NORGES BANK

3|16 SEPTEMBER

MONETARY POLICY REPORT

WITH FINANCIAL STABILITY ASSESSMENT

Norges Bank

Oslo 2016

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Editor: Øystein Olsen
Design: Brandlab
Printing: 07 Media AS
The text is set in 9.5 pkt Azo Sans Light

ISSN 1894-0242 (print)
ISSN 1894-0250 (online)

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 14 September 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 21 September 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.

CONTENTS

This *Monetary Policy Report* is based on information in the period to 16 September 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 practices.

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.

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.

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. The buffer rate has been set at 1.5%.

EXECUTIVE BOARD'S ASSESSMENT

At its meetings on 14 and 21 September 2016, the Executive Board discussed the monetary policy stance. The starting point for the discussion was the analysis published in the June 2016 *Monetary Policy Report*. The Executive Board decided to keep the key policy rate unchanged at 0.50% in June. At the same time, the Executive Board's assessment suggested that the key policy rate might be reduced in the course of the year. The analysis in the *Report* implied a decline in the key policy rate to about ¼% at the end of 2016. The key policy rate was projected to increase to ¾% towards the end of the projection period. With this path for the key policy rate, there were prospects that inflation would recede in the coming years. Inflation was projected to be between 1½% and 2% in 2019. Capacity utilisation in the mainland economy was expected to show a small decline in the period to autumn 2017, edging up thereafter.

Growth in the world economy is moderate. There are prospects that import growth among trading partners will be somewhat lower in the years ahead than foreseen in June. Heightened uncertainty as a result of the UK's vote to leave the EU is expected to dampen growth in the UK. Inflation remains low in most advanced countries, but is projected to move up gradually in the years ahead. Overall, actual and expected policy rates among trading partners have declined slightly since the June *Report* and are at historically low levels.

Oil prices have recently been broadly in line with that envisaged in the June *Report*. Futures prices have shown little change and indicate a very gradual upswing in oil prices. The krone has appreciated and is somewhat stronger than anticipated in June.

The Norwegian money market premium has increased and been higher than expected. Higher prices for banks' US dollar funding, partly as a result of new US money market regulations, may entail a higher-than-anticipated premium also ahead. Banks' lending margins have edged down.

New national accounts figures show that growth in the Norwegian economy has been slightly higher than projected in the June *Report*. In August, Norges Bank's regional network contacts reported increased growth in output and they expect a further increase ahead. There are signs that growth in the Norwegian economy is picking up at a slightly faster pace than projected in June.

Different labour market indicators show divergent developments, but on the whole capacity utilisation appears to be higher than expected. Registered unemployment has declined and been lower than projected. In August, regional network contacts reported slightly higher capacity utilisation. On the other hand, employment has declined and unemployment measured by the Labour Force Survey (LFS) has been slightly higher than projected.

Inflation has been higher than projected in the June *Report*. The twelve-month rise in consumer prices adjusted for tax changes and excluding energy products (CPI-ATE) was 3.3% in August. The krone depreciation in recent years is underpinning inflation. The pass-through from a weaker krone may have been stronger than foreseen. There are prospects that inflation will be higher in the near term than projected in the June *Report*. Inflation expectations remain well anchored and close to the target.

House price inflation has accelerated and been higher than projected. House prices are rising rapidly particularly in Oslo and surrounding areas. Household debt growth has remained stable. High house price inflation may lead to higher debt accumulation and increased household vulnerabilities.

The Executive Board notes that the analyses in this *Report* suggest that the key policy rate will remain close to ½% in the coming years. At the same time, the forecast implies a slightly higher probability of a decrease than an increase in the key policy rate in the year ahead. The key policy rate is projected to increase to just below 1% towards the end of the projection period. The key policy rate forecast is somewhat higher than in the June *Repor*t. With this path for the key policy rate, the analyses suggest that inflation will remain somewhat above 2.5% in the year ahead. Inflation will abate as the effects of the krone deprecation dissipate. Inflation is projected to be somewhat below 2% towards the end of the projection period. Capacity utilisation in the mainland economy is assessed to be higher than assumed in the June *Report*, and is projected to increase gradually in the coming years.

Monetary policy is expansionary and supportive of structural adjustments in the Norwegian economy. Nevertheless, in an economy marked by restructuring, monetary policy cannot fully counteract the effects on output and employment. There is room to manoeuvre in interest rate setting, in both directions. Should the Norwegian economy be exposed to new major shocks, the possibility cannot be excluded that the key policy rate may turn negative.

When the key policy rate is close to a lower bound, the uncertainty surrounding the effects of monetary policy increases. This suggests proceeding with greater caution in interest rate setting and reacting somewhat less to news that changes the economic outlook, whether the news pulls in the direction of a lower or higher key policy rate.

In its discussion of monetary policy in the period ahead, the Executive Board gives weight to the unexpectedly high rate of inflation in recent months. At the same time, there are signs of somewhat stronger economic growth and higher capacity utilisation than foreseen in June. Low interest rates may contribute to a persistently high rate of increase in house prices and increase the vulnerability of the financial system. On the other hand, growth in the Norwegian economy is moderate, and capacity utilisation is below a normal level. As a result of low cost growth and a somewhat stronger krone, inflation is likely to recede further ahead. 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 kept unchanged at 0.50% at this meeting. The Executive Board's current assessment of the outlook suggests that the key policy rate will most likely remain at today's level in the period ahead.

At its meeting on 21 September, the Executive Board decided to keep the key policy rate unchanged at 0.50%.

Øystein Olsen
21 September 2016

1 ECONOMIC SITUATION

Global growth remains moderate

Growth in the global economy has softened slightly in recent years, owing to weaker developments in emerging economies (Chart 1.1). There has been a moderate pickup in growth in advanced economies and thus among Norway's trading partners as a whole. So far in 2016, growth among trading partners has slowed somewhat, in line with the projections in the June 2016 *Monetary Policy Report*.

Growth prospects have weakened for many European countries after the UK vote in June to leave the EU. This applies in particular to the UK, where uncertainty surrounding its future association with important trading partners may weigh on growth in investment and employment. In the euro area and Sweden, lower expected demand from the UK and heightened uncertainty among households and firms may curb growth ahead.

US growth has hovered around 2.5% in the past few years. A decline in business investment has acted as a brake on growth so far this year. Growth is expected to pick up again in the coming period and remain at around 2% in the coming years.

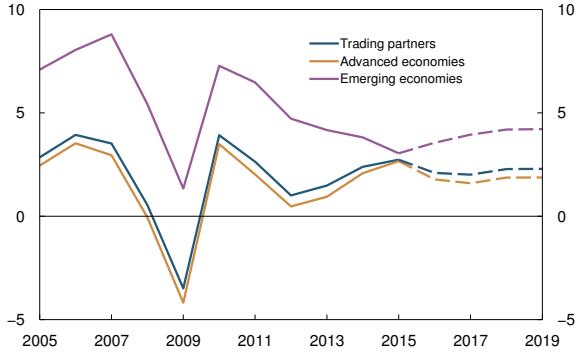
In Asia, many advanced economies are facing weaker demand for the goods and services they export. Nevertheless, expansionary economic policies are supporting growth. In China, activity in 2016 Q2 was somewhat higher than expected, partly reflecting government measures to stimulate the economy. Even so, owing to fall in investment through summer, there is persistent uncertainty surrounding developments in China further ahead. Activity is still declining in both Brazil and Russia, but the growth outlook has improved for both countries in recent months. For a further discussion of economic developments in different countries and regions, see Special Feature on page 46.

Overall GDP growth among trading partners is projected at 2.1% in 2016, unchanged from the projection in the June *Report* (Annex Table 1). In 2017, growth is projected to soften to 2%, slightly lower than projected in June. The difference in the pace of growth between advanced and emerging economies is expected to widen (Chart 1.1). Growth in global trade has diminished since 2012. Import growth among trading partners has been revised down more than implied solely by the change in the projections for GDP growth (Chart 1.2). This reflects prospects for weak growth in exports and investment, which have a substantial import content, in the UK, euro area and China.

Gradual pickup in inflation abroad

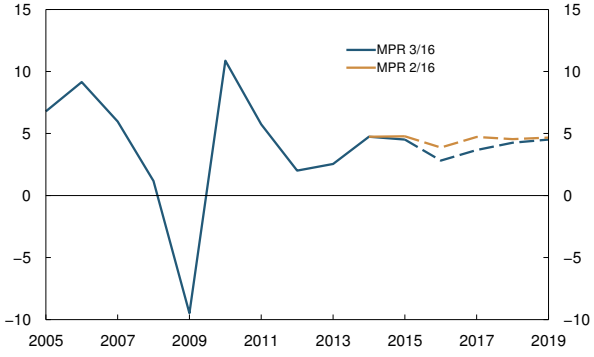
Consumer price inflation among trading partners has been low in the past few years and is currently at an average of around 1% (Chart 1.3). The low rate of inflation is partly due to the fall in commodity prices in recent years and low capacity utilisation in many countries. In recent months, US inflation declined a little. After four months of falling prices in the euro area, prices started rising again through summer. Inflation in emerging economies has fallen slightly, primarily reflecting a decline from high levels in both Russia and Brazil. Core inflation among Norway's main trading partners is stable and somewhat higher than overall consumer price inflation. Price developments among trading partners as a whole have been broadly as projected in the June *Report*.

Chart 1.1 GDP for trading partners.
Volume. Export weights. Annual change. Percent. 2005 – 2019 [1)]



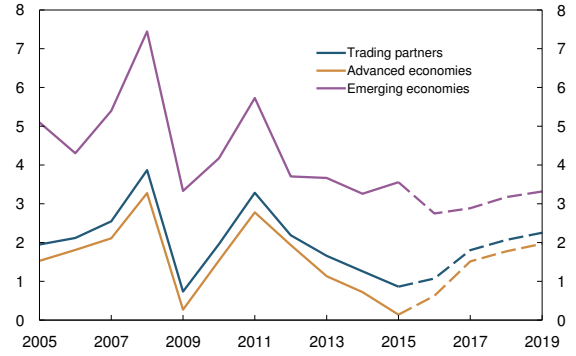
1) Projections for 2016 – 2019 (broken lines).
Sources: Statistics Norway, Thomson Reuters and Norges Bank

Chart 1.2 Trading partners' imports.
Volume. Export weights. Annual change. Percent. 2005 – 2019 [1)]



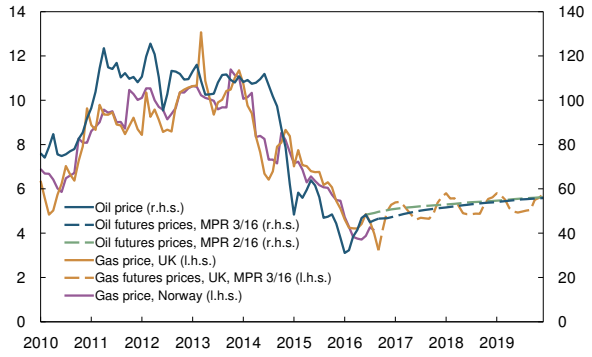
1) Projections for 2016 – 2019 (broken lines).
Sources: Statistics Norway, Thomson Reuters and Norges Bank

Chart 1.3 CPI for trading partners.
Import weights. Annual change. Percent. 2005 – 2019[1)]



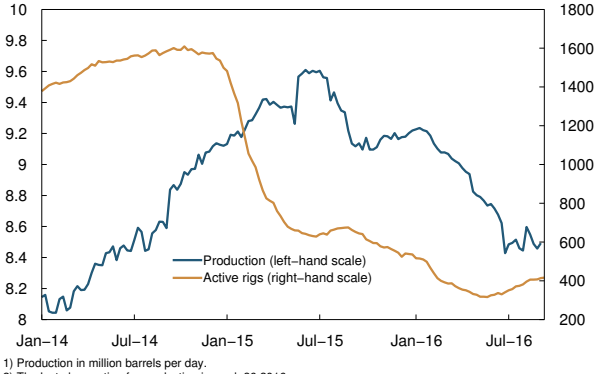
1) Projections for 2016 – 2019 (broken lines).
Sources: Statistics Norway, Thomson Reuters and Norges Bank

Chart 1.4 Spot and futures prices for crude oil and natural gas.
Oil. USD/barrel. Gas. USD/MMBtu[1)]. January 2010 – December 2019[2)]



1) Million British thermal units.
2) Futures prices (broken lines) are the averages of futures prices in the period 13 – 17 June for MPR 2/16 and 12 – 16 September 2016 for MPR 3/16.
Sources: Statistics Norway, Thomson Reuters and Norges Bank

Chart 1.5 Active rigs and oil production[1)] in the US. Week 1 2014 – week 37 2016[2)]



1) Production in million barrels per day.
2) The last observation for production is week 36 2016.
Source: Thomson Reuters

Looking ahead, developments in oil prices in line with futures prices will gradually push up consumer price inflation among trading partners. Increased capacity utilisation and accelerating cost growth may also pull up inflation in most advanced economies. On the other hand, continued surplus capacity in manufacturing and weakness in producer prices in a number of emerging economies, especially China, may curb inflation among Norway's main trading partners.

For trading partners as a whole, consumer price inflation is projected to pick up gradually to 2.3% over the coming years (Annex Table 2). The projections are broadly in line with the June *Report*.

Prospects for continued relatively low oil and gas prices

Oil prices have recently varied between USD 45 and USD 50 per barrel, and have thus been approximately as assumed in the June *Report* (Chart 1.4). Oil prices are approximately half the average level for the period between 2011 and 2014.

The supply of oil remains high. In recent months, OPEC production has been at its highest level in eight years. Since oil prices began to fall in summer 2014, OPEC has accounted for close to 90% of growth in the global supply of oil. OPEC has announced that possible measures to stabilise the oil market will be discussed at a meeting at the end of September.

Oil inventories in the OECD are still high. International Energy Agency (IEA) forecasts indicate that inventories will also increase somewhat ahead, and more than assumed in June. The forecast for global oil demand in 2016 and 2017 has been revised down slightly. The IEA expects the supply of non-OPEC oil to fall in 2016, but then rebound somewhat in 2017.

Even though global oil demand may eventually exceed supply, it will probably take time before oil inventories return to more normal levels. At the same time, activity in the US oil industry has picked up after oil prices moved up to almost USD 50 (Chart 1.5). Productivity improvements and cost savings have made it profitable to produce oil at substantially lower prices than a few years ago.

Oil prices are assumed to move in line with futures prices in the coming years, which indicate a moderate price rise to around USD 55 per barrel at the end of 2019, approximately as envisaged in the June *Report*.

Norwegian and UK gas prices move in tandem over time. UK gas prices fell through summer. Futures prices for UK gas indicate a rise in Norwegian gas prices in the coming years, broadly in line with the prospects for oil prices.

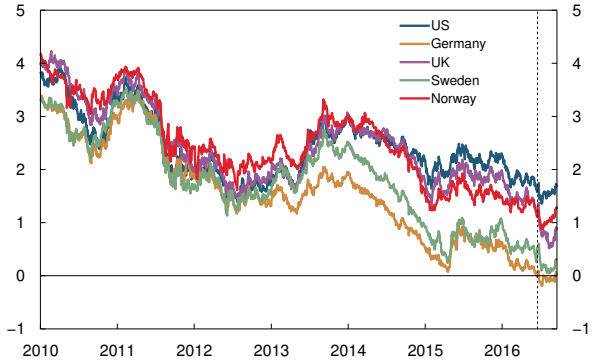
Continued very low foreign interest rates

The outcome of the UK referendum surprised financial markets, and the market impact was substantial. Considerable uncertainty surrounding the consequences of the UK's withdrawal from the EU, both for financial markets and for global economic growth, resulted in a marked decline in yields on investment grade government bonds and in equity indices in many countries in the days following the referendum (Charts 1.6 and 1.7). In the course of summer, markets have calmed. Long-term interest rates in both the US and Germany have risen to approximately the same level as at the time of the June *Report*, while UK and Swedish rates remain considerably lower than in June. Global equity indices are now higher than in June.

Key policy rates among trading partners are very low and there are prospects that they will remain low for several years ahead (Chart 1.8). Developments across countries have varied since June, but there has on the whole been little change in trading partners' expected money market rates in the near term (Chart 1.9). Forward rates a few years ahead have fallen a little.

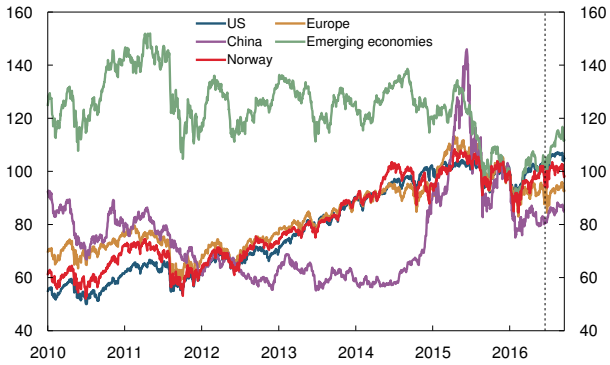
Citing weaker prospects for the UK economy following the referendum, the Bank of England (BoE) announced an extensive package of monetary policy measures in August. The policy rate was reduced from 0.5% to 0.25%, and the government bond purchasing programme was expanded. The BoE will also purchase bonds issued by non-financial companies. In addition, a new bank funding scheme was introduced to ensure that the policy rate reduction would feed through to banks' lending rates. The BoE also indicated that if economic developments are broadly consistent with projections, the policy rate may be reduced further.

Chart 1.6 Yields on 10–year government bonds.
Percent. 1 January 2010 – 16 September 2016 [1)]



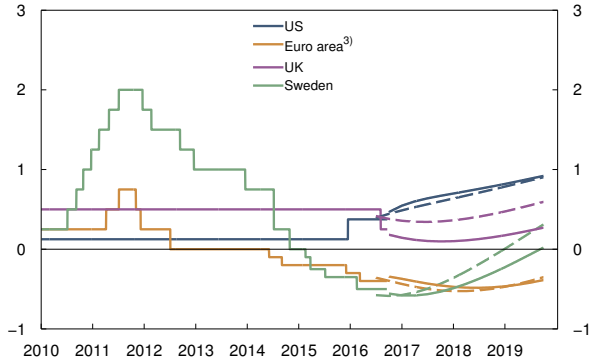
1) MPR 2/16 was based on information in the period to 17 June 2016, marked by the vertical line.
Source: Bloomberg

Chart 1.7 Selected equity price indices.
January 2016 = 100. 1 January 2010 – 16 September 2016 [1)]



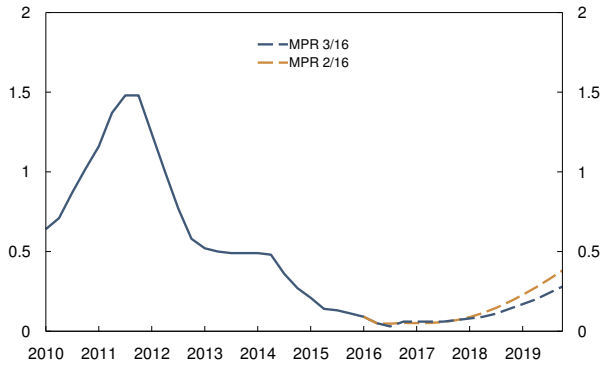
1) MPR 2/16 was based on information in the period to 17 June 2016, marked by the vertical line.
Source: Bloomberg

Chart 1.8 Policy rates and estimated forward rates at 17 June 2016 and 16 September 2016 .[1)] Percent. 1 January 2010 – 31 December 2019 [2)]



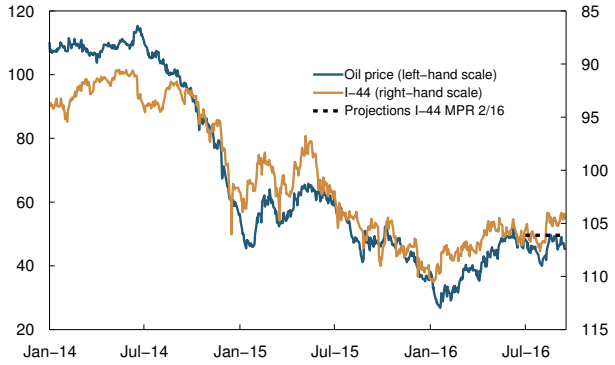
1) Estimated forward rates at 17 June 2016 (broken lines). Forward rates at 16 September 2016 (solid lines). Forward rates are based on Overnight Index Swap (OIS) rates.
2) Daily data from 1 January 2010 and quarterly data from 1 October 2016.
3) ECB's deposit rate. Eonia from 2016 Q3.
Sources: Bloomberg, Thomson Reuters and Norges Bank

Chart 1.9 Money market rates for trading partners.[1]
Percent. 2010 Q1 – 2019 Q4[2]



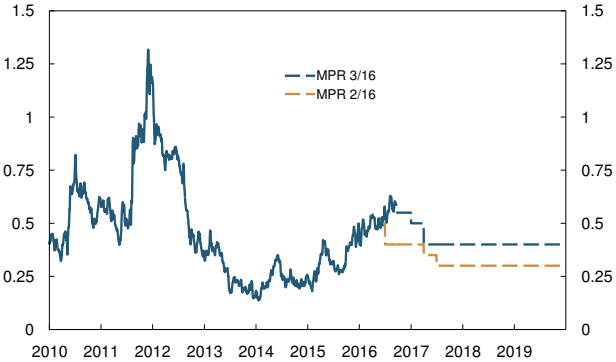
1) For information about the aggregate for trading partner interest rates, see *Norges Bank Papers* 2/2015.
2) Blue and orange broken lines show forward rates for 16 September 2016 and 17 June 2016, respectively.
Sources: Thomson Reuters and Norges Bank

Chart 1.10 Oil price[1] and import–weighted exchange rate index (I–44)[2].
1 January 2014 – 16 September 2016



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

Chart 1.11 Three–month Nibor spread.[1] Five–day moving average.
Percentage points. 1 January 2010 – 31 December 2019[2]



1) Norges Bank estimates of the difference between three–month Nibor and expected key policy rate.
2) Projections for 2016 Q3 – 2019 Q4 (broken lines).
Sources: Thomson Reuters and Norges Bank

The Federal Reserve has kept the target for the federal funds rate unchanged since the June *Report*. In late summer, the Fed signalled a possible rate hike in autumn. Market interest rate expectations suggest that the next rate increase will be in December 2016, somewhat earlier than implied by market expectations in June.

The European Central Bank (ECB) has kept its deposit rate unchanged since June and has not issued new monetary policy signals. Market interest rate expectations indicate a reduction in the ECB deposit rate during spring 2017. Many market participants expect that the ECB will extend its asset purchase programme beyond spring 2017.

Sveriges Riksbank has not changed its policy rate or its asset purchase programme since June, but has signalled that the next rate increase may come a few months later than indicated at the time of the June *Report*. The Riksbank now projects that a rate hike may occur in autumn 2017. Market expectations indicate that the first rate hike will occur in the first quarter of 2018.

A somewhat stronger krone

Since June, monetary policy signals have been a dominant force in foreign exchange markets. The US dollar appreciated a little after the Fed signalled a possible rate hike in the course of autumn. In Japan, monetary and fiscal policy measures have been less expansionary than markets expected, and the Japanese yen has appreciated since June. The euro is also somewhat stronger than at the time of the June *Report*, partly reflecting the absence of new signals from the ECB of additional monetary policy measures. Sterling weakened markedly in response to the UK's vote to leave the EU in June and depreciated further in August when the Bank of England reduced its policy rate. Some positive news about the UK economy has recently contributed to reversing some of the depreciation. In Sweden, interest rate expectations have fallen somewhat and the Swedish krona is somewhat weaker than in June.

The Norwegian krone, as measured by the import-weighted exchange rate index I-44, depreciated markedly from 2013 to the beginning of 2016, partly reflecting the fall in oil prices and weaker growth

prospects for the Norwegian economy (Chart 1.10). The krone has appreciated through 2016, and the strengthening since June has been slightly more pronounced than projected in the June *Report*. An increase in the interest rate differential against other countries, partly owing to higher Norwegian interest rate expectations, may have contributed to the recent appreciation.

Higher money market premiums

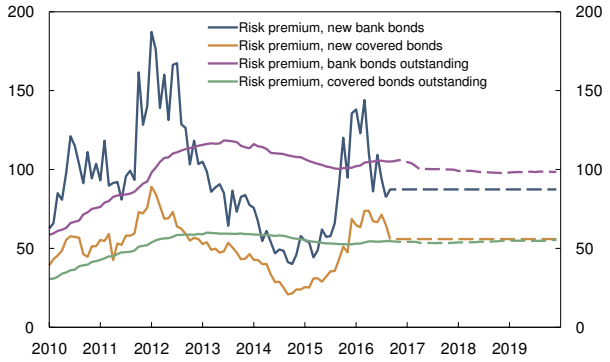
The three-month Nibor spread, which is the difference between the Nibor money market rate and the expected key policy rate, has widened in the course of summer (Chart 1.11). The Nibor spread is now about 0.60 percentage point, while it was projected at 0.40 percentage point in the June *Report*.

The increase in the spread primarily reflects the increase in US dollar interest rates, which banks apply when setting Nibor. Adjustments to new regulations for US money market funds have pulled up US dollar interest rates. Stricter liquidity requirements for banks both in Norway and globally may also have contributed to the increase in the Nibor spread. The effects of regulations in both the US and Norway on the Nibor spread are discussed in detail in a Special Feature on page 57.

The Nibor spread is projected to narrow ahead. The premium in banks' US dollar rate is expected to fall somewhat in response to the implementation of the regulation of US money market funds in mid-October. When the ECB winds down its asset purchases, the Nibor spread may show a further decline. The spread is expected to narrow to 0.40 percentage point in spring 2017. The projections are higher than in the June *Report* throughout the projection period. The projection was revised up owing to the seemingly stronger-than-expected effects of the regulations.

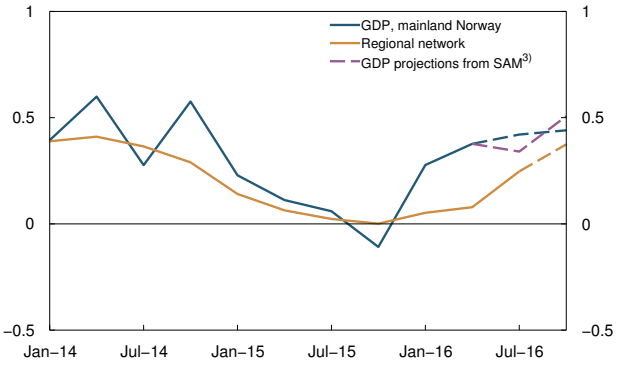
Banks must pay a risk premium above Nibor when obtaining wholesale funding. Risk premiums on new long-term wholesale funding have fallen and are now between 0.10 and 0.20 percentage point lower than at the time of the June *Report* (Chart 1.12). If risk premiums remain at that level, the average risk premium on banks' senior bonds outstanding will fall slightly ahead, while the premium on covered bonds outstanding will be approximately unchanged.

