



NORGES BANK

1 | 16 MARCH

MONETARY POLICY REPORT

WITH FINANCIAL
STABILITY ASSESSMENT

Norges Bank

Oslo 2016

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Monetary Policy Report with financial stability assessment

The *Report* is published four times a year, in March, June, September and December. The *Report* assesses the interest rate outlook and forms the basis for Norges Bank's advice on the level of the countercyclical capital buffer. The *Report* includes projections of developments in the Norwegian economy.

At the Executive Board meeting on 10 March 2016, the economic outlook, the monetary policy stance and the need for a countercyclical capital buffer for banks were discussed. On the basis of that discussion and the advice of Norges Bank's executive management, the Executive Board made its decision on the key policy rate at its meeting on 16 March 2016. The Executive Board also approved Norges Bank's advice to the Ministry of Finance on the level of the countercyclical capital buffer. The Executive Board's assessment of the economic outlook and monetary policy strategy is provided in "The Executive Board's assessment". The advice on the level of the countercyclical capital buffer is submitted to the Ministry of Finance in connection with the publication of the *Report*. The advice is made public when the Ministry of Finance has made its decision.

The *Report* is available at www.norges-bank.no.

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This *Monetary Policy Report* is based on information in the period to 11 March 2016.

Monetary policy in Norway

OBJECTIVE

Norges Bank's operational implementation of monetary policy shall be oriented towards low and stable inflation. The operational target of monetary policy is annual consumer price inflation of close to 2.5% over time.

IMPLEMENTATION

Norges Bank operates a flexible inflation targeting regime, so that weight is given to both variability in inflation and variability in output and employment. In general, the direct effects on consumer prices resulting from changes in interest rates, taxes, excise duties and extraordinary temporary disturbances are not taken into account.

Monetary policy influences the economy with a lag. Norges Bank sets the interest rate with a view to stabilising inflation at target in the medium term. The horizon will depend on disturbances to which the economy is exposed and the effects on prospects for the path for inflation and the real economy.

DECISION PROCESS

The key policy rate is set by Norges Bank's Executive Board. Decisions concerning the interest rate are normally taken at the Executive Board's monetary policy meetings. The Executive Board has six monetary policy meetings per year.

The *Monetary Policy Report* is published four times a year in connection with four of the monetary policy meetings. At a meeting one to two weeks before the publication of the *Report*, the background for the monetary policy stance is presented to the Executive Board followed by a discussion. On the basis of the analysis and discussion, the Executive Board assesses the consequences for future interest rate developments. The final decision on the key policy rate is made on the day prior to the publication of the *Report*.

REPORTING

Norges Bank reports on the conduct of monetary policy in the *Monetary Policy Report* and the *Annual Report*. The Bank's reporting obligation is set out in Article 75c of the Constitution, which stipulates that the Storting shall supervise Norway's monetary system, and in Section 3 of the Norges Bank Act. The *Annual Report* is submitted to the Ministry of Finance and communicated to the King in Council and to the Storting in the Government's *Financial Markets Report*. The Governor of Norges Bank provides an assessment of monetary policy in an open hearing before the Standing Committee on Finance and Economic Affairs in connection with the Storting deliberations on the *Financial Markets Report*.

Countercyclical capital buffer

The objective of the countercyclical capital buffer is to bolster banks' resilience to an impending downturn and counter possible procyclical effects of banks' lending practice.

The Regulation on the Countercyclical Capital Buffer was issued by the Government on 4 October 2013. The Ministry of Finance sets the level of the buffer four times a year. Norges Bank draws up a decision basis and provides advice to the Ministry regarding the level of the buffer. The decision basis includes Norges Bank's assessment of systemic risk that is building up or has built up over time. In drawing up the basis, Norges Bank and Finanstilsynet (Financial Supervisory Authority of Norway) exchange relevant information and assessments. The advice and a summary of the background for the advice are submitted to the Ministry of Finance in connection with the publication of Norges Bank's *Monetary Policy Report*. The advice is published when the Ministry of Finance has made its decision.

The buffer rate shall ordinarily be between 0% and 2.5% of banks' risk-weighted assets. The buffer requirement will apply to all banks with activities in Norway, eventually including branches of foreign banks.

Norges Bank will recommend that the buffer rate should be increased when financial imbalances are building up or have built up. The buffer rate will be assessed in the light of other requirements applying to banks. The buffer rate may be reduced in the event of an economic downturn and large bank losses, with a view to mitigating the procyclical effects of tighter bank lending.

EXECUTIVE BOARD'S ASSESSMENT

At its meetings on 10 March and 16 March 2016, the Executive Board discussed the monetary policy stance. The starting point for the discussion was the analysis published in the December 2015 *Monetary Policy Report*. The Executive Board decided in December to keep the key policy rate unchanged at 0.75%. At the same time, the Executive Board's assessment of the outlook suggested that the key policy rate might be reduced further in the first half of 2016. The analysis in the *Report* implied a decline in the key policy rate to slightly below ½% in 2016. The key policy rate was projected to increase to almost 1% towards the end of the projection period. With this path for the key policy rate, there were prospects that inflation would remain close to 3% in the near term before drifting down to around 2% towards the end of the projection period. Capacity utilisation was projected to decline in the period to summer 2017, edging up thereafter.

Growth in the world economy is moderate, with somewhat lower growth prospects for trading partners in the coming years compared with the projections in the December *Report*. Inflation is still very low among Norway's main trading partners.

The beginning of the year was marked by volatility in international financial markets. Stock indices declined in most countries and credit risk premiums increased. At the same time, yields on high-grade government bonds declined. Fears of weaker global growth, particularly in emerging economies, contributed to the volatility. In the past month the volatility has abated and the market impact has partially reversed.

Actual and expected policy rates among trading partners have decreased. The European Central Bank has reduced its deposit rate to -0.4% and the Riksbank in Sweden has cut its policy rate to -0.5%. In the US, the Federal Reserve raised its policy rate in December as expected, but the next increase is now expected to occur later than markets anticipated earlier.

After falling at the start of the year, oil prices are now back at the same level as at the time of the December *Report*, but futures prices have moved down. The krone exchange rate has recently been near the projection in the December *Report*.

Norwegian money market premiums have remained elevated and been higher than assumed. Higher USD funding costs for banks owing to new US money market regulation may contribute to keeping premiums higher than previously expected also in the period ahead. The funding costs facing Norwegian banks have shown little change since December. Banks included in Norges Bank's lending survey reported somewhat tighter credit standards for both households and enterprises in Q4. While lending rates for households seem to have moved in line with that expected in December, new information indicates that banks have increased their margins for enterprises.

New national accounts figures show that growth in the Norwegian economy was lower through 2015 than estimated in the December *Report*. Growth in consumption and private investment was weaker than projected. Overall, the activity level has remained unchanged in recent months according to the contacts in Norges Bank's regional network. Oil service and business service companies report a fall in production, while the other industries report weak growth. Overall, the contacts expect the level of production to remain unchanged the next six months. Consumer confidence has continued to wane and there are slightly weaker prospects for growth in private spending. Oil investment is also expected to show a somewhat more pronounced fall in the years ahead than foreseen earlier.

Unemployment has edged up as expected. The increase in unemployment is largely concentrated in oil regions. Overall employment grew through most of 2015, but there are now signs that employment

is levelling off. Unemployment is expected to edge up. There are prospects that wage growth will be lower in 2016 than in 2015.

The rise in consumer prices is a little higher than 3%, which is somewhat higher than projected in the December *Report*. The krone depreciation is underpinning inflation, while weaker price impulses from trading partners and low cost growth in the Norwegian economy are having a dampening impact.

House price inflation has slowed somewhat more than expected in December, with continued wide regional dispersion. Household debt growth has been a little lower than expected. House price inflation and credit growth are both expected to moderate somewhat ahead.

Monetary policy is expansionary and supportive of structural adjustments in the Norwegian economy. The krone has weakened and inflation has moved up. Inflation expectations are well anchored. The Executive Board notes that the analysis in this *Report* implies a decline in the key policy rate to about ¼% at the end of 2016. Towards the end of the projection period, the key policy rate is projected to increase to close to ¾%. With such a path for the key policy rate, the analysis suggests that inflation will stay close to 3% in the near term before gradually falling to between 1½% and 2% in 2019. Capacity utilisation in the mainland economy is expected to decline further in the period to autumn 2017, edging up thereafter. In an economy marked by restructuring, monetary policy cannot fully counteract the effects on output and employment.

The Executive Board discussed the room for manoeuvre in monetary policy. The experience of other countries suggests that the lower bound for the key policy rate is below zero, but it is difficult to provide a precise estimate of the limit. Lower interest rates could increase financial system vulnerabilities. As the key policy rate approaches a lower bound, the uncertainty surrounding the effects of monetary policy increases. This now suggests proceeding with greater caution in interest rate setting. Should the Norwegian economy be exposed to new major shocks, the Executive Board will, however, not exclude the possibility that the key policy rate may turn negative.

In its discussion of monetary policy in the period ahead, the Executive Board gives weight to a somewhat weaker outlook for the Norwegian economy and an expected rise in unemployment. Low wage growth may lead to a slower rise in prices for domestically produced goods and services further ahead. Both the objective of keeping inflation close to target and the consideration relating to capacity utilisation imply a reduction in the key policy rate.

An overall assessment of the economic outlook and the balance of risks led the Executive Board to conclude that the key policy rate should be reduced by 0.25 percentage point to 0.50%. The Executive Board's current assessment of the outlook suggests that the key policy rate may be reduced further in the course of the year.

At its meeting on 16 March, the Executive Board decided to lower the key policy rate by 0.25 percentage point to 0.50%.

Øystein Olsen
16 March 2016

1 ECONOMIC SITUATION

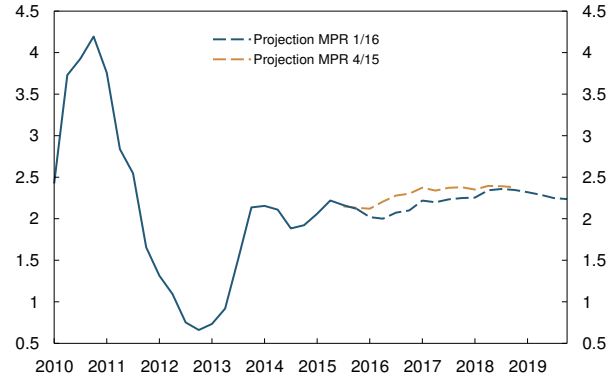
Weaker global growth outlook

Growth in the global economy is continuing at a moderate pace. The financial market volatility that marked the beginning of the year has subsided over the past month. Nevertheless, various confidence indicators suggest that the uncertainty regarding developments ahead has risen among both households and enterprises and financing conditions have tightened somewhat. Along with lower growth among commodity producers, this has contributed to a downward revision in GDP projections for trading partners overall (Chart 1.1 and Annex Table 3).

The moderate growth in the euro area continued in 2015 Q4. The upturn is on a firm footing in several countries. Since mid-2013, employment growth has picked up. Unemployment has fallen, but from a high level (Chart 1.2). Wage growth continues to be moderate, but the fall in energy prices is having a positive effect on household purchasing power and consumption. Towards the end of 2015, there were signs of a slowdown, primarily in manufacturing (Chart 1.3). Weaker growth among euro area trading partners and vulnerabilities in the European banking sector are weighing on growth prospects. Projections for euro area countries have therefore been revised down somewhat since the December 2015 *Monetary Policy Report*. Monetary policy accommodation and less fiscal tightening are still expected to contribute to gradually higher growth in the coming years.

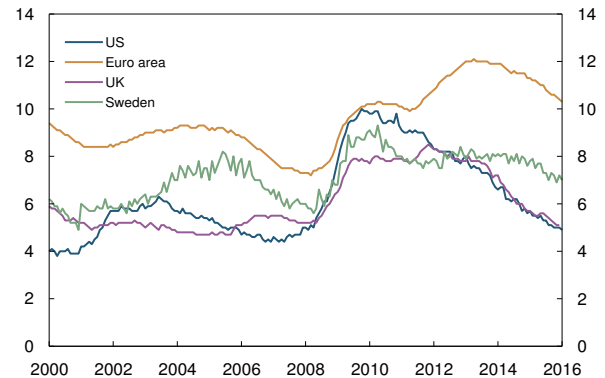
In the US, growth slowed in 2015 Q4, primarily reflecting developments in resource extraction and manufacturing. Petroleum investment continued to fall sharply in the face of low oil prices (Chart 1.4), and the appreciation of the US dollar over the past two years has contributed to a decline in exports and curbed growth in other manufacturing sectors. In a number of service segments growth remains solid and labour market developments are strong. Unemployment is now at its lowest level since 2008 (Chart 1.2). In the period ahead, some rebound in GDP growth is expected, underpinned by further improvement in household purchasing power and a somewhat more expansionary fiscal policy. Nevertheless, the GDP projection has been revised down, especially for 2016. The downward revision reflects such factors as weak growth in 2015 Q4, lower growth among US

Chart 1.1 GDP for trading partners. Volume. Four-quarter change. Percent. Export weights. 2010 Q1 – 2019 Q4¹⁾



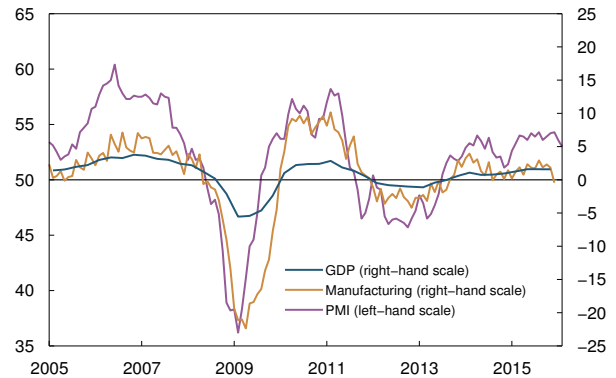
¹⁾ Projection for 2015 Q4 – 2019 Q4 (broken lines).
Sources: Thomson Reuters and Norges Bank

Chart 1.2 Unemployment rate. Seasonally adjusted. Percent. January 2000 – January 2016¹⁾



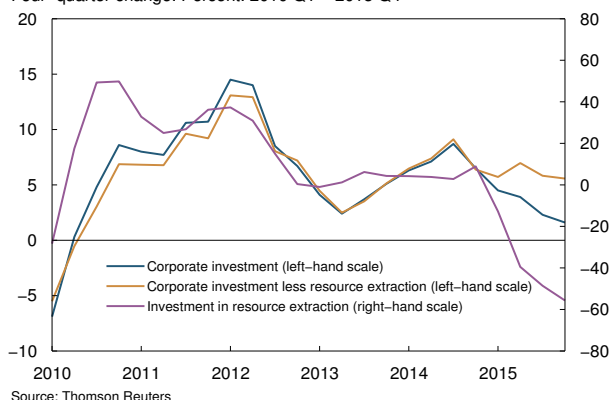
¹⁾ Latest observation for the UK is December.
Source: Thomson Reuters

Chart 1.3 Economic developments in the euro area. Four-quarter change in GDP. Twelve-month change in manufacturing output. Percent. Purchasing Managers' Index (PMI). January 2005 – February 2016¹⁾



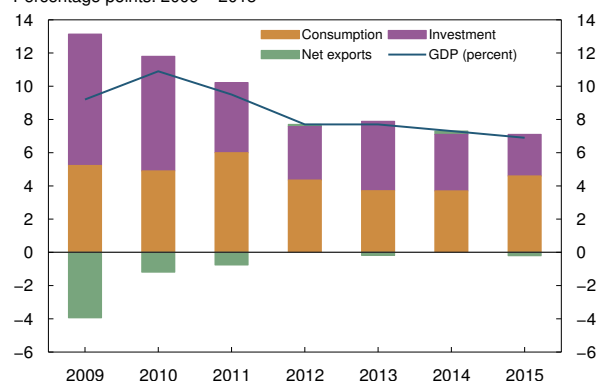
¹⁾ Latest observation for GDP is 2015 Q4. Latest observation for manufacturing output is December 2015.
Source: Thomson Reuters

Chart 1.4 US corporate investment.
Four-quarter change. Percent. 2010 Q1 – 2015 Q4



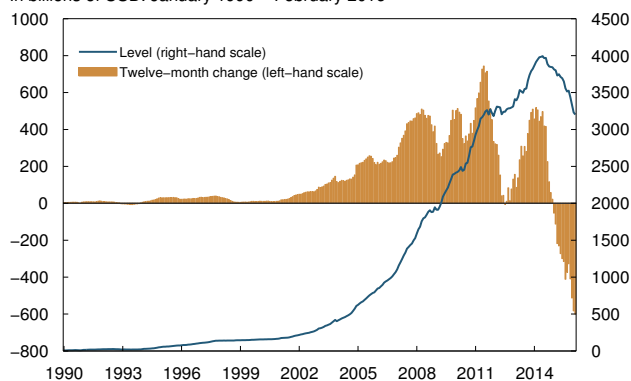
Source: Thomson Reuters

Chart 1.5 Contribution to GDP growth in China.
Percentage points. 2009 – 2015



Sources: CEIC, Thomson Reuters and Norges Bank

Chart 1.6 Chinese currency reserves.
In billions of USD. January 1990 – February 2016



Sources: CEIC, Barclays and Norges Bank

trading partners, higher financing costs for enterprises and weaker developments in household wealth.

Growth in the UK edged down in the second half of 2015, partly owing to falls in investment and exports. At the same time, increased employment and low inflation gave a solid boost to household purchasing power, and growth in private consumption was high. This tendency is expected to continue, supported by monetary accommodation. On the other hand, tighter financing conditions, fiscal austerity and a slowdown in oil sector activity will have a dampening effect on GDP growth. In addition, uncertainty surrounding the referendum on EU membership is expected to weigh on private investment in 2016, before investment growth rebounds somewhat beginning in 2017.

Growth in Sweden picked up further towards the end of 2015. Domestic demand is high, with robust growth in private consumption, investment and public sector demand. A weaker exchange rate has also contributed to solid growth in exports, primarily service exports. In the period ahead, continued strong growth in domestic demand is expected, driven especially by expansionary monetary and fiscal policy. Projections have been revised up somewhat since the December Report.

In China, growth slowed further in 2015 Q4. Continued weakness in the real estate sector contributed to lower growth in manufacturing output and investment. Exports have fallen, especially to the US and Japan. Nevertheless, demand for oil has remained firm, and the growth contribution from consumption continued to rise (Chart 1.5). This is in line with the ongoing economic rebalancing. Overall, new data still indicate gradually lower growth. The uncertainty regarding the authorities' ability to manage the restructuring of the economy has increased further since the December Report. In particular, there is considerable uncertainty surrounding the transition to a more market-based exchange rate. Along with lower expected returns on domestic investments, such as housing and equities, this has contributed to a substantial capital outflow over the past year (Chart 1.6). Underlying Norges Bank's projections is an assumption that China will avoid a steep decline in growth. However, the probability of such an outcome is deemed to be higher than in the December Report.

Developments in the other emerging economies among Norway's trading partners are expected to be weaker than assumed in December. Growth projections for commodity exporters in particular, such as Brazil and Russia, have been revised down (see Special Feature on emerging economies on page 46).

Low energy prices continue to curb inflation

Inflation among most of Norway's main trading partners was close to zero in 2015, but edged up in January, broadly as projected in the *December Report*. Low energy prices are the primary contributor to low inflation (Chart 1.7), but price inflation for finished goods has also been low or falling. For main trading partners, core inflation remains higher than headline inflation.

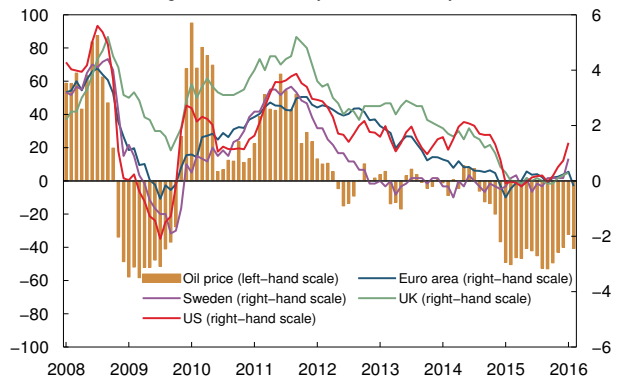
Over the coming years, inflation among trading partners is expected to be lower than projected in the *December Report* (Annex Table 4). The fall in oil futures prices is pulling down the inflation projections for 2016 and 2017, through effects on energy prices, transport costs and intermediate goods in the CPI and through effects on wage growth. As the effects of lower energy prices unwind and capacity utilisation increases, inflation is expected to pick up. In euro area countries and Sweden, effects of earlier exchange rate depreciation will likely pull up inflation. A moderate increase in wage growth among main trading partners is also expected.

Oil futures prices have fallen further

After falling at the start of the year, oil prices are now back at the same level as at the time of the *December Report*, but futures prices have moved down (Chart 1.8). Despite high growth in demand for oil, OPEC oil inventories rose considerably through 2015 (Chart 1.9). The International Energy Agency (IEA) estimates that slowing growth in oil demand and continued high OPEC supply will contribute to a further build-up of oil inventories through 2016 (Chart 1.10).

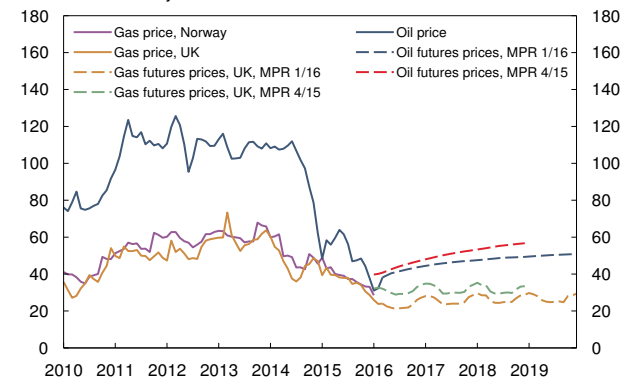
Oil prices are assumed to move in line with futures prices in the coming years, which now indicate a moderate rise to around USD 50 per barrel towards the end of 2019, almost 15% lower than at the time of the *December Report*. The outlook for oil prices is discussed in detail in the Special Feature on page 48.

Chart 1.7 Oil price and consumer prices among trading partners. Twelve-month change. Percent. January 2008 – February 2016¹⁾



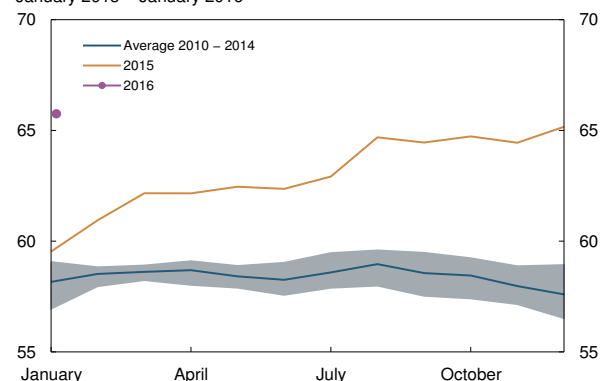
1) Latest observation for the US, the UK and Sweden is January 2016. Source: Thomson Reuters

Chart 1.8 Crude oil and natural gas prices. USD/barrel. January 2010 – December 2019¹⁾



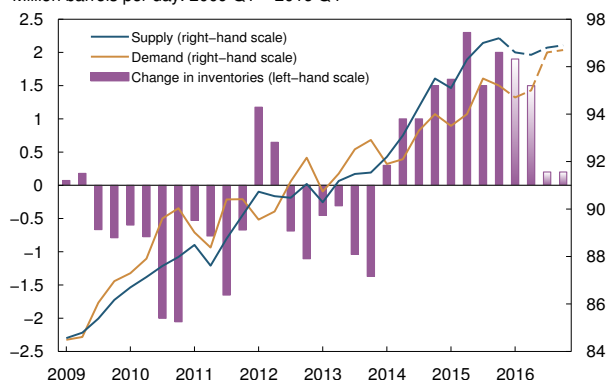
1) Futures prices (broken lines) for oil and UK gas are the average of futures prices in the period 7–11 September 2015 for MPR 4/15 and 7–11 March 2016 for MPR 1/16. Sources: Thomson Reuters, Statistics Norway and Norges Bank

Chart 1.9 Oil inventories in OECD countries. Total oil inventories in number of days of consumption.¹⁾ January 2015 – January 2016



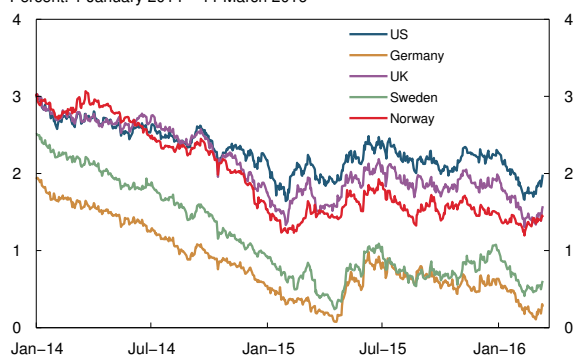
1) Days of consumption is calculated using average demand over the next three months. The grey band shows the interval between the highest and lowest level in the period 2010 – 2014. Sources: IEA and Norges Bank

Chart 1.10 Supply and demand in the oil market.
Million barrels per day. 2009 Q1 – 2016 Q4¹⁾



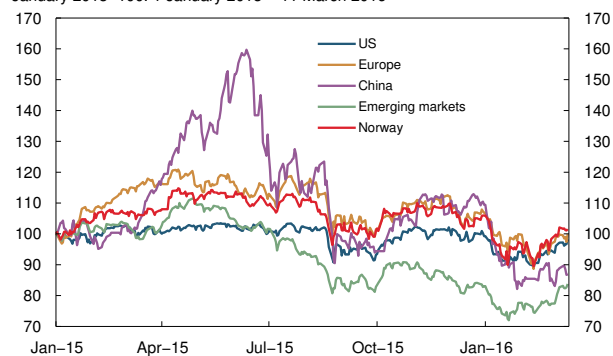
1) Projections for 2016 Q1 – 2016 4Q.
Source: IEA

Chart 1.11 Yields on 10-year government bonds.
Percent. 1 January 2014 – 11 March 2016



Source: Bloomberg

Chart 1.12 Selected equity price indices.
January 2015=100. 1 January 2015 – 11 March 2016



Source: Bloomberg

Prices for Norwegian gas in USD have fallen by 15% since the *December Report* (Chart 18). Futures prices for UK gas have fallen by approximately the same amount. In recent years, Norwegian gas prices have tracked UK gas prices fairly closely. The decline in futures prices for UK gas therefore indicates that Norwegian gas prices may remain low for several years.

Market volatility and continued low interest rates abroad

The financial market volatility of the first six weeks of 2016 had an especially strong impact on equity and bond markets. Many investors disposed of risky investments and purchased high-grade government bonds, with sovereign yields falling sharply in many countries (Chart 1.11). The most important global equity markets fell sharply (Chart 1.12). Risk premiums in credit markets rose, especially for the banking sector, as did CDS prices (Chart 1.13). Fears of a weaker economy, especially among emerging economies, were likely responsible for triggering the market volatility. Over the past month, the volatility has subsided, and the market movements have been partly reversed.

