NORGES BANK

2017

FINANCIAL STABILITY REPORT

VULNERABILITIES AND RISKS

Norges Bank
Oslo 2017

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The text is set in 9 pt Azo Sans

ISSN 1502-2749 (print)
ISSN 1503-1503-8858 (online)

Norges Bank's reports on financial stability

In the annual *Financial Stability Report,* Norges Bank assesses vulnerabilities and risks in the financial system, with a focus on the long-term, structural features of banks, financial markets and the Norwegian economy that are of importance for financial stability. Norges Bank's *Monetary Policy Report with financial stability assessment* includes an ongoing assessment of financial imbalances and the banking sector, Norges Bank's monetary policy assessments and the decision basis for the countercyclical capital buffer for banks. The report *Norway's Financial System* provides a comprehensive overview of Norway's financial system, its tasks and the performance of these tasks.

The Executive Board discussed the 2017 *Financial Stability Report* at its meeting on 9 and 25 October.

Financial stability and Norges Bank's role

Financial stability implies a financial system that is resilient to shocks and thus capable of channelling funds, executing payments and distributing risk efficiently. Financial stability is one of Norges Bank's primary objectives in its work on promoting economic stability. Norges Bank's tasks and responsibilities in this area are set out in Section 1 of the Norges Bank Act, which states that the Bank shall "promote an efficient payment system domestically as well as vis-à-vis other countries". Section 3 states that "the Bank shall inform the Ministry of Finance when, in the opinion of the Bank, there is a need for measures to be taken by others than the Bank in the field of monetary, credit or foreign exchange policy". Under the Payment Systems Act, Norges Bank is the licensing authority for interbank clearing and settlement systems.

The central bank can provide extraordinary liquidity to individual institutions in the financial sector or to the banking system when liquidity demand cannot be satisfied from alternative sources and there is a threat to financial stability. As lender of last resort, Norges Bank monitors the financial system as a whole, with particular focus on the risk of systemic failure.

The Ministry of Finance shall set the level of the countercyclical capital buffer four times a year. Norges Bank has been assigned responsibility for preparing a decision basis and providing advice to the Ministry regarding the level of the buffer. The decision basis is published four times a year as part of the *Monetary Policy Report with financial stability assessment*.

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This *Report* is based on information in the period to 28 October 2017

Executive Board's assessment

In the *Financial Stability Report*, Norges Bank assesses vulnerabilities and risks in the Norwegian financial system and points to measures that can contribute to financial stability. The Executive Board discussed the content of the *Report* on 9 October and 25 October.

So far this year, Norwegian banks' losses have been low and profitability solid. Following rising losses and write-downs of loans to oil-related enterprises in 2016, losses showed a decline in 2017. It remains uncertain whether additional restructurings of oil-related companies are necessary. Banks' Common Equity Tier 1 (CET1) capital ratio has more than doubled since the financial crisis, and banks are nearing their long-term capital targets. All banks also meet the leverage ratio requirement, which was introduced in summer.

DNB and other large Nordic banks have substantial short-term USD funding. Their short-term funding must be matched by liquid investment in line with the Liquidity Coverage Ratio (LCR). The banks amply satisfy the LCR requirement, making them less vulnerable if their funding should dry up.

More capital and liquidity has boosted banks' resilience. At the same time, there are two significant vulnerabilities in the Norwegian financial system:

- Household debt ratios are high. This increases the risk that households will reduce consumption in response to a substantial fall in house prices or a pronounced rise in the interest rate level. This may amplify a correction in the economy and result in higher losses on banks' corporate loans, including on commercial property loans.

- Property prices are at a high level, following a sharp rise in prices over several years. Commercial property prices have risen since the financial crisis, in pace with falling long-term rates. House prices rose rapidly in 2016, but since spring prices have edged down. Low house price inflation will curb household debt growth, but it will take time for vulnerabilities to diminish.

Over the past couple of years, housing construction has been high, whereas there has been a notable decline in population growth. This has led to uncertainty about further house price developments. This year's correction in the housing market may lower the risk of an abrupt and more pronounced decline further out.

Stricter capital and liquidity requirements for banks following the financial crisis are the most important measures for addressing financial vulnerabilities. In addition, the lending practice requirements for banks are helping to restrain the build-up of household vulnerabilities.

The digitalisation of financial services, in Norway and internationally, is accelerating. Norway is at the forefront of developments in its use of digital financial services, particularly within payment services. Digitalisation can enhance efficiency, improve user-friendliness and result in new services, but it can also increase the risk of operational disruptions and cybercrime, which can pose a threat to financial stability. Norges Bank closely follows developments and will in consultation with Finanstilsynet (Financial Supervisory Authority of Norway) assess possible risk-mitigating measures on a continous basis.

The stress test in this *Report* shows that the largest banks' capital buffers are sufficient to absorb losses in the event of a pronounced downturn in the Norwegian economy. Nevertheless, in such a situation, the banks may considerably tighten lending to comply with the capital requirements. This may amplify the effects on the economy. To counteract a steep decline in total credit, it may be appropriate to reduce time-varying capital requirements and allow banks to draw on the buffers in a situation where banks as a whole have large losses. It would also be appropriate to give banks time to rebuild their buffers to avoid an excessively tight credit supply.

The Government recently presented a legislative proposal on bank recovery and resolution in Norway. The proposal largely follows the EU directive on the recovery and resolution of banks and other credit institutions (BRRD) and has been submitted for consideration by the Storting (Norwegian parliament). Under the proposed regulation, the holder of bank bonds and short-term paper must be prepared to contribute towards the bank's recapitalisation if the bank experiences a sharp fall in capital and needs new capital. This can impact investors' risk perception of such debt instruments. Over time, this may have implications for the level of bank risk and contribute to reducing the vulnerability of the banking system. New legislation on deposit guarantees will be introduced together with the framework for bank recovery and resolution. The legislative proposal includes a requirement that the fee paid by each bank to the Norwegian Banks' Guarantee Fund should to a greater extent reflect the risk to which that bank exposes the Fund. In its consultation response of 5 January 2017, Norges Bank supported the main features of the proposal that has been submitted for consideration.

1 Risk outlook

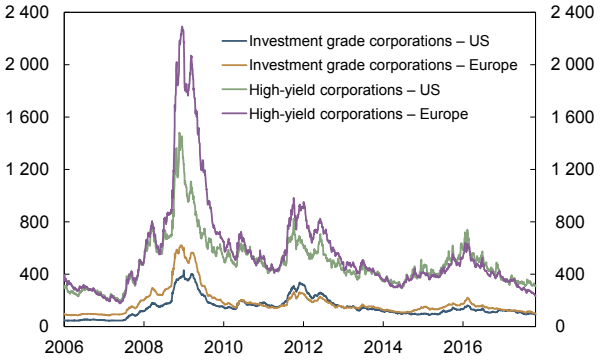
The risk outlook reflects the vulnerabilities that may increase the risk of particularly adverse outcomes. Very low interest rates and high risk-taking may give rise to financial imbalances internationally. The financial system in Norway is vulnerable to high household debt and elevated property prices. Lower house price inflation and tighter residential mortgage requirements may reduce these vulnerabilities further out. In addition, banks have increased their capital and liquidity, which has boosted their loss-absorbing capacity and their resilience to financial stress.

1.1 GLOBAL RISK OUTLOOK

Very low interest rates and high risk-taking may give rise to financial imbalances. European banks have, on the whole, improved their financial strength and a number of problem banks have been wound up or acquired by other banks without triggering appreciable contagion effects. Owing to the increased use of and dependence on IT, the financial system is vulnerable to cybercrime.

Risk premiums in the credit market are historically very low (Chart 1.1). The price/earnings ratio for US companies is at a high level (Chart 1.2). High valuation reflect low returns on risk-free investments, but may also reflect high risk-taking. Financial market volatility is historically low despite considerable economic policy uncertainty, for example in the US, and the uncertainty surrounding the outcome of the exit negotiations between the UK and the EU.

Chart 1.1 Risk premiums[1] on European and US corporate bonds. Basis points. 1 January 2006 – 27 October 2017



1) Interest rate differential against German and US government bonds.
Source: Thomson Reuters

Growth has picked up over the past year, particularly in the euro area. The projections in Norges Bank's September 2017 *Monetary Policy Report* imply that growth in the US and the euro area will remain firm and that inflation will edge up from very low levels (Chart 1.3). Forward rates show that interest rates among Norway's trading partners are expected to move up slightly, but remain fairly low for a long period.

Historically, financial imbalances have often built up in periods of solid economic growth and low real interest rates. The persistently high level of risk-taking has led to high asset prices, compressed risk premiums and higher overall debt (Chart 1.4). The global economy is vulnerable to an abrupt fall in asset prices and higher debt-servicing costs. Targeted use of macroprudential measures could reduce these vulnerabilities.

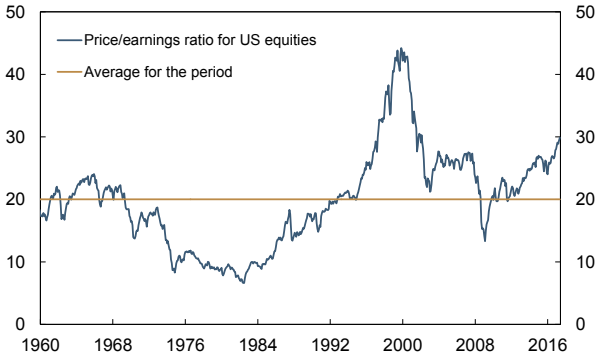
Improved financial strength, but profitability among European banks remains low

European banks have considerably improved their financial strength since the financial crisis. The average Common Equity Tier 1 (CET1) capital ratio has risen by about 5 percentage points since 2009. Over the past year, it has risen by 0.7 percentage point and stood at 14.3% at the end of 2017 Q2. The leverage ratio varied between 4.5% and 13% in 2017 Q2 (Chart 1.5). The improvement in the CET1 ratio was largely due to a reduction in the level of risk-weighted assets (Chart 1.6), reflecting both more widespread use of IRB models and a shift in lending towards low risk-weighted exposures.

Large stocks of non-performing loans (NPLs), particularly in southern Europe, are a drag on profitability, locking up capital and restraining credit provision. This may dampen economic growth. The stock of NPLs has recently diminished slightly, but there are considerable differences across countries. For European banks as a whole, about 5% of banks' loans at the end of 2017 Q2 were NPLs. In summer 2017, the EU adopted an action plan to address the problem of NPLs in the banking sector.[1] The plan outlines proposals for strengthening supervision, reforming bankruptcy law and developing secondary markets for NPLs. The European Central Bank has also recently

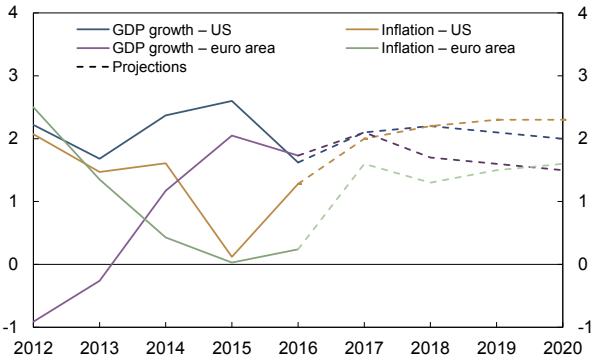
1 See press release of the Council of the European Union of 11 July 2017.

Chart 1.2 Price/earnings ratio for US equities (S&P 500).[1]
Percent. January 1960 – October 2017



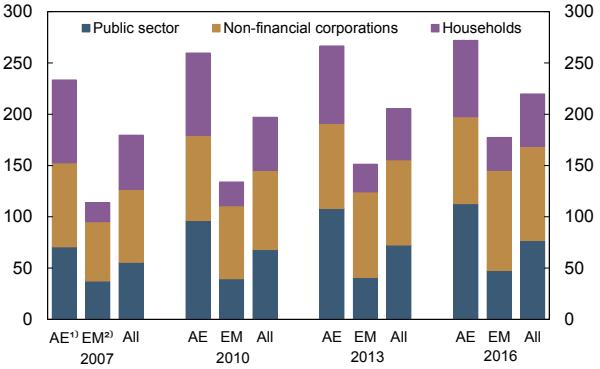
1) Shiller P/E. Price divided by a ten-year average for inflation-adjusted earnings.
Source: Robert Shiller

Chart 1.3 Growth in GDP and inflation in the US and euro area.
Percent. 2012 – 2020[1]



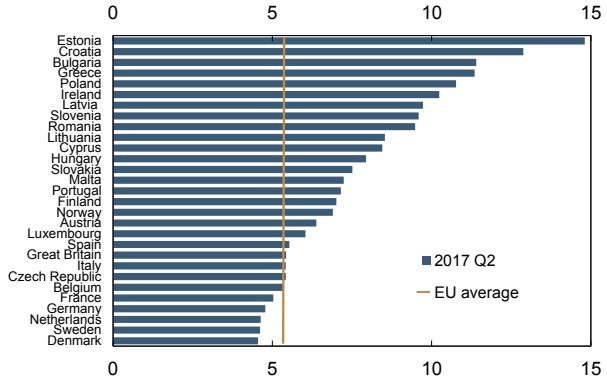
1) Projections from Monetary Policy Report 3/17 for 2017 – 2020.
Sources: International Monetary Fund (IMF) and Norges Bank

Chart 1.4 Non-financial sector debt as a share of GDP.
Percent. At year-end. 2007 – 2016



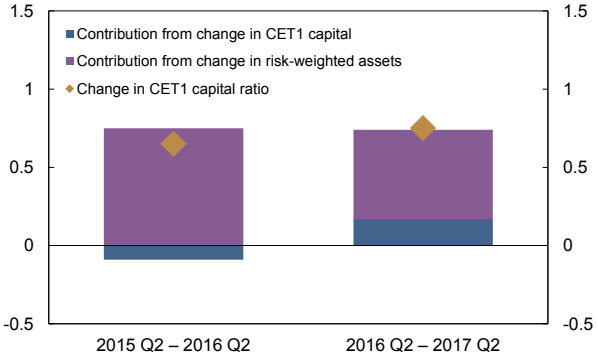
1) Advanced economies (AE).
2) Emerging markets (EM).
Sources: Bank for International Settlements (BIS), International Monetary Fund (IMF) and Organisation for Economic Cooperation and Development (OECD)

Chart 1.5 Leverage ratios for European banks. Percent. At 2017 Q2



Source: European Banking Authority (EBA)

Chart 1.6 Change in Common Equity Tier 1 (CET1) capital ratios of the largest euro-area banks.Contribution from change in CET1 capital and risk-weighted assets. Percentage points. 2015 Q2 – 2017 Q2



Source: European Banking Authority (EBA)

announced a tightening of the guidelines for NPLs to help reduce the volume of these loans.[2]

Over the past year, the authorities have dealt with a number of problem banks in Europe without triggering appreciable contagion effects. The authorities intervened in Banco Popular, one of the largest banks in Spain, in accordance with the new framework on bank recovery and resolution (see also the box on page 19). In line with the new rules, public funds were not used, while losses were absorbed by the share holders and creditors. On the other hand, three Italian banks have received government support, including Banca Monte dei Paschi di Siena, Italy's fourth largest bank, through a precautionary recapitalisation by means of an injection of public funds approved by the European Central Bank and the European Commission.

Risk of cybercrime

Greater digitalisation and the ever-growing dependence on IT systems in the financial sector increase operational risk (see Special Feature on page 21). Digitalisation also exposes the financial system to cybercrime. The number of cyberattacks is on the rise and they are becoming increasingly sophisticated. It is often the case that IT operations are outsourced to a relatively small number of key providers. Such outsourcing entails a concentration risk. If a key IT provider were to be exposed to a successful cyberattack, large parts of the financial system would be affected.[3]

A successful cyberattack can result in the loss of substantial assets and entail that customers do not gain access to payment services and account information. In addition, sensitive information could be disclosed and serious instances of cybercrime could, in a worst-case scenario, weaken the trust in banks and the financial system. Measures to prevent cybercrime are now being strengthened, in Norway and internationally.

2 From 2018, it is proposed that banks should provide full coverage for the unsecured portion of all new non-performing loans after two years at the latest and for the secured portion after seven years at the latest. See ECB press release of 4 October 2017.
3 See also 2017 *Financial Infrastructure Report*.

1.2 VULNERABILITIES IN THE NORWEGIAN FINANCIAL SYSTEM

There are two significant vulnerabilities in the Norwegian financial system: high household debt and high property prices. The degree of vulnerability is approximately unchanged since the 2016 Financial Stability Report. *Lower residential property prices and the tightening of requirements for residential mortgage loans may contribute to reducing vulnerabilities further out.*

After several years of weak economic developments in Norway, growth has picked up over the past year, partly due to low interest rates, improved competitiveness and an expansionary fiscal policy. Growth is expected to remain firm in the period ahead.[4]

The profitability of Norwegian banks has remained stable over the past year. Following higher losses and write-down of loans to oil-related enterprises in 2016, losses showed a decline in 2017. At the same time, it remains uncertain whether additional restructurings of oil-related companies are necessary. If these are extensive, banks' losses may once again increase.

High household debt

Household debt has been rising more than household income for a long time, resulting in ever higher debt

4 *Monetary Policy Report* 3/17.

KEY VULNERABILITIES IN THE NORWEGIAN FINANCIAL SYSTEM

KEY VULNERABILITIES IN NORWAY	Change since the 2016 *Financial Stability Report*
High household debt	→
High property prices	→
Banks' short-term foreign currency funding	→

There are three vulnerability levels, of which red is the highest:

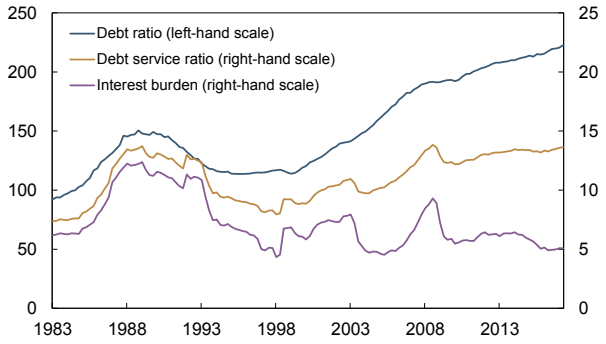
The table above shows Norges Bank's assessment of the key vulnerabilities in the Norwegian financial system. Vulnerabilities can build up gradually over time or be due to permanent structural conditions in the financial system. Vulnerabilities could amplify an economic downturn and lead to financial turbulence when the economy is exposed to large shocks.

Shocks that trigger financial turbulence or a downturn can be difficult for the authorities to predict and influence. Shocks to a small open economy like Norway will often originate in other countries.

In the table there are three vulnerability levels: yellow, orange and red, with red representing the highest level. The vulnerability assessment is based on insight into historical causes of downturns and financial turbulence. The vulnerabilities identified as key vulnerabilities may change over time. The arrows indicate whether vulnerabilities are assessed as having increased, decreased or remained unchanged since the previous *Financial Stability Report.*

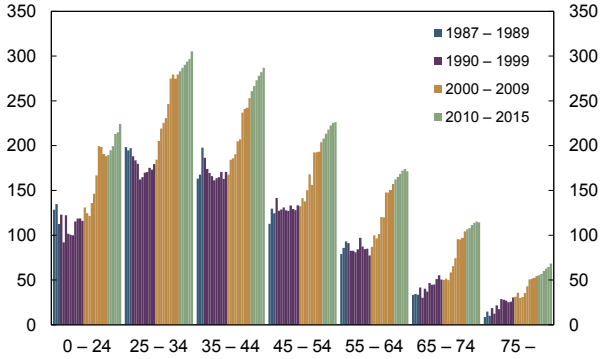
If vulnerabilities are classified as orange or red, Norges Bank will normally consider issuing advice on measures to address them. These may be measures aimed at reducing the vulnerabilities directly or increasing banking sector resilience. The authorities have already implemented measures to address the vulnerabilities summarised above (Section 1.3).

Chart 1.7 Household debt ratio, interest burden and debt service ratio.[1]
Percent. 1983 Q1 – 2017 Q2



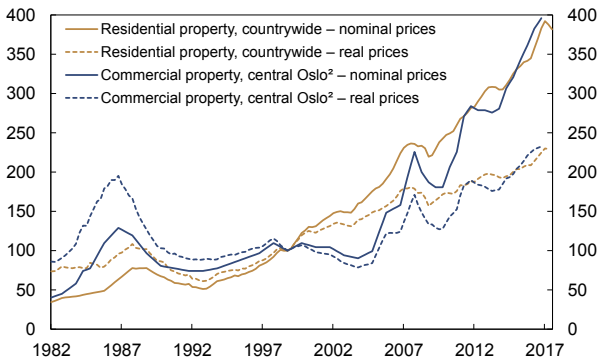
1) The debt ratio is loan debt as a percentage of disposable income. The interest burden is calculated as interest expenses as a percentage of disposable income plus interest expenses. The debt service ratio includes, in addition to interest expences, estimated principal payments on an 18-year mortgage. Disposable income is adjusted for estimated reinvested dividend income for 2000 Q1 – 2005 Q4 and reduction of equity capital for 2006 Q1 – 2012 Q3. For 2015 Q1 - 2017 Q2 disposable income excluding dividends is used.
Sources: Statistics Norway and Norges Bank

Chart 1.8 Debt as a share of after-tax income.
By age of main income earner. Percent. 1987 – 2015



Sources: Statistics Norway and Norges Bank

Chart 1.9 Residential and commercial property prices.[1]
Index. 1998 Q4 = 100. 1982 Q1 – 2017 Q3



1) Residential property prices and the GDP deflator are seasonally adjusted. Semi-annual commercial property prices are linearly interpolated. Commercial property prices to end-2016.
2) Estimated prices for centrally located high-standard office space in Oslo.
Sources: Dagens Næringsliv, Eiendomsverdi, Finn.no, OPAK, Real Estate Norway, Statistics Norway and Norges Bank

ratios (Chart 1.7). Over the past year, debt growth has moved up slightly, at the same time as growth in household disposable income has remained weak. As a result, the debt ratios has increased further from already high levels. Low interest rates contribute to keeping the interest burden low, whereas the share of income used to service interest and normal principal payments (debt service ratios) is high and has increased further over the past year (Chart 1.7). Ever since the financial crisis, the debt service ratio has indicated high systemic risk (see box on page 17).

Following strong growth in 2016, house price inflation has fallen sharply in 2017. Low house price inflation will curb debt growth, but this will take time. This is partly because the transaction prices of dwellings are still at high levels. An increase in the number of new dwellings that are sold, but must be completed and financed, is also contributing to sustaining debt growth.

Younger households in particular have a high level of debt relative to income (Chart 1.8). At the start of 2017, the regulation on residential mortgage loans was tightened (see also Section 1.3). Among other things, a new requirement was introduced that total debt, as a main rule, may not exceed five times gross income. Over time, this may mitigate household vulnerability.

High debt increases the risk of an abrupt tightening of household consumption in response to a substantial fall in house prices or a pronounced rise in the interest rate level. There is a considerable risk that many households in such a situation reduce consumption at the same time. This also applies to households that have been in the housing market for a while (see Section 4). An abrupt reduction in household consumption may reduce corporate earnings and debt-servicing capacity, which may in turn result in higher losses on banks' corporate loans.

The overall credit risk of residential mortgage loans, ie the risk of default and possible foreclosures, with potential losses for banks is low. This primarily reflects the room available to most household to reduce consumption or to use financial buffers if they are exposed to economic shocks. The rise in consumer debt[5] and increased investment in secondary homes

5 Unsecured loans.

may entail somewhat higher credit risk among banks (see Section 4).

Growth in consumer debt has remained at a high level after having risen sharply in recent years. Consumer debt accounts for a small share of total household debt, but high interest rates on such loans give households with large consumer loans a high interest burden. A number of measures have been introduced over the past year to regulate consumer loans (see Section 1.3), which may curb consumer debt in the period ahead.

High property prices

Property prices have risen rapidly over a number of years (Chart 1.9). Measured as a share of disposable income, residential property prices are close to the levels prior to the banking crisis in the early 1990s and before the financial crisis (Chart 1.10). As a share of disposable income per capita, the level is higher than before the banking crisis and the financial crisis.

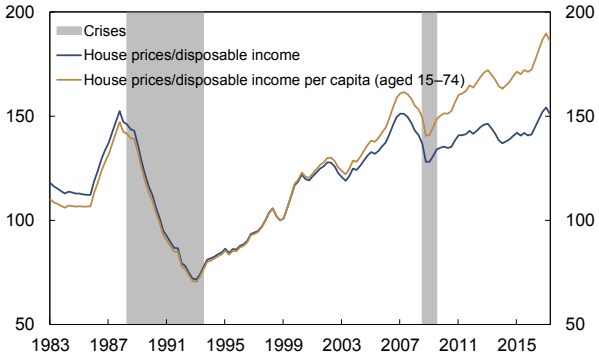
Since the turn of the year, there has been a correction in the housing market, and in recent months prices have fallen. The changes in the regulation on residential mortgage loans have probably had a dampening impact on the rise in house prices.

In general, there are large regional differences in the housing market. The twelve-month rise in house prices has slowed particularly in Oslo where prices had risen fastest, but the rise in prices has also slowed in most other large cities (Chart 1.11). Recently, regional differences have diminished.

Over the past few years, there has been a high level of housing construction in a period while population growth has shown a marked decline (Chart 1.12). This increases uncertainty regarding house price developments ahead. The correction in the housing market this year may contribute to lower the risk of an abrupt and more pronounced decline further out.

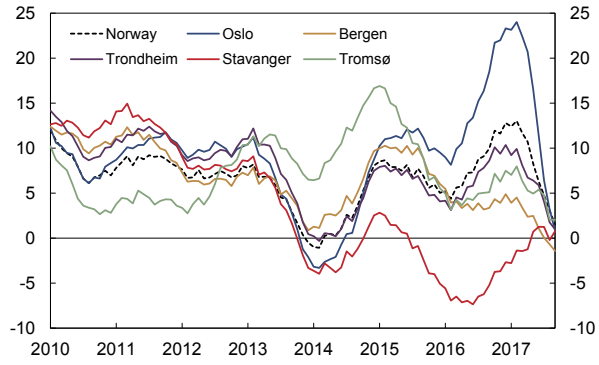
Commercial property prices in Oslo have risen over several years (Chart 1.9).[6] Since the turn of the year, office rents have risen, whereas yields have remained

Chart 1.10 House prices relative to disposable income.[1]
Index. 1998 Q4 = 100. 1983 Q1 – 2017 Q2



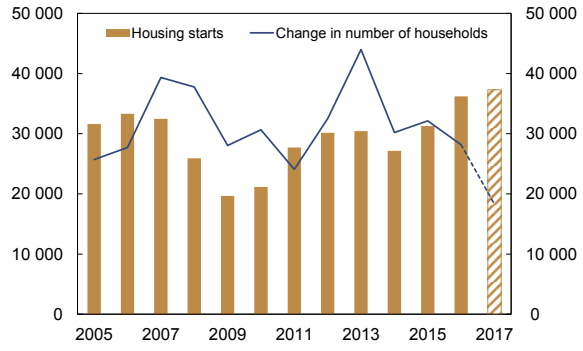
1) Disposable income adjusted for estimated reinvested dividend income for 2003 – 2005 and reduction of equity capital for 2006 Q1 – 2012 Q3. Growth in disposable income excluding dividend income is used for 2015 Q1 – 2017 Q2.
Sources: Eiendomsverdi, Finn.no, Norwegian Association of Real Estate Agents (NEF), Real Estate Norway, Statistics Norway and Norges Bank

Chart 1.11 Annual house price inflation.[1]
Percent. January 2010 – September 2017



1) The national and regional indexes are calculated using different methods and are therefore not comparable.
Sources: Eiendomsverdi, Finn.no, Norwegian Association of Real Estate Agents (NEF), Real Estate Norway, Statistics Norway and Norges Bank

Chart 1.12 Housing starts and households in Norway. Number of dwellings and change in number of households. 2005 – 2017[1]



1) Projections for housing starts and change in number of households for 2017.
Sources: Statistics Norway and Norges Bank

6 Due to changes in *Dagens Næringsliv's* rental index for offices in Oslo, selling prices for high-standard, centrally located offices were last registered in 2016 Q4. New figures are expected at the beginning of 2018.

stable.[7] Higher rents indicate that commercial property prices in Oslo have continued to increase somewhat over the past year.

There are regional differences in the office market. Over the past year, office rents have continued to fall in parts of Stavanger with a substantial oil industry presence, while they have been fairly stable in Bergen and Trondheim. Office vacancy rates have declined somewhat in Bergen over the past year, while they have been stable in Trondheim, but will probably increase ahead owing to high construction activity. Statoil's move from two large office buildings at Forus will contribute to increasing office vacancy rates in the Stavanger region next year.