Chart 1.12 Average risk premiums on new and outstanding bond debt for Norwegian banks. Spread to three–month Nibor. Basis points. January 2010 – December 2019[1)]



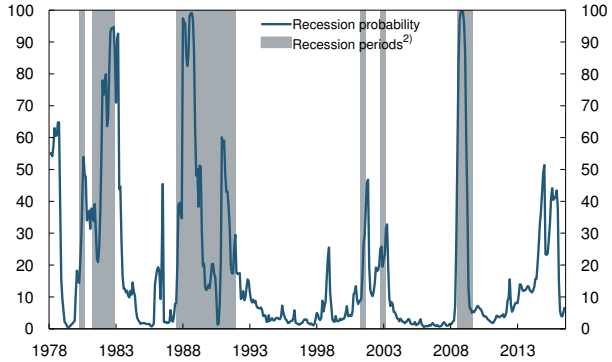
1) Projections for September 2016 – December 2019 (broken lines).
Sources: Bloomberg, DNB Markets, Stamdata and Norges Bank

Chart 1.13 GDP for mainland Norway and regional network's indicator of output growth.[1)] Quarterly change. Percent. 2014 Q1 – 2016 Q4[2)]



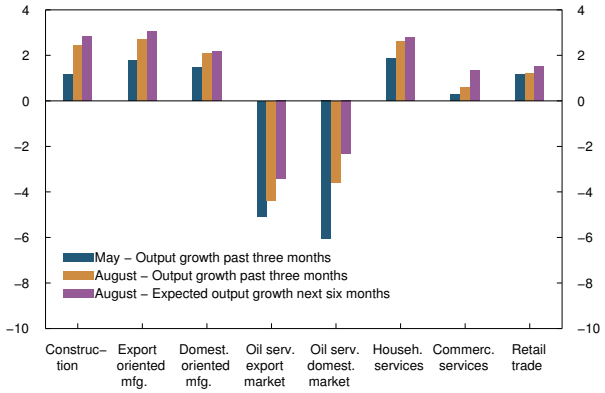
1) Reported output growth past three months, up to and including August 2016 (solid lines) and expected output growth the next six months (broken lines).
2) Projections for 2016 Q3 – 2016 Q4 (broken lines).
3) System for Averaging short–term Models.
Sources: Statistics Norway and Norges Bank

Chart 1.14 Probability of a fall in economic activity.[1)] Percent. February 1978 – July 2016



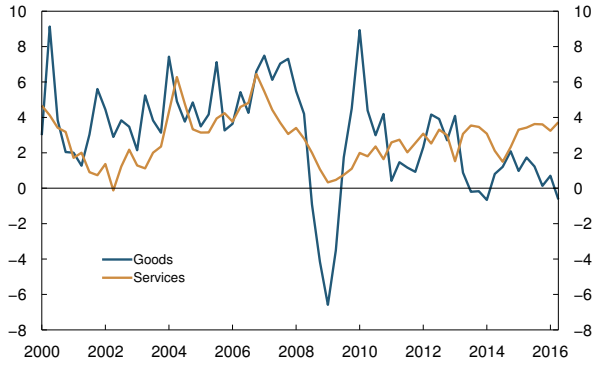
1) Smoothed recession probabilities estimated using a monthly indicator model based on the number of unemployed persons, the oil price, manufacturing output and retail sales. In a Special Feature in MPR 1/16, recession probabilities estimated in real time were presented.
2) Dated in Aastveit, K.A., A.S Jore and F. Ravazzolo (2016), "Identification and real–time forecasting of Norwegian business cycles", *International Journal of Forecasting* 32, pp. 283–292.
Source: Norges Bank

Chart 1.15 Output growth in regional network.
Annualised. Percent



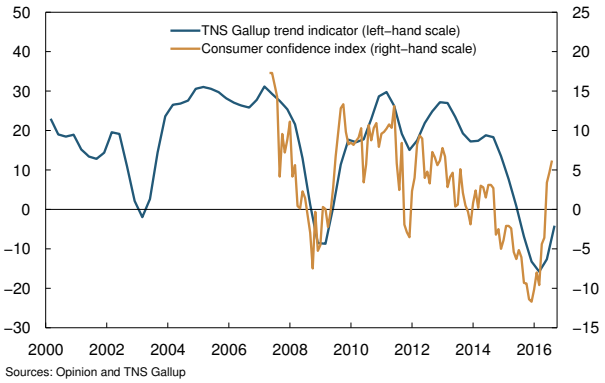
Source: Norges Bank

Chart 1.16 Household consumption of goods and services.
Four–quarter change. Percent. 2000 Q1 – 2016 Q2



Source: Statistics Norway

Chart 1.17 Consumer confidence. Net values. TNS Gallup trend indicator for households. 2000 Q1 – 2016 Q3. Opinion consumer confidence index (CCI). May 2007 – August 2016



Sources: Opinion and TNS Gallup

Despite the increase in the Nibor spread, banks appear to have made little change to their lending rates in recent months, entailing a fall in banks' lending margins, ie the spread between banks' lending rates and money market rates.

Somewhat higher growth in the Norwegian economy

Growth in the Norwegian economy has been weak in the past few years, primarily reflecting the fall in oil prices and lower activity in petroleum-related industries. Growth has edged up in 2016. Mainland GDP rose by 0.3% in Q1 and 0.4% in Q2, up from average quarterly growth of 0.1% in 2015. Excluding electricity production, growth in Q2 was 0.5%. Growth was slightly higher than projected in the June *Report*.

In the coming period, mainland GDP is projected to grow at broadly the same pace as in Q2. Growth projections have been revised up somewhat from the June *Report*. The new projections are in line with the projections from Norges Bank's System for Averaging short-term Models (SAM) and regional network contacts' expectations for output growth (Chart 1.13). According to model calculations, the probability of a fall in activity is low (Chart 1.14).

In August, regional network contacts reported somewhat higher output growth over the past three months compared with the previous three-month period. The upswing in growth was broad-based. Most regions reported higher growth, with growth picking up in all sectors except retail trade (Chart 1.15). Improvements were most evident in the oil service industry, even though activity continues to fall in that sector. Activity picked up markedly in construction, and contacts in this sector reported the highest growth since the beginning of 2013. Several contacts, including in tourism, reported that the weak krone has boosted demand for Norwegian goods and services. All sectors expected higher growth over the next six months than in the previous three-month period. Growth prospects were strongest for construction, the export industry and household services.

Growth in household consumption has been moderate in recent years. In Q2, consumption rose by 0.4%, while the level for Q1 was revised up considerably. There was solid growth in service consumption in Q2,

while goods consumption remained broadly unchanged (Chart 1.16). Goods consumption fell in July. At the same time, consumer confidence has risen (Chart 1.17), and in August household-oriented service enterprises in the regional network reported higher growth in demand. Overall, developments in consumption have been slightly stronger than projected in the June *Report*. The projections for the coming period have also been revised up somewhat. High house price inflation, increased consumer confidence and continued low interest rates are expected to pull up consumption, while weak developments in household purchasing power will restrain the increase.

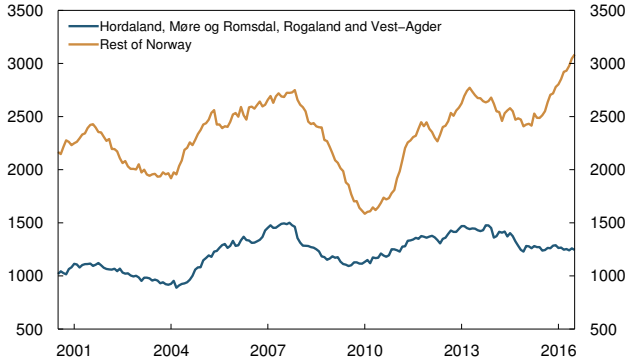
Revised figures show that the household saving ratio in 2015 was pulled up by unusually high dividend income. Excluding dividend income, saving has been lower in recent years than earlier figures indicated. Household saving is expected to show a further decline this year in order to sustain consumption growth.

Housing investment has risen markedly over the past year. The high rate of growth continued in Q2, and growth was somewhat higher than projected in the June *Report*. Housing starts have remained stable in oil-dependent regions, while continuing to rise in the rest of the country (Chart 1.18). For Norway as a whole, both housing starts and new home sales are now at high levels. Housing investment is expected to show continued growth ahead. The projections have been revised up since the June *Report* owing to recent months' strong increase in house prices.

Business investment in mainland Norway has been weak in recent years, restrained in particular by lower investment in oil-related industries. Business investment picked up somewhat in Q2 and was higher than projected in the June *Report*. Low interest rates and slightly higher economic growth are expected to contribute to moderate business investment growth also in the coming quarters. Projections for mainland business investment are somewhat higher than in the June *Report*.

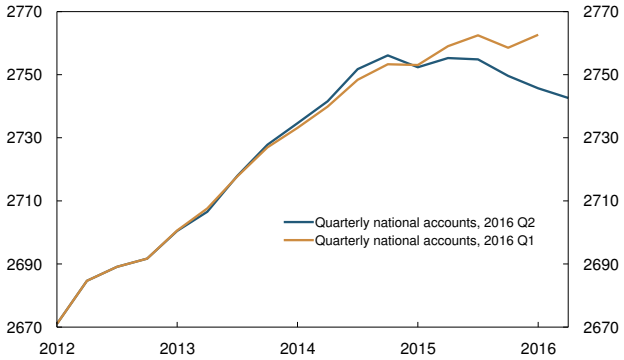
Petroleum investment has fallen sharply in the wake of the fall in oil prices and continued to decline in the first half of 2016. Developments have been weaker than projected in the June *Report*, and the projection for 2016 is somewhat lower than in June. The fall in petroleum investment in 2016 is now projected to be

Chart 1.18 Housing starts by county.
Utility floor space (1000m^2). Accumulated last twelve months. July 2000 – July 2016



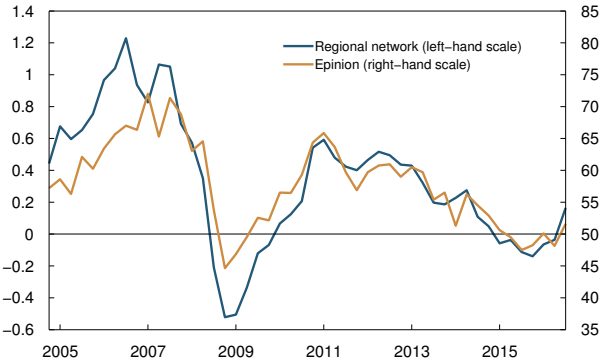
Sources: Statistics Norway and Norges Bank

Chart 1.19 Employment.
In 1000s. Seasonally adjusted. 2012 Q1 – 2016 Q2



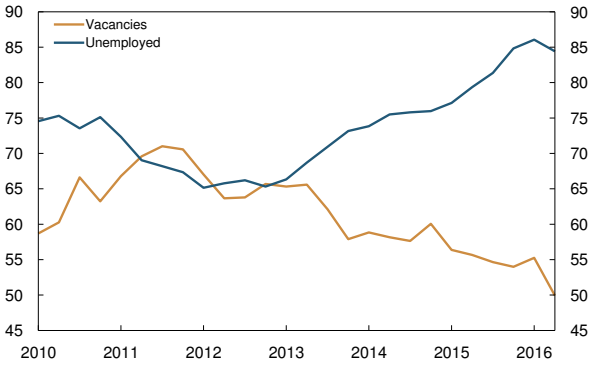
Source: Statistics Norway

Chart 1.20 Expected change in employment. Regional network.[1] Percent.
Epinion's expectation survey.[2] Diffusion index.[3] 2004 Q4 – 2016 Q3



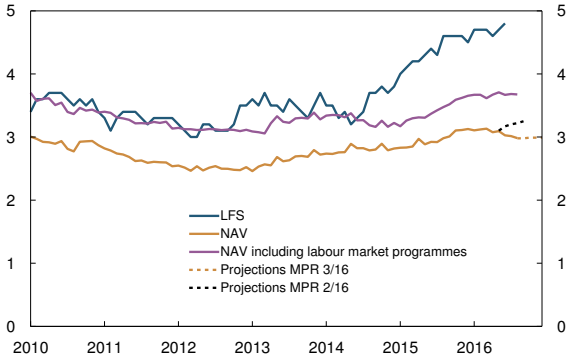
1) Expected change in employment next three months.
2) Expected change in hirings next 12 months.
3) Share of business leaders who expect "more employees" in their own company the following 12 months + (1/2 * share who expect "unchanged number of employees").
Sources: Epinion and Norges Bank

Chart 1.21 Number of vacancies and number of unemployed persons.[1)]
In 1000s. Seasonally adjusted. 2010 Q1 – 2016 Q2



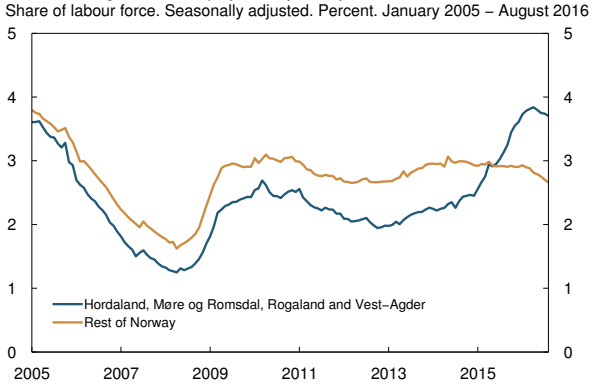
1) Registered unemployed.
Sources: Norwegian Labour and Welfare Administration (NAV), Statistics Norway and Norges Bank

Chart 1.22 Unemployment as a share of the labour force. LFS[1)] and NAV[2)].
Seasonally adjusted. Percent. January 2010 – December 2016 [3)]



1) Labour Force Survey.
2) Norwegian Labour and Welfare Administration.
3) Projections for September 2016 – December 2016 (broken lines).
Sources: Norwegian Labour and Welfare Administration (NAV), Statistics Norway and Norges Bank

Chart 1.23 Registered unemployment by county.
Share of labour force. Seasonally adjusted. Percent. January 2005 – August 2016



Sources: Norwegian Labour and Welfare Administration (NAV) and Norges Bank

about the same as in 2015, while the decline is expected to be smaller in 2017 (see box on page 18 for details on the projections for petroleum investment).

Growth in public sector demand has been solid in recent years, but growth in the first half of 2016 has been somewhat lower than anticipated in June. Hence, the projection for public sector demand for 2016 has been revised down slightly from the June *Report* (see box on page 20 on fiscal policy assumptions).

Mainland exports grew at a fast pace through 2014 and 2015. They have fallen so far in 2016 and were on the whole lower in the first half of the year than projected in the June *Report*. Oil service exports fell sharply in the first half of 2016, and exports from this sector are expected to continue to fall in the coming period. A sharp decrease in exports of refined petroleum products also pull down the projection for 2016. Other mainland enterprises are expected to show solid export growth ahead, but the rise may be restrained by capacity constraints in fish farming and segments of the process industry. Overall, a moderate increase in mainland exports is expected in the coming period. The projection for export growth in 2016 has been revised down from the June *Report*, reflecting lower-than-expected exports in the first half of the year and softer growth prospects among Norway's trading partners.

Imports have declined over the past quarters and were lower in the first half of 2016 than projected in the June *Report*. This weakness may partly be attributable to the decline in petroleum investment, which has a substantial import content. In addition, the krone depreciation in recent years is likely to have contributed to a shift in demand towards Norwegian goods and services. Imports are projected to edge up in the coming period.

Higher-than-expected capacity utilisation

Over the past couple of years, the labour market has been marked by lower activity in the petroleum sector and weak growth in the Norwegian economy. Despite the heavy job losses in oil-related industries, employment held steady. Recent national accounts figures show that employment was lower in 2015 than earlier figures indicated, and that there was a decline in the past three quarters (Chart 1.19). Overall, the level of employment

in Q2 was 0.6% lower than assumed in the June *Report*. With somewhat higher growth in the economy, employment is expected to pick up during autumn. Both regional network contacts and business leaders participating in Epinion's expectations survey expect higher employment ahead (Chart 1.20). On the other hand, the number of vacancies declined in Q2 (Chart 1.21).

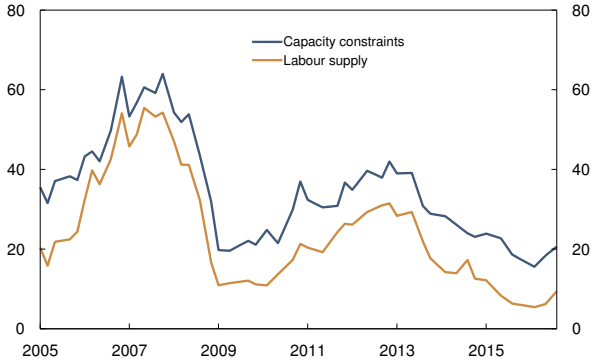
The labour force has grown by an average of just over 1% in recent years, and the increase continued in 2016 Q1. In Q2, the labour force contracted, and developments were weaker than projected in the June *Report*. The labour force is projected to rebound slightly ahead, partly reversing the decline in Q2.

Unemployment has risen in recent years. Registered unemployment measured by the Norwegian Labour and Welfare Administration (NAV) has shown a moderate increase, while unemployment measured by the Labour Force Survey (LFS) has shown a more pronounced increase (Chart 1.22).[1] In recent months, registered unemployment has declined and has been lower than projected in the June *Report*. As a share of the labour force, unemployment was 3.0% in August, unchanged from July. Recently, unemployment has also edged down in oil-dependent counties (Chart 1.23). The decline in registered unemployment may reflect an increase in the number of persons participating in labour market programmes, and the share of persons registered as unemployed or participating in labour market programmes has been broadly unchanged since the June *Report*. Unemployment measured by the LFS was 4.8% in June, up from 4.7% in May. LFS unemployment has risen slightly faster than projected in the June *Report*. In the coming period, both registered unemployment and LFS unemployment are expected to remain broadly unchanged.

Over the past couple of years, capacity utilisation has fallen and has been at a lower-than-normal level. Capacity utilisation is estimated to have declined in the first half of 2016, but at a slower pace than assumed in the June *Report*. Output has risen slightly faster than expected, and growth prospects for the coming quarters have improved somewhat. Regional network contacts reported a further rise in capacity utilisation

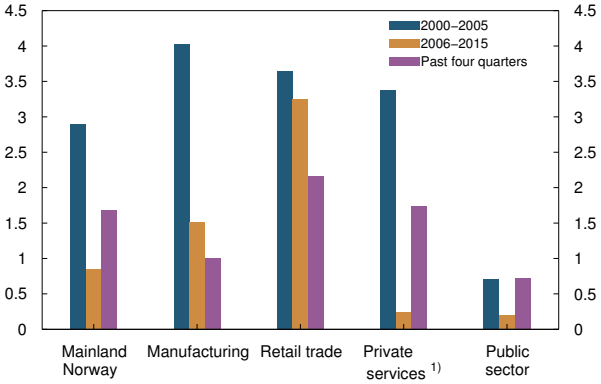
1 For a discussion of why the statistics show divergent developments, see Nordbø, E. W. (2016), "How many are unemployed?", Norges Bank *Economic Commentaries* 9/2016 (forthcoming).

Chart 1.24 Capacity and labour supply as reported by the regional network.[1)]
Percent. January 2005 – August 2016



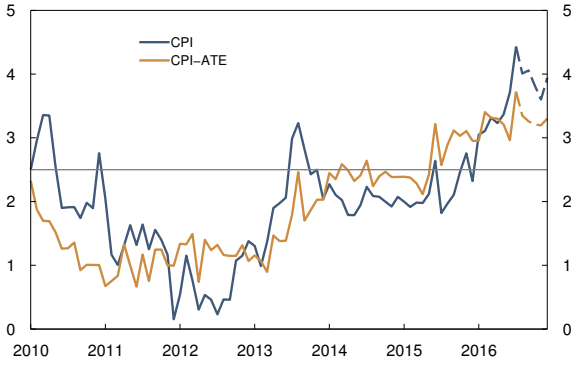
1) Share of contacts that will have some or considerable problems accommodating an increase in demand and the share of contacts reporting that production is constrained by labour supply.
Source: Norges Bank

Chart 1.25 Productivity growth in mainland Norway.
Average annual growth. Percent. 2000 Q1 – 2016 Q2



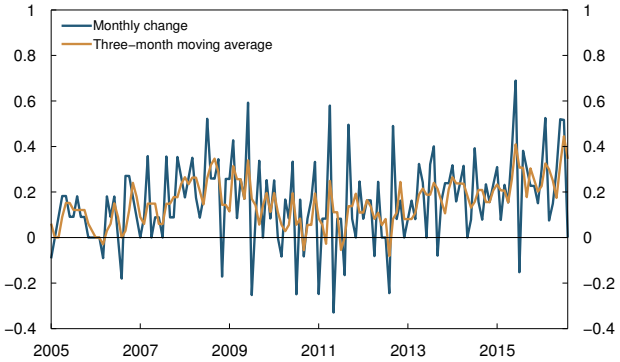
1) Except housing services and retail trade.
Sources: Statistics Norway and Norges Bank

Chart 1.26 CPI and CPI–ATE[1)].
Twelve–month change. Percent. January 2010 – December 2016[2)]



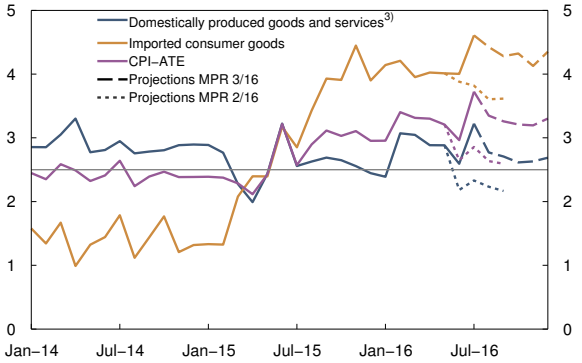
1) CPI adjusted for tax changes and excluding energy products.
2) Projections for September 2016 – December 2016 (broken lines).
Sources: Statistics Norway and Norges Bank

Chart 1.27 CPI–ATE[1].
Monthly change. Seasonally adjusted. Percent. January 2005 – August 2016



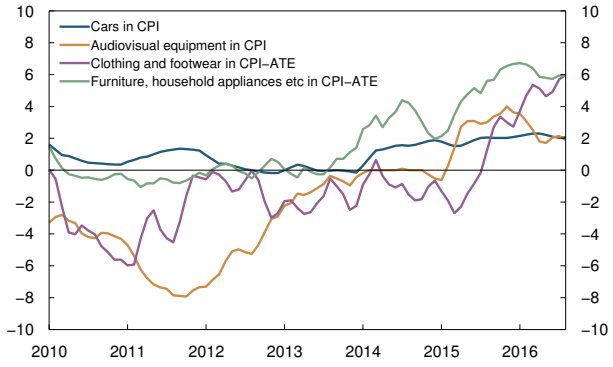
1) CPI adjusted for tax changes and excluding energy products.
Sources: Statistics Norway and Norges Bank

Chart 1.28 CPI–ATE[1] in total and by supplier sector.
Twelve–month change. Percent. January 2014 – December 2016[2]



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

Chart 1.29 CPI and CPI–ATE[1]. Product groups with high import shares.
Twelve–month change. Three–month moving average. Percent.
January 2010 – August 2016



1) CPI adjusted for tax changes and excluding energy products.
Sources: Statistics Norway and Norges Bank

in August (Chart 1.24). There was also a slight increase in the number of network enterprises reporting labour availability as a constraint on output. Registered unemployment, a key indicator in assessing capacity utilisation, has been lower than projected in the June *Report*. The wide gap between registered unemployment and LFS unemployment may indicate somewhat greater slack in the economy than registered unemployment figures in isolation suggest. In the coming quarters, capacity utilisation is projected to remain approximately unchanged, but at a higher level than projected in June.

As in many other countries, productivity growth in the Norwegian economy has been low in recent years (Chart 1.25). Nevertheless, revised national accounts figures show that productivity in the mainland economy in 2015 and in 2016 Q1 was considerably higher than previously assumed. In Q2, productivity was 1.7% higher than in the same quarter one year earlier. The increase was higher than projected in the June *Report*. The rise probably reflects an adaptation of firms' labour use to a lower output level and more efficient use of labour by firms whose situation has improved. In line with projections from the June *Report*, moderate growth in productivity is expected ahead.

Low wage growth

Wage growth is projected at 2.5% in 2016, unchanged from the projection in the June *Report*. In most of the spring wage settlements, the partners reached an agreement within the wage norm for manufacturing of 2.4%. In August, regional network contacts expected wage growth of 2.4% in 2016, slightly higher than they anticipated in May. According to Epinion's expectations survey for Q3, the social partners expect wage growth of 2.7% in 2016, up 0.3 percentage point from Q2. Consumer price inflation has increased in recent months, which indicates that wage growth will be somewhat higher than the norm applied in the wage settlements. The projections imply a decline in real wages in 2016.

Higher inflation

Inflation has increased and been higher than projected in the June *Report*. In August, the year-on-year rise in consumer prices (CPI) was 4.0%, while the rise in consumer prices adjusted for tax changes and excluding energy products (CPI-ATE) was 3.3% (Chart 1.26). CPI-ATE inflation has shown wide monthly variation in recent months (Chart 1.27).

The unexpectedly high rate of inflation through summer may be partly ascribable to temporary conditions, partly owing to lower-than-usual promotional activity in some sectors. Other factors driving inflation are likely to persist somewhat longer. The krone depreciation in recent years has pulled up inflation as a result of both higher prices for imported consumer goods and for imported input goods. It would appear that the pass-through from the krone depreciation has been stronger than assumed earlier. New national accounts figures, which show that unit labour costs have been lower than assumed earlier, would support this assessment.

The year-on-year rise in prices for domestically produced goods and services was 2.8% in August, down from 3.2% in July. The rise in prices was higher than projected in June, and the projections for the period ahead have also been revised up (Chart 1.28). The upward revision of the projections partly reflects the assumption of a stronger exchange rate pass-through to domestically produced goods and services than previously anticipated. In addition, high CPI inflation may itself contribute to keeping inflation elevated for longer, partly because many contracts contain clauses whereby prices may or must be adjusted in pace with CPI inflation.[2] Domestically driven inflation is nevertheless expected to recede gradually. This must be seen in the light of a long period of moderate wage growth and slack in the Norwegian economy.

The year-on-year rise in prices for imported goods was 4.4% in August, down from 4.6% in July (Chart 1.28) and has been higher than projected in the June *Report*. The high rise in prices reflects the krone depreciation in recent years. The krone has appreciated again so far in 2016, which may eventually dampen imported goods inflation. For some product groups with high import shares, the rise in prices has already begun to decline (Chart 1.29). External price impulses to imported consumer goods are projected to be weaker in 2016 than in 2015 (Chart 1.30), but the projection for 2016 has been revised up somewhat since June. The year-on-year rise in prices for imported goods is projected at a little more than 4.0% in the coming months. The projections are higher than in the June *Report*, primarily reflecting higher-than-expected inflation.

