NORGES BANK

4 | **16** DECEMBER

MONETARY POLICY REPORT

WITH FINANCIAL STABILITY ASSESSMENT

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 7 December 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 14 December 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 9 December 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

The analyses in the previous *Monetary Policy Report,* which was published on 22 September 2016, suggested that the key policy rate would remain close to ½% in the coming years. At the same time, the forecast implied a slightly higher probability of a decrease than an increase in the key policy rate in the year ahead. The key policy rate was projected to increase to just below 1% towards the end of the projection period. Inflation was projected to recede to somewhat below 2% in 2019. Capacity utilisation in the mainland economy was assessed to be lower than a normal level, but was expected to increase gradually in the coming years. In September, the Executive Board decided to keep the key policy rate unchanged and indicated that the key policy rate would most likely remain at that level in the period ahead. At the monetary policy meeting on 26 October, the key policy rate was left unchanged.

Growth in the global economy remains moderate, but so far this year growth among Norway's trading partners has been a little stronger than projected in the September *Report.* This primarily reflects robust growth in the UK. The growth projections for Norway's trading partners are little changed, but uncertainty has heightened as a number of US policy issues have yet to be clarified. Inflation is still low among trading partners, but market-based inflation expectations have increased in a number of countries.

The global interest rate level is very low, but policy rate expectations have increased considerably since September. Long-term interest rates have also moved up.

Oil prices have risen in response to the decision by OPEC and several other countries to limit oil production. Prices are now somewhat higher than assumed in the September *Report*. Futures prices have also edged up, but indicate that oil prices will remain close to today's level ahead. The krone has appreciated and is stronger than expected in September.

The premium in the Norwegian money market increased ahead of the entry into force of new US money market regulations in mid-October. The premium was expected to move down following implementation, but has so far shown little change. The premium is expected to decline at a somewhat slower pace than envisaged in September.

A number of banks have increased their mortgage interest rates somewhat in recent months, and interest rates on loans to households are expected to be slightly higher in the coming period than assumed in September. Interest rates on loans to enterprises have also increased somewhat in the past six months.

There are signs that activity in the Norwegian economy is picking up at a somewhat slower pace than projected in September. New national accounts figures show that economic growth is low. Norges Bank's regional network contacts reported in November that output growth had increased slightly, but that it was somewhat weaker than the contacts had envisaged in August. They expect output growth to show a small increase over the next six months. Weaker prospects for petroleum investment in 2017 than anticipated in the September *Report* will contribute to curbing growth next year.

The assumptions in the National Budget for 2017 imply an expansionary fiscal policy also in the years ahead, but indicate that spending of petroleum revenues will be slightly lower than previously assumed.

Unemployment has moved in line with the September projections. Both registered unemployment and unemployment measured by the Labour Force Survey (LFS) are at about the same level as at the time of the September *Report*.

It appears that wage growth will be slightly lower in 2016 than projected in September. Wage growth is likely to pick up somewhat in 2017, but probably to a lesser extent than projected in September, partly reflecting a somewhat slower pick-up in growth in the Norwegian economy. According to Norges Bank's expectations survey, the social partners now expect somewhat lower wage growth in 2017 than they did in autumn.

The twelve-month rise in the consumer price index adjusted for tax changes and excluding energy products (CPI-ATE) was 2.6% in November. While the rise in prices for domestically produced goods and services has been broadly in line with projections, prices for imported goods have risen less than projected. Overall, inflation has been lower than projected. The recent appreciation of the krone is expected to push down inflation somewhat faster than envisaged in September.

House price inflation has been high in large parts of the country in recent months, and prices have risen more than projected. Household debt growth has edged up and been higher than expected. Both house prices and household debt are rising faster than disposable income.

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. According to the forecast, the key policy rate increases to around 1% at the end of the projection period. The key policy rate forecast is little changed compared with the September *Report*. With this path for the key policy rate, the analyses suggest that inflation will recede in the coming years. Towards the end of the projection period, inflation is projected to lie between 1½% and 2%. The analyses suggest that capacity utilisation will remain close to its current level over the next year, normalising gradually thereafter.

Monetary policy is expansionary and supportive of structural adjustments in the Norwegian economy. 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.

Persistently low interest rates add to vulnerabilities in the financial system. Banking regulation and macroprudential policy measures are the first line of defence against financial instability. In the interest of long-term economic stability, it is nevertheless appropriate to take account of the risk associated with very low interest rates in the conduct of monetary policy. When the key policy rate is close to a lower bound, the uncertainty surrounding the effects of monetary policy is greater than when the interest rate is at a more normal level. 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 prospects that inflation will be lower than the inflation target a few years ahead. Moderate wage growth may lead to somewhat lower inflation ahead than projected earlier. At the same time, survey-based inflation expectations a few years ahead appear to be well anchored close to the inflation target. Capacity utilisation is below a normal level and there are prospects that growth in the Norwegian economy will pick up at a slightly slower pace than projected in the September *Report*. Changes in the outlook for inflation and capacity utilisation imply, in isolation, a somewhat lower key policy rate in the coming years. On the other hand, the rapid rise in house prices and household debt has increased the risk of a sharp fall in demand further out. A lower key policy rate increases the risk of a further acceleration in house price inflation and debt accumulation. The risk of a build-up of financial imbalances and the uncertainty surrounding the effects of a lower key policy rate now suggest a cautious approach to interest rate setting.

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 14 December, the Executive Board decided to keep the key policy rate unchanged at 0.50%.

Øystein Olsen
14 December 2016

1 ECONOMIC SITUATION

Moderate global growth

Growth in the global economy has softened in recent years and is now at its lowest since the financial crisis, primarily reflecting weaker developments in emerging economies, commodity producers in particular. At the same time, growth among Norway's trading partners has picked up somewhat since 2012 (Chart 1.1), owing to firming growth in a number of the largest advanced economies.

So far in 2016, growth among Norway's trading partners has been somewhat higher than projected in the September 2016 *Monetary Policy Report*. This is primarily because UK growth in the period following the vote to leave the EU has been stronger than projected in September. In the euro area, there are also signs that activity has remained higher than expected in the September *Report*. Developments in the Swedish economy have been approximately in line with assumptions. The US recovery has continued as expected, while growth in the first half of 2016 has been revised up somewhat. Growth in China has been slightly stronger than envisaged, driven by a renewed upturn in the housing market.

Growth among Norway's trading partners is expected to remain moderate in the years ahead, on a par with growth in 2016. Near-term growth prospects for trading partners have improved a little since the September *Report*, but uncertainty has heightened as a number of policy issues in the US and the UK have yet to be clarified. In the US, the president-elect has signalled substantial tax reductions and higher infrastructure and defence spending, but how this will be accomplished or how it will be funded is not yet clear. In this *Report*, it is assumed that fiscal policy will be somewhat more expansionary ahead than assumed in the September *Report*. At the same time, there has been a tightening of financial conditions owing to increased interest rates (see discussion on international market developments on page 11). In addition, there is considerable uncertainty about future trade and immigration policies. On the whole, US growth projections are approximately unchanged. In the UK, the growth projection for 2017 has been revised up compared with the September *Report*. In the longer term, projections have been revised down somewhat owing to greater uncertainty regarding the outcome of the withdrawal process. In China, tighter regulations and measures to limit credit growth are expected to curb the upswing in the housing market further out. For trading partners as a whole the near-term GDP growth projection is slightly higher than in the September *Report*, while the projection for 2019 is slightly lower than in September (Annex Table 1). For a further discussion of economic developments in different countries and regions, see Special Feature on page 50.

Rising consumer price inflation abroad

Consumer price inflation among trading partners remains low owing to low commodity prices and continued low capacity utilisation in many countries (Chart 1.2). Energy and metal prices have recently increased (Chart 1.3), reflecting factors such as higher investment growth in China and prospects for increased

Chart 1.1 Global GDP[1] and GDP for trading partners[2]. Volume. Annual change. Percent. 2010 – 2019[3]
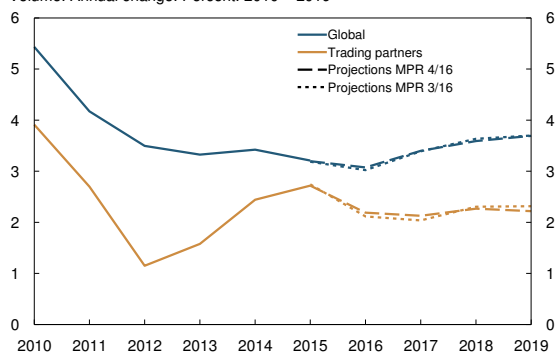
1) Purchasing power parity weights.
2) Export weights.
3) Projections for 2016 – 2019 (broken lines).
Sources: IMF, Thomson Reuters and Norges Bank

Chart 1.2 CPI for trading partners. Import weights. Annual change. Percent. 2005 – 2019[1]
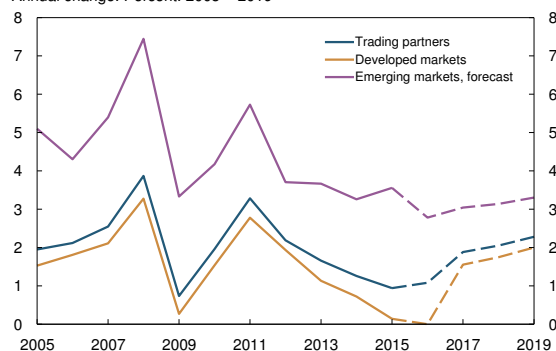
1) Projections for 2016 – 2019 (broken lines).
Sources: Statistics Norway, Thomson Reuters and Norges Bank