There are clear similarities between the rapid rise in commercial property prices in recent years and developments in a number of European cities (see box on page 16). Falling long-term rates have probably been an important driver behind the rise in prices. Yelds are low and an interest rate increase or decrease in rents could lead to a marked decline in commercial property prices.

Historically, losses on commercial property loans account for the highest share of overall bank losses during a crisis. Norwegian banks have substantial exposures to the commercial real estate market. In the event of a pronounced downturn in the Norwegian economy, more commercial premises could remain vacant while rents fall, reducing the profitability and debt-servicing capacity of commercial real estate companies. If commercial property prices fall, banks' losses could increase substantially. In recent years, banks have increased the equity capital requirement for loans secured on office buildings in central Oslo,[8] thereby contributing to reducing the risk of losses for banks.

Banks' short-term foreign currency funding

DNB and other large Nordic banks have substantial short-term funding in USD, in the form of deposits and short-term paper. US money market funds have long been the main providers of this type of funding (Chart 1.13). In autumn 2016, US money market funds were subject to stricter regulation. Consequently, a smaller share of the funds' assets is invested short term in the banks. Other investors have replaced, to a certain extent, the loss of funding from the money market funds. A larger and more diverse group of investors may lead to a reduction in the banks' concentration and refinancing risk.

Banks' short-term funding must be matched by liquid assets in line with the Liquidity Coverage Ratio (LCR). Banks satisfy the LCR requirement by an ample margin (Chart 1.14), making them less vulnerable if their funding should dry up.

1.3 MEASURES TO MITIGATE VULNERABILITIES

The Norwegian authorities have introduced a range of measures to mitigate financial system vulnerabilities since the financial crisis. Increased capital and liquidity have boosted banks' loss-absorbing capacity and their resilience to financial stress. The requirements on bank lending practices contribute to restrain the build-up of vulnerabilities in the household sector.

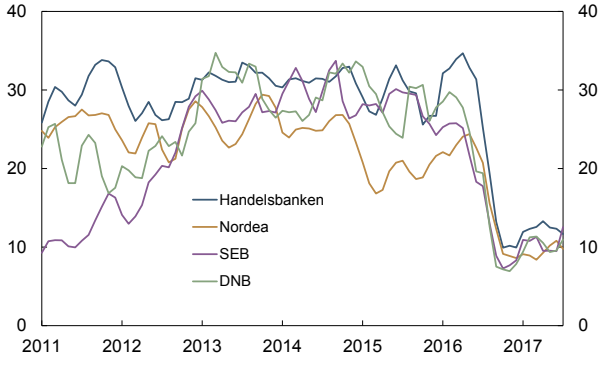
Bank's capital requirements

Banks have substantially improved their capital ratios to comply with the capital requirements that have been introduced in recent years (Table 1.1 and Chart 1.15). They have built up a substantial total buffer, consisting of a capital conservation buffer, a systemic risk buffer, a countercyclical capital buffer and a buffer for systemically important financial institutions. This has increased the loss-absorbing capacity of banks.

7 Applies to prime premises. Source: *Dagens Næringsliv* 30 August 2017

8 *UNION Bank Survey* for 2017 Q3. (In Norwegian only.)

Chart 1.13 US prime money market funds' holdings in selected Nordic banks. Three-month moving average. In billions of USD. January 2011 – September 2017



Sources: Office of Financial Research and Norges Bank

Many banks use their own models for calculating risk-weighted capital, known as internal ratings-based (IRB) models. The authorities have tightened the regulation of such models in recent years.[9] As a result, the risk weights for residential mortgage loans in IRB banks have almost doubled to over 20% since 2013.[10]

Countercyclical capital buffer

With effect from 31 December 2017, the countercyclical capital buffer rate for banks will increase from 1.5% to 2%. Norges Bank prepares a decision basis and advises the Ministry of Finance on the level of the buffer on a quarterly basis. The buffer rate is increased when financial imbalances are building up or have built up. The buffer rate can be reduced in the event of an economic downturn and large bank losses.

Capital conservation buffer

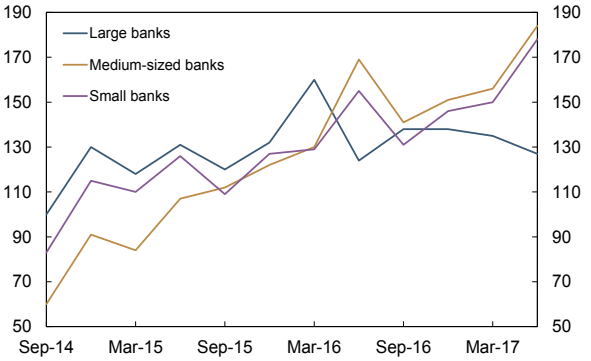
Banks are required to have a capital conservation buffer of 2.5%. According to the capital adequacy regulation (CRD IV), the buffer should be built up in periods of economic growth to absorb losses during a downturn.

Systemic risk buffer

The Ministry of Finance has set the systemic risk buffer rate at 3%. The level of the buffer is to be assessed every other year. In the National Budget for 2018, the Ministry of Finance states that the level of the systemic risk buffer reflects structural vulnerabilities in the Norwegian economy and financial system.[11] The Ministry highlights Norway's one-sided industry structure, relatively pronounced cyclical fluctuations, high levels of household debt, housing market pressures and a closely interconnected financial system dependent on foreign capital.

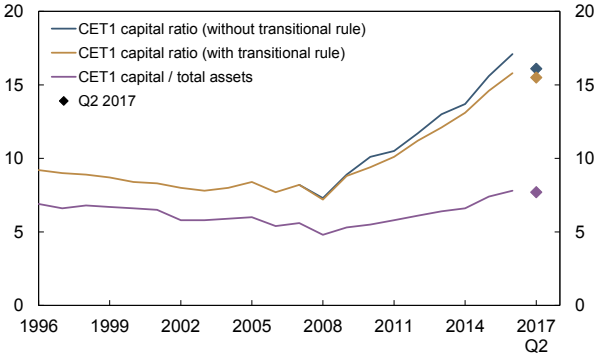
In addition, banks' exposure to the property sector is an important structural vulnerability. Residential mortgages account for almost half of banks' total lending (Chart 1.16). Over half of banks' lending to the corporate sector is to commercial property and con-

Chart 1.14 Liquidity Coverage Ratio (LCR). Norwegian banks. Weighted average. Percent. 2014 Q3 – 2017 Q2



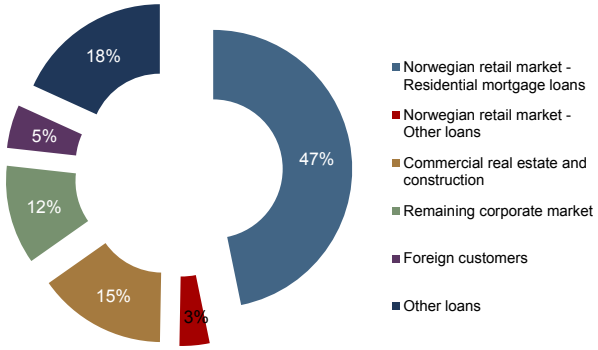
Source: Finanstilsynet (Financial Supervisory Authority of Norway)

Chart 1.15 Common Equity Tier 1 (CET1) capital ratio and CET1 capital as a share of total assets. Norwegian banks.[1] Percent. 1996 – 2016 and 2017 Q2



1) Consolidated figures are used for banks that are banking groups. For the other banks, parent bank figures are used. Nordea is removed from the series as it was converted into a branch in 2017.
Source: Finanstilsynet (Financial Supervisory Authority of Norway)

Chart 1.16 Lending[1] by all banks and mortgage companies. Percent. At 30 June 2017



1) Total lending of NOK 5 104bn.

9 In 2014, the Ministry of Finance stipulated that banks should use an LGD of at least 20% on residential mortgages. In 2015, Finanstilsynet issued new requirements for calculating PD for residential mortgages. Finanstilsynet has also tightened the requirements for LGD models for corporate exposures.
10 The effect of higher risk weights on capital requirements is limited because most IRB banks are bound by the transitional rule (Basel I floor).
11 See Chapter 2 of Report to the Storting No. 1 (2017–2018). *National Budget 2018* (in Norwegian only).

struction. Commercial property loans have historically been a source of large bank losses during a crisis.

Buffer for systemically important financial institutions

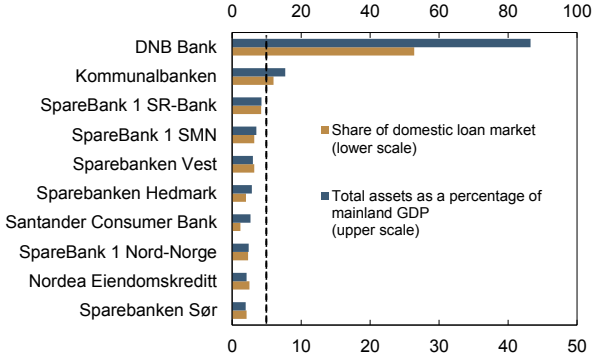
Systemically important financial institutions in Norway are required to hold an extra capital buffer of 2%. Two institutions have been classified as systemically important: DNB ASA and Kommunalbanken AS.[12] Both hold total assets equivalent to more than 10% of mainland GDP and have more than a 5% share of the retail lending market (Chart 1.17).[13]

Pillar 2 requirements

The requirements mentioned above are so-called Pillar 1 requirements. In addition, there are CET1 requirements under Pillar 2 that are to cover risk that is not, or is only partially, covered under Pillar 1 requirements. Pillar 2 requirements apply on an individual basis and depend on Finanstilsynet's assessment of risk at the relevant bank. Pillar 2 requirements consist of a formal requirement that is based on an individual decision and in addition an assessment of the size of a margin in the form of CET1 above the total requirement. Pillar 2 requirements vary across banks (Chart 2.6 in Section 2).

12 On 2 January 2017. Nordea Bank Norge ASA merged with its Swedish parent bank and its activities in Norway are now organised as a branch of Nordea Bank AB. The bank is therefore no longer designated as a systemically important financial institution in Norway (see box on page 26).
13 For a further description of the criteria, see *Forskrift om identifisering av systemviktige finansinstitusjoner* [Regulation on designating systemically important financial institutions] (in Norwegian only).

Chart 1.17 Criteria for systemically important financial institutions.[1]
Total assets as a share of GDP and share of domestic loan market.
Large banks in Norway. Percent. At end-2016



1) Required level (10% for total assets as a share of GDP and 5% market share) indicated by dashed line.
Source: Finanstilsynet (Financial Supervisory Authority of Norway)

Leverage ratio requirement

While the capital requirements described above depend on the risk weights of banks' exposures, leverage ratio requirements do not take into account different risks. Leverage ratio requirements are to function as a lower limit that supplements the risk-weighted capital requirements. A Tier 1 leverage ratio requirement was introduced with effect from 30 June 2017.

All banks must have a buffer of at least 2% above the minimum requirement of 3%, and an additional buffer of 1% applies to systemically important financial institutions.

Liquidity ratio requirement

The Liquidity Coverage Ratio (LCR) specifies the minimum quantity of high-quality liquid assets banks must hold to fulfil their payment obligations through a 30-day period of financial market stress. LCR requirements were introduced for Norwegian banks at the end of 2015. Systemically important financial institutions in Norway are already required to meet the LCR requirement in full (100%), while the requirement for other banks in Norway will follow the timetable laid down in the EU regulation (100% from end-2017). An LCR requirement for individual currencies was introduced in early summer (see Section 3 "Bank funding").

The LCR reduces the vulnerability of the banking system as a whole. In a period of stress, banks can draw on their liquidity portfolio. This can help reduce the pressure on banks to reduce lending. In the event of market stress, a high LCR among systemically important financial institutions can also ease liquidity problems in the banking system.

Requirements for bank lending practices

The Norwegian authorities have issued requirements for loans secured on dwellings and guidelines on prudent consumer lending practices.

Loans secured on dwellings

Finanstilsynet issued requirements for loans secured on dwellings in 2010 (Table 1.1). In summer 2015, the requirements were laid down in a regulation. After a period of rapidly rising house prices and high household credit growth, the requirements were tightened

Table 1.1 Measures to mitigate vulnerabilities in Norway

Category	Instrument	Introduced	Current level
Capital requirements	Countercyclical capital buffer	2015	1.5%
	Conservation buffer	2013	2.5%
	Systemic risk buffer	2013	3%
	Buffer for systemically important financial institutions	2015	2%
	Sectoral capital requirement	2014	Risk weight on residential mortgages doubled
	Pillar 2 requirements	2007	Varies across banks
	Leverage ratio requirement	2017	3% minimum requirement + 2% buffer
Liquidity requirements	Liquidity Coverage Ratio (LCR) requirements	2015	100% for systemically important banks, 80% for others (100 from 31 December 2017)
		2017	LCR requirements in individual currencies
Lending practice requirements[1]	Debt-to-income, DTI	2017	5 times gross income
	Tolerate higher interest rate (stress test)	2010	5 percentage points
	Loan-to-value, LTV	2010	85%[2]
	Principal repayment requirements	2010	2.5% annually with LTV above 60%

1 Up to 10% of the value of new loans can deviate from one or more of the requirements. For loans secured on dwellings in Oslo, the limit is 8% or up to NOK 10m.
2 The requirement is 60% for loans secured on secondary homes in Oslo.

Sources: Finanstilsynet and Ministry of Finance

in January 2017. The new requirements apply until summer 2018.

The regulation sets out requirements for the borrower's debt-servicing capacity, maximum debt-to-income (DTI) and loan-to-value (LTV) ratios. In addition, principal repayment requirements apply if LTV is above 60%. Banks have some flexibility with regard to these limits, a so-called speed limit.

The requirements were introduced to promote a more sustainable housing market. The requirements are assumed to have a dampening impact on household borrowing, particularly among households that are vulnerable to interest rate increases or a fall in house prices and income. The requirements could help reduce the vulnerability of the household sector further out.

Consumer loans

In summer, Finanstilsynet issued guidelines on prudent consumer lending practices.[14] Consumer loans only account for 3% of total household debt, but growth in such loans has been high recent years. The guidelines include requirements on debt-servicing capacity, maximum total DTI and principal repayments. The requirements are primarily aimed at promoting consumer protection, but also solid financial institutions. New regulations on credit card invoicing and marketing and a new law on a debt register for unsecured credit are also measures that have recently been introduced to regulate consumer loans.

Regulation on bank recovery and resolution

In June, the Government presented a legislative proposal on bank recovery and resolution in Norway. The bill largely follows the EU Directive on the Recovery and Resolution of Banks and other credit institutions (BRRD) and has been submitted for consideration by the Storting (Norwegian parliament) (see box on page 19). Under the proposed regulation, holders of bank bonds or short-term paper must be prepared to contribute towards the bank's recapitalisation if the bank experiences a sharp fall in capital and needs fresh capital. This may impact investors' risk perception of such debt instruments. Over time this may have an effect on banks' risk profiles and reduce banking sector vulnerabilities.

14 See Finanstilsynet's press release of 7 June 2017.

DRIVING FORCES BEHIND EUROPEAN COMMERCIAL PROPERTY PRICES PRIOR TO A SHARP FALL IN PRICES

A strong rise in commercial property prices has often preceded a substantial fall in these prices. In recent years, commercial property prices have increased substantially in a number of European cities, in pace with falling long-term interest rates. Historically, only on a few occasions has a strong rise in commercial property prices prior to a substantial fall in these prices coincided with a marked fall in the risk-free interest rate. Current yields of return are at low levels, and an interest rate increase or decrease in rents could lead to a substantial fall in commercial property prices.

Commercial real estate is the sector where banks have historically incurred the largest losses during a crisis.[1] High commercial property prices represent a serious vulnerability in the Norwegian financial system (see box on page 9).

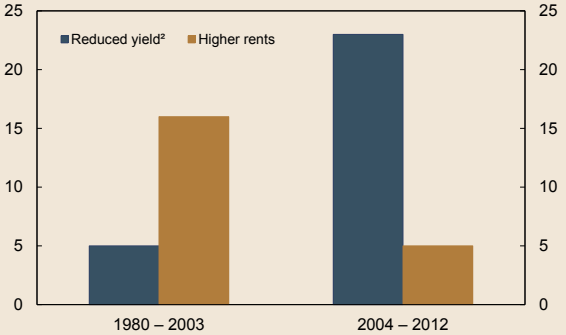
Based on commercial real estate statistics for 58 European cities, we find price characteristics that recur in the period before and after peaks.[2] For a number of the cities, the statistics date back to the 1980s. Commercial property prices for each city are decomposed into rental income and yield[3]. The most important findings are:

- The rise in commercial property prices has been more pronounced prior to a substantial fall in prices than prior to a moderate fall.[4] On average, prices have risen by approximately 85% prior to a substantial fall, while prices have risen by approximately 20% before a moderate fall.[5]
- As from 1980 and up to 2003, the increase in commercial property prices prior to substantial falls in prices was primarily driven by higher rents (Chart 1.18).
- As from 2004 and up to 2012, the increase in commercial property prices prior to substantial falls in prices was primarily driven by falling yields. In this period, even though the yield fell, the risk-free interest rate remained fairly stable (Chart 1.19). This suggests that factors other than the risk-free interest rate were the driving forces behind the decrease in yields.

In recent years, commercial property prices have increased considerably in Oslo and in a number of other European cities, but so far there has been no substantial fall in prices.[6] Commercial property prices have primarly increased and, this time, this increase probably reflects the fall in the risk-free interest rate (Chart 1.19). In the data set, there are only a few cases when a substantial rise in commercial property prices prior to a substantial fall has coincided with a marked fall in the risk-free interest rate. Current yield are at low levels, and an interest rate increase or decrease in rents could lead to a substantial fall in commercial property prices.

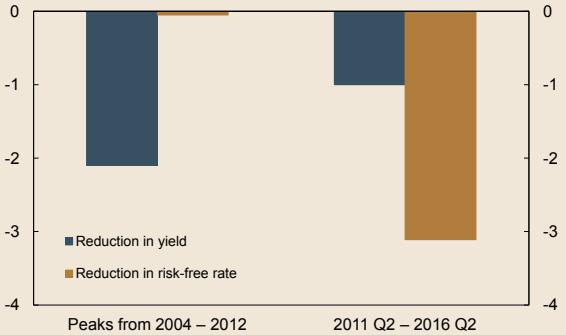
1 See Kragh-Sørensen, K. and H. Solheim (2014) "What do banks lose money on during crises?" *Staff Memo* 3/2014. Norges Bank.
2 The analysis will be documented in Hagen, M. and F. Hansen "Cyclical developments in commercial real estate prices", *Staff Memo* (forthcoming), Norges Bank.
3 The yield can be decomposed into required rate of return, expected increase in future rental income and other factors.
4 A fall in commercial property prices is considered to be substantial when it exceeds 20%.
5 The rise in prices is measured from five years before and up to a peak.
6 The analysis is based on figures up to and including 2016 Q2.

Chart 1.18 The main driver behind the rise in prices before peaks.[1]
Number of peaks. 1980 – 2012



1) Based on data for rents, yield and prices for 58 European cities. Peaks are price maxima followed by a fall of 20% or more.
2) Yield is used as an indicator of cost of capital.
Sources: CBRE Group and Norges Bank

Chart 1.19 Average reduction in yield and risk-free rate.[1]
Percentage points. 2004 – 2012 [2] and 2011 Q2 – 2016 Q2



1) Based on data for rents, yield and prices for 58 European cities.
2) From five years before and until peak. Peaks followed by a correction in prices of more than 20%.
Sources: CBRE Group and Norges Bank

A HEATMAP FOR MONITORING SYSTEMIC RISK

Norges Bank has developed a ribbon heatmap to monitor a broad range of indicators that can signal the build-up of systemic risk in the Norwegian financial system. The heatmap suggests that risks have abated in some segments since the financial crisis in 2008. However, it continues to show high property prices, elevated levels of household debt service, large exposures of banks to real estate and a rising share of credit provided by non-bank institutions. These risks warrant close monitoring.

The multitude of risks and vulnerabilities that exist in a financial system necessitates the monitoring of a broad set of indicators. The heatmap is constructed to provide a visual summary of developments in a wide range of financial vulnerabilities in Norway.[1] The objective of the heatmap is not to predict the timing of a crisis per se but to identify underlying vulnerabilities that may predispose the financial system to a crisis. Moreover, the heatmap aims to primarily measure cyclical or time-varying movements in vulnerabilities, and to a lesser extent vulnerabilities associated with structural aspects of the financial system.

Structure of the heatmap
About forty indicators are organised around three main classes of vulnerabilities and several components that fall under each:

- **Risk appetite and asset valuations:** The heatmap tracks measures of asset valuations in the housing, commercial real estate and equity markets. Bond spreads as well as bank lending margins are used to signal changes in risk appetite. Under the global financial cycle component, global indicators of risk appetite such as the VIX index are included.

- **Non-financial sector imbalances:** The heatmap includes a variety of indicators capturing vulnerabilities related to the ability to service debt, increases in leverage and high credit growth. These vulnerabilities can amplify the effects of a fall in income or an increase in interest rates, generating defaults or a substantial cutback in demand by households and corporate sector.

- **Financial system vulnerabilities:** The heatmap includes indicators of vulnerabilities in the banking system related to growth in assets and low equity ratios, exposure to liquidity or funding risks, and increases in connectedness and concentration. A separate component is also included to reflect developments in the non-bank financial system[2] for a more comprehensive assessment of the financial cycle.

The heatmap indicators are standardised to measure each indicator's level relative to its own movements over the sample period. The standardised indicators are mapped into a common colour coding scheme, where a green (red) colour reflects low (high) levels of vulnerability relative to the level of a given indicator over the relevant sample.[3] Composite indicators are constructed by taking the average of individual standardised indicators under each component, and then in turn standardising these averages.[4]

1 For a detailed discussion of the heatmap and the individual indicators, see Arbatli, E. C. and Johansen, R. M. (2017) "A Heatmap for Monitoring Systemic Risk in Norway", Forthcoming Norges Bank *Staff Memo*.
2 The non-bank financial system includes money market funds, other mutual funds, finance companies, state lending institutions, insurance companies and pension funds.
3 It is important to note that the vulnerability signaled by an indicator only depends on the level of the indicator over a given sample and should therefore be interpreted with caution.
4 Indicators are standardised on the basis of their empirical cumulative distribution functions using both the full sample (non-recursive) and expanding samples (recursive). The recursive method is best suited for evaluating the early warning properties of indicators in real-time, while the non-recursive method allows for a more accurate comparison of developments in indicators over time.

Developments in the heatmap

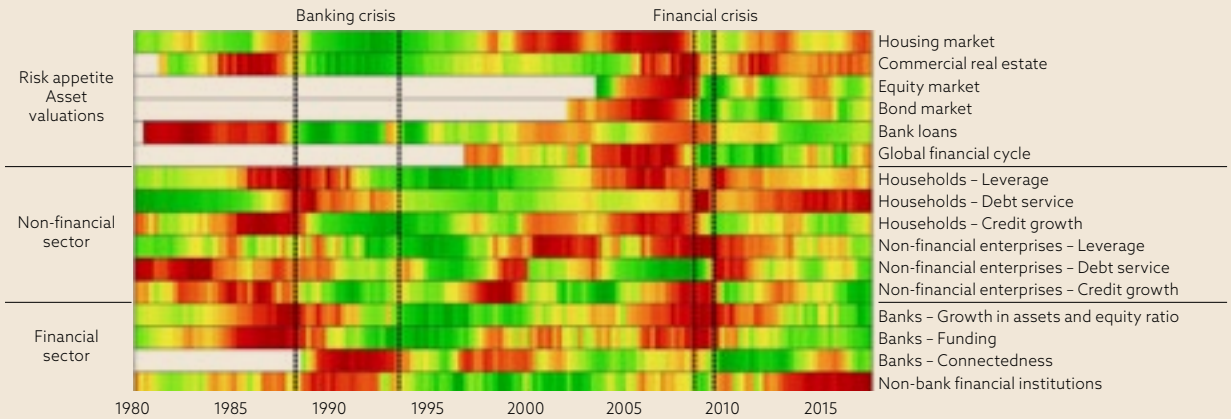
The heatmap provides useful insights on the evolution of financial stability risks in Norway over time (Chart 1.20).[5] Many components of the heatmap were elevated prior to the banking crisis of around 1990 as well as the financial crisis in 2008. Elevated property prices, high risk appetite and a build-up of risks in the non-financial private sector were observed leading up to these crises. Banking system indicators showed an increase in funding risk.

Since the global financial crisis, the heatmap has signalled lower risk in some segments, including the non-financial corporate sector and banks' exposure to funding liquidity risk. However, several components continue to signal vulnerabilities:

- Risks in the housing market have increased again in recent years, driven by a sharp increase in house prices and strong housing investment. While the recent fall in house prices has redused risks somewhat, house prices relative to disposable income remain high. Commercial property prices have also remained elevated.
- Several indicators, in particular the high debt service ratio, signal vulnerabilities in the household sector.
- Banks' connectedness has increased following the crisis, reflecting higher exposures to other Norwegian and foreign financial institutions. However, there are signs that some of these risks have receded more recently. Banks' exposure to real estate, on the other hand, signals higher risks.
- Potential risks related to the non-bank sector have also increased on the back of strong growth in credit to the private sector from non-bank financial institutions—albeit from relatively low levels. There was also an increase in the assets of non-bank finacial institutions relative to GDP.

5 In the chart, the full sample (non-recursive) method is used. Heatmaps using the recursive approach with expanding samples are presented in the forthcoming *Staff Memo* on the heatmap for monitoring systemic risk to highlight the early warning properties of indicators.

Chart 1.20 Heatmap: composite indicators 1980 Q1 – 2017 Q2



Sources: BIS, Bloomberg, Dagens Næringsliv, DNB Markets, Eiendomsverdi, Finn.no, Norwegian Association of Real Estate Agents (NEF), OECD, OPAK, Real Estate Norway, Statistics Norway, Thomson Reuters and Norges Bank

NEW REGULATORY FRAMEWORK ON RECOVERY AND RESOLUTION IN THE BANKING SECTOR

The Government's legislative proposal on crisis management in the banking sector aims to reduce the likelihood that the authorities will have to bail out a failing bank using taxpayer funds. The legislative proposal proposes to retain the deposit guarantee limit of NOK 2m per depositor per bank. Non-guaranteed deposits from private individuals and small and medium-sized enterprises will be given higher priority than other debt.

The EU directive on the recovery and resolution of banks and other credit institutions (BRRD) and the EU Deposit Guarantee Directive are currently being transposed into Norwegian law. In June, the Government proposed a statutory amendment[1] based on the two EU directives and the Banking Law Commission's report and the related consultation responses[2]. The legislative proposal has been submitted for consideration by the Storting (Norwegian parliament).

A main tenet of the legislative proposal is that if a bank is failing, the bank's shareholders and then any creditors must bear the losses and contribute towards the bank's recapitalisation. In principle, taxpayer funds must not be used, as many governments did during the financial crisis and during the banking crisis in Norway of the early 1990s. Under prevailing law, it is not possible, in practice, to impose losses on creditors without closing the bank.

It is proposed that a separate unit of Finanstilsynet (Financial Supervisory Authority of Norway) will be appointed as the resolution authority in Norway, but the Ministry of Finance will decide whether a bank should be subject to resolution.

The legislative proposal contains a number of important changes to the crisis management framework in Norway.[3] Some of the most important are:

- Bail-in will entail that if a bank loses all or a substantial part of its equity, part of the bank's debt must be converted into new equity capital to recapitalise the bank. If the bank has lost more than its equity, the bank's liabilities must be written down until all losses are absorbed. Guaranteed deposits must be excluded from the bail-in procedure. Conversions and write downs must be made by the resolution authority and should be done without the bank closing and without core business coming to a halt.

- A new creditor hierarchy is proposed. Under the current regulatory framework, almost all debt, including guaranteed deposits, is so-called non-preferred debt. This means that everything has equal priority.[4] The legislative proposal proposes depositor preference, whereby deposits that are not covered by the deposit guarantee, but are held by individuals and small and medium sized enterprises will have higher priority than other non-preferred debt, such as bond and short-term paper debt. However, guaranteed deposits have higher priority than non-guaranteed deposits (see Table 3.1 in Section 3).