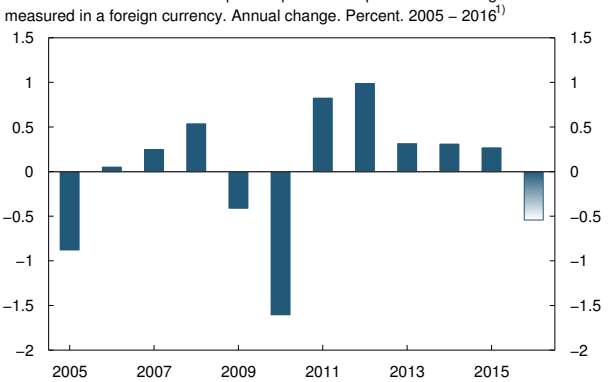
2 This applies to many home rental leases, which are regulated by the Tenancy Act. For more about the relationship between the CPI and home rental leases, see eg Erlandsen, S. K., P. B. Ulvedal and N. H. Vonen (2016), "Effects of revised methodology for calculating the CPI", Norges Bank *Staff Memo* 10/2016.

Year-on-year CPI-ATE inflation is projected to edge down and remain somewhat above 3.0% through autumn. The projections are higher than in the June *Report* and consistent with the projections from SAM (Chart 1.31). A majority of regional network contacts in household-oriented sectors also expect inflation to abate ahead. In the light of the considerable variability in inflation over the past months, the range of inflation outcomes in the period ahead seems to be wider than usual.

Higher house price inflation

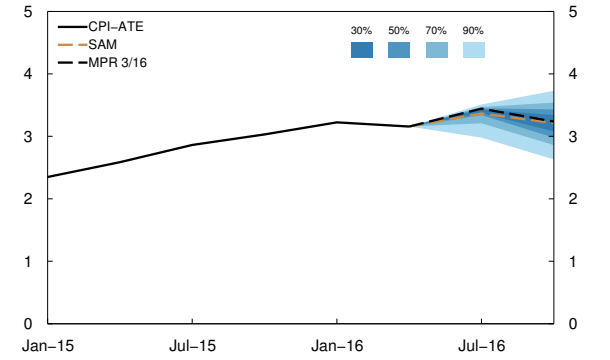
House price inflation has risen in recent months and has been higher than projected in the June *Report*. In August, the year-on-year rise was 9.1%. Growth in household credit has been fairly stable so far in 2016. In July, year-on-year growth was 5.8%, approximately as expected in the June *Report*. Developments in house prices and household debt are discussed further in Section 3.

Chart 1.30 Indicator of external price impulses to imported consumer goods measured in a foreign currency. Annual change. Percent. 2005 – 2016[1)]



1) Projections for 2016 (shaded).
Sources: Statistics Norway, Thomson Reuters and Norges Bank

Chart 1.31 CPI–ATE[1)]. Actual path, baseline scenario and projections from SAM with fan chart. Four–quarter change. Percent. 2015 Q1 – 2016 Q4 [2)]



1) CPI adjusted for tax changes and excluding energy products.
2) Projections for 2016 Q3 – 2016 Q4 (broken lines).
Sources: Statistics Norway and Norges Bank

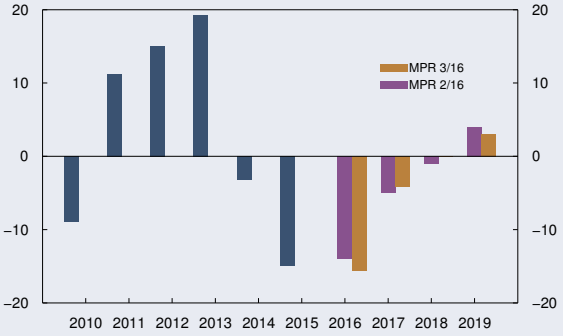
PROJECTIONS FOR PETROLEUM INVESTMENT

After rising substantially between 2003 and 2013, investment on the Norwegian continental shelf has declined markedly. While petroleum investment fell by about 3% in 2014, it decreased by 15% in 2015 (Chart 1.32). In the first half of 2016, investment was almost 20% lower than in the same period in 2015. The decline reflects the considerable reduction in petroleum industry profitability, both as a result of the substantial fall in oil and gas prices in 2014 and 2015 and of high cost growth in the industry in the preceding years. Lower profitability has resulted in the postponement or cancellation of a number of projects, and a number of cost-cutting measures have been implemented across the industry.

The investment intentions survey for Q3 and national accounts figures indicate that petroleum investment will fall somewhat more in 2016 than projected in the June *Report*. Investment is now projected to fall by more than 15% in 2016 and by about 4% in 2017. Thereafter, investment is expected to level off in 2018, followed by a moderate increase in 2019. Investment projections for exploration and fields in production have been revised up somewhat in the light of the investment intentions survey for Q3. At the same time, spending on field development is expected to be somewhat lower than projected in the June *Report*. Owing to the cost-cutting measures implemented in the petroleum industry, spending on some development projects, including the Johan Sverdrup project, will probably be lower than projected in June. In addition, phase two of the Johan Sverdrup project has been postponed for up to one year. The level of investment at the end of the projection period is somewhat lower than projected in the June *Report*.

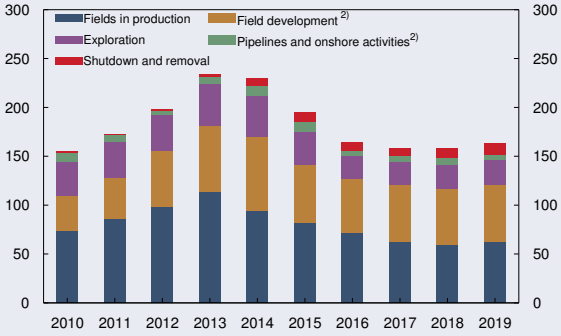
Investment in fields in production has fallen sharply in the past two years and is projected to fall by a further NOK 10bn in 2016 and NOK 12bn between 2016 and 2018 (Chart 1.33). Owing to the upgrading of several older fields, investment in fields in production was very high in 2012 and 2013. Some of the decline between 2013 and 2017 reflects the completion of major field upgrades, with no need for new

Chart 1.32 Petroleum investment.
Volume. Annual change. Percent. 2010 – 2019[1)]



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

Chart 1.33 Petroleum investment.
Constant 2016 prices. In billions of NOK. 2010 – 2019 [1)]



1) Projections for 2016 – 2019. Figures 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 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

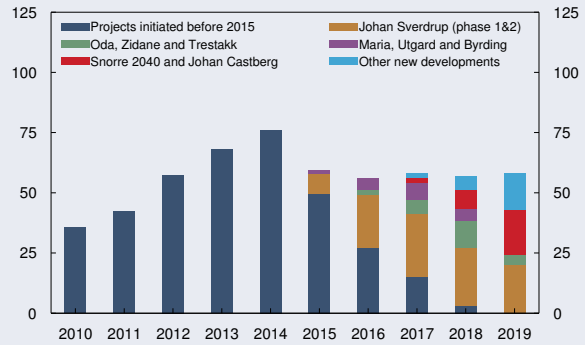
projects on that scale. Cost-cutting measures undertaken by oil companies will also reduce investment spending on fields in production in the period to 2018. Investment in fields in production is expected to edge up again towards the end of the projection period as a number of projects will likely be profitable after costs have been reduced.

Spending on field development was very high in 2013 and 2014, owing to several large project starts 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 to 2018. This reduces petroleum investment considerably between 2015 and 2018 (Chart 1.34). The decline will be dampened by the development of the Johan Sverdrup, Maria and some minor fields. Field development projections are based on the assumption that the development of the Zidane, Trestakk and Oda (Butch) fields will commence in the course of 2016. It is also assumed that the Snorre 2040 project and the Johan Castberg development will start towards the end of 2017. Phase two of the Johan Sverdrup development will likely be sanctioned in the second half of 2018. Several other development projects, such as Snilehorn, Pil and Bue, Skarfjell and Fogelberg may also commence between 2017 and 2019. Overall field development spending is projected to be somewhat lower in 2016 and the coming years than in 2015.

There was a marked decline in exploration activity in 2015. Exploration investment is projected to fall by a further NOK 11bn in 2016, in line with the investment intentions survey for Q3. Lower drilling costs and higher oil and gas prices ahead are expected to lead to some rebound in exploration activity in the years ahead.

The projections for oil investment in this *Report* are based on the assumption that spot prices for oil and gas will move in line with futures prices in the coming years (Chart 1.4) and show a further rise thereafter.

Chart 1.34 Field development.
Constant 2016 prices. In billions of NOK. 2010 – 2019 [1)]



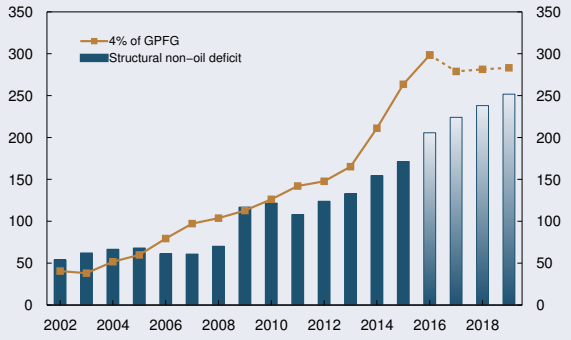
1) Projections for 2016 – 2019 and for the breakdown of investment in 2015. Figures for total development investments for 2010 – 2015 are from the investment intentions survey by Statistics Norway and deflated by the price index for petroleum investment in the national accounts. The projections are based on reports to the Storting, impact analyses, forecasts from the Norwegian Petroleum Directorate, the investment intention survey by 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

ASSUMPTIONS CONCERNING FISCAL POLICY

The fiscal policy assumptions in this *Report* are based on the revised budget for 2016. As in the June *Report*, oil revenue spending measured by the structural non-oil deficit is assumed to be NOK 206bn in 2016 (Chart 1.35). The structural deficit is around 7.5% of trend GDP for mainland Norway in 2016, an increase of 1.1 percentage points from 2015 (Chart 1.36). The change in this share is used as a simple measure of the effect of the budget on demand for goods and services. Since the fiscal rule was introduced in 2001, the average annual change in this share has been 0.35 percentage point.

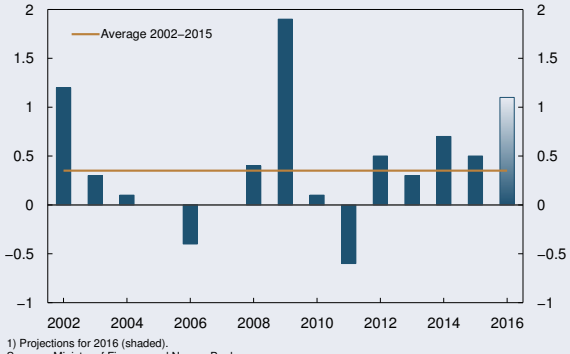
In the revised budget, it was assumed that Norway would receive 25 000 asylum-seekers in 2016, down from 31 000 in 2015. The immigration authorities have subsequently revised down the estimate to 10 000 applications. This estimate now also seems relatively high. So far this year, a little more than 2 000 persons have sought asylum in Norway. If the inflow of asylum-seekers remains low, growth in public spending in 2016 may be lower than expected.

Chart 1.35 Structural non–oil deficit and 4% of the Government Pension Fund Global (GPFG). Constant 2016 prices. In billions of NOK. 2002 – 2019 [1)]



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

Chart 1.36 Change in structural non–oil deficit.
As a percentage of trend GDP for mainland Norway. 2002 – 2016 [1)]



1) Projections for 2016 (shaded).
Sources: Ministry of Finance and Norges Bank

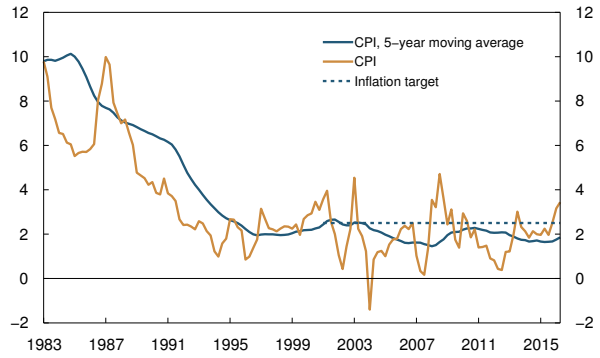
In recent years, petroleum revenue spending has risen at a relatively rapid pace. Growth in petroleum revenue spending is projected to slow ahead. From 2018, the technical assumption is applied that the annual change in the structural deficit, measured as a share of trend GDP for mainland Norway, will return to its historical average of 0.35 percentage point. In 2017, this figure may be somewhat higher, at 0.5 percentage point, owing to prospects for relatively strong spending growth and tax reductions, effective from 2016, that will not be recorded as a reduction in government income until 2017.

Growth in public sector demand is projected at 2.7% in 2016 and 2.6% in 2017, slowing to 1.8% in 2018 and 2019. The projections for the years ahead are approximately unchanged from the June *Report*, but owing to lower-than-projected growth in public spending so far in 2016, the growth projection for 2016 has been revised down somewhat. In line with the white paper on taxation and the tax compromise by the Storting, further tax reductions are assumed, although net reductions per year are expected to be lower than in the 2016 budget.

The structural non-oil deficit in 2016 is equivalent to 2.8% of the value of the Government Pension Fund Global (GPFG) at the beginning of the year. With the technical assumptions described above, the deficit as a share of the value of the GPFG will increase ahead, and in 2019 the structural non-oil deficit may reach 3.5% of the value of the GPFG.

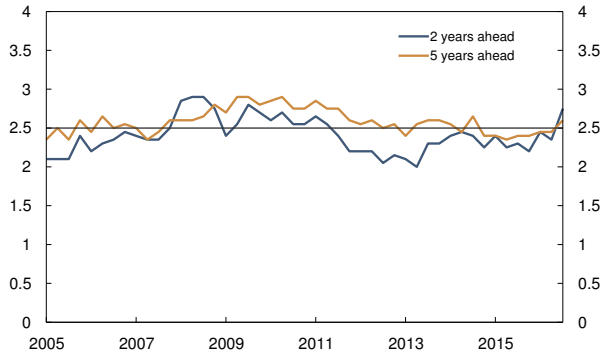
2 MONETARY POLICY OUTLOOK

Chart 2.1 Consumer price index.
Four–quarter change. Percent. 1983 Q1 – 2016 Q2



Sources: Statistics Norway and Norges Bank

Chart 2.2 Expected consumer price inflation 2 and 5 years ahead.[1)]
Percent. 2005 Q1 – 2016 Q3



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

Chart 2.3 Regional network's indicator for output growth.
Annualised. Percent. January 2005 – February 2017[1)]

1) Reported output growth past three months (solid line) and expected output growth next six months (broken line).
Source: Norges Bank

Monetary policy trade-offs

Monetary policy is geared towards keeping inflation low and stable. The operational target of monetary policy is annual consumer price inflation of close to 2.5% over time. Over the past 15 years, inflation has on average been around 2%. This is close to the inflation target (Chart 2.1). Inflation expectations, as implied by expectations surveys, have increased a little recently, but 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 conditions that imply a risk of particularly adverse outcomes for the economy and of uncertainty regarding the functioning of the economy. A robust monetary policy should contribute to preventing the build-up of financial imbalances. Uncertainty concerning the effects of monetary policy normally suggests a cautious approach to interest rate setting. This could reduce the risk of unintended consequences of monetary policy. In situations where the risk of particularly adverse outcomes is pronounced, it may in some cases be appropriate to pursue a more active monetary policy than normal.

In the wake of the decline in oil prices since summer 2014, the key policy rate has been reduced in several steps. An expansionary monetary policy has contributed to softening the downturn and to facilitating structural adjustments in the Norwegian economy, partly by supporting the depreciation of the krone exchange rate. At the same time, international interest rates have declined, and the interest rate level that is necessary for monetary policy to have an expansionary effect has probably declined (see Special Feature on page 51)

The analysis in the June 2016 Report

The analysis in the June 2016 *Monetary Policy Report* implied a decline in the key policy rate to about ¼% at the end of 2016. The key policy rate was projected to increase to ¾% towards the end of the projection period. With this path for the key policy rate, there were prospects that inflation would recede in the coming years. Inflation was projected to be between 1.5% and 2% in 2019. Capacity utilisation was lower than normal and was expected to show a small decline in the period to autumn 2017, edging up thereafter.

Forecast for the key policy rate somewhat higher

Growth in the Norwegian economy has been slightly higher than projected in the June *Report*, and the growth outlook seems to be somewhat more favourable than in June. In August, Norges Bank's regional network contacts reported increased growth in output and they expect a further increase ahead (Chart 2.3). Registered unemployment has declined and been lower than projected. Consumer confidence has improved, and house prices have risen more than expected. This may support growth in private consumption and investment. On the other hand, the krone has appreciated and growth prospects for Norway's trading partners are somewhat weaker than anticipated in the June *Report*. This may act as a drag on exports. Expected policy rates abroad have come down a little, while Norwegian money market rates have been higher than anticipated in June. Capacity utilisation in the Norwegian economy is still lower than normal, but seems to be at a higher level than envisaged in the June *Report*.

Inflation has been higher than projected in the June *Report*. The pass-through from a weaker krone to consumer prices may have been stronger than foreseen. At the same time, there is reason to believe that the unexpectedly high rate of inflation in recent months is to some extent attributable to temporary conditions that will reverse. Looking ahead, inflation may recede as the effects of the krone depreciation dissipate. Low cost growth and lower capacity utilisation than normal may also curb the rise in consumer prices.

A technical model-based interpretation of new information since the June *Report* is illustrated in the box on page 30. With an unchanged key policy rate path, this analysis suggests that capacity utilisation will be higher through the entire projection period than envisaged in June. According to the analysis, inflation will recede from the end of 2016, but remain higher than projected in June throughout the projection period.

The assessment of the trade-offs takes into account that low interest rates could contribute to a persistently high rate of increase in house prices and increase the vulnerability of the financial system. When the key policy rate is close to a lower bound, the uncertainty surrounding the effects of monetary policy increases. This suggests proceeding with greater caution in interest rate setting and reacting somewhat less to news that changes the economic outlook, whether the news pulls in the direction of a lower or higher key policy rate (see box on page 32).

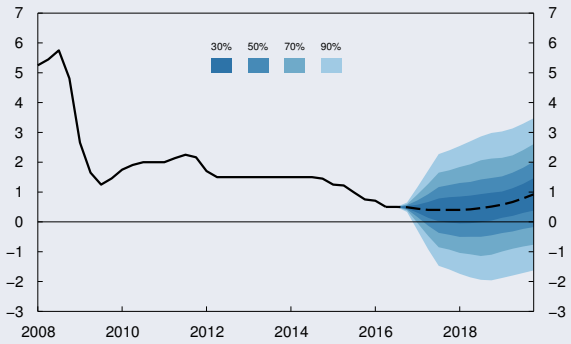
The analyses in this *Report* imply a forecast where the key policy rate will remain close to ½% in the coming years. At the same time, the forecast implies a slightly higher probability of a decrease than an increase in the key policy rate in the year ahead. The key policy rate is projected to increase to just below 1% towards the end of the projection period (Charts 2.4 a-d). The key policy rate forecast is somewhat higher than in the June *Report*. The box on page 34 provides a further description of the factors behind changes in the key policy rate forecast.

The upward adjustment of the projections for the money market premium pushes up the projections for money market rates somewhat more than the projected path for the key policy rate (Chart 2.5). Banks' lending margins are expected to increase somewhat as the Nibor premium edges down. Banks' lending margins are nonetheless expected to be lower in the coming years than assumed in the June *Report*, partly owing to a decline in risk premiums on banks' new long-term wholesale funding and the projection that these premiums will remain at today's level to the end of the projection period. In addition, the level of lending margins further out has been reassessed. The projections for lending rates have thus been revised up to a lesser extent than implied in isolation by the increase in the projected path for the key policy rate and money market premiums.

Higher inflation and capacity utilisation

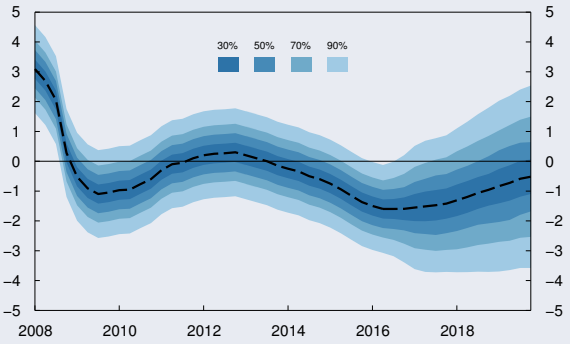
The analyses suggest that inflation will recede from the end of 2016, but remain higher than projected earlier throughout the projection period. As the effects of the krone depreciation dissipate and the krone gradually appreciates, inflation is expected to abate. A somewhat stronger krone than projected in June may in isolation entail a slightly faster-than-expected decline in inflation. In the light of prospects for higher capacity utilisation and higher nominal wage growth in the coming years, the rise in prices for domestically produced goods and services is projected to be higher than in the June *Report*. The

Chart 2.4a Projected key policy rate in the baseline scenario with fan chart.[1]
Percent. 2008 Q1 – 2019 Q4[2]



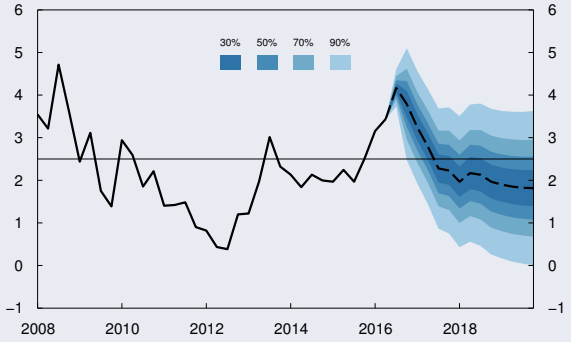
1) The fan charts are based on historical experience and stochastic simulations in our main macroeconomic model, NEMO. The fan chart for the key policy rate does not take into account that a lower bound for the interest rate exists.
2) Projections for 2016 Q3 – 2019 Q4 (broken line).
Source: Norges Bank

Chart 2.4b Projected output gap[1] in the baseline scenario with fan chart.
Percent. 2008 Q1 – 2019 Q4



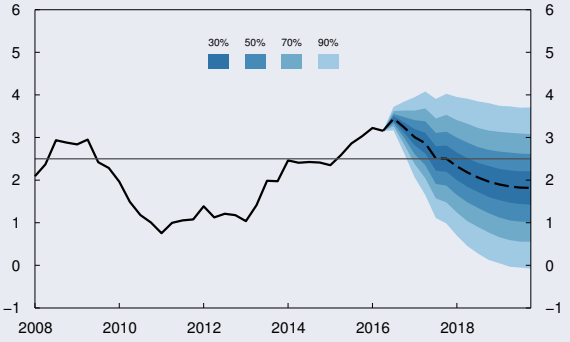
1) The output gap measures the percentage deviation between mainland GDP and projected potential mainland GDP.
Source: Norges Bank

Chart 2.4c Projected CPI in the baseline scenario with fan chart.
Four–quarter change. Percent. 2008 Q1 – 2019 Q4[1]



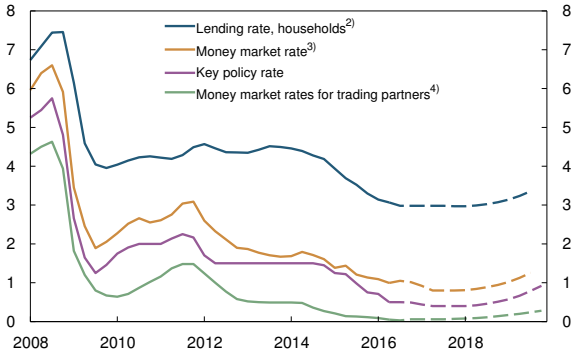
1) Projections for 2016 Q3 – 2019 Q4 (broken line).
Sources: Statistics Norway and Norges Bank

Chart 2.4d Projected CPI–ATE[1] in the baseline scenario with fan chart.
Four–quarter change. Percent. 2008 Q1 – 2019 Q4[2]



1) CPI adjusted for tax changes and excluding energy products.
2) Projections for 2016 Q3 – 2019 Q4 (broken line).
Sources: Statistics Norway and Norges Bank

Chart 2.5 Interest rates in the baseline scenario.
Percent. 2008 Q1 – 2019 Q4 [1]



1) Projections for 2016 Q3 – 2019 Q4 (broken lines).
2) Average interest rate on all loans to households from banks and covered bond companies.
3) 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.
4) The aggregate for trading partner interest rates is described in *Norges Bank Memo* 2/2015.
Sources: Statistics Norway, Thomson Reuters and Norges Bank

rise in consumer prices adjusted for tax changes and excluding energy products (CPI-ATE) is projected to lie between 3% and 3.5% in the latter half of 2016, gradually receding to somewhat below 2% towards the end of the projection period.

Capacity utilisation in the mainland economy is lower than normal, but is assessed to be higher than in the June *Report*. Capacity utilisation is expected to stay at today's level in the near term before gradually rising in the coming years. Capacity utilisation is projected to remain higher than the June projection throughout the projection period. Even though productivity growth has increased and been higher than expected, growth in trend productivity is still projected to stay

low in the coming years (see Special Feature on page 52 in the June 2016 *Monetary Policy Report*).

Slightly higher growth and lower unemployment

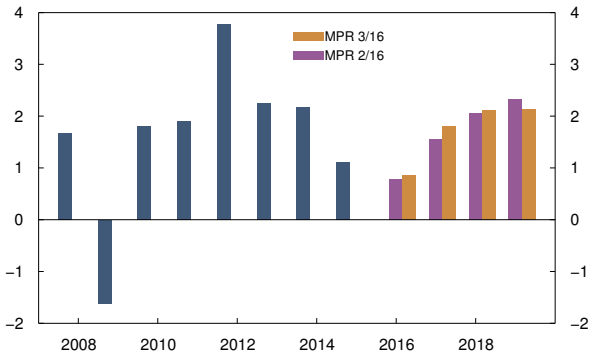
Although growth has picked up in recent quarters, it appears that annual GDP growth for mainland Norway will be slightly lower in 2016 than in 2015 (Chart 2.6). Growth is expected to pick up in the coming years as the negative contribution from petroleum investment diminishes (Chart 2.7) and investment starts to rebound. The spillover effects from lower oil prices will also fade with time. Mainland GDP growth is projected to pick up gradually throughout the projection period, with growth expected to be somewhat higher in the first years than projected in the June *Report*.

