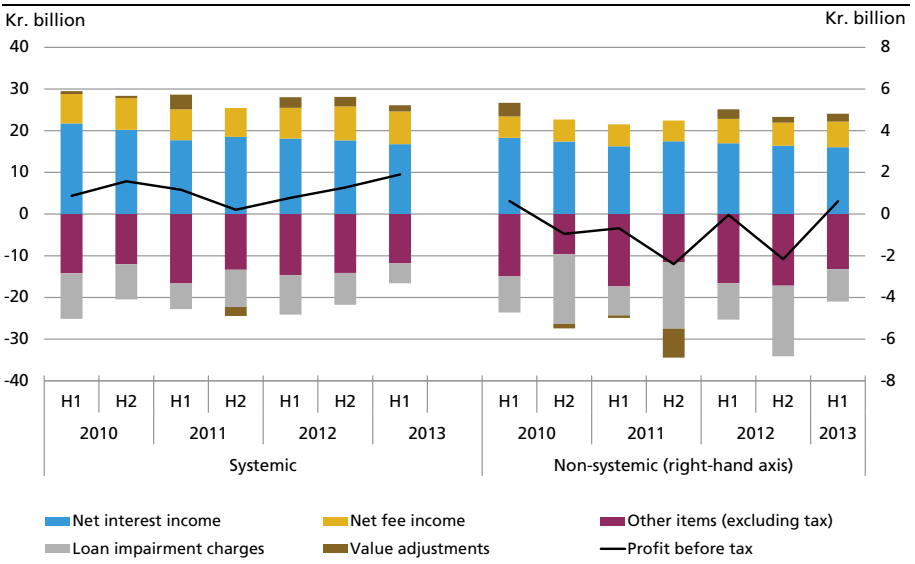


Note: Lending to the corporate sector and households. Quarterly observations.
Source: Danmarks Nationalbank.

indicates that loan impairment charges on corporate customers are falling. Interim reports for the 3rd quarter of 2013 confirm this for the systemic banks.

Among the non-systemic banks, the dispersion in earnings remained wide, and four of the nine banks posted net losses. In recent years, there

EARNINGS BROKEN DOWN BY KEY ITEMS, BANKS — Chart 2-2



Note: "Other items (excluding tax)" comprises share dividends, other operating income, income from investments in associates and group undertakings, income from assets held temporarily, staff costs and administrative expenses, depreciation and impairment of intangible and tangible assets and other operating expenses.
Source: Danish Financial Supervisory Authority and own calculations.

has been a tendency for particularly the non-systemic banks with relatively high loan impairment charges to post a substantial rise in loan impairment charges in the 2nd half of the year.

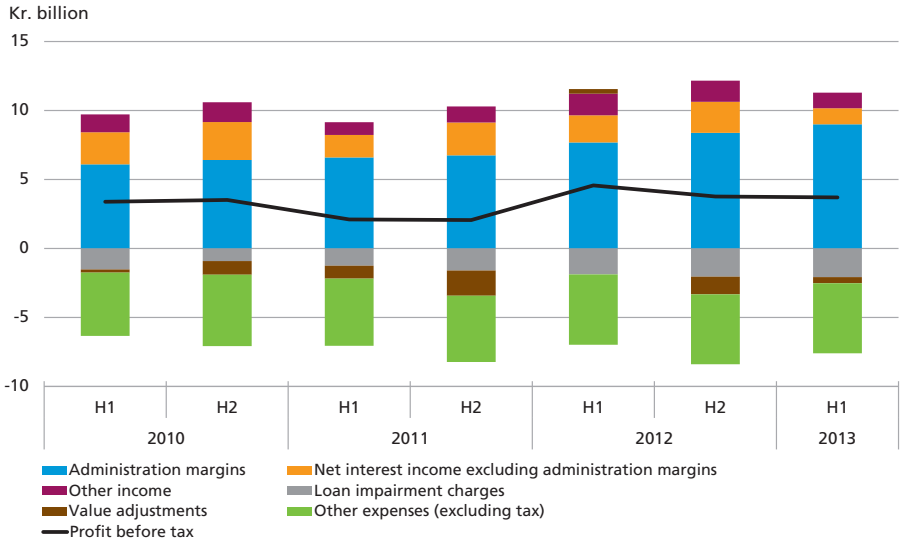
Rising lending volumes and administration margins had a positive effect on the mortgage banks' earnings in the 1st half of 2013, cf. Chart 2-3. As a result of the decline in interest rates in 2012, this positive effect was offset by falling interest income from their portfolios of short-term bonds. In the 1st half of 2013, earnings from administration margins rose to an average of 0.35 per cent of the mortgage banks' total lending, up from 0.30 and 0.33 per cent in the 1st and 2nd half of 2012, respectively. Costs remained at an unchanged level, and at end-June 2013 loan impairment charge ratios and arrears rates were at the same level as at end-2012.

Capitalisation

The positive earnings in the 1st half of the year increased the Tier 1 capital of the systemic banks, but in the same period more of them redeemed parts of their Tier 2 capital. Overall, this led to a slight fall in the banks' total capital. In four of the five banks, risk-weighted assets were also reduced, and consequently total capital ratios rose.

In June 2013, Danske Bank received four orders from the Danish Financial Supervisory Authority concerning the bank's use of the IRB

EARNINGS BROKEN DOWN BY KEY ITEMS, MORTGAGE BANKS — Chart 2-3



Note: "Other income" comprises share dividends, other operating income and income from assets held temporarily. "Other expenses (excluding tax)" comprises operating expenses, staff costs and administrative expenses and depreciation. To avoid including the result from Totalkredit twice, income from investments in associates and group undertakings has been left out.

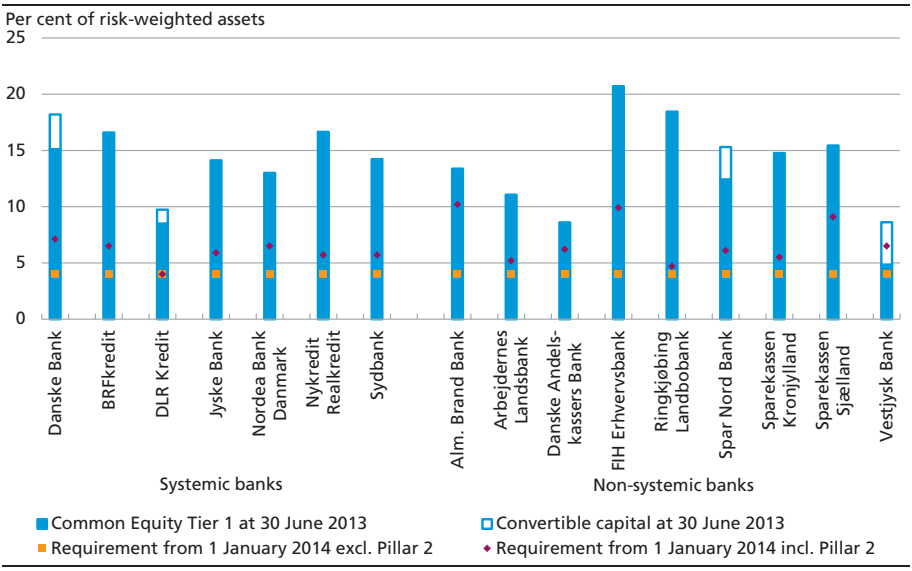
Source: Danish Financial Supervisory Authority, financial statements and own calculations.

method for calculating risk-weighted assets. Two of these were incorporated into the individual capital need as at 30 June 2013, while the bank incorporated the other two into its risk-weighted assets and individual capital need, respectively, as at 30 September 2013. The order does not alter the fact that the capitalisation of the bank is robust.

Among the non-systemic banks, the already large dispersion in excess capital adequacy widened. A few banks have very little excess capital adequacy. The capitalisation of these banks deteriorated further in the 1st half of 2013, primarily due to losses, while others are well-capitalised and have positive earnings.

In October 2013, Vestjysk Bank converted part of the Additional Tier 1 capital raised from the government under Bank Rescue Package 2 into equity and is now – in dialogue with the government as the controlling shareholder and assisted by an external financial adviser – investigating the possibilities of finding a long-term solution to its capitalisation challenges.

COMMON EQUITY TIER 1 AND CONVERTIBLE CAPITAL AS AT 30 JUNE 2013 AND REQUIREMENTS FROM 1 JANUARY 2014 Chart 2-4



Note: Stated at group level. In 2014, the Common Equity Tier 1 requirement will be 4 per cent of risk-weighted assets. The chart is based on the institutions' Common Equity Tier 1 capital as at 30 June 2013 and changes to the calculation hereof in connection with the transition to CRD IV/CRR are not taken into account. For Alm. Brand Bank, Common Equity Tier 1 capital includes the capital injection on 22 August 2013. For Vestjysk bank, Common Equity Tier 1 capital includes the conversion of government Additional Tier 1 capital on 22 October 2013. In principle, the difference between the individual capital need and the minimum capital requirement (the Pillar 2 requirement) should be met by means of Common Equity Tier 1 capital. Subject to a specific and individual assessment, the Danish Financial Supervisory Authority may permit banks to meet the Pillar 2 requirement by using other types of subordinated capital (convertible capital). In the chart, it is assumed that the individual solvency needs remain unchanged compared with the calculation at 30 June 2013.

Source: Danish Financial Supervisory Authority, credit institutions' articles of association, interim reports, press releases and own calculations.

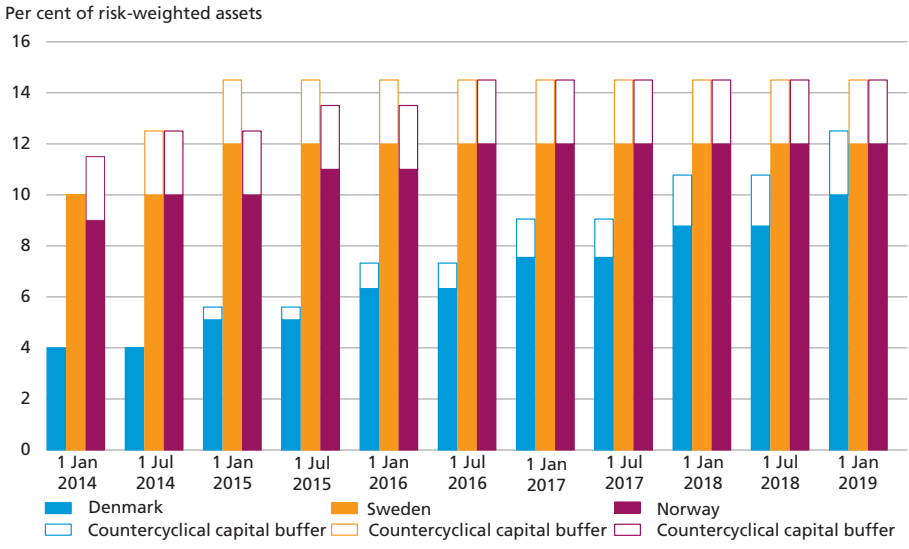
In November 2013, Danske Andelskassers Bank issued a company announcement to the effect that the bank no longer meets its individual capital need. Consequently, the Danish Financial Supervisory Authority has ordered the bank to prepare a recovery plan describing the intended actions of the bank to increase the actual solvency to a level above the individual capital need. In addition, the Danish Financial Supervisory Authority imposed restraints on the bank with regard to e.g. disbursement of dividend and interest on subordinated capital.

On aggregate, the mortgage banks' excess capital adequacy was virtually unchanged.

The Danish credit institutions are generally well prepared to meet the new CRD IV/CRR capital requirements that enter into force on 1 January 2014, cf. Chart 2-4. For the large institutions, the transition to the new capital-adequacy rules may entail an increase in risk-weighted assets, primarily related to counterparty risk in connection with derivatives exposures, while the calculation of Common Equity Tier 1 capital may be affected by the amended rules for deductions. For the vast majority, the overall effects of the amendments are expected to be relatively limited.

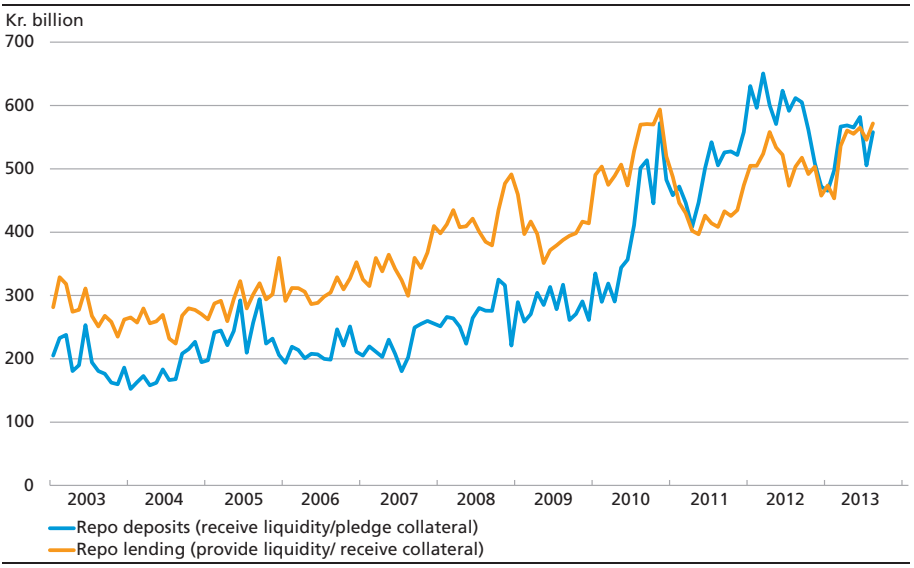
In Danmarks Nationalbank's assessment, the majority of Danish credit institutions already have sufficient equity capital to meet the fully phased-in EU capital requirements in 2019. The same is assessed to be

PLANS FOR PHASING-IN OF SIFI CAPITAL REQUIREMENTS AND FRAMEWORK FOR THE COUNTERCYCLICAL CAPITAL BUFFER — Chart 2-5



Note: Common Equity Tier 1 requirements. Norwegian legislation has already been passed, for Sweden the government announcement is shown, and for Denmark the chart reflects Bank Rescue Package 6. In Denmark, the SIFI requirement depends on the degree of systemic importance. The highest requirement is shown in the chart.
Source: National authorities.

REPO TRANSACTIONS, BANKS Chart 2-6



Note: Repos from foreign branches and subsidiaries have not been included.
Source: Danmarks Nationalbank.

the case for the systemically important financial institutions, which will in addition be subject to a differentiated SIFI requirement of between 1 and 3 per cent of risk-weighted assets, cf. Bank Rescue Package 6. However, many institutions will need to replace all or part of their subordinated capital with new issues that meet the new criteria for Additional Tier 1 and Tier 2 capital under CRD IV/CRR.

In the short term, the requirements on Common Equity Tier 1 will be lower for Danish SIFIs, cf. Bank Rescue Package 6, than for their Norwegian and Swedish counterparts, and will be phased in at a slower pace, cf. Chart 2-5.[1] In practice, market pressure is likely to reduce the differences in capital adequacy between countries, and in the longer term the Danish SIFI capital requirements are intended to be in line with the requirements of comparable countries.

The banks' liquidity

The liquidity situation of Danish banks is good. The banks continue to redeem 3-year loans from Danmarks Nationalbank prematurely, and the total volume has been reduced to kr. 11.9 billion. A small part of the outstanding amount will mature in March 2015 and the rest in September 2015. At end-September, just two non-systemic banks still had outstanding government guarantees; these guarantees total kr. 5.9 billion

[1] Under Bank Rescue Package 6 the requirement for the systemically most important bank in Denmark is 3 per cent of risk-weighted assets, while the SIFI Committee proposed 3.5 per cent.

REPOS AND RISK OF FIRE SALES – TO BE CONTINUED Box 2-1

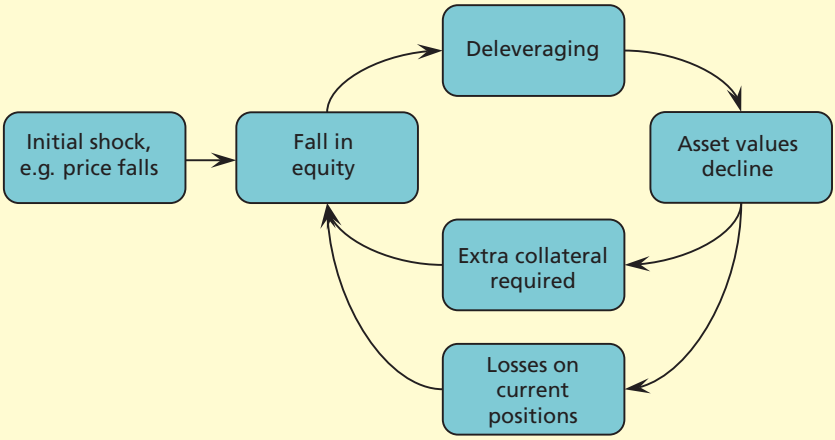
A repurchase agreement – a repo – is a transaction between two parties, where one party is borrowing from the other against securities as collateral. The difference between the amount borrowed and the market value of the security on the transaction date is a "haircut" aimed to protect the lender against any future falls in the price of the security. In practice, the borrower is selling a security to the lender. At the same time, it is agreed that the borrower will repurchase the security at an agreed price on a specified future date.

In general, the use of collateral reduces risk for the individual lender and increases the robustness of the financial system. Collateral reduces the lender's credit risk. Hence, collateral can help to prevent problems experienced by one borrower from rippling through the financial system as credit losses. For the financial system overall, the repo market may also have a stabilising effect in periods when the possibilities of raising uncollateralised loans are limited, since borrowers gain access to less expensive funding than in the uncollateralised market.

But in some situations increased use of collateral may also make the financial system more vulnerable. This is because forced sales of collateral, e.g. in connection with price drops, may push down prices further. The risk of forced sales increases if repos are used to leverage investments in securities. If the leveraged investments can no longer be refinanced, the investor may be forced into a fire sale of securities.

Fire sales by individual credit institutions may affect the stability of the financial system if other institutions holding the same securities are also forced to sell.[1] The risk that a fire sale will affect financial stability is increased by negative self-reinforcing loss and liquidity spirals, cf. Chart A.

LOSS AND LIQUIDITY SPIRALS Chart A



Source: Markus K. Brunnermeier and Lasse Heje Pedersen, Market liquidity and funding liquidity, *The Review of financial studies*, Volume 22, No. 6, 2009.

The loss spiral occurs because leveraging increases losses and funding problems in periods of falling prices. In addition, a liquidity spiral may arise if collateral requirements are raised because the lender requires extra protection against potential future falls

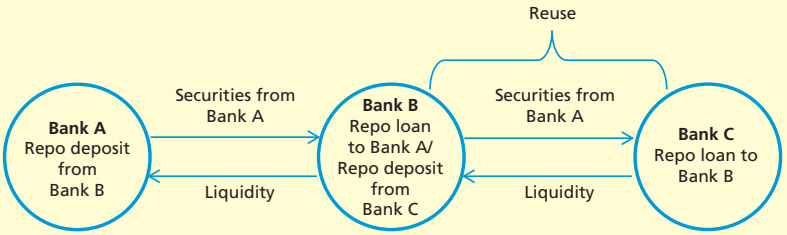
REPOS AND RISK OF FIRE SALES – CONTINUED Box 2-1

in the price of the security (eg. via margin calls). Borrowers who cannot obtain funding in other ways are forced to sell off securities. Such sales pressures may reduce the prices of the securities further, thereby making it necessary for borrowers to sell even more securities. The result is a negative development in which the loss and liquidity spirals reinforce each other. This is one of the negative scenarios that the requirement for a buffer of unencumbered, highly liquid assets included in the new Liquidity Coverage Ratio, LCR, seeks to prevent.