1 See Proposition to the Storting no. 159 L (2016–2017) (in Norwegian only).
2 See Directive 2014/59/EU *Bank Recovery and Resolution Directive (BRRD),* Directive 2014/49/EU *Deposit Guarantee Scheme Directive (DGSD*), NOU 2016:23 *Innskuddsgaranti og krisehåndtering i banksektoren* [Deposit guarantee and crisis resolution in the banking sector] (in Norwegian only) and consultation on Report no. 30 of the Banking Law Commission.
3 See also the 2013 *Financial Stability Report*, Vale (2014) "Kriseløsing av banker ved hjelp av bail-in – momenter ved innføring I Norge" [Bank resolution with the aid of the bail-in tool – introduction in Norway in brief], *Staff Memo* 12/2014 (in Norwegian only), Norges Bank and Nicolaisen (2015) "Should banks be bailed out?" Speech at the Norwegian Academy of Science and Letters, Oslo.
4 Estate management costs, earned but unpaid salary and taxes and duties already incurred are preferred debt and have higher priority than all non-preferred claims.

- Under certain conditions, the resolution authority should be able to establish a resolution financing arrangement to cover some of the losses or inject new capital.[5] However, funds from the resolution financing arrangement cannot be used until at least 8% of the bank's total liabilities have been written down or converted to equity.

- If the use of resolution tools cannot prevent significant negative effects on the financial system, the Government should be able to inject capital into the failing bank, provided that at least 8% of the bank's total liabilities have been bailed in. Government ownership must be temporary and not in breach of the EEA rules on public financial assistance.

- For banks that are deemed to be too important to close down the resolution, authority must draw up a resolution and recovery plan. This is to facilitate swift recapitalisation, without complications. The plan must also specify Minimum Required Eligible Liabilities (MREL), (see box on page 40).

The Government suggests that not all banks should be subject to resolution measures as described in the rules above. Exceptions can be made, for example for smaller banks where closure is not expected to threaten financial stability. The Ministry of Finance should then be able to decide to place the bank under public administration. This will mean that the bank is effectively closed and the deposit guarantee fund must pay out the bank's guaranteed deposits within seven business days.

It is proposed that the deposit guarantee scheme continues largely unchanged, but with a more explicit liquidity guarantee for covered deposits. The deposit guarantee fund will be obliged to make guaranteed deposits available to depositors within seven business days. The Government proposes that the deposit guarantee limit of NOK 2m per depositor per bank is retained.

During the banking crisis in the early 1990s, the deposit guarantee funds of the time intervened several times with capital or guarantees for failing banks. There is a clearly higher threshold for such intervention in the legislative proposal. This is due to a combination of two factors: first, the framework will introduce an explicit statutory requirement that the expected costs of such a measure must be lower than the estimated cost to the fund of compensating the depositors.[6] In addition, guaranteed deposits have higher priority in the creditor hierarchy than non-guaranteed deposits and ordinary non-preferred debt.

According to the legislative proposal, each bank's fee to the deposit guarantee fund should be determined by the Norwegian Banks' Guarantee Fund and designed to better reflect the risk to which the bank exposes the Fund, see also a discussion of the financing of consumer credit banks in Section 3.

In its consultation response of 5 January 2017, Norges Bank supported the main features of the proposal which is now under consideration.

5 See Sections 20-52 and 20-53 of the bill (in Norwegian only). Under the bill, it is proposed that the funds in the resolution financing arrangement are to come to at least 1% of the banks' guaranteed deposits. Upon the establishment of the arrangement, 55% of the existing funds in the Norwegian Banks' Deposit Guarantee Fund must be transferred to the resolution financing arrangement. Furthermore, banks are required to pay an annual risk-based fee. It is proposed that the new financing arrangement will be managed by the Norwegian Banks' Guarantee Fund.

6 Under the current rule, the minimum cost principle is only referred to in the articles of association of the Norwegian Banks' Guarantee Fund as a factor which should be given considerable emphasis.

INCREASE IN DIGITALISATION AND FINANCIAL STABILITY

The digitalisation of financial services is accelerating, both internationally and in Norway. Norway is at the forefront of developments in its use of digital financial services, particularly within payment services. Digitalisation can enhance efficiency, improve user-friendliness and result in new services, but it can also increase the risk of operational problems and cybercrime, which is a source of growing concern for the Norwegian authorities.

Financial technology (fintech) is a wide term encompassing a range of technological innovations in the financial sector and is not a new phenomenon. Online banking, BankID, contactless payments, Vipps and algorithmic trading are examples of fintech innovations used extensively in Norway today. What is new is the speed of developments. International investments in fintech companies have increased five-fold in the period 2013–2016[1], and in Europe, the investments were doubled between 2017 Q1 and Q2.[2]

Fintech developments, both internationally and in Norway, have attracted more attention from the authorities.[3]

Effects of digitalisation

Technological innovations can facilitate faster and more cost-effective financial transactions. At the same time, such developments can increase risk in certain areas.

Many fintech providers base their services on large quantities of data, which may be of high financial value. This sets strict personal privacy and technical solution requirements. Application errors, operational faults or targeted attacks can result in large amounts of sensitive customer data being exposed involuntarily. Targeted attacks can also lead to theft of market-sensitive information, which can then be manipulated and distributed.

1 See Financial Stability Board (FSB): "Financial Stability Implications from Fintech" 27 June 2017.
2 See KPMG (2017) "The Pulse of Fintech Q2 2017. Global Analysis of Investment in Fintech" 1 August 2017.
3 See for example "Risk and vulnerability analysis" 2016. Finantilsynet and Financial Stability Board: "Financial Stability Implications from Fintech" 27 June 2017.

The emergence of services that make it easier to compare the prices of banking services and products, as well as making it easier to change banks, can promote competition between financial services providers and give customers better and cheaper banking services. The revised Payment Services Directive (PSD2), to be introduced in January 2018, may lead to further innovation, competition and development of payment services.[4] The Directive permits new market players to receive access to existing market players' customer relationships/services. At the same time, the requirements in the directive contribute to ensuring that developments take place within limits that safeguard security in the payment system.

Banks' liquidity risk may increase when it becomes easier to change banks on account of potentially less stable deposits. New market players offering payment and account information services may contribute to increasing competition, but they could also have a negative effect on banks' earnings.

There has been a rising tendency in several countries to use alternative Internet-based financing platforms, such as crowdfunding. Alternative financing platforms can reduce credit and concentration risk in banking systems because some lending is spread across a greater number of market participants outside the banking system. At the same time, more accessible credit can increase overall debt in the economy, thereby augmenting credit risk outside the banking system. As these financing platforms are outside traditional regulated banking operations, the risk is amplified. In Norway, the number of such new market participants continues to increase, primarily within Lending-based Crowdfunding (LBC), but is still very small.

Both traditional financial undertakings and fintech providers are exploring possible uses of Distributed Ledger Technology (DLT)[5], upon which Bitcoin is based. This technology is expected to drive digital-

4 See also *Norway's Financial System* 2017 and Financial Infrastructure 2017.
5 A technology based on a decentralised and synchronised databases, made up of individual nodes in a network, which is geographically dispersed across countries, institutions or authorities, individuals etc. There is no central administrator or central data storage.

isation in the financial sector even further and can among other things be used for securities transactions and cross-border money transfers. Some central banks have also considered whether DLT can be used in the interbank settlement system.[6]

On account of the increase in digitalisation and the decline in cash transactions, a number of central banks[7], including Norges Bank[8], are conducting studies of electronic central bank money.

A number of finance providers use the same network solution for their services and many outsource the operation of some of these services to a limited number of external and specialist suppliers. External suppliers can offer more robust solutions and consequently reduce operational risk. At the same time, this increases systemic concentration risk. If a key supplier of a service is affected by a systemic error or is attacked, this will affect several finance providers simultaneously. Outsourcing has long been a common feature in the financial sector, but the scope, and hence the risk, has increased in pace with the proliferation of IT services in recent years.

Cybercrime and operational risk

The digitalisation of financial services increases both cybercrime vulnerability and operational risk, thereby increasing the significance of such incidents for financial stability. Operational problems are unintended incidents related to systemic errors or capacity overload, whereas cybercrime involves targeted attacks, such as virus attacks, information retrieval attempts or unauthorised payment transactions.

Such incidents can result in downtime, ie banking system interruptions, whereby customers and undertakings do not receive access to account and payment services.

Over the past year, there have been incidents which show how concentration risk affects the Norwegian financial system. In both April and October, the Norwegian company Evry, one of the largest IT service providers in the Nordic region, experienced technical problems, resulting in downtime and interruptions in digital services for Norwegian retail customers, banks and other undertakings. Swedish customers were also affected by the same interruptions.

The system's vulnerability to operating errors and any cybercrime is clearly shown by the interruptions and downtime affecting customers and undertakings across borders.

Both Finanstilsynet and Norges Bank are closely monitoring operational incidents and cybercrime affecting banks and financial systems. So far, downtime incidents in the Norwegian banking system have largely been related to operational, and thus unintended, incidents (Chart 1.21).[9] Frequent and/or sustained downtime, irrespective of cause, may at worst weaken confidence in the banks and the banking system.

This provides new challenges for the authorities that monitor and prevent financial instability, and thus necessitates more attention.

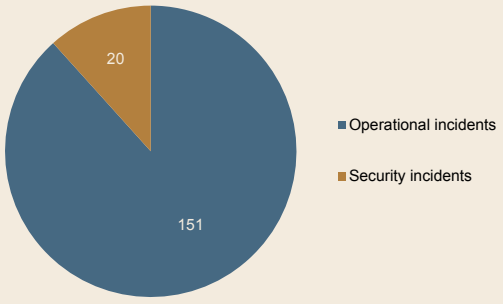
6 See for example: Central Bank of Brazil *Positioning report* "Distributed ledger technical research in Central Bank of Brazil (31 August 2017)." and Chapman et. al "Project Jasper: Are Distributed Wholesale Payment Systems Feasible Yet?" (29 September 2017) *Bank of Canada*

7 See for example "Sveriges Riksbank's e-krona project". *Report 1/2017* Sveriges Riksbank.

8 See page 9 in the 2017 *Financial Infrastructure Report*.

9 For a detailed discussion of digital crime in Norway, see *Risk and Vulnerability Analysis 2016*. Finanstilsynet.

Chart 1.21 Number of reported incidents at Norwegian financial undertakings. Yearly average. 2013 – 2016



Source: Finanstilsynet (Financial Supervisory Authority of Norway)

2 Bank profitability and solvency

Profitability for Norwegian banks has shown little change over the past year. All of the largest Norwegian banks fulfil the capital requirements that have been adopted. A stress test shows that the largest bank' capital buffers are sufficient for absorbing losses in the event of a pronounced downturn in the Norwegian economy. Nevertheless, in such a situation, banks may tighten lending considerably to meet the capital requirements, which may have a procyclical effect on the economy. To counteract an abrupt fall in total credit, it may be appropriate to reduce time-varying capital requirements and allow banks to draw on buffers in a situation where as a whole they face substantial losses. It may also be appropriate to allow banks time to rebuild buffers to avoid unnecessary credit tightening.

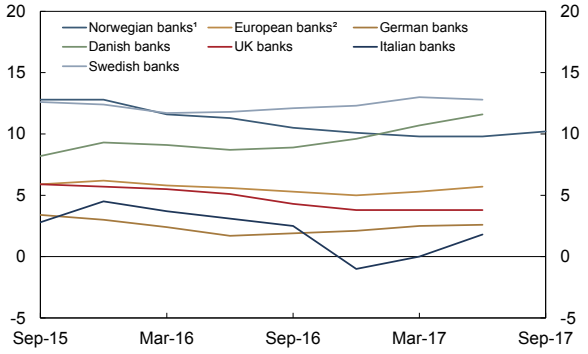
2.1 SOLID CAPITAL ADEQUACY

Over the past year, lower credit losses have helped banks maintain profitability. All the largest Norwegian banks already fulfil the capital requirements that have been adopted.

The underlying profitability of the largest Norwegian banks[1] is broadly unchanged since the 2016 *Financial Stability Report*. Compared with other European banks, the return on equity for large Norwegian banks has been high (Chart 2.1).

Higher credit losses pulled down the return on equity capital for large Norwegian banks in 2016, but in recent quarters, lower losses have helped sustain profitability (Chart 2.2). Losses increased somewhat in 2017 Q3, but they are far lower than the average back to 1987 and also considerably lower than the

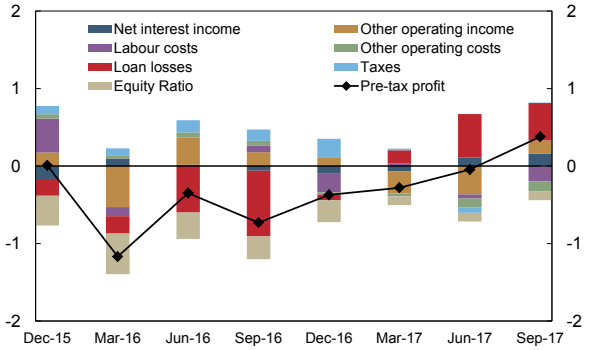
Chart 2.1 Return on equity after tax. Four-quarter moving weighted average. Percent. 2015 Q3 – 2017 Q3



1) Weighted average of DNB Bank, Nordea Bank Norge (to 2016 Q4), SpareBank 1 SR-Bank, Sparebanken Vest, SpareBank 1 SMN, Sparebanken Sør (from 2016 Q1), SpareBank 1 Østlandet (from 2016 Q3) og SpareBank 1 Nord-Norge.
2) 198 European banks.
Sources: European Banking Authority (EBA), Norwegian banking groups' quarterly and annual reports and Norges Bank

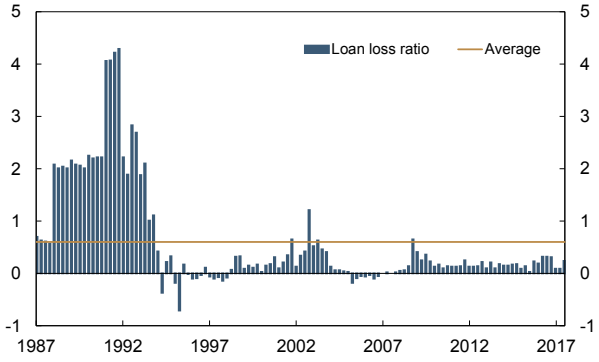
1 In this section, the term "banks" refers collectively to banks and mortgage companies.

Chart 2.2 Estimated contributions to changes in banks'[1] return on equity. Four-quarterly moving average. Percent. 2015 Q4 – 2017 Q3



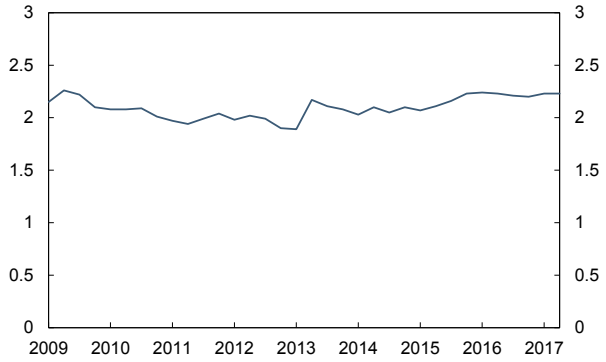
1) Weighted average of DNB Bank, Nordea Bank Norge (to 2016 Q4), Sparebank 1 SR-Bank, Sparebanken Vest, SpareBank 1 SR-Bank, Sparbanken Vest, SpareBank 1 SMN, Sparebanken Sør (from 2014 Q1), SpareBank 1 Østlandet (from 2016 Q3) and SpareBank 1 Nord-Norge.
Sources: Banks' quarterly reports and Norges Bank

Chart 2.3 Loan losses[1] as a share of gross loans. Annualised. All banks and mortgage companies. Percent. 1987 Q1 – 2017 Q3[2]



1) Annual figures to end of 1991, converted to quarterly figures.
2) Preliminary figures for 2017 Q3.
Source: Norges Bank

Chart 2.4 Banks' interest margin. All banks and mortage companies in Norway. Percent. 2009 Q1 – 2017 Q2



Sources: Statistics Norway and Norges Bank

average following the financial crisis (Chart 2.3). Completed restructuring in oil-related industries has contributed to the decline in losses. In addition, spillovers to other sectors from the downturn in the petroleum industry have been less pronounced than banks had expected.

Net interest income has been stable over the past year, measured as a share of banks' equity capital. Banks' interest margins, ie the difference between lending and deposit rates, are broadly unchanged (Chart 2.4). Growth in lending has been moderate.

An increase in equity over the past two years has, in isolation, pulled down the return on equity for large Norwegian banks (Chart 2.2). Increased equity strengthens banks' future loss-absorbing capacity.

Banks fulfil capital requirements

Since the financial crisis, Norwegian banks have sharply increased their Common Equity Tier 1 (CET1) capital ratios to meet stricter regulatory requirements (Chart 2.5). Up until 2012, the minimum CET1 capital requirement in Norway was just above 5%.2 In 2011, the EU decided that the largest banks should have a minimum CET1 ratio of 9% by summer 2012. Finanstilsynet (Financial Supervisory Authority of Norway) assumed that Norwegian banks were to fulfil the same requirement. From summer 2013, capital requirements continued to increase in pace with the phasing-in of the new capital framework (CRD IV/CRR).

The new capital framework has now been fully implemented in Norway. Capital requirements will rise further when the countercyclical capital buffer rate is raised by 0.5 percentage point from 31 December 2017. The total CET1 requirement under Pillar 1 will then be 14% for systemically important banks and 12% for other banks. Banks must also meet Pillar 2 requirements from Finanstilsynet. Pillar 2 requirements are intended to address risks not covered under Pillar 1. Pillar 2 requirements are institution-specific (Chart 2.6).

After building up their equity capital over the past 10 years, the largest banks fulfil the capital requirements that have been adopted. The largest Norwegian banks'

2 Kredittilsynet's circular 14/2001 required a Tier 1 capital ratio of at least 6% in order to issue time-limited subordinated debt. From 2002, preferred capital instruments (hybrid capital) could account for 15% of Tier 1 capital. This resulted in a minimum CET1 capital ratio of: (1 – 0.15) * 6.0 = 5.1%.

CET1 capital ratios are higher than the total requirement (Pillar 1 and Pillar 2) that applies from the end of 2017 (Chart 2.6). Several banks also satisfy their own CET1 capital targets, which are higher than the total requirement. These targets are based on the requirements under Pillar 1 and Pillar 2 and on Finanstilsynet's assessments that banks should hold a margin in the form of CET1 capital over and above the total CET1 requirement. In August, DNB Markets conducted a survey among the 49 largest Norwegian banks. All of 96% of the banks in the survey expect to complete the process of improving their capital adequacy by the end of 2017.

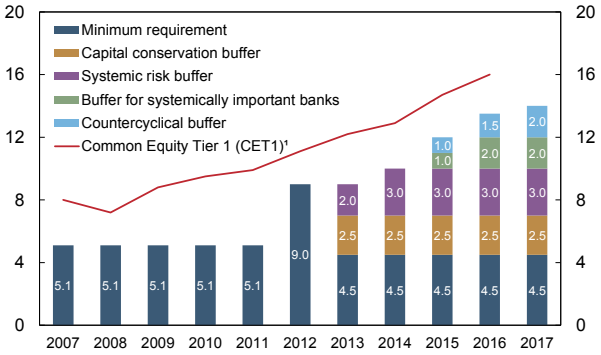
Banks have largely improved their CET1 capital ratios by increasing equity capital (Chart 2.7). This has also increased their leverage ratios. At the same time, a fall in risk weights through the period has resulted in lower growth in banks' risk-weighted assets than in total assets. This has led to a more pronounced improvement in CET1 capital ratios than in leverage ratios. All Norwegian banks fulfil the leverage ratio requirements, which were introduced in summer. All banks must have a buffer of at least 2% above the minimum requirement of 3%. Systemically important banks must have an additional buffer of at least 1%. At the end of 2017 Q2, the leverage ratio of banks as a whole was 7.5%.

Fulfilment of capital targets boosts banks' lending capacity and ability to pay dividends ahead. Banks increased dividend payments already for financial year 2016 (Chart 2.8). In addition, Norwegian banks' corporate lending growth has risen somewhat since the end of 2016 (Chart 2.9). Banks that participated in the DNB Markets' survey expect slightly lower growth in corporate lending ahead, while they expect somewhat higher growth in lending to the retail market. Banking analysts in the market expect that dividend payout ratios will rise further for the large Norwegian banks (Chart 2.8).

Foreign banks in Norway growing more slowly

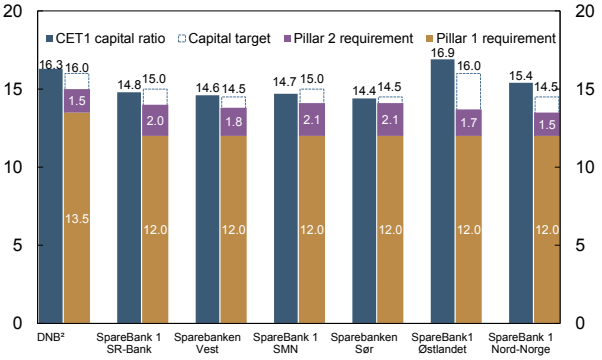
Foreign branches account for nearly a third of the market for bank loans after Nordea's Norwegian subsidiary was converted to a branch at the end of 2016 (see box on page 26). In 2016, branches of foreign banks accounted for most of the growth in lending to Norwegian firms (Chart 2.9). Since the end of 2016, branches have made less of a contribution. Among foreign banks, Nordea in particular has experienced weak lending growth.

Chart 2.5 Common Equity Tier 1 (CET1)[1] ratios for Norwegian banks[2] and Pillar 1 CET1 requirements. Percent. 2007 – 2017



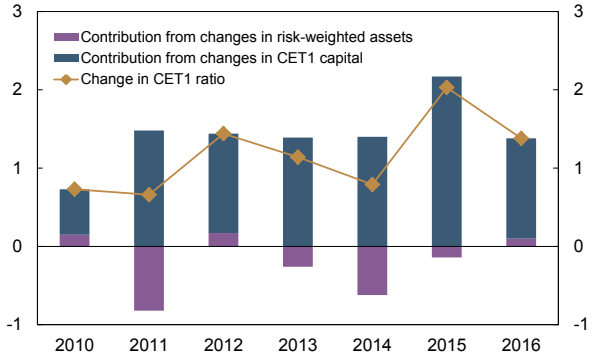
1) With transitional rule (Basel 1 floor).
2) All banking groups except branches of foreign banks in Norway.
Sources: Ministry of Finance and Norges Bank

Chart 2.6 Common Equity Tier 1 (CET1) ratios for large Norwegian banks at 2017 Q2.[1] Requirements and targets by end-2017. Percent



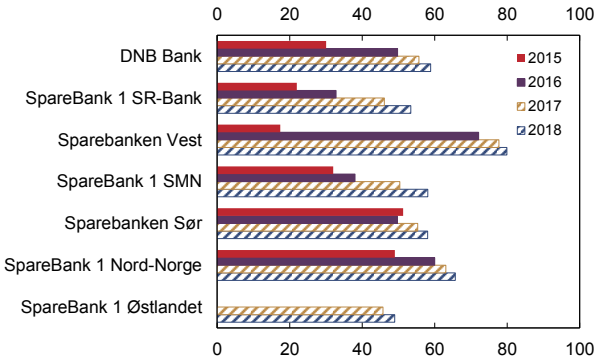
1) Half of 2017 earnings to date have been added to CET1 capital.
2) The Pillar 1 requirement for DNB is calculated from a weighted average of the countercyclical buffer requirements in the countries in which the bank operated at end-2016.
Sources: Banking groups' quarterly reports, Finanstilsynet (Financial Supervisory Authority of Norway) and Norges Bank

Chart 2.7 Change in Common Equity Tier 1 (CET1) ratios[1] for Norwegian banks.[2] Decomposed. Percent. 2010 – 2016



1) With transitional rule (Basel 1 floor).
2) Six largest Norwegian IRB-banks.
Sources: Banks' annual reports and Norges Bank

Chart 2.8 Dividend payout ratio for the largest Norwegian banks. Percent. 2015 – 2018[1]



1) Actual dividends for 2015 and 2016. Expected dividends for 2017 and 2018 (consensus estimate of analysts).
Sources: Arctic Securities, Bloomberg and DNB Markets

The decline in lending growth among foreign banks may reflect increased competition from Norwegian banks that already fulfil their capital targets. Higher losses on Norwegian corporate exposures may also have led foreign banks to consider it less profitable to lend in Norway. On the whole, branches posted somewhat higher loan losses than Norwegian banks in the first half of 2017.

Foreign banks may also have become more reluctant after the Basel Committee proposed in 2016 stricter rules for banks using the IRB approach.[3] The changes have not been finalised. Norwegian banks' risk weights

3 See "Changes to solvency rules" page 32 of the 2016 *Financial Stability Report*.

CONVERSION OF NORDEA TO A BRANCH

At the turn of the year 2016/2017, Nordea Bank AB's subsidiaries in Denmark, Finland and Norway were converted to branches. This led to an increase in the share of lending by foreign branches from around 17% to around 30%. In the deposit market, foreign branches' market share rose from 10% to around 20%.[1]

Unlike a subsidiary, a branch is not a separate legal entity. While subsidiaries are subject to the supervisory and resolution authorities in the host state, the home state authorities are responsible for the supervision and resolution of branches. Both branches and subsidiaries of foreign banks have access to an account and to the ordinary borrowing facilities at Norges Bank on an equal footing with Norwegian banks. Branches and subsidiaries can thus participate in payment settlement at Norges Bank.

Nordea Eiendomskreditt AS, which holds many of the group's residential mortgages, will continue as a subsidiary in Norway, as will Nordea Finans Norge AS.

Depositors at the Norwegian branch of Nordea are covered by the Swedish deposit guarantee scheme, which in accordance with EU regulations, covers an amount equivalent to up to EUR 100 000 per depositor per bank. Since Nordea's branch is also a member of the Norwegian Banks' Guarantee Fund, the Norwegian scheme covers the difference between NOK 2m and EUR 100 000 for depositors at Nordea's Norwegian branch.

As a consequence of the conversion, the central banks in the Nordic and Baltic countries drew up a Memorandum of Understanding (MoU) on cooperation regarding banks with cross-border establishments. The MoU was signed on 15 December 2016 and concerns the exchange of information, but also cooperation in case any of these banks require emergency liquidity assistance (ELA).[2] There is a consensus that the home state central bank is responsible for providing cross-border banks with ELA, but the host state central bank can assist if necessary. Similar MoUs have been signed by the Nordic supervisory authorities and relevant ministries.[3]

On 6 September 2017, the Board of Directors of Nordea Bank AB approved moving the head office from Stockholm to Helsinki. The move is planned to take place in the second half of 2018.

1 Source: Norges Bank.
2 See MoU of 15 December 2016.
3 See "Søknad om tillatelse til fusjon fra Nordea Bank Norge ASA" ["Application for permission for a demerger from Nordea Bank Norge"], p. 17 (in Norwegian only) and MoU of 9 December 2016.

are generally higher. In addition, most Norwegian IRB banks are bound by the transitional Basel I floor, which limits the effect of changes in risk weights. Compared with large Swedish and Danish banks, Norwegian banks' leverage ratios are higher and their CET1 capital ratios are lower (Chart 2.10). This primarily reflects the effect of the Basel I floor in Norway and Norwegian banks' higher risk weights. Norwegian banks' CET1 capital ratios are higher than those of Swedish and Danish banks if the Basel I floor, which is 80% of banks' risk-weighted assets under Basel I, is used to calculate capital adequacy (Chart 2.11).

Banks' longer-term profitability

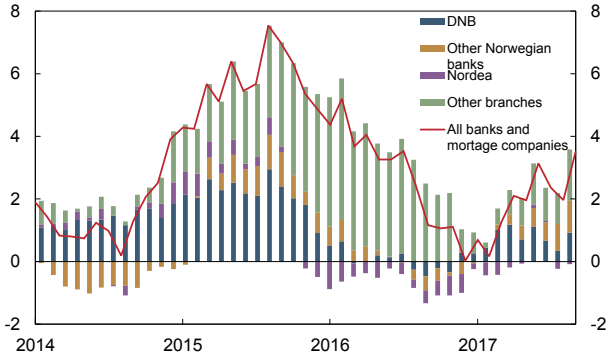
Banks' lending capacity and ability to pay dividends depend on developments in profitability ahead. We expect bank profitability to remain high in the coming years. Prospects for diminished spare capacity in the Norwegian economy and lower unemployment will contribute to holding down loan losses.[4] Banks' interest margins are projected to remain broadly unchanged. In the somewhat longer term, new providers of payment and account information services may give a boost to competition, putting pressure on bank earnings (see Special Feature on page 21).

Estimates from Norges Bank's bankruptcy probability model, which covers around three-fourths of the total bank debt of Norwegian limited companies, indicate relatively stable developments in banks' credit losses ahead (see box on page 29). According to the bankruptcy probability model, manufacturing and mining and quarrying will account for the largest share of bankruptcy-exposed debt in 2018, followed by retail trade, hotels and construction. The model does not cover oil-related industries. The debt-servicing capacity of firms in the supply and drilling segments remains weak.