Registered unemployment is projected to remain at today's level in the period ahead, and is no longer expected to move up. Later in the projection period, unemployment is expected to show a very gradual decline. The projections are lower than in the June *Report* throughout the projection period (Chart 2.8). Measured by the Labour Force Survey (LFS), unemployment also shows a decline in the coming years. In the light of the fact that the divergence in unemployment as measured by the LFS and by the Norwegian Labour and Welfare Administration (NAV) has been considerable for such a long period, it may be that the wide gap will persist somewhat longer than previously assumed. LFS unemployment is therefore expected to decline a little more slowly than in the June *Report*. After a period of weak developments, employment is expected to pick up and grow at a somewhat faster pace in the coming years than projected in the June *Report*. Growth in the labour force is expected to be lower in 2016 than in 2015, followed by a gradual pick-up in growth thereafter. Reduced inflows of asylum-seekers will after a period lead to slightly slower population growth than projected earlier. Against this background, there are also prospects that the labour force will expand somewhat more slowly towards the end of the projection period than previously assumed.

Higher wage growth in the coming years

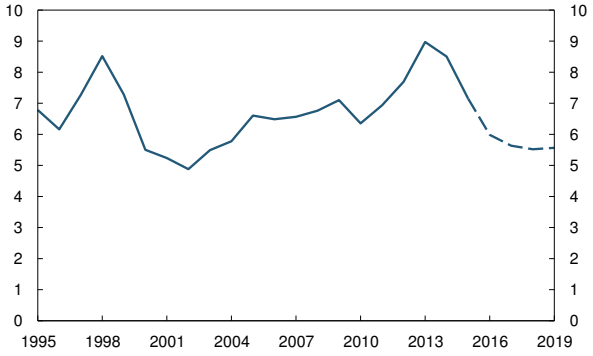
Norway's terms of trade have declined in pace with the fall in oil prices. Between 2016 Q1 and Q2, the terms of trade improved a notch, but the level is still

Chart 2.6 GDP for mainland Norway.
Annual change. Percent. 2008 – 2019 [1)]



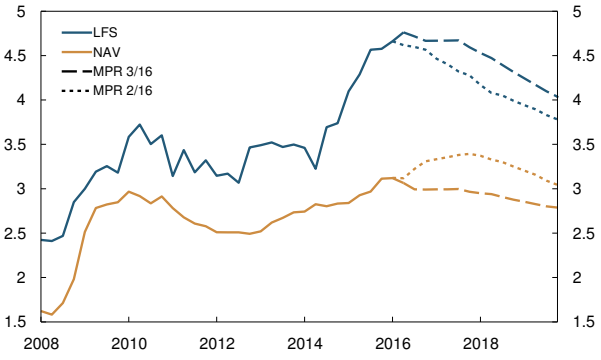
1) Projections for 2016 – 2019.
Sources: Statistics Norway and Norges Bank

Chart 2.7 Petroleum investment as a share of GDP for mainland Norway.
Percent. 1995 – 2019 [1)]



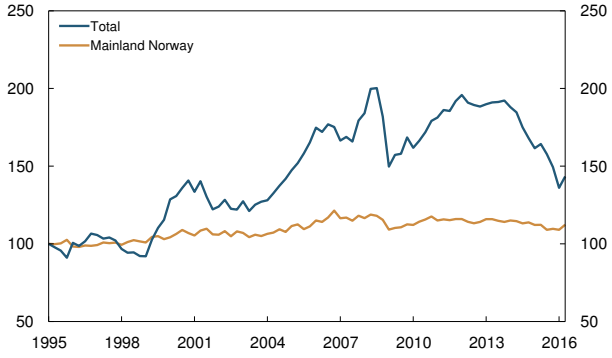
1) Projections for 2016 – 2019 (broken line).
Sources: Statistics Norway and Norges Bank

Chart 2.8 Unemployment as a share of the labour force. LFS[1)] and NAV[2)].
Seasonally adjusted. Percent. 2008 Q1 – 2019 Q4 [3)]



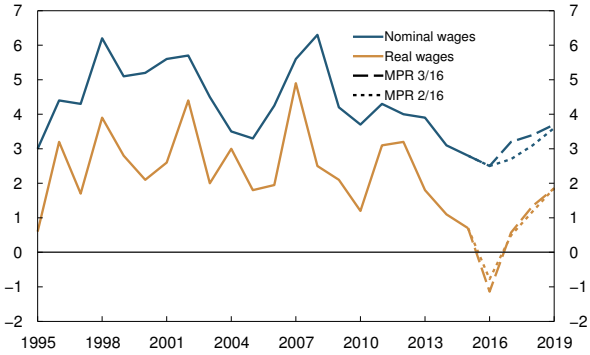
1) Labour Force Survey.
3) Norwegian Labour and Welfare Administration.
2) Projections for 2016 Q3 – 2019 Q4 (broken lines).
Sources: Norwegian Labour and Welfare Administration (NAV), Statistics Norway and Norges Bank

Chart 2.9 Terms of trade.
Seasonally adjusted. Index. 1995 Q1 = 100. 1995 Q1 – 2016 Q2



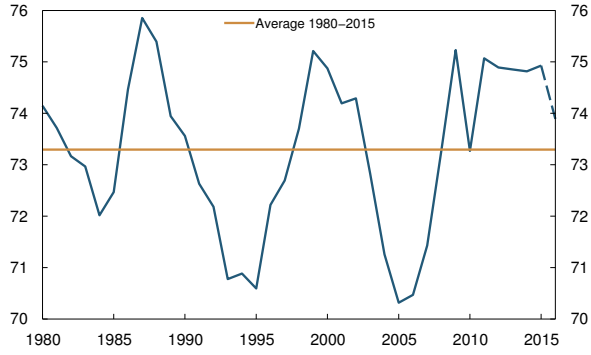
Sources: Statistics Norway and Norges Bank

Chart 2.10 Wages.
Annual change. Percent. 1995 – 2019[1)]



1) Projections for 2016 – 2019 (broken lines).
Sources: Norwegian Technical Calculation Committee for Wage Settlements (TBU), Statistics Norway, and Norges Bank

Chart 2.11 Labour cost share for mainland Norway.[1)] Percent. 1980 – 2016[2)]



1) Compensation of employees as percentage of factor income.
2) Projections for 2016 (broken line).
Sources: Statistics Norway and Norges Bank

low compared with the level prevailing over the past decade (Chart 2.9). Wage growth, both in the petroleum sector and the broader Norwegian economy, has moderated in recent years in tandem with the decline in the petroleum industry. As in the June *Report*, wage growth is expected to be lower in 2016 than in 2015. In the coming years, wage growth is expected to show a gradual increase as economic growth and capacity utilisation pick up (Chart 2.10). For the years 2017 to 2019, the projections for nominal wage growth are higher than earlier, reflecting prospects for higher capacity utilisation and higher inflation than projected in the June *Report*. Owing to higher CPI inflation, the projections nevertheless imply weaker developments in real wages in 2016 than envisaged in June. Solid corporate profitability, partly owing to higher inflation and increased productivity growth, suggests that the labour cost share is approaching a normal level this year (Chart 2.11). This may pave the way for slightly higher real wage growth in the coming years.

Somewhat stronger-than-expected krone

The krone has appreciated since the June *Report* and is somewhat stronger than assumed in June. This must partly be seen in the light of a wider interest rate differential against other countries. Looking ahead, the krone exchange rate is expected to appreciate somewhat in pace with improved developments in the Norwegian economy and a gradual rise in oil prices. The krone is projected to remain somewhat stronger throughout the projection period than envisaged in June (Chart 2.12), partly owing to prospects for a wider interest rate differential against other countries.

Stable consumption growth and continued high saving

Growth in private consumption is projected to remain stable, on a par with growth in 2015, throughout the projection period (Chart 2.13). Partly owing to elevated inflation this year, household real income will be lower than in the June projection. Combined with prospects for a slightly higher interest rate than projected earlier, this may suggest somewhat weaker growth in household demand. On the other hand, improved consumer confidence and an improved outlook for the Norwegian economy may suggest somewhat higher growth in private consumption. Moreover, the rapid rise in house prices may give some households room for increasing consumption. On balance, households are assumed

to reduce saving between 2015 and 2016 in order to sustain growth in consumption. The projection for the saving ratio is lower than in the June *Report*, but from a historical perspective saving remains high (Chart 2.14).

Higher growth in investment

Business investment is expected to increase between 2015 and 2016 (Chart 2.15). After several years of sluggish growth, investment is at a relatively low level, which may indicate an investment upswing in the coming years. Spare capacity in the business sector is likely acting as a drag, but low interest rates and improved profitability pull in the opposite direction. A more favourable outlook for the Norwegian economy may entail a faster pick-up in investment growth than projected earlier. The projections for business investment are higher than in the June *Report*.

Housing investment is expected to show a clear upswing between 2015 and 2016. Given the rapid rise in house prices, housing investment is likely to increase at a faster pace than projected earlier. After growing at a solid pace in 2016, growth in housing investment is projected to soften gradually, but as a share of mainland GDP the level is expected to remain high also in the years ahead (Chart 2.16). The projections for growth in housing investment are somewhat higher than in June throughout the projection period.

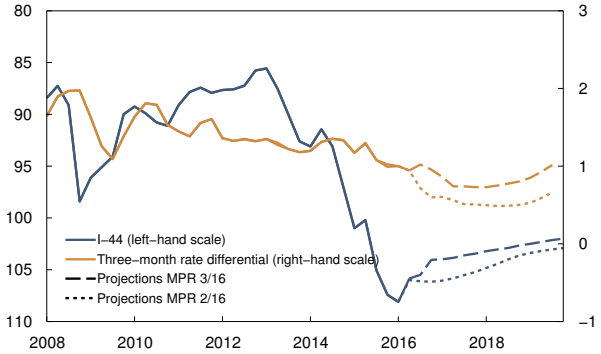
Slightly lower export growth

Exports from mainland Norway have expanded in recent years, partly reflecting improved cost competitiveness (Chart 2.17). Growth in mainland exports, excluding oil services exports, is expected to remain at broadly the same level this year as in 2015. For the years 2017 to 2019, mainland exports excluding oil services exports is expected to show a renewed rise. Somewhat weaker growth among trading partners and prospects for a slightly stronger krone will nevertheless weigh on export growth.

In the light of the global decline in the petroleum industry, exports from the oil service industry are expected to contract sharply in 2016 and continue to fall next year, while rebounding somewhat thereafter.

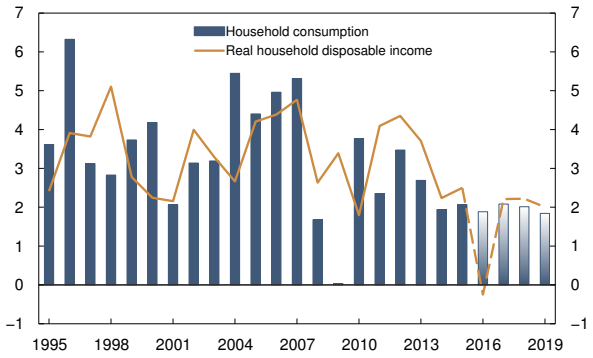
Total exports from mainland Norway are projected to fall markedly between 2015 and 2016, rising moderately in the following years (Chart 2.18). The projections for

Chart 2.12 Three–month money market rate differential between Norway[1] and trading partners[2] and import–weighted exchange rate index (I–44)[3]. 2008 Q1 – 2019 Q4[4]



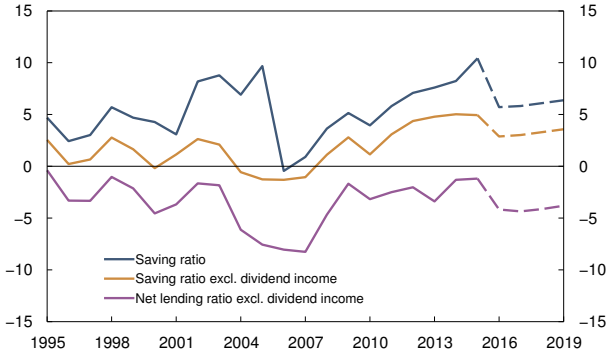
1) Key policy rate in the baseline scenario plus premiums in the Norwegian money market. The calculations are based on the assumption that announced interest rate changes are priced into the money market.
2) Forward rates for trading partners at 16 September 2016.
3) A positive slope denotes a stronger krone exchange rate.
4) Projections for 2016 Q3 – 2019 Q4 (broken lines).
Sources: Thomson Reuters and Norges Bank

Chart 2.13 Household consumption[1] and real disposable income[2]. Annual change. Percent. 1995 – 2019[3]



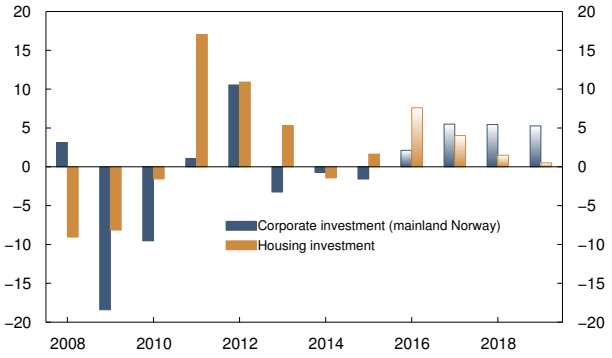
1) Includes consumption for non–profit organisations. Volume.
2) Excluding dividend income. Including income for non–profit organisations. Deflated by CPI.
3) Projections for 2016 – 2019 (broken line and shaded bars).
Sources: Statistics Norway and Norges Bank

Chart 2.14 Household saving and net lending as a share of disposable income. Percent. 1995 – 2019[1]



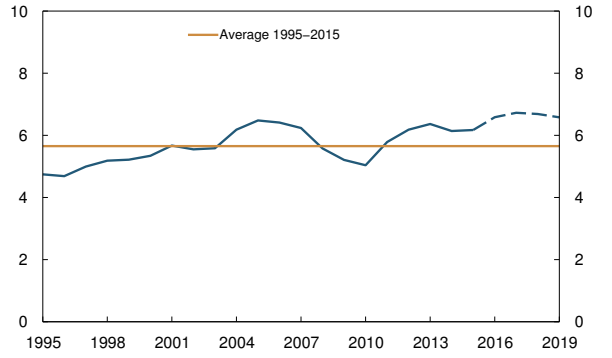
1) Projections for 2016 – 2019 (broken lines).
Sources: Statistics Norway and Norges Bank

Chart 2.15 Private investment.
Annual change. Percent. 2008 – 2019 [1)]



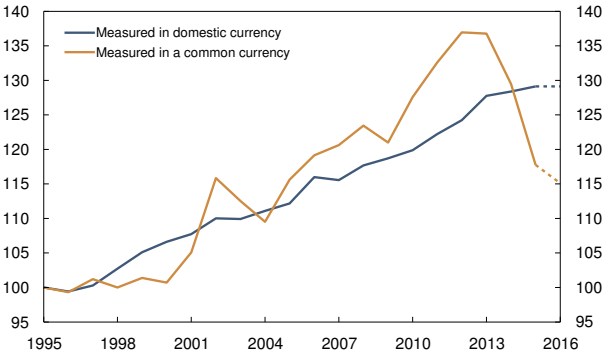
1) Projections for 2016 – 2019 (shaded bars).
Sources: Statistics Norway and Norges Bank

Chart 2.16 Housing investment as a share of GDP for mainland Norway.
Pecent. 1995 – 2019 [1)]



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

Chart 2.17 Norwegian labour costs relative to trading partners' labour costs.[1)]
Index. 1995 = 100. 1995 – 2016 [2)]



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

exports are lower than in the June *Report* throughout the projection period. The projections take into account that a share of expenditure on asylum-seekers is classified as exports in the national accounts.

Higher projected rise in house prices and debt

The projections for house prices and household debt are higher than in the June *Report*. See Section 3 for a further description.

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 effects 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. If the economic outlook changes or if the relationships between the interest rate level, inflation and the real economy differ from those assumed, the interest rate forecast may be adjusted. The effects of monetary policy are particularly uncertain when the key policy rate is close to a lower bound.

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 probability band for the key policy rate does not take into account the existence of a lower bound for the interest rate.

Since the June *Report*, consumer price inflation has been higher than projected. Consumer price inflation tends to vary widely through the summer months, and an abrupt change in inflation from one month to the next has often been followed by a pronounced movement in the opposite direction. The range of inflation outcomes in the period ahead seems to be wider than usual. Prices may increase to a further extent or inflation may remain elevated longer than projected in this *Report*. This may occur if higher inflation this year leads to higher wage growth next year than currently envisaged. On the other hand, inflation may abate to a further extent than currently envisaged if wage growth proves to be lower than assumed in this *Report*. This may prove to be the case if wage growth is restrained in the interest of cost competitiveness.

The gap between registered unemployment and unemployment measured by the LFS has continued to widen since the June *Report*, adding to the uncertainty associated with the assessment of capacity utilisation as the two measures of employment give different indications of the degree of slack in the economy. Developments in registered unemployment indicate that capacity utilisation is higher than currently projected, while unemployment measured by the LFS indicates that it is lower.

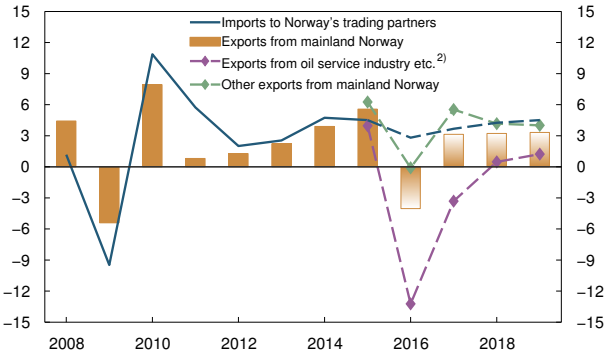
The UK's vote to leave the EU has heightened the uncertainty about developments ahead among Norway's trading partners. It is notably uncertain how UK businesses and households will behave pending clarification of the country's future ties to the EU. There is a wide range of possible outcomes, and UK growth may slow to a further extent than projected in this *Report* or it may turn out to be considerably stronger. The growth prospects for some European countries may worsen further if write-downs of non-performing loans in the banking sector lead to financial market turbulence. Debt levels are high in China and there is considerable surplus capacity in some manufacturing segments. A fall in investment through summer has again fuelled uncertainty about China's growth potential ahead.

Cross-checks of the key policy rate forecast

Forward rates in the money and bond markets can function as a cross-check of the key policy rate forecast. Estimated forward rates have increased somewhat since the June *Report*, particularly in the first part of the projection period. These interest rates are close to Norges Bank's projection for money market rates in this *Report* throughout the projection period (Chart 2.19).

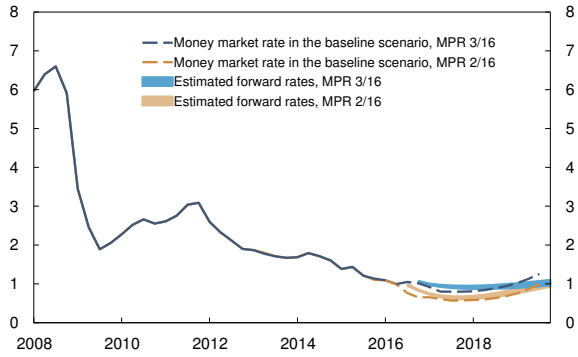
A simple rule based on Norges Bank's previous interest rate setting is also a cross-check of the baseline key policy rate. Chart 2.20 shows such a rule, where the key policy rate is determined by developments in inflation, wage growth, mainland GDP and foreign interest rates. The interest rate in the previous period is also taken into account. The model parameters are estimated on historical data from 1999 to the present. The projections are based on the estimates for the variables included in this *Report* up to and including 2016 Q4. Model uncertainty is expressed by the blue band. The chart shows that the baseline key policy rate is in the lower part of the band.

Chart 2.18 Exports from mainland Norway and imports to Norway's trading partners. Annual change. Percent. 2008 – 2019[1)]



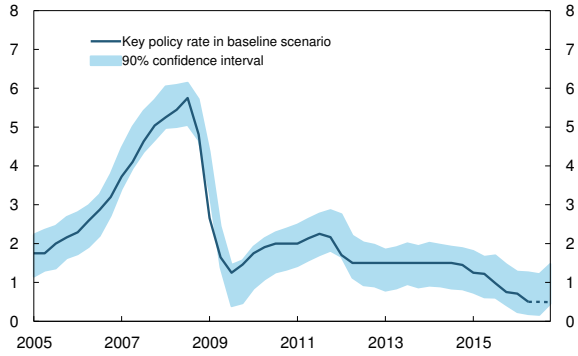
1) Projections for 2016 – 2019 (broken lines and shaded bars).
2) Groups of goods and services in the national accounts where the oil service industry accounts for a considerable share of exports.
Sources: Statistics Norway, Thomson Reuters and Norges Bank

Chart 2.19 Three–month money market rate in the baseline scenario[1)] and estimated forward rates[2)]. 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 6 – 17 June 2016 and 5 – 16 September 2016, respectively.
Sources: Thomson Reuters and Norges Bank

Chart 2.20 Key policy rate and interest rate path that follows from Norges Bank's average pattern of interest rate setting.[1)] Percent. 2005 Q1 – 2016 Q4[2)]



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 – 2016 Q2. See Norges Bank *Staff Memo* 3/2008 for further discussion.
2) Projections for 2016 Q3 – 2016 Q4 (broken line).

Source: Norges Bank

TECHNICAL MODEL-BASED INTERPRETATION OF NEW INFORMATION

In its conduct of monetary policy, Norges Bank responds to changes in the economic outlook, or if the relationships between the interest rate level, inflation and the real economy prove to differ from those previously assumed. If economic developments are broadly in line with our projections, households and enterprises can expect the key policy rate to be set approximately in line with the interest rate path. Monetary policy will respond to changes in the economic outlook or our understanding of the economy.

Charts 2.21 a-c show the results of a technical model-based analysis where new information and new projections for economic developments[1] are incorporated into our macroeconomic model NEMO, but where the interest rate path is kept unchanged from the June 2016 *Monetary Policy Report*.[2]

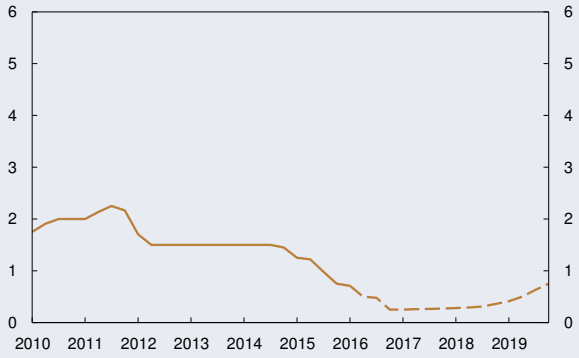
According to the model-based analysis, capacity utilisation will be higher than projected in the June *Report* throughout the projection period (Chart 2.21 b). Registered unemployment has been lower than expected, and capacity utilisation is now estimated to be higher than projected in June, partly reflecting prospects for somewhat higher growth in demand than in June.

With an unchanged path for the key policy rate, new information indicates that inflation will abate from the

1 For exogenous variables, projections for the entire projection period have been incorporated (such as external growth, inflation abroad, foreign policy rates, oil investment and fiscal policy). For endogenous variables, projections up to and including 2016 Q4 have been incorporated (see discussion on projections for near-term economic developments in Section 1).

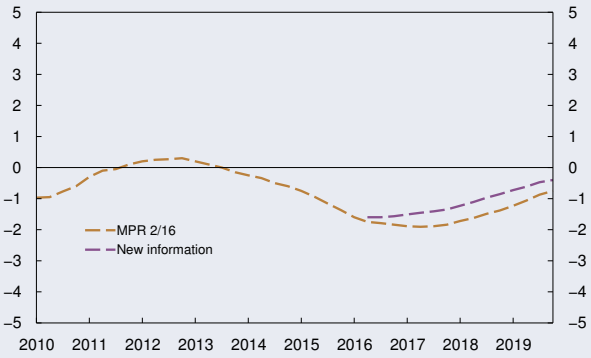
2 In order to ensure that the path for the key policy rate in this model analysis is unchanged compared with the path in the previous *Report*, the model has been exposed to a set of monetary policy shocks.

Chart 2.21a Key policy rate in the baseline scenario MPR 2/16.
Percent. 2010 Q1 – 2019 Q4 [1)]



1) Projections from 2016 Q2 – 2019 Q4 (broken lines).
Source: Norges Bank

Chart 2.21b Projected output gap. MPR 2/16 and with new information, but conditional on the key policy rate in the baseline scenario from MPR 2/16.
Percent. 2010 Q1 – 2019 Q4

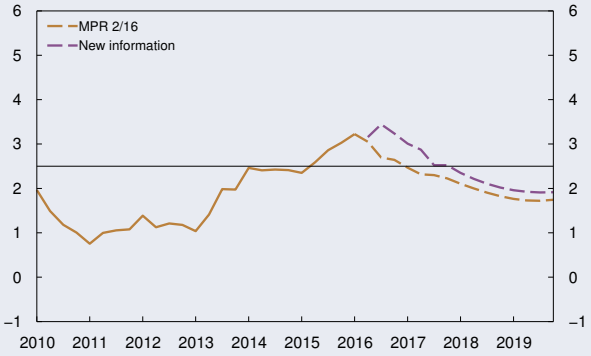


Source: Norges Bank

end of 2016, but remain higher than projected in June throughout the projection period (Chart 2.21 c). This reflects higher-than-projected inflation in recent months and prospects for higher wage growth in 2017 than envisaged in the June *Report*.

The model analysis does not take account of how the risk of a build-up of financial imbalances could affect inflation, output and employment over time. In addition, the effects of monetary policy are uncertain, particularly when the policy rate is close to a lower bound. These factors are taken into consideration in the Bank's overall judgement of monetary policy.

Chart 2.21c CPI–ATE[1]. MPR 2/16 and with new information, but conditional on the key policy rate in the baseline scenario from MPR 2/16. Four–quarter change. Percent. 2010 Q1 – 2019 Q4[2]



1) CPI adjusted for tax changes and excluding energy products.
2) Projections for 2016 Q3 – 2019 Q4 (broken lines).
Sources: Statistics Norway and Norges Bank

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.

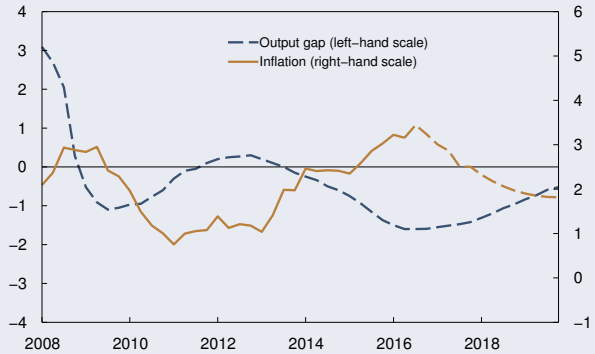
2. *The inflation targeting regime is flexible:*
   The interest rate path should provide a reasonable balance between the path for inflation and the path for capacity utilisation in the economy.