Policy rates among Norway's main trading partners remain close to zero, and market expectations indicate that they will remain close to this level for a long time ahead (Chart 1.14). Since the *December Report*, fears of weaker global growth and financial market volatility, in addition to lower expected inflation, have led to a marked decline in expected money market rates among trading partners (Chart 1.15).

As expected, the Federal Reserve raised the target range for the federal funds rate in December. At the same time, the Fed announced the prospect of further rate increases of around 1 percentage point per year in the coming years. Since the start of the year, the expected path for US policy rates has fallen. The market is pricing in the probability that the next rate increase will occur in summer 2016. Very gradual rate increases of around 0.25 percentage point per year have been priced in thereafter.

At its monetary policy meeting in March, the European Central Bank (ECB) decided to lower its policy rate by 0.05 percentage point to 0% and its deposit rate by 0.10 percentage point to -0.40%. In addition, the ECB increased the size of its asset purchase programme

from EUR 60bn to EUR 80bn per month. The programme was expanded to include highly rated bonds issued by euro area non-financial corporations. The ECB also announced a new series of targeted long-term refinancing operations for banks. The central bank grounded the measures on the back of a weaker outlook for inflation. The ECB's actions and expectations leading up to them have, along with the market volatility, contributed to a decline in expected short-term interest rates in the euro area since the *December Report*. Market expectations indicate that no further monetary policy measures by the ECB are expected.

Expected policy rates have fallen in the UK owing to the global fall in yields, lower-than-expected wage growth and fears that the UK will leave the EU. Market expectations for the timing of the first rate rise have been deferred, with prices currently reflecting the likelihood that the first interest rate rise will take place around the turn of 2017/2018.

The Riksbank in Sweden reduced its policy rate by 0.15 percentage point to -0.5% at its monetary policy meeting in February. The Riksbank also signalled a high level of preparedness to make monetary policy even more expansionary. The reason given for the rate reduction was a continued need to support the rise in inflation. The reduction was greater than market prices had indicated in advance. Along with the global decline in interest rates, this has contributed to a fall in market expectations concerning the policy rate in Sweden since the *December Report*.

Considerable movements in the foreign exchange market

The financial market volatility has resulted in considerable movements in the foreign exchange market since the *December Report*. In the first half of the period, reduced risk appetite contributed to a depreciation of the currencies of commodity exporters. For some of these currencies, the depreciation has more than reversed owing to the recent rise in commodity prices. The euro and Japanese yen have appreciated, despite a more accommodative monetary policy. Weak key indicators have contributed to a depreciation of pound sterling and the US dollar as the expected rate increases in the UK and US have been deferred. Sterling has also been weakened by uncertainty regarding the UK's future in the EU. The reduc-

Chart 1.13 CDS indices for European banking sector. Basis points. 1 January 2014 – 11 March 2016

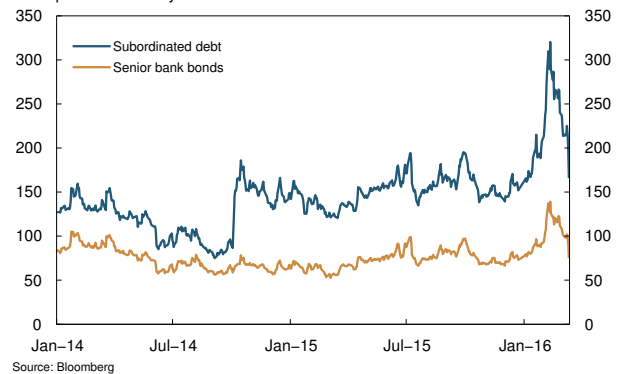
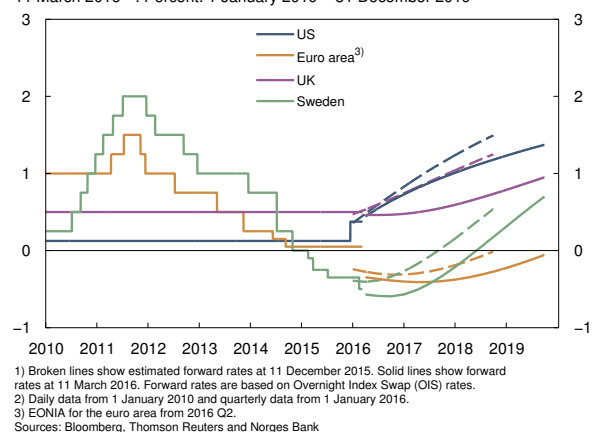
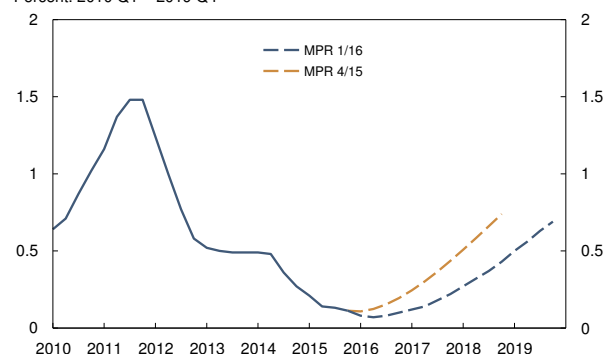


Chart 1.14 Policy rates and estimated forward rates at 11 December 2015 and 11 March 2016¹⁾. Percent. 1 January 2010 – 31 December 2019²⁾



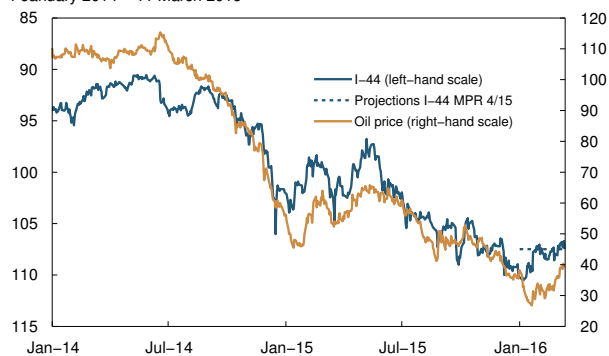
1) Broken lines show estimated forward rates at 11 December 2015. Solid lines show forward rates at 11 March 2016. Forward rates are based on Overnight Index Swap (OIS) rates.
2) Daily data from 1 January 2010 and quarterly data from 1 January 2016.
3) EONIA for the euro area from 2016 Q2.

Chart 1.15 Money market rates for trading partners.¹⁾ Percent. 2010 Q1 – 2019 Q4²⁾



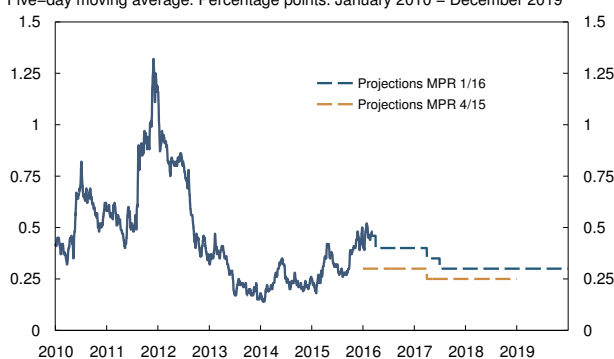
1) For information about the aggregate for trading partner interest rates, see *Norges Bank Papers 2/2015*.
2) Blue and orange broken lines show forward rates for 11 March 2016 and 11 December 2015, respectively.
Sources: Thomson Reuters and Norges Bank

Chart 1.16 Oil price¹⁾ and import-weighted exchange rate index (I-44)²⁾.
1 January 2014 – 11 March 2016



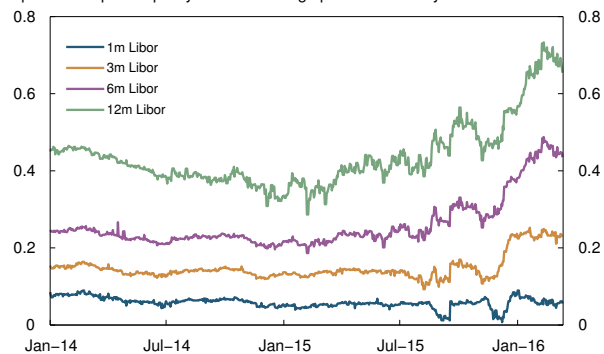
1) USD/barrel.
2) A positive slope denotes a stronger krone exchange rate.
Sources: Thomson Reuters and Norges Bank

Chart 1.17 Three-month Nibor spread.¹⁾
Five-day moving average. Percentage points. January 2010 – December 2019²⁾



1) Norges Bank estimates of the difference between three-month Nibor and expected key policy rate.
2) Projections for 2016 Q1 – 2019 Q4 (broken lines).
Sources: Thomson Reuters and Norges Bank

Chart 1.18 Premiums on USD Libor.
Spread to expected policy rate. Percentage points. 1 January 2014 – 11 March 2016



Source: Bloomberg

tion of the Swedish policy rate in February resulted in a brief depreciation of the Swedish krona, which overall is little changed since the *December Report*.

After the turn of the year, the krone depreciated to its weakest level measured by the import-weighted krone exchange rate (Chart 1.16). The depreciation reflects the fall in oil prices in the same period. Since mid-January, the krone has appreciated owing to a rebound in oil prices. So far in 2016 Q1, the krone exchange rate has nevertheless been 0.7% weaker than projected in the *December Report*.

Higher risk premiums on bank funding

The premium in the Norwegian three-month money market rate (Nibor) is little changed since December 2015. So far in 2016 Q1, the premium has averaged around 0.45 percentage point, around 0.15 percentage point higher than projected in the *December Report* (Chart 1.17).

Adjustments to new regulations in the US money market have likely raised the price of the USD funding on which banks base their Nibor quoting. The higher price of USD borrowing is also reflected in the considerable rise in the premium in the USD Libor rate since the end of 2015 (Chart 1.18). More expensive USD funding affects the premium in the Norwegian money market rate, because Nibor is constructed as a currency swap rate.¹ In addition, periods of low structural liquidity in the Norwegian banking system have likely contributed to a higher-than-projected premium. The premium is expected to remain at around 0.40 percentage point in the coming year, edging down thereafter.

Risk premiums on covered bonds and senior bank bonds rose considerably in autumn 2015. Premiums are broadly unchanged since the *December Report* (Chart 1.19). Even though the fall in oil prices has weakened the growth outlook for the Norwegian economy, DNB does not have to pay much more for wholesale funding than other large Nordic banks. For smaller Norwegian banks, and banks with large exposure to regions with substantial petroleum-related activity, risk premiums are somewhat higher.

¹ The construction of Nibor and how the Norwegian money market is affected by various domestic and international factors are described in detail in Tafjord (2015), "A decomposition of Nibor", *Economic Commentaries* 3/2015, Norges Bank.

Risk premiums on new bond issues are currently higher than the average premiums on banks' bonds outstanding. If risk premiums remain at this level, average premiums on banks' bonds outstanding will rise somewhat further out in the projection period.

Banks' lending rates fell in 2015 Q4, approximately as projected in the *December Report*. Banks' lending margins, the difference between lending rates and Nibor, on both commercial and household loans fell in the same period. The banks in Norges Bank's lending survey expected that lending margins on household loans would continue to fall in 2016 Q1, while margins on corporate loans had been expected to rise. This closely coincides with developments in lending rates since the beginning of the year. In January, residential mortgage rates fell marginally, while corporate lending rates edged up (Chart 1.20).

Weak growth in the Norwegian economy

Developments in the Norwegian economy have been weaker than projected in December. Mainland GDP grew by 1% in 2015, 0.4 percentage point less than projected in the *December Report*. Growth in the mainland economy is expected to be lower in the coming period than projected in December. The growth projections in this *Report* are slightly lower than indicated by Norges Bank's System for Averaging short-term Models (SAM) (Chart 1.21), but the projections are somewhat higher than the output growth expectations of the regional network (Chart 1.22) (see Special Feature on page 50 for a discussion of the likelihood of a fall in activity ahead).

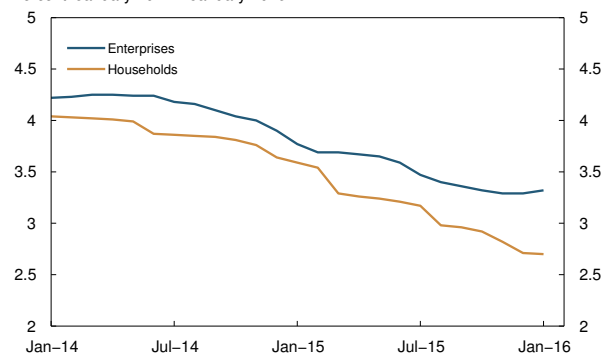
Household consumption rose slightly less in 2015 than projected in the *December Report*. Services consumption was clearly stronger than goods consumption. Weaker consumer confidence, slightly reduced access to credit, higher unemployment and lower income growth have likely weighed on demand.² Consumer confidence, which has fallen since autumn 2014, has continued to fall further recently (Chart 1.23). In particular, weaker confidence in the national economy is fuelling pessimism, but households' confidence in their own financial situation has also fallen. A further rise in unemployment and low wage growth may have

Chart 1.19 Average risk premiums on new and outstanding bond debt for Norwegian banks. Spread to three-month Nibor. Basis points. January 2010 – December 2019^{1) 2)}



1) Indicative risk premiums up to and including 11 March 2016 are used for March 2016.
2) Projections from March 2016 – December 2019 (broken lines).
Sources: Stamdata, Bloomberg, DNB Markets and Norges Bank

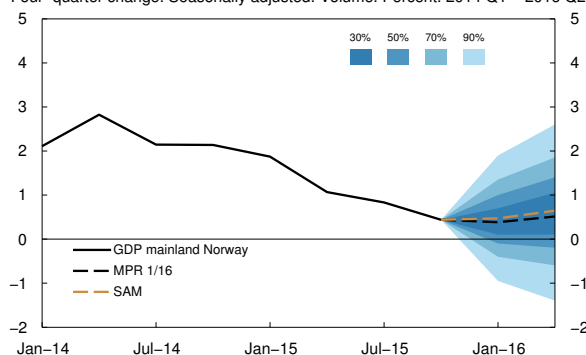
Chart 1.20 Interest rates¹⁾ on loans to non-financial enterprises and households²⁾. Percent. January 2014 – January 2016



1) Outstanding loans.
2) Lending rate for households applies to total outstanding residential mortgage loans.
Source: Statistics Norway

Chart 1.21 GDP for mainland Norway. Actual figures, baseline scenario and projections from SAM¹⁾ with fan chart.

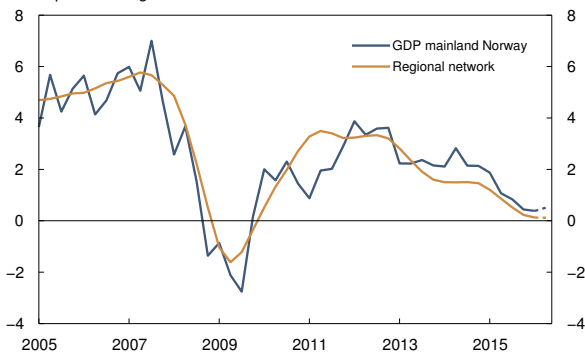
Four-quarter change. Seasonally adjusted. Volume. Percent. 2014 Q1 – 2016 Q2²⁾



1) System for Averaging short-term Models.
2) Projections for 2016 Q1 – 2016 Q2 (broken lines).
Sources: Statistics Norway and Norges Bank

2 See Andersen, H., E. Husabø and M. Aasgaard Walle (2016), "What influences household demand for goods and services?", *Staff Memo* 4/2016, Norges Bank. To be published in English as soon as possible.

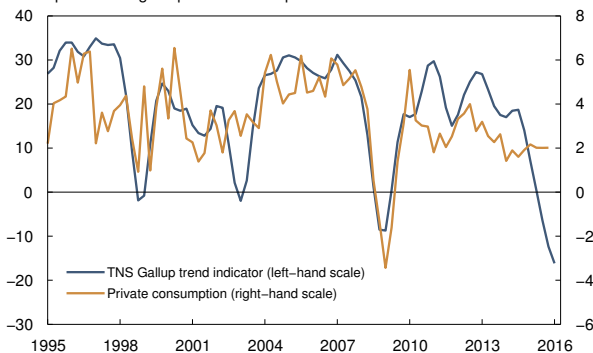
Chart 1.22 GDP for mainland Norway¹⁾ and Norges Bank's regional network indicator of output growth²⁾. Four-quarter change. Percent. 2005 Q1 – 2016 Q2



1) Projections for 2016 Q1 – 2016 Q2 (broken lines).
2) Converted to quarterly series.
Sources: Statistics Norway and Norges Bank

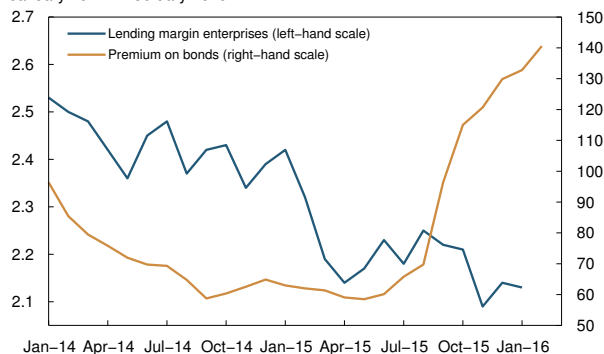
Chart 1.23 Consumer confidence and private consumption. Net values for consumer confidence.¹⁾

Four-quarter change in private consumption. Percent. 1995 Q1 – 2016 Q1²⁾



1) TNS Gallup expectations barometer, adjusted trend indicator.
2) Last observation 2015 Q4 for private consumption.
Sources: TNS Gallup, Opinion and Norges Bank

Chart 1.24 Funding costs non-financial enterprises. Lending margin. Percent. Spread to three-month Nibor.¹⁾ Basis points. January 2014 – February 2016²⁾



1) For bonds with five-year maturity issued by low-risk manufacturing enterprises.
2) Lending margin until January 2016.
Sources: Statistics Norway and DNB Markets

a dampening effect on consumption growth ahead. On the other hand, low interest rates are sustaining purchasing power. Household-oriented enterprises in the regional network expect continued moderate output growth ahead. Household consumption is projected to grow somewhat more slowly in the coming period than in the *December Report*.

After falling in 2014, housing investment rose through 2015. Growth in 2015 Q4 was higher than expected, but downward revisions of growth in previous quarters resulted in lower annual growth than previously projected. New home sales remain high, while housing starts appear to have slowed somewhat. Regional network contacts report fairly low growth in residential construction. There are considerable regional differences, with strong developments in southeastern Norway, and weaker developments in oil regions. Overall, slightly weaker growth in housing investment is expected in the coming quarters than projected in the *December Report*.

Business investment in 2015 was lower than estimated in December. Business investment fell in the last three quarters of 2015, and the level in Q2 and Q3 was revised down. In Q4, investment fell in manufacturing, mining and other goods production. At the same time, lower investment in property management contributed to weak investment growth in the service sector. Some of this weakness is probably attributable to reduced access to credit. In Norges Bank's lending survey for 2015 Q4, banks reported somewhat tighter credit standards for enterprises, including for commercial real estate loans. Banks' margins on corporate lending have shown little change since the *December Report*, while margins on bonds have shown a considerable increase (Chart 1.24). Regional network contacts overall are planning a slight increase in investment in the coming period. Statistics Norway's investment intentions survey indicates a strong rise in investment in export-related manufacturing in 2016. In addition, the survey indicates that investment in the power sector will increase further. At the same time, low output growth, weak growth prospects and uncertainty surrounding economic developments are expected to limit other industries' willingness to invest in the near term. Altogether, we project growth in business investment in the coming period, but the level will probably remain

somewhat lower than projected in the December Report.

Petroleum investment fell by nearly 15% between 2014 and 2015, as projected in the December Report. Petroleum investment is projected to fall by 12% in 2016, slightly more than projected in December. A further fall in 2017 and 2018 is projected, so that the investment level in 2018 will be a third lower than it was in the peak year 2013. In 2019, a slight rise is projected (see box on page 20 for more details on petroleum investment projections).

Mainland exports rose by more than 5% between 2014 and 2015, as projected in the December Report. Some of this growth reflects the sharp rise in exports through 2014, with considerable impetus from the krone depreciation and substantial order backlogs among export-oriented oil service companies. The downturn in the global petroleum industry contributed to the fall in oil services exports, which account for around a fifth of mainland exports, through 2015 (Chart 1.25). These exports are projected to continue to fall in the coming period, in line with information from regional network contacts. Exports of fish, which account for a tenth of mainland exports, fell through the second half of 2015, owing to supply-side challenges (Chart 1.26). Other mainland exports overall increased substantially in 2015, boosted in particular by a rise in tourism and increased exports from oil refineries and the chemical and pharmaceutical industry. Mainland exports excluding oil services are projected to grow ahead. Growth will likely be dampened by capacity constraints in fish farming and parts of the process industry. A moderate increase in overall mainland exports is expected in the coming period.

Unemployment rises further and capacity utilisation declines

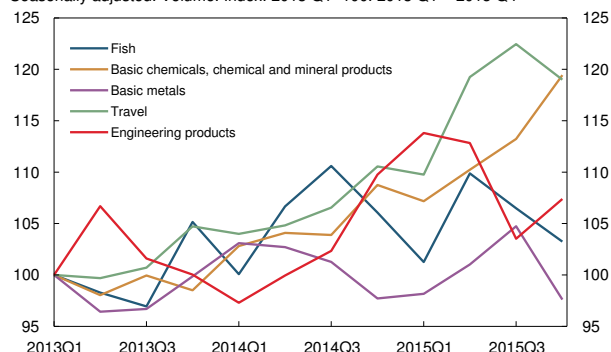
Labour market developments reflect the decline in activity in the petroleum sector and weaker growth in the Norwegian economy. Employment has fallen markedly in the oil production and oil service industry (Chart 1.27). Solid growth in some service segments and the public sector helped to keep employment growth positive through much of 2015, but in Q4 employment growth declined slightly. The number of vacancies has declined further (Chart 1.28). In the period to summer, employment is expected to remain

Chart 1.25 Norges Bank's regional network indicator of annualised output growth past three months and expected output growth next six months.¹⁾ Percent.²⁾ January 2005 – August 2016³⁾



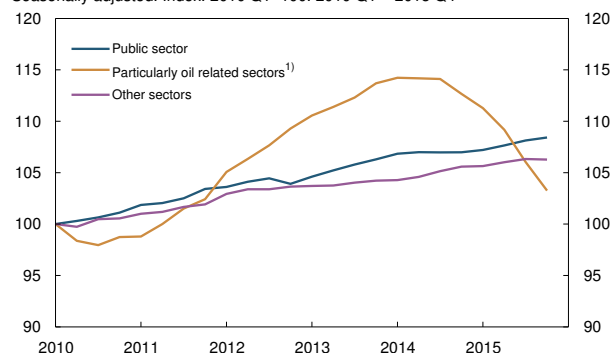
1) New sector classification results in a break in the series for the export industry from 2015.
2) The network uses an index from -5 to +5, where -5 indicates that production is expected to decline by 10 percent or more annualised. Several oil service enterprises expect production to decline by more than 10 percent in the next six months. This is not reflected in the chart due to the limitations of the index.
3) Reported growth to February 2016. Expected growth for February 2016 – August 2016.
Source: Norges Bank

Chart 1.26 Export of various goods and services. Seasonally adjusted. Volume. Index. 2013 Q1=100. 2013 Q1 – 2015 Q4



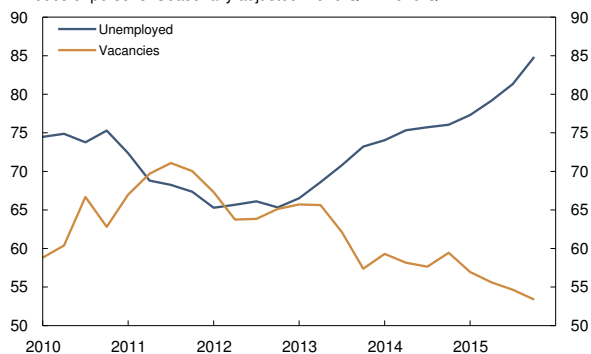
Source: Statistics Norway

Chart 1.27 Employment by sector. Seasonally adjusted. Index. 2010 Q1=100. 2010 Q1 – 2015 Q4



1) The category "particularly oil related sectors" includes extraction of crude oil and natural gas, including services, and the following industrial sectors: production of metal goods, electrical equipment and machinery, shipbuilding and transport industry, repairs and installation of machinery and equipment. In 2010 Q1 these sectors employed 166 000 people, 6% of all persons employed in the Norwegian economy.
Sources: Statistics Norway and Norges Bank

Chart 1.28 Number of vacancies and number of unemployed¹⁾. In 1000s of persons. Seasonally adjusted. 2010 Q1 – 2015 Q4



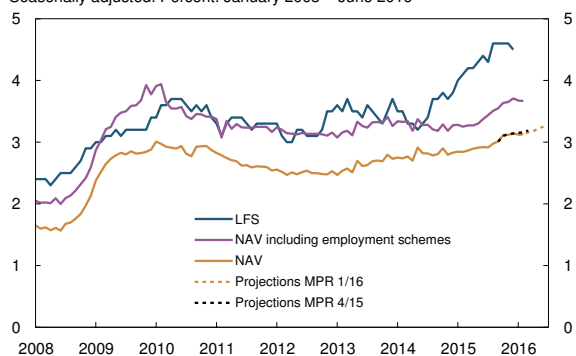
1) Registered unemployed.
Sources: Statistics Norway, NAV and Norges Bank

Chart 1.29 Norges Bank's regional network indicator for expected change in employment next three months. Percent. 2004 Q4 – 2016 Q1



Source: Norges Bank

Chart 1.30 Unemployment as a share of the labour force. LFS¹⁾ and NAV²⁾. Seasonally adjusted. Percent. January 2008 – June 2016^{3) 4)}



1) Labour Force Survey.
2) Norwegian Labour and Welfare Administration.
3) Projections for March 2016 – June 2016 (broken lines).
4) Latest observation December 2015 for LFS.
Sources: Statistics Norway, NAV and Norges Bank

approximately unchanged. This is broadly in line with the expectations of regional network contacts (Chart 1.29).

Unemployment has moved in line with the projections in the *December Report*. In February, registered unemployment was 3.1%, 0.3 percentage point higher than in the same month in 2015 (Chart 1.30). Unemployment has risen significantly in oil regions, but has been fairly stable elsewhere in the country (Chart 1.31). The Labour Force Survey (LFS) showed a more marked rise in unemployment in the period to autumn 2015, but in recent months, LFS unemployment has not increased further. In December, LFS unemployment was 4.5%, 0.7 percentage point higher than one year earlier.

Labour supply in Norway has traditionally been cyclically sensitive. During downturns, many exit the labour force, holding down the rise in unemployment. So far in this downturn, the labour force has shown sustained growth. This contributed to last year's marked rise in LFS unemployment. Labour force developments are projected to be weak ahead, which will have a dampening effect on the rise in unemployment. A somewhat stronger rise in registered unemployment than in LFS unemployment is expected ahead, narrowing the abnormally wide gap between the two indicators.