A further source of instability from the repo market is reuse (rehypothecation) of collateral, i.e. collateral received when lending liquidity is pledged when raising another loan, cf. Chart B. In this way, the same securities are used as collateral for several loans. This may result in long, complex chains of collateral, making the financial system more interlinked and less transparent.

If one credit institution in the chain cannot meet its obligations, this may spread to other institutions and cause uncertainty as to the actual whereabouts of the collateral pledged. This increases uncertainty and distrust among repo counterparties in periods of instability in the financial system.

REUSE OF COLLATERAL Chart B



The five largest banking groups operating in Denmark reuse collateral to some extent. The share of collateral received in repo transactions that is recycled rose from around 25 per cent in 2007 and 2008 to around 50 per cent in 2011 and 2012, cf. Table A.

PERCENTAGE OF COLLATERAL RECEIVED THAT IS RE-LENT Table A

2007	2008	2009	2010	2011	2012
25 per cent	22 per cent	38 per cent	62 per cent	48 per cent	46 per cent

Note: The figures have been calculated at group level and include Danske Bank, Nordea AB, Nykredit, Sydbank and Jyske Bank.
Source: Annual reports and own calculations.

[1] For more information on when fire sales become systemic, see e.g. Jeremy Stein, The fire-sales problem and securities financing transactions, speech held at Federal Reserve Bank of New York Workshop on Fire Sales as a Driver of Systemic Risk in Triparty Repo and other Secured Funding Markets, 2013.

and will expire in the period 2014-16. At the end of the 3rd quarter of 2013, only few banks had customer funding deficits, and overall both systemic and non-systemic banks had customer funding surpluses.

The banks' repo transactions have increased strongly in volume since 2003, cf. Chart 2-6. For the individual banks and for the financial system overall, use of repos has a stabilising effect. However, increased use of collateral, including repos, can also make the financial system more vulnerable, cf. Box 2-1.

At end-September 2013, both the systemic and the non-systemic banks had excess liquidity cover well above the supervisory diamond's limit value of 50 per cent.[1]

Since the autumn of 2011, banks have been able to include loan commitments from Danmarks Nationalbank based on credit claims and sector company shares in the calculation of excess liquidity cover. Use of these arrangements has been relatively limited, and none of the systemic or non-systemic banks rely on loan commitments from Danmarks Nationalbank in order to achieve excess liquidity cover of 50 per cent.

On 2 December 2013, Danmarks Nationalbank announced that the banks' credit claims and sector company shares will be omitted from the collateral basis as from 1 July 2014. At the same time, the possibility of raising 6-month loans will be terminated. Already granted loans will run to maturity.

To assess the sustainability of the banks' liquidity situation, their excess liquidity cover is analysed in a stress scenario in which they cannot refinance their 10 largest term deposits and all long-term senior debt expiring in 2013-16. It is assumed that lack of refinancing options will compel the banks to sell an equivalent volume of liquid assets, while it is not possible to reduce their balance sheets in other ways. In this scenario, all the systemic and most of the non-systemic banks have excess liquidity cover of more than 50 per cent at end-2016 – even without including loans or loan commitments from Danmarks Nationalbank on the basis of credit claims and sector company shares as collateral.

Looking ahead, Danish credit institutions will be subject to the European Liquidity Coverage Ratio, LCR, requirement, which aims to ensure that they have adequate high-quality liquid assets to cover the outflow of liquidity in an intensive 30-day liquidity stress scenario. The final definition of the LCR has not yet been agreed in the EU. One of the outstanding areas is the definition of liquid assets. By the end of 2013, the European Banking Authority, EBA, is to submit a report to the European Commission on classification of assets as highly liquid and liquid on the basis of market criteria. The preliminary results of the EBA's empirical analysis across asset classes show that mortgage bonds will achieve the

[1] Excess liquidity cover is calculated according to section 152 of the 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.

same average classification as government bonds, cf. Table 2-1. If the analysis is limited to the assets within each class that have the highest credit quality, mortgage bonds are, on average, assessed to be nearly as liquid as government bonds. Government bonds achieve a relatively better classification than mortgage bonds for liquidity measures such as traded volume and turnover, but on the other hand their price volatility is relatively higher.

The European Commission's final definition of the LCR is scheduled for mid-2014. For member states where the liquidity buffer definition entails that there are insufficient liquid assets to meet the LCR requirement, derogations will be possible. The conditions for applying the derogations have been launched for consultation by the EBA until 22 December 2013.

Phasing-in of the LCR for Danish credit institutions is set out in Bank Rescue Package 6. As a main rule, systemic Danish institutions must observe an LCR of 100 per cent from the beginning of 2015. However, phasing-in of the LCR for systemic institutions will depend on the European Commission's final definition of the LCR. If the final definition makes it difficult for Danish systemic credit institutions to achieve an LCR of 100 per cent by 2015, e.g. because Danish mortgage bonds are not defined as highly liquid assets, the LCR will be phased in according to the minimum requirement in the regulation. In other words, there will be a gradual increase from an LCR of 60 per cent at the beginning of 2015 to 100 per cent at the beginning of 2018.

If the most liquid mortgage bonds are classified as highly liquid, the vast majority of systemic credit institutions already have an LCR of 100 per cent.

As regards the LCR requirement for non-systemic credit institutions, Bank Rescue Package 6 stipulates that it will be introduced gradually in accordance with the regulation's minimum requirement, irrespective of

PRELIMINARY RESULTS OF EBA LIQUIDITY ANALYSIS — Table 2-1

Average rating	All assets	Assets of highest credit quality[1]
Government bonds	2.00	1.50
Mortgage bonds	2.00	1.63
Corporate bonds	3.00	3.13
ABS	4.38	4.25
Equities	3.63	4.00

Note: The five asset classes are assigned values from 1 to 5 – where 1 is the most liquid class – based on how they perform relative to each other on eight different liquidity measures, including turnover, traded volume, price effect and price volatility. The average rating is a simple average of the ratings for the eight individual liquidity measures.

Source: Presentation by the European Banking Authority 23 October 2013.

[1] The highest credit quality is defined as ECAI 1 (External Credit Assessment Institutions), which comprises rating classes AAA to AA-.

the final definition of the LCR. In Danmarks Nationalbank's assessment, most of the non-systemic banks will have an LCR of more than 60 per cent if the most liquid mortgage bonds are classified as highly liquid. Although the final definition of the LCR is not known until mid-2014, the non-systemic banks should still prepare to phase in the new liquidity rules.

To ensure a smooth transition to the new, tighter liquidity requirement, Bank Rescue Package 6 states that the existing liquidity requirement (section 152) will be preserved as a floor until and including 2016 if the final LCR definition means that the liquidity requirements will be eased for some institutions. Institutions that undertake to observe an LCR of 100 per cent from 2015 need not still comply with section 152 (the floor requirement).

The mortgage banks' liquidity risk

Danmarks Nationalbank is pleased to note that on 28 November 2013, the government presented a bill on compulsory, contingent maturity extension for mortgage bonds if interest rates suddenly rise very sharply or refinancing is not possible.

The bill implies that all mortgage bonds with shorter maturities than the underlying loans will be extended if the auction fails. Moreover, fixed-rate bonds underlying loans with refinancing frequencies of 1, 2 and 3 years will be extended if the yield rises by more than 5 percentage points compared with the yield to maturity on corresponding bonds issued in the previous year. If the extension takes effect, the maturity of the outstanding short-term bonds will be extended by 1 year, and the nominal interest rate will be fixed at the level of the yield to maturity on corresponding bonds issued in the previous year plus 5 percentage points. If it is not possible to refinance the bonds subsequently, the maturity will be extended further.

The risk premium demanded by investors is assessed to be modest as the probability that yields will rise by 5 percentage points during that period is very low. In Denmark, such an increase has been seen only very few times within the last 150 years.

The contingent maturity extension will apply to bonds for financing new loans as well as bonds issued to refinance existing loans. Hence, the transition to a mortgage-credit system in which investors bear the refinancing risk will be swift, and the contingent maturity extension will become the market standard.

The legislative amendment means that in future investors will bear the refinancing risk and parts of the risk of sudden interest-rate surges. This structure does not affect Danmarks Nationalbank's role as lender of last

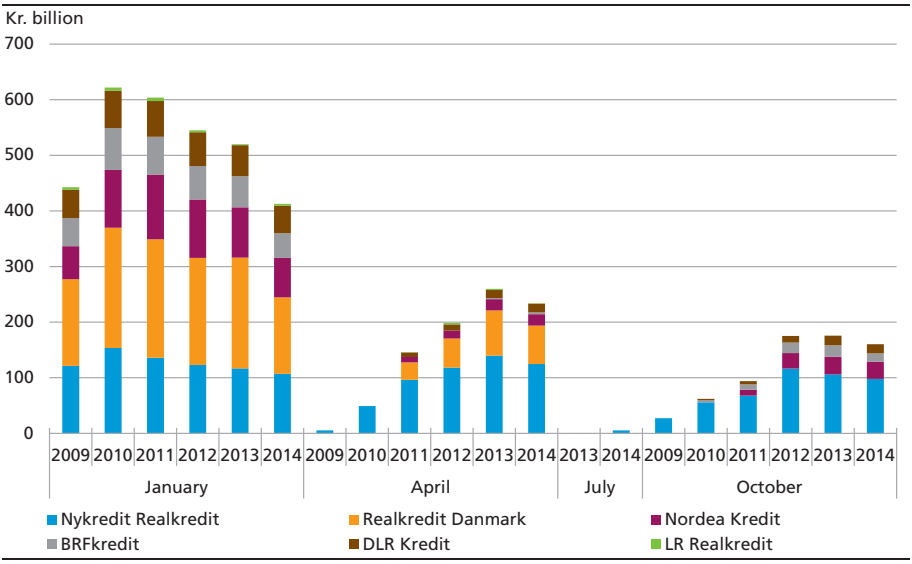
resort, but it ensures that the mortgage banks' business model does not rely on Danmarks Nationalbank as back stop. In connection with the preparatory work, Danmarks Nationalbank indicated that the bill does not in itself give reason to change Danmarks Nationalbank's collateral basis.

Moreover, the bill proposes that, if a mortgage bank is wound up, mortgage bonds with shorter maturities than the underlying loans may be converted into fixed-rate callable bonds with the same payment series as the underlying loans. This eliminates doubts concerning the refinancing risk in the event of winding-up.

Analyses show that especially short-term bonds have been almost as liquid as Danish government bonds during the crisis. Danmarks Nationalbank expects that bonds with compulsory, contingent maturity extension will also be highly liquid. The continued existence of liquid short-term bonds is positive for the money market and financial stability.

Borrowers with variable-rate loans will remain sensitive to general developments in interest rates. As long as the Danish economy is in synch with the economy abroad, increased interest-rate sensitivity may help to dampen fluctuations in the economy and have a stabilising effect. In normal circumstances interest rates will be countercyclical, so that they rise when the economy is in an upswing and fall during slowdowns, as seen after the onset of the financial crisis.

MATURITY OF BONDS FOR FINANCING ADJUSTABLE-RATE MORTGAGE LOANS Chart 2-7



Note: Calculated on the basis of the nominal outstanding volume at the end of the month before the bonds mature. However, the outstanding volume at end-September 2013 has been applied for bonds maturing in 2014. Factors such as repayments and premature redemptions mean that the amount to be refinanced is lower.

Source: Danmarks Nationalbank.

Variable-rate loans entail a payment risk for the borrower, while fixed-rate loans entail a price risk. So in order to safeguard investor confidence in the mortgage-credit system, the mortgage banks should apply a portfolio approach in their assessment of total outstanding loans. The future supervisory diamond for mortgage banks will lay down the overall framework for the mortgage banks' risk profile, but first and foremost it is the mortgage banks themselves that are responsible for their risk management.

In the interests of investor confidence and financial stability the mortgage banks should generally stay well within the statutory limits – also after the bill has been passed.

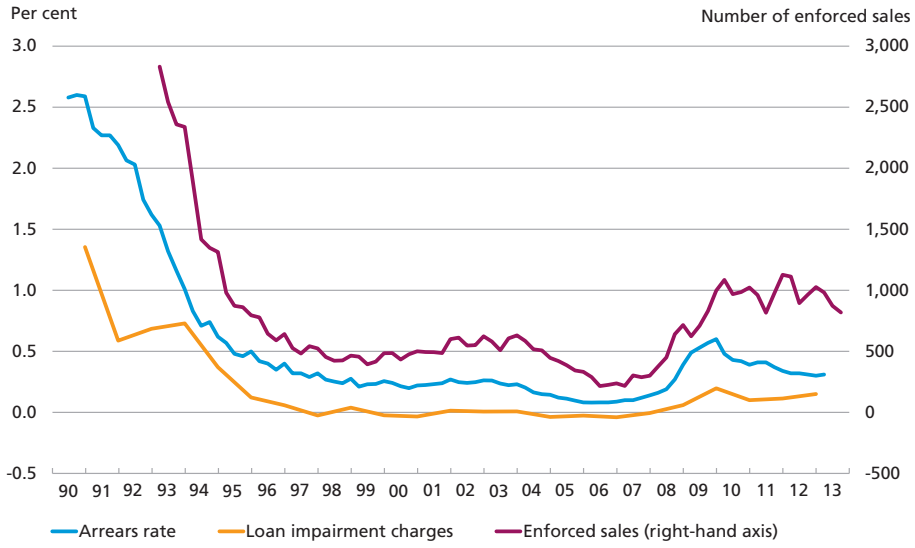
The mortgage banks have spread their refinancing need over the year, cf. Chart 2-7. This reduces the risk that many borrowers will see their yields fixed at a high level at the same time, while also reducing the volume of bonds that could be extended at any given time. These efforts should therefore continue.

Households

The number of households in arrears on their mortgage loans is low and has been so since the mid-1990s, cf. Chart 2-8. Even the strong downturn

ARREARS, ENFORCED SALES AND MORTGAGE BANKS' TOTAL LOAN IMPAIRMENT CHARGES

Chart 2-8



Note: The arrears rate indicates the proportion of the total payments that had not been made three and a half months after the due date. The calculation includes lending by all mortgage banks for owner-occupied dwellings and summer cottages. The calculation of the number of enforced sales includes single-family houses, owner-occupied flats and summer cottages only. Total loan impairment charges comprise lending to retail and corporate customers and are stated as a percentage of total lending.

Source: Association of Danish Mortgage Banks, Danish Mortgage Banks' Federation and Statistics Denmark.

EXPECTED EFFECTS IN SCENARIOS — Table 2-2

	Scenario 1	Scenario 2
Macroeconomic assumptions		
Change in interest rates, percentage points	5.7	0,0
Change in gross unemployment, percentage points	4.0	4.5
Change in house prices, per cent	-14.0	-16.5
Change in stock prices, per cent	-46.0	-46.0
Calculated consequences		
Average change in probability of arrears for all families with mortgage debt, percentage points	0.29	0.13
Expected increase in the number of families in arrears by 105 days on the June instalment	2,816	1,236
Expected increase in total mortgage debt for families in arrears by 105 days on the June instalment, kr. billion	5.28	1.83

in the Danish economy during the financial crisis resulted in only a minor rise in the level of mortgage arrears for Danish households.

For the last 20 years, there has been a close link between the development in arrears and enforced sales and the mortgage banks' loan impairment charges. The decline in arrears in the 1990s was followed by falls in the number of enforced sales and in the mortgage banks' total loan impairment charges. Both rose again during the financial crisis, but, like the arrears rate, they did not reach the high levels seen in the early 1990s.

By international standards Danish households have a very high level of debt relative to income. This has caused some concern among international observers as to whether the households will be able to service their mortgage debt in future. In this connection, Danmarks Nationalbank has performed an analysis of households with mortgage arrears.[1] The analysis shows a clear link between household finances and the probability of falling into mortgage arrears.

The probability of falling into mortgage arrears is higher the smaller the household's disposable income is, the greater its income loss has been in recent years, the smaller its holdings of liquid assets and home equity are, the larger a share of its income it uses to service debts and the smaller its pension savings are. However, the effects of these financial variables are small, which shows that even among households with squeezed finances only few fall into mortgage arrears.

The analysis also uses two stress scenarios to examine whether households are resilient to strong downturns in the Danish economy. The scenarios involve diving real house and equity prices and rising unemployment and in scenario 1 also rising interest rates, cf. Table 2-2. The pro-

[1] For details, see Asger Lau Andersen and Charlotte Duus, Danish families in mortgage arrears, Danmarks Nationalbank, *Monetary Review*, 3rd Quarter 2013, Part 2.

nounced macroeconomic shocks lead to only a small increase in the households' average probability of falling into arrears. On aggregate, the number of households in arrears will rise by no more than around 2,800 and 1,200, respectively. An increase of 2,800 means that the number of households in arrears will almost double, but overall the number remains very low. So it is not likely that there will be a marked increase in the mortgage arrears rate, even if the Danish economy is hit by severe setbacks.

It is important to emphasise that the analysis looks at mortgage arrears only. Since the mortgage is often the last loan on which a household defaults, banks can be expected to be far more seriously affected in the stress scenarios, so that their loan impairment charges will be considerable. That underlines how important it is that banks are sufficiently well-capitalised.

The high debt level of Danish households may also affect the financial sector indirectly via macroeconomic developments. Households with high debt may presumably reduce consumption more strongly than other households when the economy is hit by a financial crisis, which may amplify a cyclical downturn. For the banks and mortgage banks, this may entail a higher credit risk on loans to both households and corporate customers. In Danmarks Nationalbank's assessment, the high debt among households made a negative contribution to the development in consumption during the financial crisis.

Bank Rescue Package 6

On 10 October 2013, agreement was reached on a broad political agreement, Bank Rescue Package 6, which, inter alia, includes enhanced requirements for systemically important financial institutions, SIFIs, cf. Appendix 3. Danmarks Nationalbank is pleased to note that the agreement largely complies with the SIFI Committee's recommendations to identify and impose additional requirements on SIFIs.[1] There are still important outstanding issues to be settled, presumably in 2014. These include crisis management and crisis management buffers, which the parties to the agreement will consider when they discuss the implementation of the EU crisis management rules. Furthermore, the parties to the agreement will, in 2017 at the latest, review the final level of the Danish SIFI requirements, and if it is not in line with the final level in comparable European countries, it will be adjusted.

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[1] The SIFI Committee's report of 11 March 2013, "Systemically important financial institutions in Denmark: identification, requirements and crisis management", can be found at the website of the Ministry of Business and Growth, www.evm.dk.

With the agreement, the Minister for Business and Growth becomes the designated authority for macroprudential instruments. Danmarks Nationalbank would have preferred compliance with international recommendations regarding the designated authority.[1]

The framework for one of the macroprudential instruments, the countercyclical capital buffer, will be phased in with the agreement. This means that the Minister for Business and Growth will be able to increase the capitalisation requirement for financial institutions in periods of high lending growth, in which systemic risks typically build up. The buffer is to ensure that the institutions are better able to absorb losses in periods of stress. When systemic risks materialise or the business cycle reverses, the buffer requirements may be eased and the buffer used to absorb losses. The framework will be phased in gradually in the period 2015-19, with 0.5 percentage points annually. So if a higher requirement is needed before 2019, new legislation must be introduced.

[1] For a description of the international recommendations, see Danmarks Nationalbank, *Monetary Review*, 3rd Quarter 2013, Part 1, Box 2.

3. Stress Test of the Banks' Capitalisation

Danmarks Nationalbank's stress test shows that the capitalisation of systemic banks is sufficient. The five systemic banks comply with the capital requirements in all stress scenarios and their Common Equity Tier 1 capital remains above 8 per cent as will be required in the coming assessment of credit institutions that will be subject to direct supervision by the European Central Bank.

Three of the non-systemic banks will need to strengthen their capitalisation in the stress test.