3. *Monetary policy is robust:*
   The interest rate path should take account of conditions that imply a risk of particularly adverse economic outcomes and of uncertainty surrounding the functioning of the economy. A build-up of financial imbalances may increase the risk of sudden shifts in demand further out. A robust monetary policy should therefore seek to mitigate the risk of a build-up of financial imbalances. Uncertainty surrounding the effects of monetary policy normally suggests a cautious approach to interest rate setting. This may reduce the risk that monetary policy will have unintended consequences. In situations where the risk of particularly adverse outcomes is substantial, or where confidence in the nominal anchor is in jeopardy, it may be appropriate in some cases to pursue 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 remains close to ½% in the coming years. At the same time, the forecast implies a slightly higher probability of a decrease than an increase in the key policy rate in the year ahead. The key policy rate is projected to increase to just below 1% towards the end of the projection period. The forecast indicates a decline in inflation in the coming years (Chart 2.22).

Chart 2.22 Inflation[1] and projected output gap in the baseline scenario.
Percent. 2008 Q1 – 2019 Q4[2]



1) CPI adjusted for tax changes and excluding energy products (CPI–ATE). Four–quarter change.
2) Projections for 2016 Q3 – 2019 Q4 (broken lines).
Sources: Statistics Norway and Norges Bank

Inflation is projected to be somewhat below 2% towards the end of the projection period. Capacity utilisation in the mainland economy is projected to remain at today's level in the coming period, followed by a gradual rise in the ensuing years.

The analyses in this *Report* indicate that inflation further ahead will be lower than 2.5%. Inflation has recently been unexpectedly high. Developments in inflation in the period ahead are uncertain and the range of outcomes seems to be wider than usual. There are prospects that capacity utilisation will be higher than anticipated in June, but the projections nevertheless suggest that capacity utilisation will remain lower than a normal level throughout the projection period. The low level of capacity utilisation must be seen in the light of the fall in oil prices since summer 2014. The decline in the oil sector is having spillover effects on the wider economy. Monetary policy is expansionary and supportive of structural adjustments in the economy, but it will take time for the effects of the fall in oil prices to unwind and for activity and cost growth to normalise.

The forecast for the key policy rate is somewhat higher than would otherwise have been the case if monetary policy had not taken into account the risk of a build-up of financial imbalances. Low interest rates may increase the vulnerability of the financial system. High house price inflation may lead to higher debt accumulation and increased household vulnerabilities. This heightens the risk of an abrupt fall in demand further out (see Special Feature on page 60). By setting the key policy rate a little higher than would otherwise have been the case, monetary policy can seek to mitigate the build-up of financial imbalances (see Special Feature on page 54). This can contribute to greater economic stability over time.

When the key policy rate is close to a lower bound, the uncertainty surrounding the effects of monetary policy increases. It is uncertain to what extent changes in the key policy rate will impact banks' deposit and lending rates. Households and firms may react differently to interest rate changes when the interest rate level is very low than they would in the case of a more normal interest rate level. Very low interest rates may result in adjustments that are difficult to foresee and intensify financial market volatility. Monetary policy may have unintended consequences. When uncertainty surrounding the effects of monetary policy increases, it may be appropriate to react somewhat less to new information than in a more normal situation.

CHANGES IN THE PROJECTIONS SINCE *MONETARY POLICY REPORT* 2/16

The interest rate forecast in this *Report* is somewhat higher than in the June 2016 *Monetary Policy Report* (Chart 2.23). The projections are based on the criteria for an appropriate interest rate path (see box on page 32), an overall assessment of the situation in the Norwegian and global economy and Norges Bank's perception of the functioning of the economy.

Chart 2.24 illustrates the factors that have contributed to the changes in 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 June *Report* is shown by the black line.

There is no mechanical relationship between news that deviates from the Bank's forecasts and the effect on the interest rate path. Low interest rates may increase the vulnerability of the financial system. When the key policy rate is close to a lower bound, uncertainty surrounding the effects of monetary policy increases. This suggests proceeding with greater caution in interest rate setting and reacting somewhat less to news that changes the economic outlook, whether the news pulls in the direction of a lower or higher key policy rate.

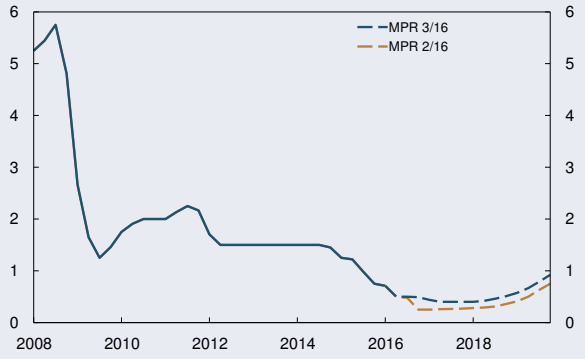
For trading partners as a whole, expected policy rates a few years ahead have declined slightly since the June *Report*. This contributes in isolation to a stronger krone and thus to lower inflation and activity in Norway. Expectations of lower policy rates abroad towards the end of the projection horizon therefore suggest that the key policy rate in Norway should also be kept low for a longer period (red bars).

There are prospects that import growth among Norway's trading partners will be somewhat lower in the coming years than envisaged in June. Lower external growth may also push down on domestic growth, partly as a result of reduced exports. This suggests a slightly lower path for the key policy rate (light blue bars).

The krone has appreciated since June and is now a little stronger than projected in the June *Report*. The appreciation has been somewhat stronger than implied in isolation by the interest rate differential against other countries. There are prospects that the krone will also appreciate a little more in the period ahead than anticipated earlier. A stronger krone contributes in isolation to pushing down inflation and dampening activity in the Norwegian economy. This suggests a lower path for the key policy rate (green bars).

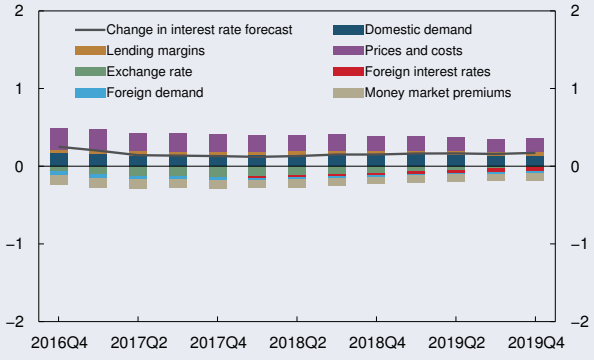
Growth in the Norwegian economy has been slightly higher than expected, and growth prospects are somewhat more favourable than envisaged earlier. In August, Norges Bank's regional network contacts reported increased growth in output and they expect a further increase ahead. Improved consumer confidence and higher house price inflation could give a

Chart 2.23 Key policy rate.
Percent. 2008 Q1 – 2019 Q4 [1)]



1) Projections for 2016 Q3 – 2019 Q4 (broken lines).
Source: Norges Bank

Chart 2.24 Factors behind changes in the interest rate forecast since MPR 2/16.
Cumulative contribution. Percentage points. 2016 Q4 – 2019 Q4



Source: Norges Bank

boost to private demand. Registered unemployment has been lower than projected and capacity utilisation is now assessed to be higher than envisaged earlier. Prospects for somewhat stronger demand suggest a higher path for the key policy rate (see dark blue bars).

Consumer price inflation has been higher than projected in June, and the pass-through from a weaker krone may have been stronger than foreseen. Higher inflation may translate into higher wage growth next year. Higher cost and price inflation pushes up the path for the key policy rate (purple bars).

The premium in the Norwegian money market has increased and been higher than expected. The premium is expected to remain higher than anticipated in the period ahead. This suggests a lower path for the key policy rate as a higher premium, all else equal, implies a higher money market rate (beige bars).

Banks' lending margins, the spread between banks' lending rates and the money market rate, have edged down and are lower than anticipated in June. This is because Norwegian money market premiums have been higher than expected, while banks' lending rates appear to have been little changed. Banks' lending margins are expected to remain lower than anticipated also in the coming years, partly reflecting reduced risk premiums on banks' new long-term wholesale funding. This suggests a slightly higher path for the key policy rate (orange bars).

Projections for macroeconomic variables are presented in Table 1.

TABLE 1 Projections for macroeconomic aggregates in *Monetary Policy Report* 3/16.
Percentage change from previous year (unless otherwise stated).
Change from projections in *Monetary Policy Report* 2/16 in brackets

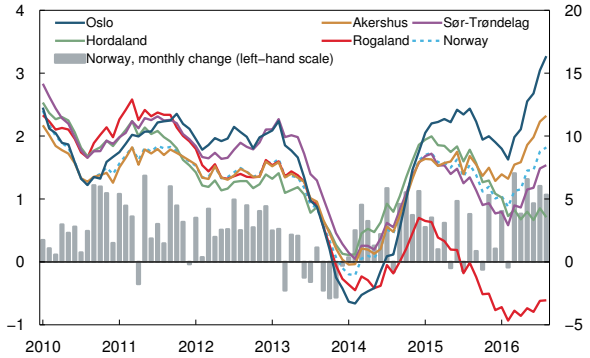
	2016	2017	2018	2019
CPI	3.6 (0.3)	2.6 (0.4)	2.1 (0.2)	1.8 (0.1)
CPI-ATE[1]	3.3 (0.4)	2.7 (0.4)	2.1 (0.1)	1.8 (0.1)
Annual wages[2]	2.5 (0)	3.2 (0.5)	3.4 (0.3)	3.7 (0.1)
GDP, mainland Norway	0.9 (0.1)	1.8 (0.2)	2.1 (0)	2.1 (-0.2)
Output gap, mainland Norway (level)[3]	-1.6 (0.1)	-1.5 (0.4)	-1.1 (0.5)	-0.7 (0.3)
Employment, persons, QNA	-0.3 (-0.5)	0.8 (0.4)	1.1 (0.3)	0.9 (-0.2)
LFS unemployment (rate, level)	4.7 (0.1)	4.7 (0.3)	4.4 (0.3)	4.1 (0.2)
Registered unemployment (rate, level)	3.0 (-0.2)	3.0 (-0.4)	2.9 (-0.4)	2.8 (-0.3)
Level				
Key policy rate[4]	0.6 (0.1)	0.4 (0.1)	0.4 (0.1)	0.7 (0.1)
Import-weighted exchange rate (I-44)[5]	105.9 (-0.7)	103.7 (-2.0)	103.0 (-1.2)	102.2 (-0.9)
Money market rates, trading partners[6]	0.1 (0)	0.1 (0)	0.1 (0)	0.2 (-0.1)

1 CPI-ATE: CPI adjusted for tax changes and excluding energy products.
2 Annual wage growth is based on the Norwegian Technical Calculation Committee for Wage 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

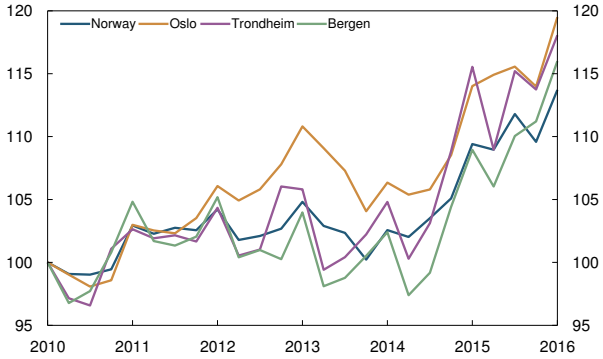
3 FINANCIAL STABILITY ASSESSMENT

Chart 3.1 House prices. Twelve-month change and seasonally adjusted monthly change.[1] Percent. January 2010 – August 2016



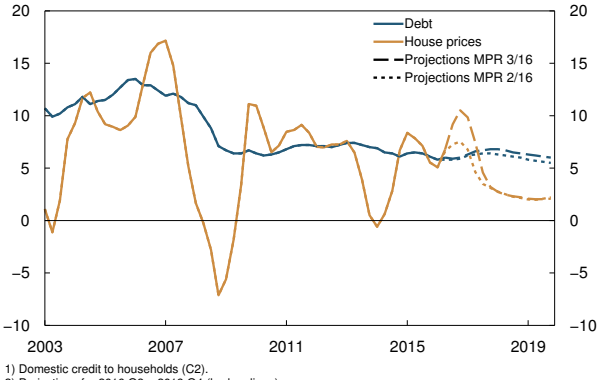
1) Twelve-month change for counties. Twelve-month change and seasonally adjusted monthly change for Norway.
Sources: Eiendomsverdi, Finn.no and Real Estate Norway

Chart 3.2 House price-to-rent ratio.
Indexed. 2010 Q1 = 100. 2010 Q1 – 2016 Q1



Sources: Eiendomsverdi, Finn.no and Real Estate Norway

Chart 3.3 Household debt[1] and house prices.
Four-quarter change. Percent. 2003 Q1 – 2019 Q4[2]



1) Domestic credit to households (C2).
2) Projections for 2016 Q3 – 2019 Q4 (broken lines).
Sources: Eiendomsverdi, Finn.no, Real Estate Norway, Statistics Norway and Norges Bank

A persistent increase in household debt and high property price inflation in recent years are signs that financial imbalances have built up. Total credit to households and enterprises has expanded faster than mainland GDP for a long period. Although overall credit growth has moderated over the past year, the credit-to-GDP ratio has nonetheless edged up owing to lower growth in the Norwegian economy. The rise in the credit-to-GDP ratio has been below its estimated long-term trend. House prices relative to income and real commercial property prices have recently risen sharply and at a more rapid pace than estimated trends. Indicators of financial imbalances are described in detail in a box on page 42.

High property price inflation

Over the past six months, the rise in house prices has accelerated and is considerably higher than growth in household disposable income. House price inflation is particularly high in Oslo and surrounding areas (Chart 3.1) and has also picked up in other parts of Norway in recent months. In the oil-dependent region Rogaland, house prices are lower than they were a year ago.

Sales of existing homes have edged down over the past year. At the same time, the stock of existing homes for sale has fallen. In August 2016, the number of existing homes for sale in Oslo had fallen by half compared with a year ago. The stock of houses for sale in Rogaland is high.

Rents have not risen by as much as house prices over the past two years (Chart 3.2). Rents have risen in Oslo, while in other cities rents have been stable or have declined. The price-to-rent ratio has risen, showing fairly similar developments across cities.

House price inflation has been higher than projected in the June 2016 *Monetary Policy Report* and is projected to remain elevated in the coming months, declining thereafter (Chart 3.3). The projection is higher than in the June *Report*. Moderate income growth will in isolation have a dampening effect on the rise in house prices ahead, while the rise will be supported by low bank lending rates.

Residential construction has recently picked up (see Section 1). This may in the long term curb house price inflation. New home sales have risen substantially in

recent years, especially in Oslo and surrounding areas (Chart 3.4). In recent years, the increase in the number of households in Oslo has outpaced the increase in the number of homes. Statistics for housing starts and new home sales indicate that residential construction is now more closely in line with the increase in the number of households.

Prices in some segments of the commercial real estate market have also risen sharply. The rise in estimated selling prices for centrally located high-standard office space in Oslo has been high in recent years (Chart 3.5). The rise in selling prices has been driven by lower required rates of return, while rents have been fairly stable.

Stable growth in household debt

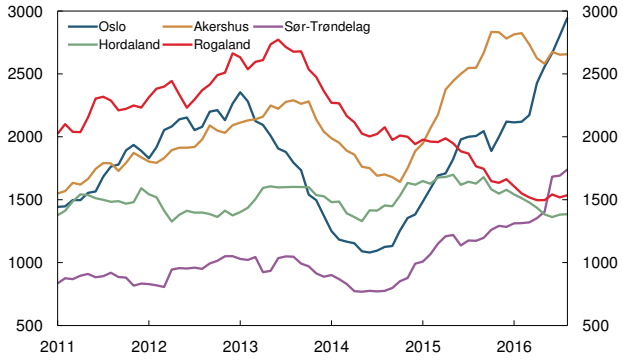
Household debt growth has been fairly stable over the past six months and has been in line with the projections in the June *Report*. The projection for credit growth is somewhat higher than in the June *Report*, primarily as a result of higher house price inflation (Chart 3.3).

Household debt ratios have risen in the past year and are expected to rise further in the period ahead (Chart 3.6). With low lending rates, interest burdens will remain low in the coming years. Most households repay principal. The share of household income devoted to servicing debt is expected to rise further. This increases households' vulnerability to a loss of income, abrupt shifts in bank lending rates or a fall in house prices, which may lead to substantial reductions in consumption.

If high house price inflation persists, household borrowing may increase further. Greater vulnerabilities in the household sector increase the risk of an abrupt decline in demand and bank loan losses ahead. Empirical studies show that the decline in consumption in a downturn is typically substantial when the downturn follows a period of strong debt growth (see Special Feature on page 60).

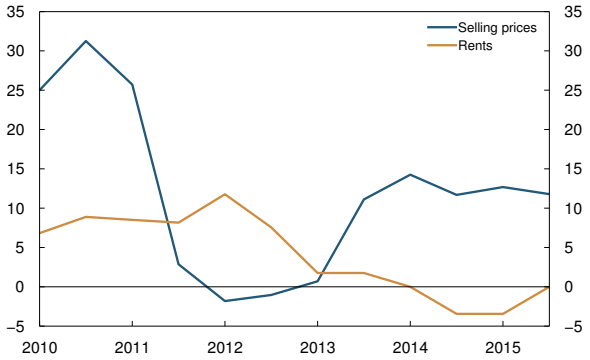
The Regulation on requirements for residential mortgage loans was introduced in June 2015 (Table 3.1). According to Finanstilsynet's (Financial Supervisory Authority of Norway) residential mortgage lending survey, the share of approved loans that breach the various limits set in the Regulation decreased slightly

Chart 3.4 New home sales.[1] Sales of new homes past twelve months. January 2011 – August 2016



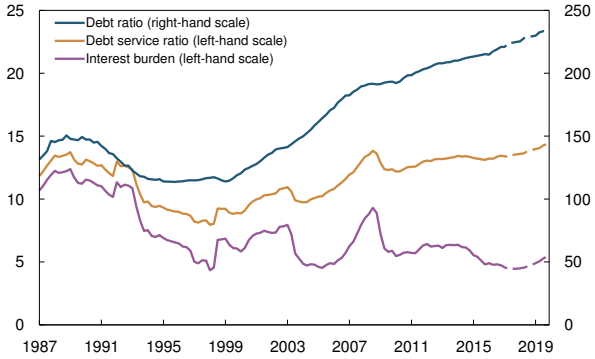
1) The statistics are based on sales reported by members of the Norwegian Home Builders' Association.
Sources: Norwegian Home Builders' Association and Prognosesenteret

Chart 3.5 Selling prices and rents for commercial property.[1] Annual rise based on semiannual data. Percent. 2010 H2 – 2016 H1



1) Centrally located high-standard office space in Oslo.
Sources: Dagens Næringsliv and OPAK

Chart 3.6 Household debt ratio, debt service ratio and interest burden.[1] Percent. 1987 Q1 – 2019 Q4 [2]



1) Loan debt as a percentage of disposable income. The debt service ratio and interest burden are calculated as interest expenses as a percentage of disposable income plus interest expenses. The debt service ratio also includes estimated principal payments on an 18-year mortgage. Disposable income is adjusted for estimated reinvested dividend income for 2003 – 2005 and redemption/reduction of equity capital for 2006 Q1 – 2012 Q3. Growth in disposable income excluding dividend income is used for the period 2015 Q1 – 2016 Q4.
2) Projections for 2016 Q2 – 2019 Q4 (broken lines).
Sources: Statistics Norway and Norges Bank

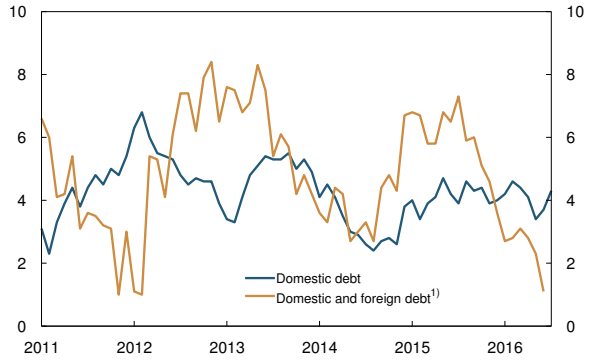
TABLE 3.1 Requirements for new residential mortgages

Requirement	Current regulation[1]
Maximum loan-to-value ratio (LTV)	85%
Debt-servicing capacity	
• Withstand interest rate increase of	5 percentage points
• Minimum annual principal repayment	2.5% per year for LTVs above 70%
Speed limit[2]	10%

1 The Regulation applies from 1 July 2015 to 31 December 2016.
2 Percentage of volume of new bank loans permitted to deviate from one or more of the requirements.

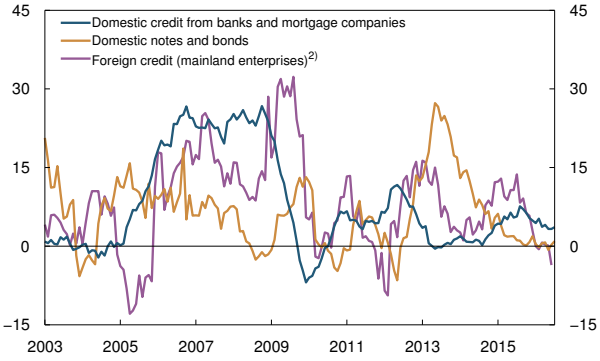
Sources: Regulation on requirements for residential mortgage loans of 15 June 2015.

Chart 3.7 Total credit to non-financial enterprises. Transactions. Mainland Norway. Twelve-month change. Percent. January 2011 – July 2016



1) To end-June 2016.
Source: Statistics Norway

Chart 3.8 Credit from selected funding sources to Norwegian non-financial enterprises. Twelve-month change.[1] Percent. January 2003 – July 2016



1) Estimated based on stock of debt.
2) Change based on transactions. To end-June 2016.
Sources: Statistics Norway and Norges Bank

between 2014 and 2015. Norges Bank's lending survey shows that tightening of banks' credit standards for households has coincided with the introduction of the Regulation and previous tightening in Finanstilsynet's guidelines (see Special Feature on page 58).

The Ministry of Finance has circulated for comment Finanstilsynet's proposal to tighten the current regulation on requirements for new residential mortgage loans. According to the proposal, banks will no longer be permitted to deviate from the regulatory requirements relating to debt-servicing capacity, loan-to-value ratios and principal payments. The proposal also calls for the implementation of a new requirement limiting borrowers' total debt to five times their gross annual income. Finanstilsynet also proposes that principal payment requirements should apply to all new loans with a loan-to-value ratio above 60%.

Moderate growth in corporate debt

Total growth in credit to non-financial enterprises in mainland Norway has been slowing since autumn 2015 (Chart 3.7). Growth in corporate credit from domestic sources has been fairly stable over the past year, while growth in foreign funding has fallen.

Corporate credit growth is being held up by bank lending (Chart 3.8). The banks in Norges Bank's lending survey reported somewhat lower corporate credit demand in the first half of 2016, while credit standards have remained approximately unchanged (Chart 3.9).

The volume of bonds issued by Norwegian non-financial enterprises so far this year has been low compared with the same period in previous years. Risk premiums on new bond financing for these enterprises rose through autumn 2015 but have fallen through 2016. For high-risk oil service enterprises, risk premiums remain very high.

Debt-servicing capacity for listed oil service companies has declined in recent years and is low compared with the historical average. Market values of equity in the oil service industry have consistently been considerably lower than book values since oil prices began to fall in autumn 2014 (Chart 3.10). High risk premiums on bonds and low market pricing of equity may indicate that the value of many oil-related companies' assets is considerably lower than indicated in

their financial statements. In other industries, market values of equity are higher than book values, and overall debt-servicing capacity is solid.

Banks report solid profitability and strengthened capital ratios

The largest Norwegian banks[1] have reported solid profitability in recent years. The return on equity capital declined somewhat in 2016 Q2, partly as a result of slightly higher loan losses. Norwegian banks' loan losses are still at a low level (Chart 3.11). Banks expect somewhat higher losses related to oil exposures in the coming years. Norwegian banks' lending to oil-related enterprises represents a limited share of banks' total lending to the corporate sector.[2]

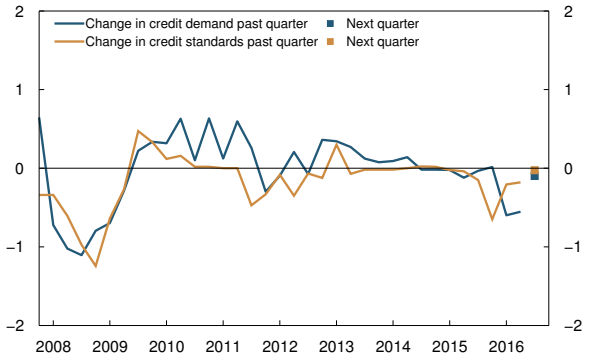
Banks continue to increase their capital ratios. Increased capital strengthens banks' resilience to loan losses. At the end of 2016 Q2, all large Norwegian banks fulfilled the regulatory capital requirements (Chart 3.12). Most banks must continue to build capital to achieve their announced CET1 capital ratio targets, which range between 14.5% and 15.5%.

Norwegian banks continue to have ample access to wholesale funding. Wholesale funding ratios have been fairly stable in recent years (Chart 3.20). Risk premiums on new long-term wholesale funding for banks have fallen since the June *Report* (Chart 1.12 in Section 1).

1 The seven large Norwegian banking groups: DNB Bank, Nordea Bank Norge, SpareBank 1 SR-Bank, Sparebanken Vest, SpareBank 1 SMN, Sparebanken Sør and SpareBank 1 Nord-Norge.

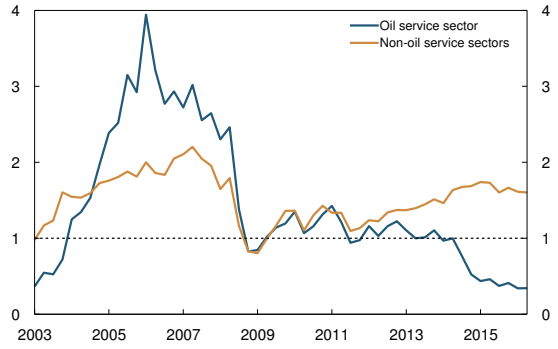
2 See Hjelseth, I.N., L.-T. Turtveit and H. Winje (2016): "Banks' credit risk associated with the oil service industry", Norges Bank *Economic Commentaries*, 5/2016.