Capacity utilisation is estimated to have declined at a somewhat faster pace than projected in the *December Report* and is clearly at a lower than normal level. Output growth has been lower than projected and growth prospects are somewhat weaker. At the same time, developments in registered unemployment, a key indicator in assessing capacity utilisation, have been as expected. Growth capacity in the economy is therefore assumed to have been weaker than projected in the *December Report*. This is limiting the decline in estimated capacity utilisation. At the same time, the wide gap between registered and LFS unemployment may suggest a somewhat greater degree of slack in the economy than unemployment figures from the Norwegian Labour and Welfare Administration (NAV) in isolation indicate. In February, regional network contacts reported a continued decline in capacity utilisation (Chart 1.32). The share of enter-

prises reporting that labour availability is limiting production remains very low.

Low wage growth

In its preliminary report prior to this year's wage settlement, the Technical Reporting Committee on Income Settlements (TBU) estimates annual wage growth of 2.8% in 2015. This is 0.1 percentage point higher than assumed in the *December Report*. The TBU estimates the wage carryover into 2016 at 0.7%. Regional network contacts expect wage growth of 2.4% in 2016. Epinion's expectations survey shows that the social partners also expect average wage growth of 2.4% in 2016, slightly lower than they envisaged in 2015 Q4. Combined with the inflation expectations in the expectations survey, this implies that the social partners assume approximately unchanged real wages in 2016.

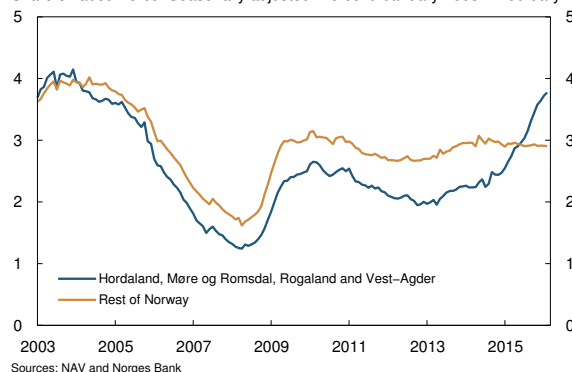
Slightly higher inflation

After remaining stable at around 3% over the past six months, inflation adjusted for tax changes and excluding energy products (CPI-ATE) rose in February (Chart 1.33). The year-on-year rise was 3.4%, 0.3 percentage point higher than projected in the *December Report*. Headline inflation (CPI) has also risen. In February, year-on-year CPI inflation was 3.1%, which was also 0.3 percentage point higher than projected in the *December Report*.

The rise in prices for imported consumer goods has been slightly lower than projected in the *December Report* (Chart 1.34). In February, the year-on-year rise was 4.2%. The krone was slightly weaker than projected in December, which in isolation pulls up the rise in prices for imported consumer goods.³ On the other hand, weaker price impulses from trading partners pull down the rise in prices (Chart 1.35). The year-on-year rise in prices for imported consumer goods is projected to be slightly lower in the coming period than projected in the *December Report*.

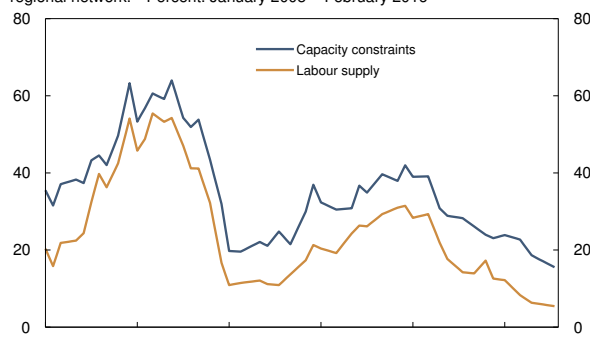
In recent months, the rise in prices for domestically produced goods and services has been close to 2.5%, but in February the year-on-year rise moved up to 3.1%. This was higher than projected in the *December*

Chart 1.31 Registered unemployment by county. Share of labour force. Seasonally adjusted. Percent. January 2003 – February 2016



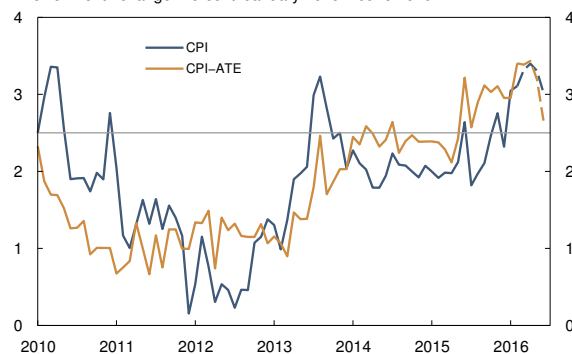
Sources: NAV and Norges Bank

Chart 1.32 Capacity constraints and labour availability as reported by Norges Bank's regional network.¹⁾ Percent. January 2005 – February 2016



1) Share of contacts that will have some or considerable problems accommodating an increase in demand and the share of contacts reporting that production is constrained by labour supply. Source: Norges Bank

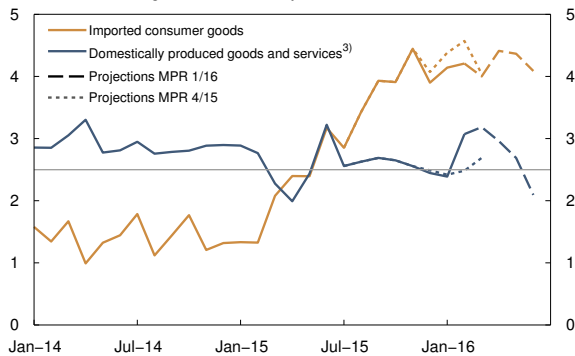
Chart 1.33 CPI and CPI-ATE¹⁾. Twelve-month change. Percent. January 2010 – June 2016²⁾



1) CPI adjusted for tax changes and excluding energy products.
2) Projections for March 2016 – June 2016 (broken lines).
Sources: Statistics Norway and Norges Bank

³ For a further description of the pass-through from exchange rate movements to consumer prices, see Ulvedal, P. B. and N. H. Vonen (2016), "Pass-through from exchange rate movements to consumer prices", *Staff Memo* 3/2016, Norges Bank. To be published in English as soon as possible.

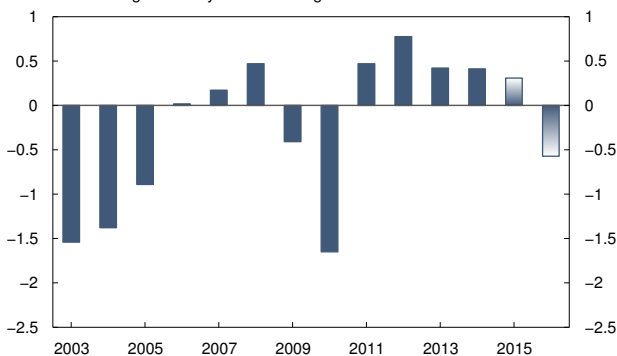
Chart 1.34 CPI-ATE¹⁾ by supplier sector.
Twelve-month change. Percent. January 2014 – June 2016²⁾



1) CPI adjusted for tax changes and excluding energy products.
2) Projections for March 2016 – June 2016 (broken lines).
3) Norges Bank's estimates.
Sources: Statistics Norway and Norges Bank

Report. The rise was partly driven by temporary factors such as a higher increase in prices for air travel, but there was also a clear increase in food price inflation. A somewhat weaker krone than projected in December will likely contribute to underpinning the rise in prices for domestically produced goods and services ahead, partly as a result of a faster rise in prices for imported intermediate goods. At the same time, slack in the Norwegian economy will curb domestic inflation. In the coming period, the twelve-month rise in prices for domestically produced goods and services is expected to be somewhat higher than projected in the *December Report*.

Chart 1.35 Indicator of external price impulses to imported consumer goods measured in foreign currency. Annual change. Percent. 2003 – 2016¹⁾



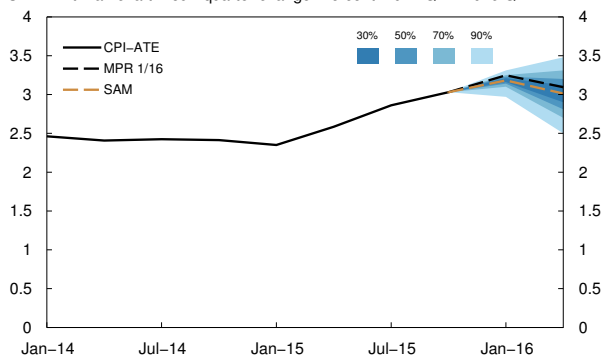
1) Projections for 2015 and 2016.
Source: Norges Bank

Overall, the year-on-year rise in consumer prices (CPI-ATE) is projected at close to 3% in the coming period, slightly higher than the projections in the *December Report*. The projections are somewhat higher than the projections from Norges Bank's System for Averaging short-term Models (SAM) (Chart 1.36).

Slower growth in house prices and debt

The year-on-year rise in house prices has slowed in recent months, and has been slightly lower than projected in the *December Report*. In February, the twelve-month rise was 4.4%. Wide regional dispersion remains, and house prices have either risen slightly or fallen in oil regions. House price inflation is projected to moderate somewhat further ahead, partly owing to weaker growth in the Norwegian economy and rising unemployment.

Chart 1.36 CPI-ATE¹⁾. Actual figures, baseline scenario and projections from SAM²⁾ with fan chart. Four-quarter change. Percent. 2014 Q1 – 2016 Q2³⁾



1) CPI adjusted for tax changes and excluding energy products.
2) System for Averaging short-term Models.
3) Projections for 2016 Q1 – 2016 Q2 (broken lines).
Sources: Statistics Norway and Norges Bank

Year-on-year growth in household debt is still higher than growth in household income, but credit growth is growing at a slower pace. In January, twelve-month growth was 6.1%, lower than projected in the *December Report*. Credit growth is being curbed by tighter credit standards and weaker growth in the Norwegian economy and is projected to edge down further in the months ahead (see Section 3 for further discussion of developments in house prices and household debt).

ASSUMPTIONS CONCERNING FISCAL POLICY

The fiscal policy assumptions in this *Report* are based on the approved budget for 2016. As in the December *Report*, oil revenue spending, as measured by the structural non-oil deficit, is assumed to be NOK 196bn in 2016 (Chart 1.37). The deficit is 7.1% of trend GDP for mainland Norway, an increase of 0.7 percentage point from 2015. The change in this share is used as a simple measure of the budgetary effect on demand for goods and services. Since the introduction of the fiscal rule in 2001, the average annual change in the share has been 0.3 percentage point.

Expenditure associated with the high inflow of asylum-seekers is contributing to the relatively large increase in petroleum revenue spending. As in the December *Report*, it is assumed that Norway will receive 33 000 asylum-seekers in 2016, in line with the Supplementary Proposition to the budget. In recent months, the inflow of asylum-seekers has slowed markedly (Chart 1.38). If this trend continues, spending growth may be lower than assumed.

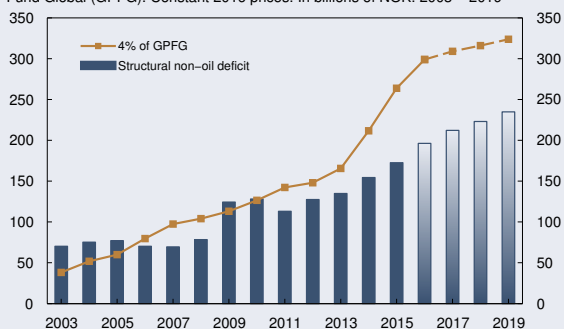
Growth in public sector demand¹ is projected at 2.8% in 2016. This is lower than projected in the December *Report*, primarily because a considerable share of the expenditure on asylum-seekers will be classified as exports in the national accounts, and not as public sector demand as assumed in December. In isolation, this change pulls up the projection for export growth in 2016, while growth in public sector demand has been revised down. The contribution from fiscal policy to economic activity in 2016 is not affected by the change.

From 2017, growth in public sector demand is expected to decelerate to around 2% annually. It is assumed that the further tax reductions proposed in "Report to the Storting No. 4 (2015–2016): Better Taxation – A Tax Reform for Transformation and Growth" will be phased in gradually. This reduces the scope for growth in public consumption and investment. Nevertheless, the change in the structural deficit, measured as a percentage of trend GDP for mainland Norway, may be 0.5 percentage point in 2017. One reason is that most of the tax reductions in the 2016 budget will not lower actual budget revenues until 2017. From 2018, growth in oil revenue spending is assumed to return to the historical average of 0.3 percentage point annually.

The projections imply a gradual increase in petroleum revenue spending as a percentage of the value of the Government Pension Fund Global (GPF), from 2.6% in 2016 to just under 3% in 2019.

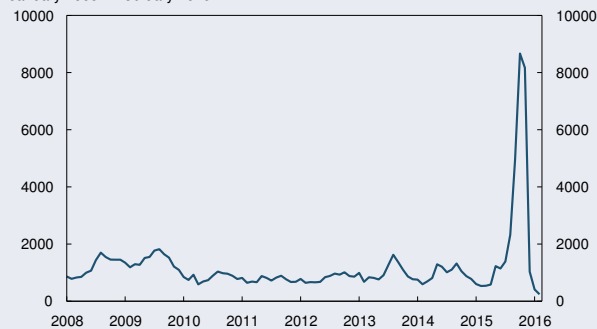
1 Public sector consumption and gross investment.

Chart 1.37 Structural non-oil deficit and 4% of the Government Pension Fund Global (GPF). Constant 2016 prices. In billions of NOK. 2003 – 2019¹⁾



1) Projections for 2016 – 2019.
Sources: Ministry of Finance and Norges Bank

Chart 1.38 Number of asylum applications received per month. January 2008 – February 2016



Source: Norwegian Directorate of Immigration

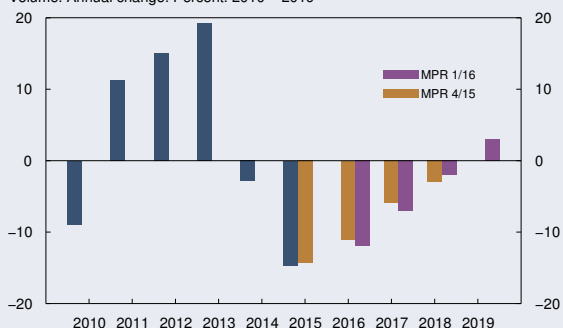
PROJECTIONS FOR PETROLEUM INVESTMENT

Costs in the petroleum industry rose rapidly in pace with the sharp increase in petroleum investment between 2002 and 2013. The higher costs and the fall in oil prices through 2014 and 2015 have substantially reduced oil company cash flows and the profitability of investments on the Norwegian continental shelf. Oil companies have therefore postponed or cancelled a number of projects and implemented a range of measures to reduce operating, maintenance and investment costs.

Oil spot prices have recently been around USD 40 per barrel. That is around USD 70 lower than the average for the first half of 2014, but broadly as projected in the *December Report*. Futures prices indicate that oil prices will move up to around USD 50 in the course of 2019 (Chart 1.8). The projections in this *Report* are based on the assumption that spot prices will move in line with futures prices in the coming years and that oil companies expect an oil price of well above USD 50 in the longer term. Futures prices for 2018 and 2019 have fallen by USD 6–8 since the *December Report*.

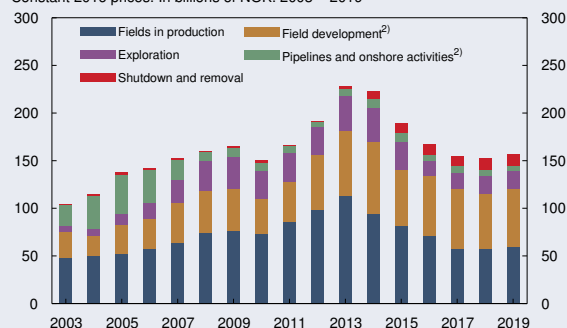
The projections for petroleum investment in 2016 to 2018 have been revised down since December. Investment is now projected to decline by 12% in 2016, by a further 7% in 2017 and by 2% in 2018 (Chart 1.39). Investment projections for exploration and fields in production overall have been revised down by an average of NOK 5bn annually, reflecting the investment intentions survey for Q1 and the decline in oil futures prices since December. Projections for field development in 2016 and 2017 are unchanged since the *December Report*. However, on the basis of new information on development projects, investment in field development is projected to be higher towards the end of the period than projected in December. Cost-cutting measures by oil companies and the oil service industry have reduced the break-even price of several planned developments from USD 50–80 to USD 35–44 per barrel. This means that more developments than previously expected can be started in the period ahead. In 2019, petroleum investment is projected to rise by 3%, with an increase in field development being the most important factor behind the rise.

Chart 1.39 Petroleum investment.
Volume. Annual change. Percent. 2010 – 2019¹⁾



1) Projections for 2016 – 2019.
Sources: Statistics Norway and Norges Bank

Chart 1.40 Petroleum investment.
Constant 2016 prices. In billions of NOK. 2003 – 2019¹⁾



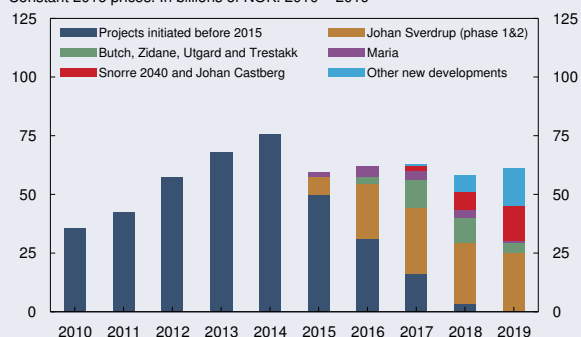
1) Projections for 2016 – 2019. Figures for 2003 – 2015 are from the investment intentions survey by Statistics Norway and deflated by the price index for petroleum investment in the national accounts. The index is projected to be unchanged from 2015 to 2016.
2) Expenses for pipelines for the Johan Sverdrup development are included in the estimates for pipeline transport and onshore activities.
Sources: Statistics Norway and Norges Bank

Investment in fields in production has fallen substantially over the past two years and is projected to fall by an additional NOK 10bn in 2016 and a further NOK 14bn in 2017 (Chart 1.40). Owing to the upgrading of several older fields, investment in fields in production was very high in 2012 and 2013. Some of the decline between 2013 and 2017 reflects the completion of field upgrades and in addition no further upgrades are now required. Savings measures undertaken by oil companies also contribute substantially to reducing investment spending on fields in production in the period to 2017. Investment in fields in production is expected to edge up again towards the end of the period as a number of projects will likely be profitable after costs have been reduced.

Spending on field development was very high in 2014 as a consequence of several ongoing large projects on the Norwegian shelf. Several of these projects have now been completed, markedly reducing field development spending in 2015. The remaining projects are planned for completion in the period 2016–2018. This in isolation reduces petroleum investment considerably between 2015 and 2018 (Chart 1.41). A large portion of the decline will be counteracted by the current development of the Johan Sverdrup and Maria fields. Field development projections are based on the assumption that the development of Butch, Zidane, Trestakk and Utgard (Alfa Sentral) fields will commence in the course of 2016, and that the Snorre 2040 project, the Johan Castberg development and phase two of the Johan Sverdrup development will be sanctioned towards the end of 2017. Several other development projects, such as Pil og Bue, Skarfjell and Fogelberg, may also commence between 2017 and 2019. Overall field development is projected to be somewhat higher in the projection period than in 2015.

Lower oil prices and cost-cutting by oil companies led to a marked decline in exploration investment between 2014 and 2015. Exploration investment is projected to fall by a further NOK 13bn in 2016, in line with the investment intentions survey for Q1. Lower drilling costs and higher oil prices ahead may lead to some rebound in exploration activity in the period 2017–2019.

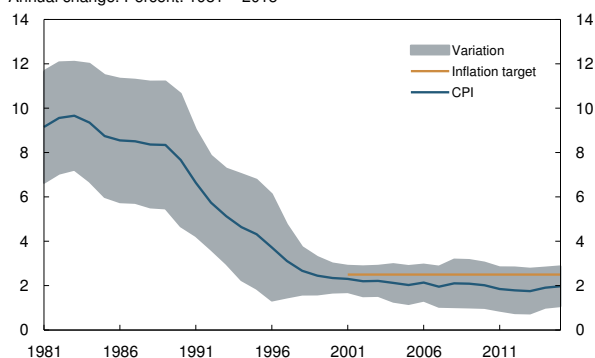
Chart 1.41 Field development.
Constant 2016 prices. In billions of NOK. 2010 – 2019¹⁾



¹⁾ Projections for 2016 – 2019 and for the breakdown of investment in 2015. Figures for total development investments for 2010 – 2015 are from the investment intentions survey by Statistics Norway and deflated by the price index for petroleum investment in the national accounts. The projections are based on reports to the Storting, impact analysis, forecasts from the Norwegian Petroleum Directorate, investment count from Statistics Norway and current information about development investments. Expenses for pipelines for the Johan Sverdrup development are included in the estimates for pipeline transport and onshore activities. Sources: Statistics Norway and Norges Bank

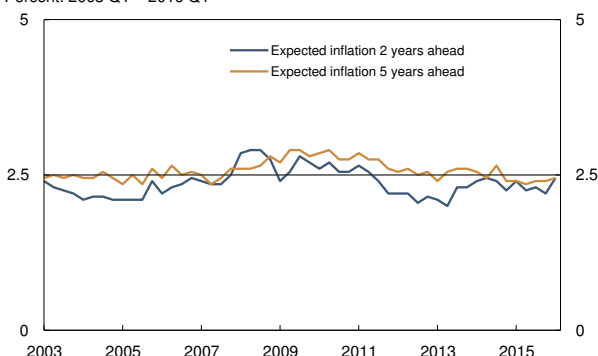
2 MONETARY POLICY OUTLOOK

Chart 2.1 10-year moving average¹⁾ and variation²⁾ in the CPI. Annual change. Percent. 1981 – 2015



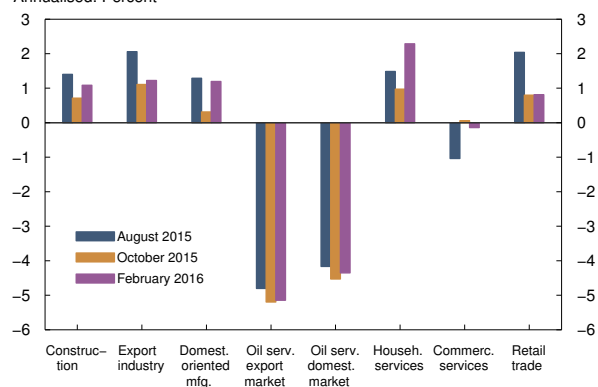
1) The moving average is calculated 10 years back.
2) The band around the CPI is the variation in the CPI in the average period, measured by +/- one standard deviation.
Sources: Statistics Norway and Norges Bank

Chart 2.2 Expected consumer price inflation 2 and 5 years ahead.¹⁾ Percent. 2003 Q1 – 2016 Q1



1) Average of expectations of employer/employee organisations and economists in the financial industry and academia.
Sources: Epinion and Norges Bank

Chart 2.3 Expected output growth next six months, Norges Bank's regional network.¹⁾ Annualised. Percent



1) The network uses an index from -5 to +5, where -5 indicates that production is expected to decline by 10% or more annualised. Several oil service enterprises expect production to decline by more than 10% in the next six months. This is not reflected in the chart due to the limitations of the index.
Source: Norges Bank

Monetary policy trade-offs

The operational target of monetary policy is low and stable inflation, with annual consumer price inflation of close to 2.5% over time. Over the past 15 years, average inflation has been around 2%. This is close to the inflation target (Chart 2.1). Inflation expectations, as implied by expectations surveys, remain close to 2.5% (Chart 2.2).

The key policy rate is set with a view to maintaining inflation close to 2.5% over time without causing excessive fluctuations in output and employment. The monetary policy assessment takes account of the fact that there is uncertainty surrounding the effects of monetary policy. This normally suggests a cautious approach to interest rate setting. Monetary policy seeks to be robust and take account of the risk of particularly adverse outcomes for the economy. Among other things, monetary policy should therefore mitigate the risk of a build-up of financial imbalances. When uncertainty concerning economic developments is particularly high, it may be appropriate to orient monetary policy towards avoiding or dampening the most adverse outcomes. This may also imply a more active monetary policy than normal.

The analysis in the December Report

The analysis in the December *Report* implied a decline in the key policy rate to a little below 1/2% in 2016. Towards the end of the projection period, the key policy rate was projected to increase to slightly below 1%. With this path for the key policy rate, there were prospects that inflation would remain close to 3% in the near term before drifting down to around 2% towards the end of the projection period. Capacity utilisation was expected to decline further in the period to summer 2017, rising somewhat thereafter.

Somewhat weaker growth prospects for the Norwegian economy

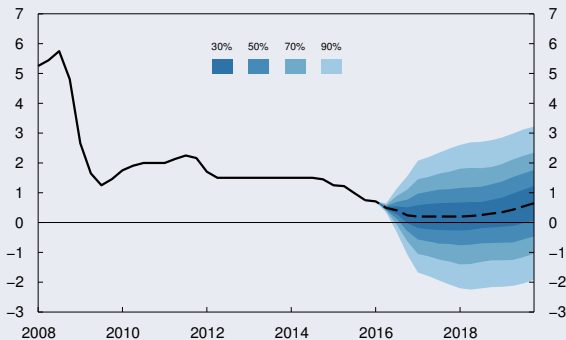
Growth in the Norwegian economy has been lower than projected, and the growth outlook is somewhat weaker than previously foreseen. Norges Bank's regional network contacts report unchanged production in recent months and expect weak developments to persist (Chart 2.3). Oil futures prices have declined since December. This may contribute to lower oil investment and a further moderation of growth in

the mainland economy. It appears that wage growth in 2016 will be lower than in 2015. A weaker krone has boosted the competitiveness of Norwegian enterprises. Somewhat weaker growth prospects among trading partners than previously anticipated may restrain export growth. On the whole, it appears that growth in the Norwegian economy ahead may be somewhat lower than previously projected. There are prospects that unemployment may increase somewhat more than projected in the *December Report*.

Weaker driving forces behind inflation

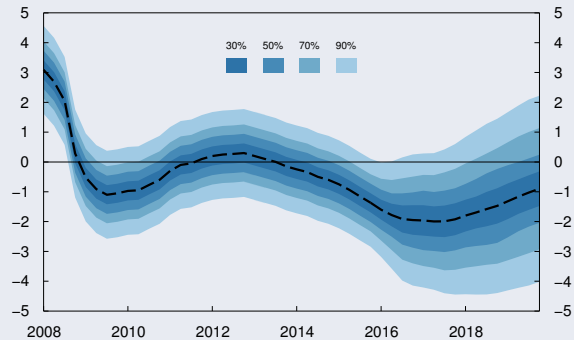
Consumer price inflation is somewhat higher than projected in the *December Report*. The year-on-year rise in consumer prices adjusted for tax changes and excluding energy products (CPI-ATE) has been steady at around 3% over the past six months, but rose to 3.4% in February. The krone depreciation underpins the rise in prices for imported consumer goods in the near term, while weaker price impulses from trading partners in isolation drag down the rise. Low wage growth and lower capacity utilisation will likely lead to a slower rise in prices for domestically produced goods and services.