In Danmarks Nationalbank's assessment, any problems arising among non-systemic banks can be solved through business initiatives or within the current framework for mergers and resolution without affecting financial stability in Denmark.

DANMARKS NATIONALBANK'S STRESS TEST MODEL

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

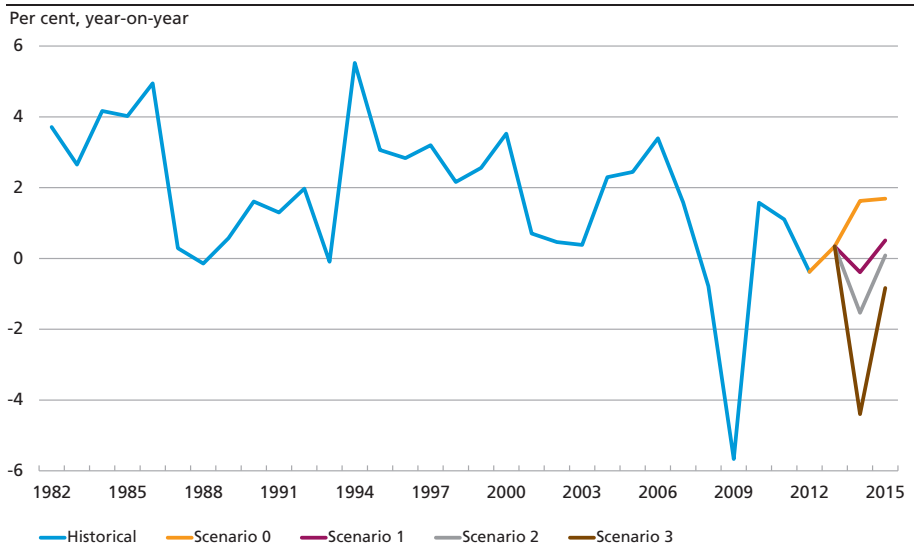
The stress test model projects the profit and loss accounts and balance sheets in various macroeconomic scenarios and thus provides scope for assessing the development in bank capitalisation. The model applies relations for historical links between macroeconomic developments in Denmark on the one hand and bank earnings and loan impairment charges on the other.[1]

The model does not take bank liquidity risks into account. The banks' liquidity situation is good, cf. Chapter 1.

The capitalisation of banks is assessed in four scenarios, cf. Chart 3-1. Scenario 0 is the baseline scenario, reflecting Danmarks Nationalbank's macroeconomic forecast, cf. *Monetary Review*, 3rd Quarter 2013. As the model is based on a number of conservative assumptions in the projection of the capitalisation of the banks, the scenario does not represent a forecast of banks' capitalisation, cf. *Financial stability*, 2012, Box 11.

[1] For a description of the estimation method for calculation of banks' loan impairment charge ratios, see Danmarks Nationalbank, *Financial stability*, 2012, Chapter 8.

GROWTH IN REAL GDP — Chart 3-1



Source: Statistics Denmark and own calculations.

The other three scenarios imply various negative shocks to the economy, cf. Table 3-1 and Box 3-1. The negative shocks to the economy will not occur until 2014. Appendix 2 provides a detailed description of the scenarios that have been developed in cooperation with the Danish Financial Supervisory Authority.

SCENARIOS, SELECTED KEY VARIABLES — Table 3-1

	Scenario 0	Scenario 1	Scenario 2	Scenario 3
2013				
GDP, per cent year-on-year	0,3			
Private consumption, per cent year-on-year	0,4			
Export market growth, per cent year-on-year	2,4			
Unemployment rate	4,1			
House prices, per cent year-on-year	2,5			
2014				
GDP, per cent year-on-year	1,6	-0,4	-1,5	-4,4
Private consumption, per cent year-on-year	1,5	-1,3	-1,2	-3,8
Export market growth, per cent year-on-year	5,3	5,3	-4,4	-9,7
Unemployment rate	4,1	4,6	4,9	5,7
House prices, per cent year-on-year	2,3	-3,4	-5,6	-10,9
2015				
GDP, per cent year-on-year	1,7	0,5	0,1	-0,8
Private consumption, per cent year-on-year	1,7	0,1	0,4	-0,6
Export market growth, per cent year-on-year	6,0	6,0	3,3	1,5
Unemployment rate	3,9	5,1	6,2	8,0
House prices, per cent year-on-year	2,5	-0,9	-3,6	-10,0

Note: Annual average. Unemployment is expressed as a ratio of the labour force.

STRESS SCENARIOS Box 3-1

Scenario 1
The scenario implies a continuation of the low economic activity in recent years. The economic slowdown is driven by a negative shock to private consumption, private investment and house prices. Since other countries are assumed to follow the baseline scenario, export market growth is not affected.

Scenario 2
The scenario implies a global shock to business and consumer confidence. Export market growth is reduced relative to the baseline scenario. The Danish economy is also affected by an erosion of confidence, leading to negative shocks to private consumption, residential investment and house prices.

Scenario 3
This scenario implies a strong global shock to business and consumer confidence, reflected in an even sharper decline in export market growth than envisaged by scenario 2.

STRESS TEST RESULTS

The analysis is based on banks' financial statements for the 1st half of 2013.[1] The banks' profit and loss accounts and balance sheets have been projected until and including the 4th quarter of 2015, so the stress test period is 2.5 years.

Earnings and loan impairment charges

Bank earnings generally improved in the 1st half of 2013 compared with both the 1st and 2nd half of 2012, cf. Chapter 2. Among the non-systemic banks, the earnings spread remained wide. In the stress test period, earnings rise slightly for the majority of banks in all scenarios as a result of marginally increasing interest rates in all scenarios.

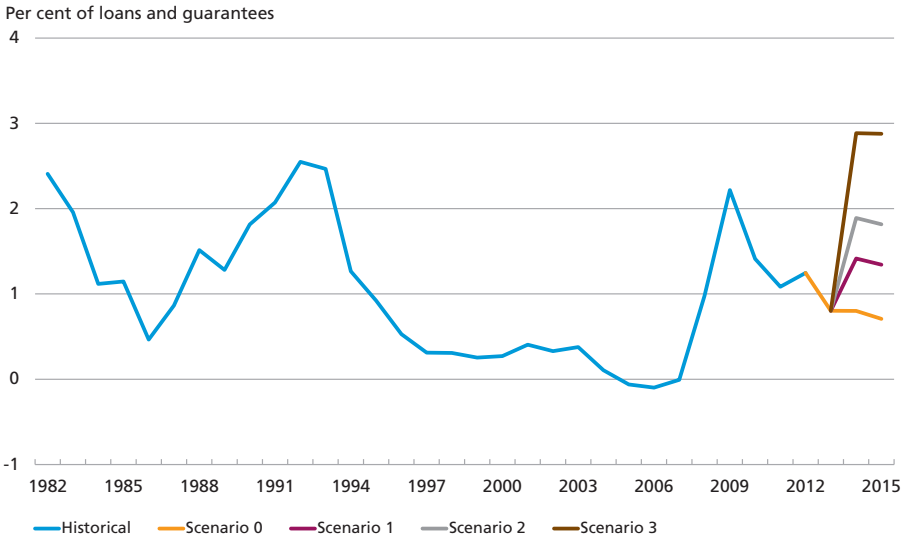
In scenario 0, loan impairment charges decline gradually in response to the recovery of the Danish economy, cf. Chart 3-2. The sum of annual loan impairment charge ratios for the years 2013-15 is 2.3 per cent in the scenario.

In scenario 1, loan impairment charges rise slightly in 2014 with the level remaining almost unchanged in 2015. Developments are driven by sustained low economic growth in Denmark. In scenario 1, the sum of annual loan impairment charge ratios is 3.6 per cent.

In scenarios 2 and 3, loan impairment charges grow considerably in response e.g. to global macroeconomic shocks in the scenarios. During the stress test period, the sum of annual loan impairment charge ratios increases to 4.5 and 6.6 per cent, respectively, in scenarios 2 and 3.

[1] Provision, redemption or conversion of capital performed after the interim report for 2013 has been included in the calculations.

ANNUAL LOAN IMPAIRMENT CHARGE RATIOS Chart 3-2



Note: Loan impairment charges are calculated as a ratio of loans and guarantees before loan impairment charges. The historical series until 2012 is based on banks in the Danish Financial Supervisory Authority's groups 1-3. The estimated loan impairment charge ratios for 2013-15 are calculated as a weighted average for the 14 banks in the stress test. Bank-specific loan impairment charges 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.

Capitalisation

The future capital adequacy rules, CRD IV/CRR, entail a higher minimum requirement for banks' Common Equity Tier 1 capital in the stress test period. Non-compliance with a minimum requirement entails that the Danish Supervisory Authority will revoke the bank's licence to operate as a bank unless it restores its capital within a short period of time. Hence, the minimum requirements are referred to as "hard" requirements.

The requirements for individual capital needs are "soft" requirements. Non-compliance with a "soft" requirement entails that the Danish Financial Supervisory Authority may impose transaction restrictions and implement a number of supervisory processes, cf. Financial stability, 2013, Box 2-1.

The stress test provides a total of four requirements for bank capital: two "soft" and two "hard" requirements. The two "soft" requirements are the same throughout the stress test period, while the "hard" requirement for Common Equity Tier 1 capital increases over the period, cf. Table 3-2.

The five systemic banks will comply with all capital requirements in all scenarios. The Common Equity Tier 1 capital of the five systemic banks remains above 8 per cent as will be required in the coming assessment of credit institutions that will be subject to direct supervision by the European Central Bank, cf. Chapter 6, Box 6-1.

STRESS TEST CAPITAL REQUIREMENTS[1] Table 3-2

"Soft" requirement I	"Soft" requirement II	"Hard" requirement I	"Hard" requirement II
Total capital must exceed the individual capital need, which is assumed to be constant during the period	The individual capital need in excess of 8 per cent must be met by Common Equity Tier 1 capital[2]	Common Equity Tier 1 capital must be at least 2.0, 4.0 and 4.5 per cent, respectively, in 2013, 2014 and 2015	Total capital must be at least 8 per cent

[1] For some banks using IRB models to calculate risk-weighted assets, the total capital requirement is higher due to transition schemes. Phasing-in of the SIFI capital requirement will commence in 2015, cf. Bank Rescue Package 6. The calculations take into account transition schemes and phasing-in of SIFI requirements.

[2] The requirement can also be met by other types of capital with the same loss-absorbing characteristics.

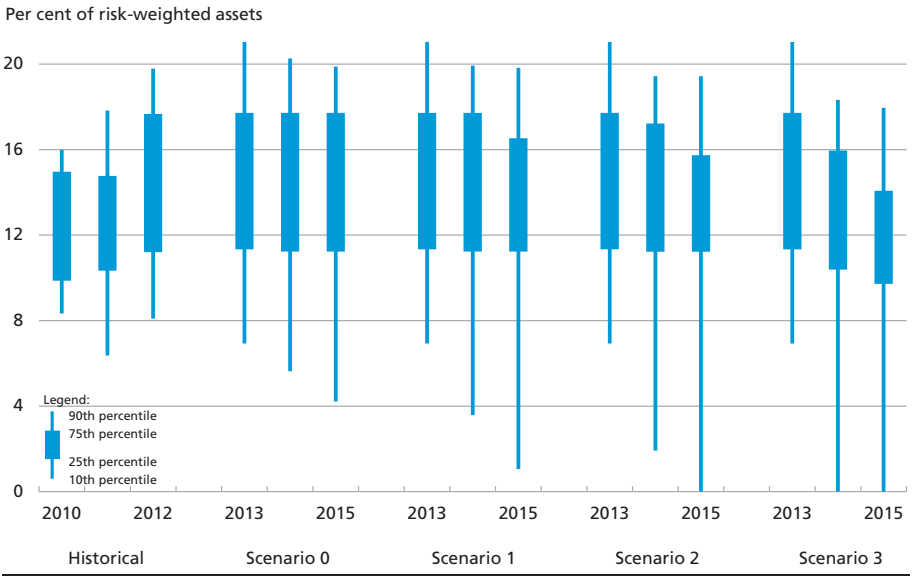
Three non-systemic banks will need to strengthen their capitalisation in scenario 0 – two of them in order to comply with the "hard" capital requirements and one to comply with the "soft" capital requirements, cf. Chart 3-3. In scenarios 1-3, the three non-systemic banks will need to strengthen their capitalisation to comply with the "hard" capital requirements. In scenario 3, most banks will see a decline in Common Equity Tier 1 capital, cf. Chart 3-4.

Banks have various options when it comes to increasing their capital, for instance by 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 could also be a solution.

BANKS' NEED TO STRENGTHEN THEIR CAPITALISATION BROKEN DOWN BY "SOFT" AND "HARD" CAPITAL REQUIREMENTS Chart 3-3

Source: Danish Financial Supervisory Authority and own calculations.

COMMON EQUITY TIER 1 CAPITAL — Chart 3-4



Source: Danish Financial Supervisory Authority and own calculations.

4. Earnings

The credit institutions' earnings act as a first buffer against loan impairment charges and therefore play a key role in financial stability. Like other large Northern European credit groups, the large Danish groups have posted a considerably lower return on equity since 2008, compared with the years preceding the crisis. The return of the Danish groups is in the middle of the range, but below that of the Swedish groups which, like their Danish counterparts, mainly operate in the Nordic countries.

Overall, the return on equity of Danish systemic banks is markedly higher than that of non-systemic banks. Moreover, in terms of the cost/income ratio, systemic banks are more cost-efficient. These disparities have widened in the years after the onset of the financial crisis, partly reflecting that systemic banks have introduced faster and more comprehensive cost-efficiency measures to align with the lower activity level in the banking sector.

Some of the small banks have performed well during the crisis, but many have a low return on equity and high costs. For these banks, it may be relevant to look into the possibilities of mergers in order to obtain synergies and provide the basis for a more profitable business.

BACKGROUND

The credit institutions' earnings act as a first buffer against loan impairment charges and therefore play a key role in financial stability. Since 2008, Danish systemic banks' impairment charges on loans and guarantees have amounted to kr. 108 billion. During the same period, the credit institutions have recorded a profit before loan impairment charges and tax of kr. 151 billion, which has been sufficiently large to ensure positive earnings for the group as a whole. Non-systemic banks recorded a profit before loan impairment charges and tax of kr. 16 billion, which was insufficient to offset loan impairment charges of kr. 24 billion.

Danmarks Nationalbank has recommended many banks to strengthen their earnings. The Danish Financial Supervisory Authority also focuses on earnings and has contacted banks with vulnerable or weak core earnings as part of its supervisory activities. To this end, the Danish Financial

DATA BASIS – TO BE CONTINUED Box 4-1

The international analysis is based on aggregate accounting data for the Danish, French, Dutch, British, Swedish and German credit groups that were included in the capital exercise for 2012 performed by the European Banking Authority, EBA, cf. the table. BPCE (France) and ABN AMRO Bank NV (Netherlands) were part of the capital exercise, but have been excluded from the calculations because the groups were not established in their current form until 2009. An international analysis at group level enhances the comparability, as home financing in Denmark is primarily obtained via mortgage banks, while in other countries it is obtained via banks.

CREDIT GROUPS INCLUDED IN THE ANALYSIS

Country	Group	Assets as at 30 June 2013 (billion euro)
Denmark	Danske Bank	445
	Jyske Bank	33
	Nykredit Realkredit	188
	Sydbank	19
France	BNP Paribas	1,861
	Crédit Agricole	1,944
	Société Générale	1,254
Netherlands	ING Bank	830
	Rabobank Nederland	698
	SNS Bank	78
UK	Barclays	1,789
	HSBC Holdings	2,036
	Lloyds Banking Group	1,023
	Royal Bank of Scotland Group	1,420
Sweden	Nordea Bank	622
	Skandinaviska Enskilda Banken	296
	Svenska Handelsbanken	272
	Swedbank	215
Germany	Bayerische Landesbank	266
	Commerzbank	637
	DeKaBank Deutsche Girozentrale	121
	Deutsche Bank	1,910
	Deutsche Zentral-Genossenschaftsbank	396
	HSH Nordbank	121
	Hypo Real Estate Holding	169
	Landesbank Baden-Württemberg	307
	Landesbank Berlin	115
	Landesbank Hessen-Thüringen Girozentrale	181
	Norddeutsche Landesbank Girozentrale	208
	Westdeutsche Genossenschafts-Zentralbank	93

Note: In the case of Hypo Real Estate Holding, assets are calculated as at 31 December 2012.
Source: SNL Financial.

DATA BASIS – CONTINUED Box 4-1

The analysis of earnings in the Danish banking sector is based on aggregate accounting data of systemic and non-systemic banks, cf. Appendix 1. Moreover, banks in the Danish Financial Supervisory Authority's group 3 are included under the *small banks* category. Only banks that have been active and are included in the Danish Financial Supervisory Authority's group 1, 2 or 3 in all years as from 1999 are included. The grouping as at 31 December 2012 applies back in time. Merged institutions are included under the continuing company. Banks acquired by the Financial Stability Company have not been included in the analyses.

Supervisory Authority has requested accounts of any planned measures aiming at a more robust business model in the future.[1]

The following contains an analysis of the earnings of first the large credit groups in six Northern European countries, then Danish banks, cf. Box 4-1.

EARNINGS OF NORTHERN EUROPEAN CREDIT GROUPS

Like other large Northern European credit groups, the large Danish groups have posted a considerably lower return on equity since 2008, compared with the years preceding the crisis, cf. Chart 4-1. However, the Danish groups have recorded positive returns every year, with a rising trend since the 2008 low. The Swedish groups have recorded the highest return on equity every year, while the Danish groups have recorded a return in the middle of the range. One reason for the Swedish groups' high earnings is that the Swedish economy has performed better during the financial crisis than those of the other countries.

Breakdown of return on equity

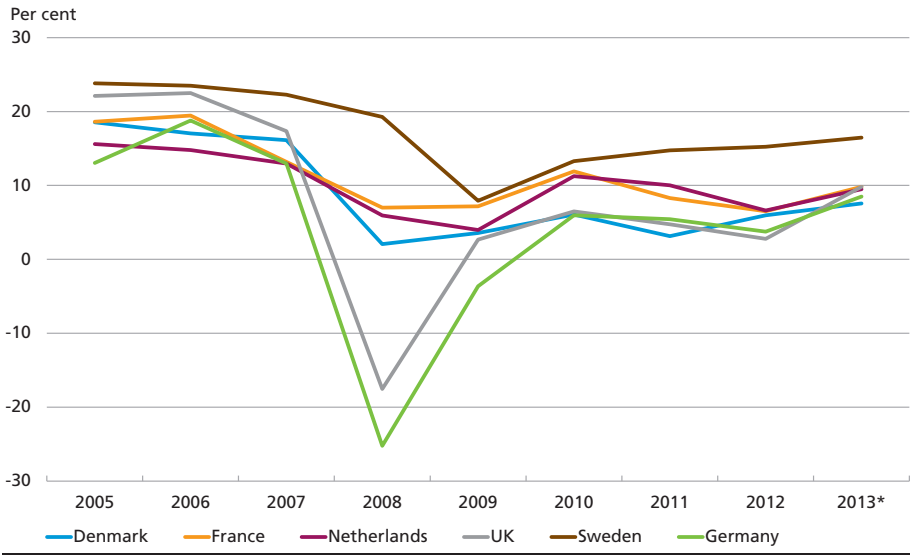
In order to investigate the drivers of return on equity, it can be broken down into two measures – return on assets and leverage:

$$Return\ on\ equity = \frac{Profit\ before\ tax}{Total\ assets} \times \frac{Total\ assets}{Equity}$$

The credit institutions can enhance the impact of the return on assets on the return on equity by increasing their leverage. If a rising return on equity is essentially attributable to a higher degree of leverage, this may be an indication of growing vulnerability.