Chart 1.3 Commodity prices. USD. Twelve-month change. Percent.
January 2010 – December 2016 [1]
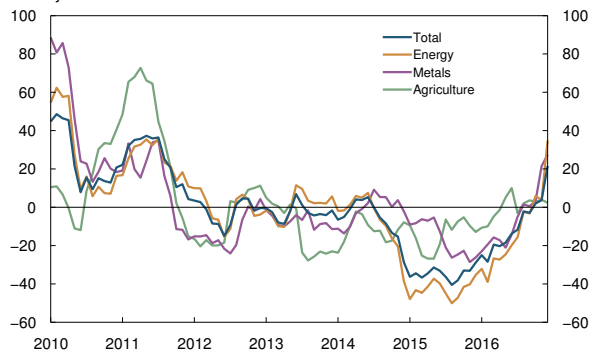
1) Commodity prices for December 2016 are the averages for the period 1 – 9 December.
Source: Thomson Reuters

Chart 1.4 Market-based inflation expectations five years ahead.[1]
Percent. 4 January 2010 – 9 December 2016
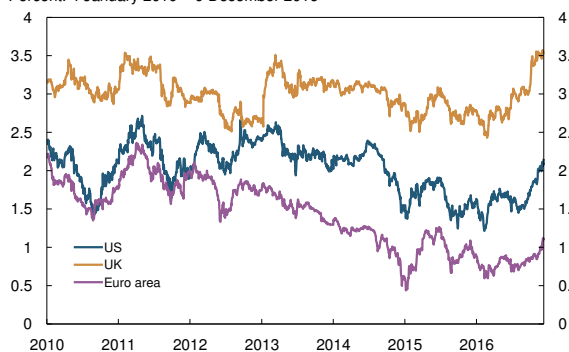
1) Five-year inflation swaps.
Sources: Bloomberg and Thomson Reuters

Chart 1.5 Crude oil spot and futures prices. USD/barrel.
January 2010 – December 2019 [1]
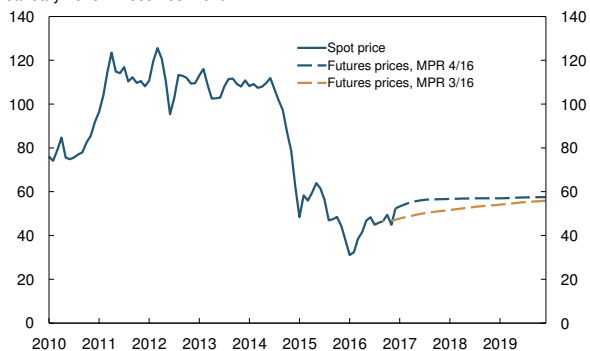
1) Futures prices (broken lines) are the averages of futures prices for the period 12 – 16 September 2016
for MPR 3/16 and 5 – 9 December 2016 for MPR 4/16.
Source: Thomson Reuters

infrastructure investment in the US. The production of coal and certain metals has also been reduced in China. The rise in commodity prices has contributed to some increase in consumer price inflation. Looking ahead, a rise in commodity prices in line with futures prices will push up inflation further. Core inflation among Norway's main trading partners is stable and somewhat higher than overall consumer price inflation. In the UK, inflation is expected to rise substantially as a result of the depreciation of sterling following the vote to leave the EU. Market-based inflation expectations have increased both in the US and in Europe after having been low for several years (Chart 1.4). In several emerging economies, there are prospects for lower capacity utilisation than envisaged in September, as near-term growth estimates have been revised down and the implementation of structural reforms lifts potential growth in some countries. At the same time, currencies in several emerging economies have depreciated, which is expected to push up imported inflation. Inflation projections for emerging economies as a whole have been revised down slightly since September. For trading partners as whole, the projection for consumer price inflation for 2017 has been revised up slightly compared with the September *Report*. For the subsequent years the projections are unchanged (Annex Table 2).

Somewhat higher oil prices

Oil prices have declined by more than half compared with the average for 2011–2014, but prices are markedly higher than the trough in early 2016 (Chart 1.5). Oil prices have recently hovered somewhat above USD 50 per barrel, somewhat higher than envisaged in the September *Report*. Futures prices have shown a smaller increase.

At the end of November, the Organisation of the Petroleum Exporting Countries (OPEC) decided to cut oil production from 1 January 2017. At the end of May 2017, OPEC will assess whether to extend the cuts. Non-OPEC countries have also committed to reducing production. As a result, global oil consumption will probably exceed global oil production by the first half of 2017, while it was previously assumed that this would not occur until the second half of the year. Oil inventories may then fall, albeit from a historically high level (Chart 1.6). At the same time, an oil price above USD 50 may lead to a further pick-up in the

number of active shale drilling rigs in the US, resulting in a faster increase in production than expected earlier. Oil prices are assumed to move in line with futures prices. These prices indicate that oil prices will rise slightly in the near term and remain fairly stable thereafter.

Gas prices have risen both in the UK and on the continent in the course of autumn. The price of Norwegian gas exports, as reported by Statistics Norway, is therefore likely to rise further out.

Higher foreign interest rates

The global interest rate level remains very low, but market interest rates in many countries have risen markedly since the September *Report*. Long-term interest rates have shown the largest increase (Chart 1.7), and the rise has been strongest in the US and the UK. The main factors behind the rise in interest rates are likely the outcome of the US election and somewhat stronger-than expected developments in the real economy, especially in the UK. The US election result seems to have contributed to expectations of a looser fiscal policy ahead. According to market participants, this has influenced long-term rates through expectations of higher GDP growth and inflation, increased issuance of US government securities and less need for monetary stimulus in the period ahead. Higher risk premiums have also likely contributed to the increase in long-term interest rates. Uncertainty in connection with the presidential election in France next year and the referendum in Italy at the beginning of December on constitutional reforms has contributed to a rise in interest rates in these countries. Equity prices in Europe and the US have also moved up markedly since the September *Report* (Chart 1.8). Equity markets have fallen slightly in emerging economies. The Oslo Børs benchmark index has advanced more than corresponding international indexes in the same period.

There are now prospects for a somewhat faster rise in policy rates among Norway's main trading partners than in the September *Report* (Chart 1.9). As a consequence, expected money market rates for trading partners have risen (Chart 1.10), with the highest rise in interest rates expected a few years ahead. Market participants regard a December rate hike in the US as likely, and US rates in the years ahead

Chart 1.6 Oil inventories in the OECD. Total oil inventories in number of days of consumption.[1] January 2011 – September 2016
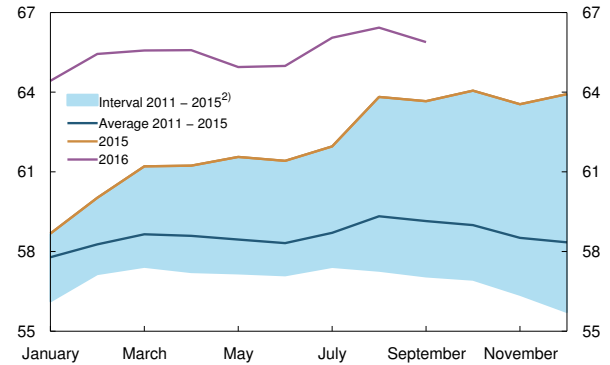
1) The number of days of consumption is calculated using average expected demand for the next three months.
2) The blue band shows the interval between the highest and lowest levels in the period 2011 – 2015.
Sources: IEA and Norges Bank

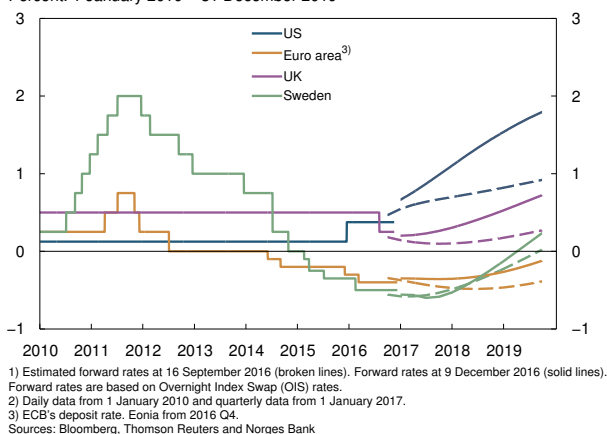Chart 1.7 Yields on ten–year government bonds. Percent. 1 January 2010 – 9 December 2016 [1]
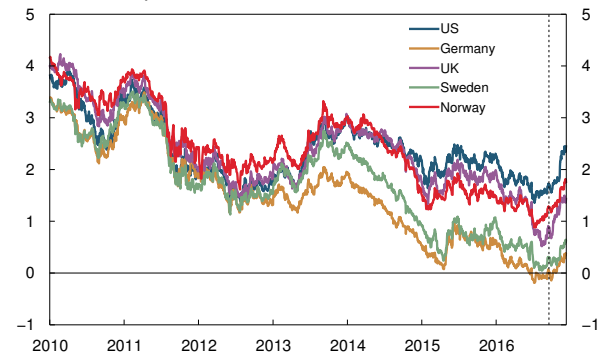
1) MPR 3/16 was based on information in the period to 16 September 2016, marked by the vertical line.
Source: Bloomberg

Chart 1.8 Selected equity price indexes. January 2016 = 100. 1 January 2010 – 9 December 2016 [1]
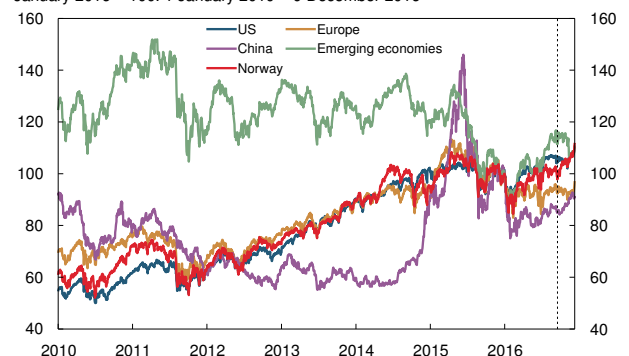
1) MPR 3/16 was based on information in the period to 16 September 2016, marked by the vertical line.
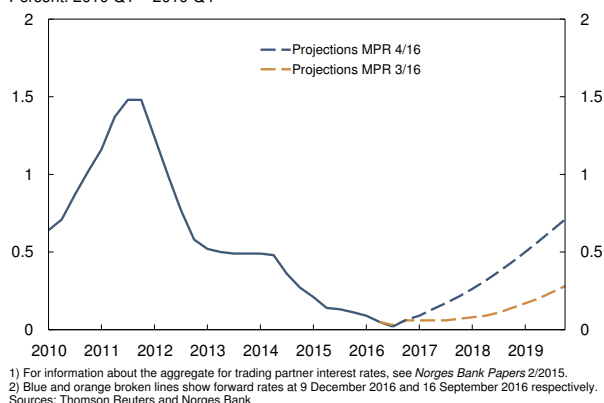Source: Bloomberg

Chart 1.9 Policy rates and estimated forward rates[1].
Percent. 1 January 2010 – 31 December 2019 [2].