The introduction of new accounting rules for impairment recognition (IFRS 9) may result in somewhat higher credit losses in 2018 (see box on page 36). Under IFRS 9, recognition of credit impairment will be based on more forward-looking assessments than under the current rules. Banks' loan losses may increase when the standard is implemented in 2018. Many of the large Norwegian banks expect IFRS 9 to have little or no impact.

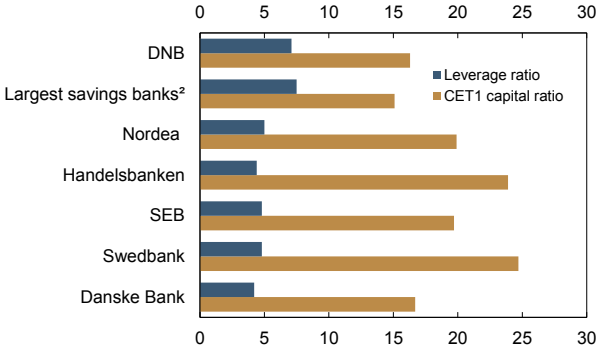
4 See *Monetary Policy Report* 3/17.

Chart 2.9 Credit to Norwegian non-financial enterprises from banks and mortgage companies. Contribution to twelve-month change by banking group. Percent. January 2014 – September 2017[1]



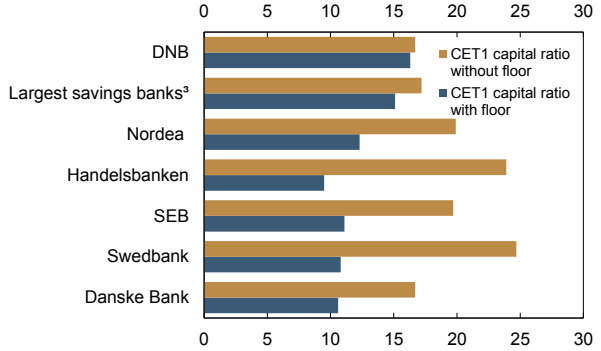
1) Premliminary figures for September 2017.
Source: Norges Bank

Chart 2.10 Leverage ratios and Common Equity Tier 1 (CET1) capital ratios[1] for large Norwegian and Nordic banking groups. Percent. At 2017 Q3



1) Includes half of after-tax profit for 2017 Q1–Q3.
2) Weighted average of the six largest Norwegian regional savings banks.
Sources: Banks' quarterly reports, Finanstilsynet (Financial Supervisory Authority of Norway) and Norges Bank

Chart 2.11 Common Equity Tier 1 (CET1) ratio for large Norwegian and Nordic banking groups. With and without Basel I transitional rule[2]. Percent. At 2017 Q3



1) Including half of the after-tax profit for 2017 Q1–Q3.
2) Under the transitional rule, risk-weighted assets may not be lower than 80% of what they would have been under Basel I.
3) Weighted average for the six largest Norwegian regional savings banks.
Sources: Banks' quarterly reports, Finanstilsynet (Financial Supervisory Authority of Norway) and Norges Bank

Banks's loan losses ahead are uncertain. There is still uncertainty regarding the need for further restructurings by oil-related enterprises. If they prove to be substantial, bank losses may rise again. In addition, the correction in the housing market may prove to be more pronounced than projected in the September 2017 *Monetary Policy Report*. This may result in lower activity in the Norwegian economy and higher bank losses.

In the longer term, structural changes in the economy may impact banks' credit risk. A number of central banks have published assessments of how climate change can affect the economy and financial stability. For example, the Bank of England points out that climate change and society's response to it represent a financial risk.[5] Climate change may also affect the Norwegian economy. Moreover, there may be a special risk related to Norwegian banks' exposure to oil-related industries and the shift towards a low-carbon economy.

5 See "The Bank of England's response to climate change".

Extensive climate change mitigation measures and new technology may weaken global demand for oil further out. This may affect the Norwegian oil service sector and thus banks' loan losses.[6] The latter will also depend on cost developments for offshore projects and banks' adjustments ahead.

Owing to limited information regarding banks' loan customers, estimating banks' losses is difficult. Better access to data will make it possible to perform more detailed and precise analyses of banks' risks. To make such information more readily available, the European Central Bank has decided to set up AnaCredit, a database of bank loans to enterprises (see box below). The central banks of Sweden and Denmark have decided to establish similar databases. Such information should also be made more readily available in Norway by creating a similar database of bank loans, which should also include retail market loans, as in Denmark.

6 See Turtveit and Goldsack Forthcoming Norges Bank *Staff Memo*.

NEW DATABASE ON CORPORATE LOANS FROM EURO AREA BANKS

The European Central Bank (ECB) is about to launch a granular database on corporate loans from euro area banks. The database is called AnaCredit and will contain detailed information on individual loans, including data on the interest rate and collateral. All loans above EUR 25 000 will be included. Banks will be required to report quarterly, or more frequently, with initial reporting at the beginning of 2019.

AnaCredit is intended to increase the quantity of data and improve the ECB's monetary policy and financial stability analyses. Information at the individual loan level can reveal trends in segments or sectors that are not visible in aggregated credit measures. For example, a tightening of credit for small and medium-sized enterprises may be concealed in the aggregate by an ample supply of credit for large firms. As cross-border banking activities increase, it will also be more important to strengthen the exchange of information between countries. Loans to the retail market may be included in AnaCredit at a later date. An important purpose of the database is to harmonise existing credit register information in euro area countries.

Other EU countries may also participate in AnaCredit. The central banks of Sweden and Denmark have decided to create similar databases. The Danish data base will include retail loans in addition to corporate loans. The establishment of a similar database in Norway should be considered, and it should contain loans to both the corporate and the retail markets.

Only Sweden will participate in exchanging data with the ECB, while the central banks of Sweden, Denmark, Finland and the Baltic countries have agreed on exchanging data for cross-border banks. In this data exchange, Nordic banks with branches in Norway will report on their loans to Norwegian corporates.

BANKS' CREDIT RISK ON CORPORATE LOANS

Bank losses on oil-related corporate exposures rose markedly through 2016, but have fallen back in recent quarters. Losses on loans to other industries have remained stable at a low level. Norges Bank's bankruptcy probability model indicates that non-oil sector credit risk will remain stable also in the period ahead.

Banks' losses on commercial loans edged up in 2016, primarily driven by losses on oil-related corporate exposures. In recent quarters, losses on loans to oil-related industries have declined, pulling down total loan losses (Chart 2.3).

So far, spillovers from the decline in oil-related industries in the form of higher loan losses in other sectors appear to have been minimal. While oil-related loan losses rose markedly in 2016, losses on loans to commercial real estate, construction and retail have edged down (Chart 2.12).

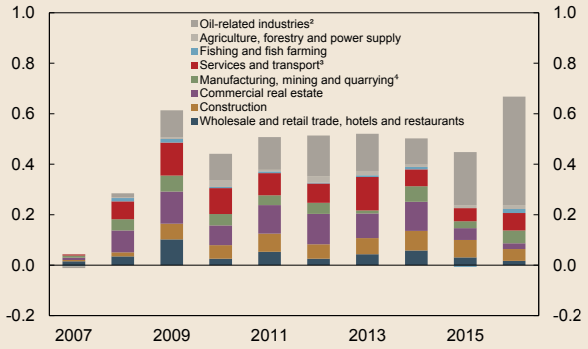
Norges Bank has developed an empirical model for monitoring corporate credit risk.[1] The model uses accounting data, credit ratings and macroeconomic indicators to calculate the bankruptcy probability of an individual enterprise.[2] The model is estimated at industry level and includes:

- Retail trade, hotels and restaurants
- Construction
- Commercial real estate
- Manufacturing and mining and quarrying
- Services and transport
- Fishing and fish farming

The industries in the model sample cover approximately three-fourths of the total bank debt of Norwegian non-financial limited companies. No models are estimated for oil and oil-related industries, international shipping, the power sector, agriculture and forestry. Estimated bankruptcy probabilities, which are weighted by enter-

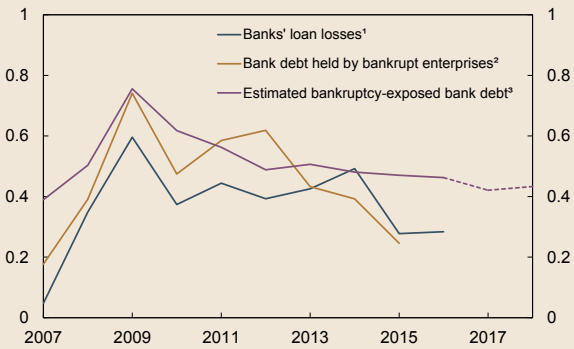
1 See page 48 of the 2016 *Financial Stability Report* and Hjelseth, I.N. and A. Raknerud (2016) "A model of credit risk in the corporate sector based on bankruptcy prediction", *Staff Memo* 20/2016, Norges Bank.
2 The economic indicators include mainland GDP, the 10-year swap rate, office rents and salmon prices.

Chart 2.12 Banks'[1] loan losses to enterprises as share of total corporate lending. Contribution by sector. Percent. 2007 – 2016



1) All banks in Norway except subsidiaries of foreign banks.
2) International shipping (incl. non oil-related), oil services and oil extraction. Also includes mining and quarrying and transport for 2014–2016.
3) Transport has been moved to other sectors for 2014–2016 because the sector also contains oil-related businesses from 2014.
4) "Mining and quarrying" has been moved to oil-related sectors for 2014–2016 because the sector also contains oil-related businesses from 2014.
Source: Norges Bank

Chart 2.13 Banks' loan losses, bank debt held by bankrupt enterprises and estimated bankruptcy-exposed bank debt. Percent. 2007 – 2018



1) Loan losses as a share of total corporate lending. Loans to oil-related industries, agriculture, forestry and power supply in Chart 2.12 are excluded for comparability.
2) Recognised bank debt held by enterprises registered as bankrupt 1–2 years after the last financial statement submitted as share of total bank debt.
3) Model projections for 2017 and 2018.
Source: Norges Bank

prises' recognised bank debt, provide a measure of the share of bankruptcy-exposed bank debt in each industry. Bankruptcy-exposed bank debt, in turn, is an indicator of the credit risk associated with the enterprises. Even if there is no direct correlation between bankruptcies and banks' loan losses, the series track one another fairly closely (Chart 2.13).

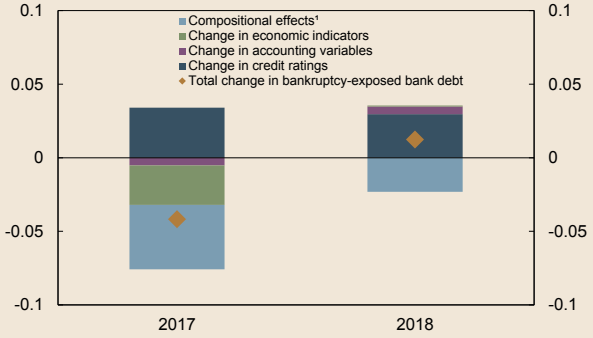
The model estimates that credit risk will remain relatively stable in 2017 and 2018 for the industries in the sample. For 2017, credit rating downgrades for enterprises pull up the estimated credit risk, while an improvement in macroeconomic indicators pull down credit risk (Chart 2.14). Between 2017 and 2018, there are small changes in the estimates of the macroeconomic indicators.[3] Further credit rating downgrades pull up credit risk slightly.

In the period ahead, the highest share of bankruptcy-exposed debt will be in manufacturing and mining and quarrying, followed by retail trade, hotels and restaurants and construction (Chart 2.15). Overall, these industries account for around 60% of bankruptcy-exposed bank debt, but below 30% of the total bank debt in the sample. This reflects the higher average frequency of bankruptcies among these industries than among other industries during the estimation period.

Commercial real estate accounts for nearly half of bank debt, but only around 15% of the total bankruptcy-exposed debt in the sample. Over time, banks' losses on commercial real estate loans have been low. In recent years, low interest rates, fairly stable rents and low vacancy rates have boosted earnings and debt-servicing capacity for commercial real estate companies.[4] At the same time, low interest rates have contributed to significant commercial property price inflation. Shocks such as a marked rise in global interest rates may lead to a sharp decline in commercial real estate prices and reduce the value of banks' collateral (see box on page 16). If at the same time, banks' lending rates rise, the debt-servicing capacity of many commercial real estate companies may be impaired.

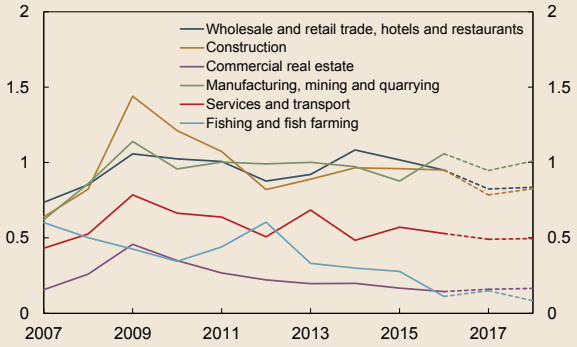
3 For many of the industries, annual growth in mainland GDP has been chosen as an economic indicator. The projections in *Monetary Policy Report* 3/2017 are used for 2017 and 2018. The level of bankruptcy-exposed bank debt may change in the event of changes in the outlook.
4 Stable rents and low vacancy rates primarily pertain to the Oslo area, where a large proportion of commercial properties are located. The commercial real estate markets in Stavanger, Bergen and Trondheim have shown slightly more mixed developments.

Chart 2.14 Change in bankruptcy-exposed bank debt from the previous year. Contribution from each explanatory variable. Percentage points. Total for all industries. 2017 – 2018



1) Effects of population changes, changes in enterprises' debt ratios by sector and change in the debt ratio of each sector.
Source: Norges Bank

Chart 2.15 Estimated bankruptcy-exposed bank debt by industry as a share of total corporate lending. Percent. 2007 – 2018[1]



1) Model projections for 2017 and 2018.
Kilde: Norges Bank

2.2 STRESS TEST – BANK SOLVENCY IN THE EVENT OF A PRONOUNCED DOWNTURN

In recent years, banks have built up considerable buffer capital, comprising a capital conservation buffer, a systemic risk buffer, a countercyclical capital buffer and a buffer for systemically important banks. The stress test is based on the current risk outlook, which is characterised by vulnerabilities associated with particularly adverse outcomes. The stress test shows that the buffers are sufficient for absorbing losses in the event of a pronounced downturn in the Norwegian economy. Nevertheless, in such a situation, banks may tighten lending considerably to meet capital requirements, which may have procyclical effects. To counteract an abrupt fall in total credit, it may be appropriate to reduce time-varying capital requirements and allow banks to draw on buffers in a situation where as a whole they face substantial losses. It may also be appropriate to allow banks time to rebuild buffers to avoid unnecessary credit tightening.

Downturn in the Norwegian economy

The stress test is based on a pronounced downturn in the Norwegian economy. Financial imbalances can amplify a downturn and trigger financial turbulence when the economy is exposed to shocks. The banking crisis in the early 1990s is an example of a downturn where both the shocks and financial imbalances were substantial. During the financial crisis in 2008, the Norwegian economy was subject to considerable shocks from abroad. Banks were more resilient than in the run-up to the banking crisis, and the financial system was less vulnerable. Nevertheless, significant liquidity measures and an expansionary fiscal and monetary policy were necessary to dampen the impact on the economy.

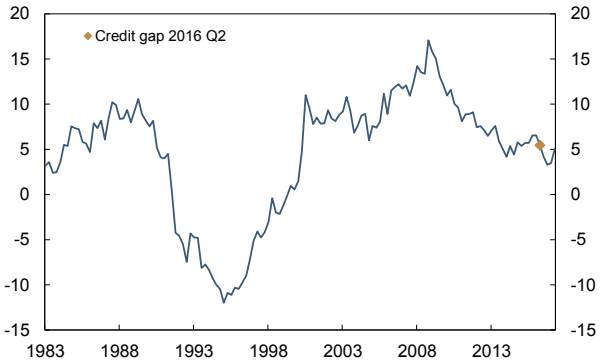
Empirical analyses show that the impact of financial crises is more severe when preceded by rapid growth of financial imbalances.[7] In line with the empirical findings, the depth and length of the downturn in this stress test is allowed to depend on the level of financial imbalances in Norway.[8] The credit gap, the gap between total credit relative to GDP and an estimated trend, is used as a measure of financial imbalances (Chart 2.16).

The relationship between financial imbalances and the economy varies across countries and over time. The empirical basis employed in the stress test contains data from 20 OECD countries back to 1975. The analysis does not control for the impact of fiscal and monetary policy on downturns. For example, banking crises in countries with a fixed exchange rate will often be more severe than in countries with an inflation-targeting regime and floating exchange rate.

The stress test is based on two different paths for the real economy. In stress scenario 1, the financial imbalances are assumed to correspond to the level of the credit gap at the end of 2017 Q2. This is approximately the same level as in 2016 (Chart 2.16).

The credit gap is a broad measure and will not capture all imbalances. Vulnerabilities may increase in parts of the financial system, and the system may become more interwoven, without this being reflected in an aggregated credit measure. In addition, changes in economic policy or financial system regulation may affect the functioning of the economy. Norges Bank uses a number of indicators in order to obtain a more detailed risk outlook (see box on page 17).

Chart 2.16 Credit gap. Total credit mainland Norway[1] as a share of mainland GDP. Deviation from estimated trend. [2] Percentage points. 1983 Q1 – 2017 Q2



1) The sum of C2 households and C3 non-financial enterprises for mainland Norway (all non-financial enterprises pre-1995). C3 non-financial enterprises comprise C2 non-financial enterprises and foreign debt for mainland Norway.
2) Trend estimated using a one-sided Hodrick-Prescott filter on data from 1975 Q4 to 2017 Q2, augmented with a simple projection. Lambda = 400 000.
Sources: International Monetary Fund (IMF), Statistics Norway and Norges Bank

7 See eg Jorda, O., M. Schularick and A.M. Taylor (2013) "When credit bites back". *Journal of Money, Credit and Banking*, 45.
8 The method is described in inter alii Jorda, O., M. Schularick and A.M. Taylor (2013) "When credit bites back". *Journal of Money, Credit and Banking*, 45. The data set and dating of financial crises are based on Anundsen, A.K., K. Gerdrup, F. Hansen and K. Kragh-Sørensen (2016) "Bubbles and crises: The role of house prices and credit". *Journal of Applied Econometrics*.

Table 2.1 Macroeconomic aggregates. Percentage change from previous year[1]

	2017[2]	2018	2019	2020	2021
GDP, mainland Norway					
- Stress scenario 1	2.0	-1.1	-0.9	3.4	2.9
- Stress scenario 2	2.0	-1.2	-2.3	2.1	1.6
Private consumption					
- Stress scenario 1	2.7	-0.4	0.0	3.3	3.0
- Stress scenario 2	2.7	-1.0	-1.5	2.6	1.3
Registered unemployment (rate, level)					
- Stress scenario 1	2.7	3.9	6.2	6.2	5.9
- Stress scenario 2	2.7	4.2	7.3	7.8	7.7
3-month Nibor (level)					
- Stress scenario 1	0.9	1.5	1.5	1.0	1.0
- Stress scenario 2	0.9	2.0	2.0	1.5	1.0
Weighted risk premium for covered bonds and senior bank bonds[3]					
- Stress scenario 1	0.7	0.8	0.9	1.0	1.1
- Stress scenario 2	0.7	0.8	1.0	1.1	1.2
House prices					
- Stress scenario 1	5.9	-4.3	-9.1	-7.8	-4.3
- Stress scenario 2	5.9	-6.3	-12.2	-11.4	-6.2
Credit (C2), households[4]					
- Stress scenario 1	6.6	5.0	3.7	2.7	0.8
- Stress scenario 2	6.6	3.6	2.2	1.2	-0.7
Credit (C2), non-financial enterprises in mainland Norway[4]					
- Stress scenario 1	4.4	-4.5	-3.3	4.0	4.9
- Stress scenario 2	4.4	-5.0	-6.1	0.8	0.4
Loan losses (rate, level)					
- Stress scenario 1	0.1	1.8	2.4	2.0	1.6
- Stress scenario 2	0.1	1.8	2.7	2.6	2.4

1 Unless otherwise stated. Levels are measured as annual averages.
2 Baseline scenario for mainland GDP, private consumption, unemployment, 3-month Nibor, house prices and credit to households is from *Monetary Policy Report* 3/17.
3 The higher premiums only have an effect on new bonds.
4 Change in stock measured at year-end.

Sources: Statistics Norway, Real Estate Norway, Finn.no, Eiendomsverdi AS, Norwegian Labour and Welfare Administration (NAV) and Norges Bank

Stress scenario 2 is intended to reflect the uncertainty surrounding the level of financial imbalances. In this scenario, it is assumed that the financial imbalances are more pronounced and correspond to the average credit gap level during the five years prior to the financial crisis. The most important vulnerabilities in the Norwegian financial system are discussed in Section 1 (see box on page 9). High household debt and high property prices may suggest that financial imbalances are more substantial than the total credit gap indicates. High debt levels increase the risk that households will tighten consumption if house prices should fall or interest rates rise (see also Section 4).

The effects in stress scenario 1 are somewhat less pronounced than during the banking crisis in the early 1990s, while the effects in stress scenario 2 are approximately the same as during the banking crisis. In both scenarios, Norwegian mainland GDP falls in 2018 and 2019 before picking up again in the subsequent two years (Table 2.1). Unemployment rises dramatically and remains high. House prices fall by 25%–35%. Households tighten consumption, and housing investment falls sharply.

Higher default rates and substantial losses

In the analysis, financial turbulence is assumed to result in substantial losses on banks' securities portfolios and higher risk premiums on bank funding. Nevertheless, banks retain access to funding. Banks have to write down the value of their stock of equities by 40% and fixed-income instruments by 5% at the beginning of the stress period.

In both stress scenarios, the key policy rate is set to zero in the course of 2018. Borrowing costs rise on the back of higher risk premiums and remain high during the entire stress period, despite a lower key policy rate. Historically, the ability of banks to maintain interest margins has varied. Banks are assumed to adjust lending rates to achieve the same margin against borrowing costs as prior to the stress period, leading to higher lending rates. The results of the stress test are sensitive to assumptions regarding lending rates. If the margin against borrowing costs is assumed to be 0.5 percentage point lower in the stress period, bank earnings weaken considerably. This deterioration corresponds to a fall in the macro

bank's CET1 capital ratio of around 3 percentage points during the stress period.

Credit growth falls in both stress scenarios. Growth in credit to enterprises falls sharply (Table 2.1). Credit growth to households remains generally positive through the period, but will be far weaker than has been observed in recent years. Credit developments in the stress test depend in particular on assumptions regarding the interaction between the macroeconomy and the banking sector. The fall in credit is assumed to be in line with declines in previous financial crises. The fall in credit growth may reflect both tighter bank credit standards and lower demand for loans.

Owing to higher interest expenses and a weak economy, default rates rise on both household and commercial loans. On the back of higher default rates and reduced collateral values, banks' credit losses increase sharply (Chart 2.17), especially on corporate exposures. Credit losses are in line with historical relationships that do not contain effects of the new accounting rules for impairment recognition (IFRS 9). Under IFRS 9, banks may have to recognise losses at an earlier stage than assumed in the stress test (see box on page 36).

Capital buffers absorb the losses in the stress test

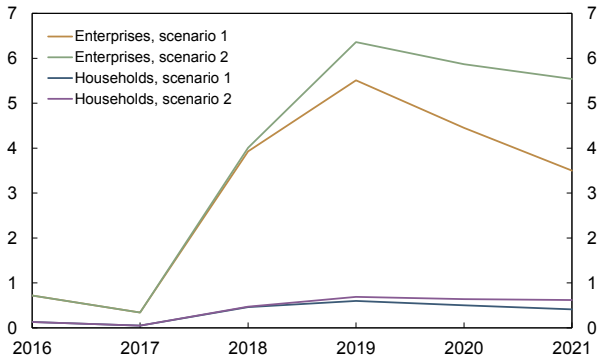
The stress test is conducted for a macro bank comprising nine large Norwegian banks: DNB Bank, SpareBank 1 SR-Bank, Sparebanken Vest, SpareBank 1 SMN, Sparebanken Sør, SpareBank 1 Østlandet, SpareBank 1 Nord-Norge, Sbanken[9] and Sparebanken Møre. The macro bank is a weighted average of the nine banks. Developments in profitability and capital adequacy may vary considerably across the banks in the stress test.

Banks' loan losses are calculated on total figures for the corporate and household sectors. Loan losses by individual banks have not been analysed specifically beyond taking account of the distribution of lending across the two sectors. The analysis will therefore underestimate differences in the risk of losses across banks.

Large losses on loans and securities reduce banks' earnings through the stress period. Banks' risk weights rise somewhat, reflecting higher default rates and a fall in collateral values, and a generally weaker economic

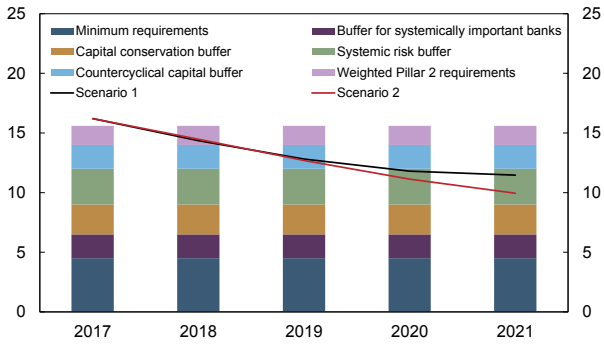
9 In autumn 2017, Skandiabanken is changing its name and corporate branding to Sbanken.

Chart 2.17 Loan losses as a share of gross loans to the sector. Macro bank. Percent. 2016 – 2021[1]



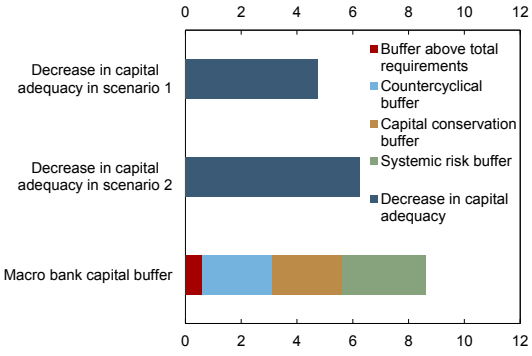
1) Projections for 2017 Q3 – 2021 Q4. Historical loss distribution is used to allocate loan losses to enterprises and households.
Sources: SNL Financial, Statistics Norway and Norges Bank

Chart 2.18 Common Equity Tier 1 (CET1) capital ratio in the stress scenarios and CET1 requirements under Pillar 1 and Pillar 2.[1] Percent. 2017– 2021[2]



1) Requirements for the banks in the stress tests are weighted by their risk-weighted assets.
2) Projections for 2017 Q3 – 2020 Q4.
Sources: SNL Financial and Norges Bank

Chart 2.19 Macro bank's capital buffers and capital adequacy[1] in the stress scenarios. Measured by Common Equity Tier 1 (CET1) capital. Percentage points



1) Decrease in CET1 ratio from 2017 Q4 to 2021 Q4.
Sources: SNL Financial and Norges Bank

outlook. Large losses and higher risk weights reduce capital ratios in both stress scenarios (Chart 2.18).

It is assumed that banks will make a number of adjustments to cushion the impact on earnings and capital adequacy. Banks' operating expenses are assumed to remain broadly unchanged as a share of operating income in the stress period. Together with the assumption that banks maintain margins against borrowing costs, this results in relatively solid earnings before credit losses. It is assumed that banks do not pay dividends in the stress period. The zero-dividend assumption, along with lower lending and relatively solid earnings before credit losses, contributes to a reduction in the fall in capital ratios. On the other hand, the introduction of IFRS 9 may result in a sharper fall in capital ratios (see box on page 36).

It is assumed that the macro bank will have to comply with a total CET1 capital requirement under Pillar 1 of 14%, corresponding to the Pillar 1 requirement for systemically important banks from 31 December 2017 (Chart 2.18). Banks must also meet Pillar 2 requirements from Finanstilsynet. The average Pillar 2 requirement for the banks in the stress test is 1.6%. This means that the total capital requirement for the macro bank is 15.6%.