[1] Cf. Danish Financial Supervisory Authority, Halvårsartikel 2013 for pengeinstitutter (Semi-annual article 2013 on banks – in Danish only).

RETURN ON EQUITY Chart 4-1



Note: Return on equity is calculated as profit before tax relative to equity at year-end. For 2013, the annualised return on equity is calculated on the basis of interim reports. Calculations are based on aggregate data for the credit groups included in the 2012 EBA capital exercise, cf. Box 4-1.
Source: Own calculations based on data from SNL Financial.

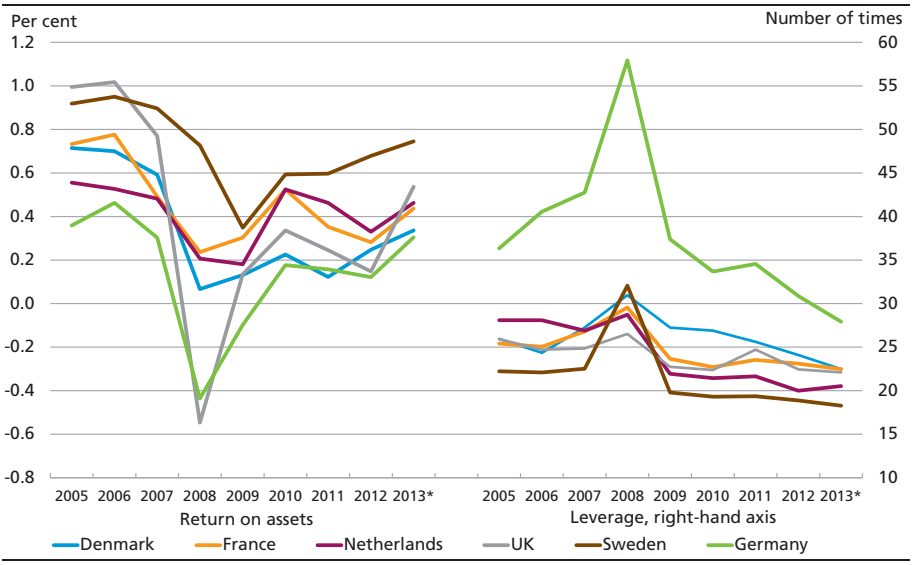
However, a high degree of leverage is not necessarily an indication of a high degree vulnerability. For instance, institutions that primarily grant collateralised loans can be robust despite a high degree of leverage. Moreover, risk hedging may result in an increase in the simple leverage ratio as the fair value of derivatives is included in the banks' total assets.

Return on assets can be broken down into two further components to separate loan impairment charges from other items in the income statement:

$$\frac{Profit\ before\ tax}{Total\ assets} = \frac{Profit\ before\ loan\ impairment\ charges\ and\ tax}{Total\ assets} - \frac{Loan\ impairment\ charges}{Total\ assets}$$

The returns on assets of the credit groups under review have tended to converge in recent years, cf. Chart 4-2, left. The Swedish groups stand out by recording a higher return on assets than the other groups. The Danish credit groups have the second-highest degree of leverage, cf. Chart 4-2, right, partly reflecting a relatively large share of mortgage loans. As the risk on loans secured against owner-occupied housing is generally lower than that of uncollateralised lending, the capital requirements for the former will be lower and enable a higher degree of leverage.

BREAKDOWN OF RETURN ON EQUITY Chart 4-2



Note: Return on assets is calculated as profit before tax relative to total assets at year-end. Leverage is calculated as total assets relative to equity at year-end. For 2013, the annualised series are calculated on the basis of interim reports. Calculations are based on aggregate data for the credit groups included in the 2012 EBA capital exercise, cf. Box 4-1.

Source: Own calculations based on data from SNL Financial.

The high leverage of German groups is partly attributable to a relatively large share of assets with low risk weights such as government bonds and mortgage loans. In addition, the German groups – notably Deutsche Bank – hold large derivatives positions on both the assets and the liabilities side.

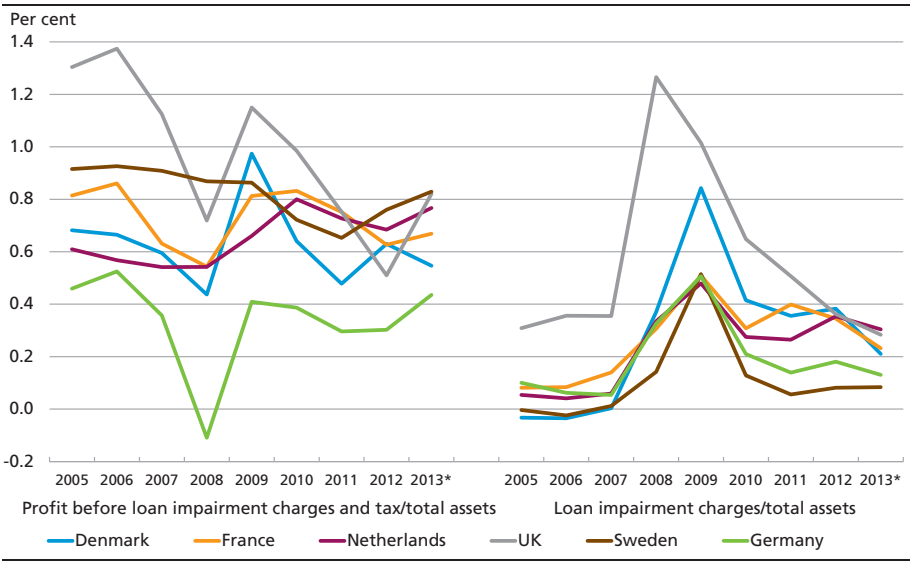
Overall, the groups' leverage has declined since 2008 on the back of capital injections and a sharp drop in dividend payments in several groups, among other factors. Assuming that a credit institution's risks on assets are unchanged, the required return on equity will fall when an institution increases its equity and reduces its debt financing similarly.[1] Therefore, the required return on equity is expected to decline in step with the increase in capitalisation, which should be reflected in the institutions' targets for return on equity.

According to the accounting regulations, loan impairment charges must be based on the objective evidence of impairment criterion, implying that loan impairment charges – and therefore also the return on equity – should be expected to vary over time.

During the period under review, the Danish groups recorded the second-highest loan impairment charges relative to total assets, cf. Chart 4-3,

[1] For further details see Danmarks Nationalbank, *Financial stability*, 2013.

BREAKDOWN OF RETURN ON ASSETS Chart 4-3



Note: Profit before loan impairment charges and tax and loan impairment charges relative to total assets at year-end. Loan impairment charges comprise impairment charges for all exposures. For 2013, the annualised series are calculated on the basis of interim reports. Calculations are based on aggregate data for the credit groups included in the 2012 EBA capital exercise, cf. Box 4-1.
Source: Own calculations based on data from SNL Financial.

which should be coupled with the fact that since 2008 Denmark has seen weaker economic development than the other five countries of the analysis.

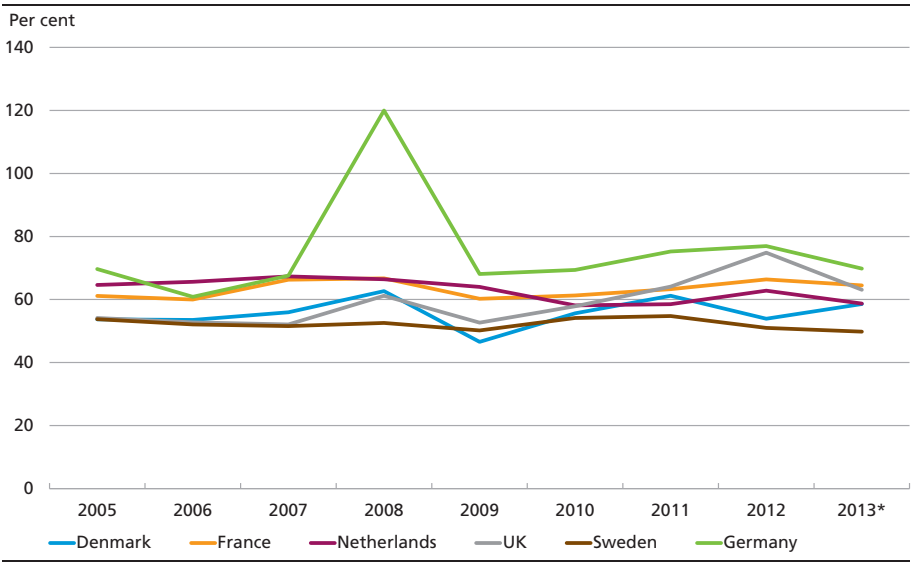
The high loan impairment charges also indicate that the Danish groups have held relatively risky assets.

Cost efficiency

In order to generate strong earnings, it is important to adjust costs to the level of income. In a competitive banking services market, which does not provide scope for charging supernormal prices, low costs relative to income will usually indicate high cost efficiency. During the period under review, the Swedish credit groups have had the lowest cost/income ratio followed by the Danish groups, cf. Chart 4-4. The high German cost/income ratio in 2008 reflected, *inter alia*, significant capital losses on US subprime mortgages, which led to a sharp decline in income.

Although, at an average of 56 per cent, the Danish credit groups' cost/income ratio was one of the lowest over the period, there is still room for efficiency improvements in the years ahead. The cost/income ratio of the Swedish groups, which, like their Danish counterparts, mainly operate in the Nordic countries, was 52 per cent on average during

COST/INCOME RATIO Chart 4-4



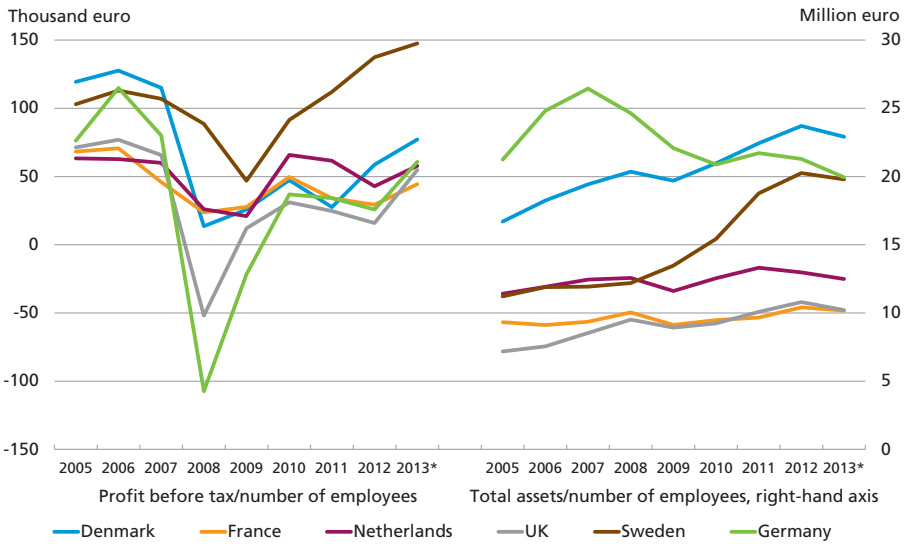
Note: The cost/income ratio is defined as costs for the year as a percentage of income. Costs comprise staff costs and administrative expenses, depreciation of assets and other operating costs. Loan impairment charges are not included in the calculations. Income includes net interest and fee income, value adjustments and other net income. For 2013, the cost/income ratio is calculated on the basis of interim reports. Calculations are based on aggregate data for the credit groups included in the 2012 EBA capital exercise, cf. Box 4-1.
Source: Own calculations based on data from SNL Financial.

the same period. Danske Bank has published a cost/income ratio target of below 50 per cent for 2015.

Overall, based on simple measures of cost/income ratio and labour productivity, the large Danish credit groups are among the most cost-efficient groups in Northern Europe. Earnings and total assets per employee may be used as rough indicators of labour productivity.[1] Measured by earnings per employee, the Swedish credit groups are clearly in the lead, cf. Chart 4-5, left. The Danish groups' earnings have gradually improved since the 2008 low, partly reflecting a more than 11 per cent reduction in the number of employees. Measured by assets per employee, the Danish credit groups are in the lead, cf. Chart 4-5, right, due in part to their relatively large and standardised mortgage loans.

[1] For a detailed analysis see Kim Abildgren, Mark Strøm Kristoffersen, Nicolai Møller Andersen and Andreas Kuchler, Productivity and cost efficiency in the Danish financial sector, Danmarks Nationalbank, *Monetary Review*, 4th Quarter 2013, Part 2.

SIMPLE MEASURE OF LABOUR PRODUCTIVITY Chart 4-5



Note: Profit before tax is calculated as profit for the year, while total assets are calculated on the basis of the value at the end of the period. Number of employees is calculated as the average number of full-time employees during the year. For 2013, the annualised series are calculated on the basis of interim reports. Calculations are based on aggregate data for the credit groups included in the 2012 EBA capital exercise, cf. Box 4-1.
Source: Own calculations based on data from SNL Financial.

EARNINGS OF DANISH BANKS

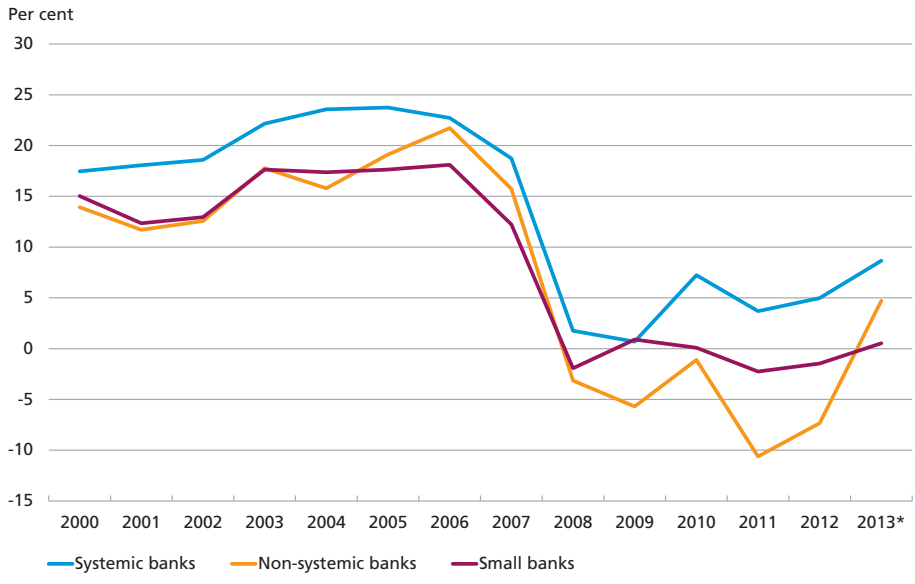
In recent years, Danish banks have taken various measures to improve earnings. On the income side, lending margins have been adjusted and fee structures changed and on the cost side, the number of branches and employees has been reduced. Typically, it takes some time for the full impact of such measures to show through to the accounts.

The Danish banking sector comprises a multitude of banks of varying size with different business models. In the past few years, requirements from customers and regulators have grown. Some of the small banks have performed well during the crisis, but many have a low return on equity and high costs. For these banks, it may be relevant to look into the possibilities of mergers in order to obtain synergies and provide the basis for a more profitable business.

In the years preceding the financial crisis, the Danish banks recorded a high return on equity, cf. Chart 4-6. The banks' net interest income was on the increase partly due to high lending growth and access to cheap funding. Moreover, as a result of the economic boom, the banks had very low loan impairment charges.

This picture changed markedly after the outbreak of the financial crisis, and in the period 2008-13 many banks have recorded a negative re-

RETURN ON EQUITY Chart 4-6



Note: Return on equity is calculated as profit before tax relative to average equity at the beginning and end of the year. For 2013, the annualised return on equity is calculated on the basis of interim reports. Calculations are based on aggregate data for the three groups of banks, cf. Box 4-1.
Source: Own calculations based on data from the Danish Financial Supervisory Authority.

turn on equity, mainly as a result of high loan impairment charges. In addition, in recent years the banks have been under pressure from declining lending volumes and lower deposit margins due to the low level of interest rates. The banks have sought to offset this by widening their lending margins and adjusting their fee structures. However, in a market characterised by many banks, prices of banking services can only be increased to the extent that this is compatible with the competitive environment.

Systemic banks have the highest return on equity and, overall, have recorded positive returns throughout the period, while non-systemic and small banks have recorded negative returns for a number of years since 2008. However, the results of the individual banks in these groups vary strongly; some banks have performed well during the crisis, while others have recorded substantial deficits.

Breakdown of return on equity

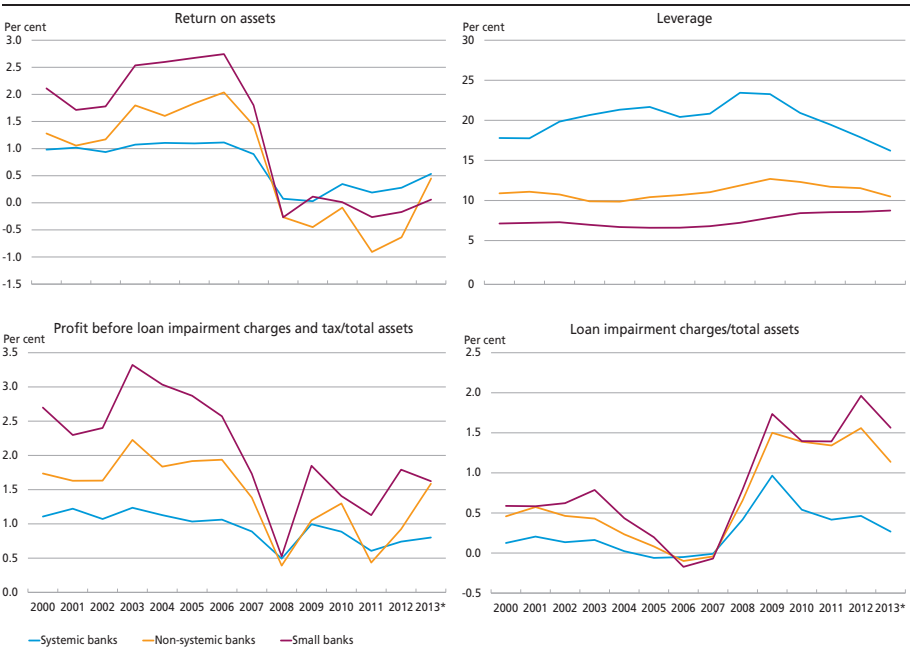
There are differences between the balance sheet structures of large and small banks. For large banks, lending to other credit institutions and large corporate customers (including repo lending) and bonds and derivatives typically make up a larger share of total assets compared with

small banks, which are mainly exposed to households and small corporate customers.

Prior to the financial crisis, the return on assets showed a clear pattern: highest for small banks, second-highest for non-systemic banks and lowest for systemic banks, cf. Chart 4-7. This is to a large extent attributable to differences in business models and balance-sheet structures. Due to differences in volumes and credit risks, lending margins will typically be higher for loans to households and small corporate customers than, for instance, for loans to other banks and large corporate customers. This implies that during an economic boom the earnings of small banks as a ratio of total assets will be higher than those of large banks. If loan impairment charges are disregarded, the pattern largely continues throughout the period.

As a result of differences in balance-sheet structures, systemic banks have been able to maintain a significantly higher degree of leverage than non-systemic and small banks because the capital requirements for

BREAKDOWN OF RETURN ON EQUITY — Chart 4-7



Note: Return on assets is calculated as profit before tax relative to average total assets at the beginning and end of the year. Leverage is calculated as total assets relative to average equity at the beginning and end of the year. Profit before loan impairment charges and tax and loan impairment charges relative to average total assets at the beginning and end of the year. Loan impairment charges comprise impairment charges on loans and guarantees. For 2013, the annualised series are calculated on the basis of interim reports. Calculations are based on aggregate data for the three groups of banks, cf. Box 4-1.