1) Estimated forward rates at 16 September 2016 (broken lines). Forward rates at 9 December 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 January 2017.
3) ECB's deposit rate. Eonia from 2016 Q4.
Sources: Bloomberg, Thomson Reuters and Norges Bank

Chart 1.10 Three-month 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 at 9 December 2016 and 16 September 2016 respectively.
Sources: Thomson Reuters and Norges Bank

Chart 1.11 Oil price[1] and import-weighted exchange rate index (I-44)[2].
1 January 2014 – 9 December 2016 [3]

1) Brent blend. USD/barrel.
2) A positive slope denotes a stronger krone exchange rate.
3) MPR 3/16 was based on information in the period to 16 September 2016, marked by the vertical line.
Sources: Thomson Reuters and Norges Bank

are also expected to increase somewhat faster than in the September *Report*.

In the UK, new monetary policy signals from the Bank of England (BoE) came in response to improved growth prospects. While earlier in autumn the BoE indicated that further monetary measures could be implemented, in November it signalled that its monetary policy stance would remain unchanged in the period ahead. Together with the international rise in interest rates, this has resulted in a marked rise in UK policy rate expectations. Market pricing now indicates that the BoE will not reduce its policy rate further, and that the rate will be raised in summer 2018.

In December, the European Central Bank (ECB) decided to expand its asset purchase programme by nine months to December 2017. The ECB will continue to make monthly bond purchases in an amount of EUR 80bn up to and including March 2017. Thereafter, the monthly purchases will be EUR 60bn. The ECB has signalled that the monthly purchases may be increased if necessary. Market pricing does not indicate further deposit rate cuts.

In Sweden, the monetary policy stance has remained unchanged since the September *Report*. Owing to lower inflation prospects, the Riksbank projected in October that its policy rate would remain at -0.5% somewhat longer than projected earlier. The Riksbank policy rate path indicates some probability of further rate cuts in the near term. At the same time, the Riksbank signalled a possible expansion of its asset purchase programme. Policy rate expectations a few years ahead have increased owing to the international rise in interest rates.
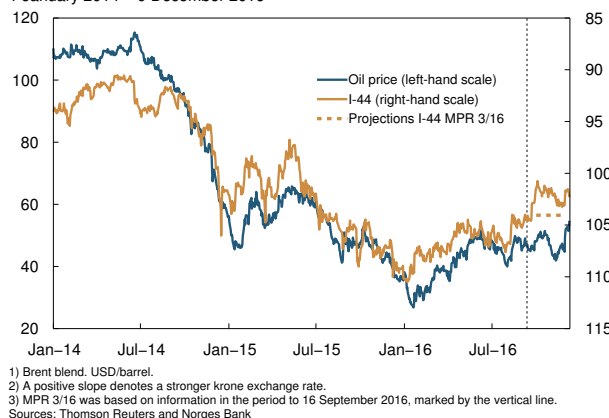
Stronger krone

In recent months, the foreign exchange market has been marked by political uncertainty and monetary policy signals from central banks. News regarding the UK's exit from the EU has resulted in wide swings in the sterling exchange rate, but the value of sterling is largely unchanged since the September *Report*. The US dollar has appreciated markedly, partly on signals from the Federal Reserve of a likely rate hike by the end of 2016. Higher US interest rates following the presidential election have also contributed to the strengthening of the US dollar. The marked depreciation

of the Japanese yen was driven by a wider interest rate differential against the US and the euro area. The euro exchange rate is somewhat weaker than in the September *Report,* partly owing to the extension of the of the ECB's asset purchase programme in December. The Swedish krona has depreciated in response to signals from the Riksbank that further monetary policy measures may be warranted.

The Norwegian krone has appreciated since the September *Report*, reflecting higher oil prices and increased Norwegian interest rate expectations. As measured by the import-weighted exchange rate index, I-44, the krone is stronger than projected in the September *Report* (Chart 1.11).

Money market premium remains elevated

In the past year, the three-month money market premium, ie the difference between three month Nibor and the expected key policy rate, has increased by about 0.20 percentage point (Chart 1.12). So far in 2016 Q4, the spread has averaged approximately 0.60 percentage point, while the September projection was 0.55 percentage point. The increase in the spread over the past year primarily reflects an increase in the USD interest rate that banks apply when quoting Nibor. Adjustments to new regulations for US money market funds have pulled up the USD interest rate. In the September *Report*, the premium on banks' USD interest rate was expected to fall when the regulations entered into force in mid-October, but the USD interest rate is little changed so far. Increased demand for USD as a result of banks' funding adjustments towards the end of the year has likely sustained USD premiums at their current level. There is reason to believe that these effects will reverse after the turn of the year. Premiums in the US money market are expected to fall thereafter, but somewhat more slowly than projected in the September *Report*. The fall in the premium on the USD interest rate is probably also being held back somewhat by the ECB's extension of its asset purchase programme.[1] The premium in the Norwegian money market is likely to drift down through 2017, but is expected to be higher throughout the year than projected in the September *Report*.

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1   For a further description of the driving forces that influence the money market premium, see Lund, K., K. Tafjord and M. Øwre-Johnsen (2016) "What drives the risk premium in Nibor?". *Economic Commentaries* 10/2016. Norges Bank. The article includes a discussion of how ECB asset purchases influence the money market premium.

Chart 1.12 Spread to three-month money market rate.[1] Five-day moving average. Percentage points. 1 January 2010 – 31 December 2019 [2]
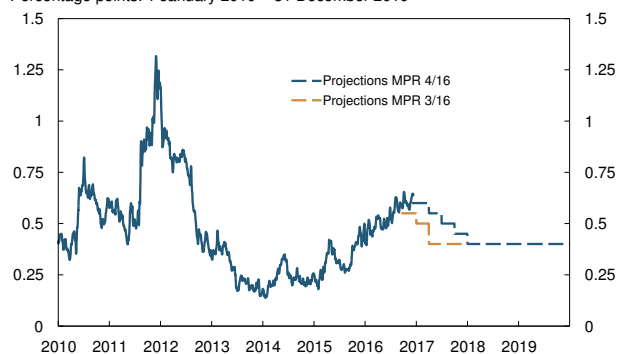

1) Norges Bank estimates of the difference between three-month money market rate and expected key policy rate.
2) Projections for 2016 Q4 – 2019 Q4 (broken lines).
Sources: Thomson Reuters and Norges Bank

Chart 1.13 Average risk premiums on new and outstanding bond debt for Norwegian banks. Spread to three-month money market rate. Percentage points. January 2010 – December 2019 [1]
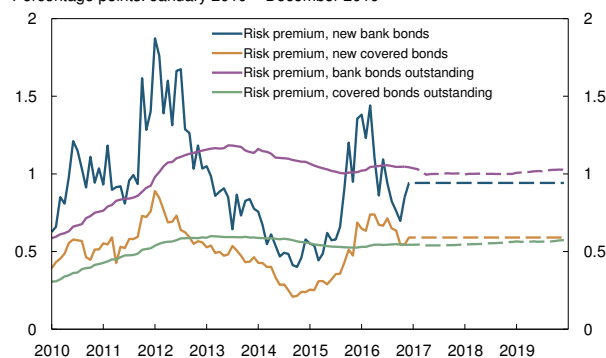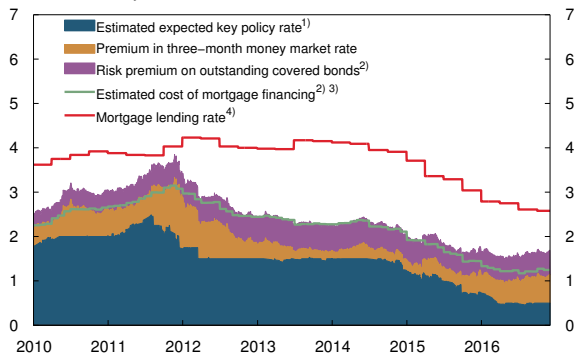

1) Projections for December 2016 – December 2019 (broken lines).
Sources: Bloomberg, DNB Markets, Stamdata and Norges Bank

Chart 1.14 Interest rates[1] on loans to non-financial enterprises and households[2]. Percent. January 2014 – October 2016
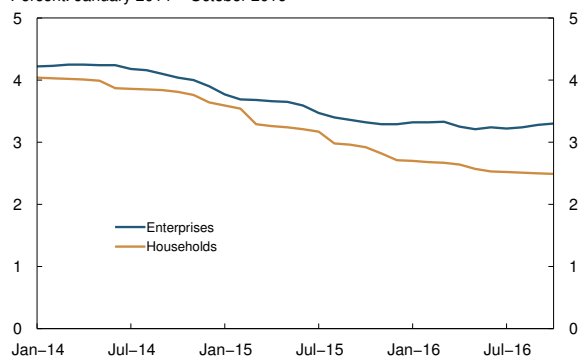
1) Outstanding loans.
2) Lending rate for households applies to total outstanding residential mortgage loans.
Source: Statistics Norway

Chart 1.15 Interest rates and funding costs for residential mortgages.
Percent. 1 January 2010 – 1 December 2016

- Estimated expected key policy rate[1]
- Premium in three–month money market rate
- Risk premium on outstanding covered bonds[2]
- Estimated cost of mortgage financing[2] [3]
- Mortgage lending rate[4]