The banks breach the total capital requirement in both scenarios. In stress scenario 1, the macro bank's CET1 capital ratio falls to 11.5% in 2021. In stress scenario 2, the CET1 capital ratio falls to 10.0%. In both stress scenarios, the macro bank satisfies the 6% leverage ratio requirement for systemically important banks. The losses in the stress scenarios will not cause the macro bank to breach the coming MREL requirements, because the losses are absorbed in their entirety by buffer capital that is not eligible for inclusion in MREL (see box on page 40).[10] This means that neither restrictions on account of a breach of MREL nor resolution measures will be implemented.

In the event of an economic downturn and large bank losses, the countercyclical capital buffer should be lowered to mitigate the procyclical effects of tighter bank lending. Banks can also draw on other buffers in periods of losses. The capital conservation buffer requirement is permanent, but that buffer may be drawn on in bad times.[11] The systemic risk buffer may be reduced from its current level of 3%. In addition, banks generally hold a separate buffer beyond the total capital requirement.

The capital needs in stress scenario 1 are met by the banks' own buffer beyond the total capital requirement together with the countercyclical capital buffer and the capital conservation buffer (Chart 2.19). In stress scenario 2, the banks must also draw on some of the systemic risk buffer. To some degree, the effects in stress scenario 2 reflect structural vulnerabilities that the systemic risk buffer is intended to address, including high levels of household debt, high house prices and relatively pronounced cyclical fluctuations in the Norwegian economy.[12]

Banks may opt to tighten lending sharply

The economic impact may become considerably more pronounced if banks tighten lending in order to comply with the buffer requirements.[13] Developments in the stress scenarios, where bank lending follows historical relationships, imply that the macro bank breaches both the Pillar 2 requirements and several buffer requirements. Practice in Norway is to lay Pillar 2 requirements on top of the buffer requirements under Pillar 1. The consequences of breaching Pillar 2 requirements will therefore have an impact on how banks adjust to the requirements as a whole.

According capital adequacy rules, buffers under Pillar 1 may be drawn on in bad times. The rules restrict dividend payments of banks that draw on these buffers (see box on page 35). With the Pillar 2 requirements on top of all the requirements under Pillar 1, a bank will breach the Pillar 2 requirement before drawing on the buffers under Pillar 1. If the CET1 capital ratio falls below the total requirement under Pillar 1 and Pillar 2, the bank must immediately notify Finanstilsynet and then draw up a plan to restore compliance with the total capital requirement.[14]

10 Assuming that, at the outset, banks satisfy the coming MREL requirements, which are yet to be finalised.

11 See Article 129 in CRD IV and paragraphs 79 and 80 of the preamble to CRD IV.
12 See Chapter 3 of Report No. 1 to the Storting (2017–2018) *Nasjonalbudsjettet 2018* [The 2018 National Budget] (in Norwegian only).
13 The economic impact of tighter lending by the largest banks depends on whether the other banks, especially the branches of foreign banks, also tighten. This was not analysed in the stress test. Over the past 10 years, branches of foreign banks have experienced more volatile lending growth (see Turtveit, L.T. (2017) "Branches of foreign banks and credit supply". *Economic Commentaries* 3/2017. Norges Bank.
14 See Finanstilsynet (2017), "Publication of Finanstilsynet's decision on Pillar 2 requirements for individual banks" 17 April 2017.

Finanstilsynet is also empowered to impose a number of restrictions.[15] These may be orders to limit bonus payments or prohibitions on paying dividends and interest on Tier 1 capital. Finanstilsynet may also require operational changes. In addition, the capital adequacy rules[16] authorise Finanstilsynet to revoke the licence of banks in breach of capital requirements.

The potential for serious consequences of breaching Pillar 2 requirements may induce banks to tighten lending sharply in order to comply with the capital requirements. If Finanstilsynet imposes severe restrictions for breaches of Pillar 2 requirements, banks will, in practice, only be able to draw on their capital buffers if the buffer requirements are lowered. The countercyclical capital buffer and systemic risk buffer requirements can be lowered, while the capital conservation buffer requirement and buffer requirement for systemically important banks will likely remain unchanged.

Simple calculations[17] indicate that a number of banks will have to tighten lending sharply in the stress scenarios in order to comply with the total capital requirement under Pillar 1 and Pillar 2 (Chart 2.21). The bank with the greatest need for tightening will have to reduce lending by more than 20% in stress scenario 1 to comply with the total requirement in the stress period. The calculations indicate that tightening will be less pronounced if the countercyclical capital buffer is reduced to zero. There will also be less need for tightening if banks are permitted to restore compliance with the capital requirements over a relatively long period.

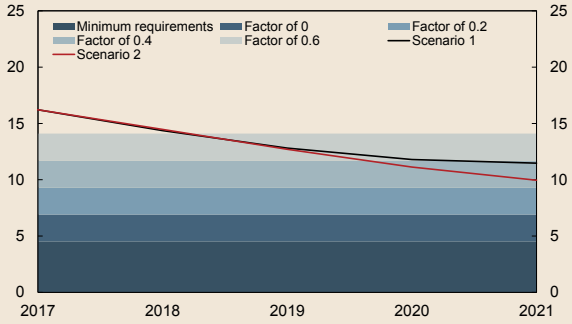
Banks may also make other adjustments that reduce the need to tighten lending. One possibility is to issue new equity capital. This can be both costly and difficult at a time of financial turbulence and a weak economic outlook. Another possibility may be to sell assets. However, selling assets at distressed prices may entail considerable losses. Moreover, selling assets may push their prices down further, inflicting further losses on other banks.

15 See Section 14-6 of the Financial Undertakings Act (in Norwegian only).
16 See Article 18d of the Capital Requirements Directive (CRD) IV.
17 It is assumed that banks at risk of breaching the total capital requirement will tighten corporate lending in order to comply with the requirement. The other banks experience the same credit growth as in stress scenario 1. All the other assumptions correspond to the assumptions in scenario 1. Banks' adjustments are based on a structural model that is described in "Model for banks' adjustment to a countercyclical capital requirement" in the 2016 *Financial Stability Report*.

DIVIDEND RESTRICTIONS WHEN BANKS BREACH BUFFER REQUIREMENTS

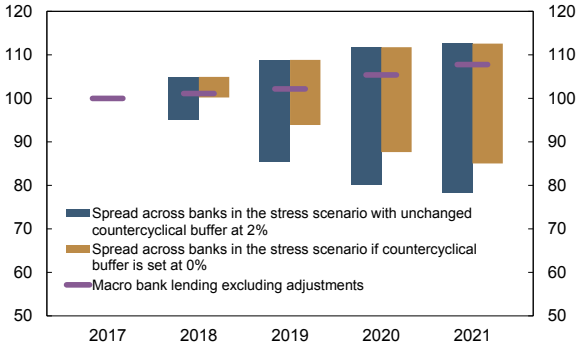
The capital adequacy rules set restrictions on dividend payments for banks in breach of the buffer requirements under Pillar 1. The size of these restrictions depend on the how low the CET1 capital ratio relative to the combined buffer requirement, which is the total of the capital conservation buffer, systemic risk buffer, buffer for systemically important banks and countercyclical capital buffer. At the end of 2017, the combined buffer requirement will be 9.5% (Chart 2.5). The rules set out four bands that specify the proportion of earnings that banks may pay out as dividends to shareholders (Chart 2.20). The lower the capital ratio is, the lower the permitted dividend payout ratio will be.

Chart 2.20 Common Equity Tier 1 (CET1) capital ratio in the stress scenarios and CET1 requirements under Pillar 1. Percent. 2017 – 2021[1]



1) Projections for 2017 Q3 – 2021 Q4.
Sources: SNL Financial and Norges Bank

Chart 2.21 Changes in bank lending in stress scenario 1 to comply with adjustments to Pillar 1 and Pillar 2 capital requirements.[1] Index. 2017 = 100. 2017 – 2021[2]



1) Based on each bank's total requirements under Pillar 1 and Pillar 2.
2) Projections for 2017 – 2021.
Sources: Finanstilsynet (Financial Supervisory Authority of Norway), SNL Financial and Norges Bank

NEW ACCOUNTING RULES WILL CHANGE THE WAY BANKS RECOGNISE CREDIT IMPAIRMENT

New accounting rules for recognising credit losses (IFRS 9) will be introduced from 2018. Under IFRS 9, recognition of credit impairment will be based on more forward-looking assessments than under the current rules. Banks' loan losses may increase, both when the rules are implemented and during downturns, when credit risk rises. Many large Norwegian banks expect IFRS 9 to have little or no impact.

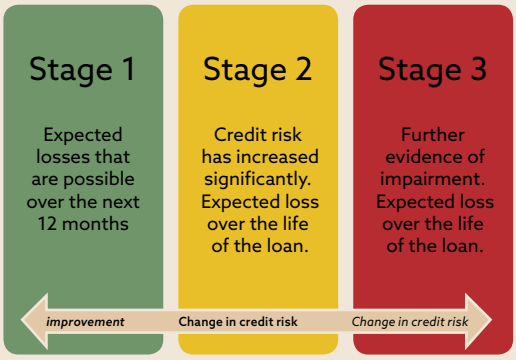
During the financial crisis, the accounting rules for recognising credit losses were criticised, primarily because they do not require banks to consider potential developments in loss risk in future periods. The current rules in International Accounting Standard (IAS) 39 require banks to recognise an impairment loss on a loan only if there is objective evidence of a loss event (incurred loss approach). Under these rules, banks' losses are often recognised too late. As a response to the criticism, new accounting rules, International Financial Reporting Standard (IFRS) 9, will be implemented from January 2018 under which loan impairment shall reflect expected losses.[1] IFRS 9 is also intended to enable banks to better manage credit risk.

Under the new rules, recognition of credit losses shall be based on assessments of forward-looking information. Estimated credit losses (ECLs) are estimated by probability-weighting the expected discounted cash flows from loans over a range of possible outcomes. An ECL provision is initially calculated on the basis of expected credit losses over a 12-month horizon (Stage 1) (Chart 2.22). If the credit risk for a loan increases significantly, banks shall recognise an ECL provision over the life of the loan (Stages 2 and 3). A shift from Stage 2 to Stage 3 requires further objective evidence of impairment, eg the occurrence of a loss event.

Banks' loan losses may increase under IFRS 9, both when the standard is implemented and during downturns, because recognition of credit impairment shall now be based on more forward-looking assessments than under the previous accounting standard (IAS 39). Losses may therefore be recognised at an earlier stage of the downturn. The European Banking Authority (EBA) has analysed the impact of IFRS 9 on European banks' credit losses

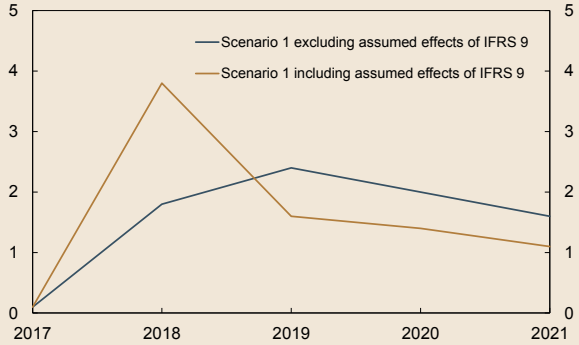
1 See Stefano "IFRS 9 Implementation". Forthcoming in Norges Bank *Economic Commentaries*.

Chart 2.22 Impairment recognition under IFRS 9



Source: EY (2017)

Chart 2.23 Loan losses as a share of gross loans in stress scenario 1. Including and excluding assumed effects of IFRS 9. Percent. 2017– 2021[1]



1) Projections.
Sources: Statistics Norway and Norges Bank

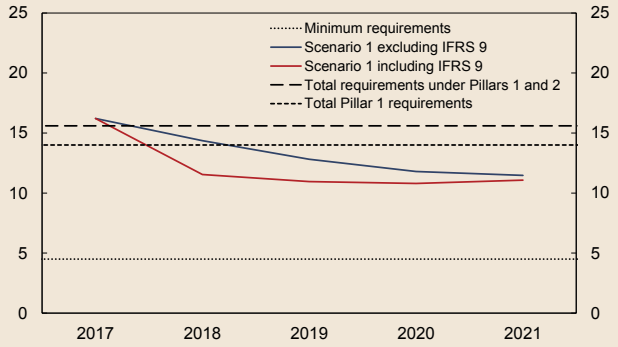
and capital ratios. The results suggest that loan loss provisions may increase by around 13% when the new rules are introduced. Common Equity Tier 1 (CET1) ratios will be reduced by an average of 45 basis points, but the estimated impact of IFRS 9 varies considerably across banks. The European Commission has proposed transitional rules for implementing IFRS 9 to enable the effects on capital ratios to be phased in over several years. Many large Norwegian banks[2] expect IFRS 9 to have little or no impact. This may be because the credit risk of Norwegian banks is low compared with other European banks. In its annual report for 2016, DNB Bank indicated that the new accounting rules will lead to increased provisions for credit losses, but that it is too early to give a reliable estimate of the expected implementation effect.

IFRS 9 may also lead to increased loss provisions during downturns, because banks must recognise provisions for lifetime ECLs when credit risk rises (Stages 2 and 3). The European Systemic Risk Board (ESRB) points out that IFRS 9 may enhance discipline regarding banks' loss recognition and greater transparency regarding asset quality.[3] This may improve market confidence in banks during downturns. At the same time, a model-based analysis by Abad and Suarez (2017)[4] shows that IFRS 9 may result in more pronounced tightening of bank lending if expected losses increase quickly in downturns.

IFRS 9 may result in earlier recognition of losses than what is assumed in the stress test. In the stress test, loan losses are assumed to follow historical relationships where effects of IFRS 9 are not included. Banks' losses rise sharply in both 2018 and 2019 also remain high in 2020 and 2021 (Chart 2.17). In both stress scenarios, credit risk will rise considerably already in 2018, and a large portion of the loan portfolio would be shifted to Stages 2 and 3 under IFRS 9. If it is assumed that banks must recognise a third of the losses incurred in the period 2019–2021 already in 2018 (Chart 2.23), the macro bank's capital ratio will fall sharply in 2018 (Chart 2.24).

2 Kommunalbanken, Nordea Eiendomskreditt, SpareBank 1 SR-Bank, SpareBank 1 Østlandet, SpareBank 1 Nord-Norge, SpareBank 1 SMN and Sparebanken Sør.
3 European Systemic Risk Board (2017) «Financial stability implications of IFRS 9». 7/2017. ESRB.
4 Abad, J. and J. Suarez (2017) «Assessing the cyclical implications of IFRS 9, a recursive model». *Occasional Paper Series* 12/2017. ESRB.

Chart 2.24 Macro bank's Common Equity Tier 1 (CET1) capital ratio in stress scenario 1. Including and excluding effects of IFRS 9. CET1 requirements under Pillars 1 and 2.[1] Percent. 2017 – 2021[2]

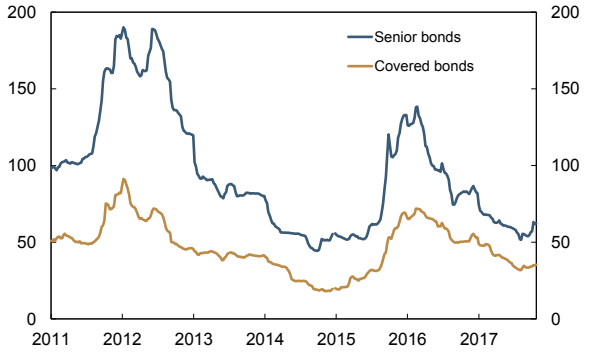


1) Requirements for banks in the stress test are weighted by the banks' risk-weighted assets.
2) Projections for 2017 Q3 – 2020 Q4.
Sources: SNL Financial and Norges Bank

3 Bank funding

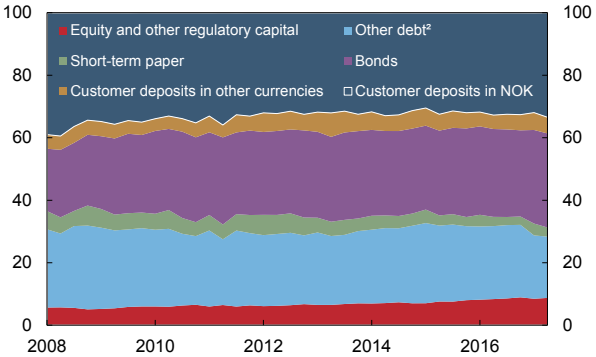
Banks have ample access to wholesale funding. New requirements governing banks' debt structure may change the composition of banks' funding. The liquidity regulation has been finalised and banks satisfy the requirements by an ample margin. The fee each bank pays to the Norwegian Banks' Guarantee Fund should reflect the risk to which the bank exposes the Fund.

Chart 3.1 Risk premiums in Norway. Spread over three-month Nibor. Five-year maturity. Basis points. 7 January 2011 – 27 October 2017



Source: Nordic Bond Pricing

Chart 3.2 Funding structure.[1] Norwegian banks and covered bond mortgage companies. Percent. 2008 Q1 – 2017 Q2



1) Not consolidated. Adjusted for the swap arrangement. Nordea Bank Norge is excluded from 2017 Q1.
2) Other debt includes intra-group debt, financial derivatives, repurchase agreements etc.
Source: Norges Bank

3.1 NEW REQUIREMENTS COULD CHANGE THE COMPOSITION OF BANK FUNDING

Risk premiums on banks' wholesale funding are lower than the average for the past few years. The new regulatory framework for bank recovery and resolution could change the composition of banks' funding. The reforms implemented in US money markets have not resulted in major shocks to Norwegian banks.

Norwegian banks and mortgage companies have ample access to wholesale funding, both in NOK and in other currencies. Risk premiums on banks' wholesale funding have fallen recently and are below the average for the past few years (Chart 3.1).

The most important funding sources for Norwegian banks[1] are customer deposits and long-term wholesale funding (Chart 3.2). The deposits account for approximately 40% of banks' total funding, while long-term wholesale funding accounts for approximately 30%. More than half of banks' bond funding is in the form of covered bonds, which have replaced a substantial share of banks' unsecured wholesale funding since their introduction in 2007 (Chart 3.3). In addition, Norwegian banks issue preferred capital securities and subordinated debt instruments[2]. These instruments absorb losses before other debt instruments

1 Norwegian banks and covered bond mortgage companies, hereinafter referred to as "banks".
2 Hybrid capital and additional capital.

and can be used to meet some of the statutory capital requirements and the requirements in the new regulatory framework for bank resolution and recovery.

New requirements governing banks' capital structure and debt structure

When the new EU directive on bank resolution and recovery is implemented in Norway (see box on page 19), Norwegian banks will be subject to new capital and debt composition requirements. Individual minimum requirements will be set for debt and regulatory capital (own funds) that can be easily written down and/or converted into equity, so-called MREL (Minimum Requirement for Own funds and Eligible Liabilities, see box on page 40). Norwegian banks' average MREL-eligible capital and debt is 39% of risk-weighted assets. This is slightly above the European average.[3]

The MREL requirements have not yet been finalised in the EU or in Norway. An important clarification will be whether senior bank bonds will be MREL-eligible. The EU has reached agreement on a new category of non-preferred senior debt instruments (Tier 3). The new debt category will rank lower than senior bank bonds but higher than regulatory capital (Tier 2 capital) and can be included in MREL-eligible liabilities without creating legal uncertainty about the priority ranking of liabilities. France is one of the countries where Tier 3 capital has been introduced.

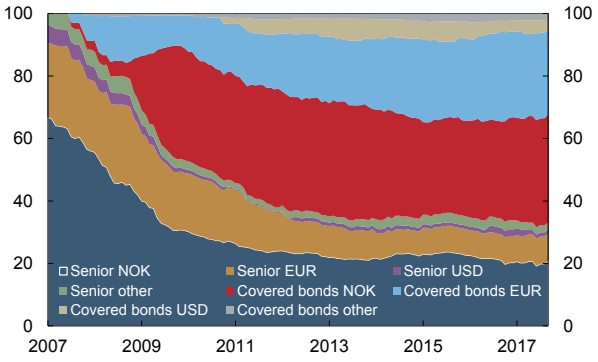
In Norway, it has yet to be determined how MREL-eligible liabilities should be defined. If banks issue a new category of debt instruments, their funding structure will change. This could lead to a lower volume of senior bank bond issues. These bonds would also become more secure because banks would hold more debt that could absorb losses ahead of senior bank bonds. This could also affect banks' funding costs. Risk premiums on the debt classes required to absorb losses first could increase, whereas risk premiums on liabilities that are not eligible for MREL could be lower.

Banks' short-term foreign currency funding

Many international banks, including DNB, obtain a large share of their short-term funding from the US money market. Money market funds have been the

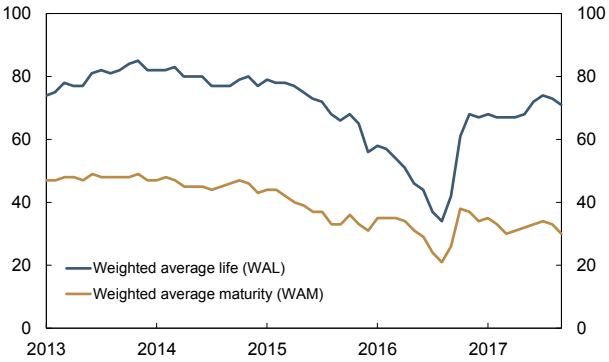
3 See memo on MREL from Finanstilsynet (Financial Supervisory Authority of Norway) (2017).

Chart 3.3 Outstanding wholesale funding in Norway.[1] By currency. Percent. January 2007 – September 2017



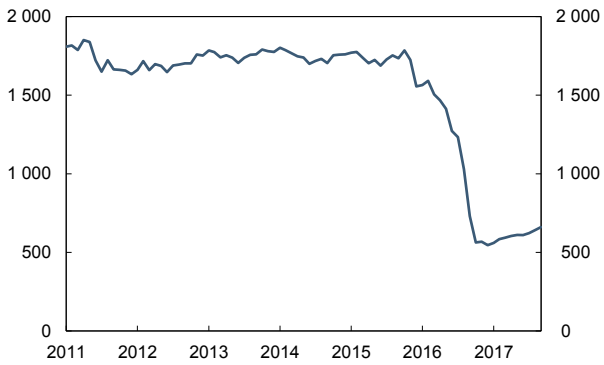
1) Norwegian banks and covered bond mortgage companies.
Sources: Bloomberg and Stamdata

Chart 3.4 Maturity of investments in US prime money market funds. Average. Number of days. January 2013 – September 2017



Source: Investment Company Institute

Chart 3.5 Total assets of US prime money market funds. In billions of USD. January 2011 – September 2017



Source: Office of Financial Research

MINIMUM REQUIREMENT FOR OWN FUNDS AND ELIGIBLE LIABILITIES (MREL)

The Minimum Requirement for Own Funds and Eligible Liabilities (MREL) is an important part of the EU Bank Recovery and Resolution Directive (BRRD). In early summer, the Government presented to the Storting (Norwegian parliament) a new draft recovery and resolution framework for Norway (see box on page 19). The proposed legislation is largely based on the EU directive. MREL requirements and the details of MREL have not yet been determined in the EU. Once the Norwegian recovery and resolution framework and MREL details have been finalised, MREL requirements can be drawn up for Norwegian banks.

Under the MREL requirements, banks will be subject to a minimum requirement regarding the share of debt that can swiftly and easily be written down and/or converted to equity, so that:

- bank losses will be absorbed by shareholders and creditors in an efficient manner (loss absorption element);
- it will be possible to conduct a swift internal recapitalisation (a bail-in) to restore capital adequacy so that banks can continue to operate (recapitalisation element).

MREL will be a minimum requirement set separately for each bank by the resolution authority. The requirement is to be met using own funds and/or senior debt and non-preferred deposits with a residual maturity of more than one year. Capital used to meet the combined capital buffer requirement cannot be included in MREL-eligible capital and debt (Chart 3.6). An important principle is that no creditor should incur greater losses than they would have incurred if the institution had been wound up under normal insolvency proceedings (the no creditor worse off principle (NCWO)). The EU has reached agreement on a new debt category, Tier 3,[1] to enable national authorities to require banks to hold a certain amount of debt with lower priority than senior debt (see Table 3.1). This may promote effective resolution because it does not breach the NCWO principle and consequently reduces legal uncertainty.

The MREL requirement will vary from bank to bank depending on the assessments made by the resolution authority. Banks that can be expected to be wound down in a financial crisis will have to meet an MREL requirement that will cover losses only (loss-absorption requirement), probably similar to the regulatory capital requirements. Banks that are deemed to be too important to close down will have to meet an MREL requirement to cover losses and recapitalisation. The EU proposal supports a recapitalisation requirement corresponding to the capital adequacy requirements under Pillar 1 and 2 and the combined capital buffer requirement, expressed as a percentage of risk-weighted assets. The proposal also sets requirements for MREL-eligible own funds and liabilities as a percentage of the leverage ratio exposure measure.

1 See press release from the European Commission 25 October 2017.

Chart 3.6 MREL requirements and capital requirements

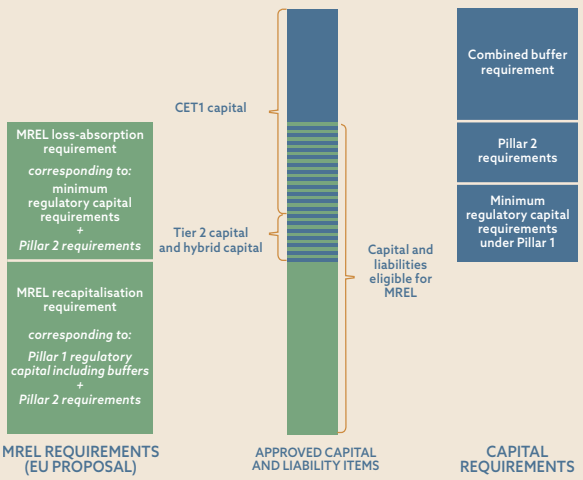


Table 3.1 Liabilities and equity – priority ranking

Guaranteed deposits and the deposit guarantee scheme's claims due to the repayment of banks' guaranteed deposits	
Deposits from natural persons and small and medium-sized enterprises in excess of the guaranteed amount	
Bonds, short-term paper and other ordinary, unsecured debt without priority and deposits from large enterprises in excess of the guaranteed amount	
Debt ranked between subordinated debt capital and ordinary, unsecured debt ("Tier 3")	
Subordinated debt capital (Tier 2)	Regulatory capital
Preferred capital securities (Hybrid capital)	
Common Equity Tier 1 (CET1) capital	

Source: Memo from Finanstilsynet of 28 February 2017, p. 7.

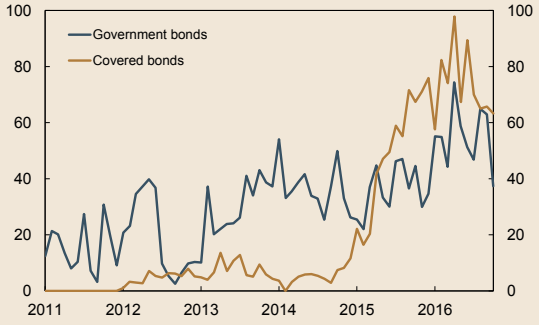
INCREASED USE OF REPURCHASE AGREEMENTS (REPOS)

In a repurchase agreement (repo), two parties agree to exchange securities for money for a given period. Upon entering into the agreement, one party relinquishes the securities in exchange for cash (the sale). Once the agreement has reached maturity, the securities are returned to the initial seller, who simultaneously relinquishes a predetermined amount of cash (the repurchase). The buyer pays an implicit rate determined by the difference between the sale and repurchase price of the security.

The repo market in Norway has grown rapidly in recent years (Chart 3.7). A number of Norwegian banks and mortgage companies use repos for lending in the Norwegian money market, and volumes have increased in recent years. The securities used as collateral in most repo transactions in the Norwegian market are government bonds or covered bonds.

Hedge funds are also major participants in the Norwegian repo market. A fund buys, for example, covered bonds from a bank and lends the bonds back to the bank in a repo, allowing the fund to finance the covered bond purchase, while the bank earns a profit by lending cash to the fund using the repo. Such an investment can involve a high degree of leverage, increasing the fund's exposure to losses if the bond falls in value. This can force the fund to sell the bond, which in turn can cause a further fall in the bond price. Large price falls could make it difficult for Norwegian covered bond mortgage companies to issue new debt and will also reduce the value of banks' high-quality liquid assets.

Chart 3.7 Turnover repurchase agreements.[1] In billions of NOK. January 2012 – September 2017



1) Government bond turnover does not include repurchase agreements between government bond primary dealers and Norges Bank.
Sources: Oslo Børs and Norges Bank

most important investors. In autumn 2016, a major reform of US money market funds was carried out.[4] Prior to the reform, money market funds shortened the maturity of their investments (Chart 3.4) so that they could realise assets quickly in the event investors made withdrawals. Total assets also fell by approximately USD 1tn (Chart 3.5). Maturities have risen again since the reform, and total assets have edged up. Banks have reduced their short-term debt funding somewhat, but there are also signs that new investors have entered the market. A shift towards a larger and more diverse group of investors and longer maturities may contribute to reducing both concentration risk and refinancing risk. Assessing to what extent risk has actually been reduced is challenging as access to information on the new investors is limited.