Source: Own calculations based on data from the Danish Financial Supervisory Authority.

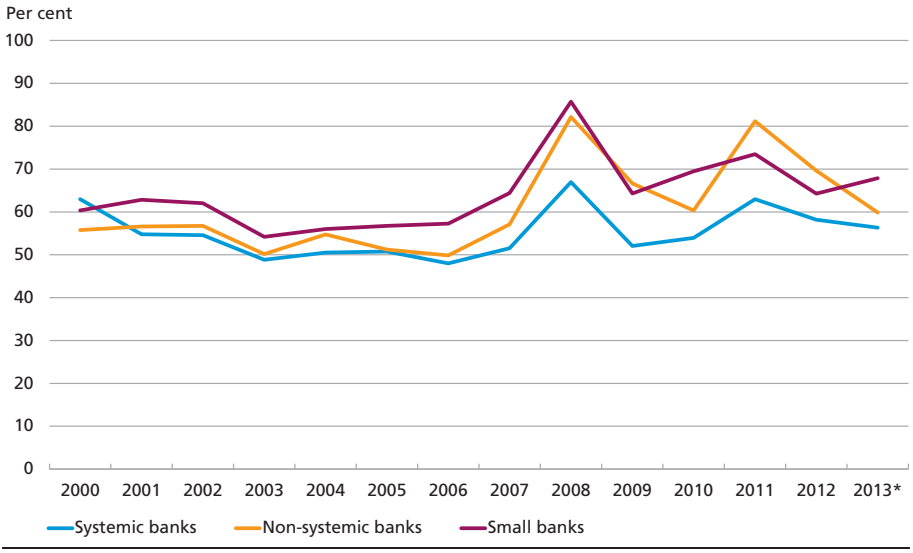
low-risk assets are lower than for higher-risk assets. The variations in the credit risk on assets are reflected in loan impairment charges, which have been highest for small banks after the onset of the financial crisis. The aggregate figures for the groups mask pronounced bank-specific differences. There is a tendency for the banks with the strongest balance-sheet growth prior to the financial crisis to subsequently record the largest loan impairment charges. This shows that some banks were strongly focused on boosting earnings in the short term through lending growth at the expense of sufficient credit assessment.

Cost efficiency

Measured by the cost/income ratio, systemic banks are more cost-efficient than non-systemic and small banks, cf. Chart 4-8, a disparity that has widened in the years after the beginning of the financial crisis. This partly indicates that banking activities offer economies of scale, and partly that large banks have aligned their costs to the lower banking sector activity level more promptly than small banks.

One of the initiatives taken by the banks with a view to adjusting costs to the drop in the activity level has been to reduce the number of em-

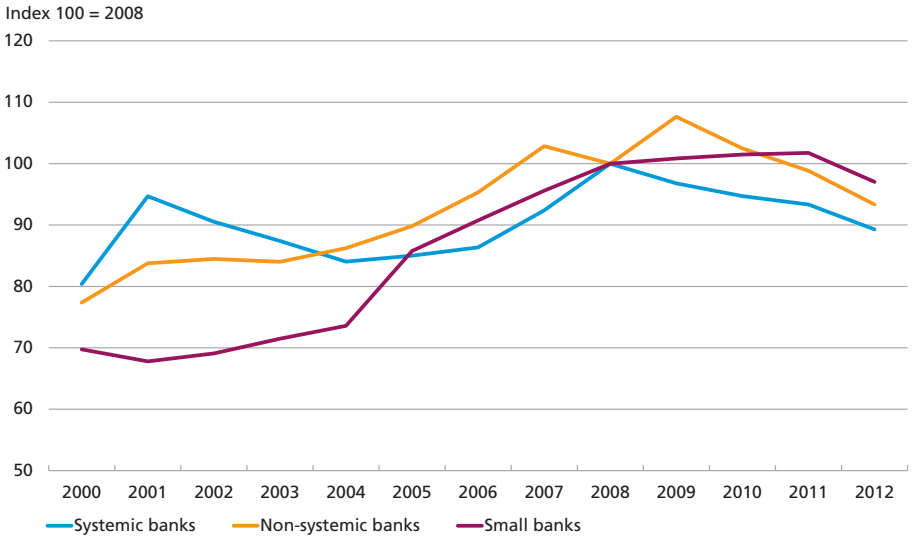
COST/INCOME RATIO — Chart 4-8



Note: The cost/income ratio is defined as costs for the year as a percentage of income. Costs comprise staff costs and administrative expenses, depreciation of assets and other operating costs. Impairment charges on loans and guarantees are not included in the calculations. Income includes net interest and fee income, value adjustments, net income from discontinuing operations and other operating income. For 2013, the cost/income ratio is calculated on the basis of interim reports. Calculations are based on aggregate data for the three groups of banks, cf. Box 4-1.

Source: Own calculations based on data from the Danish Financial Supervisory Authority.

EMPLOYMENT TRENDS Chart 4-9



Note: Calculations of employment in the banks are stated as the average number of full-time employees during the year and are based on aggregate data of the three groups of banks, cf. Box 4-1.
Source: Own calculations based on data from Statistics Denmark and the Danish Financial Supervisory Authority.

ployees, cf. Chart 4-9. Since 2008, systemic banks have implemented faster and more comprehensive adjustments than non-systemic and small banks.

5. Risk-Weighted Assets and Internal Models

Banks' and mortgage banks' solvency is calculated as a percentage of risk-weighted assets. Accurate calculation of risk-weighted assets is of major significance to an assessment of the solvency and hence the robustness of credit institutions. Therefore, risk weights and particularly the internal models have increasingly attracted attention.

The average risk weights of Danish banks and mortgage banks have been declining since 2008 – especially on the banks' corporate exposures. This development is related, among other things, to a wider spread in the estimated probabilities of default, where a very low probability is allocated to a larger share of customers. It is important for the banks to ensure that the process of improving their internal models does not entail adjusting their models to the current economic situation, while their ability to predict defaults in the event of new and different economic shocks deteriorates.

Inherently, the risk-based approach of the internal models will be procyclical. However, it is difficult to conclude as yet whether the approach has a significantly procyclical effect.

The use of internal models gives the banks an incentive to improve their risk management and portfolio structures. Hence, the models cannot be replaced with simpler calculation methods.

Initiatives that may improve confidence in the banks' calculation of risk-weighted assets and remedy any inadequacies are welcomed. In this connection, Danmarks Nationalbank attaches particular importance to ensuring a high and standardised level of disclosure in relation to risk-weighted assets. Internationally, this can be promoted by increasingly harmonising the information to be disclosed by the banks.

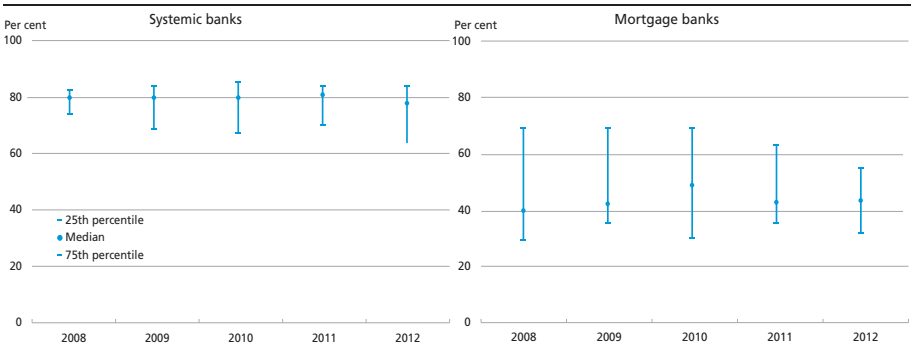
A number of policy proposals are under consideration – or have already been adopted, e.g. increased transparency, introduction of a leverage ratio to supplement the risk-based capital requirements and benchmark exercises in which the banks apply their internal models to hypothetical portfolios.

MOTIVATION AND BACKGROUND

The banks' and mortgage banks' solvency is calculated as a percentage of risk-weighted assets. In order to increase the resilience of the financial sector to economic and financial turmoil, a number of enhanced

RISK-WEIGHTED ASSETS CALCULATED USING INTERNAL MODELS AS A PERCENTAGE OF RISK-WEIGHTED ASSETS CALCULATED ACCORDING TO BASEL I

Chart 5-1



Note: The chart comprises the institutions included in Table 5-1.
Source: Danish Financial Supervisory Authority and own calculations.

qualitative and quantitative requirements for the banks' capital base, i.e. the numerator of the total capital ratio, will be introduced in the coming years.[1] However, the calculation of the denominator of the total capital ratio – risk-weighted assets – also has a major impact on the sector's resilience. If the actual risks on a bank's assets turn out to exceed the calculated numerator, there is a risk – worst case – that a bank, which seems to be well capitalised based on the total capital ratio, proves to be undercapitalised.

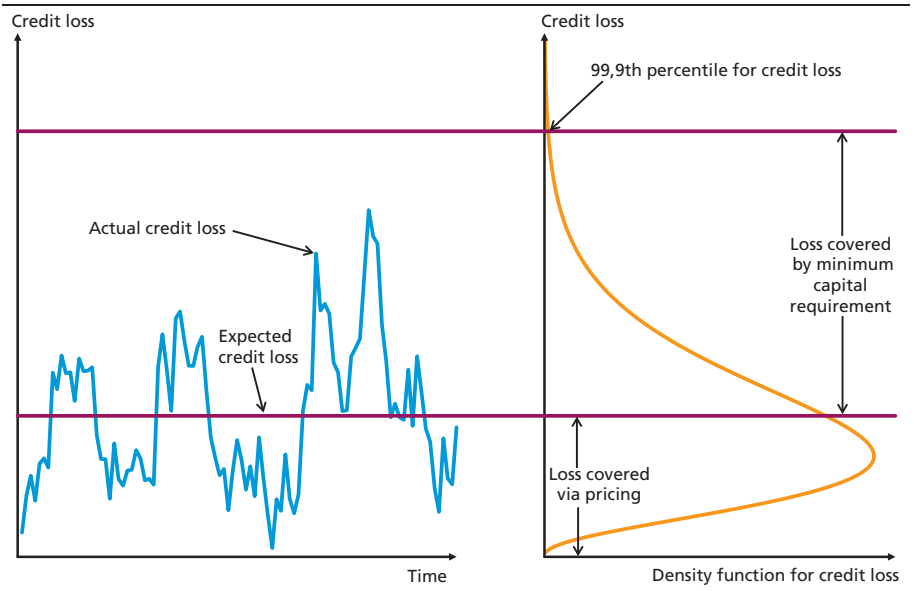
The calculation of risk-weighted assets has increasingly attracted international attention. This is particularly true of the internal models where the banks base the calculation on their own models. In Europe, the transition from Basel I to the internal models approach under Basel II has generally led to considerable declines in risk-weighted assets. This is also the case in Denmark, where risk-weighted assets for the median bank is currently around 80 per cent of what they would have been under Basel I for the systemic banks and 45 per cent for the mortgage banks using internal models, cf. Chart 5-1.

The Basel Committee on Banking Supervision, BCBS, and the European Banking Authority, EBA, have both conducted detailed studies comparing the risk weights of different banks and submitted preliminary findings.[2] All the studies find that a substantial share of the risk weight variation can be attributed to differences in the banks' internal models.

1 A description of the new capital requirements is available in Danmarks Nationalbank, *Financial stability*, 2013, Appendix 2.

2 The European Banking Authority, EBA, Interim results of the EBA review of the consistency of risk-weighted assets, February 2013, and Interim results update of the EBA review of the consistency of risk-weighted assets, August 2013 as well as the Basel Committee on Banking Supervision, BCBS, Regulatory Consistency Assessment Programme, RCAP, Analysis of risk-weighted assets for market risk, January 2013.

CREDIT LOSSES OVER TIME AND DENSITY FUNCTION FOR CREDIT LOSSES Chart 5-2



INTERNAL MODELS FOR CREDIT RISKS

Theoretical background

A credit institution will frequently have borrowers who do not meet their payment obligations, thereby potentially causing the institution a credit loss. The credit losses vary over time, cf. Chart 5-2 (left). The credit institution can never know for certain which losses will be realised in a given year, but the expected loss can be estimated. The institution can take the expected loss on a lending portfolio into account via loan pricing by means of an adequate interest margin. When applying internal models for credit risks (also called IRB models, Internal Rating Based models), the expected loss, to the extent that loan impairment charges have not been made, should be deducted from the institution's capital, i.e. the numerator of the capital statement.

In some cases the actual loss will exceed the expected loss. The actual loss less the expected loss is known as the unexpected loss. To some extent, credit institutions cover this loss via their capital reserves. Under the IRB approach, the formula for calculating the capital requirement entails that, in theory, the requirement covers the difference between the expected loss and the maximum loss to the institution within a confidence interval of 99.9 per cent.[1] In practice, this is not likely to be the

[1] This means that the loss in one out of a thousand years is expected to exceed the minimum capital requirement.

case as several of the assumptions for derivation of the IRB formula are not met – e.g. shocks to the macroeconomy are not normally distributed. Chart 5–2 (right) illustrates the distribution function for an institution's credit loss. The distribution of the credit loss is skewed with a long tail as small losses occur more frequently than large losses. Large credit losses on a well-diversified loan portfolio typically occur when the macroeconomy is hit by a severe negative shock and many borrowers find it difficult to service their debt. Hence, the share of the exposure to be financed via equity capital in order to cover unexpected losses, i.e. the risk weights by which the exposure is to be multiplied, is determined by the degree to which individual borrowers' debt servicing ability depends on the macroeconomy.

Calculating risk-weighted assets using the IRB approach

In the IRB models for credit risks, exposures are divided into seven categories, of which retail exposures are divided into three subcategories, cf. Box 5-1.

To calculate the capital requirement for an exposure under the IRB approach, the institutions must estimate/calculate up to five variables:

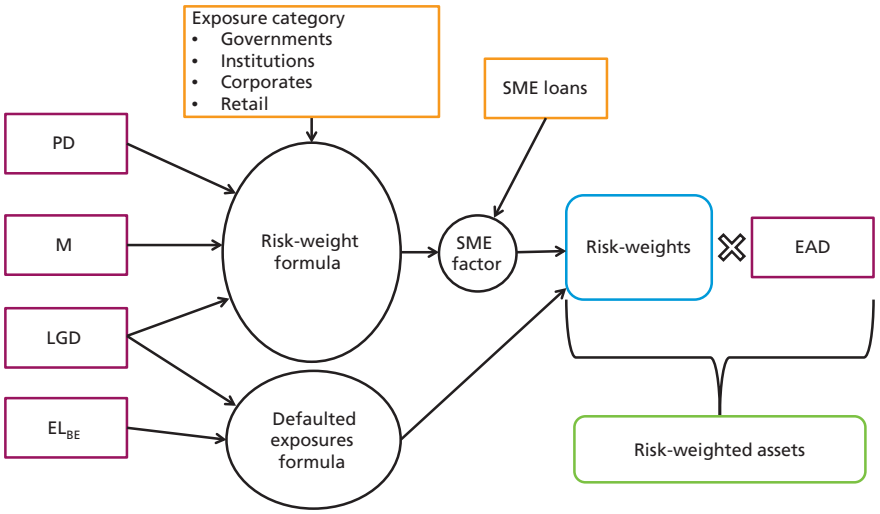
- *PD*, the probability of default on a loan within the coming year (Probability of Default)
- *M*, the remaining maturity of the loan (Maturity)
- *LGD*, the expected loss ratio in the event of default (Loss Given Default)
- EL_{BE}, the best estimate of the expected loss on a defaulted loan (Expected Loss Best Estimate)
- *EAD*, the expected exposure at the time of default (Exposure At Default)

As regards government, institution and corporate exposures, it varies how many variables are estimated by the institution itself. This depends

EXPOSURE CATEGORIES SUBJECT TO CREDIT RISKS IN IRB MODELS — Box 5-1

1. Government exposures
2. Institution exposures
3. Corporate exposures
4. Retail exposures (exposures to private individuals and small firms)
   - Retail exposures secured by real property
   - Qualifying revolving retail exposures, e.g. overdrafts
   - Other retail exposures
5. Equity exposures
6. Securitisation positions
7. Other non credit-obligation assets, e.g. tangible assets and the residual value of leased assets

ILLUSTRATION OF THE IRB APPROACH Chart 5-3



on whether the institution is authorised to use the foundation IRB approach, F-IRB (Foundation-IRB), or the advanced IRB approach, A-IRB (Advanced-IRB). Under the foundation approach, F-IRB, only PD has to be estimated by the institution itself.

The risk weights for individual exposures are calculated by inserting PD, LGD and, if required, M and/or EL_{BE} into fixed formulae, cf. the illustration in Chart 5–3. The risk-weighted assets are then found by multiplying the risk weight by EAD. The categorisation of an exposure determines the formula to be used by the institutions to calculate the risk weight on the exposure.

The expected loss on an exposure can be calculated by multiplying the probability of default on the loan by the loss given default and the exposure at default:

$$\text{Expected loss} = \text{PD} * \text{LGD} * \text{EAD}$$

Broadly speaking, the unexpected loss on an exposure to be covered by capital is calculated by converting the PD into what it would be if the economy was hit by a negative shock corresponding to the 99.9th percentile in its distribution and then deducting the expected loss as defined above. If the PD, converted into (conditioned on) what it would be if the economy was hit by a severe negative shock, is called $PD|_{99,9 \text{ per cent}}$, this can be written as:

$$\begin{aligned}\text{Unexpected loss to be covered by capital} \\ &= \text{Unexpected loss}|_{99,9\text{ per cent}} - \text{expected loss} \\ &= \text{PD}|_{99,9\text{ per cent}} * \text{LGD} * \text{EAD} - \text{PD} * \text{LGD} * \text{EAD} \\ &= (\text{PD}|_{99,9\text{ per cent}} - \text{PD}) * \text{LGD} * \text{EAD}\end{aligned}$$

The risk of loss to be covered by capital is determined by the increase in the PD if the economy is hit by a negative shock. In the risk-weight formula, the ratio between the conditional and the unconditional PD is a decreasing function of the unconditional PD. The intuition is that for exposures with a low unconditional PD, defaults virtually only occur in situations when the economy is hit by negative shocks. Conversely, defaults on exposures with a high PD must be expected to occur to a greater extent when the economy is hit by negative shocks as well as at other times.

Besides, the risk-weight formula for corporate exposures assumes that the probability of default for small firms (measured by revenue) is less dependent on the macroeconomy than it is for large firms.

In addition, the above expression in the case of corporate exposures is multiplied by a maturity adjustment that is greater than one for all maturities of more than one year. The maturity adjustment for a given maturity is a decreasing function of the probability of default. The reason is that especially for exposures with long maturities and low probabilities of default there is a risk that the probability of default will increase over the life of the loan.