1) Derived from three-month money market rate and expresses average expected key policy rate next three months.
2) Monthly data.
3) Estimated using weighted interest rates on covered bonds outstanding and weighted deposit rates.
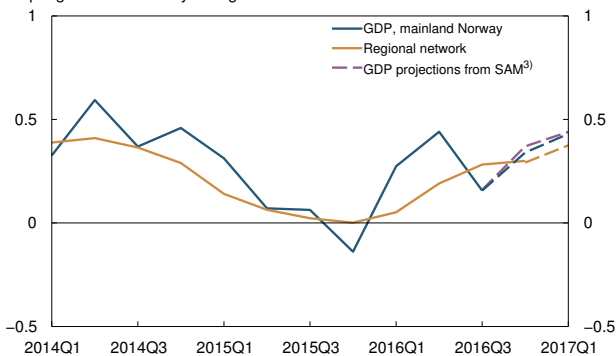4) Quarterly data.
Sources: Bloomberg, DNB Markets, Stamdata, Statistics Norway and Norges Bank

Chart 1.16 GDP for mainland Norway and regional network's indicator of output growth[1]. Quarterly change. Percent. 2014 Q1 – 2017 Q1 [2]

- GDP, mainland Norway
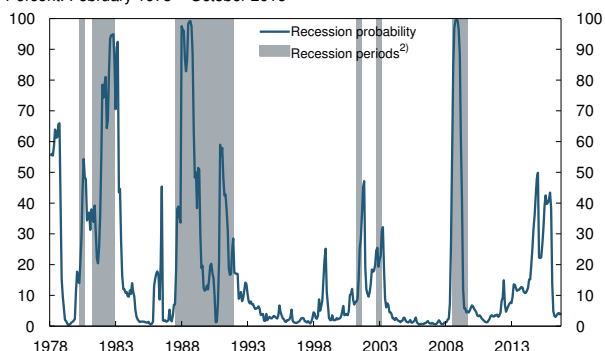- Regional network
- GDP projections from SAM[3]

1) Reported output growth past three months (solid lines) and expected output growth next six months (broken lines). Correction of growth in 2016 Q2 due to an error in MPR 3/16.
2) Projections for 2016 Q4 – 2017 Q1 (broken lines).
3) System for Averaging short-term Models.
Sources: Statistics Norway and Norges Bank

Chart 1.17 Probability of a fall in economic activity.[1]
Percent. February 1978 – October 2016

- Recession probability
- Recession periods[2]

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

The premium is projected at 0.4 percentage point in 2018 and 2019.

Banks must pay a risk premium above the money market rate on wholesale funding. Risk premiums on senior bonds and covered bonds issued by Norwegian banks have risen somewhat since the September *Report* (Chart 1.13). If premiums are unchanged ahead, the average risk premium on banks' outstanding senior and covered bonds will remain somewhat higher than at the time of the September *Report*.

Banks' average interest rate on loans to households was approximately unchanged in the period between the end of July and the end of October (Chart 1.14). The interest rate on corporate loans has increased somewhat. Developments in lending rates were approximately in line with the projections in the September *Report*. The difference between lending rates and banks' funding costs has shown little change in recent months (Chart 1.15). Many banks have recently announced increases in residential mortgage rates, resulting in slightly higher interest rates on loans to households in the period ahead than projected in the September *Report*.

Weak growth in the Norwegian economy[2]
Growth in the Norwegian economy has been weak in recent years, primarily reflecting the effects of the fall in oil prices and lower activity in petroleum-related industries. Mainland GDP growth picked up slightly in the first half of 2016, but declined to 0.2% in 2016 Q3, which was somewhat lower than projected in the September *Monetary Policy Report*.

In 2016 Q4 and 2017 Q1, mainland GDP is projected to grow at broadly the same pace as in the first half of 2016 (Chart 1.16). The projections are in line with the projections from Norges Bank's System for Averaging short-term Models (SAM), but somewhat higher than regional network contacts' expectations for output growth. Growth projections are slightly lower than in the September *Report*. Model calculations show that the probability of a recession has declined since the beginning of the year. Since March, the probability of a recession has been less than 10%,

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2 This section provides a description of projections for the Norwegian economy up to and including 2017 Q1. Projections up to and including 2019 are presented in Section 2.

and is little changed since the September *Report* (Chart 1.17).

In November, regional network contacts reported that annualised total output growth over the past three months was approximately 1.2%. Growth was highest for household services and traditional exports. Oil service industry contacts reported a further decline in output. For contacts as a whole, growth was slightly higher than in the previous three-month period, but somewhat lower than they anticipated in August. While the August survey showed broad-based improvements across sectors and regions, the November results were more mixed. The service industries, among others, reported a pick-up in growth, while other industries, such as construction and traditional exports, reported lower growth (Chart 1.18). Regional network contacts as a whole expected the growth rate in the next six months to be somewhat higher than in the previous three months.

Growth in household consumption has slowed gradually in recent years. Consumption increased moderately in the first half of 2016, but remained unchanged between Q2 and Q3. Goods consumption in particular has been weak (Chart 1.19). All told, household consumption has increased less than projected in the September *Report*. According to the Kantar TNS trend indicator, consumer confidence has increased recently, while the Opinion consumer confidence index (CCI) fell slightly (Chart 1.20). In November, household-oriented service enterprises in the regional network reported higher output growth. According to projections, consumption growth will edge up again in the period ahead, approximately as envisaged in the September *Report*. High house price inflation and continued low interest rates are expected to pull up consumption, while a decline in real wages this year will restrain the increase.

Housing investment has risen markedly through 2015 and 2016. In 2016 Q3, investment was 12% higher than in 2015 Q3. Growth was stronger than projected in the September *Report*. So far this year, there were far more housing starts than in the same period in 2015. Housing starts have increased in large parts of the country, and the rise is most pronounced in southeastern Norway. In Rogaland and Vest-Agder, housing starts have declined (Chart 1.21). Housing

Chart 1.18 Output growth as reported by regional network. Annualised. Percent
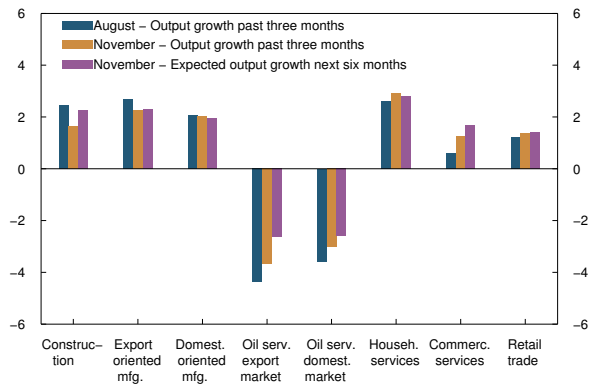

Source: Norges Bank

Chart 1.19 Household consumption of goods and services. Four-quarter change. Sesonally adjusted. Percent. 2000 Q1 – 2016 Q3
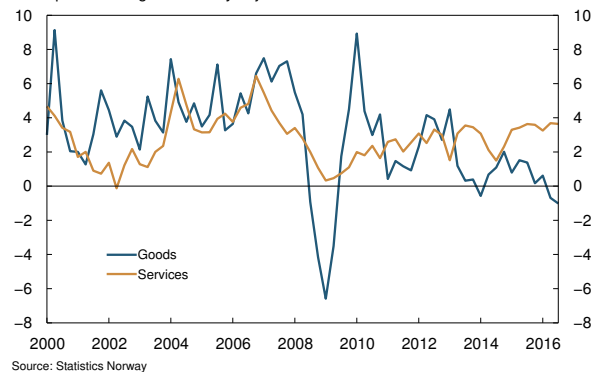

Source: Statistics Norway

Chart 1.20 Consumer confidence. Net values. Kantar TNS trend indicator for households. 2000 Q1 – 2016 Q4. Opinion consumer confidence index (CCI). May 2007 – November 2016
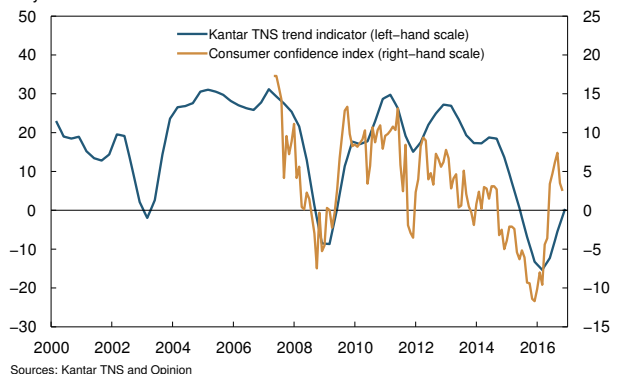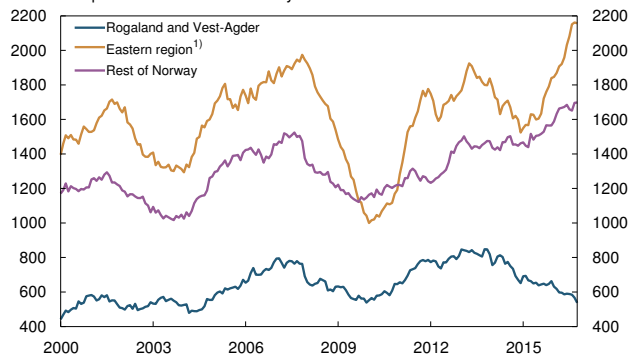

Sources: Kantar TNS and Opinion

Chart 1.21 Housing starts by county. Utility floor space (1000m²).
Cumulative past twelve months. January 2000 – October 2016

Rogaland and Vest-Agder
Eastern region[1]
Rest of Norway

1) Akershus, Buskerud, Hedmark, Oppland, Oslo, Telemark, Vestfold and Østfold.
Sources: Statistics Norway and Norges Bank

Chart 1.22 Norwegian labour costs relative to trading partners'.[1]
Index. 1995 = 100. 1995 – 2016 [2]