Chart 2.4a Projected key policy rate in the baseline scenario with fan chart.¹⁾ Percent. 2008 Q1 – 2019 Q4²⁾



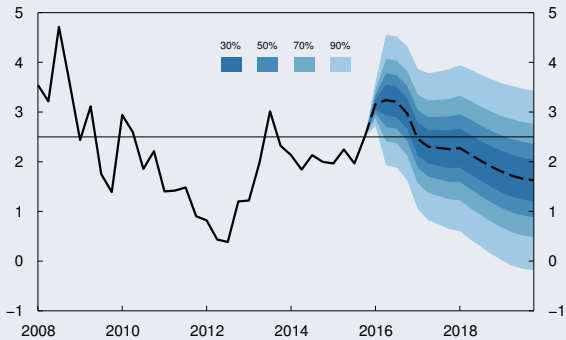
1) The fan charts are based on historical experience and stochastic simulations in our main macroeconomic model, NEMO. The fan chart for the key policy rate does not take into account that a lower bound for the interest rate exists.
2) Projections for 2016 Q1 – 2019 Q4 (broken line).
Source: Norges Bank

Chart 2.4b Projected output gap¹⁾ in the baseline scenario with fan chart. Percent. 2008 Q1 – 2019 Q4



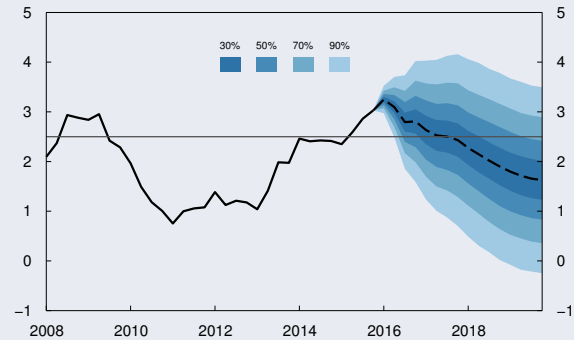
1) The output gap measures the percentage deviation between mainland GDP and projected potential mainland GDP.
Source: Norges Bank

Chart 2.4c Projected CPI in the baseline scenario with fan chart. Four-quarter change. Percent. 2008 Q1 – 2019 Q4¹⁾



1) Projections for 2016 Q1 – 2019 Q4 (broken line).
Sources: Statistics Norway and Norges Bank

Chart 2.4d Projected CPI-ATE¹⁾ in the baseline scenario with fan chart. Four-quarter change. Percent. 2008 Q1 – 2019 Q4²⁾



1) CPI adjusted for tax changes and excluding energy products.
2) Projections for 2016 Q1 – 2019 Q4 (broken line).
Sources: Statistics Norway and Norges Bank

Chart 2.5 GDP for mainland Norway.
Annual change. Percent. 2008 – 2019

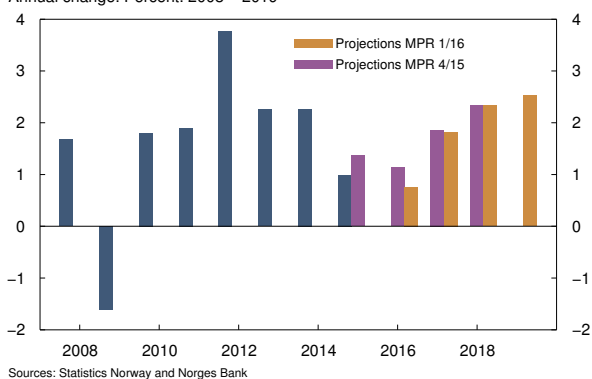


Chart 2.6 Registered unemployment in percent of labour force.
Seasonally adjusted. Percent. 2008 Q1 – 2019 Q4¹⁾

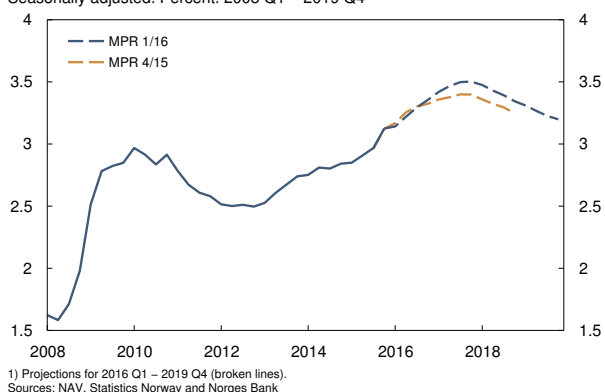
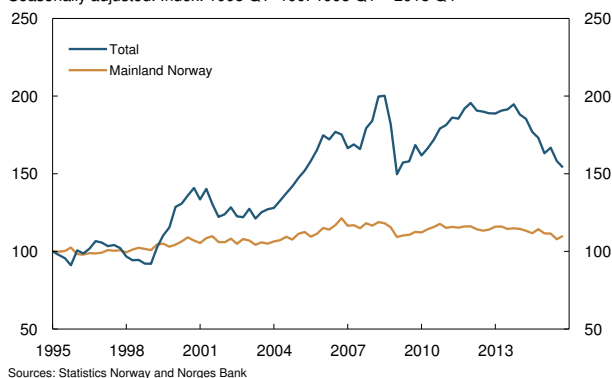


Chart 2.7 Terms of trade.
Seasonally adjusted. Index. 1995 Q1=100. 1995 Q1 – 2015 Q4



Downward revision of key policy rate forecast

Capacity utilisation in the Norwegian economy is declining and the driving forces behind inflation have weakened. Both the objective of keeping inflation close to target and the consideration relating to capacity utilisation imply a lower key policy rate. Lower interest rates could increase financial system vulnerabilities. As the key policy rate approaches a lower bound, the uncertainty surrounding the effects of monetary policy increases. This now suggests proceeding with greater caution in interest rate setting. The forecast for the key policy rate is somewhat higher than it would have been if the consideration of robustness had not been given weight (see box on page 30). The monetary policy trade-offs are discussed further in the “Executive Board’s assessment”.

The analyses in this *Report* imply a forecast where the key policy rate declines to about ¼% at the end of 2016. Towards the end of the projection period the key policy rate is projected to increase to close to ¾% (Charts 2.4 a-d). The forecast for the key policy rate is lower than in the December *Report* through the entire projection period (see box on page 32 for a further description of the factors behind the changes in the interest rate forecast).

With a path for the key policy rate in line with the baseline scenario, the analyses suggest that inflation will remain close to 3% in the near term (Chart 2.4 d). Thereafter, inflation is expected to decline gradually to between 1.5% and 2% in 2019. Capacity utilisation in the mainland economy is expected to decline further in the period to autumn 2017, edging up thereafter.

Lower growth and somewhat higher unemployment

Growth in the Norwegian economy is expected to be lower in 2016 than in 2015 and to pick up gradually thereafter to around 2.5% in 2019 (Chart 2.5). Low output growth will curb growth in employment. Labour immigration has fallen in recent years and is expected to continue to drift down. As in earlier downturns, labour force participation is expected to decrease after a period. Combined with lower labour immigration, this will likely lead to slower growth in the labour supply and thereby curb the rise in unem-

ployment. On the other hand, the increase in the number of asylum-seekers may eventually push up growth in the labour supply. Unemployment is projected to increase somewhat more than in the *December Report*. Registered unemployment is projected to increase from 3% in 2015 to 3.5% in 2017 (Chart 2.6), falling somewhat towards the end of the projection period.

Prospects for lower wage growth

The fall in oil prices since summer 2014 has led to a pronounced decline in Norway's terms of trade (Chart 2.7). Lower profitability in the oil production and oil service industry curbs wage growth in both that industry and the wider economy. In 2015, wage growth was the lowest in over 20 years. The weak growth in the Norwegian economy suggests that wage growth will also be moderate in the coming years. In 2016, wage growth is expected to edge down to 2.6% (Chart 2.8). The projection is lower than in the *December Report*. In the coming years, wage growth is expected to show some increase, but the projections are lower than in the *December Report* through the entire projection period.

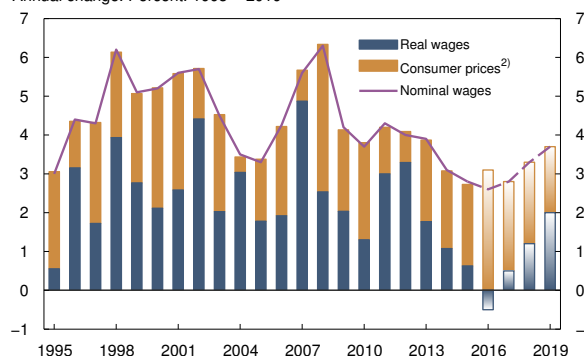
Weaker-than-expected krone

The krone exchange rate has on average been slightly weaker than anticipated, but has recently been close to the projection in the *December Report*. Looking ahead, the krone is expected to appreciate somewhat as oil prices edge up and the uncertainty surrounding developments in the Norwegian economy diminishes. The krone exchange rate is nevertheless expected to remain weaker than previously projected through the entire projection period (Chart 2.9), partly reflecting prospects for a somewhat lower oil price than envisaged in the *December Report*.

Consumer price inflation edging down

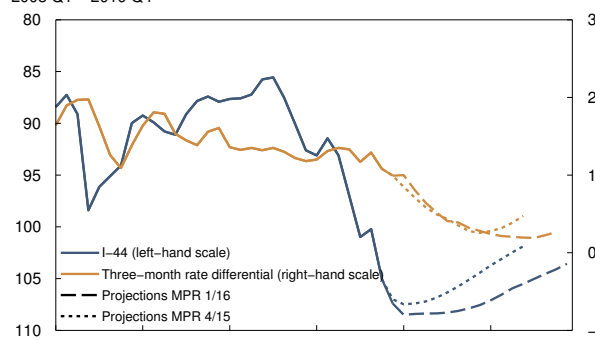
Consumer price inflation is expected to remain close to 3% in the near term. A weaker krone exchange rate through the entire projection period will sustain inflation longer than previously foreseen. On the other hand, weaker price impulses from trading partners will curb the rise in prices for imported consumer goods. After a period, lower capacity utilisation and slower wage growth will dampen the rise in prices for domestically produced goods and services. Overall

Chart 2.8 Annual wages.
Annual change. Percent. 1995 – 2019¹⁾



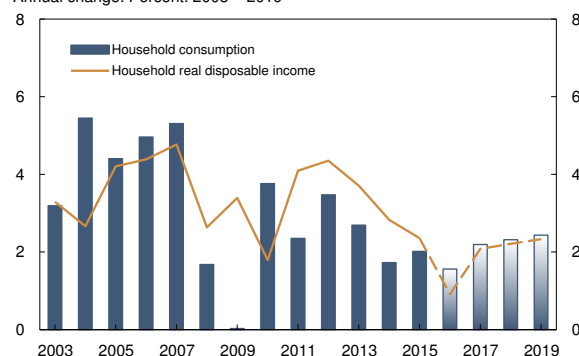
1) Projections for 2016 – 2019.
2) CPI.
Sources: TBU, Statistics Norway and Norges Bank

Chart 2.9 Three-month money market rate differential between Norway¹⁾ and trading partners²⁾ and import-weighted exchange rate index (I-44)³⁾. 2008 Q1 – 2019 Q4⁴⁾



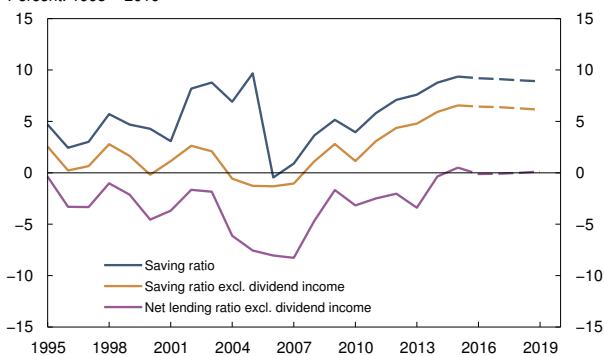
1) Key policy rate in the baseline scenario plus premiums in the Norwegian money market. The calculations are based on the assumption that announced interest rate changes are priced into the money market.
2) Forward rates for trading partners at 11 March 2016.
3) A positive slope denotes a stronger krone exchange rate.
4) Projections for 2016 Q1 – 2019 Q4 (broken lines).
Sources: Thomson Reuters and Norges Bank

Chart 2.10 Household consumption¹⁾ and real disposable income²⁾.
Annual change. Percent. 2003 – 2019³⁾



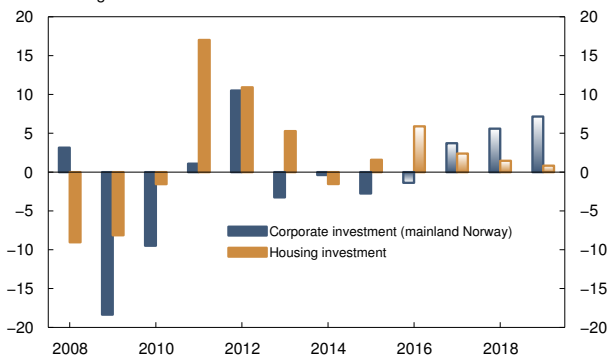
1) Includes consumption for non-profit organisations. Volume.
2) Excluding dividend income. Including income for non-profit organisations. Deflated by CPI.
3) Projections for 2016 – 2019.
Sources: Statistics Norway and Norges Bank

Chart 2.11 Household saving and net lending as a share of disposable income. Percent. 1995 – 2019¹⁾



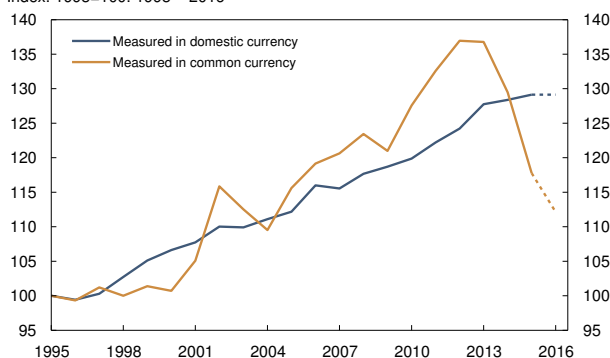
1) Projections for 2016 – 2019 (broken lines).
Sources: Statistics Norway and Norges Bank

Chart 2.12 Private investment. Annual change. Percent. 2008 – 2019¹⁾



1) Projections for 2016 – 2019.
Sources: Statistics Norway and Norges Bank

Chart 2.13 Norwegian labour costs¹⁾ relative to trading partners' labour costs. Index. 1995=100. 1995 – 2016²⁾



1) Hourly labour costs in manufacturing.
2) Projections for 2016 (broken lines).
Sources: TBU, Statistics Norway and Norges Bank

consumer price inflation is projected to drift down to between 1.5% and 2% in 2019.

Low productivity growth

Productivity growth in the Norwegian economy continued to decline in 2015 and growth is expected to remain low in 2016. Low productivity growth during a downturn may reflect labour hoarding by firms despite a decline in output. The enterprises in Norges Bank's regional network report a continued abundant supply of labour and low capacity utilisation, providing them with ample opportunity to increase output as demand picks up. In pace with rising capacity utilisation in the Norwegian economy, productivity growth is thus expected to rise somewhat. Labour immigration is expected to decline further, partly reflecting weaker domestic economic developments. As a result, the contribution from labour immigration to growth in potential output will decline. On the other hand, high inflows of asylum-seekers may over time make some contribution to growth in the labour force.

Modest growth in consumption and high savings

Growth in private consumption has remained fairly solid. From an annual growth rate of 2.1% in 2015, consumption growth is projected to decline to 1.6% in 2016 (Chart 2.10). The decline must be seen in the light of weaker growth in household purchasing power owing to higher inflation, lower wage growth and rising unemployment. In isolation, low interest rates push up private consumption. Further out in the projection period, real income growth and reduced uncertainty surrounding developments in the Norwegian economy will provide a boost to consumption growth. Combined with a further increase in collective pension savings, the projections suggest that the saving ratio will remain at a high level (Chart 2.11).

Gradual pick-up in investment growth

Business investment has been weak over a longer period, and is expected to fall to a lower level in 2016 than in 2015. Low demand growth, uncertainty about economic developments and tighter bank credit standards will likely have a dampening impact on business investment, while low interest rates pull in the opposite direction. Several years of weak investment

may give rise to a need to increase investment later in the projection period (Chart 2.12). Reduced uncertainty and rising demand may also boost investment further ahead. Growth in housing investment is projected to remain firm in the period ahead, supported by continued population growth and house price inflation. Lower house price inflation may curb growth in housing investment further out in the projection period.

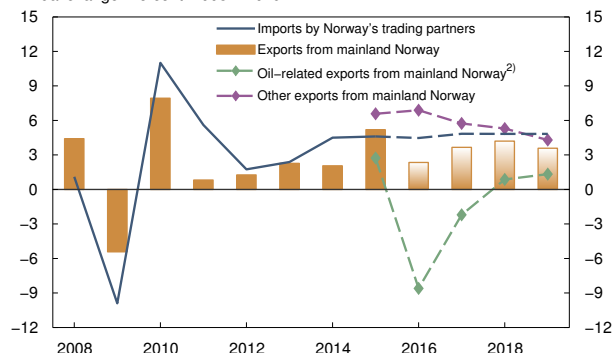
Moderate export growth

The depreciation of the krone in recent years has improved Norwegian firms' cost competitiveness (Chart 2.13). This helped exports from mainland Norway grow at a fast pace and faster than imports by Norway's trading partners in 2015. Mainland exports excluding exports from the oil service sector are projected to continue to grow faster than imports by trading partners in 2016 and 2017 (Chart 2.14). Export growth is expected to slow in subsequent years as the effects of the krone depreciation unwind and the krone appreciates somewhat. As a result of the decline in the global petroleum industry, exports from the oil service sector are expected to fall substantially in 2016 and continue to fall in 2017. The decline in oil service exports will be restrained by the fact that some oil service companies are turning to other markets.¹ In 2018 and 2019, these exports are expected to pick up somewhat. Overall growth in mainland exports is projected to decline between 2015 and 2016, followed by somewhat higher growth. The projections take into account that a large share of expenditure on asylum-seekers is recorded as exports in the national accounts (see box on page 19).

Gradual deceleration in house price inflation and debt growth

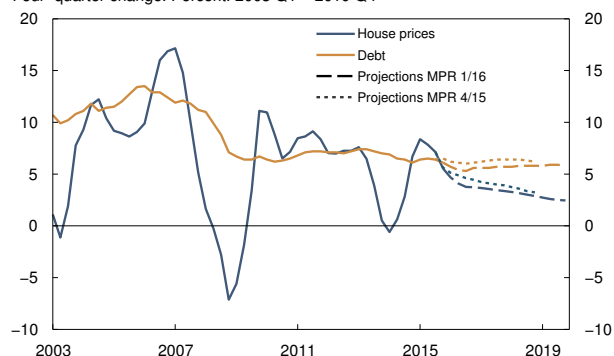
House price inflation is projected to decelerate gradually through the projection period (Chart 2.15). Somewhat lower house price inflation than projected in the December Report reflects weaker developments in the Norwegian economy, with rising unemployment and weak income growth. Household debt is also projected to grow at a somewhat slower pace than anticipated earlier. Household debt ratios will likely continue to rise (Chart 2.16). In the light of prospects

Chart 2.14 Exports from mainland Norway and imports by Norway's trading partners. Annual change. Percent. 2008 – 2019¹⁾



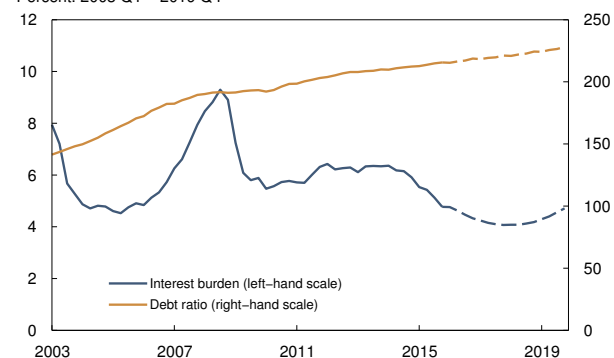
1) Projections for 2016 – 2019.
2) Goods and service groups in the national accounts where the oil service sector accounts for a considerable share of exports.
Sources: Thomson Reuters, Statistics Norway and Norges Bank

Chart 2.15 Household debt¹⁾ and house prices. Four-quarter change. Percent. 2003 Q1 – 2019 Q4²⁾



1) Domestic credit to households (C2).
2) Projections for 2016 Q1 – 2019 Q4 (broken lines).
Sources: Statistics Norway, Eiendom Norge, Eiendomsverdi, Finn.no and Norges Bank

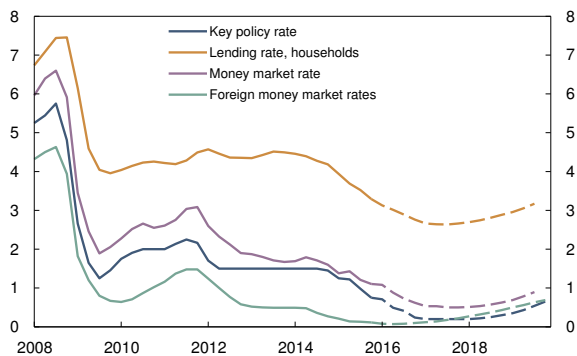
Chart 2.16 Household debt ratio¹⁾ and interest burden²⁾. Percent. 2003 Q1 – 2019 Q4³⁾



1) Loan debt as a percentage of disposable income adjusted for estimated reinvested dividend income for 2003 – 2005 and redemption/reduction of equity capital for 2006 Q1 – 2012 Q3.
2) Interest expenses as a percentage of disposable income adjusted for estimated reinvested dividend income for 2003 – 2005 and redemption/reduction of equity capital for 2006 Q1 – 2012 Q3 plus interest expenses.
3) Projections for 2015 Q4 – 2019 Q4 (broken lines).
Sources: Statistics Norway and Norges Bank

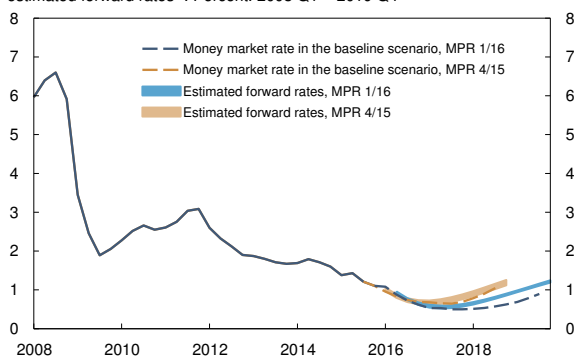
1 See Brander, A. S., H. Brekke and B. E. Naug (2016), "Increased adaptability among Norwegian oil service enterprises", *Economic Commentaries* 4/2016, Norges Bank. To be published in English as soon as possible.

Chart 2.17 Key policy rate, three-month money market rate¹⁾, interest rate on loans to households²⁾ and foreign money market rates in the baseline scenario. Percent. 2008 Q1 – 2019 Q4³⁾



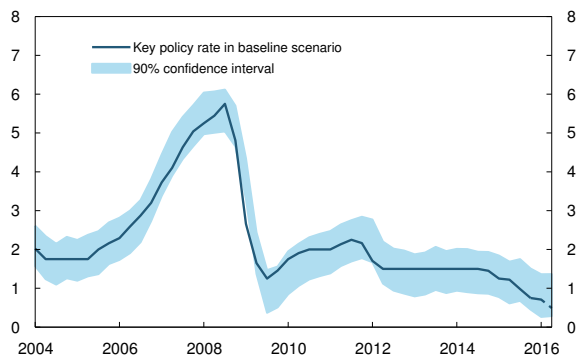
1) Key policy rate in the baseline scenario plus premiums in the Norwegian money market. The calculations are based on the assumption that announced interest rate changes are priced into the money market.
 2) Average interest rate on all loans to households from banks and covered bond companies.
 3) Projections for 2016 Q1 – 2019 Q4 (broken lines).
 Sources: Thomson Reuters, Statistics Norway and Norges Bank

Chart 2.18 Three-month money market rate in the baseline scenario¹⁾ and estimated forward rates²⁾. Percent. 2008 Q1 – 2019 Q4



1) Key policy rate in the baseline scenario plus Norwegian money market premiums. The calculations are based on the assumption that announced interest rate changes are priced into the money market.
 2) Forward rates are based on money market rates and interest rate swaps. The orange and blue bands show the highest and lowest rates in the period 30 November – 11 December 2015 and 29 February – 11 March 2016, respectively.
 Sources: Thomson Reuters and Norges Bank

Chart 2.19 Key policy rate and interest rate developments that follow from Norges Bank's average pattern of interest rate setting.¹⁾ Percent. 2004 Q1 – 2016 Q2



1) Interest rate movements are explained by developments in inflation, mainland GDP growth, wage growth and three-month money market rates among trading partners, as well as the interest rate in the preceding period. The equation is estimated over the period 1999 Q1 – 2015 Q4. See Norges Bank Staff Memo 3/2008 for further discussion.
 Source: Norges Bank

for somewhat higher money market premiums than expected earlier, interest rates on loans to households and enterprises are expected to fall somewhat less than the key policy rate (Chart 2.17). A lower interest rate will nevertheless contribute to keeping the interest burden low for a longer period.

The projections are uncertain

The projections in this *Report* are based on Norges Bank's assessment of the economic situation, the functioning of the economy and the effect of monetary policy. The projections are uncertain. If economic developments are broadly in line with projections, economic agents can also expect interest rate developments to be approximately as projected. The interest rate path is a conditional forecast. Monetary policy can respond to changes in the economic outlook or if the relationships between the interest rate level, inflation and the real economy differ from those assumed. The effects of monetary policy are particularly uncertain when the key policy rate approaches a lower bound (see box on page 30).

The uncertainty surrounding Norges Bank's projections is illustrated using fan charts (Charts 2.4 a-d). The fans are based on historical experience and the Bank's model apparatus. The projections lie in the middle of the fans, indicating that the uncertainty is equally distributed on either side of a given forecast. The probability band for the key policy rate does not take into account the existence of a lower bound for the interest rate. If the band had taken into account the existence of such a lower bound, the bands for the other forecast variables would have been influenced. This is because the possibility of counteracting the effect of a negative shock is limited when the key policy rate approaches a lower bound.

In the assessment underlying the interest rate forecast in this *Report*, there are some key factors that are particularly uncertain.

Growth in private consumption may prove to be lower than projected in this *Report*. Consumer confidence has weakened considerably over the past year and a half and is at a historic low. So far growth in consumer spending has remained solid. Even though the relationship between consumer confidence and private

consumption varies over time, periods of declining consumer confidence have at times also coincided with a sharp fall in household consumption (Chart 1.23 in Section 1). Higher unemployment, a fall in house prices and weaker income growth may also depress consumption growth to a further extent than currently envisaged. Lower growth in consumption will weigh down on total demand and output and will thereby reduce capacity utilisation more than currently envisaged.