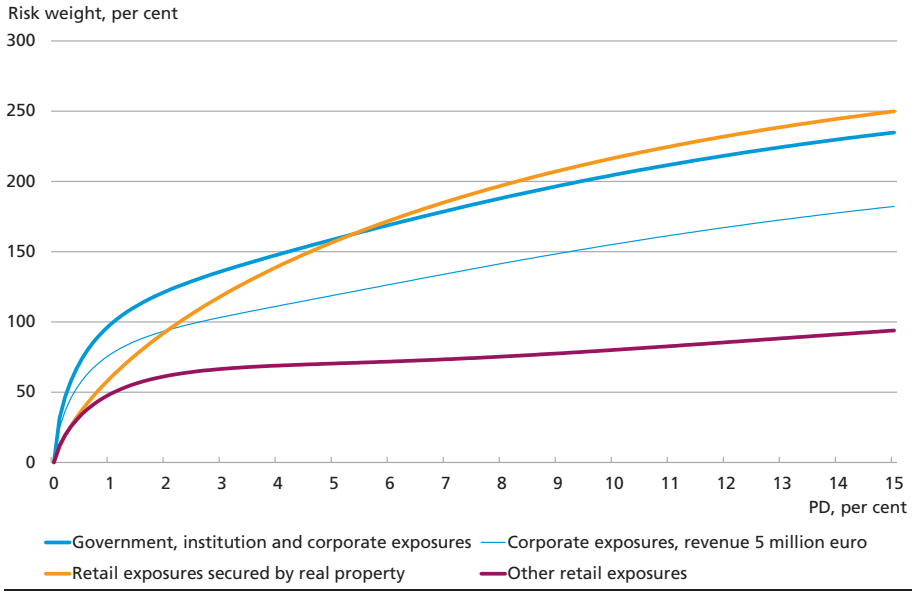
Finally, the above expression is multiplied by 1.06 and 12.5. The multiplier 1.06 is to ensure that the risk-weighted assets of institutions using the IRB approach do not get too low compared with those of institutions using the standardised approach, while still providing an incentive to use the IRB approach. The multiplier 12.5 is calculated as the reciprocal of 8 per cent and aims to ensure that institutions with a capital requirement of 8 per cent relative to their risk-weighted assets finance a sufficiently large proportion of their assets via equity capital to cover unexpected losses, within a confidence interval of 99.9 per cent. Therefore, risk-weighted assets can be written as:

$$\begin{aligned}&\text{Risk-weighted assets} = \\ &\left(\text{PD}|_{99,9\text{ per cent}} - \text{PD}\right) * \text{LGD} * \text{EAD} * \text{Maturity adjustment}(\text{M}, \text{PD}) * 12{,}5 * 1{,}06\end{aligned}$$

Chart 5-4 shows risk-weighted assets as a function of PD for various exposure categories.

For defaulted exposures where the unconditional PD equals 100 per cent, the result of the above expression is zero. Hence, those exposures are

RISK WEIGHT AND PD FOR DIFFERENT EXPOSURE CATEGORIES Chart 5-4



Note: A loss given default, LGD, of 45 and a maturity, M, of 2.5 years have been used.
Source: Own calculations

not risk weighted according to this expression. On the other hand, the below expression is used for credit institutions using their own LGD estimates:

$$\text{Risk-weighted assets}|_{\text{PD=100 per cent}} = \max.\{0; 12{,}5 * (\text{LGD} - \text{EL}_{\text{BE}})\} * \text{EAD}$$

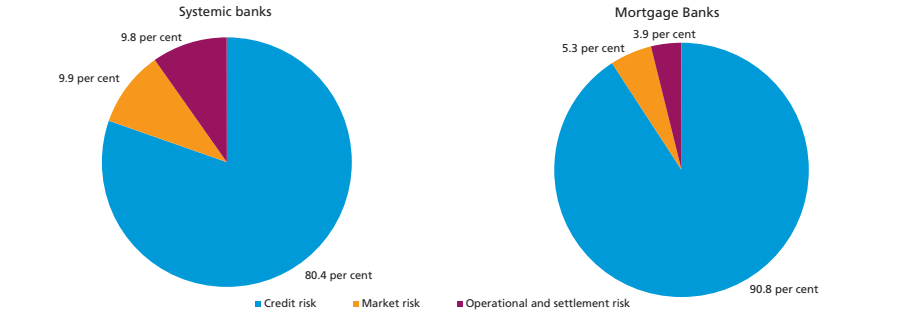
Defaulted exposures have been excluded from the empirical calculations in this chapter in order to better compare the development in institutions using their own LGD estimates (A-IRB) and institutions which do not estimate LGD themselves (F-IRB).

Authorisation to use IRB models

An institution that wishes to use IRB models to calculate its risk-weighted assets must be authorised for this by the Danish Financial Supervisory Authority. If it gets the authorisation, the institution must use IRB models on all exposures within the seven exposure categories, unless it has been authorised by the Danish Financial Supervisory Authority to use the standardised approach permanently.

This applies e.g. to government and institution exposures, if the number of important borrowers is limited and it would be an excessive burden for the institution to implement the IRB approach for these borrowers. Moreover, exposures in unimportant business units and exposure categories are exempted. The same applies to government exposures to

COMPOSITION OF RISK-WEIGHTED ASSETS Chart 5-5



Note: Calculated at end-2012. The chart comprises the institutions included in Table 5-1.
Source: Danish Financial Supervisory Authority and own calculations.

EU member states, which are given a risk weight of zero under the standardised approach.

The Danish Financial Supervisory Authority may also temporarily authorise an institution to use the standardised approach for some exposures if it implements the IRB models in stages. In that case, the Danish Financial Supervisory Authority must define the terms of the staged implementation to ensure that the institution does not apply the standardised approach selectively to exposures where the standardised approach is expected to entail lower risk weights than the IRB approach.

Composition of Danish credit institutions' risk-weighted assets

The vast majority of Danish credit institutions' risk-weighted assets are attributable to credit risks, cf. Chart 5-5.

Today, all systemic banks in Denmark and the majority of mortgage banks use IRB models to a greater or lesser extent to calculate risk-

APPROACH TO CALCULATION OF CREDIT RISKS – EXPOSURE CATEGORIES Table 5-1

Institution	Government exposures	Institution exposures	Corporate exposures	Retail exposures	Equity exposures	Securitisation positions	Other non credit-obligation assets
Danske Bank	Standard	A-IRB	A-IRB	IRB	Standard	A-IRB	A-IRB
Nordea Bank Danmark	Standard	F-IRB	F-IRB	IRB	Standard	Standard	Standard
Nykredit Bank	Standard	Standard	F-IRB	IRB	Standard	Standard	Standard
Jyske Bank	Standard	Standard	A-IRB	IRB	Standard	A-IRB	A-IRB
Sydbank	Standard	Standard	F-IRB	IRB	Standard	Standard	Standard
BRFkredit	Standard	Standard	A-IRB	IRB	Standard	na.	Standard
Nordea Kredit	Standard	F-IRB	F-IRB	IRB	Standard	Standard	Standard
Nykredit Realkredit	Standard	Standard	A-IRB	IRB	Standard	Standard	Standard
Realkredit Danmark	Standard	A-IRB	A-IRB	IRB	Standard	A-IRB	A-IRB
Totalkredit	Standard	Standard	A-IRB	IRB	Standard	Standard	Standard

Note: For retail exposures, no distinction is made between A-IRB and F-IRB.
Source: The institutions' risk reports.

COMPOSITION OF RISK-WEIGHTED ASSETS SUBJECT TO CREDIT RISKS Chart 5-6

Note: The chart comprises the institutions included in Table 5-1.
Source: Danish Financial Supervisory Authority and own calculations.

weighted assets for credit risks. The alternative to using IRB models is the standardised approach under which exposures are divided into 15 different exposure categories with fixed risk weights.

Table 5-1 provides an overview by exposure category of the approaches used by Danish banks and mortgage banks. On corporate and retail exposures, the credit institutions all use IRB models.

The largest item of both banks' and mortgage banks' risk-weighted assets with credit risks are attributable to the "corporate" exposure category, cf. Chart 5-6. The following will focus mainly on those exposures. The majority of the risk-weighted assets calculated according to the standardised approach are attributable to equity and institution exposures.

DEVELOPMENT IN RISK-WEIGHTED ASSETS

The average risk weights for the Danish systemic banks and mortgage banks have been declining since the transition to IRB models in 2008. In terms of the various exposure categories, the risk weights have been particularly reduced on the banks' corporate exposures. For this category, the risk weight has declined by 10 and 6 percentage points, respectively, for median banks and mortgage banks, cf. Chart 5-7 (top).

The development is driven by many factors, several of which are opposite. LGD on the banks' exposures is reduced over the period, cf. Chart 5-7 (bottom left). All other things being equal, this will reduce the risk weight. The reduction of LGD is primarily attributable to increasing use of collateral on exposures. Opposing factors are a generally higher PD level for both banks and mortgage banks, cf. Chart 5-7 (middle). The PDs increased particularly at the beginning of the financial crisis when a strong rise in the number of defaults coincided with a general economic slowdown.

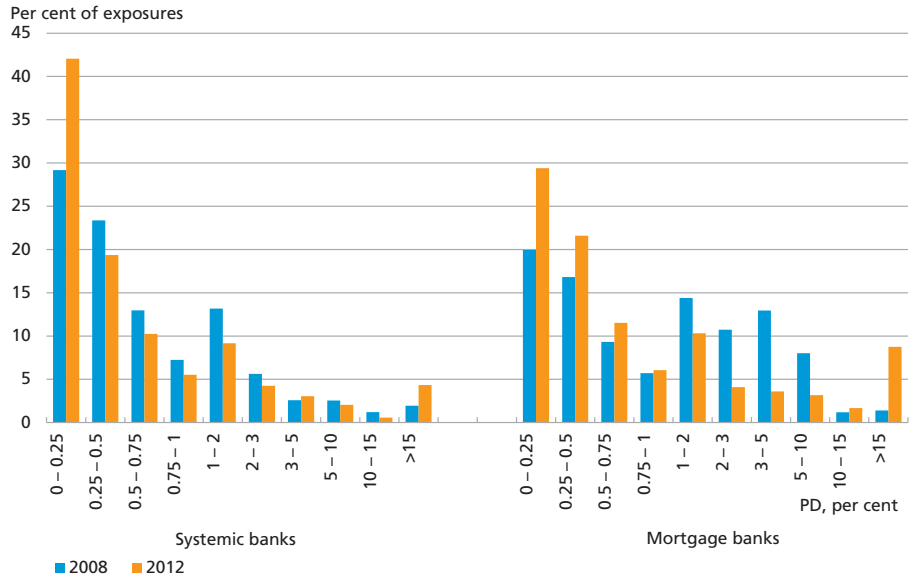
RISK WEIGHTS, PD AND LGD FOR CORPORATE EXPOSURES — Chart 5-7

Note: The chart comprises the institutions included in Table 5-1. PD for corporate exposures must be minimum 0.03 per cent. Excluding defaulted exposures.
Source: Danish Financial Supervisory Authority and own calculations.

Furthermore, a larger share of the banks' exposures at the end of 2012 has a relatively low or high PD compared with the distribution at the end of 2008, cf. Chart 5-8. The wider spread in the banks' estimated PDs, where a very low probability is allocated to a larger share of customers, may contribute to reducing risk weights. This is attributable to the non-linear decreasing relationship between PD and risk weight, cf. Chart 5-4. The curve is steeper when a PD is very low than when it is high. If e.g. an estimated PD of 1 per cent is reduced by 0.5 percentage point to 0.5 per cent, the risk weight is reduced by 24 percentage points for corporate exposures. Conversely, the risk weight only increases by 2 percentage points if an estimated PD of 14.5 per cent increases by 0.5 percentage point to 15 per cent.

The fact that, in relative terms, the banks have increased their exposures to customers with lower PDs may have to do with the development in the banks' portfolio structures. Another factor may be that model improvements have made PD estimates more accurate. All else equal, the high level of defaults in recent years provides a better statistical data basis when estimating the banks' models. It is important for the banks to ensure that the process of improving their models does not entail adjustment to the current economic situation, while their ability to predict defaults in the event of new and different economic shocks deteriorates.

PD DISTRIBUTION FOR CORPORATE EXPOSURES — Chart 5-8



Note: The chart comprises the institutions included in Table 5-1. Exposures are grouped by the 10 intervals after the average exposure-weighted PD for the institutions' credit rating categories. Exposures are calculated as EAD multiplied by LGD.

Source: Danish Financial Supervisory Authority and own calculations.

PROCYCLICALITY

Procyclicality indicates that credit institutions often display behaviour that may amplify cyclical patterns and make the financial system more vulnerable. Credit institutions are very willing to assume risk during an upswing, when measured risks are low, while risks are building up, and less willing in a downturn, when measured risks are high.

Financial regulation may seek to take this self-reinforcing behaviour into account,[1] but it may also comprise factors that may reinforce the tendency of credit institutions to display procyclical behaviour.

Since cyclical fluctuations will affect the banks' customers, other things being equal, a risk-based approach to calculation of the capital requirement will inherently be procyclical. The customers' PDs will tend to increase during a recession and decrease during a boom. The extent to which models estimating the customers' PDs will capture this relationship depends on the cyclical sensitivity of the models.

The most cyclically sensitive models are called PIT (Point in Time) and are characterised by cyclical fluctuations being fully reflected in PD estimates. The least cyclically sensitive models, in which PD estimates only change if the customers' non-cyclical properties change, are called TTC (Through The Cycle). Between these extremes are hybrid models in which the cyclical impact affects PD to a greater or lesser extent. The degree to which a model is PIT, TTC or hybrid is referred to as its *rating philosophy*.

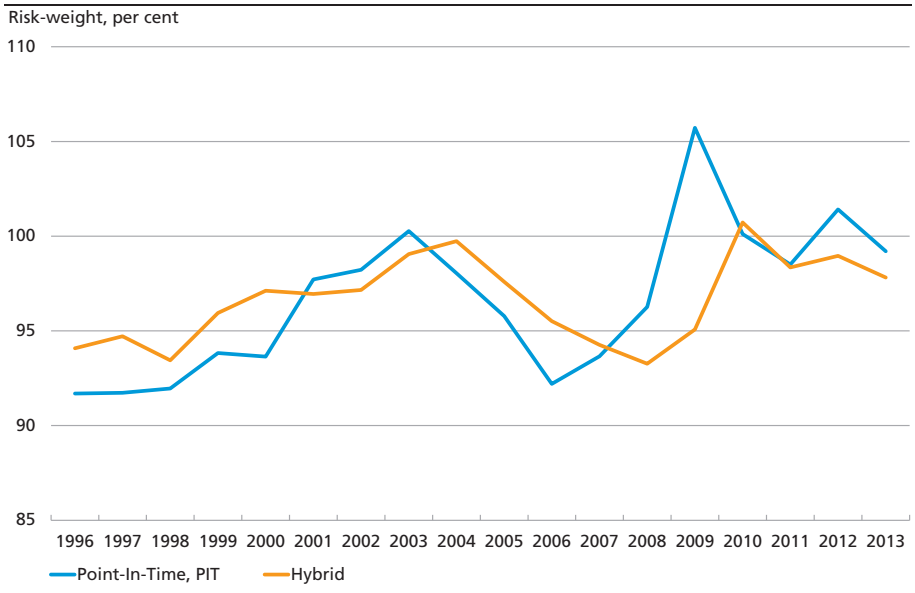
Danish credit institutions are free to choose their rating philosophy, provided they identify it explicitly, analyse its degree and take it into account in all relevant respects – e.g. when calculating their capital need. For the calculation of risk-weighted assets, the Danish Financial Supervisory Authority may authorise the institutions to use TTC PDs translated from PIT PDs. This reflects that the institutions will normally use PIT PDs in their internal risk management and pricing so that the interest margins on the customers are adjusted to the current economic conditions. Conversely, the institutions may wish to seek to prevent the risk-weighted assets from fluctuating excessively over the business cycle.

The effect of the rating philosophy on the risk weights can be illustrated by calculating risk weights based on estimated failure rates from Danmarks Nationalbank's failure-rate model for a hypothetical portfolio of loans to Danish firms. Danmarks Nationalbank's failure-rate model primarily includes historical accounting data and data on industry, geo-

[1] One example is the countercyclical capital buffer that is being introduced under the new capital adequacy rules, CRD IV. For a more detailed description, see Danmarks Nationalbank, *Financial stability*, 2012.

ESTIMATED RISK WEIGHT ON HYPOTHETICAL PORTFOLIO OF LOANS TO CORPORATE CUSTOMERS

Chart 5-9



Note: Risk weights are calculated on the basis of an annual sample of 1,000 firms with estimated PDs from Danmarks Nationalbank's failure-rate model. A loss given default, LGD, of 45 and a maturity, M, of 2.5 years have been used.

Source: Experian A/S, Statistics Denmark and own calculations.

graphical location and real GDP growth in the Danish economy. The model estimates the probability that the firms will fail within the coming year.[1] The estimates of the model are PIT PD estimates. If the macroeconomic variables in the model are replaced by their long-term average, the model would be more in the nature of a hybrid model with a reduced cyclical element. It would not fully correspond to a TTC model, since the other variables would still be subject to considerable cyclicality, for which no adjustment is made.

In both models, the calculated risk weights fall in the period up to the crisis and subsequently rise, cf. Chart 5-9. As expected, the PIT PDs fluctuate more than the hybrid PDs, and the risk weights calculated on the basis of the PIT PDs are relatively lower during booms and higher in recessions.

The risk-based approach to the capital requirements of IRB models will inherently be procyclical, as illustrated above. So according to the EU Capital Requirements Directive, CRD – and in future the Capital Requirements Regulation, CRR – the authorities should monitor the devel-

[1] The model will deviate from the institutions' internal models particularly as regards the definition and registration/timing of default. Default will typically occur in the institutions' internal models at an earlier stage than a failure will be registered in the Danish Official Gazette, which constitutes the data basis for Danmarks Nationalbank's failure-rate model.

opment in capital requirements, including the calculation of risk-weighted assets, and analyse whether the capital adequacy rules have a significant effect on the business cycle. EU reports analysing this were prepared in 2010 and 2012.[1] In view of the short time horizon of the data and overlaps between the implementation of internal models and the crisis, the conclusion of both reports is that it is difficult to determine as yet whether the rules have a significant procyclical effect.

TRANSPARENCY

Institutions that use IRB models are comprised by a number of special disclosure requirements. The information required forms part of the institutions' risk reports, known as Pillar 3 reports, that are typically published at the same time as the annual report. The disclosure aims to create market discipline by giving market participants, including investors and creditors, access to important information about the institutions' capital, risk exposures and risk assessment process. This is particularly relevant in relation to institutions using IRB models, since the approaches and models chosen will affect the size of the institutions' risk-weighted assets and hence their capital requirement.

The disclosure requirements concerning the use of IRB models can be divided into requirements regarding qualitative and quantitative information.

The qualitative information comprises background information on the Financial Supervisory Authority's approval of the model used, the structure of the internal credit rating system, the use of own estimates, the application of approaches to mitigate credit risk , and a description of the system's control procedures. In addition, a description of the internal credit assessment process for the individual exposure categories must be provided. The description must include the type of exposures in each exposure category, definitions, approaches and data to estimate PD and for institutions using A-IRB also LGD and the translation factor used to calculate EAD.

The quantitative information can be further divided into information focusing on risk exposures and risk assessments and information focusing on actual results. The latter may give an indication of the reliability of the information provided.

[1] European Commission, Report from the Commission to the Council and the European Parliament on effects of Directives 2006/48/EC and 2006/49/EC on the economic cycle, June 2010, and European Commission, Report from the Commission to the Council and the European Parliament, Second Report on Effects of Directives 2006/48/EC and 2006/49/EC on the Economic Cycle, December 2012.

PUBLICLY AVAILABLE INFORMATION ON EXPOSURE-WEIGHTED AVERAGE RISK WEIGHTS (RW), LGD AND PD ESTIMATES Table 5-2

	Institution			Corporate			Retail		
	RW	LGD	PD	RW	LGD	PD	RW	LGD	PD
BRFkredit	-	-	-	No	No	No	No	No	No
Danske Bank	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No
Jyske Bank	-	-	-	Yes	Yes	No	Yes	Yes	No
Nordea Bank Danmark	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No
Nykredit Realkredit	-	-	-	Yes	Yes	Yes	Yes	Yes	Yes
Sydbank	-	-	-	Yes	Yes	Yes	Yes	Yes	Yes

Note: The information in the risk reports is stated at group level. BRFkredit discloses the exposure-weighted average risk weights, LGD and PD estimates for the IRB portfolio as a whole.
Source: The institutions' risk reports from 2012 with related appendices.