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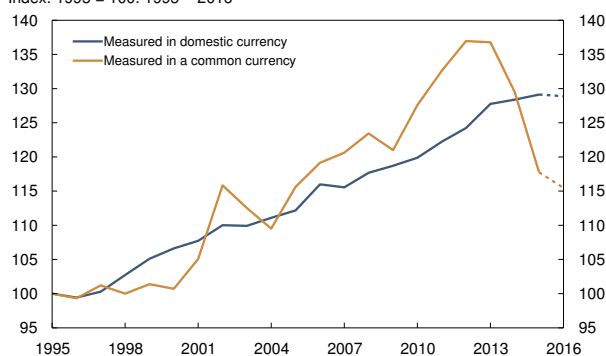
1) Hourly labour costs in manufacturing.
2) Projections for 2016 (broken lines).
Sources: Norwegian Technical Calculation Committee for Wage Settlements (TBU), Statistics Norway
and Norges Bank

Chart 1.23 Employment.
In 1000s. Seasonally adjusted. 2012 Q1 – 2016 Q3

Quarterly national accounts, 2016 Q3
Quarterly national accounts, 2016 Q2
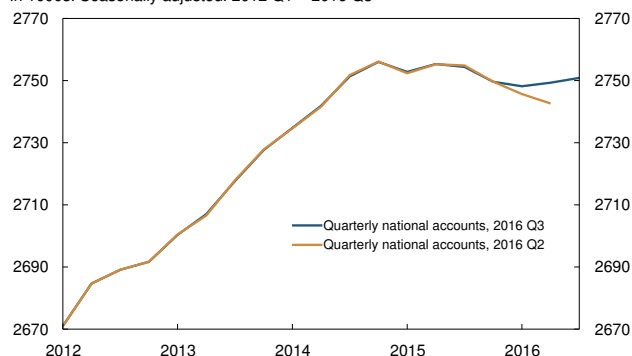
Source: Statistics Norway

investment is projected to remain high in the period ahead. Projections have been revised up owing to the high number of housing starts and the rapid rise in house prices.

Business investment in mainland Norway has picked up slightly in 2016 after having declined over the past three years. Developments have been weak in several industries. In the past few years, particularly low investment in oil-related activities has weighed on growth. Developments in business investment have been approximately as projected in the September *Report*. In November, regional network contacts expected investment to remain unchanged in the year ahead. Investment growth is projected to be somewhat higher in the period ahead than in 2016 Q3, but slightly lower than projected in September. The downward revision primarily reflects slightly weaker-than-expected growth in the Norwegian economy.

Petroleum investment has fallen sharply in recent years in the wake of the fall in oil prices and continued to fall in 2016 Q3, albeit at a somewhat slower pace than projected in the September *Report*. The investment intentions survey for 2016 Q4 suggests lower investment in the period ahead than envisaged in September (see box on page 22 for a further discussion of Norges Bank's projections for petroleum investment).

Public consumption and investment have increased considerably in recent years and are supporting growth in the wider economy. In 2016 Q3, public demand increased somewhat more than anticipated in September. The fiscal policy assumptions are based on the central government budget for 2017. The increase in petroleum revenue spending from 2016 to 2017 appears to be approximately as projected in the September *Report* (see box on page 24 for a further discussion of fiscal policy assumptions).

Mainland exports expanded rapidly through 2014 and 2015, driven by growth in important export markets and a considerable improvement in cost competitiveness (Chart 1.22). So far this year, exports have shown a clear decline, primarily owing to lower exports from oil refineries and the oil service industry. Exports have been somewhat lower than projected in the

September *Report*. Owing to the decline in the global petroleum industry, oil service exports are expected to decline further in the near term, albeit not to the same extent as in early 2016. For other mainland enterprises, exports are projected to rise in the period ahead, supported by slightly improved market prospects and a relatively weak krone exchange rate. At the same time, capacity constraints in fish farming and segments of the process industry are weighing down on growth. Overall, mainland exports are expected to show moderate growth in the period ahead.

Imports have been relatively weak in recent years, partly owing to the decline in petroleum investment. The depreciation of the krone since 2013 has likely also contributed to the reduction in demand for imported goods and services. So far in 2016, imports have been somewhat higher than anticipated in the September *Report*. Imports are projected to increase moderately in the period ahead. Projections for import growth are slightly higher than in the September *Report*, partly reflecting a somewhat stronger krone in recent months.

Slightly lower capacity utilisation

The labour market is marked by low activity in the petroleum sector and weak growth in the Norwegian economy. Employment has declined in oil-dependent regions in recent years, while increasing in the rest of the country. Recently, developments in overall employment have been somewhat more favourable than anticipated in the September *Report*. Growth from 2016 Q2 to 2016 Q3 was in line with projections, but an upward revision of the level earlier in 2016 explains why the number of employed is slightly higher than projected (Chart 1.23). In November, regional network contacts expected weak employment growth in the next three months. In Epinion's expectations survey for Norges Bank for 2016 Q4, there was a slight rise in the share of business leaders expecting increased employment in the next twelve months (Chart 1.24). A moderate rise in employment is expected in the coming period, but because of weaker-than-expected developments in the Norwegian economy, the outlook for employment growth is slightly lower than in the September *Report*.

Chart 1.24 Expected change in employment. Regional network.[1] Percent. Epinion's expectations survey for Norges Bank.[2] Diffusion index.[3] 2004 Q4 – 2016 Q4
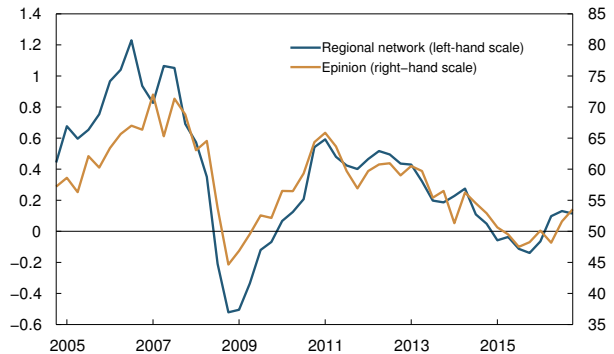

1) Expected change in employment next three months.
2) Expected change in hirings next 12 months.
3) Share of business leaders who expect "more employees" in their own company the following 12 months + (1/2 * share who expect "unchanged number of employees").
Sources: Epinion and Norges Bank

Chart 1.25 Unemployment as a share of the labour force. LFS[1] and NAV [2]. Seasonally adjusted. Percent. January 2010 – March 2017[3]
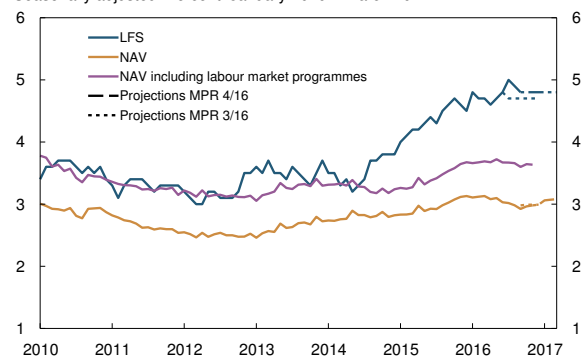

1) Labour Force Survey.
2) Registred unemployment.
3) Projections for LFS October 2016 – March 2017 and projections for NAV for December 2016 – March 2017 (broken lines).
Sources: Norwegian Labour and Welfare Administration (NAV), Statistics Norway and Norges Bank

Chart 1.26 Registered unemployment by county. Share of labour force. Seasonally adjusted. Percent. January 2005 – November 2016
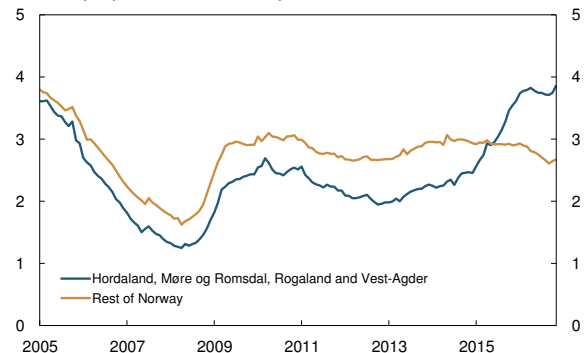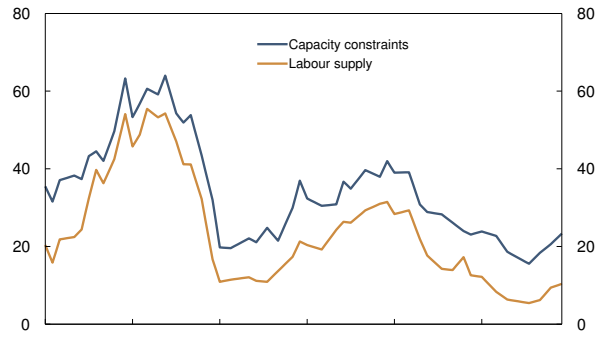

Sources: Norwegian Labour and Welfare Administration (NAV) and Norges Bank

Chart 1.27 Productivity.[1]
Four-quarter change. Percent. 2011 Q4 – 2016 Q3
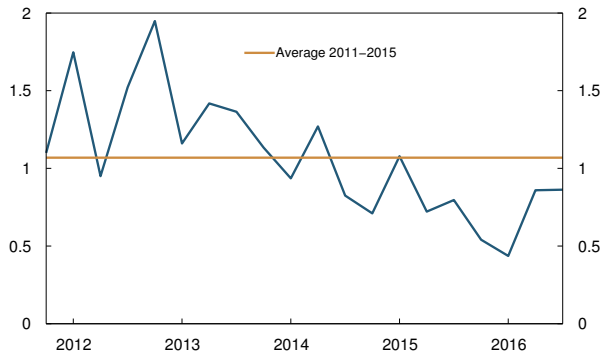
1) GDP for mainland Norway per employed.
Sources: Statistics Norway and Norges Bank

Chart 1.28 Capacity constraints and labour supply as reported by
the regional network.[1] Percent. January 2005 – November 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 1.29 Terms of trade.
Index. 1995 Q1 = 100. Seasonally adjusted. 1995 Q1 – 2016 Q3
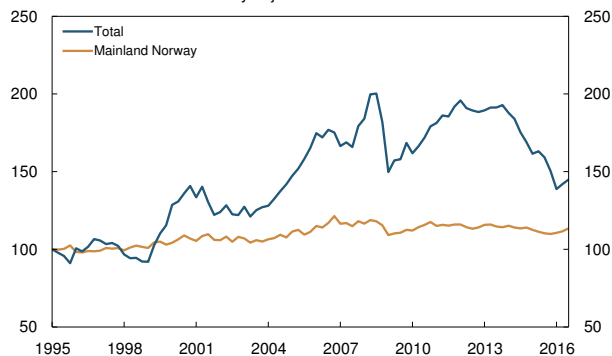
Sources: Statistics Norway and Norges Bank

The labour force in Norway has historically shown a high degree of flexibility compared with other countries. Many have exited the labour market during downturns and returned again when activity picked up. In recent years, labour force growth has remained elevated despite weak growth in the Norwegian economy. According to the labour force survey (LFS), the labour force increased by 19 000 persons between June 2016 and September 2016. In recent months, the labour force has expanded at a faster pace than projected in the September *Report*.