Chart 3.9 Changes in credit demand and banks' credit standards past quarter, and expected change next quarter.[1)] Enterprises. 2007 Q4 – 2016 Q2



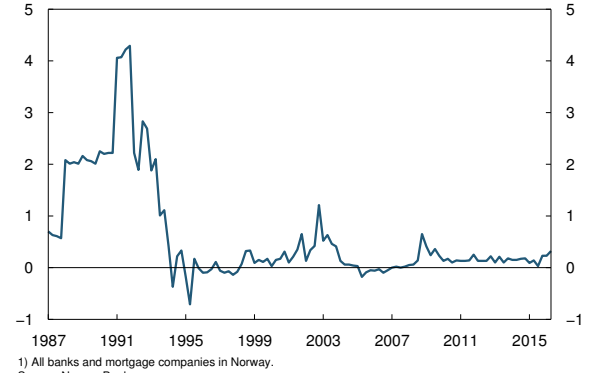
1) The banks respond on a scale of +/–2. In the aggregated figures, banks are weighted by the size of their balance sheets. Negative values denote lower demand or tighter credit standards.
Source: Norges Bank's Survey of Bank Lending

Chart 3.10 Price-to-book ratio,[1)] listed companies.[2)] 2003 Q1 – 2016 Q2



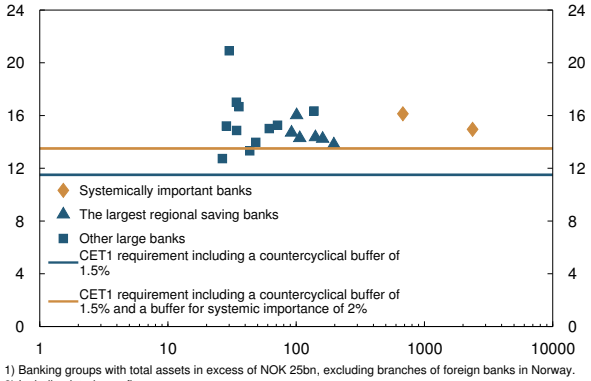
1) Market value as a percentage of book value per share.
2) Norwegian non-financial companies listed on Oslo Børs excluding extraction. Norsk Hydro is excluded to end-2007 Q3.
Sources: Bloomberg and Norges Bank

Chart 3.11 Banks'[1)] loan losses as a share of gross lending. Percent. Annualised. 1987 Q1 – 2016 Q2



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

Chart 3.12 Banking groups'[1)] Common Equity Tier 1 (CET1) capital ratios[2)]. Percent. Total assets[3)] In billions of NOK. At 30 June 2016



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

ON THE DECISION BASIS FOR THE COUNTERCYCLICAL CAPITAL BUFFER

Norges Bank is responsible for drawing up a decision basis and providing advice to the Ministry of Finance regarding the level of the countercyclical capital buffer four times a year. Norges Bank has formulated three criteria on which its assessment of the buffer is based (see box on page 41). The decision basis for the buffer is presented in Section 3 and a box on page 42. The framework for the countercyclical capital buffer in Norway is described in detail in a box on page 4.

The countercyclical capital buffer is set at 1.5% effective from 30 June 2016.

COUNTERCYCLICAL CAPITAL BUFFERS IN OTHER COUNTRIES

The objective of the countercyclical capital buffer is to mitigate systemic risk in the individual country and is set on the basis of national conditions. EU capital adequacy legislation (CRD IV/CRR) provides for international reciprocity, i.e. that buffer rates must be recognised across borders.[1] This means that banks operating in several countries must adhere to buffer rates that are applicable in the borrower's home country. Table 1 shows buffer rates in some countries[2] where Norwegian banks have large exposures.[3] Buffer rates in all EU countries excluding Sweden have been set at 0%. The Czech Republic and Slovakia have announced that they will set their buffer rates at ½% in 2017. At the beginning of July, the UK announced that its countercyclical capital buffer rate would not be raised to ½% in March 2017 as signalled earlier.

TABLE 1 Countercyclical capital buffers in countries where Norwegian banks have large exposures

Country	Current buffer rate	Norwegian banks' exposure*
Sweden	1.5%**	4.9%
US	0%	3.0%
Poland	0%	2.8%
UK	0%	2.0%
Lithuania	0%	1.7%
Singapore	0%***	1.1%
Spain	0%	1.0%
Germany	0%	0.9%
Ireland	0%	0.9%
Netherlands	0%	0.9%

* IRB banks' risk-weighted assets as a percentage of total risk-weighted assets in 2015 Q3.
** Buffer rate of 2% applies from 19 March 2017.
*** Applies from 1 January 2017.

Sources: Bank for International Settlements (BIS), the European Systemic Risk Board (ESRB) and Finanstilsynet (Financial Supervisory Authority of Norway)

1 Buffer rates of up to 2.5% must 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 ESRB (2014): *Recommendation on guidance for setting countercyclical buffer rates*).
2 An overview of the countercyclical capital buffer (CCB) rates currently applicable in EU and EEA countries is provided on the ESRB website: *National policy – countercyclical capital buffer.* A similar overview for Basel Committee member jurisdictions is available on the BIS website: *Countercyclical capital buffer.*
3 For Norwegian banks, the Norwegian buffer rate also applies to exposures outside Norway. Finanstilsynet has proposed that Norway should normally recognise other countries' countercyclical capital buffer rates. The proposal has been circulated for comment and is being considered by the Ministry of Finance.

CRITERIA FOR AN APPROPRIATE COUNTERCYCLICAL CAPITAL BUFFER[1]

The countercyclical capital buffer 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. In periods of rising real estate prices, debt growth tends to accelerate. When banks grow rapidly and raise funding for new loans directly from financial markets, systemic risk may increase.

Norges Bank's advice to increase the countercyclical capital buffer will as a main rule 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) real commercial property prices and iv) wholesale funding ratios for Norwegian credit institutions[2] The four indicators have historically risen ahead of periods of financial instability.

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 ESRB[3] 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 have been 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.

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.
3 See European Systemic Risk Board (2014): "Recommendation on guidance for setting countercyclical buffer rates".

MEASURING FINANCIAL IMBALANCES AND BUFFER GUIDE[1]

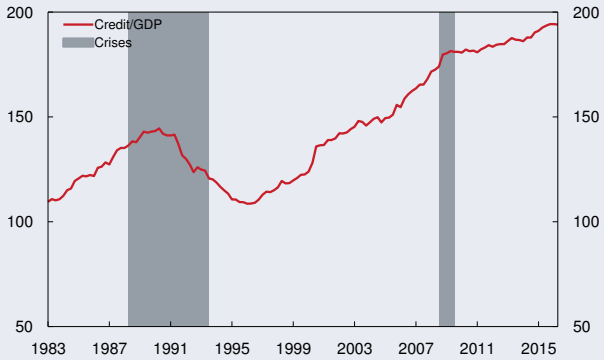
Norges Bank's assessment of financial imbalances is based on the credit-to-GDP ratio, developments in property prices and banks' wholesale funding ratio. See Section 3 for a detailed description.

Total household and corporate debt has long been rising faster than mainland GDP (Chart 3.13). Although overall credit growth has gradually slowed over the past year, the credit-to-GDP ratio has nonetheless edged up owing to lower growth in the Norwegian economy. Recently, the gap between the credit-to-GDP ratio and its estimated trend has narrowed slightly (Chart 3.14).[2]

The buffer guide[3] is 0% in 2016 Q2 when the trend is estimated using a one-sided HP filter. When the trend is estimated based on an augmented HP filter, which has proved to be a better leading indicator of crises, the buffer guide is ¾%, down from 1% in the previous quarter (Chart 3.15).

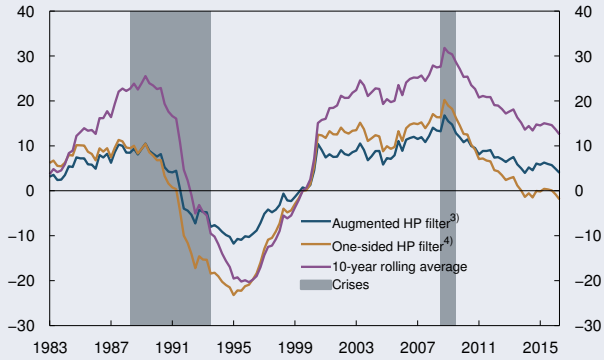
House prices relative to disposable income have been fairly stable in recent years (Chart 3.16). In the past quarter, the ratio of house prices to disposable income has risen and the deviation from its estimated trends has increased (Chart 3.17). Real commercial property prices have been increasing for some time (Charts 3.18 and 3.19). The wholesale funding ratio has been fairly stable in recent years (Charts 3.20 and 3.21).

Chart 3.13 Total credit[1)] mainland Norway as a share of mainland GDP. Percent. 1983 Q1 – 2016 Q2



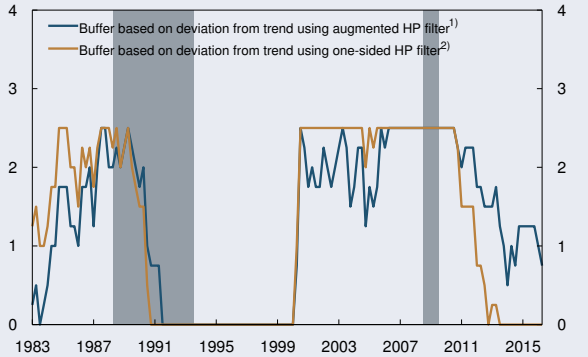
1) The sum of C2 households and C3 non-financial enterprises for mainland Norway (all non-financial enterprises pre-1995). C3 non-financial enterprises comprises C2 non-financial enterprises and foreign debt for mainland Norway.
Sources: IMF, Statistics Norway and Norges Bank

Chart 3.14 Credit gap. Total credit[1)] mainland Norway as a share of mainland GDP. Deviation from estimated trends.[2)] Percentage points. 1983 Q1 – 2016 Q2



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

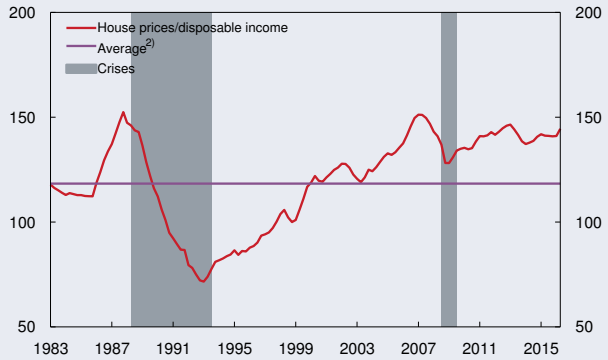
Chart 3.15 Reference rates for the countercyclical capital buffer under alternative trend estimates. Percent. 1983 Q1 – 2016 Q2



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: IMF, Statistics Norway and Norges Bank

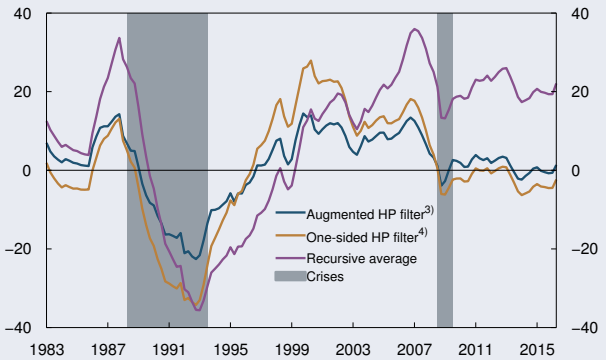
1 See also "Criteria for an appropriate countercyclical capital buffer", *Norges Bank Papers* 1/2013.
2 There is considerable uncertainty related to trend estimation. Norges Bank has so far applied three different methods of trend estimation (see page 30 in Norges Bank (2013): *Monetary Policy Report* 2/13).
3 The Basel Committee on Banking Supervision has proposed a simple rule for calculating a reference rate for the countercyclical capital buffer (a buffer guide) based on the credit-to-GDP ratio, see Bank for International Settlements (2010): *Guidance for national authorities operating the countercyclical capital buffer.*

Chart 3.16 House prices relative to disposable income[1].
Indexed. 1998 Q4 = 100. 1983 Q1 – 2016 Q2



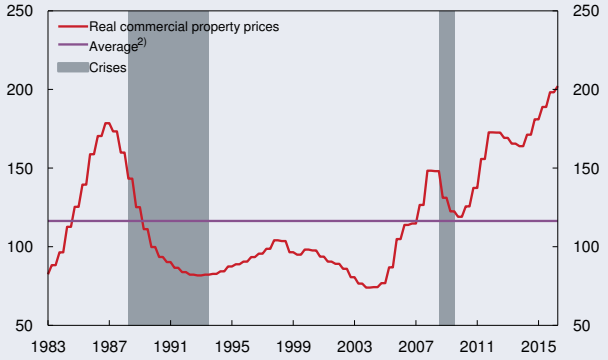
1) Disposable income adjusted for estimated reinvested dividend income for 2003 – 2005 and redemption/ reduction of equity capital for 2006 Q1 – 2012 Q3. Growth in disposable income excluding dividend income is used for 2015 Q1 – 2016 Q2.
2) Based on data from 1978 Q4 onwards.
Sources: Eiendomsverdi, Finn.no, Norwegian Association of Real Estate Agents (NEF), Real Estate Norway, Statistics Norway and Norges Bank

Chart 3.17 House price gap. House prices relative to disposable income[1] as deviation from estimated trends.[2] Percent. 1983 Q1 – 2016 Q2



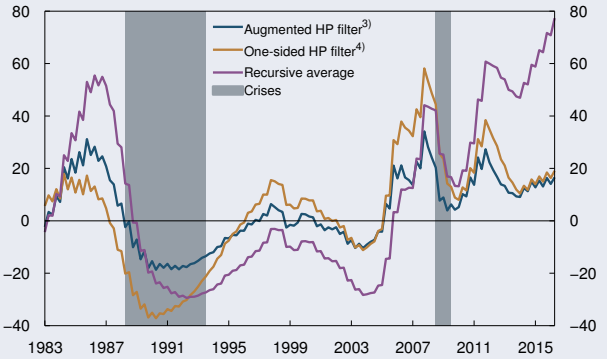
1) Disposable income adjusted for estimated reinvested dividend income for 2003 – 2005 and redemption/- reduction of equity capital for 2006 Q1 – 2012 Q3. Growth in disposable income excluding dividend income is used for 2015 Q1 – 2016 Q2.
2) The trends are estimated based on data from 1978 Q4 onwards.
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: Eiendomsverdi, Finn.no, Norwegian Association of Real Estate Agents (NEF), Real Estate Norway, Statistics Norway and Norges Bank

Chart 3.18 Real commercial property prices.[1]
Indexed. 1998 = 100. 1983 Q1 – 2016 Q2



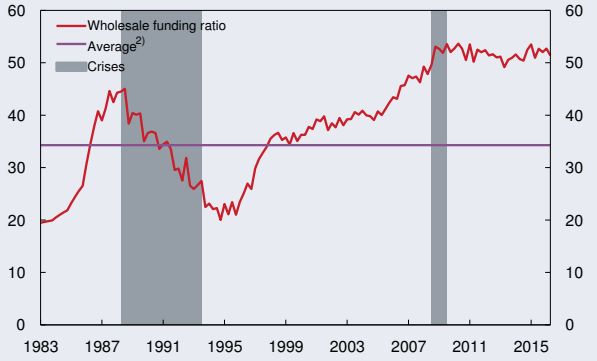
1) Estimated selling prices for centrally located high-standard office space in Oslo deflated by the GDP deflator for mainland Norway.
2) Based on data from 1981 Q1 onwards.
Sources: Dagens Næringsliv, OPAK, Statistics Norway and Norges Bank

Chart 3.19 Commercial property price gap. Real commercial property prices[1] as deviation from estimated trends.[2] Percent. 1983 Q1 – 2016 Q2



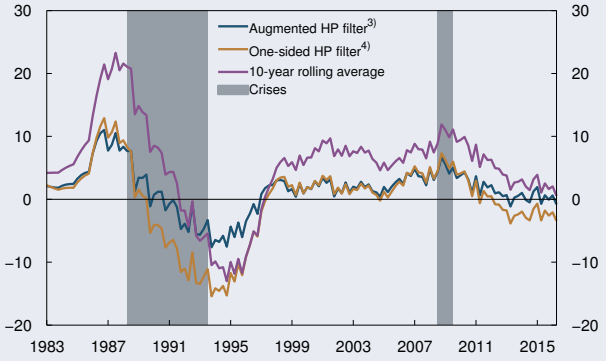
1) Estimated selling prices for high-standard office space in Oslo deflated by the GDP deflator for mainland Norway.
2) The trends are estimated based on data from 1981 Q2 onwards.
3) One-sided Hodrick-Prescott filter estimated on data augmented with a simple projection. Lambda = 400 000.
4) One-sided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

Chart 3.20 Banks'[1] wholesale funding ratio.
Percent. 1983 Q1 – 2016 Q2



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

Chart 3.21 Wholesale funding gap. Banks'[1] wholesale funding ratio as deviation from estimated trends.[2] Percentage points. 1983 Q1 – 2016 Q2



1) All banks and covered bond mortgage companies in Norway excluding branches and subsidiaries of foreign banks.
2) The trends are estimated based on data from 1975 Q4 onwards.
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

SPECIAL FEATURES

THE GLOBAL ECONOMY – DEVELOPMENTS IN DIFFERENT REGIONS AND COUNTRIES

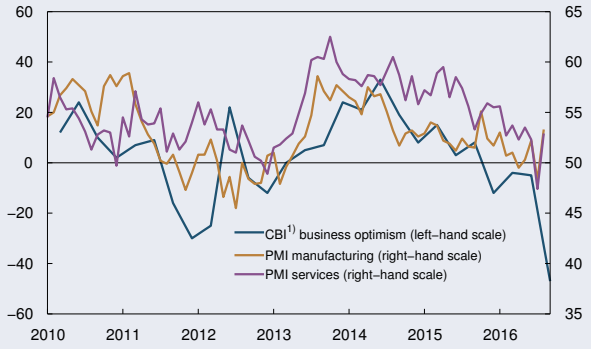
As a result of the UK's vote to leave the EU, the outlook for the UK economy in both the near and long term has become more uncertain. Even though growth accelerated between Q1 and Q2, and was stronger than foreseen in the June 2016 *Monetary Policy Report*, the growth outlook now seems to have weakened considerably. So far, the main questions relating to the EU withdrawal process and the UK's future ties to the EU and other trading partners have not been clarified (see more on this on page 50). The uncertainty is expected to weigh on growth in private investment and employment. Household consumption is also likely to be negatively affected. A number of surveys conducted just after the referendum showed a clear increase in pessimism among households and businesses, but this has reversed somewhat recently (Chart 1). Growth remains solid in retail trade and the housing market (Chart 2), and an accommodative economic policy is expected to dampen the adverse effects. The projection for UK GDP growth in 2017 is revised down by 1.5 percentage points to 0.8%. Growth is then expected to increase to 1.6% in 2018. In the longer term, exit from the EU is expected to reduce potential growth in the UK, partly as a result of higher trade costs and reduced labour supply.

The moderate recovery in the euro area continues, but the outlook is somewhat weaker than anticipated earlier, particularly for the UK's main European trading partners. Euro area growth weakened between Q1 and Q2, as expected in the June *Report*. Activity was unchanged in both Italy and France, while growth was strong in Spain and Germany (Chart 3). On balance, the data so far in Q3 indicate continued moderate growth.

Investment growth in the euro area weakened markedly through spring and summer. Investment growth is expected to weaken further in the period ahead as a result of weaker prospects for export growth and heightened uncertainty in the wake of the UK referendum. New orders for capital goods have fallen in recent months, and production plans have been adjusted down. In the longer term, investment growth is nevertheless expected to pick up as capacity utilisation increases. Measures by the European Central Bank (ECB) have contributed to improving financing conditions across the euro area, which should also fuel investment. Housing investment in particular is expected to increase. House prices are now starting to move up in most countries, and the number of building permits is clearly on the rise (Chart 4).

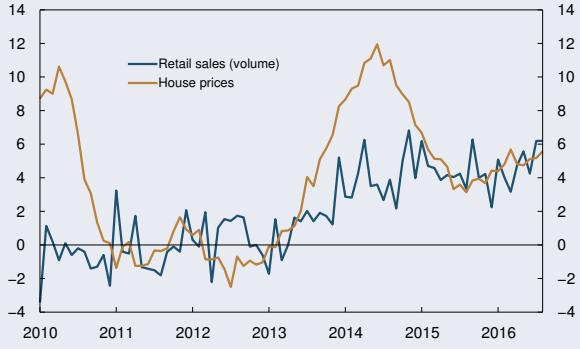
Euro area exports have exhibited strong growth relative to growth in global trade in the past few years, and the euro area continues to increase its market shares. New export orders have nevertheless been

Chart 1 UK. Business surveys. Seasonally adjusted. 2010 Q1 – 2016 Q3



1) Confederation of British Industry.
Source: Thomson Reuters

Chart 2 UK. Retail sales and house prices.
Twelve–month change. Percent. January 2010 – August 2016



Source: Thomson Reuters

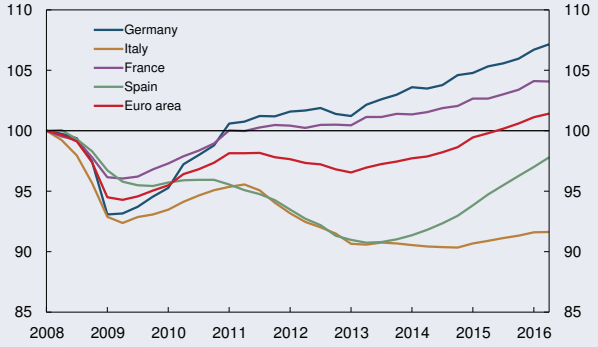
weak in recent months, and export growth is expected to be somewhat lower ahead than envisaged earlier. This is primarily due to weaker growth prospects for the UK and some appreciation of the euro so far this year. Household consumption has made the strongest contribution to economic growth in recent years, driven by higher employment and lower energy prices. However, consumption growth slowed in Q2, and in recent months consumer confidence has weakened. Consumption is expected to grow somewhat more slowly ahead compared with the growth rates prevailing in recent years.

GDP growth in the euro area overall is expected to slow from 1.5% in 2016 to 1.3% in 2017. The projections have been revised downward by 0.2 percentage point for 2017 and by 0.1 percentage point for 2018 and 2019 compared with the June *Report*. Growth prospects may weaken further should write-downs of non-performing loans in the European banking sector lead to renewed turbulence in financial markets.

In Sweden, economic developments have been strong for a long period, with solid growth in domestic demand. However, GDP growth edged down in the first half of 2016, driven by weaker growth in household consumption, which showed zero growth in Q2 (Chart 5). Moreover, exports fell for the second consecutive quarter. Growth in investment increased somewhat between Q1 and Q2, but growth is expected to be lower in the latter half of the year. Activity in the housing market remains robust, and housing starts increased by almost 45% in the first half of the year, compared with the same period one year earlier. Manufacturing firms are a little more pessimistic, most likely reflecting the outcome of the UK referendum. Growth in Sweden is expected to slow from 3.1% in 2016 to 2.1% towards the end of the projection period. The projections are somewhat lower than in the June *Report*.

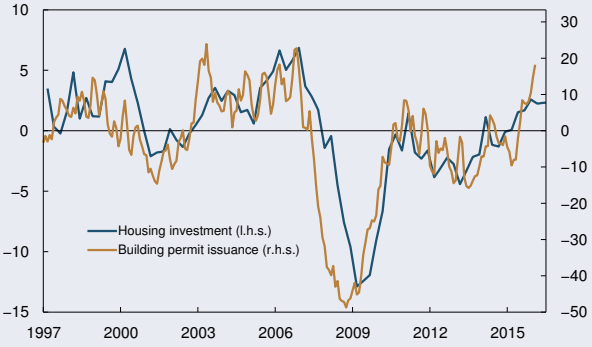
In the US, growth has slowed markedly since 2015 Q3, with three consecutive quarters of growth around 0.25% (Chart 6), primarily reflecting weak investment growth. Falling oil sector investment has continued to weigh on overall investment, but between Q1 and Q2 there was also a decline in public investment, housing investment and business investment as a whole (Chart 7). In addition, there was a substantial adjustment in business inventories. Despite strong growth in private consumption, GDP growth in Q2 was clearly lower than envisaged in the June *Report*. Labour market conditions have nonetheless continued to improve, with a further fall in unemployment and solid employment growth.

Chart 3 Euro area. GDP aggregated and for selected countries.
Seasonally adjusted. Index. 2008 Q1 = 100. 2008 Q1 – 2016 Q2



Source: Thomson Reuters

Chart 4 Euro area. Housing investment. Four–quarter change.
Building permits. Twelve–month change. Three–month moving average.
Percent. 1997 Q1 – 2016 Q2



Source: Thomson Reuters

Stronger household income is expected to continue to sustain the strong rate of growth in US consumption. The need to modernise equipment and increased petroleum investment will bolster investment growth further ahead. The growth outlook, however, is slightly weaker than in the June *Report*, reflecting lower expected growth among a number of main trading partners as a result of the UK's vote to leave the EU. The highly polarised US presidential campaign has increased the uncertainty surrounding future economic policy in key areas such immigration, infrastructure and trade. The projection for US GDP growth for 2016 has been revised down to 1.5%, while the projection for 2017 is revised down to 2.1%.

In China, growth has gradually slowed in recent years, but is being supported by government economic measures. Quarterly growth in Q2 picked up at a somewhat faster pace than foreseen in the June *Report*. Growth in transport services edged up, and the contribution to growth from manufacturing and construction increased. This may be attributable to higher real estate and infrastructure investment prior to summer owing to economic policy easing (Chart 8).

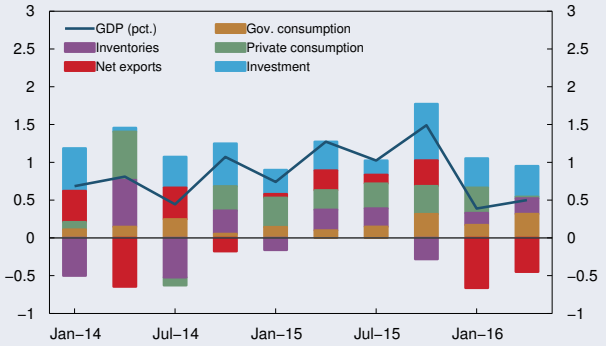
Declining private sector investment through summer has led to renewed uncertainty about the growth potential of the Chinese economy. Weak turnover and profitability are likely weighing on investment growth. Return on capital has deteriorated sharply in the metal and coal industries, while returns have remained firm in the more consumer-oriented industries (Chart 9). Growth in investment in state-owned enterprises remains buoyant, but growth has edged down so far in Q3, which may reflect fading effects of government measures. The weakness in July must be seen in light of extreme weather in central and southern regions of the country. Developments in investment improved somewhat in August, likely owing to the start of reconstruction activity following the extreme weather.