Oil prices may turn out to be weaker than expected in this *Report*. The analyses in this *Report* are based on the assumption that oil prices will move in line with futures prices, which indicate some increase in oil prices over the next few years. Even if oil prices are low at present, it cannot be ruled out that oil prices will remain at today's level or fall further. At lower oil prices, fewer development projects will be profitable. Petroleum-related exports will likely also be lower. Lower oil prices may also weigh down on consumption and investment to a further extent than projected in this *Report*.

Oil prices may also rise more than implied by current futures prices. Many oil companies and analysts now seem to be assuming that oil prices will be somewhat higher in the longer term than implied by futures prices. More projects will be profitable at higher oil prices, which may result in a smaller fall in oil investment than envisaged at present. In addition, higher oil prices may reduce the uncertainty surrounding developments in the Norwegian economy and push up growth through higher consumption and investment than projected in this *Report*.

Cross-checks for the interest rate forecast

Forward rates in the money and bond markets can function as a cross-check for the interest rate forecast. Estimated forward rates have fallen since the December *Report*. In the coming year, these interest rates are close to Norges Bank's projection for the money market rate in this *Report*. Thereafter, estimated forward rates suggest that market participants expect somewhat higher money market rates than projected in this *Report* (Chart 2.18).

A simple rule based on Norges Bank's previous interest rate setting is also a cross-check for the baseline key policy rate. Chart 2.19 shows such a rule, where the key policy rate is determined by developments in inflation, wage growth, mainland GDP and foreign interest rates. The interest rate in the previous period is also taken into account. The model parameters are estimated using historical data from 1999 to the present. The projections are based on the estimates for the relevant variables up to and including 2016 Q2. Model uncertainty is expressed by the blue band. The explanatory variables in the model suggest a low interest rate, but inflation has picked up and is now relatively high. The simple rule does not take into account that the increase in inflation is probably temporary. This may partly explain why the baseline key policy rate is at the lower end of the band.

MONETARY POLICY TRADE-OFFS

The operational target of monetary policy is annual consumer price inflation of close to 2.5% over time. In its conduct of monetary policy, Norges Bank operates a flexible inflation targeting regime so that weight is given to both variability in inflation and variability in output and employment when setting the key policy rate. The following set of criteria is regarded as a guideline for an appropriate interest rate path:

1. **The inflation target is achieved:**
The interest rate path should stabilise inflation at target or bring inflation back to target after a deviation has occurred.
2. **The inflation targeting regime is flexible:**
The interest rate path should provide a reasonable balance between the path for inflation and the path for capacity utilisation in the economy.

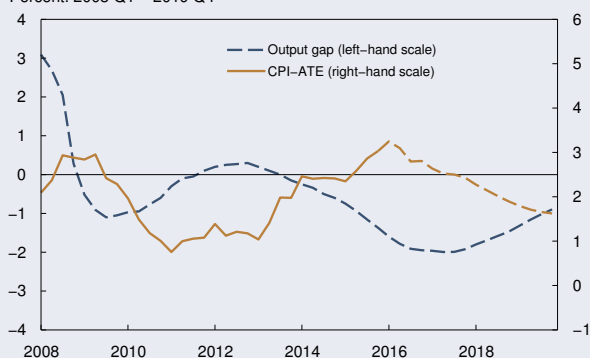
The assessment takes account of the fact that there is uncertainty surrounding the effects of monetary policy. This normally suggests a cautious approach to interest rate setting. In addition, the following criterion is given weight:

3. **Monetary policy is robust:**
Conditions that imply an increased risk of particularly adverse economic outcomes should be taken into account when setting the key policy rate. This suggests, among other things, that monetary policy should seek to mitigate the risk of a build-up of financial imbalances. In the event of major and abrupt changes in the balance of risks, the consideration of robustness may also imply a more active monetary policy than normal. The consideration of robustness is not an objective in itself, but is included because it may yield improved performance in terms of inflation, output and employment over time.

The various considerations expressed in the criteria are weighed against each other. The Executive Board provides an account of the reasoning behind its judgement in the "Executive Board's assessment" at the beginning of the *Report*.

The analyses in this *Report* imply a forecast where the key policy rate declines to about ¼% at the end of 2016. Towards the end of the projection period the key policy rate is projected to increase to close to

Chart 2.20 Inflation¹⁾ and projected output gap in the baseline scenario. Percent. 2008 Q1 – 2019 Q4



1) CPI adjusted for tax changes and excluding energy products. Projections for 2016 Q1 – 2019 Q4 (broken line). Sources: Statistics Norway and Norges Bank

¾%. The projections indicate that inflation will be somewhat below the inflation target around the end of 2019 (Chart 2.20). Capacity utilisation is lower than a normal level, but increases towards the end of the projection period.

The projections for inflation and capacity utilisation in the projection period might have implied an even lower interest rate path. However, there are limits to how low the key policy rate can be set. The experience of other countries suggests that the lower bound for the key policy rate is below zero (see Special Feature on page 52), but it is difficult to provide a precise estimate of the limit. In previous monetary policy reports, Norges Bank has used technical model-based analyses to present alternative paths for the key policy rate in the case where weight is only given to attaining the inflation target and closing the output gap at the end of the projection period. The usefulness of such estimations is limited in today's situation. The analytical framework does not take into account the existence of a lower bound for the key policy rate and that the effects of monetary policy may change as the key policy rate approaches the lower bound.

Monetary policy seeks to be robust, which entails taking into account uncertainty surrounding the effects of monetary policy and the risk of particularly adverse economic outcomes. Lower interest rates may increase financial system vulnerabilities. In the worst case, that may trigger or amplify an economic downturn. The risk of an acceleration in property price inflation and debt growth increases when interest rates are low. Moreover, very low and negative interest rates may result in adjustments that are difficult to foresee and intensify financial market volatility. The forecast for the key policy rate is somewhat higher than it would have been if the consideration of robustness had not been given weight.

CHANGES IN THE PROJECTIONS SINCE MONETARY POLICY REPORT 4/15

The interest rate forecast in this *Report* has been revised down since the December 2015 *Report* (Chart 2.21). The projections are based on the criteria for an appropriate interest rate path (see box on page 30), an overall assessment of the situation in the Norwegian and global economy and Norges Bank's perception of the functioning of the economy.

Chart 2.22 illustrates the factors that have affected the interest rate forecast through their impact on the outlook for inflation, output and employment. The overall change in the interest rate forecast from the December *Report* is shown by the black line.

The monetary policy trade-offs are difficult to quantify. Given the risk associated with very low interest rates and the uncertainty regarding the effect of monetary policy as the key policy rate is approaching a lower bound, monetary policy is now responding somewhat less than usual to news that pushes down on the interest rate path. On the other hand, the baseline scenario implies only a very gradual increase in the key policy rate towards the end of the projection period.

An account of the reasoning behind the Executive Board's judgement is provided in the "Executive

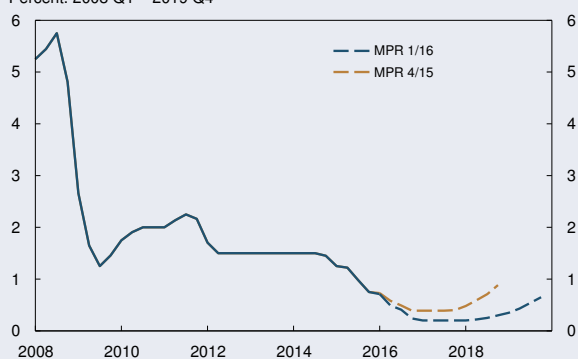
Board's assessment" at the beginning of this *Report*. The decomposition in Chart 2.22 is not an exact expression of Norges Bank's response pattern ahead.

For trading partners as a whole, both actual and expected policy rates have fallen since the December *Report*. This contributes in isolation to a stronger krone and thus to lower inflation and activity in Norway. Lower policy rates abroad therefore imply that the key policy rate in Norway will be kept low for a longer period (purple bars).

For most of our trading partners, growth is now expected to be somewhat lower ahead than anticipated in the December *Report*. Lower growth abroad could also dampen growth in Norway, for example via lower exports. This suggests a slightly lower key policy rate in Norway (orange bars).

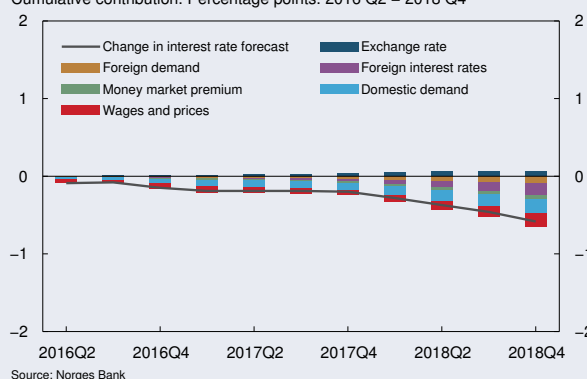
Growth in the Norwegian economy has been lower than expected and the growth outlook has weakened somewhat. Contacts in Norges Bank's regional network report unchanged output in recent months and expect weak developments to persist. The fall in oil futures prices since December could push down oil investment and further dampen growth in the mainland economy. Weaker prospects for demand,

Chart 2.21 Key policy rate.¹⁾ Percent. 2008 Q1 – 2019 Q4



¹⁾ Projections for 2016 Q1 – 2019 Q4. Source: Norges Bank

Chart 2.22 Factors behind changes in the interest rate forecast since MPR 4/15. Cumulative contribution. Percentage points. 2016 Q2 – 2018 Q4



Source: Norges Bank

and thereby for output and employment, point towards a lower path for the key policy rate (light blue bars).

Consumer price inflation has been somewhat higher than expected. In isolation, this suggests a marginally higher interest rate in the near term. The projections for wage growth have been adjusted down compared with the *December Report*. Lower wage growth contributes to lower cost growth and thereby to lower inflation. On balance, slightly higher inflation and the prospect of lower wage growth push down the interest rate path (red bars).

Oil futures prices indicate a more moderate rise in oil prices than assumed in December. This implies a more gradual appreciation of the krone than previously anticipated. A weaker krone contributes in isolation to higher inflation and higher activity in the Norwegian economy. This pushes up the path for the key policy rate (dark blue bars).

Norwegian money market premiums have remained elevated and been somewhat higher than expected. The premiums are expected to remain higher in the period ahead than envisaged earlier. This suggests a lower key policy rate, because a higher premium, all else equal, means a higher money market rate (green bars).

TABLE 1 Projections for macroeconomic aggregates in *Monetary Policy Report 1/16*. Percentage change from previous year (unless otherwise stated). Change from projections in *Monetary Policy Report 4/15* in brackets

	2016	2017	2018	2019
CPI	3.1 (0.3)	2.3 (-0.2)	2.1 (0.1)	1.7
CPI-ATE ¹	3.0 (0.1)	2.5 (0)	2.1 (0.1)	1.7
Annual wages ²	2.6 (-0.2)	2.8 (-0.3)	3.3 (-0.2)	3.7
GDP, mainland Norway	0.8 (-0.3)	1.8 (-0.1)	2.3 (0)	2.5
Output gap, mainland Norway (level) ³	-1.8 (-0.2)	-2.0 (-0.2)	-1.6 (-0.1)	-1.1
Employment, persons, QNA	0.1 (-0.2)	0.5 (-0.1)	1.0 (-0.1)	1.1
Registered unemployment (rate, level)	3.3 (0)	3.5 (0.1)	3.4 (0.1)	3.3
Level				
Key policy rate ⁴	0.5 (0)	0.2 (-0.2)	0.2 (-0.5)	0.5
Import-weighted exchange rate (I-44) ⁵	108.4 (1.2)	108.0 (2.6)	106.3 (3.5)	104.3
Money market rates, trading partners ⁶	0.1 (0)	0.2 (-0.1)	0.3 (-0.3)	0.6

1 CPI-ATE: CPI adjusted for tax changes and excluding energy products.

2 Annual wage growth is based on the Technical Reporting Committee on Income Settlements' definitions and calculations.

3 The output gap measures the percentage deviation between mainland GDP and projected potential mainland GDP.

4 The key policy rate is the interest rate on banks' deposits in Norges Bank.

5 The weights are estimated on the basis of imports from 44 countries, which comprise 97% of total imports.

6 Market rates are based on money market rates and interest rate swaps.

Source: Norges Bank

3 DECISION BASIS FOR THE COUNTERCYCLICAL CAPITAL BUFFER

Norges Bank prepares a decision basis and provides advice to the Ministry of Finance regarding the level of the countercyclical capital buffer four times a year. The buffer rate has been set at 1% and will be increased to 1.5% from 30 June 2016. National buffer requirements will eventually apply to Norwegian banks' exposures in other EU/EEA countries (see box on page 41).

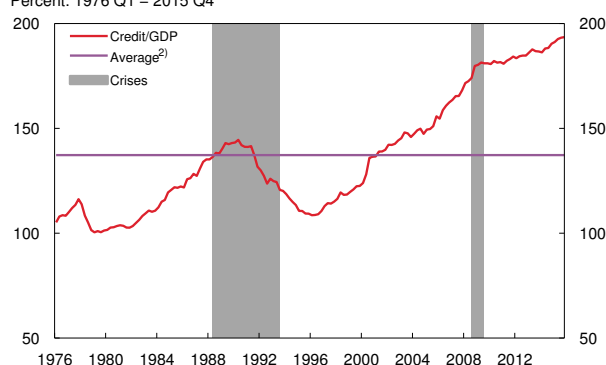
Norges Bank has formulated three criteria for an appropriate countercyclical capital buffer (see box on page 44). Banks should build and hold a countercyclical capital buffer when financial imbalances are building up or have built up. The buffer rate should be considered in the light of other requirements applying to banks, particularly when new requirements are introduced. In the event of an economic downturn

and large bank losses, the buffer rate can be reduced to mitigate the procyclical effects of tighter bank lending.

Norges Bank's assessment of financial imbalances is based on the credit-to-GDP ratio and the deviation of this ratio from its long-term trend.

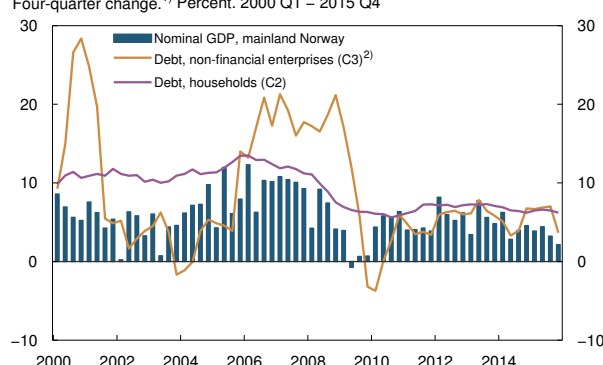
Total household and corporate debt in the mainland economy has risen faster than GDP for a long period (Chart 3.1). Debt growth moderated slightly towards the end of 2015 (Chart 3.2). The credit indicator nonetheless rose in Q4, partly reflecting lower growth in the Norwegian economy.

Chart 3.1 Total credit¹⁾ mainland Norway as a share of mainland GDP. Percent. 1976 Q1 – 2015 Q4



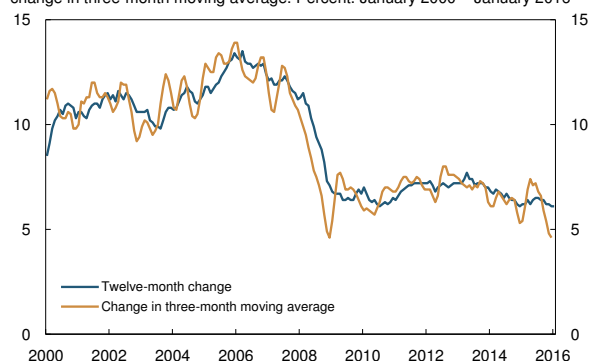
1) The sum of C2 households and C3 non-financial enterprises for mainland Norway (all non-financial enterprises pre-1995). C3 non-financial enterprises comprises C2 non-financial enterprises and foreign debt for mainland Norway.
2) Estimated based on figures from 1975 Q4.
Sources: Statistics Norway, IMF and Norges Bank

Chart 3.2 Debt held by households and non-financial enterprises and mainland GDP. Four-quarter change.¹⁾ Percent. 2000 Q1 – 2015 Q4



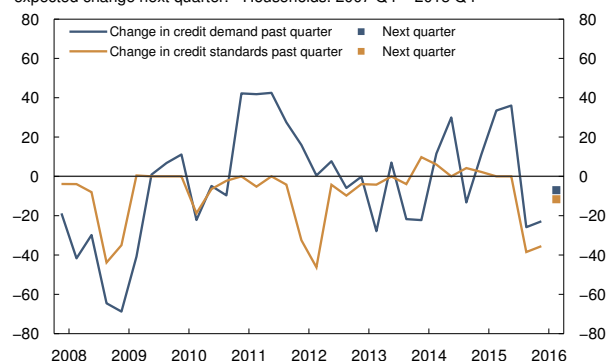
1) Estimated based on stock of debt at the end of the quarter.
2) Sum of C2 non-financial enterprises and foreign debt for mainland Norway.
Sources: Statistics Norway and Norges Bank

Chart 3.3 Credit to households (C2). Twelve-month change and annualised change in three-month moving average. Percent. January 2000 – January 2016



Source: Statistics Norway

Chart 3.4 Change in credit demand and banks' credit standards past quarter and expected change next quarter.¹⁾ Households. 2007 Q4 – 2015 Q4



1) Negative values denote lower demand or tighter credit standards.
Source: Norges Bank

Weaker growth in household debt

Household debt growth has moderated over the past half-year (Chart 3.3). In Norges Bank's lending survey for Q4, banks reported somewhat lower household credit demand and tighter credit standards (Chart 3.4). Weaker developments in the Norwegian economy and the new residential mortgage lending requirements have probably contributed to the moderation in debt growth.

Household debt-to-income ratios have continued to rise, albeit at a slightly gentler pace compared with the past couple of years (Chart 2.16 in Section 2). Lower bank lending rates have contributed to a fall in household interest burdens (Chart 3.5). The persistent rise in household debt ratios has increased household vulnerability to interest rate increases. Banks' assess-

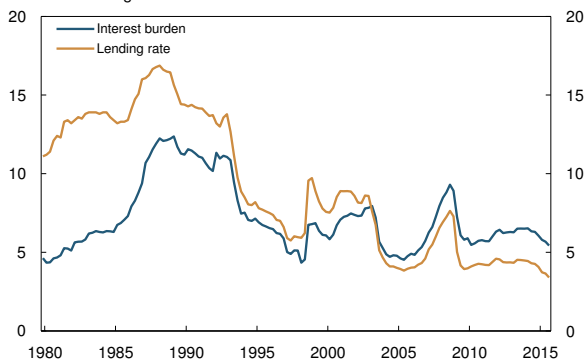
ment of new residential mortgage loan applications is based on whether the borrower can withstand a 5 percentage point increase in interest rates. An increase of this magnitude would today result in an interest burden that is as high as when the banking crisis erupted at the end of the 1980s, in spite of the fact that lending rates are now considerably lower.¹

Slightly lower house price inflation

House price inflation has slowed (Chart 3.6). House prices overall have risen at about the same pace as household disposable income over the past year. The house price indicator was approximately unchanged in Q4 (Chart 3.7).

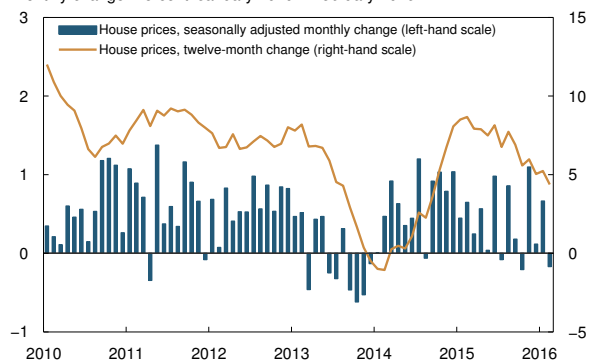
¹ See "From a 'critical interest burden' to a 'vulnerable debt ratio'", *Economic Commentaries 2/2016*, Norges Bank.

Chart 3.5 Lending rates¹⁾ and interest burden²⁾. Percent. 1979 Q4 – 2015 Q3



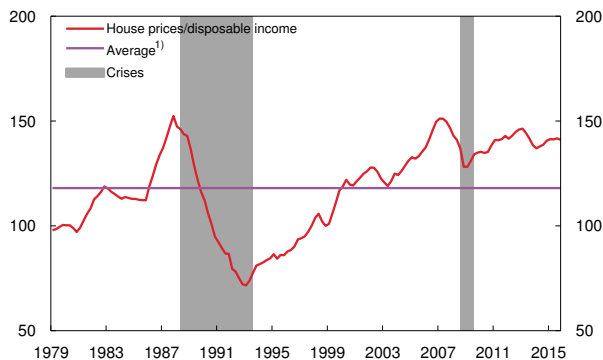
1) Interest rate on all bank loans to households and enterprises up to 2001. From 2001, interest rate on all loans to households from banks and mortgage companies.
2) Interest expenses as a percentage of disposable income adjusted for estimated reinvested dividend income for 2003 – 2005 and redemption/reduction of equity capital 2006 Q1 – 2012 Q3 plus interest expenses after tax. Sources: Statistics Norway and Norges Bank

Chart 3.6 House prices. Twelve-month change and seasonally adjusted monthly change. Percent. January 2010 – February 2016



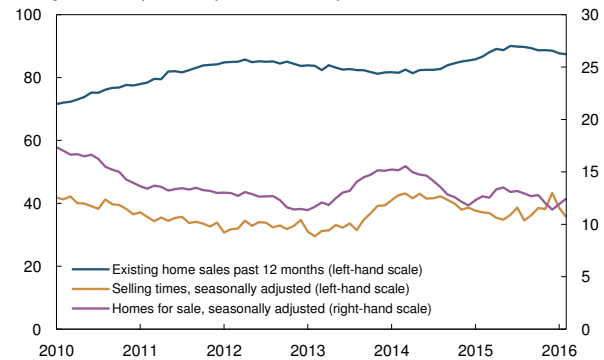
Sources: Eiendom Norge, Eiendomsverdi and Finn.no

Chart 3.7 House prices relative to disposable income. Indexed. 1998 Q4 = 100. 1979 Q1 – 2015 Q4



1) Average house prices/disposable income. Estimated based on figures from 1978 Q4. Sources: Statistics Norway, Eiendom Norge, Eiendomsverdi, Finn.no, Norwegian Association of Real Estate Agents (NEF) and Norges Bank

Chart 3.8 Sales of existing homes and homes for sale in thousands of dwellings. Selling times in days. January 2010 – February 2016



Sources: Eiendom Norge, Eiendomsverdi, Finn.no and Norges Bank

Sales of existing homes were high in early 2015, but have shown a slight decline in recent months (Chart 3.8). The selling time for homes increased through autumn 2015, but has decreased in recent months. The number of homes for sale fell somewhat through 2015, but has picked up in 2016.

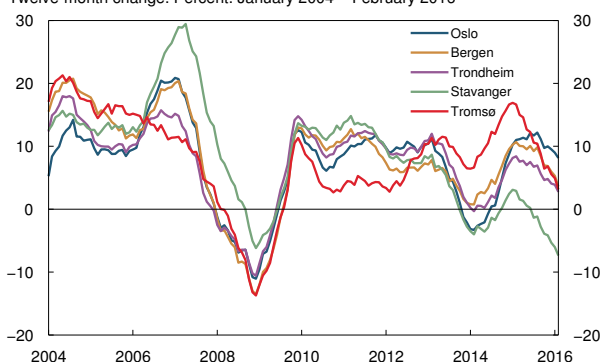
There are substantial regional differences in the housing market. The year-on-year rise in house prices in Oslo is still high (Chart 3.9). House price inflation is weak in oil regions, which have also seen a rise in unemployment (Chart 3.10). In Stavanger, sales of existing homes are low and the stock of unsold homes is high. At the same time, sales of new homes are falling.

Lower corporate debt growth

Debt growth for non-financial enterprises has been moderate, edging down towards the end of 2015, primarily reflecting lower growth in foreign funding (Charts 3.2 and 3.13).

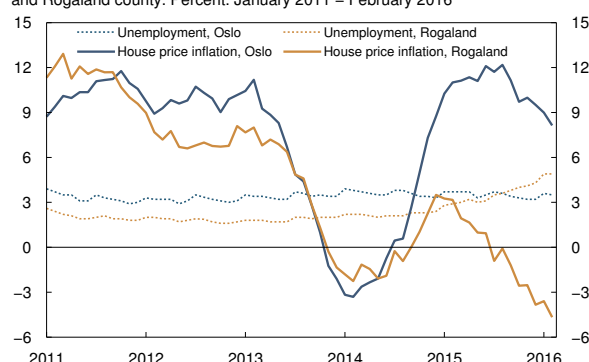
Growth in bank lending has edged down (Chart 3.11). Growth in bank lending in NOK has been stable, while growth in foreign currency lending has moderated. This may be related to movements in the krone exchange rate. Growth in bank lending has been highest for manufacturing and construction enterprises, while it has been lowest for enterprises in oil-related industries. Growth in commercial real estate lending showed a slight decline towards the end of the year. The banks in Norges Bank's lending survey reported somewhat tighter credit standards in 2015

Chart 3.9 House prices in selected cities. Twelve-month change. Percent. January 2004 – February 2016



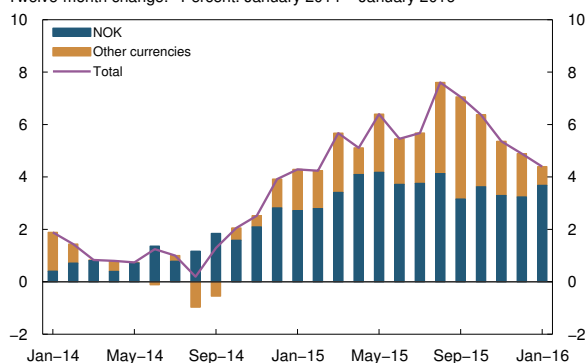
Sources: Eiendom Norge, Eiendomsverdi and Finn.no

Chart 3.10 Unemployment¹⁾ and twelve-month house price inflation for Oslo and Rogaland county. Percent. January 2011 – February 2016



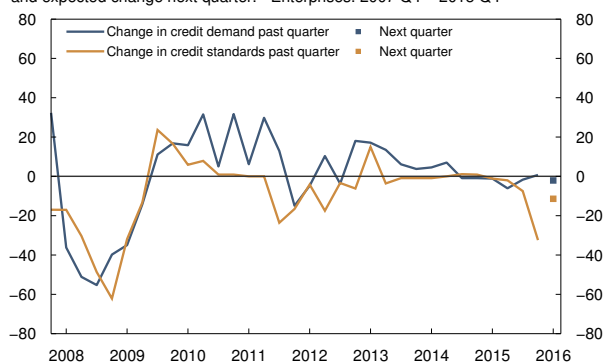
1) Registered unemployment as a share of the labour force. Sources: NAV, Eiendom Norge, Eiendomsverdi and Finn.no

Chart 3.11 Domestic credit (C2) to Norwegian non-financial enterprises from banks and mortgage companies in NOK and other currencies. Twelve-month change.¹⁾ Percent. January 2014 – January 2016



1) Change in stock of debt. Sources: Statistics Norway and Norges Bank

Chart 3.12 Changes in credit demand and banks' credit standards past quarter, and expected change next quarter.¹⁾ Enterprises. 2007 Q4 – 2015 Q4



1) Negative values denote lower demand or tighter credit standards. Source: Norges Bank

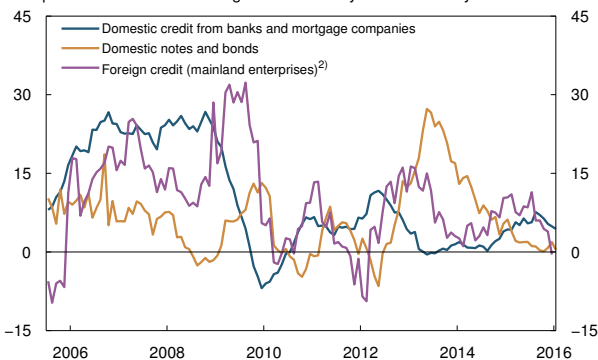
Q4 (Chart 3.12). The banks point to weaker macroeconomic prospects and capital adequacy considerations as the main factors behind the tightening. Banks have raised corporate lending rates somewhat (Chart 1.20 in Section 1). Banks expect little change in lending practices for enterprises as a whole in 2016 Q1, but foresee some tightening of standards for commercial property loans.