Registered unemployment, as measured by the Norwegian Labour and Welfare Administration (NAV), increased moderately up to the beginning of 2016, when the seasonally adjusted unemployment rate rose to 3.1%. Unemployment declined somewhat thereafter. In recent months, registered unemployment has increased slightly. The share of fully unemployed and persons participating in labour market programmes has remained largely unchanged since the turn of the year (Chart 1.25). Wide regional differences remain and unemployment has picked up particularly in oil-dependent regions (Chart 1.26). At end-November, registered unemployment was 3.0% for the country as a whole, in line with projections. According to the LFS, unemployment continued to rise through the first half of 2016, flattening out thereafter. In September, LFS unemployment was 4.8%, approximately as projected. Slightly lower employment growth ahead may result in a slight rise in unemployment in the coming months. The projections for unemployment are slightly higher than in the September *Report*.

Productivity growth has gradually slowed in recent years (Chart 1.27). Some of the decline may be related to the fact that enterprises have not reduced their workforces to the extent implied by the fall in output growth. Revised national accounts figures show that productivity growth has recently been lower than anticipated in the September *Report*. Productivity growth is projected to edge up again in the period ahead when output growth picks up and the utilisation of labour and capital improves.

Capacity utilisation has fallen in recent years and is lower than normal. Capacity utilisation is the difference between actual output and projected potential

output. Output growth has been somewhat softer than expected. At the same time, the low level of productivity growth may indicate slightly lower potential output than assumed in September. According to our estimates, capacity utilisation declined slightly between 2016 Q2 and 2016 Q3, while in September it was projected to remain unchanged.

In its assessment of capacity utilisation, Norges Bank gives weight to developments in unemployment. In the past couple of years, there has been an unusually wide gap between the two measures of unemployment, and registered unemployment indicates a clearly higher level of capacity utilisation than LFS unemployment. The wide gap increases uncertainty regarding the degree of slack in the economy. In November, Norges Bank's regional network contacts reported a rise in capacity utilisation. The share of enterprises reporting labour availability as a constraint on output was slightly higher than in August, but the share was still very low (Chart 1.28). Regional network contacts and other indicators may suggest somewhat lower capacity utilisation than implied by registered unemployment, but clearly higher than indicated by the LFS (see Special Feature on page 54 for a further discussion of the assessment of capacity utilisation). In the coming quarters, capacity utilisation is expected to remain largely unchanged and slightly lower than projected in the September *Report*.

Moderate wage growth

In the wake of the fall in oil prices since 2014, wage growth has slowed. The fall in oil prices led to a pronounced decline in Norway's terms of trade and in the profitability of the petroleum and oil service industries. The terms of trade have improved slightly in 2016 but are still low compared with the level prevailing over the past ten years (Chart 1.29). In most of the spring wage settlements, the social partners reached an agreement within the wage norm for manufacturing of 2.4%. In November, regional network contacts expected wage growth in 2016 to be 2.4%. Quarterly national accounts figures and Statistics Norway's wage index may suggest that wage growth will be slightly lower in 2016. Wage growth is projected at 2.3% in 2016, which is slightly lower than in the September projection. Combined with the projection for consumer price inflation, the projection for wage

Chart 1.30 CPI and CPI-ATE[1].
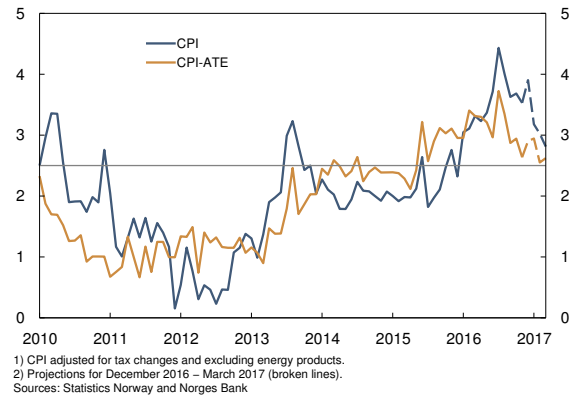Twelve-month change. Percent. January 2010 – March 2017 [2]

1) CPI adjusted for tax changes and excluding energy products.
2) Projections for December 2016 – March 2017 (broken lines).
Sources: Statistics Norway and Norges Bank

Chart 1.31 Selected energy goods in the CPI.
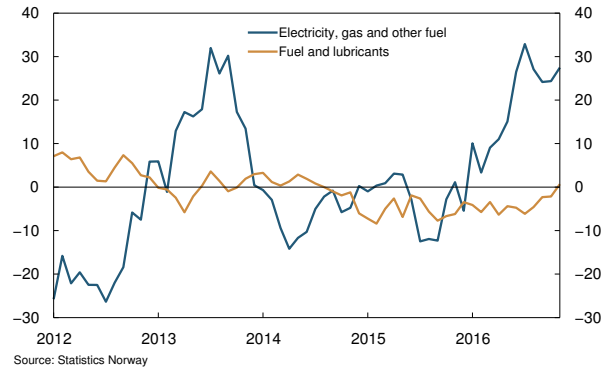Twelve-month change. Percent. January 2012 – November 2016

Source: Statistics Norway

Chart 1.32 CPI-ATE[1] in total and by supplier sector.
Twelve-month change. Percent. January 2014 – March 2017[2]

1) CPI adjusted for tax changes and excluding energy products.
2) Projections for December 2016 – March 2017 (broken lines).
3) Norges Bank's estimates.
4) The observations from 2015 have changed somewhat compared with MPR 3/16.
The twelve-month change for 2015 is now based on Statistics Norway's revised classification which is used from January 2016.
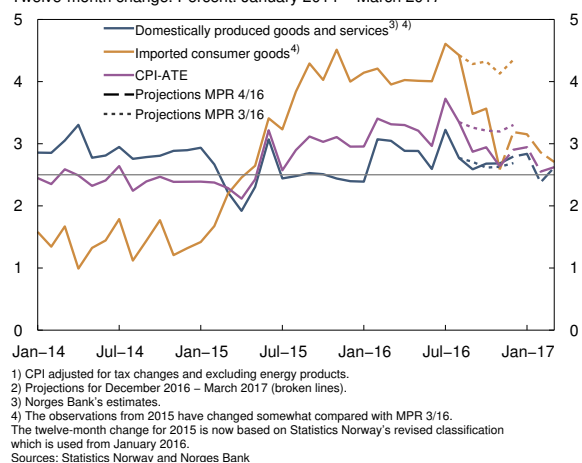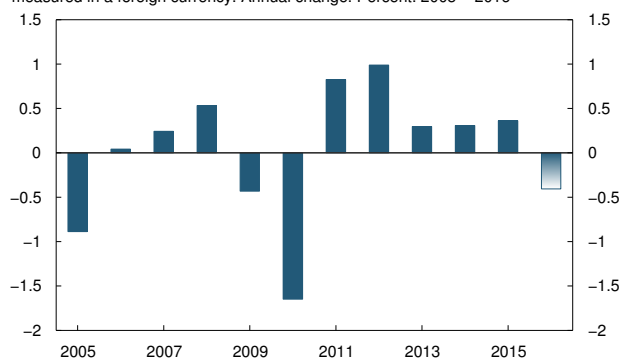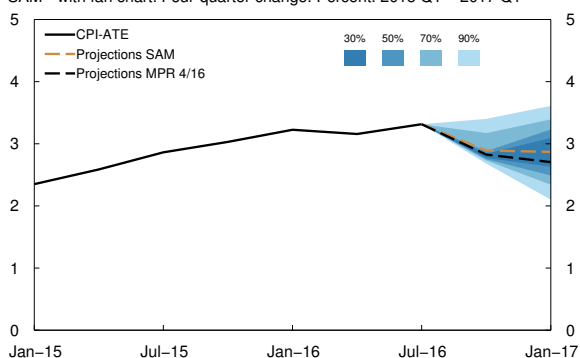Sources: Statistics Norway and Norges Bank

Chart 1.33 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 1.34 CPI-ATE[1]. Actual path, baseline scenario and projections from SAM[2] with fan chart. Four-quarter change. Percent. 2015 Q1 – 2017 Q1 [3]

1) CPI adjusted for tax changes and excluding energy products.
2) System for Averaging short-term Models.
3) Projections for 2016 Q4 – 2017 Q1 (broken lines).
Sources: Statistics Norway and Norges Bank

growth implies a considerable decline in real wages in 2016.