The expansionary economic policy has reduced the likelihood of an abrupt halt in growth in the near term, and the projection for GDP growth in 2016 has been revised up to 6.4%. The projections beyond 2016 have not been changed.

Chinese imports have grown at a slower pace than envisaged earlier. According to the IMF[1], the slowing of import growth since 2014 reflects lower growth in both investment and exports, partly owing to the appreciation of the Chinese currency. In addition, the ongoing rebalancing towards a more consumption-driven economy is likely weighing on imports as the import content of consumption is lower than that of

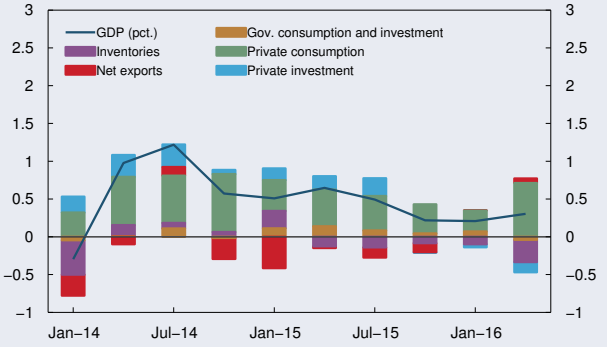
1 See Kang and Liao (2016): "Chinese Imports: What's Behind the Slowdown?", IMF Working Paper 16/106.

Chart 5 Sweden. Contribution to quarterly change in GDP.
Seasonally adjusted. Percentage points. 2014 Q1 – 2016 Q2



Source: Thomson Reuters

Chart 6 US. Contribution to quarterly change in GDP.
Seasonally adjusted. Percentage points. 2014 Q1 – 2016 Q2

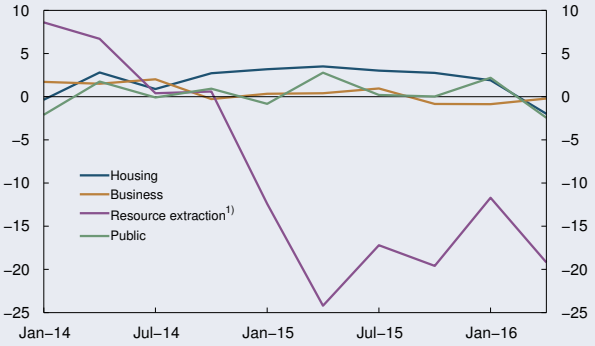


Source: Thomson Reuters

investment. The projection for import growth in China has been revised down considerably for the entire projection period.

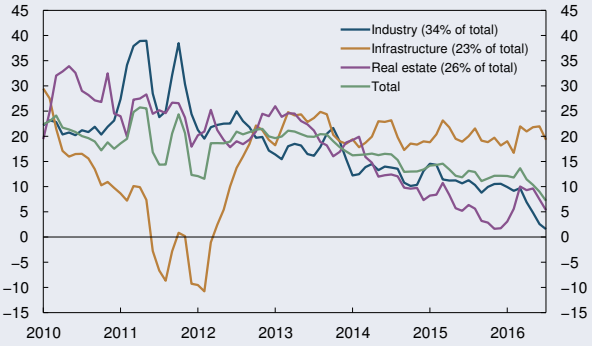
Among the large emerging economies, India is growing fastest, while activity in Russia and Brazil is still declining (Chart 10). In recent months, however, growth prospects for Russia and Brazil have improved somewhat, owing to a stabilisation of commodity prices, exchange rates and inflation. Key figures point to a smaller decline in activity than anticipated in the June *Report*. In Brazil, political uncertainty is still at a high level and may restrain the recovery. On the other hand, confidence indicators have improved after an interim government was established following the decision to impeach President Rousseff. Russian growth is being curbed by international sanctions, and geopolitical uncertainty represents a substantial downside risk to the projections ahead. In India, growth is expected to continue at a solid pace. The recent reform of the tax system is expected to bring productivity gains in the longer term, but may drag down domestic demand somewhat in the near term. The growth projection for emerging economies excluding China has been revised up from 1.4% to 1.8% in 2016.

Chart 7 US. Investment. Seasonally adjusted. Quarterly change. 2014 Q1 – 2016 Q2



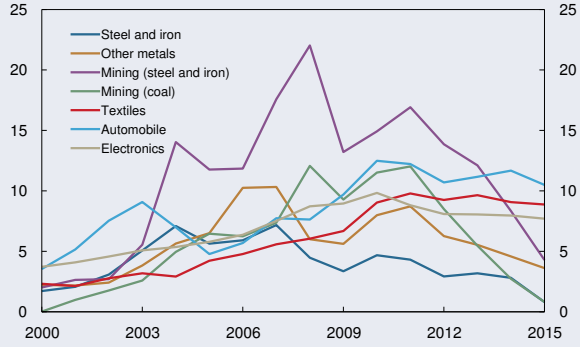
1) Constituted approximately 4.5% of total business investment in 2015.
Source: Thomson Reuters

Chart 8 China. Investment by sector.
Volume. Twelve–month change. Three–month moving average. Percent.
January 2010 – July 2016



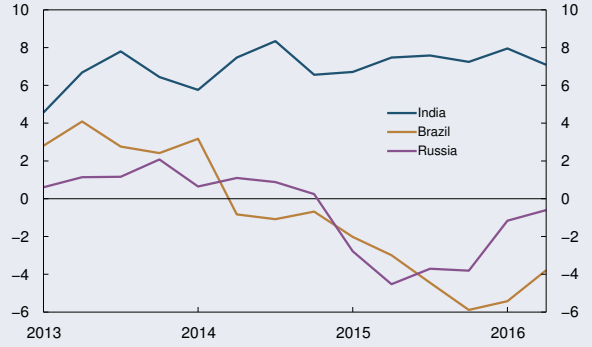
Sources: CEIC and Norges Bank

Chart 9 China. Return on capital in selected industries.
Percent. 2000 – 2015



Source: CEIC

Chart 10 Emerging economies. GDP.
Four–quarter change. Percent. 2013 Q1 – 2016 Q2



Source: Thomson Reuters

The road ahead for the UK

After 43 years' membership, the UK electorate voted to leave the European Union in a referendum on 23 June. The road ahead for the UK is not yet clear, with regard to both the withdrawal process and the future association with the UK's trading partners, both within and outside the EU. Until the withdrawal process is completed, the UK will remain a full-fledged member of the Union, with all the rights and obligations membership entails.

Withdrawal from the EU is governed by Article 50 of the Lisbon Treaty. A member state that decides to withdraw must formally notify the other 27 EU member states of its intention. It is unclear when the UK will submit its notification. Negotiations begin thereafter on the arrangements for withdrawal. A deadline of two years is set from receipt of notification. The notification period may be extended if all 28 member states agree.

Once a withdrawal agreement has been negotiated, it must be approved by the European Council, acting by a qualified majority. This means that at least 72% of the remaining members of the Council, representing at least 65% of the population of the EU, must approve the agreement. The withdrawal agreement must also be approved by a simple majority of the European Parliament. If the agreement is deemed to be "mixed" (where member state as well as EU competencies are engaged), it will have to be ratified by the national parliaments of member states.

The negotiations with the EU will deal with two main issues: the arrangements for withdrawal from the EU and the new relationship between the UK and the remaining EU member states.

The arrangements for withdrawal from the EU will include matters such as transitional arrangements, the rights of UK citizens residing in other EU member states and EU citizens residing in the UK, relocating EU agencies located in the UK, reallocation of unspent funds due to be received by UK regions and farmers, security arrangements and transfer of regulatory responsibilities.

The negotiations on the new relationship between the UK and EU member states will clearly be the more extensive, and it is uncertain which model for the future association the UK authorities will pursue. Currently, four alternative models stand out:

- Membership of the European Economic Area (EEA)
- European free trade agreement (EFTA)
- Bilateral free trade agreements
- Agreements based on World Trade Organisation (WTO) rules

The most important differences among the various forms of agreement:

- The level of access to the single market for goods, services, capital and labour
- Requirements for contracting parties with regard to financial contributions and degree of integration with the EU's rules and legal system
- The ability to influence EU rules and regulations

An agreement modelled on the EEA Agreement entails the deepest integration, while a WTO-based agreement entails the least integration with the EU.

All trade agreements between EU member states and third countries have been negotiated by the European Commission and apply to the EU as a whole. The UK will therefore need to establish new trade agreements also with non-EU countries. Currently, the EU has concluded more than 34 trade agreements, covering over 50 countries.

THE NEUTRAL REAL INTEREST RATE GLOBALLY AND IN NORWAY

The global interest rate level has declined markedly since the beginning of the 1980s. Lower actual and expected inflation was an important factor behind the decline in nominal interest rates in the 1980s and the early 1990s. The fall in real interest rates has been particularly pronounced over the past 20 years (Chart 1).

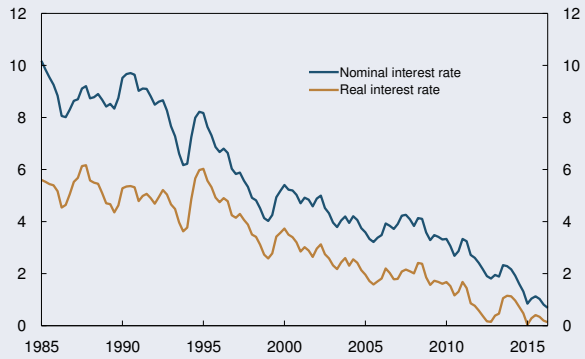
The causes of the decline in interest rates are complex. In recent years, extraordinary measures introduced by many central banks have pushed down long-term rates, but the most important causes are more structural in nature. The real interest rate, which is the price of capital, is determined by the supply of and demand for capital. Over the past 15 years, several emerging economies, particularly China and oil exporting countries, have recorded substantial savings surpluses. Saving has probably also increased in many countries as a result of demographic developments and a more uneven distribution of income. At the same time, investment in advanced countries has been low. An important factor behind the weak investment trends may be the low return on productive capital over time. In the wake of the financial crisis, more temporary conditions have also pushed down interest rates. While deleveraging has boosted saving, heightened uncertainty may have restrained the willingness to invest.

These developments have consequences for monetary policy. The level of the real interest rate that is consistent with balanced developments in the economy has fallen in pace with increased saving and lower demand for capital. This level is usually referred to as the neutral real interest rate.[1] The difference between the actual real interest rate and the neutral real interest rate indicates whether monetary policy is expansionary or contractionary. A real interest rate that is below the neutral interest rate stimulates economic growth, while a real interest rate that is above the neutral interest rate dampens growth.

The neutral interest rate is influenced both by fundamental economic structures and by more transient phenomena. Over time, the neutral interest rate will move around a level determined by factors such as long-term productivity, population growth and long-term saving preferences.[2] Fluctuations around this level may be due to factors such as transient changes in saving and investment behaviour.

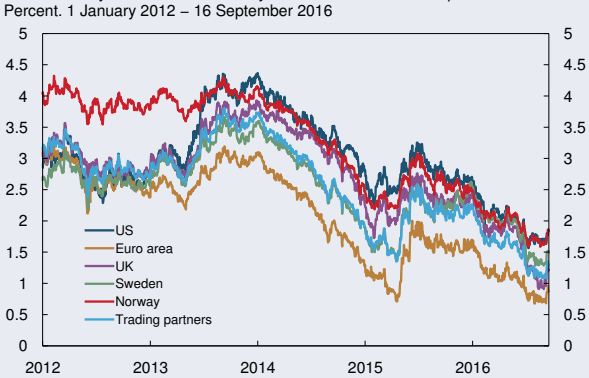
1 In some contexts, the neutral real interest rate is referred to as the "natural real interest rate" or the "short-term equilibrium interest rate".
2 This level is often referred to in the literature as the "long-term equilibrium interest rate", which can be understood as the equilibrium real interest rate generated by theoretical economic growth models. Examples include variations of the Ramsey model (see Rachel, L. and T.D. Smith (2015): "Secular drivers of the global real interest rate", Staff Working Paper 571, Bank of England, and Baker, D., J. B. Delong and P. R. Krugman (2005): "Asset returns and economic growth", *Brookings Papers on Economic Activity* 1/2005, pp. 289–330).

Chart 1 Long–term interest rates. 14 OECD countries.[1)]
Percent. 1985 Q1 – 2016 Q2



1) US, Germany, France, Italy, UK, Japan, Netherlands, Austria, Belgium, Sweden, Denmark, Canada, Switzerland and Norway. Unweighted average.
Source: OECD

Chart 2 Five–year interest rates five years ahead based on swap rates.[1)]
Percent. 1 January 2012 – 16 September 2016



1) Implied five–year forward rates five years ahead based on 5– and 10–year swap rates.
Source: Bloomberg

The neutral real interest rate is not directly observable and estimates are uncertain. Central banks must nevertheless have a conception of the interest rate that is consistent with balance in the real economy. The forecast for the key policy rate moves towards this level over the medium term as various economic disturbances unwind.

Global economic integration has deepened over the past decades. In financial markets, freer capital movements have resulted in narrower observed real interest rate differentials across countries. Moreover, neutral interest rate levels have likely converged across countries with the literature now commonly referring to a global neutral interest rate.

International estimates of the global neutral real interest rate have fallen in the past ten years.[3] It is also pointed out that several of the factors that have pulled down the interest rate level will continue to do so ahead. Underlying productivity growth appears to remain low, and in many countries labour force growth is slow. On the other hand, it is likely that the after-effects of the financial crisis will gradually dissipate, and that the ageing of the population may contribute to lower saving. In sum, these factors suggest that the global neutral real interest rate could edge up ahead.

A Bank of England analysis suggests that the global neutral real interest rate will remain close to 1% in the medium and long term.[4] Estimates of the US neutral real interest rate vary between around 0% and 2%.[5] In June 2016, the members of the Board of Governors of the Federal Reserve estimated the shortest nominal money market rate, the federal funds rate, to be 3% over the long term. With inflation expectations at 2%, this corresponds to a neutral real interest rate of 1%. Estimates for the euro area are even lower.[6] Analyses conducted by the BIS indicate that the neutral interest rate has also fallen considerably in Asian countries.[7] As the studies are based on uncertain methods and judgement, the estimates must be interpreted with a high degree of caution.

Developments in expected long-term rates can provide an indication of market participants' estimates of the neutral real interest rate.[8] Such rates will to a lesser extent than spot rates be influenced by the current cyclical situation and will to a greater extent reflect expectations regarding future interest rates.

3 For a discussion on global interest rate developments and the global neutral real interest rate, see for example: IMF (2014): "Perspectives on global real interest rates", *World Economic Outlook* April 2014; Bean, C., C. Broda, T. Ito and R. Krozner (2015): "Low for long? Causes and consequences of persistently low interest rates", *Geneva Reports on the World Economy* 17; Hördahl, P., J. Sobrun and P. Turner (2016): "Low long-term interest rates as a global phenomenon", BIS Working Papers 574; Teulings, C. and R. Baldwin (2014): "Secular stagnation: Facts, causes and cures", *VoxEU*, published by CEPR; Williams, J. C.(2016): "Monetary Policy in a Low R-star world", FRBSF Economic Letter 2016/23, Federal Reserve Bank of San Francisco.

4 See Rachel, L and T.D. Smith (2015) "Secular drivers of the global real interest rate", Staff Working Paper 571, Bank of England.

5 See Laubach, T. and J. C. Williams (2015): "Measuring the natural rate of interest redux", Hutchins Center on Fiscal and Monetary Policy at Brookings, WP 15 and Hamilton, J. D., J. Hatzius, E. S. Harris and K. D. West (2015): "The equilibrium real funds rate: Past, present, and future", Hutchins Center on Fiscal and Monetary Policy at Brookings, WP 16.

6 See "The challenge of low real interest rates for monetary policy", speech by Vítor Constâncio, Vice-President of the European Central Bank, 15 June 2016.

7 See Zhu, F. (2016): "Understanding the changing equilibrium real interest rates in Asia-Pacific", BIS Working Papers 567.

8 In the absence of term premiums and other risk premiums, implied forward rates can be interpreted as market expectations of future interest rates. The implied five-year interest rate five years ahead can be estimated based on for example today's five- and ten-year yields. This is the rate achieved when the return on a five-year investment five years ahead is reinvested for a further five years and thus yields a total expected return equal to the expected return on a ten-year investment made today. For further discussion and interpretation of implied forward rates, see Bernhardsen, T. (2011) "Renteanalysen" [Interest rate analysis], Norges Bank *Staff Memo* 4/2011 (Norwegian only).

These rates will thus normally be closer to the interest rate level that is expected when the economy is in balance. Chart 2 shows five-year rates five years ahead based on international swap rates.[9] For Norway's trading partners, these rates have been between ¾% and 2½ % so far this year. With long-term inflation expectations at around 2%, international swap rates imply neutral real money market rates abroad of between -1¼% and ½%.

There are several reasons why today's low levels of long-term implied forward rates do not necessarily reflect market expectations concerning the neutral real interest rate. Central banks' extensive purchases of securities have contributed to a marked decline in government bond yields, which has also affected swap rates. In addition, the question may be raised as to whether implied forward rates are unresponsive to cyclical conditions.

Norway is part of a global market and international interest rate developments affect the Bank's interest rate setting, particularly through the exchange rate channel. Norges Bank's estimate of the neutral interest rate has been gradually revised down in pace with international developments. The Bank's forecasts are now based on the assumption that a neutral nominal money market rate in Norway will be between 2½% and 3½% in the coming years. The associated neutral nominal key policy rate is somewhat lower as a result of money market spreads.[10] The estimate is highly uncertain.

The projections in this *Report* suggest that the key policy rate at the end of the projection period will be lower than the estimate for the neutral interest rate. This reflects the shocks to which the Norwegian economy has been exposed in recent years, primarily the pronounced fall in oil prices. Prospects for continued expansionary monetary policies abroad, as indicated by implied long-term forward rates, pull in the same direction. There are therefore prospects that it will take longer than normal for the interest rate to move up to a neutral level.

9 A swap rate refers to the rate on an interest rate swap in which two parties agree to exchange a floating rate (for example six-month Libor) for a fixed rate for a specific period. One party receives payments at a fixed rate, the swap rate, and makes payments at a floating rate, while the other party makes fixed-rate payments and receives floating rate payments. The swap rate is used as an indication of market interest rate expectations for that period.

10 The difference between the money market rate and the expected key policy rate (the Nibor spread) can vary over time; see Special Feature in this *Report*. The three-month money market spread in Norway is discussed further in Lund, K., M. Øwre-Johnsen and K. Tafjord (2016): "What drives the Nibor spread", Norges Bank *Economic Commentaries* 10/2016 (forthcoming).

POTENTIAL COSTS AND BENEFITS OF LEANING AGAINST THE WIND IN MONETARY POLICY

Norges Bank seeks to conduct a robust monetary policy. This means for example that the assessment of the trade-offs takes account of conditions that imply a risk of particularly adverse economic outcomes. When there is a risk of a build-up of financial imbalances, this suggests keeping the key policy rate higher than would otherwise have been the case. The purpose is to mitigate downside risks to the economy. Such a monetary policy approach is often referred to as "leaning against the wind", which, over time, may result in a more balanced development in inflation, output and employment.

Norges Bank's macroeconomic model, NEMO, does not take account of the risk that a build-up of financial imbalances may affect developments in inflation, output and employment over time, primarily because the mechanisms are difficult to model and quantify in a complex model such as NEMO. Therefore, in practice, such factors are taken into account through judgemental adjustments of the forecasts and by including variables in the objective function in the analytical framework that indirectly capture some of these factors.[1]

A recently published Norges Bank research paper presents a model that can be used to illustrate potential costs and benefits of leaning against the wind.[2] The model is more stylised than NEMO, but recognises that financial crises may occur. In the model, high credit growth will increase the probability that a financial crisis will occur and also result in a more pronounced decline in output should a crisis materialise.[3] Developments in credit depend in turn on the interest rate and economic growth. A key assumption in the model is that households and firms systematically underestimate the risk of a financial crisis.

In the model, the central bank makes a trade-off between stabilising the deviation of output from potential output and the deviation of inflation from the inflation target. The central bank's trade-off can be illustrated mathematically by the following loss function:

$$(1)\quad L_t = E_t \sum_{k=0}^{\infty} \beta^k \left[(\pi_{t+k} - \pi^*)^2 + \lambda y_{t+k}^2\right]$$

where L_t is the expected "loss" in a given period t, π_t is inflation, π^* is the inflation target, y_t is the output gap and β is a discounting factor. E_t expresses expectations based on information available at time t and may be interpreted as the central bank's forecast. As (1) shows, the expected loss is higher the further away from the targets actual inflation and output are expected to be. The deviations are squared, ie the central bank's losses increase with wide deviations from the targets in either direction.

Alternatively, the loss function can be expressed as follows[4]:

$$(2)\quad L_t = \sum_{k=0}^{\infty} \beta^k [(E_t\pi_{t+k} - \pi^*)^2 + \lambda(E_t y_{t+k})^2 + var_t(\pi_{t+k}) + \lambda var_t(y_{t+k})]$$

The first two terms in (2) mean that the expected loss is greater the wider the inflation and output gaps are. The last two terms mean that the expected loss is greater the more uncertainty there is in the projections. In linear models, it is sufficient to assess the point forecasts for inflation and the output gap to determine whether there is an appropriate balance between output and inflation. However, a model that incorporates the possibility of a crisis will be non-linear. In such a model, an important channel for monetary policy will also be to influence the variance in the variables. A reduction in the build-up of financial imbalances will then mitigate the downside risk to the economy and thus reduce expected variation in the output gap and inflation further out.

The cost associated with leaning, as it can be estimated within this framework, is illustrated by a temporary one percentage point increase in the interest rate. The interest rate increase is assumed to reflect the fact that for a period the central bank is seeking to

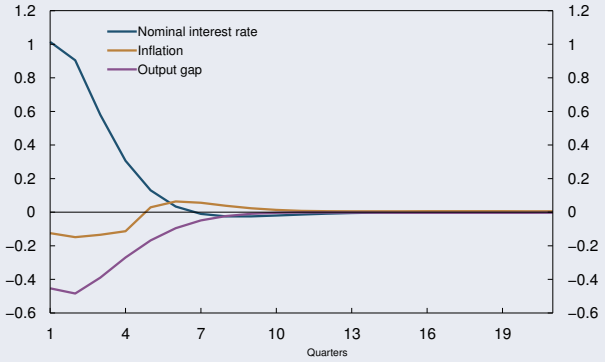
1 See eg Evjen, S. and T. B. Kloster (2012): "Norges Bank's new monetary policy loss function – further discussion", Norges Bank *Staff Memo* 11/2012.
2 The model and estimation methods are described in greater detail in Gerdrup, K., F. Hansen, T. Krogh and J. Maih (2016): "Leaning against the wind when credit bites back," Norges Bank *Working Paper* 9/2016.
3 See also Jorda, O., M. Schularick, and A. M. Taylor (2013): "When credit bites back". *Journal of Money, Credit and Banking 45* (s2), pp. 3–28, for information based on longer historical data.
4 Here the definition of conditional variance is used: $var_t(x_{t+k}) = E_t(x_{t+k} - E_t x_{t+k})^2$

mitigate the build-up of financial imbalances to a greater extent than what is consistent with the central bank's typical response pattern. As shown in Chart 1, such a rate increase results in a decline in output and inflation. This contributes to higher expected losses as assessed by the central bank by means of the first two terms in (2).

The benefits of the interest rate increase are reaped further out in time owing to lower credit growth and hence a reduced probability of a financial crisis (Chart 2). The expected fall in output during a crisis, given that it materialises, is also reduced (Chart 3). This is because households and firms are less vulnerable to a downturn when there is less build-up of debt prior to a crisis. This latter benefit is greater further out in time, since it takes time for financial imbalances to recede. A lower downside risk to the economy reduces the expected variation in the output and inflation gaps and thus contributes to a lower expected loss expressed by the last two terms in (2).

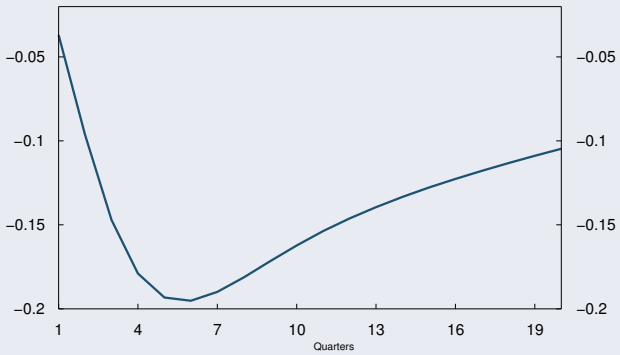
Chart 4 shows an estimate of net quarterly losses (t) as a consequence of a higher interest rate and how

Chart 1 Effect of a monetary policy shock in Q1 on inflation and the output gap.
Inflation. Percentage points. Output gap. Percent



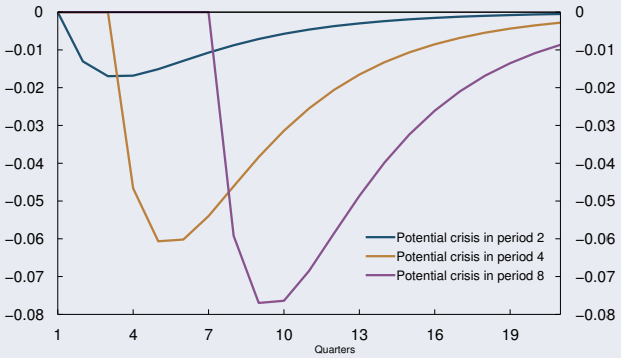
Source: Norges Bank

Chart 2 Effect of a monetary policy shock in Q1 on annualized crisis probability.[1)]
Percentage points



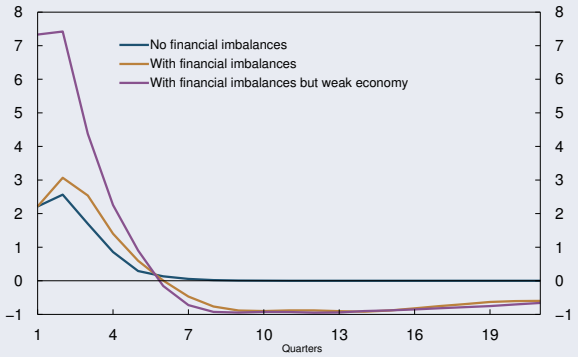
1) Shows the effect of an interest rate increase in the presence of financial imbalances.
Source: Norges Bank

Chart 3 Effect of a monetary policy shock in Q1 on output decline in a crisis,
with different starting points for the crisis.[1)] Percent



1) Expected decline in GDP given a crisis is around 10%. A negative value reduces the decline.
Source: Norges Bank

Chart 4 Effect of a monetary policy shock in Q1 on expected quarterly loss[1)].