Growth in corporate bond financing was low in 2015, but picked up somewhat towards the end of the year (Chart 3.13), partly as a result of large commercial real estate bonds issued in December. Issue volumes have been low so far in 2016 (Chart 3.14), and there have been no issues by enterprises with a low credit rating. Since summer 2015, all corporate issuers with a low credit rating have been enterprises in non-oil related

industries. Low issue volumes must be viewed in the context of the rise in funding costs. Risk premiums on new corporate bonds rose in the second half of 2015 for enterprises with high and low credit ratings. Premiums are particularly high for enterprises with a low credit rating in oil-related industries.

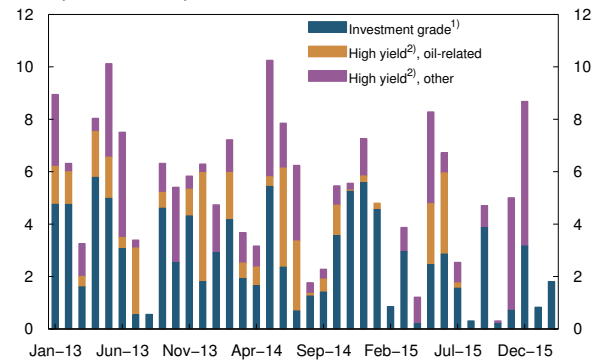
The debt-servicing capacity of listed companies has deteriorated somewhat in recent years (Chart 3.15). The debt-servicing capacity of oil service enterprises is lower than for other enterprises. With falling profitability in oil-related industries, a number of enterprises may find it difficult to meet their debt obligations and may need to restructure debt in the coming years. Market values of oil service companies' equity have been lower than book values since the very start of the plunge in oil prices in autumn 2014 (Chart 3.16).

Chart 3.13 Credit from selected funding sources to Norwegian non-financial enterprises. Twelve-month change.¹⁾ Percent. July 2005 – January 2016



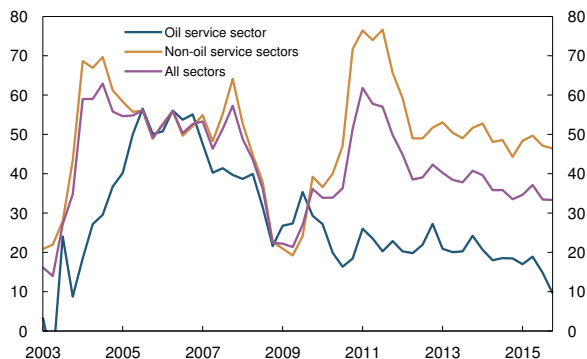
1) Estimated based on stock of debt.
2) Change based on transactions. To end-December 2015.
Sources: Statistics Norway and Norges Bank

Chart 3.14 Volume of bond issues from Norwegian registered non-financial enterprises in the Norwegian bond market. In billions of NOK. January 2013 – February 2016



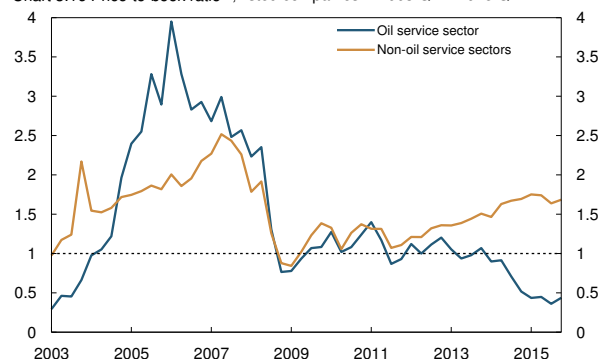
1) Enterprises with credit rating equal to or higher than BBB-.
2) Enterprises with credit rating lower than BBB-.
Source: Stamdata

Chart 3.15 Debt-servicing capacity¹⁾ for listed companies.²⁾ Percent. 2003 Q1 – 2015 Q4



1) Pre-tax profit plus depreciation and amortisation for the previous four quarters as a percentage of net-interest bearing debt.
2) Norwegian non-financial companies listed on Oslo Børs, excluding oil extraction. Norsk Hydro is excluded to end-2007 Q3.
Sources: Bloomberg and Norges Bank

Chart 3.16 Price-to-book ratio¹⁾, listed companies.²⁾ 2003 Q1 – 2015 Q4



1) Market value as a percentage of book value per share.
2) Norwegian non-financial companies listed on Oslo Børs excluding extraction. Norsk Hydro is excluded to end-2007 Q3.
Sources: Bloomberg and Norges Bank

The debt-servicing capacity of other industries remains solid and market values are higher than book values.²

Continued strong rise in commercial real estate prices

The value of commercial real estate depends on several factors, including net rental income and investors' required rate of return. The commercial property price indicator is based on observed rental prices and estimated required rates of return on high-standard office premises in central Oslo. Estimated selling prices have continued to rise sharply (Chart 3.17). Rental prices in Oslo and some other cities edged down in 2015 (Chart 3.18). The required rate of return

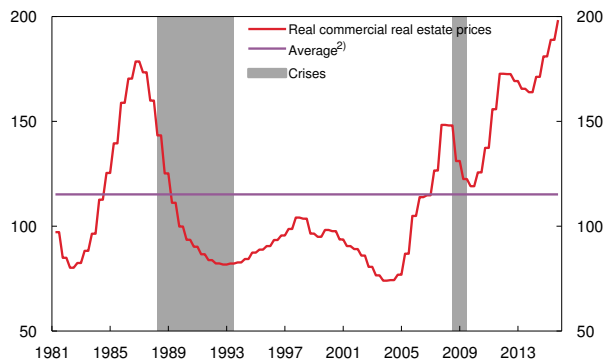
on the most attractive premises in Oslo fell in 2015 (Chart 3.19). The difference between the required rate of return and long-term yields, the risk premium, has remained broadly unchanged for the most attractive premises in Oslo since the financial crisis, indicating that low interest rates have passed through fully to prices. Risk premiums for commercial real estate in major European cities have tracked each other closely (Chart 3.20).

Office rental prices and selling prices are influenced by vacancy rates. According to *Konsensusrapport 1/16* by the real estate company Entra, vacancy rates are expected to remain fairly stable in 2016.

The UK company Investment Property Databank (IPD) estimates the value of commercial real estate using

2 For further details, see "Debt-servicing capacity of Norwegian listed non-financial companies", *Economic Commentaries 3/2016*, Norges Bank

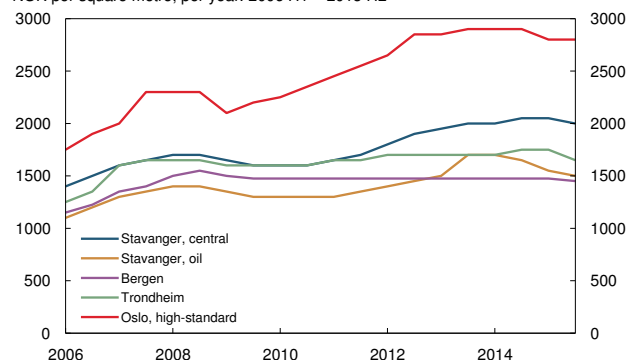
Chart 3.17 Real commercial real estate prices.¹⁾ Indexed. 1998 = 100. 1981 Q2 – 2015 Q4



1) Estimated market prices for high-standard office premises in central Oslo deflated by the GDP deflator for mainland Norway.
2) Estimated based on figures from 1981 Q2.

Sources: Dagens Næringsliv, OPAK, Statistics Norway and Norges Bank

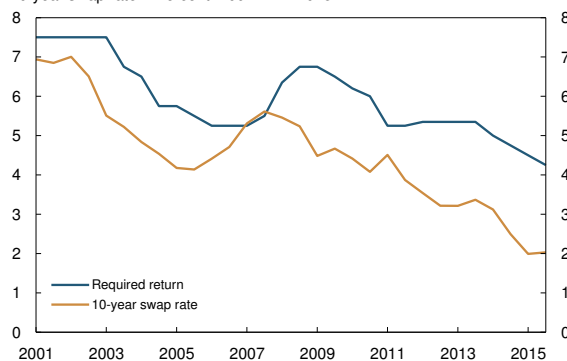
Chart 3.18 Rental prices for office premises in selected cities. NOK per square metre, per year. 2006 H1 – 2015 H2¹⁾



1) For cities other than Oslo, the statistics previously comprised one rental price segment. In the latter half of 2013, prices were divided into the segments "middle standard" and "high standard" in each area. For the series "Stavanger, central" and "Stavanger, oil" the segment "high standard" was continued, while "middle standard" was continued for "Bergen" and "Trondheim".

Sources: OPAK and Dagens Næringsliv

Chart 3.19 Required return¹⁾ for the most attractive office premises in Oslo and 10-year swap rate.²⁾ Percent. 2001 H1 – 2015 H2

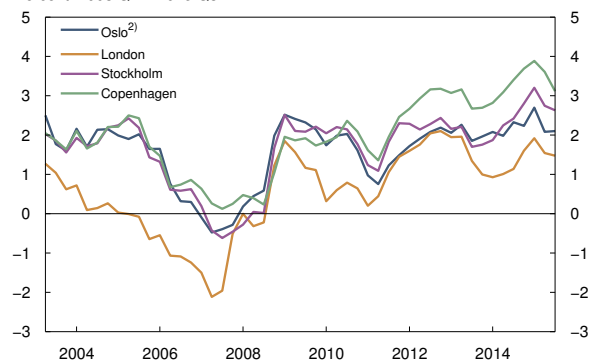


1) The required return is based on assessments by Dagens Næringsliv's expert panel for commercial real estate.

2) Semi-annual swap rate is calculated as an average of daily rates.

Sources: Dagens Næringsliv and Thomson Reuters

Chart 3.20 Risk premiums for attractive premises in selected major European cities.¹⁾ Percent. 2003 Q2 – 2015 Q3



1) The risk premium is the difference between the direct required rate of return in each city and the quarterly ten-year swap rate in that country. The quarterly swap rate is calculated as an average of daily rates.

2) For Oslo, there are some minor deviations in the direct required rate of return between this chart and Chart 3.19 owing to the use of different sources.

Sources: CBRE and Bloomberg

financial data from the commercial real estate sector. IPD estimates that the value of office premises rose in all areas of Oslo in 2015 (Chart 3.21). Values declined in Stavanger, while they were broadly unchanged in Bergen.

Strengthened capital ratios in the banking sector

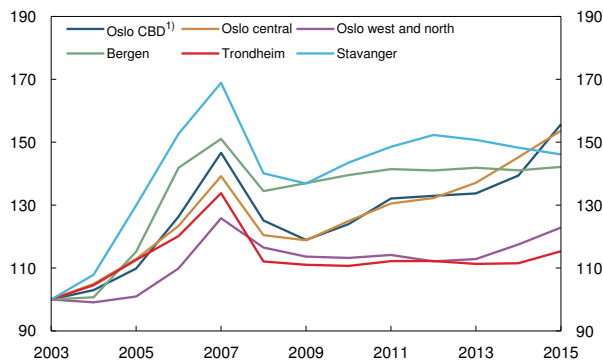
Large Norwegian banks³ reported solid profitability in 2015. The return on equity capital is in line with the average for the past 20 years⁴ (Chart 3.22).

Norwegian banks' loan losses increased somewhat in 2015 Q4, partly as a result of higher collective impairments. From a historical perspective, loan losses are still low (Chart 3.23). Although Norwegian banks' lending to the oil industry and oil-related enterprises represents a limited share of banks' total lending to the corporate sector, exposures vary across banks. The fall in oil prices and the decline in oil investment may lead to higher losses on loans to oil-related enterprises ahead. The increase in collective impairments takes account of heightened uncertainty with regard to future loan losses.

Banks have strengthened their capital ratios over the past year. High profit retention ratios and moderate dividend payouts for the 2015 financial year have contributed. Common Equity Tier 1 (CET1) capital ratios

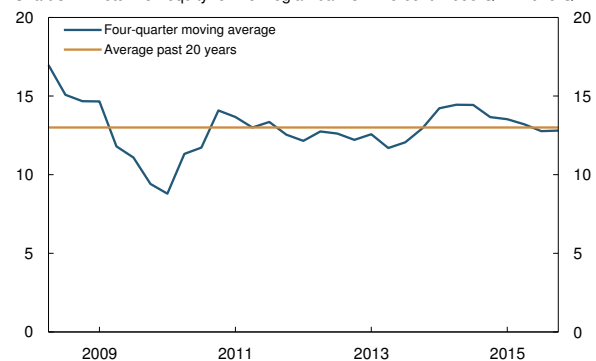
3 The seven large Norwegian banking groups are: DNB Bank, Nordea Bank Norge, SpareBank 1 SR-Bank, Sparebanken Vest, SpareBank 1 SMN, Sparebanken Sør and SpareBank 1 Nord-Norge.
4 See "Norwegian banks' adjustment to stricter capital and liquidity regulation", Staff Memo 18/2014, Norges Bank.

Chart 3.21 Value of office premises. Selected cities. Index. 2003 = 100. 2003 – 2015



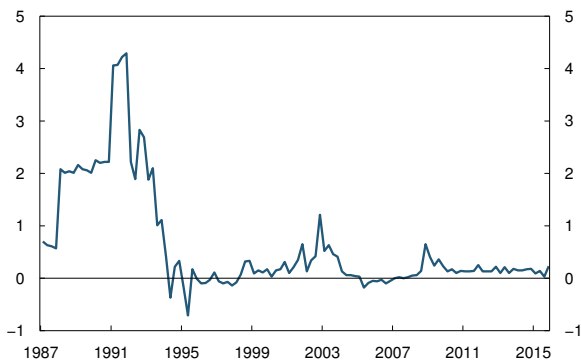
1) CBD stands for Central Business District. Source: Investment Property Databank (IPD)

Chart 3.22 Return on equity for Norwegian banks¹⁾. Percent. 2008 Q2 – 2015 Q4



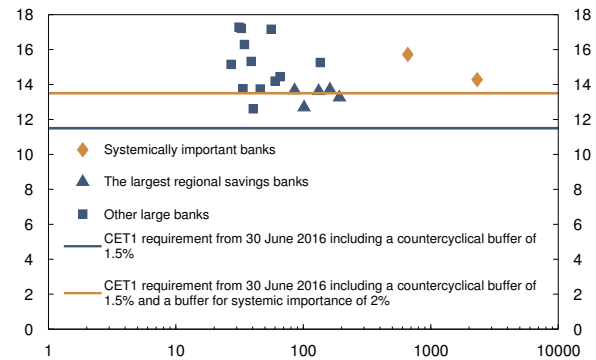
1) Calculated as weighted average of seven large Norwegian banks: DNB Bank, Nordea Bank Norge, SpareBank 1 SR-Bank, Sparebanken Vest, SpareBank 1 SMN, Sparebanken Sør and SpareBank 1 Nord-Norge (excluding Sparebanken Sør to end-December 2013). Sources: Banking groups' quarterly and annual reports and Norges Bank

Chart 3.23 Banks¹⁾ loan losses as a share of gross lending. Percent. Annualised. 1987 Q1 – 2015 Q4



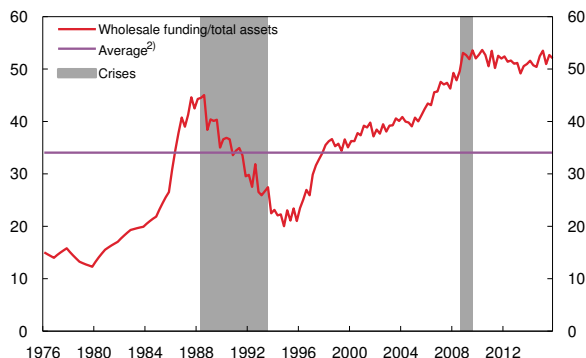
1) All banks and mortgage companies in Norway. Source: Norges Bank

Chart 3.24 Banking groups¹⁾ Common Equity Tier 1 (CET1) capital ratios. Percent. Total assets²⁾ In billions of NOK. At 31 December 2015³⁾



1) Banking groups with total assets in excess of NOK 25bn, excluding branches of foreign banks in Norway.
2) Logarithmic scale.
3) Calculations based on banks' proposed dividends. Sources: Banking groups' quarterly reports and Norges Bank

Chart 3.25 Banks¹⁾ wholesale funding as a share of total assets. Percent. 1976 Q1 – 2015 Q4

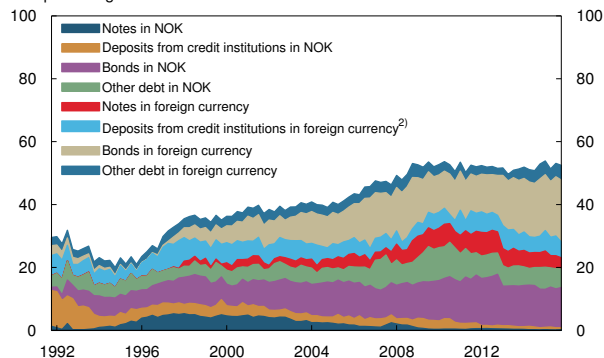


1) All banks and covered bond mortgage companies in Norway, excluding branches and subsidiaries of foreign banks.
2) Estimated based on figures from 1975 Q4.
Source: Norges Bank

for large Norwegian banks averaged 14.4% at end-2015, which was well above the CET1 capital requirement (Chart 3.24). Most banks must continue to build capital to achieve their announced capital targets. DNB's target is a minimum CET1 capital ratio of 15.0% by the end of 2016 and a long-term level of 15.5% from the end of 2017. Most of the large regional savings banks have set a minimum CET1 capital target of 14.5% by end-2016.

Banks' wholesale funding ratios increased markedly in the years preceding the financial crisis when growth in bank lending was high (Chart 3.25), but have been fairly stable in recent years. Bonds, primarily in the form of covered bonds, account for a growing share of banks' wholesale funding (Chart 3.26).

Chart 3.26 Decomposition of banks¹⁾ wholesale funding. As a percentage of total assets. 1991 Q4 – 2015 Q4



1) All banks and covered bond mortgage companies in Norway excluding branches and subsidiaries of foreign banks.
2) Deposits from credit institutions include deposits from central banks.
Source: Norges Bank

Long-term wholesale funding spreads for banks are broadly unchanged since the December *Monetary Policy Report* after increasing considerably through autumn 2015 (Chart 1.19). Norwegian banks still have ample access to wholesale funding.

Assessment of financial imbalances

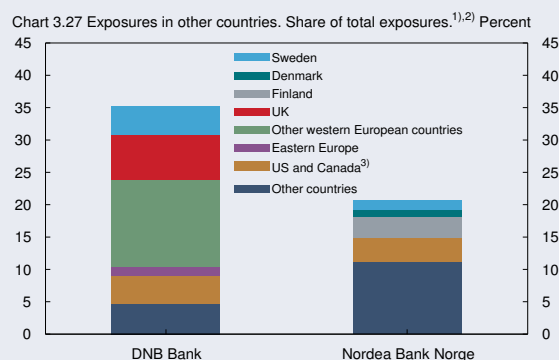
The credit indicator edged higher in Q4 (Chart 3.1). The house price indicator and banks' wholesale funding ratios were stable (Charts 3.7 and 3.25). The commercial property price indicator has continued to rise sharply (Chart 3.17).

The persistent increase in household debt ratios and high property price inflation in recent years are signs that financial imbalances have built up. Estimated market prices for commercial real estate have continued to rise rapidly, while house price inflation and debt growth have moderated. On the whole, recent developments suggest that the imbalances are not building up further. Looking ahead, weak growth in the Norwegian economy may curb growth in both household and corporate debt. On the other hand, lower interest rates entail a risk of a pickup in property price inflation and debt growth.

COUNTERCYCLICAL CAPITAL BUFFERS IN OTHER COUNTRIES

The countercyclical capital buffer is intended to address systemic risk in the individual country and be set on the basis of national conditions. Banks operating in several countries are regulated by their home authorities. To ensure an identical buffer rate for different banks' exposures in the same country, EU capital adequacy legislation (CRD IV/CRR) provides for international reciprocity, i.e. that EU countries recognise each others' buffer rates.¹ The European Systemic Risk Board (ESRB) recommends that countercyclical buffer rates set by third countries are recognised as well.² Under the EU capital framework, all EU countries are required to have set a countercyclical capital buffer rate by 1 January 2016.

The Ministry of Finance has tasked Finanstilsynet (Financial Supervisory Authority of Norway) with drawing up a draft consultation document and regulatory requirements regarding how countercyclical capital buffer rates set in other EU/EEA countries may apply to Norwegian banks' exposures in these countries. The deadline is the end of March 2016. The main Norwegian banks with exposures in other countries are DNB Bank and Nordea Bank Norge (Chart 3.27). Table 1 shows the countercyclical capital buffer rates set by some of these countries.³



1) Exposures are not risk-weighted. Figures at 31 December 2014 for the DNB Bank group and 31 December 2015 for the Nordea Bank Norge group.
 2) The two banks group countries differently and general categories may include countries categorised separately by the other bank.
 3) Nordea only reports figures for the US.
 Sources: The banks' group annual and Pillar 3 reports and Norges Bank

TABLE 1 Countercyclical capital buffer rate in selected countries where Norwegian banks have exposures

Country	Buffer rate	Rate applies from
Denmark	0%	1 January 2016
Estonia	0%	1 January 2016
Finland	0%*	29 September 2015
Latvia	0%**	1 February 2016
Lithuania	0%	31 December 2015
Poland	0%	1 January 2016
Sweden	1%***	13 September 2015
UK	0%	1 December 2015
US	0%	21 December 2015

* Buffer rate of 0% applies from 21 December 2016

** Buffer rate of 0% applies from 1 February 2017

*** Buffer rate of 1.5% applies from 27 June 2016 and 2% from 19 March 2017

Source: European Systemic Risk Board (ESRB) and Bank for International Settlements (BIS)

1 Buffer rates of up to 2.5% will be automatically recognised between EU countries. The limit is lower than 2.5% during a phasing-in period between 2016 and 2019. The European Systemic Risk Board (ESRB) recommends in general that higher rates should also be recognised (see *Recommendation on guidance for setting countercyclical buffer rates*, ESRB, 2014).

2 See ESRB (2015), *Recommendation on recognising and setting countercyclical buffer rates for exposures to third countries*.

3 An overview of the countercyclical capital buffer rates currently applicable in EU and EEA countries is provided on the ESRB website: *Countercyclical capital buffer – announced CCB rates*. A similar overview for Basel Committee member jurisdictions is available on the BIS website: *Countercyclical capital buffer*.

MEASURING FINANCIAL IMBALANCES AND BUFFER GUIDE¹

Norges Bank analyses developments in four key indicators and compares the current situation with long-term trends. There is considerable uncertainty related to trend calculation and hence to measurement of financial imbalances. Given this uncertainty, different methods of calculating trends have been considered.

Norges Bank has so far used three methods to calculate trends²: a one-sided Hodrick-Prescott (HP) filter as applied by the Basel Committee on Banking Supervision, a one-sided HP filter estimated on data augmented with a simple projection, and historical averages. For house prices relative to disposable income and real commercial real estate prices, the average is calculated recursively throughout the period. For credit relative to GDP and banks' share of wholesale funding, a 10-year rolling average is used.

Chart 3.28 a shows the credit indicator measured as the deviation from the estimated trends. The gap between the indicator and trends narrowed in the years following the financial crisis, but has been fairly stable over the past quarters. The indicator is higher than two out of three trends. The credit indicator has continued to rise post crisis, but not as quickly as in the pre-crisis years. The trend estimated using the one-sided HP filter continued to rise rapidly in the post-crisis years. If the pre-crisis rate of growth is not sustainable, this method may underestimate financial imbalances. Experience shows that the credit gap is a better leading indicator of crises when the trend is based on an augmented HP filter. Charts 3.28 b-d show developments in the three other key indicators, measured as deviations from estimated trends. The house price gap and wholesale funding gap have remained broadly unchanged over the past quarters. The commercial real estate price gap has widened over the past year.

Norges Bank has developed early warning models for financial crises based on the credit and property price indicators.³ The blue area in Chart 3.29 shows estimated crisis probabilities based on a large number of combinations of explanatory variables and trend estimation methods. The chart shows that estimated crisis probabilities have declined since the financial crisis, but that there is some spread between the predictions from the different models.

The Basel Committee has proposed a simple rule for calculating a reference rate for the countercyclical capital buffer based on the credit-to-GDP ratio.⁴ Under the rule, the buffer will be activated when the credit gap exceeds 2 percentage points. When the credit gap is between 2 and 10 percentage points, the reference rate will vary linearly between 0% and 2.5%. When the credit gap is 10 percentage points or more, the reference rate will be 2.5%. The reference buffer rate is 0% in 2015 Q1 when the trend is calculated using a one-sided HP filter. When the trend calculation is based on an augmented HP filter, the reference rate is 1% (Chart 3.30).

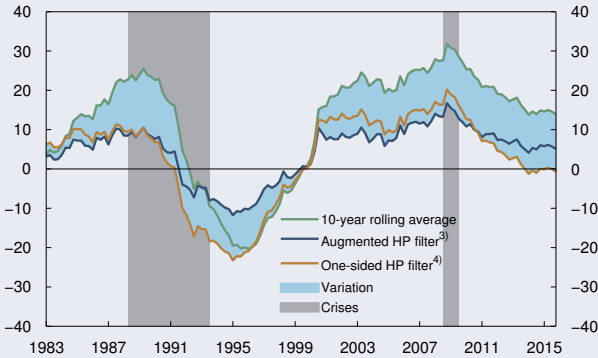
1 See also *Criteria for an appropriate countercyclical capital buffer*, , Norges Bank Papers 1/2013.

2 For further details, see box on measuring financial imbalances on page 30 in *Monetary Policy Report 2/13*.

3 See box on page 40 in *Monetary Policy Report 3/14* and Norges Bank (2014) "Bubbles and crises: The role of house prices and credit", *Working Papers 14/2014*.