Slightly weaker economic growth and somewhat lower inflation in the near term suggest somewhat lower wage growth in 2017 than projected in the September *Report*. Lower wage growth expectations among the social partners pull in the same direction. Epinion's expectations survey for Norges Bank for 2016 Q4 shows that the social partners expect average wage growth in 2017 to be 2.7%, 0.2 percentage point lower than in 2016 Q3. In November, regional network contacts expected wage growth to be 2.5% in 2017.

Lower inflation

The rise in consumer prices (CPI) gradually picked up between summer 2015 and summer 2016 (Chart 1.30). The rise reflected the krone depreciation between 2013 and last winter, which pushed up prices for imported consumer and intermediate goods. Energy prices, particularly electricity prices, have also pulled up the rise in prices in 2016 (Chart 1.31). The year-on-year rise in the CPI was 4.4% in July 2016. Inflation has fallen since then and CPI inflation was 3.5% in November. The year-on-year rise in consumer price inflation adjusted for tax changes and excluding energy products (CPI-ATE) was 2.6% in November, lower than projected in the September *Report*.

Prices for imported goods in the CPI-ATE rose rapidly through 2015 and remained high in the period to summer 2016 (Chart 1.32), primarily reflecting the krone depreciation. The rise in prices edged down in autumn, and the year-on-year rise was 2.6% in November. The rate of increase has been slower than projected in the September *Report*. This may be the result of a more rapid unwinding of the effects of the earlier krone depreciation on the rise in prices for imported goods than previously anticipated. The rise in prices is projected to slow further in the near term as a result of both recent movements in the krone and weaker external price impulses to Norwegian consumer prices in 2016 (Chart 1.33). The projections have been revised down since the September *Report*, partly owing to lower-than-expected inflation and a somewhat stronger-than-anticipated krone exchange rate.

The year-on-year rise in prices for domestically produced goods and services in the CPI-ATE has been fairly stable in recent months. In November, the year-on-year rise in prices was 2.7%, approximately as projected in the September *Report*. The rise in prices for domestically produced goods and services is projected to remain close to this level in the period ahead, declining somewhat thereafter. Exchange rate movements take time to feed through to consumer prices for domestically produced goods and services and the krone depreciation in recent years is expected to continue fuelling domestic inflation. Relatively high CPI inflation over the past year pulls in the same direction because many prices, such as rents under existing leases, are adjusted in pace with CPI inflation. On the other hand, moderate wage growth in 2016 has a dampening effect on business costs and thereby inflation. The projections for the rise in domestically produced goods and services in the period ahead are approximately in line with the projections in the September *Report*.

Year-on-year CPI-ATE inflation is expected to be somewhat below 3.0% in the period ahead. The projections are lower than in the September *Report* and slightly lower than the projections from SAM (Chart 1.34). Owing to higher energy price inflation, the CPI will probably increase somewhat more than the CPI-ATE in the near term. The projections for CPI inflation the next months are somewhat lower than in the September *Report*.

Higher house price inflation
In recent months, house price inflation has been high in large parts of the country, and prices have risen at a faster pace than projected in the September *Report*. In November, the year-on-year rise was 11.6%. High house price inflation is in part being fuelled by low interest rates. Higher bank lending rates and an increased supply of new homes may have a dampening effect on house price inflation. House prices are projected to continue to rise in the period ahead. The projections are somewhat higher than in the September *Report*.

Household credit is still rising at a faster pace than household income. In October, twelve-month growth in household debt was 6.3%, slightly higher than projected in the September *Report*. The rapid rise in house prices may push up credit growth in the period ahead, while prospects for slightly higher lending rates pull in the opposite direction. Household credit growth is projected to edge up ahead. The projections have been revised up somewhat from the September *Report*.

High house price inflation and a continued rise in household debt ratios are signs that financial imbalances have built up further (see Section 3 for a further discussion of developments in house prices, household debt and assessments of financial imbalances).
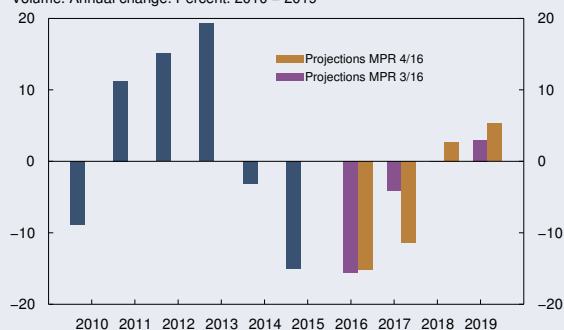
PROJECTIONS FOR PETROLEUM INVESTMENT

Investment on the Norwegian continental shelf has declined markedly since 2013. The decline reflects the considerable reduction in petroleum industry profitability, as a result of both the substantial fall in oil and gas prices in 2014 and 2015 and high cost growth in the industry in the preceding years.

Oil spot prices have hovered somewhat above USD 50 recently. The projections in this *Report* are based on the assumption that oil prices will move in line with futures prices. These prices indicate that oil prices will rise slightly in the near term and remain fairly stable thereafter (Chart 1.5).

The investment intentions survey for Q4 indicates that petroleum investment in 2017 will be lower than projected in the September *Report*. Investment is now projected to fall by 15% in 2016 and by 11% in 2017. Investment is expected to show some increase in 2018 and 2019 (Chart 1.35). The level of investment at the end of the projection period is 3% lower than previously projected.

Investment in *fields in production* has fallen substantially over the past two years and is projected to decline by a further NOK 12bn in 2016 and by NOK 11bn between 2016 and 2018 (Chart 1.36). 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 2018 reflects the completion of major field upgrades, with no

Chart 1.35 Petroleum investment.
Volume. Annual change. Percent. 2010 – 2019[1]

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

Chart 1.36 Petroleum investment.
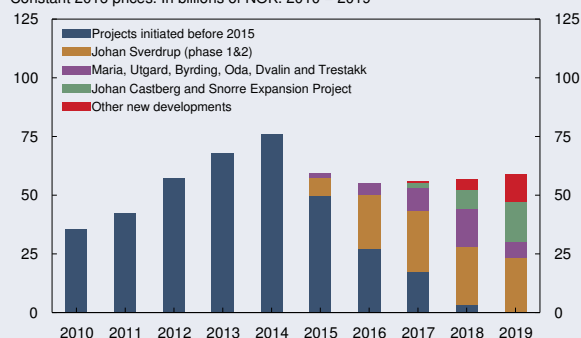Constant 2016 prices. In billions of NOK. 2010 – 2019[1]
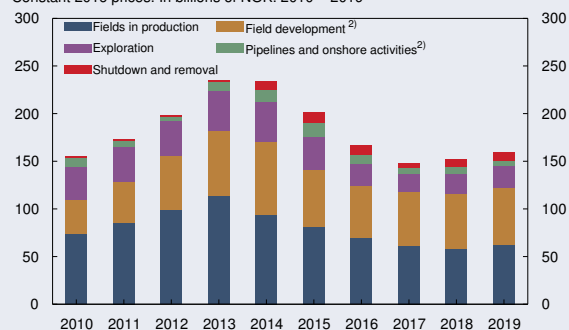
1) Projections for 2016 – 2019. Figures for 2010 – 2015 are from the investment intentions survey by Statistics Norway and deflated by the price index for petroleum investment in the national accounts. The index is projected to be unchanged from 2015 to 2016.
2) Expenses for pipelines for the Johan Sverdrup development are included in the estimates for pipeline transport and onshore activities.
Sources: Statistics Norway and Norges Bank

new project starts 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. Some of these have now been completed, while the remaining projects are scheduled for completion in the period 2016–2018. This reduces petroleum investment between 2015 and 2018 (Chart 1.37). The decline is being dampened by the development of the Johan Sverdup field and several other small and medium-sized projects started over the past two years. Since the September *Report,* the Trestakk, Oda and Dvalin (formerly Zidane) licensees have decided to develop these fields. It is also assumed that the Snorre Expansion Project (Snorre 2040) and development of the Johan Castberg field will start towards the end of 2017 and that phase two of the Johan Sverdrup development will commence in the second half of 2018. Several other development projects, such as Snilehorn, Pil and Bue, Skarfjell and Fogelberg may also commence in the period 2017–2019. 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 and NOK 4bn in 2017. Lower drilling costs and higher oil and gas prices ahead are expected to lead to some rebound in exploration activity in 2018 and 2019.

Chart 1.37 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 investment 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 intentions 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 central government budget for 2017. Petroleum revenue spending, as measured by the structural non-oil deficit, is assumed to be NOK 224bn in 2017 (Chart 1.38), equivalent to 7.8% of trend GDP for mainland Norway in 2017. Although petroleum revenue spending in 2017 is somewhat lower than assumed in the September *Report,* the increase between 2016 and 2017 appears to be approximately in line with projections.

The final budget for 2016 shows an estimated structural non-oil deficit of NOK 200bn in 2016. This is NOK 6bn lower than assumed in the 2017 National Budget. Lower-than-assumed spending growth, partly owing to the arrival of a lower number of asylum-seekers than expected, is the main reason for the downward revision. As a result of lower-than-assumed spending in 2016, the increase in structural petroleum revenue spending between 2016 and 2017 may be higher than assumed in the 2017 National Budget.

The change in the structural deficit as a share of GDP is used as a simple measure of the effect of the budget on demand for goods and services. In 2017, this fiscal impulse is estimated to be lower than in recent years but still slightly higher than the average for the period between 2001, when the fiscal rule was introduced, and 2016 (Chart 1.39).