So far, the disclosure requirements have been implemented in Danish legislation via the Executive Order on Capital Adequacy, but in future they will be subject to direct regulation under the EU Capital Requirements Regulation, CRR. The transition does not entail any major changes to the disclosure requirements concerning IRB portfolios, but it introduces a new requirement for detailed information about the exposure-weighted LGD and PD estimates.[1]

Under the current rules, the institutions are required to disclose the exposure-weighted average risk weights for each exposure category and – if using their own LGD estimates – the exposure-weighted average LGD estimates. The information must be specified at a suitable number of credit risk stages to enable the risk report users to get an idea of the credit risk differentiation. Although this is not a requirement under the current rules, some of the Danish IRB institutions provide similar information about the exposure-weighted average PD estimates, cf. Table 5-2. According to the new CRR requirement, the institutions must disclose their exposure-weighted average LGD and PD estimates for each exposure category broken down by the countries in which the institution undertakes activities through branches or subsidiaries.

Since 2008, the European Banking Authority, EBA, has carried out annual assessments of the risk reports from a selection of the largest European credit institutions (no Danish institutions are included in the sample). The focus of these assessments is the institutions' compliance with the disclosure requirements and identification of best practice. Room for improvements was noted by the EBA regarding compliance with the requirements in several areas, and the comparability of the information in the reports was mentioned as a major challenge.[2] The need for fur-

1 Cf. CRR, Article 452(j).
2 EBA, Follow-up review of banks' transparency in their 2011 Pillar 3 reports, October 2012.

ther harmonisation, consistency and comparability was also a common theme throughout the responses of several risk report users in a questionnaire issued by EBA in April 2012.[1]

In Danmarks Nationalbank's assessment, the new disclosure requirement in CRR, according to which the exposure-weighted average LGD and PD estimates must be disclosed for relevant geographical areas, will make it easier to make comparisons of the estimates and preconditions which in fact determine the size of the institutions' capital requirements. International efforts should be directed at further harmonising the information in the risk reports, as this would be helpful for investors, analysts, credit rating agencies and others performing risk assessments of credit institutions. Further harmonisation of disclosures would promote the intended market discipline.

A possible approach to further harmonisation would be to base the disclosure requirements directly on the forms used by the institutions when reporting to the supervisory authorities. In the longer term, this information could be published in a joint database with harmonised Pillar 3 information for all institutions in the EU.[2]

POLICY INITIATIVES

A number of initiatives to improve confidence in the institutions' calculation of risk-weighted assets and remedy any inadequacies are under consideration or have already been adopted. Use of the internal models gives the institutions an incentive to improve their risk management and portfolio structures. Hence, the models cannot be replaced with simpler calculation methods.

Under CRD IV/CRR, which enter into force on 1 January 2014, the European Banking Authority, EBA, will be mandated to develop a number of technical standards for the institutions' internal models. Looking ahead, this can be expected to reduce some of the differences between the institutions.

Furthermore, at the end of 2013, EBA must report to the European Commission whether and how the methodology of institutions using internal models is to be harmonised to ensure better comparability of capital requirements while reducing the risk of procyclicality.

Under CRD IV, institutions using internal models are required to calculate their capital requirements on benchmark portfolios developed by EBA at least once a year. On the basis of the results from all institutions

1 Cf. http://www.eba.europa.eu/-/questionnaire-on-the-identification-of-users-investors-needs-on-credit-institutions-pillar-3-disclosures.

2 Cf. ESRB staff note, Benefits of a Standardised Reporting of Pillar 3 Information, January 2013.

in the EU, EBA must prepare an annual report that enables national supervisory authorities to assess whether one or more institutions deviate considerably from other institutions. If this is the case, the supervisory authorities must look into the reasons. The deviations may be justified by sound economic reasons. The supervisory authority should only take corrective action if the investigation shows that the internal model approach leads to underestimation of the risk-weighted assets which cannot be attributed to differences in the underlying risks on the exposures. The supervisory authority must ensure that the corrective action is not in conflict with the objective of the internal models, i.e. they must not involve standardisation or preferred methods, create wrong incentives or cause herd behaviour.

In Denmark, the Committee on the causes of the financial crisis has recommended that institutions using internal models should also disclose the regulatory capital requirements that would be imposed under the standardised approach. Moreover, the institutions may be subjected to limitations in terms of the estimates of risk weights and underlying parameters. In Denmark, the Committee on the causes of the financial crisis has also recommended that a lower limit be set for the risk weights that can be used in internal models. Legally it is possible to impose requirements on the institutions in terms of the parameters included in the calculation of the risk weights. The Danish Financial Supervisory Authority can also impose stricter requirements as regards the individual capital need, if risks are likely to be underestimated in the internal models.

Finally, both internationally and in Denmark work on a simple leverage ratio where the institutions' capital is compared with total non-weighted exposures continues. The leverage ratio is to supplement the risk-based capital requirements, not to replace them. The ratio is intended to offer protection against excessive leveraging in the institutions. Under CRD IV, the European Commission must report on the impact and efficiency of a leverage ratio by end-2016 at the latest based on a report from EBA and, if deemed relevant, propose a binding measure of the ratio. 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. The expert group is to examine, *inter alia*, whether the leverage ratio limit should differ for banks and mortgage banks and for institutions using or not using internal models, respectively, to calculate their capital requirements.

6. Banking Union

This autumn the European Parliament and the Council adopted the legal basis for the Single Supervisory Mechanism, and the European Central Bank, ECB, is now preparing the single supervision.

From November 2014, the ECB is expected to directly supervise around 130 credit institutions in the euro area, while the remaining 6,000 or so will continue to be supervised by national authorities.

The European Parliament and the Council are currently discussing the Single Resolution Mechanism, including how non-euro area member states can participate on equal terms.

Danmarks Nationalbank generally takes a positive view of the banking union currently outlined. It is an important step towards strengthening the single market for financial services and hence cross-border competition. Competition forces both credit institutions and firms to improve their skills. That is sound and good for everyone. It is important that euro area and non-euro area member states can participate in the banking union on equal terms. Otherwise, there is a risk that the single market for financial services becomes fragmented. In addition, Danmarks Nationalbank finds it essential that the banking union includes an insurance element in relation to the systemic institutions in Denmark. A single, strong bank resolution fund could ensure that. For the euro area member states, the ESM – the European Stability Mechanism – provides extra insurance and will act as the ultimate back stop when all other funds have been depleted. Again, it is important to ensure equal treatment of participating euro area and non-euro area member states.

The banking union is scheduled to become operational from 1 January 2015.

THE SINGLE SUPERVISORY MECHANISM[1]

At present, credit institutions in the EU are supervised by national authorities in the individual member states. With the Single Supervisory Mechanism, SSM, responsibility for the most important supervisory tasks in the euro area will be transferred to the European Central Bank, ECB. This applies in relation to e.g. authorising and withdrawing authorisa-

[1] 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.

tions of credit institutions, ensuring compliance with capital and liquidity requirements, approving acquisition and disposal of qualifying holdings and ensuring observance of requirements for board members.

In practice, the ECB will perform its new supervisory role in cooperation with national supervisors. A division of responsibilities is envisaged, so that the ECB will undertake direct supervision of the largest credit institutions (with a total value of assets exceeding 30 billion euro or 20 per cent of the national GDP), while the national supervisors will supervise the remaining institutions.

From November 2014, the ECB is expected to directly supervise around 130 credit institutions, representing almost 85 per cent of total banking assets in the euro area. The remaining credit institutions (6,000 or so in the euro area) will still be subject to supervision by the national authorities, which will perform their tasks on the basis of frameworks, guidelines and instructions issued by the ECB. The methods and framework for the division of work between the ECB and the national supervisors will be laid down in detail by 4 May 2014.

In a few areas, competence will be split between the national authorities and the ECB. These include the countercyclical capital buffer and other macroprudential instruments. The national authorities will be empowered to make decisions on the use of these instruments, but the ECB will be able to apply more stringent measures, if deemed necessary.

The ECB will levy an annual supervisory fee on credit institutions to cover the costs of the ECB's supervision. The fee will be calculated on the basis of objective criteria relating to the importance and risk profile of the credit institution concerned, including its risk weighted assets. The fee will not affect the rights of national supervisors to levy fees to cover their costs.

Supervision by the ECB

The ECB is currently preparing the framework for the new single supervision. As an important element of its preparations, the ECB will conduct a "Comprehensive Assessment" – a full review and assessment of risks in the credit institutions to be supervised directly by the ECB, cf. Box 6-1.

Initially, the ECB's internal supervisory organisation will comprise of four directorates general and one secretariat. Two directorates general will supervise the largest credit institutions on a day-to-day basis. The division of responsibilities will be determined on the basis of risk exposure, complexity and business model. The third directorate general will conduct indirect supervision of smaller credit institutions still supervised by the national authorities. The fourth directorate general will oversee and ensure uniform supervision across the directorates general and perform expertise functions, such as methodology and standards develop-

ment, risk analysis, model validation, crisis management and enforcement of sanctions. It is expected that the ECB's supervisory organisation will employ around 1,000 new staff, of which around 750 will be directly involved in the supervision of credit institutions.

The national authorities will assist the ECB, both in its day-to-day supervision and in connection with on site inspections. To ensure that the ECB has the necessary local knowledge, staff will be exchanged and sent on secondment.

Before the ECB decides on a case, the relevant credit institution must be consulted. The ECB's Supervisory Board will make decisions in specific cases. One representative from each national supervisor participating in the SSM will attend the meetings of the Supervisory Board. The decisions of the Supervisory Board must be approved by the ECB's Governing Council and are regarded as endorsed unless the Governing Council objects. If the Governing Council expressly disagrees with a decision of the

REVIEW AND ASSESSMENT OF RISKS[1] Box 6-1

Before taking over the supervisory role, the ECB must carry out a review the risks of the credit institutions to be directly supervised. The purpose is to map the health of these institutions and to address any problems, so that the ECB will take over supervision of viable institutions only. The review will help to increase confidence in the institutions comprised by the SSM.

For the credit institutions in question, the review will include three elements: (1) an analysis of key risks, including their liquidity and funding situation, (2) a more detailed assessment of the quality of balance-sheet assets, and (3) a stress test. The national supervisory authorities will perform the reviews on the basis of detailed guidelines from the ECB. The ECB has hired a consulting firm to assist the ECB and the national supervisors in this respect.

The ECB's point of departure for assessing the viability of credit institutions will be a Common Equity Tier 1 capital ratio of 8 per cent of risk weighted assets. If the review shows that some institutions need to boost their capital base, this should initially be done by e.g. withholding dividends, issuing shares or selling assets. If it is not possible for the institutions to raise the capital required, national measures such as capital injections may be necessary. The European Council has urged member states to take the necessary steps in this respect. If the national measures prove to be insufficient, the European Stability Mechanism, ESM, may step in, subject to the rules agreed.

The European Banking Authority, EBA, has recommended that all EU member states, including those outside the euro area, perform similar reviews of credit institutions' risk with focus on the quality of assets. On the basis of the ECB's review and assessment, the Danish Financial Supervisory Authority will perform a similar review of the largest Danish credit institutions. The EBA and the ECB will work closely together on a stress test of the largest EU credit institutions. All findings will be published in the autumn of 2014, when the work on the stress tests is scheduled to have been completed.

[1] Source: European Central Bank, *Note: comprehensive assessment*, October 2013.

Supervisory Board, the disagreement should be resolved by a mediation panel established by the ECB.

Non-euro area member states are not represented in the Governing Council. For these member states, the decision-making procedure includes a security mechanism whereby they may choose not to observe a decision reversed by the Governing Council. In that case, the ECB may suspend or terminate the cooperation with the non-euro area member state in question.

Credit institutions will have the option to appeal decisions by the ECB to an independent administrative board under the ECB. As a main rule, an appeal will not have suspensory effect. Institutions whose appeals are not successful will be able to bring the case before the European Court of Justice.

National supervision

The smaller credit institutions will continue to have an ongoing dialogue with their national supervisory authorities, which will be responsible for on site inspections etc. Over time, supervisory practices may change in response to ECB guidelines and instructions.

Officially, the national supervisors will make decisions in cases concerning small credit institutions. However, this does not apply in relation to authorisation and withdrawing authorisation and acquisition and disposal of qualifying holdings, which will be within the remit of the ECB. The national supervisors shall consult the ECB on all major draft decisions. Decisions will be closely coordinated with the ECB. Via guidelines and instructions issued to the national supervisors, the ECB will be able to lay down the detailed frameworks for a specific decision. Appeals about decisions by national supervisors will be handled by the national appeal systems.

The ECB will monitor the national supervisors to ensure uniform supervisory practices of a high quality. In that connection, the national supervisors will have a duty to inform the ECB of their supervision on a regular basis. In addition, they should always provide any information requested by the ECB.

THE SINGLE RESOLUTION MECHANISM[1]

The proposal concerning a Single Resolution Mechanism, SRM, will establish uniform rules and a uniform procedure for the resolution of distressed

[1] Proposal for a 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 (COM(2013)520).

credit institutions within the framework of the SSM. At the same time, a Single Bank Resolution Fund is proposed, cf. Box 6-2. The proposal is currently being discussed by the European Parliament and the Council.

THE SINGLE BANK RESOLUTION FUND Box 6-2

According to the original proposal, the Single Bank Resolution Fund should have assets corresponding to at least 1 per cent of the amount of covered deposits of the credit institutions comprised (estimated at some 55 billion euro based on end-2011 data). The Fund is to be built up over a 10-year period with contributions from the credit institutions in question. This period may be extended by up to four years if disbursements during that period exceed 50 per cent of the Fund's target size. Up to 30 per cent of the contributions may be in the form of irrevocable payment commitments from the institutions in question fully backed by collateral of high-quality assets. The Fund will be able to raise loans and levy extraordinary ex post contributions on the credit institutions if its size proves to be insufficient to handle a distressed institution.

The assets of the Single Bank Resolution Fund will be available for the following purposes:

- Guaranteeing the assets and liabilities of credit institutions under resolution, their subsidiaries, bridge institutions or asset management vehicles.
- Loans to institutions under resolution, their subsidiaries, bridge institutions or asset management vehicles.
- Purchase of assets in institutions under resolution.
- Capital injections into bridge institutions or asset management vehicles.
- Contributions to institutions under resolution to replace the contributions that would have been achieved from write-down and conversion of debt into share capital ("bail-in"), where one or more creditors are excluded.
- Compensation to shareholders or creditors assessed to have suffered greater losses than they would have suffered in the event of liquidation or normal insolvency proceedings.

In addition, the Fund may use the above tools in relation to potential buyers of entire or parts of institutions under resolution.

In principle, the Fund's assets may not be used directly to absorb the losses of the distressed institution or contribute to its recapitalisation. As a main rule, that must be done via a bail-in. However, this mechanism is not expected to apply until 2018. Until then, equity capital and subordinated debt will, as a minimum, have to be written down in accordance with the EU state aid rules.

In extraordinary circumstances, the Fund may cover losses and contribute to the recapitalisation of institutions if bail-in of at least 8 per cent of total liabilities has previously taken place in a resolution situation. Contributions from the Fund may not exceed 5 per cent of the total liabilities of the distressed institution. If 5 per cent is not sufficient to cover the institution's losses, funding may be sought from alternative financing sources, such as the European Stability Mechanism, ESM, or the Resolution Fund. However, use of alternative financing sources requires that all unsecured liabilities of the institution (except covered deposits and deposits exceeding 100,000 euro from natural persons and small and medium-sized enterprises) have been fully written down or converted.

The SRM is based on the forthcoming EU rules on crisis management and resolution (the Crisis Management Directive), which are to ensure a uniform approach to crisis management and resolution of distressed credit institutions throughout the EU.

With the SRM, powers to decide to resolve distressed credit institutions are transferred from the national authorities to the European Commission. At the same time, a new EU agency will be established, the Single Resolution Board. The Commission may decide on resolution either at its own initiative or on the basis of a recommendation from the Single Resolution Board.

The Single Resolution Board

Among other things, the Single Resolution Board will prepare resolution plans and assess the resolvability of credit institutions. The national authorities may be ordered to take the necessary steps to remove any impediments to efficient resolution, e.g. by requiring changes to a credit institution's operational structures. The Resolution Board will assess when an institution meets the conditions for resolution and will prepare recommendations on resolution to the Commission.

The national resolution authorities will handle the practical aspects of the resolution. However, the execution will be monitored by the Resolution Board, which may issue direct orders to the institutions under resolution, if the national resolution authorities do not comply with the decisions made.

The original proposal envisages that the Single Resolution Board will comprise an Executive Director, a Deputy Executive Director, two members appointed by the Commission and the ECB, respectively, and representatives of the national resolution authorities. The Resolution Board will operate in two sessions: an executive session and a plenary session. In its plenary session, the Board will take decisions of a general nature; in its executive session, it will take decisions in respect of individual institutions. Decisions shall be made by a simple majority of votes. Each participating member will have one vote. When deliberating on a cross-border institution, the home authorities shall have one vote, while the host authorities shall have one vote between them. In case of a tie the Executive Director shall have the casting vote.

The Resolution Board shall have its seat in Brussels and shall initially have a staff of around 300.

Major issues being discussed

The proposal for a Single Resolution Mechanism is currently being discussed by the European Parliament and the Council. The latter has discussed potential amendments in a number of key areas, including:

- *Bail-in*. The Crisis Management Directive, which is being discussed in parallel with the SRM, requires the use of bail-in in connection with resolution from 2018. The Council has discussed whether the SRM should make bail-in a requirement already from 2015 so as to reduce the need for public funds for resolution purposes. This is particularly relevant in the phasing-in period, during which the Single Bank Resolution Fund has not yet been fully built up. The Council has contemplated postponing the SRM until 2018 if the bail-in requirement is not brought forward.
- *Back stop*. It cannot be ruled out completely that public funds may be needed for resolution purposes. The euro area member states have access to additional funds (a "back stop") via the European Stability Mechanism, ESM. Non-euro area member states do not participate in the ESM, so the Council has discussed their possibilities of participating in a single back-stop arrangement.
- *Legal basis*. It has been discussed whether Article 114 of the Treaty on the Functioning of the European Union, TFEU, may be applied for establishing the SRM, including the Single Bank Resolution Fund. The Council Legal Service has stated that in its opinion Article 114 provides a sufficient legal basis.

During the negotiations on both the SSM and the SRM, the Danish government has emphasised that the banking union should not have negative consequences for the single market, and that it should be possible for non-euro area member states to participate on equal terms with euro area member states. In addition, the government has focused on ensuring an expedient framework for the Danish mortgage-credit sector. In relation to the SSM, the ECB will have an obligation to take different business models into account, including the Danish mortgage-credit model. Denmark is working to ensure that an equivalent requirement is included in the SRM.

IMPLICATIONS FOR DENMARK AND DANISH CREDIT INSTITUTIONS

The euro area member states will automatically become part of the SSM and the SRM, while non-euro area member states may opt in by concluding an agreement with the ECB. For non-euro area member states opting in, decisions will in practice be implemented by the national authorities via instructions from the ECB. The ECB must conclude a Memorandum of Understanding, MoU, with the non-euro area member states that do not wish to join the SSM. The MoU will describe how the ECB and the national supervisors will cooperate on prudential supervision of

credit institutions operating in both participating and non-participating member states.

The government has not yet decided on Danish participation in the banking union. A separate decision-making process will take place when the government finds that it has a sufficient basis for making a decision.

If Denmark decides to participate in the banking union, Danske Bank, Nordea Bank Danmark, Nykredit, Jyske Bank and BRFkredit will be subject to direct supervision by the ECB. In addition, it would be natural for the ECB to undertake supervision of all designated SIFIs in Denmark; these are currently expected also to include Sydbank and DLR Kredit. Even if Denmark opts out, two of the largest Danish banks, Danske Bank and Nordea, will be subject to supervision by the ECB in relation to considerable parts of their euro area activities.