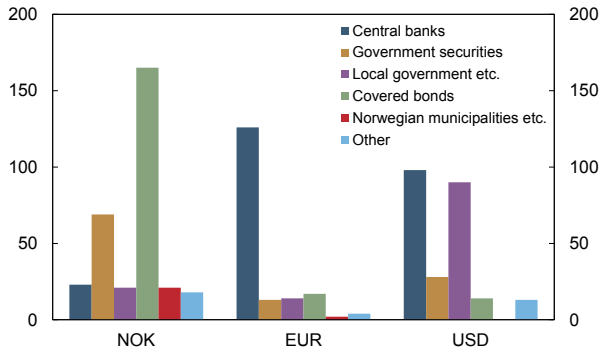
3.2 LIQUIDITY REGULATION FINALISED

The Norwegian liquidity regulation has now been finalised. Banks meet the regulatory requirements and their liquidity coverage in NOK is higher than before. At the same time, banks have substantial holdings of covered bonds.

Banks face significant refinancing risk because they must replace deposits that are withdrawn, or roll over funding that matures, before loans are repaid. The aim of the Liquidity Coverage Ratio (LCR) is to reduce the risk of liquidity problems in the banking sector (see box on page 42). The regulation sets a total LCR requirement for all currencies, and an LCR requirement was introduced for single currencies in early summer. For banks and mortgage companies that have a substantial share of their funding in EUR or USD[5], at least 50% of their LCR must be denominated in NOK. This means that they may use high quality liquid assets in foreign currency to cover the remaining 50% of the NOK requirement. At the same time, it is important that banks are largely self-sufficient in NOK. Banks that do not have EUR or USD as significant currencies are not subject to a minimum LCR requirement in NOK, but the Financial Supervisory Authority of Norway can set limits on how individual banks can use their stock of foreign currency liquid assets to meet payment obligations in NOK. All banks must fully comply with the foreign currency LCR requirement.

4 See also page 38 of the 2016 *Financial Stability Report*, Norges Bank.
5 Significant foreign currency (each currency comprises at least 5% of total debt).

Chart 3.8 Stock of liquid assets by type of asset. Norwegian banks and covered bond mortgage companies. After haircut.
In billions of NOK. 30 June 2017



Source: Finanstilsynet (Financial Supervisory Authority of Norway)

LIQUIDITY COVERAGE RATIO

The Liquidity Coverage Ratio (LCR) is intended to reduce banks' liquidity risk. Under the Regulation on Liquidity Coverage Ratio (LCR) requirements, banks must hold an adequate stock of liquid assets to meet their payment obligations for a 30-day period of financial market stress. The liquidity reserve improves banks' ability to weather market turbulence, as obtaining funding in the market can be deferred by selling assets from the stock. Banks can also use these assets as collateral in repurchase agreements and for borrowing from Norges Bank or from other creditors.

$$\text{LCR} = \frac{\text{High-quality liquid assets}}{\text{Total net cash outflows}}$$

The Regulation was introduced in Norway in 2015 and will be phased in over the period to end-2017. The Regulation imposes LCR requirements for all currencies in total and for significant currencies[1]. Banks and mortgage companies with EUR or USD as significant currencies must have LCR in NOK of at least 50%. Other banks do not have to meet the LCR requirement in NOK. All banks must meet the foreign currency LCR requirement in full.

1 See "Krav til likviditetsreserve i signifikant valuta" [requirements for banks' liquidity reserves in significant currencies]. (In Norwegian only.) Ministry of Finance, 2017.

Banks' high-quality liquid assets (HQLA) primarily consist of covered bonds, central bank deposits and government securities (Chart 3.8). Since the Norwegian government debt market is small, banks have substantial holdings of covered bonds issued by other Norwegian banks. This represents a concentration of risk in the banking sector. Since many banks will probably realise their stock of HQLA at the same time during periods of financial market stress, there will likely be a substantial fall in the value of the covered bonds in banks' stock. Consequently, new issuance of covered bonds will be both more demanding and more costly, which could lead to further liquidity problems and sell-offs of liquid assets. The problems will be further amplified if there is also a fall in house prices. Under the regulation, covered bonds must comprise no more than 70% of a bank's stock of HQLA. Covered bonds in all currencies now comprise 26% of banks' HQLA. Covered bonds in NOK account for more than 50% of banks' HQLA in NOK, and this share has risen in recent years. On account of the recently adopted low LCR requirement for NOK, most banks do not need to increase their HQLA in NOK. This may prevent a further increase in the share of covered bonds in banks' holdings of HQLA and a further rise in concentration risk. Covered bonds are also widely used in repos (see box on page 41). For a more detailed description of liquidity in the Norwegian bond and short-term paper market, see box on page 46.

Ample liquidity coverage in the banking sector

The LCR for the banking sector as a whole was 132% at the end of 2017 Q2 (Chart 3.9). Norwegian banks have increased their LCRs in NOK over the past year and had on average 107% coverage at the end of 2017 Q2. This means that banks have self-insured in NOK against liquidity risk to a greater extent than before. It is primarily the large banks that have increased their stock of high-quality liquid assets in NOK. Banks satisfy the foreign currency LCR requirement by an ample margin. High-quality liquid assets in EUR and USD mainly consist of central bank deposits.

Banks can reduce liquidity risk by diversifying funding across different markets, forms of funding and investors, and by increasing funding maturities. The Net Stable Funding Ratio (NSFR) is intended to ensure that banks fund illiquid assets with long-term funding.

The NSFR is yet to be clearly defined in the EU framework, but Norwegian banks already meet the Basel Committee's proposed requirement. This increases banks' resilience.

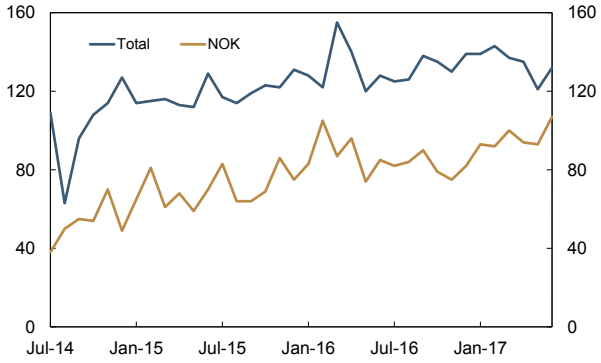
3.3 FOCUS: FUNDING OF CONSUMER CREDIT BANKS

Banks specialising in consumer credit have experienced strong lending growth in recent years. Guaranteed deposits account for almost all of their funding and they have markedly higher interest margins than other banks. Consumer credit banks also have a substantially higher share of non-performing loans. Under the Government's bill on new rules for deposit guarantees, the fee paid by each bank to the Norwegian Banks' Guarantee Fund will better reflect the risk to which the bank exposes the Fund.

Most consumer credit banks[6] fund their operations almost exclusively with customer deposits. This particularly applies to Bank Norwegian, Instabank, Komplett Bank, Monobank and yA Bank, which hold NOK 42bn in consumer credit.[7] This is somewhat less than one third of total consumer loans held by financial institutions in Norway.[8] Lending growth for the five banks specialising in consumer credit has been markedly higher than total growth in consumer loans by other banks (Chart 3.10). The interest margin has also been substantially higher than for other banks (Chart 3.11).

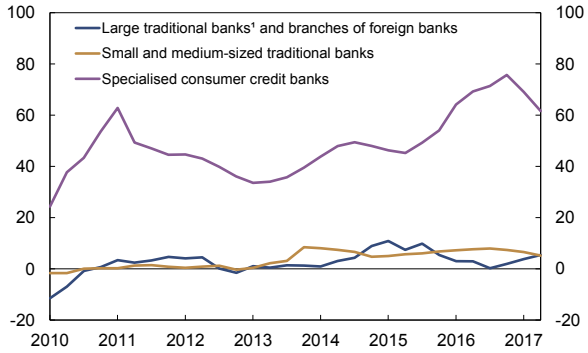
Many consumer credit banks have marketed their lending products by promising swift loan application processing, by requiring, for example, limited information from these customers.[9] The credit quality of the consumer credit banks' lending portfolio is markedly lower than that of other banks and the default rate is considerably higher (Chart 3.12). Interest margins are high to compensate for losses due to default. So far, this has resulted in solid earnings (Chart 3.13). These banks' high lending rates suggest that the level of

Chart 3.9 Liquidity Coverage Ratio (LCR). All Norwegian banks. Percent. July 2014 – June 2017



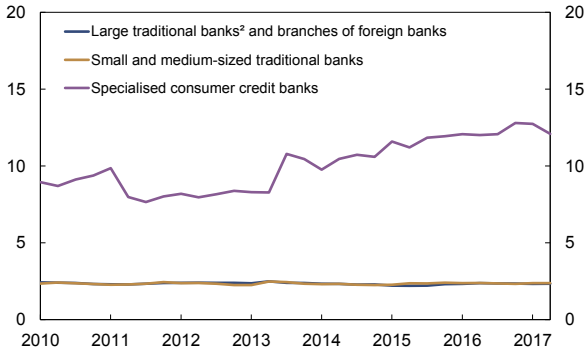
Source: Finanstilsynet (Financial Supervisory Authority of Norway)

Chart 3.10 Lending to customers. Four-quarter growth. Percent. 2010 Q1 – 2017 Q2



1) Large traditional banks are banks with lending volumes above NOK 30bn at 2017 Q2.
Source: Statistics Norway

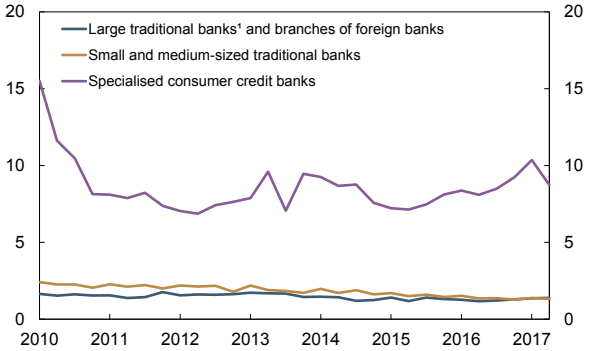
Chart 3.11 Interest margins.[1] Percent. 2010 Q1 – 2017 Q2



1) Average lending rate minus average deposit rate for domestic customers, weighted by amount lent and deposited.
2) Large traditional banks are banks with lending volumes above NOK 30bn at 2017 Q2.
Source: Norges Bank

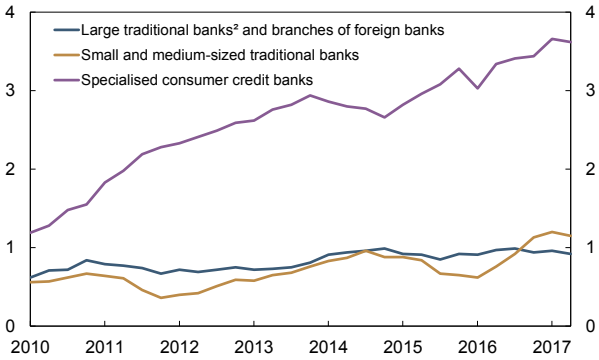
6 Consumer credit banks refers here to Norwegian banks that only extend unsecured consumer loans to the retail market, i.e. credit card loans and other unsecured loans. See also Hagen, Turtveit and Vatne (2017) "Strong growth in consumer credit", *Economic Commentaries* 1/2017 Norges Bank.
7 Including foreign customers. Source: Norges Bank.
8 See Finanstilsynet (Financial Supervisory Authority of Norway): *Resultatrapport for finansforetak 1. halvår 2017* [Report on financial enterprise performance, 2017 H1], p. 24 (in Norwegian only).
9 The Government has adopted the Regulation on the marketing of credit, effective from 1 July 2017, which prohibits emphasising the simplicity of the application processes. Furthermore, in June 2017, Finanstilsynet set stricter guidelines on the processing and credit assessment of consumer credit.

Chart 3.12 Default rate. Total loan defaults as a share of gross loans to customers. Percent. 2010 Q1 – 2017 Q2



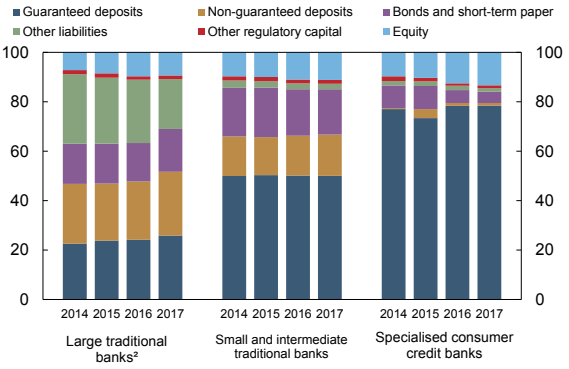
1) Large traditional banks are banks with lending volumes above NOK 30bn at 2017 Q2.
Source: Statistics Norway

Chart 3.13 Return on total assets.[1] Four-quarter weighted moving average. Percent. 2010 Q1 – 2017 Q2



1) Profit after tax as a percentage of average total assets over the past four quarters.
2) Large traditional banks are banks with lending volumes above NOK 30bn at 2017 Q2.
Source: Norges Bank

Chart 3.14 Distribution of debt and equity. Percent. End of year. 2014 – 2017[1]



1) At 2017 Q2.
2) Large traditional banks are banks with lending volumes above NOK 30bn at 2017 Q2.
Source: Norges Bank

willingness to pay for unsecured loans is high, as there does not appear to be a lack of competitors in the market. Several new banks specialising in consumer credit have been established in recent years, and according to the survey conducted by Finanstilsynet, there are at least 27 financial institutions offering consumer loans in Norway.

High degree of deposit funding

Excluding equity and other regulatory capital, the five consumer credit banks rely primarily on customer deposits for their funding (Chart 3.14). The Norwegian Banks' Guarantee Fund guarantees deposits of up to NOK 2m per depositor per bank. Guaranteed deposits account for more than 98% of the five banks' total deposits.[10] Consumer credit banks offer a lower interest rate on deposits above NOK 2m. As this is unusual in the banking sector, consumer credit banks can thus secure a high share of guaranteed deposits.

A few consumer credit banks have also obtained some funding in the bond market. Since 2011, Bank Norwegian has issued senior bonds with a term to maturity of between 3 and 5 years. Since 2015, yA Bank has also issued senior bonds with a term to maturity of two years. Risk premiums on the most recent senior bonds issued have varied substantially, but all have been higher than the premiums on senior bonds issued by the largest Norwegian banks.[11]

Compared with other banks, very little of consumer credit banks' funding is not guaranteed (Chart 3.14). This means that consumer credit banks are much less likely to obtain funding from investors that have an incentive to assess the level of risk taken on by these banks. Creditors who extend unsecured loans to banks or hold non-guaranteed deposits have a disciplining effect on banks' risk-taking behaviour. It has been to shareholders' advantage that consumer credit banks have not been subject to market discipline to any great extent and have been able to lean on the Deposit Guarantee Scheme. This may also have contributed to the rapid growth of these banks even though they have a far higher default rate than other banks (Charts 3.10 and 3.12).

10 Only six other banks have a guaranteed share of deposits above 90%.
11 Bank Norwegian's last three-year bond issued in April had a premium of 0.75 percentage point above three-month NIBOR. The estimated equivalent premium for the largest Norwegian banks was approximately 0.45 percentage point (source: Nordic Bond Pricing). Risk premiums were higher for yABank and Komplett than for Bank Norwegian.

The fee paid by banks to the Norwegian Banks' Guarantee Fund is only to a limited extent designed to reflect the risk to which each bank exposes the Fund. Only a small adjustment is made based on the banks' capital ratios. In practice, this means that consumer credit banks do not pay higher fees, even though they expose the Fund to higher risk than most of the other banks. Less loss-absorbing debt and deposits increases the risk of losses these banks represent for the Norwegian Banks' Guarantee Fund.

The Government presented a new bill on bank recovery and resolution and the deposit guarantee scheme (see box on page 19) in early summer. The bill proposes that each bank's fee to the Norwegian Banks' Guarantee Fund should to a greater extent reflect the risk to which the bank exposes the Fund. Based on guidelines issued by the European Banking Authority (EBA)[12], the Norwegian Banks' Guarantee Fund has estimated how much higher the fees paid to the Fund by individual consumer credit banks should be compared with the current fee.[13] The estimates indicate that the fee should increase from the current level of 0.06–0.09% to between 0.11 and 0.16% of guaranteed deposits. The EBA guidelines provide for further fee increases.

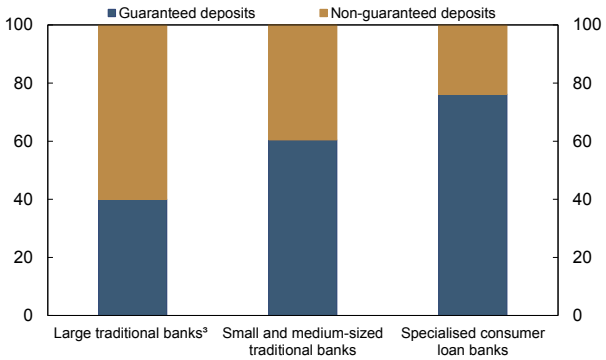
With consumer credit banks' high interest margin, even a three-fold fee increase would have a very marginal effect on profitability. Nevertheless, a fee increase would mean that each bank would to a greater extent pay for the risk to which the bank exposes the Fund.

Any reduction made to the guaranteed deposit limit from the current NOK 2m to an amount equivalent to the EU limit of EUR 100 000 would have consequences for consumer credit banks. Given the current deposit structure, these banks would receive a substantially larger share of non-guaranteed deposits, perhaps as much as a quarter (Chart 3.15). If they wish to maintain their funding structure, they will have to replace the deposits that are no longer guaranteed with guaranteed deposits from new customers. This will probably take some time, and in a transitional period it could be difficult for consumer credit banks to sustain the high level of lending growth they have recorded in recent years. Alternatively, they could change their funding structure and have more non-guaranteed funding. This would probably mean that they would have to pay a higher interest rate, which would reduce profitability.

If consumer credit banks were to be instructed by the authorities to increase the share of non-guaranteed funding, funding costs would to a greater extent reflect the risk associated with these banks

12 See EBA/GL/2015/10: Guidelines on Methods for Calculating Contributions to DGS.
13 See Chart 10.12 in Proposition 159 L (2016–2017) (in Norwegian only).

Chart 3.15 Guaranteed deposits under EU rules.[1]
Share of all customer deposits.[2] Percent. 2017 Q2



1) Total of all deposits up to EUR 100 000.
2) Includes only bank reporting total deposits of less than EUR 100 000.
3) Large traditional are banks with lending volumes above NOK 30bn at 2017 Q2.
Source: Norges Bank

LIQUIDITY IN THE NORWEGIAN BOND AND SHORT-TERM PAPER MARKET

Norges Bank conducts semi-annual surveys of market participants on liquidity in the Norwegian bond and short-term paper market. This survey can capture conditions that are not reflected in reported figures for turnover and market-making on the exchange. Treasury bill and government bond liquidity has remained broadly unchanged over the past year, while corporate bond liquidity has improved somewhat.

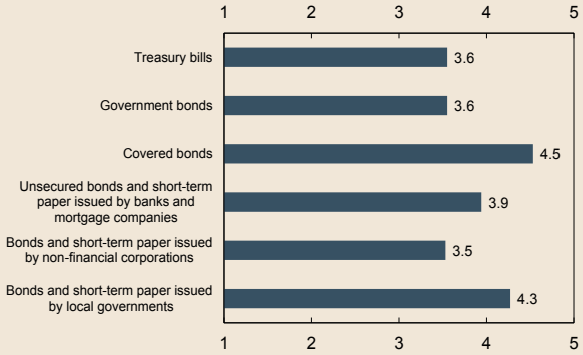
A liquid market can be described as a marketplace where assets can be traded in large amounts within a short period of time without incurring high costs. As liquid markets contribute to the effective redistribution of risk and capital, they are important for a well-functioning financial system.[1]

The market participants in the survey assessed liquidity in the different market segments as better than fair or good in the first half of 2017 (Chart 3.16). Covered bonds and fixed income instruments issued by municipalities and counties are considered to be most liquid.

The survey indicates that higher volumes of covered bonds and government securities can be traded in the secondary market than other securities without appreciably changing the price. Responses vary considerably. Even though bonds issued by local government are considered to be among the most liquid, the volume that

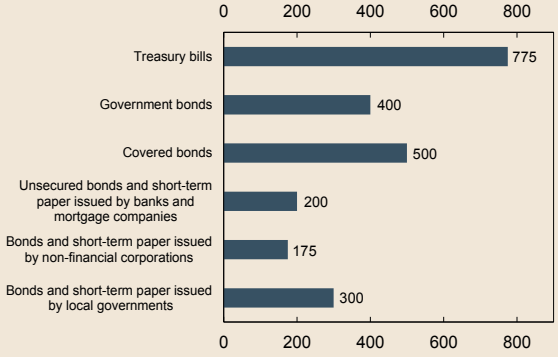
1 For more information on the Norwegian bond market, see *Norway's financial system* 2017.

Chart 3.16 Assessment of market liquidity, first six months of 2017. Average of respondents. Scale: 1 (poor) – 2 – 3 (fair) – 4 – 5 (very good)



Source: Norges Bank

Chart 3.17 Volume that can be traded in the secondary market without causing appreciable price movements. Median of respondents. In millions of NOK. 2017 H1



Source: Norges Bank

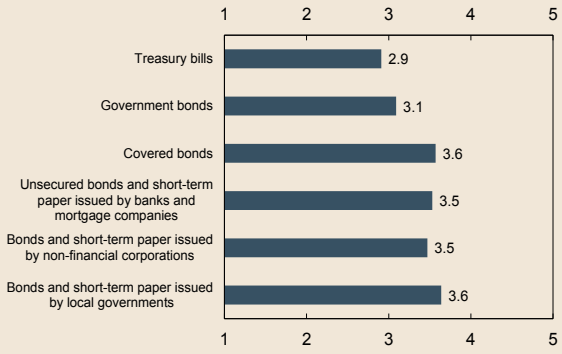
can be traded without causing price changes is lower than for government securities (Chart 3.17), probably because the volume of municipal bonds outstanding is lower than the volume of government securities outstanding.

Somewhat improved liquidity over the past year

The respondents report that while government bond liquidity remained largely unchanged in the first half of 2017, corporate bond liquidity has edged up (Chart 3.18). The reported improvement in liquidity in the first half of 2017 may reflect historically higher issue activity for corporate bonds at the beginning of a year than towards the end. High issue activity normally has a positive effect on secondary market liquidity.

The survey indicates that market liquidity has improved in all market segments except Treasury bills over the past year. Nevertheless, a number of respondents report that banking regulation has contributed to somewhat poorer liquidity. This particularly applies to the market for unsecured senior bank bonds. Banks are reported to be deferring issues of new bonds pending new requirements for the composition of capital and debt (Minimum Requirement for Own Funds and Eligible Liabilities (MREL) (see box on page 40)).

Chart 3.18 Assessment of market liquidity, from 2016 H2 to 2017 H1.
Average of respondents.
Scale: 1 (much poorer) – 2 – 3 (unchanged) – 4 – 5 (much better)



Source: Norges Bank

4 Household debt and the link to the housing market

Norwegian household debt has risen faster than income for a long period. The debt level is high both historically and compared with other countries and is considered to be the most important source of vulnerability in the Norwegian financial system (Section 1). High debt increases the risk that households will need to tighten consumption in the event of a sharp decline in house prices or a marked rise in interest rates. This risk is particularly high among younger home-owning households and among households that have recently purchased a dwelling. Residential mortgage credit risk—the risk of default and possible foreclosure with bank losses—is low overall. Higher consumer debt and increased investment in secondary homes may lead to higher credit risk exposure for banks.

4.1 EXPOSURE TO DEBT VARIES WITH THE LIFE CYCLE

Debt and housing market behaviour are closely linked to the life cycle. Among newly established young households, debt is high relative to both income and the value of the dwelling.

For households, housing is the largest item of investment. More than 70% of Norwegian households own their own homes[1], and most home purchases are financed by substantial mortgage loans. Housing is considered low-risk collateral, and housing wealth provides households with easier access to the credit market. They can accumulate housing wealth by repaying their mortgages or realise price gains in the housing market by borrowing more.

Debt-to-income (DTI) and loan-to-value (LTV) ratios are closely related to the time that has passed since the house purchase. Debt-servicing capacity is related to stage of the life cycle and income. Household vulnerability therefore varies across population groups and for the individual over different stages of life. Analyses of the debt situation for the household sector as a whole may therefore present an incomplete picture of vulnerabilities.

Using detailed data for households, an analysis has been conducted of risk and vulnerabilities related to high household debt. In the analysis, households are categorised based on their position in the housing market (Chart 4.1), demonstrating the variation in risk across categories of households. To further assess risk developments in recent years, a comparison is made between households in the same position in the housing market in 2010 and in 2015.

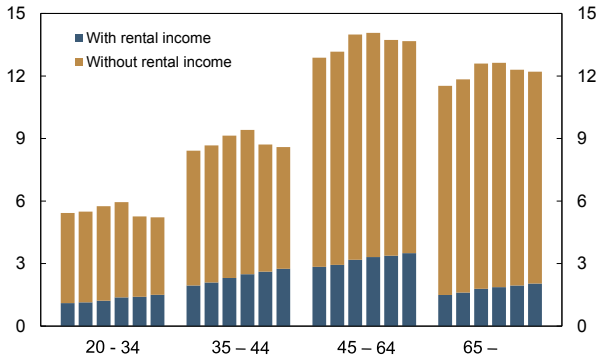
The main categories are households that have recently purchased a dwelling, further divided into first-home buyers and buyers that already own a dwelling (referred to as home movers), younger and older home-owners, pensioners and tenants. First-home buyers and home movers comprise a small share of households in a given year, but provide insight into household behaviour in a housing transaction.

1 Share of households where the main income earner is over 20 years of age.

Secondary home owners are identified as a separate group. This category is delimited to households that own more than one dwelling and have rental income.[2] These are households with an investment property in the housing market in addition to their primary dwelling. The share of households in this category has increased in recent years (Chart 4.1).

2 In tax statistics, secondary homes also comprise commuter accommodation and dwellings used as holiday homes. To exclude such entities, this category is delimited to secondary homes with rental income.

Chart 4.1 Share of households with secondary dwellings by age. With and without rental income. Percent. 2010 – 2015



Sources: Norwegian Mapping Authority, Statistics Norway and Norges Bank

DATA SET

The analysis is based on a combination of income statistics for households compiled by Statistics Norway (based on tax assessment data from the Norwegian Tax Administration) and information on home purchases from the Norwegian Mapping Authority's Land Registry. Households are defined as persons living in the same unit. The age of a household is determined by the age of the main income earner. The analysis is delimited to households between 20 and 90 years of age. Self-employed persons are excluded. Certain outliers are also excluded. Housing transactions are delimited to registered property purchased for residential purposes. For 2015, the data set covers approximately 2.2m households and 91 000 housing transactions.

The analysis examines changes between 2010 and 2015. The year 2010 was selected as a reference year because the manner in which housing values are determined in tax assessment data was changed in 2010 and the basis for comparing home ownership before and after 2010 is limited.