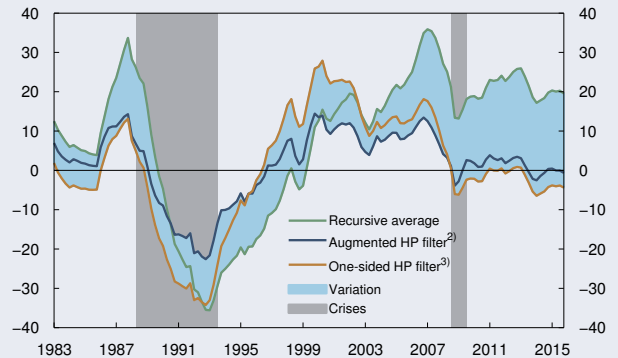
4 See *Guidance for national authorities operating the countercyclical capital buffer*, Basel Committee on Banking Supervision (2010), Bank for International Settlements.

Chart 3.28a Credit gap. Total credit¹⁾ mainland Norway as a share of mainland GDP. Deviation from estimated trends.²⁾ Percentage points. 1983 Q1 – 2015 Q4



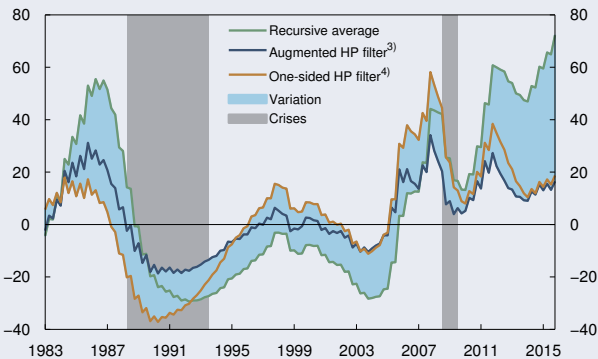
- 1) The sum of C2 households and C3 non-financial enterprises for mainland Norway (all non-financial enterprises pre-1995). C3 non-financial enterprises comprises C2 non-financial enterprises and foreign debt for mainland Norway.
 - 2) The trends are calculated based on figures from 1975 Q4.
 - 3) One-sided Hodrick-Prescott filter estimated on data augmented with a simple projection. Lambda = 400 000.
 - 4) One-sided Hodrick-Prescott filter. Lambda = 400 000.
- Sources: Statistics Norway, IMF and Norges Bank

Chart 3.28b House price gap. House prices relative to disposable income. Deviation from estimated trends.¹⁾ Percent. 1983 Q1 – 2015 Q4



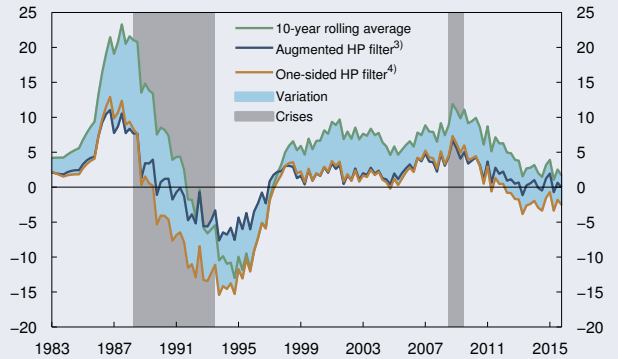
- 1) The trends are calculated based on figures from 1978 Q4.
 - 2) One-sided Hodrick-Prescott filter estimated on data augmented with a simple projection. Lambda = 400 000.
 - 3) One-sided Hodrick-Prescott filter. Lambda = 400 000.
- Sources: Statistics Norway, Eiendom Norge, Norwegian Association of Real Estate Agents (NEF), Finn.no, Eiendomsverdi and Norges Bank

Chart 3.28c Commercial real estate price gap. Real commercial real estate prices¹⁾ as deviation from estimated trends.²⁾ Percent. 1983 Q1 – 2015 Q4



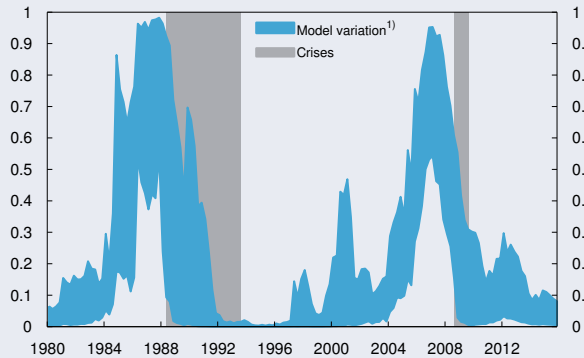
- 1) Estimated market prices for high-standard office premises in Oslo deflated by the GDP deflator for mainland Norway.
 - 2) The trends are calculated based on figures from 1981 Q2.
 - 3) One-sided Hodrick-Prescott filter estimated on data augmented with a simple projection. Lambda = 400 000.
 - 4) One-sided Hodrick-Prescott filter. Lambda = 400 000.
- Sources: Dagens Næringsliv, OPAK, Statistics Norway and Norges Bank

Chart 3.28d Wholesale funding gap. Banks¹⁾ wholesale funding as a share of total assets. Deviation from estimated trends.²⁾ Percentage points. 1983 Q1 – 2015 Q4



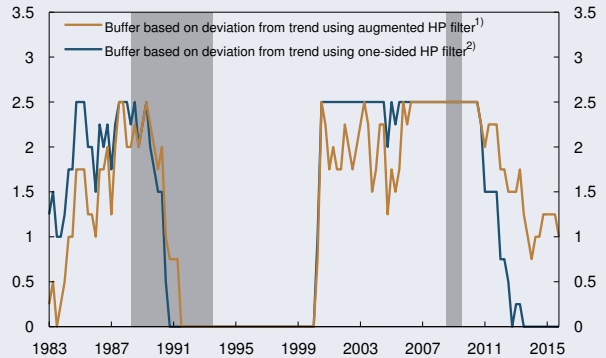
- 1) All banks and covered bond mortgage companies in Norway excluding branches and subsidiaries of foreign banks.
 - 2) The trends are calculated based on figures from 1975 Q4.
 - 3) One-sided Hodrick-Prescott filter estimated on data augmented with a simple projection. Lambda = 400 000.
 - 4) One-sided Hodrick-Prescott filter. Lambda = 400 000.
- Source: Norges Bank

Chart 3.29 Estimated crisis probabilities from various model specifications. 1980 Q1 – 2015 Q4



- 1) Model variation is represented by the highest and lowest crisis probability based on different model specifications and trend calculations.
- Source: Norges Bank

Chart 3.30 Reference rates for the countercyclical capital buffer under alternative trend estimates. Percent. 1983 Q1 – 2015 Q4



- 1) One-sided Hodrick-Prescott filter estimated on data augmented with a simple projection. Lambda = 400 000.
 - 2) One-sided Hodrick-Prescott filter. Lambda = 400 000.
- Sources: Statistics Norway, IMF and Norges Bank

CRITERIA FOR AN APPROPRIATE COUNTERCYCLICAL CAPITAL BUFFER¹

The countercyclical capital buffer requirement should satisfy the following criteria:

1. ***Banks should become more resilient during an upturn***
2. ***The size of the buffer should be viewed in the light of other requirements applying to banks***
3. ***Stress in the financial system should be alleviated***

The countercyclical capital buffer should be increased when financial imbalances are building up or have built up. This will strengthen the resilience of the banking sector to an impending downturn and strengthen the financial system. Moreover, a countercyclical capital buffer may curb high credit growth and mitigate the risk that financial imbalances trigger or amplify an economic downturn.

Experience from previous financial crises in Norway and other countries shows that both banks and borrowers often take on considerable risk in periods of strong credit growth. In an upturn, credit that rises faster than GDP can signal a build-up of imbalances. Rising house and real estate prices tend to go hand in hand with increasing debt growth. When banks grow rapidly and fund new loans directly in the financial market, systemic risk may increase.

Norges Bank's advice to increase the countercyclical capital buffer will primarily be based on four key indicators: i) the ratio of total credit (C2 households and C3 mainland non-financial enterprises) to mainland GDP, ii) the ratio of house prices to household disposable income, iii) commercial real estate prices and iv) the wholesale funding ratio of Norwegian credit institutions.² The four indicators have historically risen ahead of periods of financial instability.

¹ See also "Criteria for an appropriate countercyclical capital buffer", *Norges Bank Papers* 1/2013.

² As experience and insights are gained, the set of indicators can be developed further.

As part of the basis for its advice on the countercyclical capital buffer, Norges Bank will analyse developments in the key indicators and compare the current situation with historical trends (see box on page 42). Norges Bank's advice will also build on recommendations from the European Systemic Risk Board (ESRB). Under the EU Capital Requirements Directive (CRD IV), national authorities are required to calculate a reference buffer rate (a buffer guide) for the countercyclical buffer on a quarterly basis.

There will not be a mechanical relationship between the indicators, the gaps or recommendations from the ESRB³ and Norges Bank's advice on the countercyclical capital buffer. The advice will be based on the Bank's professional judgement, which will also take other factors into account. Other requirements applying to banks will be part of the assessment, particularly when new requirements are introduced.

The countercyclical capital buffer is not an instrument for fine-tuning the economy. The buffer rate should not be reduced automatically even if there are signs that financial imbalances are receding. In long periods of low loan losses, rising asset prices and credit growth, banks should normally hold a countercyclical buffer.

The buffer rate can be reduced in the event of an economic downturn and large bank losses. If the buffer functions as intended, banks will tighten lending to a lesser extent in a downturn than would otherwise be the case. This may mitigate the procyclical effects of tighter bank lending. The buffer rate will not be reduced to alleviate isolated problems in individual banks.

The key indicators are not well suited to signalling when the buffer rate should be reduced. Other information, such as market turbulence and loss prospects for the banking sector, will then be more relevant.

³ See *Recommendation on guidance for setting countercyclical buffer rates*, European Systemic Risk Board (ESRB), 2014.

SPECIAL FEATURES

Weak developments in emerging economies

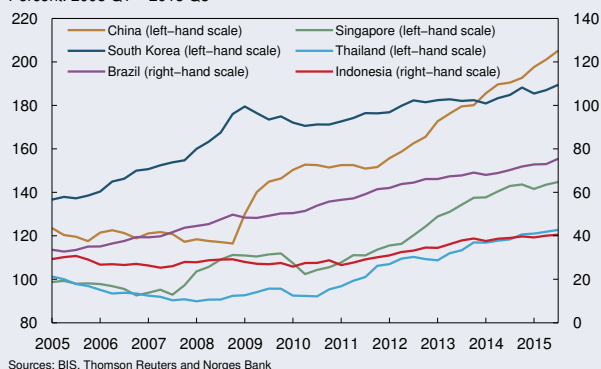
Developments in oil prices

Recession probability

The pass-through from negative central bank interest rates to banks' interest rates

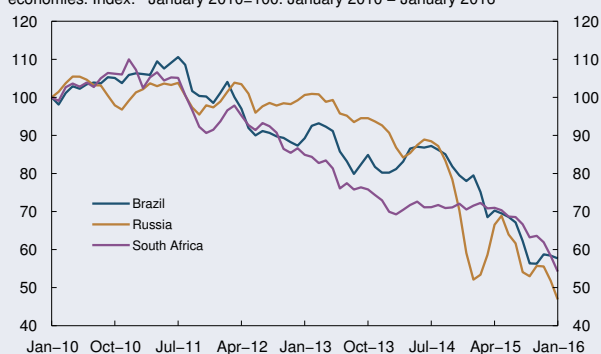
WEAK DEVELOPMENTS IN EMERGING ECONOMIES

Chart 1 Private sector credit as a share of GDP. Percent. 2005 Q1 – 2015 Q3



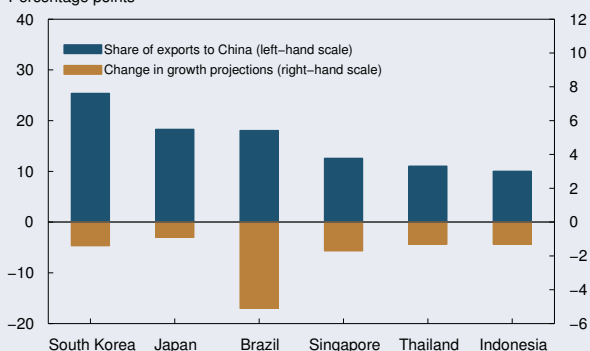
Sources: BIS, Thomson Reuters and Norges Bank

Chart 2 Effective nominal exchange rate in commodity-exporting emerging economies. Index.¹⁾ January 2010=100. January 2010 – January 2016



¹⁾ A falling curve denotes a weaker exchange rate.
Source: BIS

Chart 3 Exports to China as a share of total exports.¹⁾ Percent. Change in growth projections for 2016 from MPR 1/15 to MPR 1/16. Percentage points



¹⁾ Data for 2014.
Sources: UN Comtrade and Norges Bank

Lower growth and weaker prospects for China have received considerable attention in recent years¹, but growth has also slowed in other emerging economies. Between *Monetary Policy Report 1/15* and *Monetary Policy Report 1/16*, Norges Bank's growth projection for emerging economies excluding China² for 2016 was revised down by slightly less than 2 percentage points. Lower projections for these countries have also pulled down the projections for advanced economies. Among Norway's trading partners, Brazil and Russia are facing the most severe situation, with activity plunging in 2015 and expected to fall further in 2016.

The weak developments in emerging economies reflect a number of conditions. Expansionary monetary and fiscal policies following the financial crisis contributed to high credit growth and increased debt as a percentage of GDP (Chart 1). Combined with structural reforms, this was expected to boost investment growth. The willingness to implement reforms has been weaker than expected and deleveraging will likely dampen growth ahead. External conditions have also pushed down growth. Lower growth in China, with slower growth in investment in real estate, manufacturing and infrastructure, has led to weaker demand for manufactured goods and commodities. This has led to lower demand for export goods from other emerging economies. Commodity prices have fallen and the terms of trade for many commodity-exporting countries have worsened. Combined with an incipient normalisation of US monetary policy, this has contributed to capital outflows and a pronounced weakening of a number of emerging economy currencies (Chart 2).

The fall in oil prices that began in summer 2014 was expected to boost activity and improve prospects for emerging economies that are net importers of oil, through increased household purchasing power and lower energy costs in the business sector. Among countries with high inflation, the fall in oil prices was expected to provide greater monetary policy leeway. However, the positive effects have been weaker than expected. In many countries, the authorities have

¹ See e.g. Slettvåg (2014), "Consequences of an abrupt slowdown in China's property market", *Economic Commentaries* 5/2014, Norges Bank.
² The aggregate for emerging economies excluding China that are discussed here is weighted using GDP weights.

used this opportunity to reduce energy subsidies. As a result, the oil price decline has not led to as large a decline in prices for end users. At the same time, the price fall in local currency was curbed owing to currency depreciation.

In Brazil and Russia, where developments have been weakest, currency depreciation has contributed to substantial inflation through increased prices for imported goods. In 2015, consumer price inflation was 9% in Brazil and 16% in Russia. In an attempt to bring down inflation, the central banks have raised their policy rates. At the same time, fiscal policy leeway has been reduced, owing to lower revenues from petroleum activities.

The growth projection for Chinese imports ahead has been revised down, entailing a downward adjustment of the growth projection for other emerging economies (Chart 3). In this *Report*, it is assumed that growth in emerging economies excluding China will pick up to just below 4% towards the end of the projection period. The decline in activity is expected to slow in both Brazil and Russia, at the same time as expansionary monetary and fiscal policies will likely stimulate domestic demand in a number of Asian countries. Emerging economies are, however, vulnerable to external conditions. Developments ahead will depend, among other things, on China's ability to avoid an abrupt fall in growth, US monetary policy ahead and developments in commodity prices.

Structural problems and other domestic challenges, such as the Petrobras corruption scandal in Brazil, pose a downside risk to the outlook and may result in weaker-than-expected developments. Rapid credit growth and heavy debt burdens also represent a challenge for many countries. We have therefore analysed the effects on Norway's largest trading partners of a downward revision of growth in emerging economies as a result of considerably lower growth in domestic demand. In the analysis, annual GDP growth for emerging economies excluding China is assumed to be 2 percentage points lower in 2016 and 2017 than in *Monetary Policy Report 1/16*. To quantify the effects, the IMF's Global Projection Model (GPM)³ has been used. According to the calculations, this will have substantial negative effects on other countries and regions (Chart 4). The first-round effects are greatest for China because China is an important trading partner for emerging economies. Weaker growth in China will then spill over into other countries, adversely affecting growth in Japan and the euro area also in 2018. Inflation becomes lower in all regions, partly reflecting a 4% fall in oil prices in 2016 and a 35% fall in 2017 compared with the baseline scenario (Chart 5). In addition, such developments will affect the US, Japan and the euro area through financial markets, but these effects are not taken into account here.

3 The GPM is a global, quarterly projection model incorporating seven regions and commodity prices. For each region, there is a set of equations that describe the dynamic relationship between output, inflation, interest rates and exchange rates. The model also takes into account changes in external demand, and thus also represents a structural, global framework model that is well suited to analyse the spillovers from a shock in one region to other regions and commodity prices.

Chart 4 Effect on GDP growth of 2 percentage point lower growth in emerging economies excluding China. Change in four-quarter change compared with baseline scenario. Percentage points. 2015 Q1 – 2019 Q4

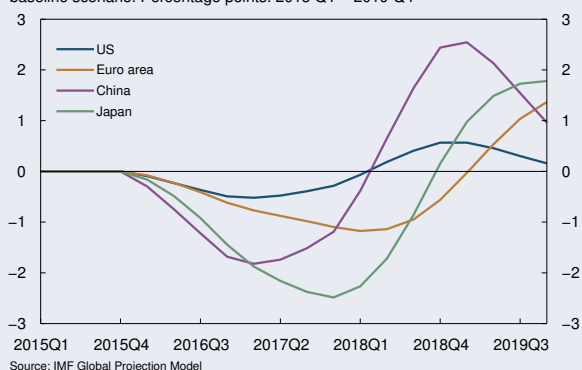
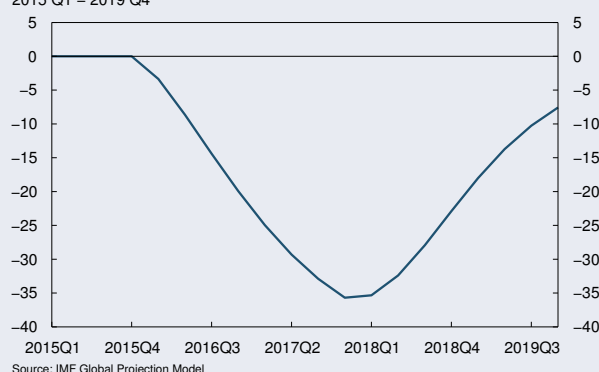


Chart 5 Effect on oil price of 2 percentage point lower growth in emerging economies excluding China. Change in percent from baseline scenario. 2015 Q1 – 2019 Q4



DEVELOPMENTS IN OIL PRICES

From June 2014 to March 2016, oil prices have fallen from a good USD 110 to around USD 40 per barrel. The longest futures prices have also fallen from around USD 100 to a little more than USD 50 per barrel (Chart 1). These prices indicate that oil prices may remain low for a long time.

US oil production has remained robust despite the sharp price fall, primarily owing to substantial cost reductions and productivity gains. Moreover, OPEC has increased production, which is a change in OPEC's, and especially Saudi Arabia's, reaction pattern of recent years. While Saudi Arabia previously seemed to defend a price level target of around USD 100 per barrel, the country now appears to be defending its market share and giving less weight to stabilising the market in the short term (Chart 2).

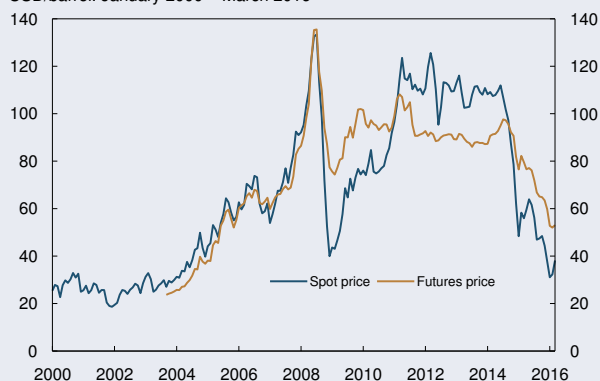
A fall in oil prices entails a reallocation of global income from oil-exporting to oil-importing countries. Insofar as oil-importing countries have a lower propensity to save than oil-exporting countries, a fall in oil prices will normally boost global activity. The expansionary effect on economic activity and global oil demand has, however, been less pronounced than implied by previous relationships. The International

Monetary Fund (IMF) cites four reasons for this.¹ For oil exporting countries, the oil price fall has reduced income, partly through lower tax revenues, limiting fiscal space and thereby the scope for sustaining economic activity. For oil-importing countries deleveraging in the wake of the financial crisis has diminished the positive impact on economic activity. The massive contraction of global oil-related investment pulls in the same direction. Finally, the pass-through of the oil price decline to end-user prices in many countries has been dampened by weaker currencies and reduced energy subsidies.

Surprisingly high oil production inside and outside of OPEC and weaker-than-assumed expansionary effects of lower oil prices have led to a longer period of oversupply in the oil market than previously assumed by the International Energy Agency (IEA). The excess supply of oil is expected to persist for some time ahead (Chart 3). At the same time, substantial volatility in oil prices must be expected. As both the production and consumption of oil are not particularly price sensitive in the short term, even small changes in the quantity supplied or demanded prompt substantial price movements. Changes in

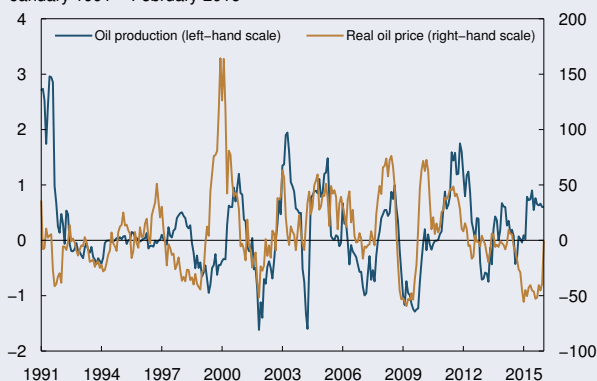
¹ IMF (2016), "Subdued Demand, Diminished Prospects" World Economic Outlook January Update. See also Husain et al. (2015), "Global Implications of Lower Oil Prices", IMF Staff Discussion Note 15/15.

Chart 1 Oil prices, Brent Blend. Spot price and futures price with delivery in five years. USD/barrel. January 2000 – March 2016¹⁾



¹⁾ For March 2016 the average daily prices 1–11 March are used. Source: Thomson Reuters

Chart 2 Real oil price.¹⁾ 2016 USD per barrel. Oil production in Saudi-Arabia. Million barrels per day. Twelve-month change. Percent. January 1991 – February 2016



¹⁾ Deflated by the U.S. Consumer Price Index. Sources: IEA and Thomson Reuters

OPEC's strategy have also triggered abrupt shifts in market price expectations.

Iranian oil production is expected to increase following the removal of UN nuclear programme-related sanctions in January 2016. If Iranian oil production is not offset by cuts by other OPEC members, total OPEC supply will increase. The outcome of possible cooperation between some OPEC and non-OPEC countries on production limits is highly uncertain.

In the coming years, substantial investment will be needed to meet higher demand and to replace declining production at existing fields.² The IEA projects a medium-term increase in global oil demand on a par with that observed over the ten previous years. Even with lower growth in oil demand, the need for new investment will be substantial. According to the IEA, 85% of total investment demand in the long term will be related to declines in existing production.³ According to Rystad Energy, only a quarter of long-term investment demand was satisfied in 2015.⁴ The IEA expects that investment will shrink further in 2016. At today's prices, a large share of the field developments needed to increase production capacity will

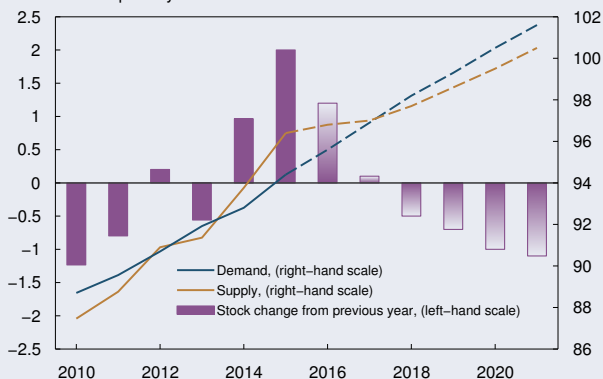
likely be unprofitable. This could reduce supply from non-OPEC producers. OPEC's market share would then increase, enabling the cartel to exploit the low price sensitivity by limiting production to raise prices. In that case, prices may rise to a further extent than implied by prevailing futures prices.

On the other hand, new technology and more efficient production could lead to an even more pronounced decline in costs. This could curb the decline in non-OPEC production, reducing OPEC's market power. Moreover, political conflicts and short-term needs for foreign exchange revenues within OPEC could make it more difficult to agree on a common production policy. Finally, growth in oil demand could fall in the event of a further slowdown in global growth, enhanced energy efficiency and a continued shift towards renewable energy.

The projections in this *Report* are based on an oil price that moves in line with futures prices. These prices have fallen substantially. Over time, oil production costs among non-OPEC countries will be decisive in terms of future rises in oil prices.

2 See IEA "Medium-Term Oil Market Report 2016".
 3 See IEA "IEA World Energy Outlook 2015".
 4 See "Rystad Energy press release of 9 December 2015".

Chart 3 IEA main scenario for oil market balance.
 Million barrels per day, 2010 – 2021¹⁾



1) Projections from 2016.
 Source: IEA Medium Term Oil Market Report 2016

RECESSION PROBABILITY

Growth in the Norwegian mainland economy has slowed markedly over the past three years, and has been lower than its estimated potential. Norges Bank's projections for the output gap, the percentage difference between actual and estimated potential GDP for mainland Norway, have turned from slightly positive to gradually more negative (Chart 1).

Cyclical developments can also be assessed on the basis of the actual level of economic activity. A recession is often defined as a broad decline in economic activity that lasts more than a few months, and which has an impact on economic variables such as output, income, demand and the labour market.¹ A recession starts when economic activity passes a peak and ends when activity reaches a trough. The period from trough to peak is called an expansion. See Chart 2 for a stylised illustration of these "classical" business cycles. The advantage of this classification is that it does not require an estimation of potential GDP.

In Aastveit, Jore and Ravazzolo (2016)², historical classical recessions in the Norwegian economy are identified and dated with the aid of a model in which quarterly data for oil prices, employment, household consumption, business investment, traditional

exports and mainland GDP represent economic activity.³ The model estimates the probability of the economy being in an expansion or a recession. A turning point is identified when the probability of being in one of these states changes from less than 50% to more than 50%.⁴

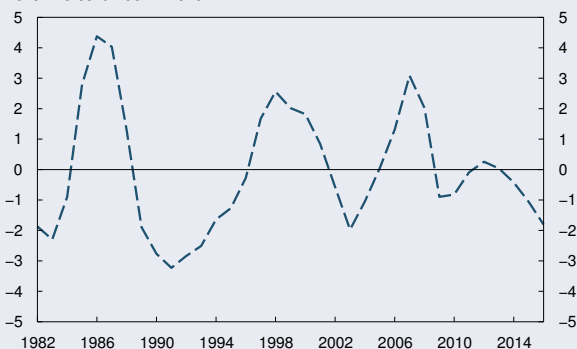
Chart 3 illustrates historical recession periods in Norway as dated by the model outlined above. The chart shows two broad measures of economic activity: the level of mainland GDP at constant prices and the unemployment rate. The grey areas represent periods of recession. Between 1978 Q1 and 2013 Q4,⁵ the economy has been in recession in 20% of the quarters. Seasonally adjusted average quarterly growth in mainland GDP was -0.2% during the recession periods, while the average growth rate during expansions was 0.9%. Developments in unemployment, which is not included in the model, support the dating.