Danmarks Nationalbank's assessment

Irrespective of whether Denmark participates, the banking union will be of major significance to Denmark. It is essential to all EU member states that the project is a success. Financial stability in the euro area is a prerequisite for financial stability throughout the EU and has a large impact on future growth in the EU.

A well-functioning banking union requires strong confidence in the single supervisory authority. The ECB's Comprehensive Assessment, which will be carried out in the coming year, will be an important step, cf. Box 6-1. A credible review of that nature will give the credit institutions involved a solid, and in some cases much-needed, quality stamp. It is positive that the Danish Financial Supervisory Authority plans to conduct their review of the largest Danish institutions on the basis of the ECB's Comprehensive Assessment. Danmarks Nationalbank's stress test shows that the large Danish institutions come through all stress scenarios with Common Equity Tier 1 capital in excess of 8 per cent, which will be the requirement in the ECB's stress test.

Danmarks Nationalbank generally takes a positive view of the banking union currently outlined. It is an important step towards strengthening the single market for financial services and hence cross-border competition. Competition forces both credit institutions and firms to improve their skills. That is sound and good for everyone. It is important that euro area and non-euro area member states can participate in the banking union on equal terms. Otherwise, there is a risk that the single market for financial services becomes fragmented. In addition, Danmarks Nationalbank finds it essential that the banking union includes an insurance element in relation to the systemic institutions in Denmark. A sin-

gle, strong bank resolution fund could ensure that. For the euro area member states, the ESM – the European Stability Mechanism – provides extra insurance and will act as the ultimate back stop when all other funds have been depleted. Again, it is important to ensure equal treatment of participating euro area and non-euro area member states.

Appendices

Appendix 1: Population in the Report

The analyses in this report are, unless otherwise stated, based on the same institutions and groupings as in *Financial stability 2013*.[1] For banks, the analyses are based on the institutions included in the Danish Financial Supervisory Authority's groups 1 and 2 at 31 December 2012. Saxo Bank has been omitted due to its business model, however. The analyses of mortgage credit include all mortgage banks, cf. Table A1-1.

TOTAL ASSETS FOR BANKS AND MORTGAGE BANKS IN THE POPULATION AS AT 30 JUNE 2013, KR. MILLION — Table A1-1

Group	Amount	Group	Amount
Systemic banks		**Mortgage banks**	
Danske Bank	2,200,675	Nykredit Realkredit	1,218,380
Nordea Bank Danmark	583,888	Realkredit Danmark	789,484
Jyske Bank	246,546	Totalkredit	599,714
Nykredit Bank	251,212	Nordea Kredit	422,170
Sydbank	141,595	BRFkredit	219,193
Systemic banks, total	*3,423,916*	DLR Kredit	141,472
		LR Realkredit	16,566
Non-systemic banks		FIH Realkredit	265
Spar Nord Bank	75,772	*Mortgage banks, total*	*3,407,245*
Arbejdernes Landsbank	38,119		
FIH Erhvervsbank	33,714		
Vestjysk Bank	27,373		
Ringkjøbing Landbobank	17,800		
Alm. Brand Bank	17,608		
Sparekassen Kronjylland	17,015		
Sparekassen Sjælland	15,105		
Danske Andelskassers Bank	12,166		
Non-systemic banks, total	*254,672*		

Note: The total assets are stated at group level.
Source: Danish Financial Supervisory Authority.

[1] See Appendix 1 to Danmarks Nationalbank, *Financial stability*, 2013, for detailed information about the population.

Appendix 2: Stress test scenarios

The appendix provides a detailed description of the macroeconomic scenarios used in the stress test in chapter 3.

SPECIFICATION OF SCENARIOS FOR THE DANISH ECONOMY — Table A2-1

	Scenario 0	Scenario 1	Scenario 2	Scenario 3
2013				
Real growth, per cent, year-on-year				
GDP	0.3			
Private consumption	0.4			
Public consumption	0.4			
Housing investment	-1.5			
Business investment	3.0			
Public investment	-4.5			
Inventory investments (contribution to GDP-growth)	0.3			
Exports	0.9			
- of which industrial exports	1.5			
Imports	1.8			
Export market growth	2.4			
Nominal growth, per cent, year-on-year				
Private sectors disposable income	0.5			
HICP	0.6			
Hourly wages (industry)	1.7			
House prices	2.5			
Average level for the year				
Bond yield, per cent p.a.	1.6			
3-month money market rate, per cent p.a.	0.0			
Unemployment, thousands	118			
Total employment, thousands	2,729			
- of which private sector, thousands	1,739			
Labour force, thousands	2,847			
Unemployment rate, per cent	4.1			
Net borrowing/net lending, private sector, kr. billion	141			
Government budget balance, kr. billion	-28			
B.o.p. current account, kr. billion	113			
Crude oil, dollar/barrel	110			

SPECIFICATION OF SCENARIOS FOR THE DANISH ECONOMY — Table A2-2

	Scenario 0	Scenario 1	Scenario 2	Scenario 3
2014				
Real growth, per cent, year-on-year				
GDP	1.6	-0.4	-1.5	-4.4
Private consumption	1.5	-1.3	-1.2	-3.8
Public consumption	0.7	0.7	0.7	0.7
Housing investment	4.7	-7.1	-7.3	-13.5
Business investment	5.2	-5.7	1.8	-10.3
Public investment	0.3	0.3	0.3	0.3
Inventory investments (contribution to GDP-growth)	0.1	0.0	0.0	-0.2
Exports	3.5	3.6	-1.5	-4.3
- of which industrial exports	4.7	4.8	-2.9	-6.8
Imports	4.2	2.1	0.4	-3.0
Export market growth	5.3	5.3	-4.4	-9.7
Nominal growth, per cent, year-on-year				
Private sectors disposable income	3.2	1.6	0.3	-2.1
HICP	1.8	1.8	1.8	1.7
Hourly wages (industry)	2.2	2.1	2.0	1.9
House prices	2.3	-3.4	-5.6	-10.9
Average level for the year				
Bond yield, per cent p.a.	2.1	2.1	2.1	2.1
3-month money market rate, per cent p.a.	0.1	0.1	0.1	0.1
Unemployment, thousands	117	130	140	162
Total employment, thousands	2,742	2,720	2,703	2,666
- of which private sector, thousands	1,745	1,723	1,707	1,669
Labour force, thousands	2,859	2,850	2,843	2,828
Unemployment rate, per cent	4.1	4.6	4.9	5.7
Net borrowing/net lending, private sector, kr. billion	133	170	138	162
Government budget balance, kr. billion	-38	-54	-59	-79
B.o.p. current account, kr. billion	94	115	78	82
Crude oil, dollar/barrel	106	106	106	106

SPECIFICATION OF SCENARIOS FOR THE DANISH ECONOMY — Table A2-3

	Scenario 0	Scenario 1	Scenario 2	Scenario 3
2015				
Real growth, per cent, year-on-year				
GDP	1.7	0.5	0.1	-0.8
Private consumption	1.7	0.1	0.4	-0.6
Public consumption	0.7	0.7	0.7	0.7
Housing investment	2.4	-8.3	-0.4	-5.5
Business investment	4.4	-2.8	1.4	0.4
Public investment	0.9	0.9	0.9	0.9
Inventory investments (contribution to GDP-growth)	0.1	-0.1	-0.5	-0.7
Exports	3.2	3.4	1.0	-0.2
- of which industrial exports	4.9	5.3	4.9	4.3
Imports	3.6	1.9	1.0	-0.4
Export market growth	6.0	6.0	3.3	1.5
Nominal growth, per cent, year-on-year				
Private sectors disposable income	5.3	4.7	4.2	3.7
HICP	1.8	1.7	1.4	1.2
Hourly wages (industry)	2.7	2.1	1.5	0.6
House prices	2.5	-0.9	-3.6	-10.0
Average level for the year				
Bond yield, per cent p.a.	2.7	2.7	2.7	2.7
3-month money market rate, per cent p.a.	0.5	0.5	0.5	0.5
Unemployment, thousands	111	146	177	225
Total employment, thousands	2,755	2,700	2,651	2,574
- of which private sector, thousands	1,755	1,700	1,651	1,574
Labour force, thousands	2,866	2,846	2,828	2,799
Unemployment rate, per cent	3.9	5.1	6.2	8.0
Net borrowing/net lending, private sector, kr. billion	158	232	188	226
Government budget balance, kr. billion	-58	-89	-101	-134
B.o.p. current account, kr. billion	99	142	86	91
Crude oil, dollar/barrel	99	99	99	99

Appendix 3: Bank Rescue Package 6

On 10 October 2013, agreement was reached on a broad political agreement, known as Bank Rescue Package 6, on e.g. regulation of systemically important financial institutions, SIFIs, and requirements imposed on all banks and mortgage banks for more and better capital and higher liquidity.[1] In response to the agreement, the government has presented a bill, which has been submitted for consultation until 4 December 2013.[2] The legislation is expected to enter into force on 31 March 2014.

REGULATION OF SIFIs

Bank Rescue Package 6 imposes specific requirements on systemically important financial institutions, SIFIs. The agreement sets criteria for identification of SIFIs and determines a differentiated capital requirement that depends on the banks' systemic importance. This SIFI capital requirement is to be met by Common Equity Tier 1 and will be phased in gradually in the period 2015-19, cf. Table A3-1.

The SIFIs are expected to be identified for the first time no later than 30 June 2014 by the Danish Financial Supervisory Authority, and the SIFI regulation is expected to enter into force on 1 January 2015. The Danish SIFI capital requirements are intended to be in line with the requirements of other comparable countries. So follow-up will be performed regarding the final level of the Danish SIFI capital requirements by 2017 at the latest, and if it is not in line with the final level in the other comparable European countries, it will be adjusted.[3]

The SIFI capital requirement would amount to 1-3 per cent of risk-weighted assets at end-2012. Under the agreement, the following seven institutions are expected to be identified as SIFIs according to the criteria defined: Danske Bank (capital requirement of 3 per cent of risk-weighted assets), Nykredit (2 per cent), Nordea Bank Danmark (2 per cent), Jyske Bank (1.5 per cent), Sydbank (1 per cent), BRF Kredit (1 per cent) and DLR Kredit (1 per cent).

1 The agreement is available at www.evm.dk.
2 The text in the appendix is in accordance with the political agreement, Bank Rescue Package 6, and the subsequent bill.
3 According to the agreement, the comparable countries are: Sweden, Norway, the UK, Germany, France, the Netherlands, Austria and Switzerland.

PHASING-IN OF THE SIFI CAPITAL REQUIREMENT, PER CENT OF RISK-WEIGHTED ASSETS Table A3-1

Final level of the individual institutions	2015	2016	2017	2018	2019
1.0	0.2	0.4	0.6	0.8	1.0
1.5	0.3	0.6	0.9	1.2	1.5
2.0	0.4	0.8	1.2	1.6	2.0
2.5	0.5	1.0	1.5	2.0	2.5
3.0	0.6	1.2	1.8	2.4	3.0

Source: Bank Rescue Package 6 and the government's draft bill to amend the Danish Financial Business Act, etc.

SIFIs will also have to comply with a new liquidity requirement, the Liquidity Coverage Ratio, LCR[1], which will be introduced under the coming set of rules strengthening the regulation of credit institutions in the EU, CRD IV/CRR[2]. The starting point is that the SIFIs should meet the LCR requirement from 2015, but the final decision awaits the European Commission's decision in 2014 on the design of the LCR requirement. In terms of stable funding, the Ministry of Business and Growth and the Danish Financial Supervisory Authority will be tasked with preparing draft rules for this in collaboration with Danmarks Nationalbank. In addition, resolution plans are to be prepared for all Danish SIFIs by 1 January 2016. The resolution plans should make it possible to continue operation of critical functions in a SIFI, while other parts are being wound up. The resolution plans are prepared by the national resolution authority in close dialogue with the SIFI and with the participation of the Danish Financial Supervisory Authority and Danmarks Nationalbank. The Financial Stability Company will, in adjusted form, undertake the task of national resolution authority.

Other crisis management rules will not be determined until the coming EU-wide crisis management rules have been clarified. It is not the intention to wind up Danish SIFIs under Bank Rescue Package 3. The coming EU crisis management rules are expected to enter into force on 1 January 2015, and a transition from Danish rules in this area (Bank Rescue Package 3) to harmonised EU rules will have to take place at that time. The size of the crisis management buffers to be established by the individual institutions and the establishment of a resolution fund will be considered when the parties discuss the implementation of the EU crisis management rules.

1 This requirement specifies the volume of liquid assets an institution must hold to cover the net cash outflows in a 30-day liquidity stress scenario.

2 The new regulation amends the existing Capital Adequacy Directive and consists of a directive (Capital Requirements Directive IV, CRD IV) and a regulation (Capital Requirements Regulation, CRR). In the following, CRD IV/CRR is used as a generic term for the new requirements.

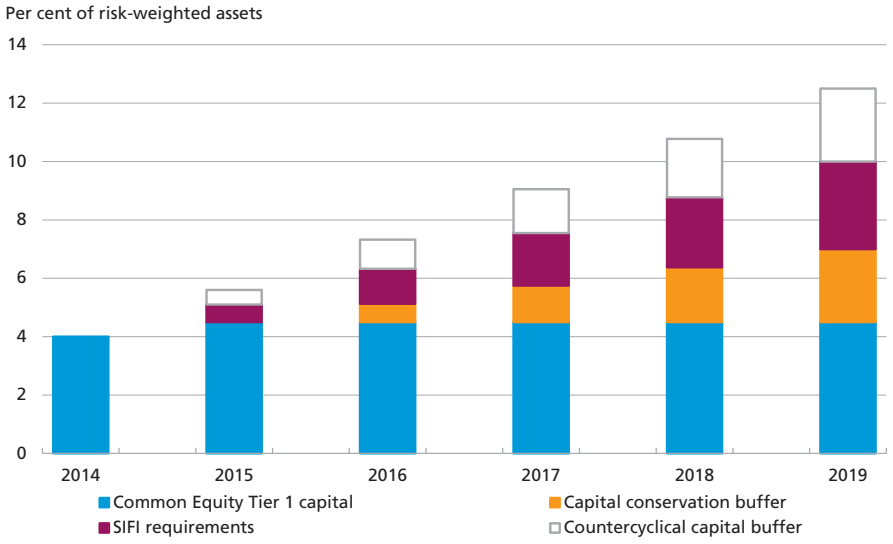
REQUIREMENTS FOR ALL BANKS AND MORTGAGE BANKS

The second element in Bank Rescue Package 6 includes enhanced capital and liquidity requirements for all Danish banks and mortgage banks in accordance with CRD IV/CRR.

According to the minimum capital requirement, total capital must still constitute 8 per cent of risk-weighted assets, but, in future, Common Equity Tier 1 capital must be at least 4.5 per cent of risk-weighted assets (after a transitional period) against 2 per cent today. In future, Tier 1 capital, including Additional Tier 1 capital, must be at least 6 per cent of risk-weighted assets (after a transitional period) against 4 per cent today.

Furthermore, a capital conservation buffer and a countercyclical capital buffer will be introduced, both to be met by Common Equity Tier 1 capital. The former will constitute 2.5 per cent of risk-weighted assets in 2019 after gradual phasing-in from 2016, cf. Chart A3-1. The framework for the countercyclical capital buffer will also be phased in gradually, as the buffer can be set at up to 0.5 per cent of risk-weighted assets in 2015, 1 per cent in 2016, 1.5 per cent in 2017, 2 per cent in 2018 and 2.5 per cent in 2019. Buffer rates defined in other EU member states/EEA countries in which Danish institutions have exposures will be approved

PHASING-IN OF CAPITAL REQUIREMENTS (COMMON EQUITY TIER 1 CAPITAL) Chart A3-1



Note: Requirement of Common Equity Tier 1 capital. The SIFI requirement depends on the degree of systemic importance, and the highest requirement is used in the chart. For Common Equity Tier 1 capital in 2014, a minimum of 4 per cent has been used in accordance with the transitional provisions during the period from the entry into force of the Act until 31 December 2014, cf. CRR.

Source: Bank Rescue Package 6 and the government's draft bill to amend the Danish Financial Business Act, etc.

at up to 2.5 per cent from 2015. Moreover, the Minister for Business and Growth can approve buffer rates exceeding 2.5 per cent in other countries.

The countercyclical capital buffer can be introduced in periods of excess credit growth.[1] The Minister for Business and Growth is responsible for activating and determining the size of the countercyclical capital buffer. In this connection the Minister for Business and Growth can ask the Danish Financial Supervisory Authority to prepare drafts for that purpose. The Systemic Risk Council can make a recommendation to the Minister for Business and Growth on activation and determination of the buffer.

When the combined buffer requirement is not met, bonus and dividend payments and interest payments on Additional Tier 1 capital will be subject to restrictions. The combined buffer requirement consists of the capital conservation buffer, the countercyclical capital buffer, a G-SIFI buffer and a systemic risk buffer.[2] The G-SIFI buffer will apply to global systemically important institutions. There are no indications that G-SIFIs will be identified in Denmark. The bill proposes that the systemic risk buffer should primarily be used to determine the SIFI buffer requirements agreed under Bank Rescue Package 6. In addition, it is proposed to make it possible to determine the systemic risk buffer for the entire sector in order to prevent and limit long-term non-cyclical systemic or macroprudential risks.

Like SIFIs, other institutions must also meet the new liquidity requirement, LCR. It will be phased in in accordance with the minimum requirement under CRD IV/CRR, i.e. gradual phasing-in from 60 per cent of the full requirement by 2015 to 100 per cent by 2018. If the final definition of LCR means that the liquidity requirements will be eased for some institutions relative to their current liquidity requirements, the existing Danish liquidity requirement (Section 152 of the Danish Financial Business Act) will be retained as a floor until the end of 2016. Institutions that already fully comply with LCR need not still comply with Section 152 requirement from 2015.

In addition, CRD IV/CRR enables member states to temporarily impose stricter requirements in selected areas than the standard requirements of CRD IV/CRR with a view to preventing the build-up of systemic risks in the financial sector. Under the agreement, the Minister for Business and Growth, as the designated authority, is responsible for any tightening of

1 For a general description of the countercyclical capital buffer, see Danmarks Nationalbank, *Financial stability,* 2012 and Mads P. Harmsen, Basel III: Macroprudential regulation by means of countercyclical capital buffers, Danmarks Nationalbank, *Monetary Review*, 4th Quarter 2010.

2 In Denmark, the SIFI requirements are implemented using the systemic risk buffer. CRD IV includes an O-SII (Other Systemically Important Institutions) buffer, which is not included in the Danish bill.

OTHER SELECTED ELEMENTS OF BANK RESCUE PACKAGE 6 Box A3-1

- Establishment of a governing board for the Danish Financial Supervisory Authority's supervisory activities. The Minister for Business and Growth appoints seven members of the governing board, including one member from Danmarks Nationalbank. The governing board will take over the Financial Council's current tasks.
- Setting up an expert group to assess the need to introduce a leverage ratio measure in Denmark. The expert group is to look into whether it would be appropriate to introduce a requirement that is higher than the 3 per cent forming the basis of international standards.
- Legal basis for previously restructured mortgage banks whose principal shareholders are funds and associations to issue shares carrying no voting rights, "non-voting shares".
- Target levels for and phasing-in of a deposit guarantee fund and resolution fund are to be discussed in connection with the parties' discussions on the implementation of the Crisis Management Directive in 2014.
- Requirement to establish internal whistle-blower schemes for financial corporations' financial regulation violations.

the requirements. Such initiatives should be submitted to the Systemic Risk Council for prior consultation.

In addition to the above-mentioned capital and liquidity requirements for both SIFIs and non-SIFIs, Bank Rescue Package 6 includes a number of other elements. Selected elements are outlined in Box A3-1.