Table 4.1 Household categories in the analysis, 2015[1]

			Households		Debt	
Category	Position in the housing market	Age	Number (in 1000s)	% of total	Billions of NOK	% of total debt
First-home buyers	Purchased a home in 2015. Not registered as home owners in the preceding two years.	20–34	25	1.2	57	2.1
Home movers	Purchased a home in 2015. Registered as home owners in the preceding year.	20–90	62	2.9	182	6.9
Secondary home owners	Registered as owning a secondary home with rental income.	20–90	53	2.4	165	6.2
Younger home owners	Registered as home owners in 2014–2015 but no home purchases in these periods.	20–44	435	20.0	977	36.7
Older home owners	Registered as home owners in 2014–2015 but no home purchases in these periods.	45–64	544	24.9	803	30.2
Pensioners	Registered as home owners in 2014–2015. Pension most important source of income.	65–90	341	15.6	142	5.3
Tenants	Not registered as home owners in the period 2014–2015.	20–90	596	27.3	195	7.3
Other		20–90	125	5.7	142	5.3

1 The categories are mutually exclusive. The figures for 2010 were calculated using 2010 and 2009–2010 as base years.

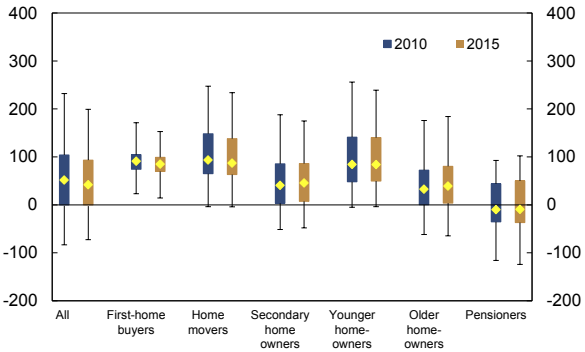
RESIDENTIAL MORTGAGE LENDING REQUIREMENTS

To contribute to more sustainable developments in the residential mortgage market, the authorities have introduced a regulation on requirements for new residential mortgage loans.[1] The requirements in the regulation include a maximum DTI ratio requirement of five times gross annual income, that households must be able to service debt in the event of a five percentage point rise in mortgage rates and an LTV ratio limit of 85%. There is also a minimum principal payment requirement when LTV ratios exceed 60%. Banks are given some flexibility to provide loans that breach the requirements, a so-called "speed limit".[2]

For households with low equity, the LTV requirement will be the most important constraint on borrowing for home purchases (see also box on page 51). For single-person households or households that wish to purchase a dwelling in urban areas, DTI ratios have gained importance as the rise in house prices has outstripped income growth.[3]

1 Finanstilsynet (Financial Supervisory Authority of Norway) introduced guidelines in March 2010. These were converted into a regulation by the Ministry of Finance in June 2015 that was revised in January 2017 and is effective until June 2018. See also Section 1.3.
2 In addition, secondary dwellings in Oslo are subject to additional requirements. Mortgage lending in Oslo is also subject to an Oslo speed limit.
3 See eg Norges Bank's consultation response to the regulation on residential mortgage lending requirements.

Chart 4.2[1] Loan-to-value (net debt/house value) ratio.[2]
Percent. 2010 and 2015



1) Diamonds indicate the median, bars indicate the 25th–75th percentile, lines indicate the 5th–95th percentile. Tenants are excluded because they are not homeowners.
2) Net debt is total debt excluding student loans less bank deposits.
Sources: Norwegian Mapping Authority, Statistics Norway and Norges Bank

The assessment of risk related to household debt is based on three indicators:

- *LTV ratio (net debt[3]/value of the dwelling)*, an indicator of banks' collateral.
- *DTI ratio (total debt/gross income)*, an indicator of the capacity to repay debt.
- *Debt-servicing capacity (income after tax and interest expenses, the required minimum principal payment and ordinary consumption)*[4], an indicator of the ability to cope with higher interest rates or a reduction in income.

The three indicators largely correspond to the requirements in the "Regulation on requirements for new residential mortgage loans", see box on this page.

Exposure across categories

Household debt in Norway has increased by 23% in the period between 2010 and 2015, measured at constant prices. For first-home buyers, this can mainly be attributed to higher house prices, which have made it more costly to enter the housing market (see box on page 56). For other categories, debt growth to a greater degree reflects both income growth and higher housing wealth.

Many first-home buyers and home movers have high LTV ratios (Chart 4.2).[5] High LTV ratios among younger home owners reflect the high LTV ratios many of these owners had when they bought their first dwelling a few years ago. In the period between 2010 and 2015, the share of first-home buyers and younger home owners with very high LTV ratios fell somewhat, which may reflect tighter regulation. First-home buyers in particular are expected to be more sensitive to regulatory changes (see box on page 51). The LTV ratios of secondary home owners are very similar to those of older home owners.

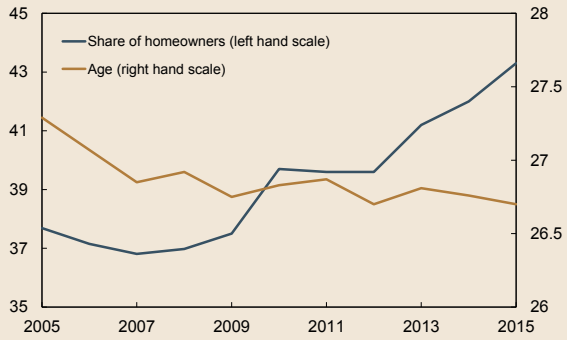
3 Net debt is defined as total debt less student loans and bank deposits.
4 The principal payment is set at 2.5% of debt less student loans for households with LTV ratios exceeding 60%. Ordinary consumption is obtained from the National Institute for Consumer Research (SIFO) Reference Budget for Consumer Expenditure.
5 For home buyers, the purchase price of the dwelling as recorded by the Norwegian Mapping Authority is used. Tax-based estimates of market values are used for other categories. These values may underestimate the actual market value of attractive dwellings and overestimate LTV ratios. A more precise estimation of LTV ratios for first-home buyers can explain the narrower spread within this category.

FIRST-HOME BUYERS AND THE REGULATION ON RESIDENTIAL MORTGAGE LOANS

There has been reason to assume that the requirements for residential mortgage loans would act as a particular constraint on first-home buyers' borrowing. Up to and including 2015, there had been few signs that households from this category have not been able to enter the housing market. The share of persons under 35 years of age that own their own home has risen in recent years and the average age of home buyers has fallen (Chart 4.3).[1]

One reason that first-home buyers have so far not been particularly affected by the regulation may be that banks prioritise exercising the flexibility of the so-called "speed limit" for these borrowers. Another reason may be that first-home buyers to a greater extent receive financial assistance from their parents in order to enter the housing market.[2] Empirical studies nevertheless show that parents' economic position has not been the deciding factor for young people's entry to the housing market, but that the sense of security provided by well-off parents may influence young people to borrow more and purchase more expensive dwellings. The role of parents is found to have become somewhat more important over time (see box on page 58).

Chart 4.3 Average age of first-home buyers and percentage of homeowners under the age of 35. 2005 – 2015



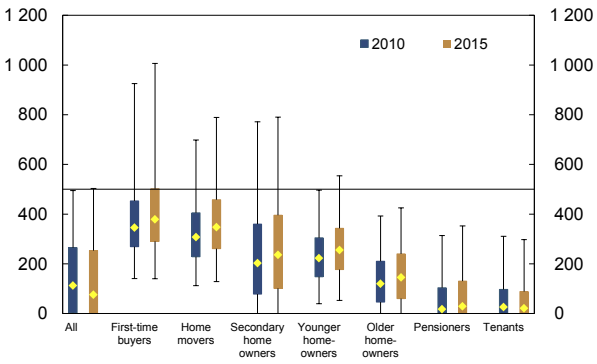
Sources: Norwegian Mapping Authority, Statistics Norway and Norges Bank

1 Figures from Norges Eiendomsmeglerforbund (NEF) and the Norwegian Mapping Authority for the first part of 2017 indicate that the share of young first-home buyers may have fallen after the regulation on new residential mortgage loans was tightened at the turn of the year.
2 See Husholdningsundersøkelsen [Survey of households], Finance Norway. (In Norwegian only.) Gulbrandsen, L. (2016). "Nordmenns gjeld og formue høsten 2015" [Household debt and wealth in Norway, Autumn 2015]. NOVA Notat 3/16, Oslo and Akershus University College of Applied Sciences. (In Norwegian only.)

Households that have recently purchased a home also have high DTI ratios (Chart 4.4). First-home buyers have higher DTI ratios than home movers. Many secondary home owners also have high DTI ratios, although there is wide variation within this category. For other categories, DTI ratios are relatively moderate.[6]

Debt-servicing capacity, measured as income less fixed expenses, is weakest among first-home buyers and tenants (Chart 4.5).[7] First-home buyers have high debt and relatively low income, but can often expect higher income growth than other household categories. For many tenants, poor debt-servicing capacity is a result of low income. Among pensioners, debt-

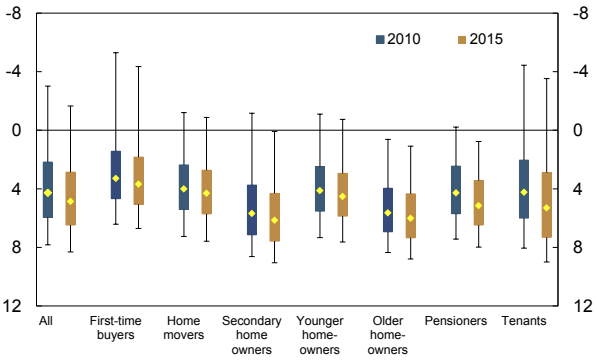
Chart 4.4[1] Debt-to-income (total debt/gross income) ratio. Percent. 2010 and 2015



1) Diamonds indicate the median, bars indicate the 25th–75th percentile, lines indicate the 5th–95th percentile.
Sources: Norwegian Mapping Authority, Statistics Norway and Norges Bank

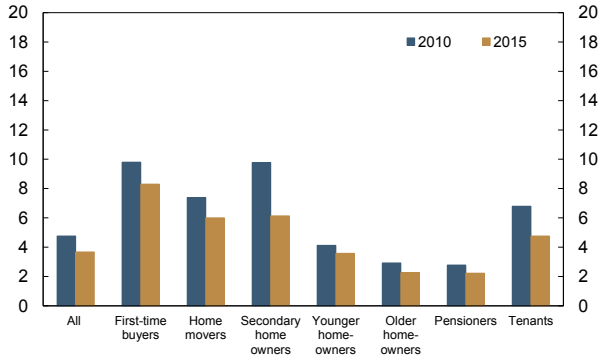
6 Note that owing to compositional effects, the median for "all" falls despite being higher in each of the categories: the number of individuals in the categories with a low median DTI ratio is increasing faster than in the categories with a high median DTI ratio.
7 Ordinary consumption as defined by SIFO does not include rental expenditure, which results in lower debt-servicing capacity for tenants than shown by the chart.

Chart 4.5[1] Debt-servicing capacity. Margin as the number of monthly incomes after interest and principal repayments[2] and standard consumption expenditure. 2010 and 2015



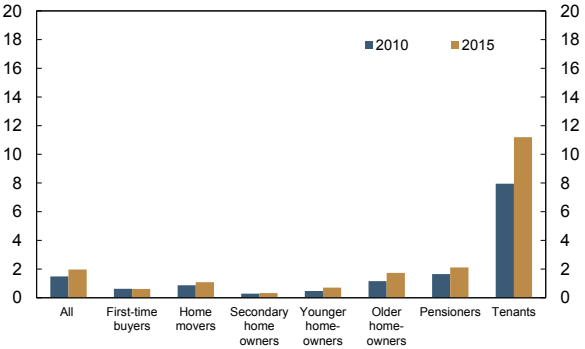
1) Diamonds indicate the median, bars indicate the 25th–75th percentile, lines indicate the 5th–95th percentile. Note that the vertical scale is inverted.
2) Applies to LTV ratios above 60 percent. Principal payments set at 2.5% of debt less student loans.
Sources: Norwegian Mapping Authority, SIFO, Statistics Norway and Norges Bank

Chart 4.6 Credit risk measured as the share of debt among households with LTV ratio[1], DTI ratio[2] and debt-servicing capacity[3] exceeding critical levels. Percent. 2010 and 2015



1) Net debt exceeding the market value of the dwelling.
2) Debt exceeding five times gross income.
3) Margin below one month's after-tax income.
Sources: Norwegian Mapping Authority, SIFO, Statistics Norway and Norges Bank

Chart 4.7 Consumer debt[1] as a share of the category's total debt. Percent. 2010 and 2015



1) Debt where the ratio of interest expenses to average debt over the past two years exceeds two times banks' average lending rate.
Sources: Norwegian Mapping Authority, Statistics Norway and Norges Bank

servicing capacity has historically been weak, but has improved owing to income growth in the period between 2010 and 2015. Pensioners with low debt-servicing capacity may be somewhat more vulnerable than other households in the same situation because they are less able to increase their incomes by working more.

4.2 RISK OF DEFAULT AND SHIFTS IN CONSUMPTION

There is a substantial risk that many households will need to increase savings and tighten consumption in the event of a sharp decline in house prices or a marked rise in interest expenses. This also applies to households that have been established in the housing market for some time. Residential mortgage credit risk is low, but homeowners that have recently purchased a dwelling are vulnerable. Higher consumer debt and increased investment in secondary dwellings may lead to higher credit risk exposure for banks.

To assess the share of exposed households and debt, critical levels[8] are set for each of the key indicators presented above:

- *LTV ratio:* Net debt exceeding 100% of the dwelling's market value
- *DTI ratio:* Debt exceeding five times gross income
- *Debt-servicing capacity:* Less than one month's income remaining after payment of interest, minimum principal[4] and ordinary consumption expenditures (on an annual basis).

Credit risk

Credit risk is related to non-performing household loans. If the loan continues to be defined as non-performing over time, the bank may file for the enforced sale of collateral to cover outstanding claims. The credit risk measure provides an indication of the share of banks' loans at elevated risk of default in the event of a pronounced downturn in the economy and is not an estimate of expected bank losses.

8 For a detailed explanation of the critical levels, see Solheim, H. and B.H. Vatne (2013) "Measures of household credit risk". *Economic Commentaries* 8/2013, Norges Bank, and Lundquist, K.-G., H. Solheim and B.H. Vatne (2017) "Household debt and the link to the housing market", *Economic Commentaries* 7/2017, Norges Bank.

Debt collection is costly for both borrower and lender.[9] It is assumed that other solutions are chosen as long as households have flexibility in at least one of the three indicators. In this analysis, residential mortgage credit risk is only high when a household simultaneously exceeds the critical levels of all three of the indicators.10

International studies show that the rate of default among households with secondary dwellings in crisis situations is significantly higher than for households that only own a primary dwelling.[11] Secondary home owners in Norway with rental income are financially secure, with ample scope for consumption in excess of the National Institute for Consumer Research (SIFO) reference budget.[12] However some of these home owners' income is rental income, which can decrease in the event of a weakening of the housing market.[13] Households that own multiple dwellings are also likely to have higher fixed expenses.

The probability of default is substantially higher for consumer loans than for other household loans.[14] The data used in the analysis do not explicitly distinguish between residential mortgage loans and other debt, but it is possible to extract households with unusually high interest expenses relative to the level of debt. This may indicate that the household has debt that is not secured on collateral and therefore has elevated credit risk.[15]

Overall credit risk is measured as the share of debt that is either in breach of the three criteria for residential mortgage credit risk or is defined as consumer debt.

9 In Norway, debt is linked to the borrower and not to the property mortgaged, as it is in some countries. In the event of enforced sale of collateral, a borrower's income in excess of the amount needed to cover a minimum of consumption expenses may be confiscated under the Debt Reorganisation and Bankruptcy Act, see the Norwegian Advisory Council on Bankruptcy's website.
10 The LTV requirement does not apply to non-homeowners.
11 See Reserve Bank of New Zealand (2015): "Adjustments to restrictions on high-LVR residential mortgage lending" *Consultation Paper* and Albanesi, S., G. De Giorgi and J. Nosal (2017) "Credit Growth and the Financial Crisis: A New Narrative", *Working Paper* 23740, NBER.
12 In 2015, the median household with a secondary dwelling had a margin of just over five months' income, compared with a margin of six months for the median of the population as a whole.
13 For the median household with a secondary dwelling, rental income accounts for approximately 6% of total income.
14 See Hagen, M., L.-T. Turtveit and B.H. Vatne (2017) "Strong growth in consumer credit", *Economic Commentaries* 1/2017, Norges Bank. Note that the risk of default for consumer loans is largely reflected in banks' interest margins on the loans. Banks expect losses on consumer loans to be higher than on other loans.
15 Consumer debt is defined as household debt with an average interest rate that is twice as high as for household debt as a whole.

Risk of shifts in consumption

Risk of shifts in consumption is the risk that high debt will induce households to change their saving and consumption behaviour when they are exposed to shocks such as an abrupt increase in interest rates, a sharp fall in house prices or an expected reduction in income.[16] International studies show that high debt is a better indicator of the negative spillover effects of household debt on economic growth than credit risk.[17]

Changes in household behaviour may both amplify and prolong a downturn:

- High debt increases the probability that a household will need to rapidly reduce consumption.
- High debt may also reduce household flexibility, including the ability to increase debt to finance housing investments or business activities.

There is reason to believe that shifts in consumption will occur long before debt collection becomes necessary. In the analysis, it is assumed that when households exceed the critical level of at least one of the three indicators, it is an indication of a higher risk of shifts in consumption.[18]

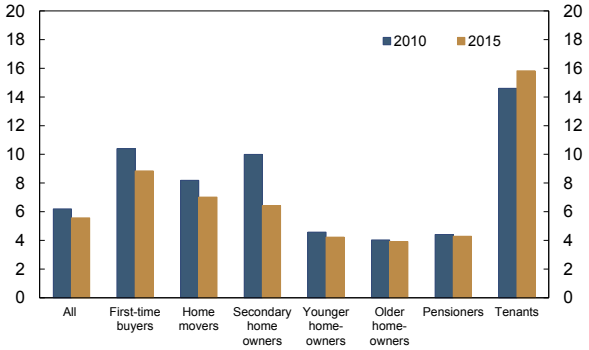
In assessing the risk of shifts in consumption, the deciding factor is not necessarily debt in itself, but rather the share of households that are tightening consumption. This risk indicator is therefore defined as the share of households exceeding the critical level of at least one of the indicators.

Change in risk between 2010 and 2015

Residential mortgage credit risk, measured as the share of debt among households exceeding the critical levels of all three of the indicators simultaneously, is highest among first-home buyers (Chart 4.6). For older age groups, the share of high-risk debt is considered to be low. Credit risk among tenants[19] without debt defined as consumer debt has declined somewhat in the period between 2010 and 2015,

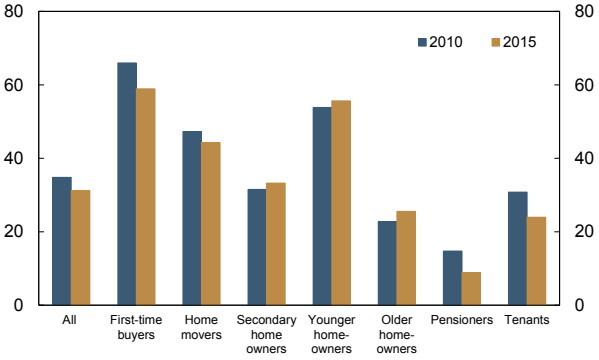
16 Analyses of euro area household data show that high debt ratios dampen growth in private consumption. See Chapter 2 in International Monetary Fund (2017) *Global Financial Stability Report*, IMF, October 2017.
17 International Monetary Fund (2017) *Global Financial Stability Report*, IMF, October 2017.
18 Household consumer debt is not assumed to have a particular effect on the risk of shifts in consumption.
19 Tenants as defined here do not own a dwelling. Credit risk therefore only reflects breaches of requirements relating to LTV and debt-servicing capacity.

Chart 4.8 Credit risk measured as the share of debt among households whose LTV ratio[1], DTI ratio[2] and debt-servicing capacity[3] exceed critical levels and that hold consumer debt.
Percent. 2010 and 2015



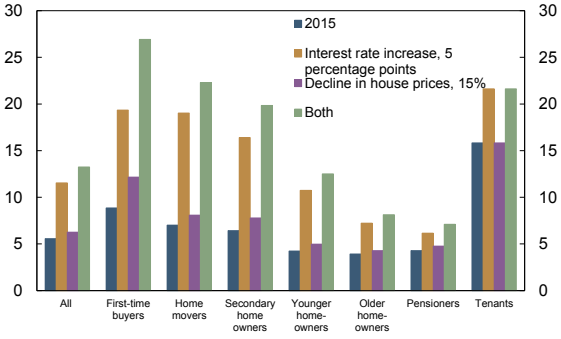
1) Net debt exceeding the market value of the dwelling.
2) Debt exceeding five times gross income.
3) Margin below one month after-tax income.
Sources: Norwegian Mapping Authority, SIFO, Statistics Norway and Norges Bank

Chart 4.9 Risk of shifts in consumption. Share of households with high LTV ratio[1], high DTI ratio[2] or low debt-servicing capacity[3].
Percent. 2010 and 2015



1) Net debt exceeding the market value of the dwelling.
2) Debt exceeding five times gross income.
3) Margin below one month's after-tax income.
Sources: Norwegian Mapping Authority, SIFO, Statistics Norway and Norges Bank

Chart 4.10 Sensitivity analysis for credit risk. Share of households that exceed critical levels of the LTV ratio[1], DTI ratio[2] and debt-servicing capacity[3], given an increase in interest rates and a fall in house prices.
Percent. 2015



1) Net debt exceeding the market value of the dwelling.
2) Debt exceeding five times gross income.
3) Margin below one month's after-tax income.
Sources: Norwegian Mapping Authority, SIFO, Statistics Norway and Norges Bank

primarily owing to lower interest rate levels and improved debt-servicing capacity.

Credit risk for secondary home owners is approximately the same as for other categories of home owners that have recently bought a new home. As mentioned above, there may be reason to believe that credit risk related to secondary home mortgages is somewhat higher than for primary home mortgages, all else being equal. The calculation methodology may therefore underestimate the risk related to lending to this category compared with the assessment of other categories.

The share of consumer debt is particularly high among tenants (Chart 4.7). Pensioners also have a somewhat higher share of consumer debt than other categories. The share of this type of debt among households that have recently purchased a dwelling was small in 2015.[20]

For households as a whole, credit risk has fallen marginally in the period between 2010 and 2015 (Chart 4.8). Of total debt in 2015, 5.5% is assessed as being particularly high-risk, of which 2 percentage points is consumer debt. Credit risk fell particularly among first-home buyers and secondary home owners. Among older households, credit risk has remained stable. For this category, lower interest rates have had a dampening effect on credit risk, while more consumer debt has pulled in the opposite direction.

The risk of shifts in consumption is estimated to have fallen marginally between 2010 and 2015 (Chart 4.9). Just over 30% of households in 2015 are associated with a high risk of shifts in consumption. Risk is particularly high for households that have recently purchased a dwelling and younger home owners. Risk in the secondary home owners' category is approximately equal to the average for all households. Risk in the older home owners and pensioners categories is low.

Sensitivity analysis: Higher interest rates and lower house prices

The risk indicators are sensitive to the level of house prices and interest rates. If interest rates had been

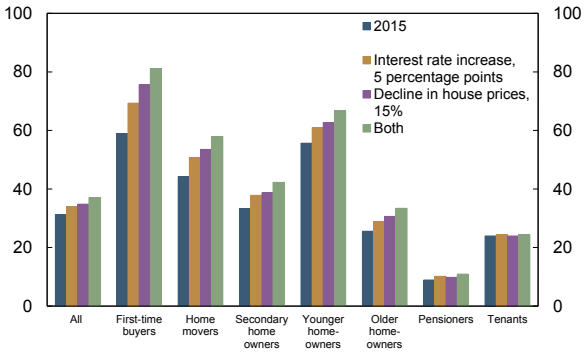
20 Note that the average interest rate will still be low for borrowers that have substantial debt with a low interest rate and some debt with a high interest rate. As a result, they are not captured by this consumer loan indicator.

higher, or house prices lower, more households and more debt would have been considered high-risk. In the sensitivity analysis, the indicators are calculated with a five percentage point increase in the interest rate level and/or a 15% reduction in house prices.

The categories with the highest debt are most vulnerable to higher interest rates. With a 5 percentage point increase in interest rates, the share of high-risk debt among first-home buyers will increase from approximately 9% to approximately 19% (Chart 4.10). The share of high-risk debt among secondary home owners increases from close to 6% to close to 16%. With both higher interest rates and a 15% decline in house prices, the share increases to 27% for first-home buyers and to 20% for secondary home owners. Vulnerability to changes in interest rates or house prices among other home buyers is approximately on a par with that of first-home buyers.

Older home owners and pensioners appear to cope with both higher interest rates and lower house prices without an appreciable change in credit risk. The risk of default is considerably lower among younger home owners than households that have recently purchased a dwelling, which illustrates the particular vulnerability of a household just after the purchase of a dwelling. Total credit risk is driven by the most sensitive categories and rises markedly with substantial increases in interest rates.

Chart 4.11 Sensitivity analysis for risk of shifts in consumption. Share of households that exceed critical levels of the LTV ratio, DTI ratio and debt-servicing capacity, given an increase in interest rates and a fall in house prices. Percent. 2015



1) Net debt exceeding house market value.
2) Debt exceeding five times gross income.
3) Margin below one month's after-tax income.
Sources: Norwegian Mapping Authority, SIFO, Statistics Norway and Norges Bank

The share of households with a high risk of shifts in consumption increases in all categories when they are exposed to shocks (Chart 4.11). The effects of higher interest rates and lower house prices are approximately the same. In principle, pensioners have the lowest risk and are also the least sensitive to changes in interest rates and house prices.

BANKS' EXPOSURE TO THE HOUSING MARKET

Lending accounts for approximately 60% of banks' total assets, of which approximately half is lending to households. Residential mortgages account for approximately 94% of lending to households. A fall in house prices will increase risk in the banking sector through various channels:

1. Increased probability of mortgage default and higher losses on non-performing loans.
2. Negative impacts on the real economy resulting from changes in household behaviour, ie consumption and saving behaviour. This may weaken the debt-servicing capacity of banks' other borrowers.
3. Lower revenues from banking services provided to the household sector due to declining household sector activity.
4. Uncertainty regarding bank funding, particularly related to funding through the issuance of covered bonds.
5. Increased risk related to commercial real estate (CRE) lending. As commercial space can be converted for residential use, a fall in house prices can spread to the CRE market.

WHAT EXPLAINS THE INCREASE IN HOUSEHOLD DEBT?

Increased debt among households reflects higher income and collateral values, but also a higher propensity to borrow or improved access to credit.

Household debt is largely determined by the stage of the life cycle, income, house prices and interest rates. The stage of the life cycle, or age, has an important influence on housing market behaviour. Household debt-servicing capacity depends on income, while the level of household borrowing for home purchases and borrowing against home equity depends on house prices. Borrowing is also influenced by factors such as banks' credit standards and household propensity to borrow.

The increase in average household debt in the period between 2010 and 2015 is decomposed to shed light on the factors that have influenced household borrowing in recent years.[1] The data comprises total household debt excluding student loans. The calculations show the share of the increase in debt levels that can be attributed to developments in age distribution, income, housing wealth and rural/urban location and the share that can be attributed to changes in the propensity and ability to borrow in relation to each of these variables. A higher propensity or ability to borrow means higher debt even if the level of the variables remains unchanged.[2]

In 2010, average household debt excluding student loans was close to NOK 1m. In 2015, it was approximately NOK 215 000 higher (Chart 4.12), which largely reflects higher income and housing wealth. The age distribution has shown little change in this period, and the same applies to the rural/urban distribution of households.[3] The analysis shows that household debt related to income increased from 2010 to 2015. There was a modest increase in debt related to home equity.

The analysis is also carried out based on different stages of the life cycle (Table 4.1). The increase in average debt among *first-home buyers* can to a great extent be attributed to higher house prices. At the same time, reduced propensity or ability to borrow related to home equity had a restraining effect on the increase in debt. This may indicate that the regulation of banks' residential mortgage lending, first as guidelines and then as regulatory requirements, has had an impact. This is also in line with the assumption that the loan-to-value (LTV) ratio requirement is the most important constraint on borrowing for first-home buyers.

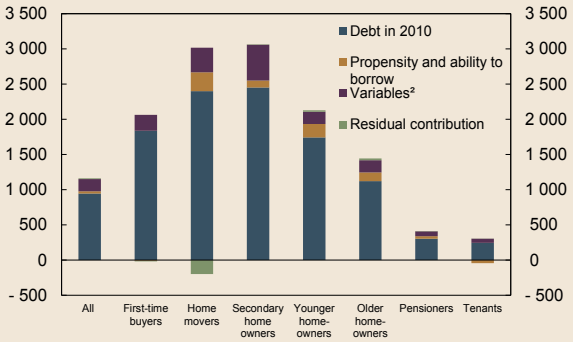
1 See box on page 49 for a description of the underlying data.
2 While debt-to-income and debt-to-value ratios show total debt relative to income and housing wealth respectively, this method links shares of debt to income, housing wealth, age distribution and rural/urban location. The method provides an exhaustive decomposition of the increase in debt and finds the share that can be attributed to changes in the variables (resources) and the share that can be attributed to differences in estimated coefficients in the model used. Changes in coefficients over time are interpreted as changes in the willingness and ability to borrow. An increase in the coefficient for income for example is referred to as an increase in debt related to income. A third component, the residual contribution is also included in the calculation. This is of little importance for most of the categories. Each factor's contribution can be positive or negative. (See Lindquist, K.-G., H. Solheim and B.H. Vatne (2017) "A decomposition of the increase in household debt", *Economic Commentaries* 6/2017, Norges Bank.)
3 A variable for living in a city (Oslo, Bergen, Trondheim and Stavanger) is included to capture omitted city-related factors. Expectations of higher income growth or house price inflation are examples of such factors.