1) Difference in loss with and without monetary policy shock. Loss is defined as the sum of the output and inflation gap in every period where both elements are squared.
Source: Norges Bank

the losses depend on the current situation in the economy. A negative net loss implies a benefit. The blue line shows developments in the loss in a situation where at the outset there are no financial imbalances, the output gap is closed and inflation is at target. A higher interest rate results in a loss in the initial quarters. In the longer run, no benefit is achieved in the form of a lower downside risk, since this risk is already very low. The loss per quarter converges to zero as the output gap closes and inflation returns to target. The total effect from this policy appears by comparing the area between the curve and the zero line. When the area above zero is greater than the area below zero, the costs will exceed the benefits. On balance, the cost associated with leaning is greater than the benefit in this case ($L_t > 0$).

The yellow line in Chart 4 shows a situation where financial imbalances have already built up and are high. At the outset, the output gap is closed and inflation is at target, as assumed for the blue line. In the short run, the expected loss increases as a consequence of a higher interest rate. First, a higher interest rate contributes to negative output and inflation gaps. Second, at all times there is a risk of a sharp economic downturn owing to the financial imbalances. If a crisis occurs, this will contribute to a pronounced economic downturn that in turn will amplify the loss caused by the monetary tightening. Over time, a higher interest rate will mitigate the downside risk to the economy, turning the loss per quarter to a gain. Overall, a somewhat higher interest rate is beneficial in this example, since the benefits exceed the costs ($L_t < 0$).

If the interest rate is raised in a situation where the economy is already weak, the expected short-term losses increase sharply (purple line). This is because if a sharp downturn occurs when cyclical conditions are weak, here intensified by a higher interest rate, the output gap will turn sharply negative and inflation will fall even further below the target. With a higher interest rate, the quarterly losses will turn into gains over time. Owing to a weaker economic starting point, much would be needed for these benefits to offset the short-term economic costs. On balance, the cost of leaning is greater than the benefit ($L_t > 0$).

The estimations of gains and losses are highly uncertain. This is partly because periods of financial instability occur relatively infrequently and because structural conditions in the economy and the financial system imply divergent risks of financial instability across countries. The economics literature arrives at different results owing to alternative assumptions about economic relationships and estimated effects of the interest rate on the output gap and inflation on the one hand and financial imbalances and crisis depth on the other.[5] If the interest rate has a pronounced effect on the build-up of financial imbalances, the benefit of leaning is greater as it reduces the risk of a sharp downturn further ahead in time. If the interest rate has a pronounced effect on output and inflation, the short-term costs of allowing the interest rate to respond to financial variables are greater.

5 The BIS argues that the benefits of leaning can be substantial, particularly at an early stage in a period of strong growth in asset prices and credit, see *86th Annual Report*, 2015/16, Bank for International Settlements Svensson (2016) and Ajello et al (2015) find small or no benefits of such a policy, see Svensson, L. E. O. (2016): "Cost-Benefit Analysis of Leaning Against the Wind: Are Costs Larger Also with Less Effective Macroprudential Policy?", IMF Working Paper WP/16/3, January 11. and Ajello, A., T. Laubach, D. Lopez-Salido, and T. Nakate (2015, February): "Financial stability and optimal interest-rate policy." Working Paper, Federal Reserve Board.

HOW IS THE NIBOR SPREAD AFFECTED BY NEW REGULATIONS?

Nibor is intended to express the price of an unsecured loan in NOK to a leading bank that is active in the Norwegian money and foreign exchange markets. Nibor panel banks base their Nibor setting on the cost of an unsecured interbank loan in USD, adjusted for the cost of converting the loan to NOK in the foreign exchange swap market. Owing to the construction of Nibor as a foreign exchange swap rate, international conditions may have a considerable impact on Norwegian money market rates.[1]

In the course of summer, the premium in the US dollar rate banks use as the basis for Nibor rose markedly (Chart 1). This has resulted in an increase in the same period in the difference between the three-month Nibor and the expected key policy rate, referred to as the Nibor spread.

The increase in the premium in the US dollar rate through the summer reflects the higher cost of short-term bank funding in the US money market. This is largely due to adjustments to new regulations for US money market mutual funds. The regulations will apply from mid-October 2016 and primarily affect what are known as prime funds, which invest in short-term debt securities (commercial paper) issued by banks. The new regulations set stricter liquidity requirements for these funds, and a number of funds must sell and redeem shares at market price, compared with a fixed price previously. The regulatory changes have led to a sharp decline in the maturity of prime funds' investments and prompted a number of investors to withdraw their holdings from prime funds before the new regulations enter into force. In addition, a number of mutual fund companies have opted to convert existing prime funds into government funds[2], which will not be subject to the same regulation. Overall, this has contributed to an increase in the price of commercial paper (CP) funding in the US money market, shown by the premium in the CP rate in Chart 1. The chart shows that the premium on the US dollar rate in Nibor has risen in pace with the higher price of CP funding and the higher premium in the US money market rate Libor[3].

Stricter liquidity requirements for banks are likely also contributing to higher money market spreads. Following the financial crisis, new liquidity requirements for banks have been introduced both in Norway and internationally. Under the Liquidity Coverage Ratio (LCR) requirement, banks must hold an adequate stock of liquid assets to meet their liquidity needs for a 30-day period of financial market stress.[4] This requirement has increased the demand for funding with maturity of over one month and has likely amplified the effect of the new regulation of the US money market.

There is reason to believe that the premium in the US dollar rate will edge down after the new regulations for US money market funds enter into force in mid-October. Reduced uncertainty regarding future capital outflows may again induce the funds to offer funding with longer maturity. A lower premium in the US dollar rate will in isolation pull down the Nibor spread. Nevertheless, both banks' liquidity requirements and new regulations for US money market funds suggest that the premium in Nibor may remain higher in the longer term than previously assumed. Therefore, the long-term premium in the three-month Nibor has been revised up from 0.30 percentage point to 0.40 percentage point. However, there is considerable uncertainty surrounding the effects of regulation on the money market.

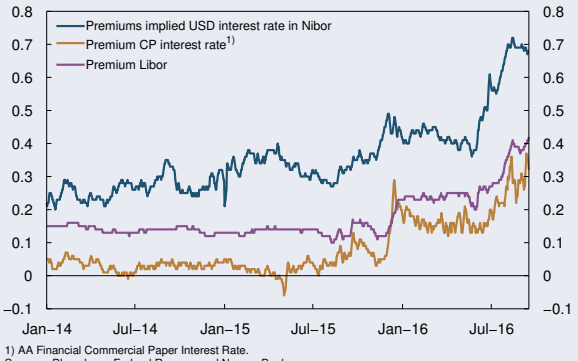
1 Nibor stands for Norwegian Interbank Offered Rate. The banks participating in setting Nibor (Nibor panel banks) are DNB Bank ASA, Danske Bank, Handelsbanken, Nordea Bank Norge ASA, SEB AS and Swedbank. For a detailed description of the construction of Nibor, see Lund, K., K. Tafjord and M. Øwre-Johnsen (2016): "What drives the Nibor spread?", Norges Bank *Economic Commentaries*, 10/2016 (forthcoming),. This commentary also provides an account of the impact of the new regulations on the Nibor spread.

2 Government funds invest in government or government-guaranteed assets, while prime funds have a broader investment universe and invest primarily in securities issued by non-financial enterprises and banks.

3 The three-month USD Libor expresses the interest rate on an unsecured interbank loan in USD with a three-month maturity.

4 See *Financial Stability Report* 2015, Norges Bank, pp. 34–35, for a detailed description of new liquidity rules for Norwegian banks.

Chart 1 Premiums in three–month USD interest rates. Five–day moving average. Percentage points. 1 January 2014 – 16 September 2016



1) AA Financial Commercial Paper Interest Rate.
Sources: Bloomberg, Federal Reserve and Norges Bank

DEVELOPMENTS IN BANKS' CREDIT STANDARDS

The purpose of Norges Bank's Survey of Bank Lending is to shed light on developments in banks' credit standards and on banks' assessment of the demand for credit. Similar surveys are conducted by a number of other central banks. Norges Bank's lending survey has been conducted since 2007 Q4. The nine largest banks in Norway participate in the survey. This Special Feature presents an assessment of developments in banks' credit standards over time.[1]

The banks in the survey are asked for their assessment of credit standards, factors affecting credit standards, changes in loan conditions and credit demand from households and non-financial enterprises.[2] Banks assess developments in the past quarter and report their expectations with regard to the quarter ahead.

As reported by the banks, credit standards have been tightened substantially since 2008 (Chart 1). Tightening was particularly pronounced in the periods 2008–2009, 2011–2012 and in 2015. Economic developments, new capital requirements and regulation of residential mortgage lending have been reported as important reasons for tightening in these periods.

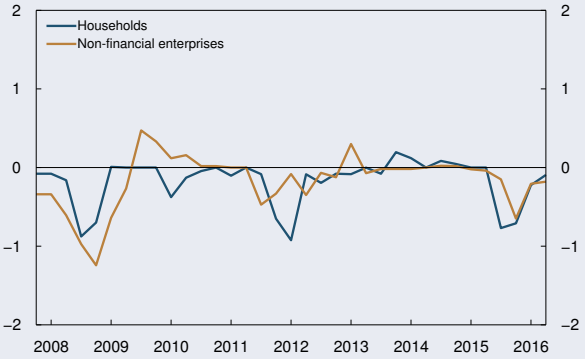
For non-financial enterprises, economic factors[3] have been the most important explanation for tighter credit standards (Chart 2). Capital requirements and funding have also been of considerable importance. In Norway, the authorities have raised capital requirements in several rounds, including by introducing a systemic risk buffer and a countercyclical capital buffer. Banks have also tightened loan conditions for non-financial enterprises, primarily through fees and equity requirements.

Economic conditions have also been an important reason for the tightening of credit standards for households, especially in the period following the financial crisis in 2008 and in 2015 (Chart 3). Bank capital requirements have had little impact on credit standards for households, probably because residential mortgages have lower risk weights and tie up less of a bank's capital than corporate loans. In 2011–2012 and in 2015, tightening of credit standards for households was focused on changes in loan conditions, probably reflecting Finanstilsynet's guidelines for residential mortgage lending, which were introduced in 2010, tightened in 2011 and laid down in a regulation in 2015. Banks have in particular tightened loan-to-value (LTV) ratios, reduced the use of interest-only periods and increased the use of fees, while maximum loan maturity has been of little importance (Chart 4).

The information provided by the lending survey can provide an indication of future credit developments. In an empirical model of household credit growth (C2), credit standards in particular have proved to provide significant additional information (for a detailed description, see Norges Bank *Staff Memo* 17/2016).

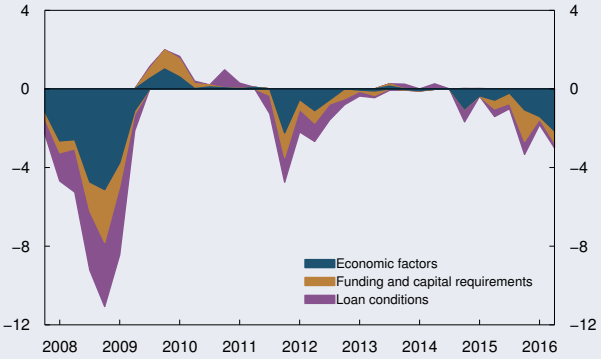
1 For a broader review, see Lindquist, K.-G., O.M.K. Mundal, M.D. Riiser and H. Solheim (2016): "Banks' demand and credit standards since 2008: results from Norges Bank's Survey of Bank Lending", Norges Bank *Staff Memo* 17/2016 (forthcoming).
2 Banks refer to economic conditions, risk of default, the funding situation and capital requirements as possible reasons for the change in credit standards. Changes in loan conditions include collateral, equity and income requirements, maximum loan maturity and use of interest-only periods.
3 Economic factors include macroeconomic conditions and the risk of default. For non-financial enterprises, industry-specific factors are also included.

Chart 1 Change in credit standards for households and non-financial enterprises.[1] 2007 Q4 – 2016 Q2



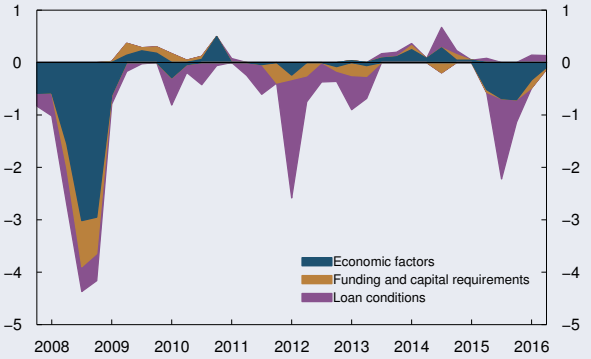
1) The banks respond on a scale of +/–2. In the aggregated figures, banks are weighted by the size of their balance sheets. Negative values denote tighter credit standards.
Source: Norges Bank's Survey of Bank Lending

Chart 2 Change in loan conditions and factors affecting credit standards for non-financial enterprises.[1] 2007 Q4 – 2016 Q2



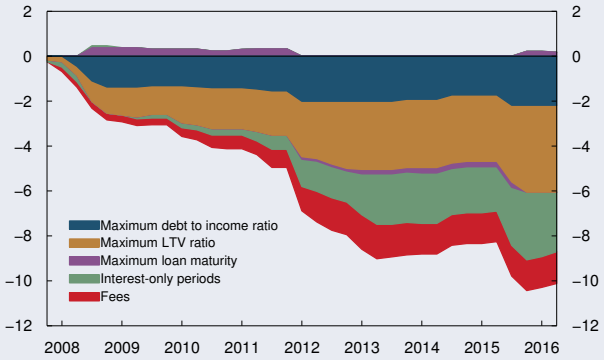
1) The banks respond to a number of questions on a scale of +/–2. The responses to each question are aggregated using the size of banks' balance sheets as weights. The chart shows the sum of the aggregated responses to each question. Negative values denote tighter credit standards.
Source: Norges Bank's Survey of Bank Lending

Chart 3 Change in loan conditions and factors affecting credit standards for households.[1] 2007 Q4 – 2016 Q2



1) The banks respond to a number of questions on a scale of +/–2. The responses to each question are aggregated using the size of banks' balance sheets as weights. The chart shows the sum of the aggregated responses to each question. Negative values denote tighter credit standards.
Source: Norges Bank's Survey of Bank Lending

Chart 4 Decomposition of changes in loan conditions for households accumulated over time.[1] 2007 Q4 – 2016 Q2



1) The banks respond on a scale of +/–2. In the aggregated figures, banks are weighted by the size of their balance sheets. Negative values denote tighter credit standards.
Source: Norges Bank's Survey of Bank Lending

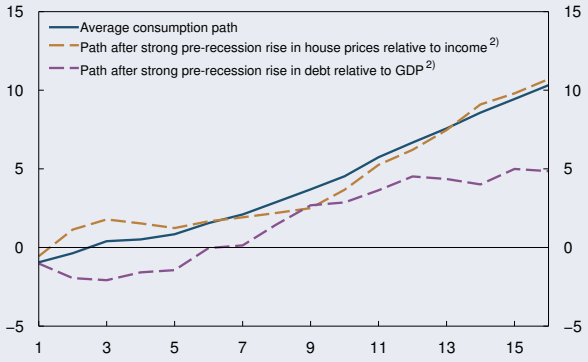
DOES HIGH DEBT GROWTH IN UPTURNS LEAD TO A MORE PRONOUNCED FALL IN CONSUMPTION IN DOWNTURNS?

A persistently strong rise in debt and asset prices can increase the risk of a steep decline in overall demand further out. High levels of debt can increase household vulnerability to higher interest rates, a fall in house prices or a reduction in income. If interest rates rise and income is reduced, a larger portion of household income will have to be used to pay interest and principal, leaving less income for other consumption.

Experience from international recessions over the past four decades confirms that strong debt growth in the period preceding a recession contributes to a steep decline in private demand at an aggregated level.[1] Chart 1 shows estimated developments in household consumption during recessions.[2] The fall in household consumption is deeper and its recovery weaker when the recession is preceded by high household debt accumulation. In an estimated average consumption path, it takes three quarters for consumption to return to its pre-recession level. However, if debt growth is one standard deviation higher than the average in the five-year period preceding the recession, it takes six quarters for consumption to return to its original level.[3] Controlled for developments in household debt as a share of GDP, changes in house prices relative to disposable income in the five-year period preceding the recession have in isolation little effect on consumption during the recession.

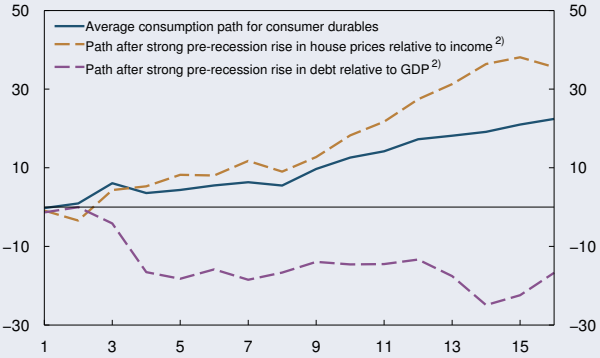
During recessions, households usually reduce consumption of durable consumer goods, such as cars and furniture, more than other consumption, such as food and clothing. Durable consumption generally falls more through recessions and is affected by pre-recession debt accumulation to a greater extent than non-durable consumption (Charts 2 and 3).

Chart 1 Estimated path for total consumption during recessions.[1)]
Number of quarters from start of recession. Percent



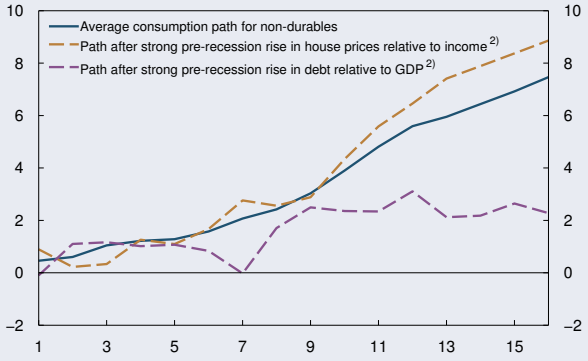
1) Path estimated using local projections.
2) Strong growth is defined as a rise of more than one standard deviation above the average. The rise is the average rise in the five years preceding the start of the recession.
Sources: BIS, Federal Reserve Bank of Dallas, OECD, Statistics Norway and Norges Bank

Chart 2 Estimated path for durable consumption during recessions.[1)]
Number of quarters from start of recession. Percent



1) Path estimated using local projections.
2) Strong growth is defined as a rise of more than one standard deviation above the average. The rise is the average rise in the five years preceding the start of the recession.
Sources: BIS, Federal Reserve Bank of Dallas, OECD, Statistics Norway and Norges Bank

Chart 3 Estimated path for non-durable consumption during recessions.[1)]
Number of quarters from start of recession. Percent



1) Path estimated using local projections.
2) Strong growth is defined as a rise of more than one standard deviation above the average. The rise is the average rise in the five years preceding the start of the recession.
Sources: BIS, Federal Reserve Bank of Dallas, OECD, Statistics Norway and Norges Bank

1 The analysis is based on 64 recessions in 21 countries in the period 1970 Q1 to 2014 Q4. The data and method are described in more detail in Hansen F. and K.N. Torstensen (2016): "Does high debt growth in upturns lead to a more pronounced fall in consumption in downturns?", Norges Bank *Economic Commentaries* 8/16 (forthcoming).
2 The analyses control for average growth in debt as a share of GDP and house prices relative to disposable income in the five years preceding the beginning of the recession. The analyses also control for pre-recession housing investment and GDP and country-specific fixed effects.
3 The effect of debt on consumption is statistically significant at the 3–6 quarter and 14–16 quarter horizons.

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
14 December 2016		
26 October 2016		
21 September 2016	**0.50**	**0**
22 June 2016	0.50	0
11 May 2016	0.50	0
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

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 PROJECTIONS FOR GDP GROWTH IN OTHER COUNTRIES

Change from projections in *Monetary Policy Report* 2/16 in brackets	Share of world GDP[1]			Change from previous year. Percent				
	PPP	Market exchange rates	Trading partners[4]	2015	2016	2017	2018	2019
US	16	23	9	2.6 (0.2)	1.5 (-0.3)	2.1 (-0.2)	2.2 (0)	2.1 (0)
Euro area[6]	12	17	32	1.9 (0.3)	1.5 (0)	1.3 (-0.2)	1.5 (-0.1)	1.5 (-0.1)
UK	2	4	10	2.2 (-0.1)	1.8 (-0.1)	0.8 (-1.5)	1.6 (-0.6)	1.9 (-0.2)
Sweden	0.4	0.7	11	4.1 (0.2)	3.1 (-0.4)	2.2 (-0.3)	2.2 (-0.1)	2.1 (0)
Other advanced economies[2]	7	10	20	1.4 (-0.1)	1.5 (0)	1.8 (0)	2.2 (0.1)	2.1 (0)
China	18	14	6	6.9 (0)	6.4 (0.1)	5.9 (0)	5.7 (0)	5.7 (0)
Other emerging economies[3]	19	11	12	0.9 (0)	1.9 (0.5)	3.3 (0.3)	3.9 (0.1)	4.0 (0.2)
Trading partners[4,6]	73	78	100	2.7 (0.4)	2.1 (0)	2.0 (-0.2)	2.3 (0)	2.3 (0.1)
World (PPP)[5]	100	100		3.2 (0.1)	3.0 (-0.1)	3.4 (-0.1)	3.6 (0)	3.7 (0)
World (market exchange rates)[5]	100	100		2.5 (0)	2.3 (-0.1)	2.7 (-0.2)	3.0 (0)	3.0 (0)

1 Country's share of global output measured in a common currency. Average 2013–2015.
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 (market exchange rates) are used to reflect the countries' contribution to global growth.
4 Export weights, 25 main trading partners. In MPR 3/16, the weights are updated using data to 2015. In MPR 2/16, the weights are based on data to 2012. After the update, emerging economies, in particular China, received a larger weight in the aggregate. The countries with increased weights are as a whole expected to grow faster than the other countries in the period to the end of the projection period. All else equal, this entails an upward revision of 0.1 percentage point annually between 2016 and 2018 compared with MPR 2/16. In 2019, the projection is revised up by 0.2 percentage point
5 GDP weights. Three-year moving average. Norges Bank's estimates for 25 trading partners, other estimates from the IMF.
6 Euro area GDP growth is revised up by 0.3 percentage point for 2015, primarily reflecting revised national accounts figures in Ireland.

Sources: IMF, Thomson Reuters and Norges Bank

TABLE 2 PROJECTIONS FOR CONSUMER PRICES IN OTHER COUNTRIES

Change from projections in *Monetary Policy Report* 2/16 in brackets	Trading partners[3]	Trading partners in the interest rate aggregate[4]	Change from previous year. Percent				
			2015	2016	2017	2018	2019
US	7	21	0.1 (0)	1.2 (0)	2.0 (0.3)	2.1 (0)	2.2 (0)
Euro area	34	53	0.0 (0)	0.2 (-0.1)	1.2 (0)	1.3 (0.1)	1.5 (0)
UK	8	7	0.0 (0)	0.8 (0)	2.4 (0.6)	2.2 (0.1)	2.0 (0)
Sweden	15	12	0.0 (0)	1.1 (0.2)	1.7 (-0.2)	2.5 (-0.1)	2.8 (0)
Other advanced economies[1]	15		0.4 (0)	0.5 (0)	1.3 (-0.1)	1.6 (0)	1.8 (0)
China	12		1.4 (0)	1.9 (0)	1.9 (0)	2.4 (0)	2.7 (0)
Other emerging economies[2]	10		8.1 (0)	5.6 (-0.2)	5.1 (-0.1)	5.0 (0.1)	4.9 (0)
Trading partners[3]	100		0.9 (0)	1.1 (0)	1.8 (0)	2.1 (0.1)	2.3 (0)
Trading partners in the interest rate aggregate[4]			0.0	0.6 (0)	1.5 (0)	1.7 (0)	1.9 (0)
Oil price, Brent Blend. USD per barrel[5]			52	43 (-2)	50 (-2)	53 (-1)	55 (-1)

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 (market exchange rates).
3 In MPR 3/16, the weights are updated using data to 2015. In MPR 2/16, the weights are based on data to 2012.
4 Norges Bank's 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 2016, the average of spot prices so far this year and futures prices for the rest of the year are used. Change from MPR 2/16 in brackets, in USD per barrel.

Sources: IMF, Thomson Reuters and Norges Bank

TABLE 3 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	3.6	2.6	2.1	1.8
CPI-ATE[1]		2.7	3.3	2.7	2.1	1.8
Annual wages[2]		2.8	2.5	3.2	3.4	3.7
Real economy						
GDP	3117	1.6	0.7	1.3	1.5	1.7
GDP, mainland Norway	2620	1.1	0.9	1.8	2.1	2.1
Output gap, mainland Norway (level)[3]		-1.1	-1.6	-1.5	-1.1	-0.7
Employment, persons, QNA		0.3	-0.3	0.8	1.1	0.9
Labour force, LFS		1.4	0.4	0.7	0.9	0.6
LFS unemployment (rate, level)		4.4	4.7	4.7	4.4	4.1
Registered unemployment (rate, level)		3.0	3.0	3.0	2.9	2.8
Demand						
Mainland demand[4]	2609	1.8	2.5	2.7	2.2	2.1
- Household consumption[5]	1341	2.1	1.9	2.1	2.0	1.8
- Business investment	226	-1.6	2.1	5.5	5.4	5.3
- Housing investment	162	1.6	7.6	4.0	1.5	0.5
- Public demand[6]	880	2.2	2.7	2.6	1.8	1.8
Petroleum investment[7]	187	-15.0	-15.5	-4.2	0.0	3.0
Mainland exports[8]	609	5.6	-4.0	3.1	3.2	3.3
Imports	996	1.6	0.6	3.0	2.1	2.7
Interest rate and exchange rate						
Key policy rate (level)[9]		1.0	0.6	0.4	0.4	0.7
Import-weighted exchange rate (I-44)[10]		103.5	105.9	103.7	103.0	102.2

1 CPI-ATE: CPI adjusted for tax changes and excluding energy products.
2 Annual wage growth is based on the Norwegian Technical Calculation Committee for Wage Settlements' definitions and calculations.
3 The output gap measures the percentage deviation between mainland GDP and projected potential mainland GDP.
4 Household consumption and private mainland gross fixed investment and public demand.
5 Includes consumption for non-profit organisations.
6 General government gross fixed investment and consumption.
7 Extraction and pipeline transport.
8 Traditional goods, travel, petroleum services and exports of other services from mainland Norway.
9 The key policy rate is the interest rate on banks' deposits in Norges Bank.
10 Level. The weights are estimated on the basis of imports from 44 countries, which comprise 97% of total imports.

Sources: Statistics Norway. Norwegian Technical Calculation Committee for Wage Settlements (TBU). Norwegian Labour and Welfare Administration (NAV) and Norges Bank

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