Dating historical turning points may be useful for many purposes. For current economic monitoring, however, the model described above is not sufficient. The quarterly national account data used in the model are available with a lag of around seven weeks, and they are subject to several rounds of revisions. In real

1 This definition has been taken from the National Bureau of Economic Research (NBER). NBER dates cyclical peaks and troughs in US economic activity. NBER's dating of recessions is widely used in analyses of the US economy.
2 Aastveit, K.A., A.S. Jore and F. Ravazzolo (2016), "Identification and real-time forecasting of Norwegian business cycles", *International Journal of Forecasting*, 32, 283-292.

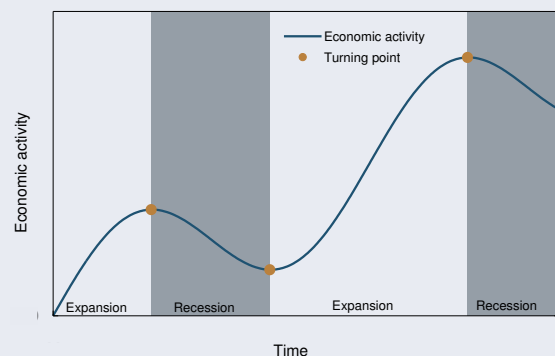
3 Even if mainland GDP is in itself a broad measure of economic activity, it is useful to include main components of demand and other indicators of activity as well.
4 Probabilities are calculated using a Markov-switching factor model.
5 2013 is the latest year when national accounts are final.

Chart 1 Projected output gap.¹⁾
Level. Percent. 1982 – 2016



1) The output gap measures the percentage deviation between mainland GDP and projected potential mainland GDP.
Source: Norges Bank

Chart 2 Phases of the business cycle.



time, empirical models based on alternative indicators available earlier may be useful for estimating the probability of whether the economy is in a recession.⁶ In the second part of Aastveit et al. (2016) several models are evaluated, on the basis of how early turning points are detected. Using this analysis as a starting point, Norges Bank has developed a monthly indicator model of recession probabilities. As inputs, the model uses retail sales, manufacturing output, the number of unemployed persons and the oil price. Chart 4 shows recession probabilities from this model estimated in real time.⁷

To be a reliable indicator, the estimated monthly recession probabilities in real time should be high in the historical recession periods already identified and dated. Chart 4 shows that they are closely, but not perfectly, aligned. The indicator models generate a high probability of recession at the beginning of the 1980s, broadly in line with the identified recession periods. During the severe economic downturn in the late 1980s and early 1990s, recession probabilities

were consistently high, particularly at the start of the period. The monthly model's usefulness is evident in autumn 2008. Already at the beginning of September 2008, it showed a markedly higher probability of recession. It took time before the weak developments became evident in the national accounts. Seasonally adjusted quarterly GDP growth in 2008 Q3 was not measured as negative until November 2009.

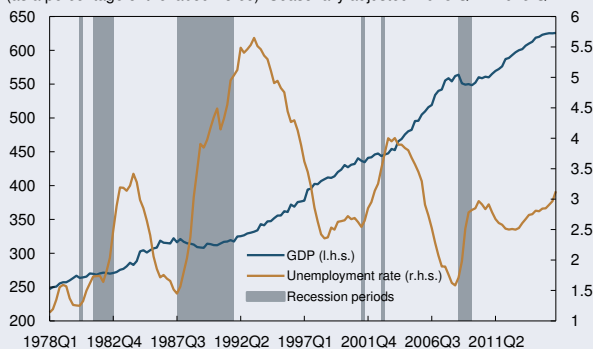
The recession probability estimates are volatile. In January 2015, the probability estimate was as high as 70% before falling back again. A few episodes of a relatively high estimated probability of recession have also been observed without a recession being identified afterwards.

In recent months, the probability of a recession has been in the area 30%–60%. This is substantially lower than what the model predicted at the time of the financial crisis in 2008/2009, but higher than during the two brief recessions in the beginning of the 2000s. The probability of decreasing economic activity naturally increases in periods of low growth. The fan chart for the mainland GDP projections derived from Norges Bank's System for Averaging short-term Models (SAM) in this Report (Chart 1.21) indicates that there is a 30%–40% probability that economic activity will fall in 2016 Q1. This is well in line with the model-based recession probability.

6 There is considerable interest internationally in updating recession probabilities for the US, with many websites following and commenting on the monthly updates of recession probabilities from Jeremy Piger's website at the University of Oregon. See Chauvet, M., & Piger, J. (2008): "Comparison of the real-time performance of business cycle dating methods", *Journal of Business and Economic Statistics*, 26, pp. 42–49. Goldman Sachs recently published recession probabilities for a number of countries, including Norway. Note that Goldman Sachs defines recessions differently from NBER.

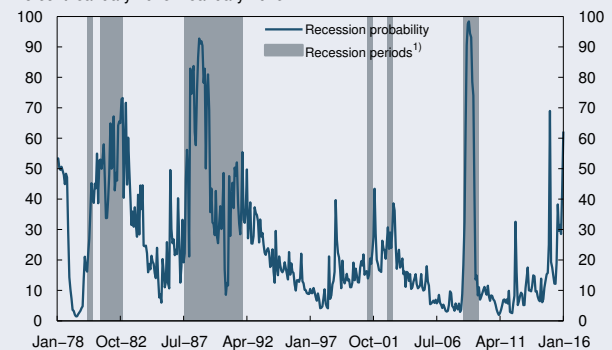
7 For the years prior to 2012, final data are used, where observations have been removed so that the data correspond to what would have been available at the time in question. The data may deviate from what was historically available if the data are subsequently revised, which is primarily the case for retail sales and manufacturing output. There is reason to assume that the deviations in the estimated probabilities will not be substantial.

Chart 3 Norwegian recession periods¹⁾, GDP for mainland Norway (in billions of NOK at constant prices) and registered unemployment (as a percentage of the labour force). Seasonally adjusted. 1978 Q1 – 2015 Q4



1) Dated in Aastveit, Jore and Ravazzolo (2016).
Sources: NAV, Statistics Norway and Norges Bank

Chart 4 Recession probabilities estimated in real time with monthly indicator model. Percent. January 1978 – January 2016



1) Dated in Aastveit, Jore and Ravazzolo (2016).
Source: Norges Bank

THE PASS-THROUGH FROM NEGATIVE CENTRAL BANK INTEREST RATES TO BANKS' INTEREST RATES

In recent years, several central banks have introduced negative interest rates, either by setting the policy rate below zero or by charging a negative interest rate on excess central bank reserves in the banking system.¹ There has been a broad-based transmission of negative central bank rates through to money market rates (Chart 1).

As negative rates were until recently an untested monetary policy instrument, the question naturally arises of whether policy rate changes will have the same effect when the rate is below zero as when it is positive.

Monetary policy affects the economy through various channels. A precondition for monetary policy to function normally is that changes in the policy rate have an impact on the lending and deposit rates faced by households and enterprises. In many countries the banking sector is the main source of financial services for households and enterprises. How monetary policy functions will therefore depend on the impact of negative interest rates on banking behaviour.

Traditional banks rely on equity capital and debt to fund lending. Debt comprises both deposits and market funding. An important part of banks' income is the margin earned on debt-financed lending. This margin arises because lending rates are higher than banks' borrowing costs related to deposit and market funding. Banks' profitability is also affected by other factors such as fee income and loan losses.

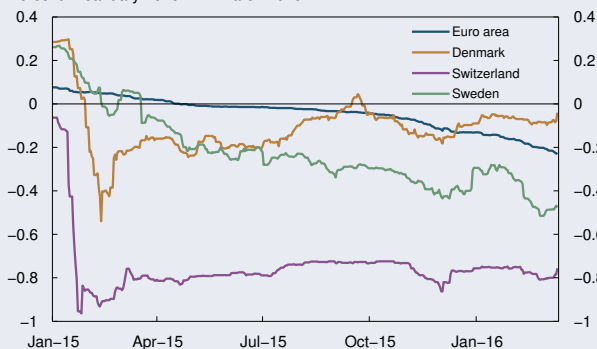
In normal times, when the policy rate is well above zero, changes in the policy rate can pass through fully to lending rates without affecting banks' margins as banks can then reduce deposit rates in tandem with lending rates. In addition, market interest rates will normally decrease with money market rates.²

The pass-through to banks' interest rates may change if the policy rate moves below zero. Internationally, banks have been reluctant to set negative deposit rates, particularly for households and small enterprises (Chart 2). The reason for this may be that for many retail customers, there is little cost associated with switching from bank deposits to cash. When banks do not lower deposit rates further, reductions in the policy rate will only affect the market compo-

1 See Bernhardsen T. and K. Lund (2015), "Negative interest rates: Central bank reserves and liquidity management", *Economic Commentaries* 2/2015, Norges Bank.

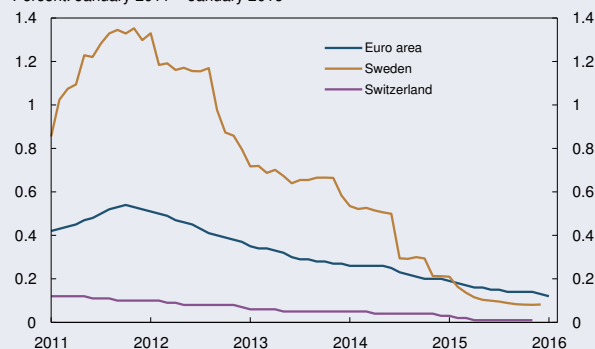
2 Even if the margin earned from debt-financed lending is not changed, the return on capital is expected to fall in tandem with the reduction in the interest rate on equity-financed lending.

Chart 1 Three-month money market rate. Percent. 1 January 2015 – 11 March 2016



Source: Thomson Reuters

Chart 2 Household deposit rates.¹⁾ Percent. January 2011 – January 2016



1) Deposit rates for new agreements. For Sweden the series includes all maturities. For the euro area and Switzerland the series include sight deposits. For Switzerland the series includes other sectors in addition to households. Sources: Statistics Sweden, ECB and SNB

ment of banks' funding. If the policy rate passes through fully to lending rates, the margin on banks' debt-financed lending is reduced.

The extent of the pass-through to lending rates will depend on the competitive situation and profitability in the banking sector. If there is strong competition, banks will compete on prices, which may result in a broad-based pass-through to lending rates and lower margins. If competition is weaker, the pass-through to lending rates will likely be reduced. A moderately negative policy rate can nonetheless be expected to have some effect on lending rates even when banks attempt to maintain profitability. Cheaper market funding provides room for banks to reduce lending rates while maintaining profitability.

Negative rates also have a direct effect on profitability as banks then have to pay for holding central bank reserves. In most countries, central bank reserves constitute a relatively small share of banks' total assets. The direct cost to banks will therefore be fairly modest. The cost will be higher when the volume of central bank reserves increases. This is why some central banks with negative rates have chosen to

increase the share of banks' deposits that are exempt from negative rates.³

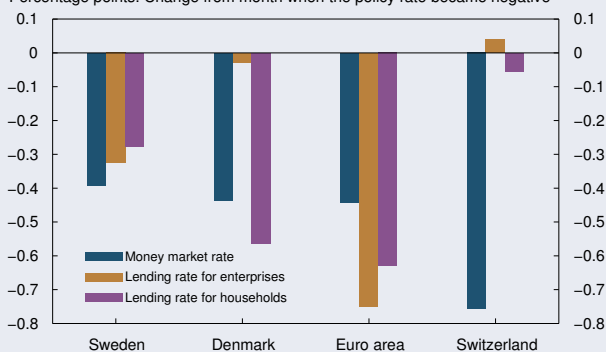
The experience of countries with negative rates indicates that monetary policy has passed through to bank lending rates (Chart 3). The exception is Switzerland, where lending rates were at very low levels even before the policy rate was reduced to below zero. The Swiss National Bank expects that increased competition in the lending market may exert some downward pressure on lending rates ahead.⁴

The impact of negative rates may vary across countries. One of the reasons for this is differences in banks' possibility to change interest rates on existing loans. For loan contracts where the interest rate is set as a fixed premium above the money market rate, a reduction in the policy rate will have full impact if the premium cannot be changed. In countries where such loan contracts are common, it will be more demanding for banks to sustain profitability. Banks may then choose to raise the premium on new loans to boost earnings. If, on the other hand, lending rates can easily be adjusted for existing loans, a negative interest rate will probably squeeze margins to a lesser

3 See for example Maechler A. M. (2015), "Introductory Remarks", news conference, the Swiss National Bank, 10 December.

4 Zurbrugg F. (2015), "A new premise for SNB monetary policy?", KOF Forecast Conference, 1 October.

Chart 3 Three-month money market rates and lending rates for households¹⁾ and enterprises²⁾. Percentage points. Change from month when the policy rate became negative³⁾



1) New mortgage loans from banks and credit institutions. For Switzerland the series is for fixed-rate mortgages (loan sector not specified)

2) New loans to enterprises from banks (including credit institutions for the euro area). For Switzerland the series is for fixed-rate investment loans.

3) Latest observation: 31 December 2015 for money market rates and December 2015 for lending rates (November for Switzerland).

Sources: Thomson Reuters, Statistics Sweden, Danmarks Nationalbank, SNB and ECB

extent. In that case, it will be sufficient to hold back somewhat when reducing lending rates in order to maintain overall profitability. The experience suggests that interest rates on new loans have generally fallen across countries with negative rates.

So far, negative interest rates do not seem to have materially impaired banks' profitability. Many banks in the euro area have compensated for the decline in interest income by means of higher lending volumes, reduced impairment provisions for future losses and higher capital income.⁵ In Sweden, high lending growth and increased commission income are supporting banks' profitability.⁶ Lower loan losses boosted Danish banks' profitability in 2015 in spite of the pressure on bank earnings as a result of low demand for new loans and the low interest rate level.⁷ For Swiss banks, higher fees and increased margins on new real estate loans have contributed to easing the pressure on profitability in 2015.⁸

The experience so far indicates that negative rates have contributed to a reduction in bank lending rates. At the same time, the room to cut rates that are below zero is limited. If interest rates fall low enough, large enterprises and banks may to a greater extent switch to using cash. This sets a lower bound for how far central banks can lower interest rates.

5 Cœuré B. (2016), "From challenges to opportunities: rebooting the European financial sector", speech at SZ (Süddeutsche Zeitung), Finance Day 2016, 2 March.

6 *Financial Stability Report 2015:2*, Sveriges Riksbank (2015).

7 *Financial Stability*, 2nd half 2015, Danmarks Nationalbank (2015).

8 *Financial Stability Report 2015*, Swiss National Bank (2015).

ANNEX

Monetary policy meetings with changes in the key policy rate
Tables and detailed projections

MONETARY POLICY MEETINGS WITH CHANGES IN THE KEY POLICY RATE

Date ¹	Key policy rate ²	Change
22 June 2016		
11 May 2016		
16 March 2016	0.50	-0.25
16 December 2015	0.75	0
4 November 2015	0.75	0
23 September 2015	0.75	-0.25
17 June 2015	1.00	-0.25
6 May 2015	1.25	0
18 March 2015	1.25	0
10 December 2014	1.25	-0.25
22 October 2014	1.50	0
17 September 2014	1.50	0
18 June 2014	1.50	0
7 May 2014	1.50	0
26 March 2014	1.50	0
4 December 2013	1.50	0
23 October 2013	1.50	0
18 September 2013	1.50	0
19 June 2013	1.50	0
8 May 2013	1.50	0
13 March 2013	1.50	0
19 December 2012	1.50	0
31 October 2012	1.50	0
29 August 2012	1.50	0
20 June 2012	1.50	0
10 May 2012	1.50	0
14 March 2012	1.50	-0.25
14 December 2011	1.75	-0.50
19 October 2011	2.25	0
21 September 2011	2.25	0
10 August 2011	2.25	0
22 June 2011	2.25	0
12 May 2011	2.25	+0.25
16 March 2011	2.00	0
26 January 2011	2.00	0
15 December 2010	2.00	0
27 October 2010	2.00	0
22 September 2010	2.00	0

¹ The interest rate decision has been published on the day following the monetary policy meeting as from the monetary policy meeting on 13 March 2013.

² The key policy rate is the interest rate on banks' sight deposits in Norges Bank. This interest rate forms a floor for money market rates.

By managing banks' access to liquidity, Norges Bank ensures that short-term money market rates are normally slightly higher than the key policy rate.

TABLE 1 MAIN MACROECONOMIC AGGREGATES

Percentage change from previous year/quarter	GDP	Mainland GDP	Private consumption	Public consumption	Mainland fixed investment	Petroleum investment ¹	Mainland exports ²	Imports
2008	0.4	1.7	1.7	2.4	0.9	4.7	4.4	3.2
2009	-1.6	-1.6	0.0	4.1	-10.4	3.3	-5.4	-10.0
2010	0.6	1.8	3.8	2.2	-6.4	-8.9	7.9	8.3
2011	1.0	1.9	2.3	1.0	5.0	11.3	0.8	4.0
2012	2.7	3.8	3.5	1.6	7.4	15.1	1.3	3.1
2013	1.0	2.3	2.7	1.0	2.9	19.3	2.3	4.9
2014	2.2	2.3	1.7	2.9	1.3	-2.9	2.1	1.5
2015	1.6	1.0	2.0	1.8	0.2	-14.7	5.2	0.6
2015 ³ Q1	-0.1	0.2	0.6	-0.1	-0.1	-0.1	0.7	3.8
Q2	0.0	0.2	0.6	0.4	1.2	-4.7	1.2	-1.8
Q3	1.6	0.0	0.2	0.5	2.4	-8.1	1.9	-2.6
Q4	-1.2	0.1	0.6	0.3	-0.4	-2.8	-1.3	1.6
2015 level. In billions of NOK	3 141	2 611	1 336	727	537	190	601	982

1 Extraction and pipeline transport.

2 Traditional goods, travel, petroleum services and exports of other services from mainland Norway.

3 Seasonally adjusted quarterly data.

Sources: Statistics Norway and Norges Bank

TABLE 2 CONSUMER PRICES

Annual change/twelve-month change. Per cent	CPI	CPI-ATE ¹	CPIXE ²	CPI-AT ³	CPI-AE ⁴	HICP ⁵
2008	3.8	2.6	3.1	3.9	2.5	3.4
2009	2.1	2.6	2.6	2.1	2.7	2.3
2010	2.5	1.4	1.7	2.4	1.4	2.3
2011	1.2	0.9	1.1	1.1	1.1	1.3
2012	0.8	1.2	1.0	0.6	1.4	0.4
2013	2.1	1.6	1.4	2.1	1.6	2.0
2014	2.0	2.4	2.3	2.1	2.3	1.9
2015	2.1	2.7	2.6	2.1	2.7	2.0
2016 Jan	3.0	3.0	2.6	2.9	3.0	3.1
Feb	3.1	3.4	3.0	3.1	3.5	3.3

1 CPI-ATE: CPI adjusted for tax changes and excluding energy products.

2 CPIXE: CPI adjusted for tax changes and excluding temporary changes in energy prices. See Norges Bank Staff Memo 7/2008 and 3/2009 for a description of the CPIXE.

3 CPI-AT: CPI adjusted for tax changes.

4 CPI-AE: CPI excluding energy products.

5 HICP: Harmonised Index of Consumer Prices. The index is based on international criteria drawn up by Eurostat.

Sources: Statistics Norway and Norges Bank

TABLE 3 PROJECTIONS FOR GDP GROWTH IN OTHER COUNTRIES

Change from projections in <i>Monetary Policy Report 4/15</i> in brackets	Share of world GDP			Change from previous year. Percent.				
	PPP	Market exchange rates ¹	Trading partners ⁴	2014	2015	2016	2017	2018
US	16	22	10	2,4 (-0,1)	2,1 (-0,4)	2,4 (-0,1)	2,3 (0)	2,1
Euro area	12	18	38	1,5 (0)	1,4 (-0,2)	1,5 (-0,2)	1,7 (0)	1,6
UK	2	4	9	2,2 (-0,2)	2,1 (-0,3)	2,2 (-0,2)	2,2 (0)	2,2
Sweden	0,4	0,8	12	3,8 (0,5)	3,3 (0,3)	2,7 (-0,1)	2,5 (0)	2,3
Other advanced economies ²	7	11	16	1,5 (-0,1)	1,5 (-0,3)	1,9 (-0,1)	2,2 (0)	2,2
China	16	11	5	6,9 (0,1)	6,1 (-0,1)	5,9 (-0,1)	5,7 (-0,1)	5,7
Emerging economies ³	19	12	10	0,7 (0)	1,5 (-0,3)	3,1 (-0,5)	3,8 (-0,1)	3,8
Trading partners ⁴	72	77	100	2,2 (0)	2,0 (-0,2)	2,2 (-0,2)	2,3 (-0,1)	2,3
World (PPP) ⁵	100	100		3,1(0)	3,2 (-0,2)	3,6 (-0,1)	3,8 (0)	3,8
World (market exchange rates) ⁵	100	100		2,4 (0)	2,6 (-0,2)	3,0 (-0,1)	3,1 (-0,1)	3,1

1 Country's share of global output measured in a common currency (market exchange rate). Average 2010–2013.

2 Other advanced economies in the trading partner aggregate: Denmark, Switzerland, Japan, Korea and Singapore. Export weights.

3 Emerging economies in the trading partner aggregate excluding China: Brazil, India, Indonesia, Russia, Turkey, Poland and Thailand. GDP weights.

4 Export weights, 25 main trading partners.

5 GDP weights. Norges Bank's estimates for 25 trading partners, other estimates from IMF.

Sources: IMF, Thomson Reuters and Norges Bank

TABLE 4 PROJECTIONS FOR CONSUMER PRICES IN OTHER COUNTRIES

Change from projections in <i>Monetary Policy Report 4/15</i> in brackets	Trading partners ³	Trading partners in the interest rate aggregate ⁴	Change from previous year. Percent				
			2014	2015	2016	2017	2018
US	6	19	0,1 (0)	1,2 (-0,2)	1,8 (-0,2)	2,2 (-0,1)	2,2
Euro area	35	53	0,0 (0)	0,2 (-0,6)	1,1 (-0,3)	1,2 (-0,3)	1,5
UK	7	7	0,0 (0)	0,8 (-0,4)	1,7 (-0,2)	2,1 (0,1)	2
Sweden	16	13	0,0 (0,1)	0,7 (-0,4)	1,8 (-0,8)	2,6 (-0,2)	2,8
Other advanced economies ¹	15		0,4 (0)	0,5 (-0,5)	1,6 (-0,4)	1,7 (-0,2)	1,8
China	11		1,4 (-0,1)	1,5 (-0,2)	2,0 (-0,4)	2,7 (0)	2,7
Emerging economies ²	10		8,3 (0)	6,2 (0)	5,4 (0)	4,9 (0)	4,9
Trading partners ³	100		1,0 (0,1)	1,1 (-0,4)	1,9 (-0,3)	2,1 (-0,2)	2,3
Trading partners in the interest rate aggregate ⁴			0,1 (0,1)	0,5 (-0,5)	1,4 (-0,4)	1,7 (-0,2)	1,9
Oil price, Brent Blend. USD per barrel ⁵			52	39	44	47	49

1 Other advanced economies in the trading partner aggregate: Denmark, Switzerland, Japan, Korea and Singapore. Import weights.

2 Emerging economies in the trading partner aggregate excluding China: Brazil, India, Indonesia, Russia, Turkey, Poland and Thailand. GDP weights.

3 Import weights, 25 main trading partners.

4 Norges Banks aggregate for trading partner interest rates includes the euro area, Sweden, United Kingdom, United States, Canada, Poland and Japan.

For more information, see "Calculation of the aggregate for trading partner interest rates", *Norges Bank Papers* 2/2015.

5 Futures prices (average for the past five trading days). For 2015, the average of spot prices so far this year and futures prices for the rest of the year are used.

Sources: IMF, Thomson Reuters and Norges Bank

TABLE 5 PROJECTIONS FOR MAIN ECONOMIC AGGREGATES

	In billions of NOK	Percentage change from previous year (unless otherwise stated)				
		Projections				
	2015	2015	2016	2017	2018	2019
Prices and wages						
CPI		2.1	3.1	2.3	2.1	1.7
CPI-ATE ¹		2.7	3.0	2.5	2.1	1.7
Annual wages ²		2.8	2.6	2.8	3.3	3.7
Real economy						
GDP	3141	1.6	-0.1	1.2	1.6	1.9
GDP, mainland Norway	2611	1.0	0.8	1.8	2.3	2.5
Output gap, mainland Norway (level) ³		-1.1	-1.8	-2.0	-1.6	-1.1
Employment, persons, QNA		0.6	0.1	0.5	1.0	1.1
Labour force, LFS		1.4	0.3	0.4	0.8	0.9
LFS unemployment (rate, level)		4.4	4.6	4.4	4.1	3.9
Registered unemployment (rate, level)		3.0	3.3	3.5	3.4	3.3
Demand						
Mainland demand ⁴	2600	1.6	2.0	2.2	2.4	2.6
- Private consumption	1336	2.0	1.6	2.2	2.3	2.4
- Business investment	226	-2.8	-1.4	3.7	5.6	7.2
- Housing investment	158	1.6	5.9	2.4	1.5	0.8
- Public demand ⁵	880	2.0	2.8	1.9	2.0	2.1
Petroleum investment ⁶	190	-14.7	-12.0	-7.0	-2.0	3.0
Mainland exports ⁷	601	5.2	2.3	3.7	4.2	3.6
Imports	982	0.6	1.1	2.7	2.8	4.2
Interest rate and exchange rate						
Key policy rate (level) ⁸		1.0	0.5	0.2	0.2	0.5
Import-weighted exchange rate (I-44) ⁹		103.5	108.4	108.0	106.3	104.3

1 CPI-ATE: CPI adjusted for tax changes and excluding energy products.

2 Annual wage growth is based on the Technical Reporting Committee on Income Settlements' definitions and calculations.

3 The output gap measures the percentage deviation between mainland GDP and projected potential mainland GDP.

4 Private consumption and private mainland gross fixed investment and public demand.

5 General government gross fixed investment and consumption.

6 Extraction and pipeline transport.

7 Traditional goods, travel, petroleum services and exports of other services from mainland Norway.

8 The key policy rate is the interest rate on banks' deposits in Norges Bank.

9 Level. The weights are estimated on the basis of imports from 44 countries, which comprise 97% of total imports

Sources: Statistics Norway. Technical Reporting Committee on Income Settlements (TBU). Norwegian Labour and Welfare Administration (NAV) and Norges Bank

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