Average debt is highest among *home movers* and *secondary home owners*. The increase in their debt reflects both higher income and higher housing wealth. The categories cover a wide range of ages. Overall, home movers' borrowing related to home equity has decreased. Nonetheless, owing to higher borrowing among younger home movers, the propensity and ability to borrow of the category as a whole has increased.

While the increase in the average debt of younger home owners was close to the average, the increase in older home owners' debt was well above average. Many households in these categories borrow to purchase cars and holiday homes or for home renovations. Among younger households, borrowing related to income increased substantially, while older households to a greater extent made use of available collateral values and increased their borrowing related to home equity.

Average debt among *pensioners* and *tenants* is low. For pensioners, borrowing related to home equity has increased somewhat, but borrowing related to income has declined. This likely reflects more rapid income growth than expected for this category. Among tenants, the rise in debt is almost entirely a reflection of higher incomes.

Chart 4.12[1] Average debt in 2010 and the increase to 2015. Decomposed change. In thousands of 2015 NOK



1) Each group is analysed seperatly. The groups are mutually exclusive. See main text for definition of each group.
2) After-tax income in 2015 NOK, real housing wealth in 2015 NOK, rural/urban location and age variables.
Sources: Norwegian Mapping Authority, Statistics Norway and Norges Bank

THE IMPORTANCE OF PARENTS' ECONOMIC POSITION FOR FIRST-HOME BUYERS

For young people entering the housing market, their own income is the most important factor, but the importance of parents' economic position has increased somewhat. The share of young first-home buyers that have received direct financial assistance from their parents has increased in recent years.

There are currently few signs of young people being shut out of the housing market (Chart 4.3), despite many years of rapid house price inflation and a gradual tightening of bank residential mortgage lending requirements.

At the same time, housing values for the parent generation have risen ever higher. The tax exemption on early inheritance gifts was increased in 2009 and was abolished entirely in 2014, which may have made it more attractive for parents to transfer funds to their children.

Linking tax return data for young people and their parents can show to what extent parents' economic position and financial assistance correlate with young people's entry into the housing market conditioned on the economic position of young people. Tax assessment data do not show whether parents pledge their own homes as collateral or act as mortgage guarantors.[1] Data for the period between 2005 and 2014 are used to model the probability of a first-home purchase among young people aged between 21 and 31.[2]

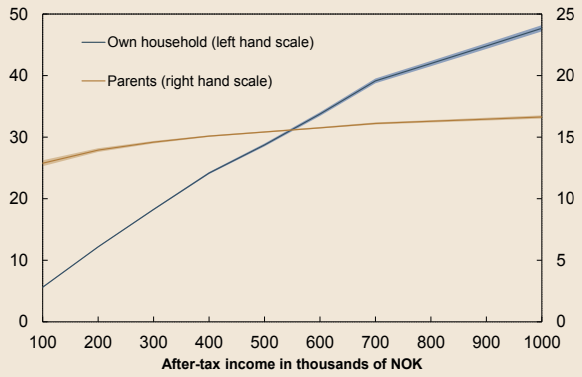
The analysis shows that the most important factor for first-home buyers in Norway is own household income. A doubling of a post-tax household income of NOK 300 000 increases the probability of purchasing a first home by approximately 15 percentage points (Chart 4.13). Parents' income is of relatively little importance. A doubling of parents' post-tax income above NOK 300 000 increases the likelihood of their children entering the housing market by only 1–1½ percentage points. An increase in parents' housing wealth from NOK 2m to NOK 5m increases the likelihood of their children purchasing a home by close to 1½ percentage points. The importance of housing wealth is fairly modest, although consistent with some parents pledging additional collateral when

1 If such support correlates with the economic position of the parents, for example their housing wealth, this could nevertheless be reflected in the results.
2 Explanatory variables are parents' income, gross financial assets and housing wealth, transfer information, and the household's own income and gross financial assets. Income is measured after tax and all assets are measured at the beginning of the year. The analysis also controls for gender, marital status, number of children, rural/urban location, student status, number of siblings, age and calendar year. For more detail, see Halvorsen, E. and K.-G. Lindquist (2017) "Getting a foot on the housing ladder: The role of parents in giving a leg-up". Forthcoming Norges Bank *Working Paper* 19/2017.

their children buy a house. Well-off parents often have not only higher income, but also more financial and housing assets. For the children of these parents, the overall financial contribution from parents could be substantial. The analysis finds that parents' income and wealth is somewhat more important after 2009 than before.

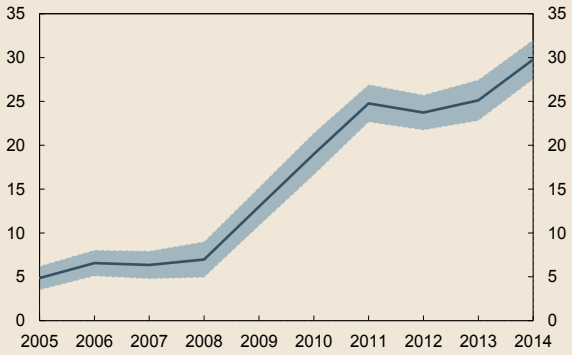
The importance of receiving financial assistance for home purchases has increased over time. In 2008, the probability that young people who received assistance from their parents would purchase a first home was approximately 5 percentage points higher than the probability for those who did not receive such assistance. Between 2008 and 2011 this probability increased and was 25–30 percentage points higher as of 2011 (Chart 4.14). The share of first-home buyers that received financial assistance was approximately 3½% at both the beginning and end of the analysis period. The share fell until 2008 and increased thereafter. The amounts that are transferred by parents are generally high. In 2014, the average transfer captured by tax assessment data was NOK 620 000, while the median was NOK 400 000.

Chart 4.13 Probability of purchasing a first home. Contributions from own household and parents' income.[1] Percentage points. 2005 – 2014



1) The shaded area indicates a 95 percent confidence interval.
Sources: Statistics Norway and Norges Bank

Chart 4.14 Average contribution of financial assistance from parents to the probability of buying a first home.[1] Percentage points. 2005 – 2014

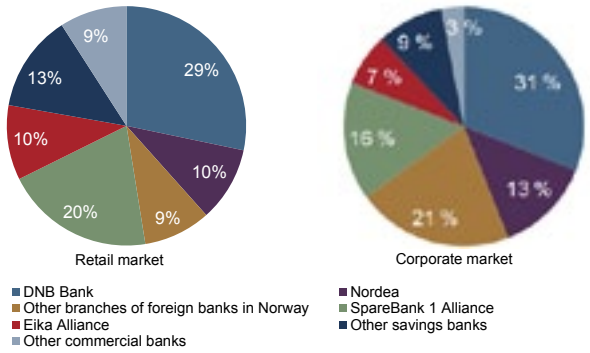


1) The shaded area indicates a 95% confidence interval.
Sources: Statistics Norway and Norges Bank

Annex 1
The Norwegian banking sector

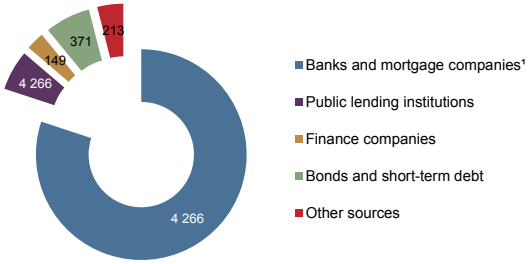
See also *Norway´s financial system 2017* for a description of the Norwegian financial system.

Chart 1 Lending market shares in the Norwegian banking sector.[1,2]
Percent. At 30 June 2017



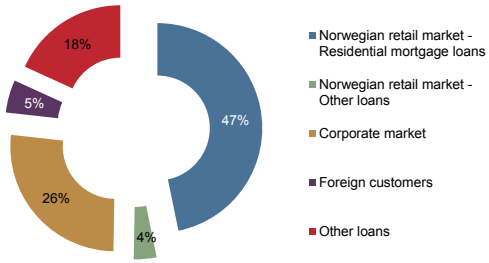
1) All banks and mortgage companies in Norway.
2) See Table 2.
Source: Norges Bank

Chart 2 Gross domestic lending to the non-financial sector by credit source.
In billions of NOK. At 30 June 2017



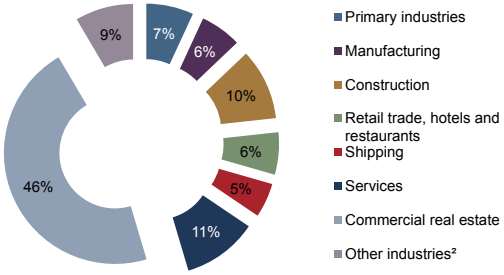
1) All banks and mortgage companies including Eksportfinans.
Source: Statistics Norway

Chart 3 Lending[1] by all banks and mortgage companies.
Percent. At 30 June 2017



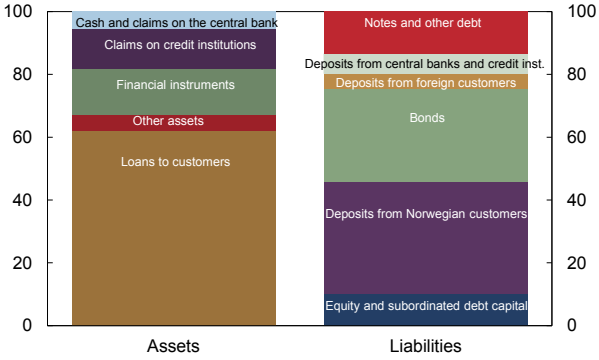
1) Total lending of NOK 5 104bn.
Source: Norges Bank

Chart 4 Lending to the corporate market[1] by all banks and mortgage companies.
Percent. At 30 June 2017



1) Total corporate loans NOK 1 351bn.
2) Other industries comprise Oil service, Other transportation, Electricity and water supply and Extraction of natural resources. Here, "Oil service" is narrowly defined.
Source: Norges Bank

Chart 5 Balance sheet[1] of Norwegian-owned banks and covered bond mortgage companies.[2] Percent. At 30 June 2017



1) Intercompany items between banks and mortgage companies are not eliminated.
2) All banks and mortgage companies excluding subsidiaries and branches of foreign banks in Norway.
Source: Norges Bank

Table 1 Structure of the Norwegian financial industry at 30 June 2017

	Number	Lending (NOK bn)	Total assets (NOK bn)
Banks (excluding branches of foreign banks)	126	1796	3657
Branches of foreign banks	11	771	1348
Mortgage companies (including branches of foreign companies)	31	1693	2100
Finance companies (including branches of foreign companies)	51	157	189
State lending institutions	3	329	342
Life insurance companies (excluding branches of foreign companies)	13	109	1429
Non-life insurance companies (excluding branches of foreign companies)	59	2	174

	NOK bn
Market value of equities and equity certificates, Oslo Børs	2 166
Outstanding domestic bond and short-term paper debt	2054
Issued by public sector and state-owned companies	730
Issued by banks	327
Issued by other financial institutions	563
Issued by other private enterprises	167
Issued by non-residents	267
GDP Norway (2016)	3117
GDP mainland Norway (2016)	2717

Sources: Oslo Børs, VPS, Statistics Norway, Finanstilsynet (Financial Supervisory Authority of Norway) and Norges Bank

Table 2 Market shares[1] of banks and mortgage companies in Norway at 30 June 2017. Percent

	Gross lending to		Deposits from	
	Retail market[9]	Corporate market[10]	Retail market[9]	Corporate market[10]
DNB Bank[2]	28	31	30	37
Nordea[3]	10	13	7	13
Branches of foreign banks in Norway[4]	9	21	5	17
SpareBank 1 Alliance[5]	20	16	19	14
The Eika Alliance[6]	10	7	13	7
Other savings banks[7]	13	9	13	9
Other commercial banks[8]	9	3	13	2
Total	100	100	100	100
Total market (NOK bn)	2 566	1 352	1 158	669

1 The market shares are calculated by summing the balance sheet items for the institutions in the different groups.
2 DNB Bank, DNB Boligkreditt and DNB Næringskreditt.
3 Nordea Bank AB (Publ), branch in Norway and Nordea Eiendomskreditt.
4 Danske Bank, Handelsbanken, Handelsbanken Eiendomskreditt, eight other branches and one mortgage lender.
5 SpareBank 1 SR-Bank, SpareBank 1 SMN, SpareBank 1 Østlandet (former Sparebanken Hedmark), SpareBank 1 Nord-Norge, the other eleven savings banks in the Sparebank 1 Alliance, SpareBank 1 Boligkreditt og BN Bank, one commercial motgage lender, one mortgage lender and one other residential mortgage lender.
6 Eika Boligkreditt, Eika Kredittbank, 72 savings banks and three commercial banks, which own Eika Gruppen AS and two other residential mortgage lenders.
7 Sparebanken Vest, Sparebanken Vest Boligkreditt, Sparebanken Sør, Sparebanken Møre og Sparebanken Sogn og Fjordane, 13 other savings banks, seven residential mortgage lenders, one mortgage lender and one hybrid covered bond mortgage company.
8 Skandiabanken ASA, Santander Consumer Bank AS, Eksportfinans, Gjensidige Bank ASA, Storebrand Bank, Landkreditt Bank, 13 other commercial banks and five other residential mortgage lenders, Kommunalbanken and one municipal mortgage lender.
9 The retail market comprises wage earners, pensioners, benefit recipients and students.
10 The corporate market primarily comprises non-financial private enterprises and the self-employed.

Source: Banks' websites and Norges Bank

Table 3 Rating by Moody's[1], total assets, capital adequacy[2] and return on equity for Nordic financial groups, subsidiaries in Norway and Norwegian banks at 30 June 2017. Consolidated figures

	Credit rating			Common equity tier 1 (CET1) capital ratio (%)			Return on equity		
	Short-term	Long-term	Total assets (NOK bn)	(with transitional floor)	(without transitional floor)	Proportion of interim result in CET1 capital[2] (%)	2015	2016	2017 Q1–Q2
Nordea Bank	P-1	Aa3	5 899	12.1	19.4	50	12.3	11.5	9.9
Danske Bank	P-1	A1	4 955	10.5	16.2	50	8.5	11.9	6.3
Handelsbanken	P-1	Aa2	2 940	9.5	23.6	50	13.5	13.1	12.6
SEB	P-1	Aa3	2 757	10.6	18.9	50	12.2	7.8	12.6
DNB	P-1	Aa2	2 722	15.8	16	50	14.5	10.1	9.7
Swedbank	P-1	Aa3	2 409	10.5	16.2	50	13.5	15.8	15.7
SpareBank 1 SR-Bank	P-1	A1	213	15.0	16.5	100	10.8	10.0	9.9
Sparebanken Vest	P-1	A1	168	15.0	18.7	100	11.0	13.1	10.7
Santander Consumer Bank	P-2	A3	151	15.3	15.3	100	12.3	14.3	18.6
SpareBank 1 SMN	P-1	A1	149	15.4	16.8	100	10.7	11.3	9.9
Sparebanken Sør	P-1	A1	111	14.7	14.7	100	8.4	11.6	8.6
SpareBank 1 Østlandet[3]	P-1	A1	108	17.1	18.9	100	11.4	10.5	9.2
SpareBank 1 Nord-Norge	P-1	A1	96	15.9	18.5	100	9.1	12.0	12.2

1 Rating at 5 September 2017. Moody's scale of rating: Short-term: P-1, P-2,... Long-term: Aaa, Aa1, Aa2, Aa3, A1, A2,...
2 The higher the proportion of (positive) interim result included, the higher the CET1 capital ratio. Owing to different national rules, such as consolidation rules for life insurance companies, CET1 capital figures for Norwegian financial groups are not directly comparable with those of other Nordic financial groups.
3 Former Sparebanken Hedmark, merged with Bank 1 Oslo og Akershus.

Sources: Banks' websites and Moody's

Table 4 Banks'[1] losses on loans[2] to various industries and sectors as a percentage of lending to the respective industries and sectors

Industries	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Lending in NOK bn 2017
Agriculture, forestry and fishing	-0.1	0.2	0.2	0.1	0.2	0.1	0.1	0.2	0.0	0.2	90.5
of which: Fish farming, hatcheries	-0.1	0.6	0.8	0.2	0.1	0.0	0.1	0.1	0.2	0.1	12.7
Extraction of crude oil and natural gas	0.0	0.0	0.1	0.0	0.1	0.4	-0.1	0.2	0.2	6.8	10.7
Manufacturing, mining and quarrying	0.1	0.5	0.9	0.7	0.7	0.7	0.2	1.0	1.3	1.7	61.0
of which: Manufacturing			0.9	0.9	0.4	0.5	0.2	1.2	0.6	1.0	44.2
of which: Ship and boat building			0.8	-0.1	2.7	2.0	0.0	0.0	-0.2	0.4	10.5
Electricity and water supply, construction	0.1	0.4	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.4	140.1
of which: Construction	0.2	0.7	0.9	1.5	1.5	1.2	1.5	2.0	1.6	1.1	35.1
Retail trade and auto repair, hotels and restaurants	0.2	0.5	1.4	0.4	0.8	0.3	0.6	0.8	0.4	0.3	60.5
of which: Retail trade and auto repair	0.2	0.5	1.6	0.3	0.8	0.3	0.6	0.9	0.5	0.3	48.4
of which: Hotels and restaurants	0.3	0.4	0.4	0.5	0.7	0.5	0.3	0.5	0.3	0.3	12.2
Shipping and pipeline transport	0.0	0.1	1.4	1.4	1.7	2.1	2.1	1.4	1.8	2.3	54.5
Other transport and communications	0.1	0.1	1.4	1.4	1.2	0.6	2.1	0.1	0.5	2.5	61.3
Business services and real estate activities	0.0	0.3	0.4	0.2	0.3	0.3	0.2	0.3	0.2	0.2	450.0
of which: Real estate activities	0.0	0.3	0.3	0.2	0.3	0.3	0.2	0.3	0.1	0.1	382.4
of which: Professional, financial business services			0.6	0.2	0.3	0.4	0.3	0.6	0.7	1.0	67.6
Other service industries	0.1	0.2	0.4	0.6	0.1	0.4	0.2	0.8	0.1	0.0	32.6
Total for all industries	**0.0**	**0.3**	**0.6**	**0.4**	**0.5**	**0.5**	**0.5**	**0.5**	**0.4**	**0.7**	**961.3**
Retail market	**0.0**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.0**	**0.1**	**1 078.6**
Other[3]	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.5**	**0.1**	**795.1**
Total	**0.0**	**0.2**	**0.3**	**0.2**	**0.3**	**0.2**	**0.2**	**0.2**	**0.3**	**0.3**	**2 835.2**

1 All banks in Norway excluding foreign branches.
2 Recognised losses, excluding changes in unspecified loss provisions/collective impairment losses.
3 Financial institutions, central government and social security administration, municipal sector and foreign sector.

Source: Norges Bank

Table 5 Loan defaults. All banks and covered bond mortgage companies[1]. At year-end

	Loan defaults. Percentage of lending to sector			Loan defaults. Percentage of lending to private sector			
År	Households	Enterprises	Others	Households	Enterprises	Others	Total
1990	4.9	7.6	3.1	3.1	2.6	0.1	5.7
1991	6.3	10.2	3.1	4.1	3.4	0.1	7.5
1992	8.2	11.5	1.9	5.2	3.9	0.1	9.2
1993	6.5	10.6	0.4	4.3	3.5	0.0	7.7
1994	4.8	6.9	0.7	3.2	2.2	0.0	5.4
1995	3.7	4.6	0.3	2.4	1.5	0.0	3.9
1996	2.8	3.3	0.4	1.9	1.0	0.0	2.9
1997	2.1	2.1	0.2	1.4	0.7	0.0	2.1
1998	1.5	1.3	0.1	0.9	0.4	0.0	1.4
1999	1.3	1.5	0.1	0.9	0.5	0.0	1.4
2000	1.3	1.4	0.1	0.8	0.5	0.0	1.3
2001	1.3	1.7	0.0	0.8	0.6	0.0	1.4
2002	1.3	3.5	0.1	0.8	1.1	0.0	2.0
2003	1.1	3.2	0.1	0.7	1.0	0.0	1.7
2004	0.8	1.8	0.1	0.6	0.5	0.0	1.1
2005	0.7	1.0	0.0	0.5	0.3	0.0	0.8
2006	0.6	0.7	0.1	0.4	0.2	0.0	0.6
2007	0.5	0.5	0.0	0.4	0.2	0.0	0.5
2008	0.8	0.9	0.0	0.5	0.3	0.0	0.8
2009	1.1	1.6	0.1	0.7	0.5	0.0	1.3
2010	1.2	1.8	0.1	0.8	0.6	0.0	1.4
2011	1.0	1.9	0.2	0.7	0.6	0.0	1.3
2012	1.0	1.8	0.7	0.7	0.6	0.0	1.2
2013	0.9	1.8	0.3	0.6	0.5	0.0	1.2
2014	0.8	1.5	0.1	0.6	0.4	0.0	1.0
2015	0.7	1.3	0.2	0.5	0.4	0.0	0.9
2016	0.7	1.5	0.1	0.5	0.4	0.0	0.9
2017[2]	0.7	1.5	0.1	0.5	0.4	0.0	0.9

1 Covered bond mortgage companies included from 2005.
2 At 30 June 2017.

Source: Norges Bank

Annex 2
Regulatory reform

Banks' capital, liquidity and risk management	Progress
Revisions to the IRB approach for credit and operational risks	The Basel Committee has proposed revisions to the IRB approach to credit risk. The revisions aim to simplify the framework and reduce differences in risk-weighted assets that cannot be explained by differences in underlying risk. The Committee has also proposed removing the option to use the IRB approach to calculate capital requirements for operational risk. The proposals have not yet been finalised.
New standardised approach	The Basel Committee has proposed revisions to the standardised approach for credit risk. The revisions aim to enhance the risk sensitivity of capital requirements under the standardised approach and ensure that the standardised approach is a suitable alternative to the IRB approach. The proposals have not yet been finalised.
New capital floor for the IRB approach	The Basel Committee has proposed to extend the transitional rule (Basel I floor) for IRB banks, based on the revised standardised approach. The proposal has not yet been finalised. According to the Basel I floor, the capital requirement should not be lower than 80% of the requirement under the Basel I rules. The Basel 1 floor will be removed from the EU regulation at end-2017. The Basel 1 floor may be retained in Norway until the EU regulation is incorporated into the EEA Agreement.
Leverage ratio	In June 2017, the Ministry of Finance introduced a leverage ratio. Banks and other financial undertakings that are not insurance groups must have a buffer of at least 2% in addition to the minimum requirement of 3%. Systemically important banks must have an additional buffer of at least 1%.
SME discount	New rules on reduced capital requirements for loans to small and medium-sized enterprises (SME discount) will enter into force when the EU regulation relating to this discount is incorporated into the EEA Agreement. The implementation date has not been set.
Quantitative liquidity standards	In 2015, the Ministry of Finance issued the Regulation on Liquidity Coverage Ratio (LCR) requirements. The requirements will be progressively implemented in the period to end-2017, except for systemically important financial institutions, which are required to meet a 100% LCR from 31 December 2015. In June 2017, the Ministry of Finance determined that the LCR in significant currencies, including NOK, must be met by 30 September 2017. The Basel Committee's recommendation on the Net Stable Funding Ratio (NFSR) was published in 2014. The European Commission submitted draft legislation for the NFSR in 2016 and the requirement will be introduced after final approval.

Bank recovery and resolution	Progress
Financial Stability Board (FSB) – Crisis resolution	In November 2015, the FSB issued total loss absorbing capacity (TLAC) standards for global systemically important banks (G-SIBs). G-SIBs must have a minimum TLAC of 16% of risk-weighted assets and 6% of the Basel III leverage ratio denominator by 1 January 2019. From 1 January 2022, the minimum requirements will increase to 18% and 6.75%, respectively.
EU – Bank Recovery and Resolution Directive (BRRD)	The BRRD became EU law on 1 January 2015. Bail-ins (debt written down or converted into equity) as a crisis resolution tool entered into force on 1 January 2016. In June 2017, the Government submitted draft legislation to implement the BRRD in Norway. The matter is under deliberation. See box on page 19.
EU – Minimum requirement for own funds and eligible liabilities (MREL) for write down or conversion	The MREL is defined in Commission Delegated Regulation (EU) of 23 May 2016 and consists of a loss absorption amount and an amount necessary for recapitalisation. In principle, each amount shall be set equal to the bank's total capital requirements, including buffers, so that the entire MREL is twice the total capital requirement. Some degree of discretion is permitted in applying the regulation to individual institutions. In November 2016, the Commission proposed revisions of the BRRD, among other things to harmonise MREL with the FSB standard for TLAC. The proposal is under deliberation in the European Council and the Parliament. See box on page 40.

Bank recovery and resolution	Progress
Deposit insurance	In 2014, the EU approved a new Directive on Deposit Guarantee Schemes that stipulates a deposit guarantee of EUR 100 000 per depositor. In June 2017, the Government submitted draft legislation to transpose the directive into Norwegian law. The draft legislation is under deliberation in the Storting. The Government proposes maintaining the upper limit on the deposit guarantee of NOK 2m per depositor per bank. See box on page 19.
Securities settlement	On 22 September 2016, the Ministry of Finance laid down a regulation pursuant to Section 4-2 of the Act Relating to Payment Systems, etc. concerning settlement of securities. Under the regulation, financial instruments that are available in settlement accounts in a central securities depository, and deposits in a securities settlement account with Norges Bank or another settlement bank, may be used for securities settlement on the same business day as the opening of insolvency proceedings. VPS and Norges Bank are in the process of adapting their rules and contracts and their routines.

Other	Progress
Clearing obligation for certain Norwegian interest rate derivatives	On 10 June 2016, the European Commission adopted a delegated regulation requiring central clearing of certain interest rate derivatives in NOK, ie fixed-to-float interest rate swaps (IRSs) and forward rate agreements (FRAs). The regulation entered into force in August 2016. The obligation for Norwegian market participants is subject to the implementation of the European Market Infrastructure Regulation (EMIR) in Norwegian law. EMIR entered into force in Norway on 1 June 2017. For the time being, amendments to EMIR after 2012 have not been incorporated into the EEA Agreement. The same applies to Commission delegated acts on EMIR. Finanstilsynet has stated that it expects entities subject to supervision and other relevant parties to comply in principle with the rules in force in the EU at any given time.
Recovery and resolution of central counterparties (CCPs)	In 2016, the European Commission proposed new rules for the recovery and resolution of central counterparties (CCPs) based on recommendations from the FSB. The rules contain many of the same tools that have been approved for bank recovery and resolution, including early intervention, preparation of recovery and resolution plans and the establishment of resolution colleges for each CCP containing all the relevant authorities in the countries the CCP operates. The Council's Working Party on Financial Services and the European Parliament Committee for Economic and Monetary Affairs are both working on proposed changes to the Commission's proposed rules that they will bring to the trilogue negotiations (between the Commission, the Council and the European Parliament) on a final legislative text
Central Securities Depository Act and disclosure of information on bondholders	The Ministry of Finance has conducted a consultation of a draft Central Securities Depository (CSD) Act. Its aim is to implement forthcoming EEA rules that correspond to EU Regulation No 909/2014 on improving securities settlement in the EU and the Central Securities Depository Regulation (CSDR). The CSDR is the first common regulation of CSDs in the EEA and contains provisions that regulate the issuers of financial instruments, trading venues, CCPs, collective investment undertakings and certain banks. The draft CSD Act also contains rules on disclosure of information on bondholders. The consultation responses are now under consideration by the Ministry of Finance. The CSDR has not yet been incorporated into the EEA Agreement.
Pension funds	A proposal for new capital requirements for pension funds was circulated for comment with consultation closing date in January 2017. The proposal includes a simplified version of the Solvency II requirements. The proposal is under consideration by the Ministry of Finance.
Regulation on requirements for new residential mortgage loans	In 2016, the Ministry of Finance laid down a new regulation on requirements for new residential mortgage loans in force between 1 January 2017 and 30 June 2018. The regulation restricts both loan-to-value (LTV) and debt-to-income (DTI) ratios and includes requirements for principal repayment and debt-servicing capacity in the event of an interest rate increase.
EEA adaptations to the EU financial supervisory system	The EEA adaptations were approved by the Storting and by the EEA Joint Committee in 2016. The adaptations provide inter alia for the incorporation into the EEA Agreement of a large number of EU directives and regulations in the area of financial markets that had yet to be incorporated pending clarification.

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Financial Stability Report 2017