Chart 1.38 Structural non-oil deficit and 4% of the Government Pension Fund Global (GPFG). Constant 2017 prices. In billions of NOK. 2002 – 2019[1]
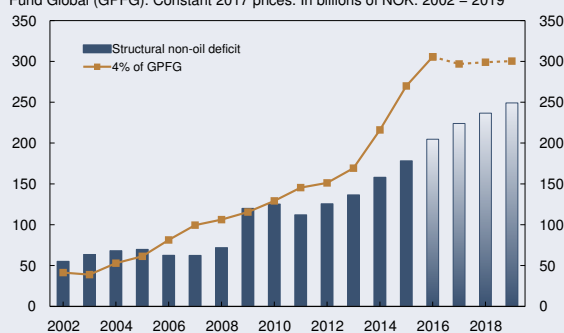
1) Projections for 2016 – 2019 (broken line and shaded).
Sources: Ministry of Finance and Norges Bank

Chart 1.39 Fiscal impulse. Change in the structural non-oil deficit as a percentage of trend GDP for mainland Norway. 2002 – 2017[1]
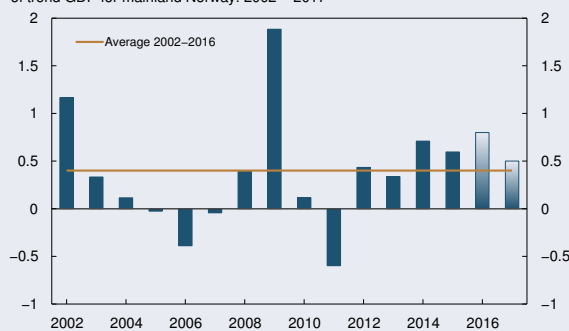
1) Projections for 2016 and 2017 (shaded).
Sources: Ministry of Finance and Norges Bank

As from 2018, the technical assumption is applied that the fiscal impulse will decline to 0.3 percentage point per year, in line with the assumptions in the National Budget for 2017. In the September *Report*, the fiscal impulse was assumed to be 0.35 percentage point from the beginning of 2018, in line with the corresponding assumption in the Revised National Budget for 2016 and the same as the average for the years between 2001 and 2015.

Lower growth in petroleum revenue spending is reflected in lower growth in public demand, projected at 3.4% in 2016. Growth in public demand is expected to decrease to 2.5% in 2017 and to slow further to 1.6% in 2018. The growth projection for 2016 has been revised up as a result of strong growth in public investment in Q3, partly owing to the import of two new fighter aircraft. Public investment for the first half of 2016 was also revised up. Growth projections for the coming years, on the other hand, have been revised down somewhat compared with the projections in the September *Report*.

In the 2017 budget, the tax rate on ordinary income is reduced to 24% from 1 January, and a proposal to include a further reduction to 23% in the 2018 budget has been signalled. As in the September *Report*, it is assumed that this tax reduction will be implemented, but that the tax level will otherwise remain unchanged in real terms going forward.

In the budget, it is assumed that the structural deficit in 2017 will be equivalent to 3.0% of the value of the Government Pension Fund Global (GPFG) at the beginning of the year. If petroleum revenue spending continues to increase in the years ahead, in line with the technical assumptions in this *Report,* the structural deficit may increase to 3.3% of the value of the GPFG in 2019.

2 MONETARY POLICY OUTLOOK

Chart 2.1 Consumer price index.
Four-quarter change. Percent. 1988 Q1 – 2016 Q3
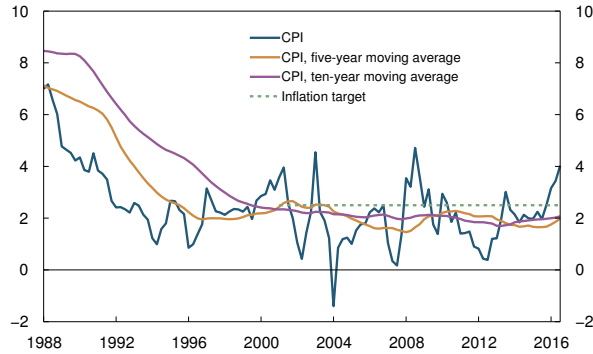
Sources: Statistics Norway and Norges Bank

Monetary policy objectives and 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).

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 mone-

Chart 2.2a Projected key policy rate in the baseline scenario with fan chart.[1]
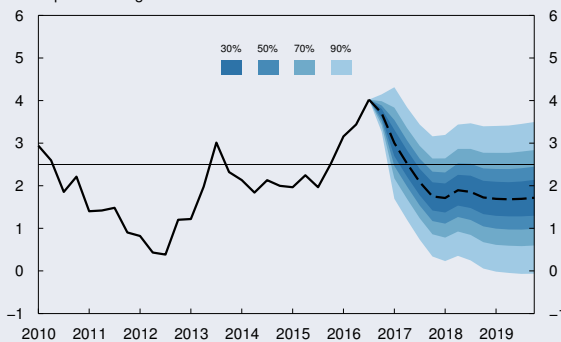Percent. 2010 Q1 – 2019 Q4[2]
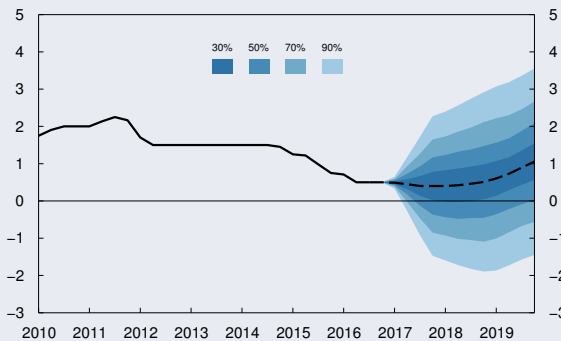
1) The fan charts are based on historical experience and stochastic simulations in our main macroeconomic model, NEMO. The fan chart for the key policy rate does not take into account that a lower bound for the interest rate exists.
2) Projections for 2016 Q4 – 2019 Q4 (broken line).
Source: Norges Bank

Chart 2.2b Projected output gap[1] in the baseline scenario with fan chart.
Percent. 2010 Q1 – 2019 Q4
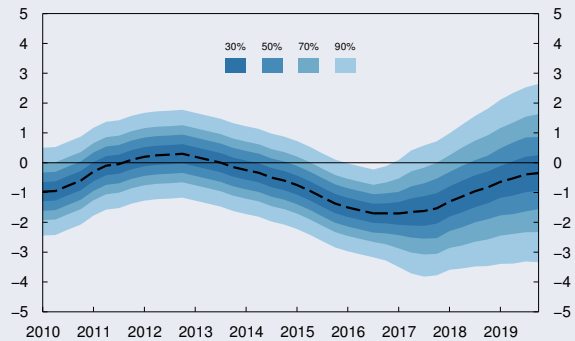
1) The output gap measures the percentage deviation between mainland GDP and projected potential mainland GDP.
Source: Norges Bank

Chart 2.2c Projected CPI in the baseline scenario with fan chart.
Four–quarter change. Percent. 2010 Q1 – 2019 Q4[1]

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

Chart 2.2d Projected CPI-ATE[1] in the baseline scenario with fan chart.
Four-quarter change. Percent. 2010 Q1 – 2019 Q4[2]
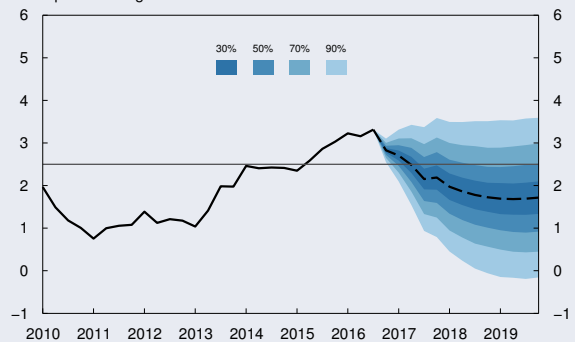
1) CPI adjusted for tax changes and excluding energy products.
2) Projections for 2016 Q4 – 2019 Q4 (broken line).
Sources: Statistics Norway and Norges Bank

tary 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 (see box on criteria for an appropriate interest rate path on page 35).

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, commonly referred to as the neutral real interest rate, has probably declined.

The analysis in the September 2016 Report

The analysis in the September 2016 *Report* suggested that the key policy rate would remain close to ½% in the coming years. At the same time, the forecast implied a slightly higher probability of a decrease than an increase in the key policy rate in the year ahead. The key policy rate was projected to increase to just below 1% towards the end of the projection period. With this path for the key policy rate, there were prospects that inflation would recede to somewhat below 2% in 2019. Capacity utilisation was assessed to be lower than normal. Capacity utilisation was expected to remain broadly unchanged in the near term, before edging up in the coming years.

Little change in the key policy rate forecast

There are signs that activity in the Norwegian economy is picking up at a somewhat slower pace than projected in September. At the same time, the driving forces behind inflation have diminished somewhat since that time. The box on page 36 provides an illustration of a technical model-based interpretation of new information since the September *Report*. With an unchanged key policy rate path, this analysis suggests that capacity utilisation will stay close to today's level somewhat longer than envisaged earlier, before rising towards a more normal level. According to the analysis, inflation will recede and lie lower through the entire projection period than projected in September. The technical model-based
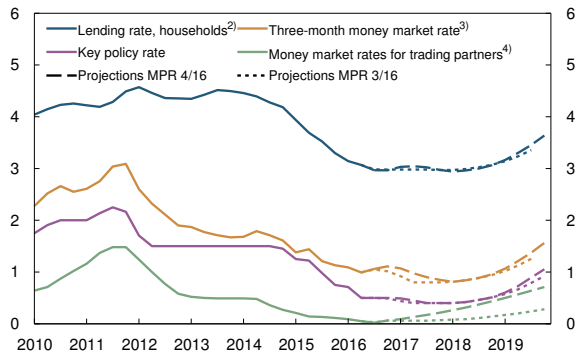
analysis suggests on balance a somewhat lower path for the key policy rate in the coming years.

The assessment of the monetary policy trade-offs also takes into account that persistently low interest rates add to vulnerabilities in the financial system. The rapid rise in house prices and household debt has increased the risk of a sharp fall in demand further out. Banking regulation and macroprudential policy measures are the first line of defence against financial instability. However, regulatory effects are uncertain, and it cannot be assumed that regulations will eliminate the risk of financial instability. In the interest of long-term economic stability, it is appropriate to take account of the risk associated with very low interest rates in the conduct of monetary policy. When the key policy rate is close to a lower bound, the uncertainty surrounding the effects of monetary policy is greater than when the interest rate is at a more normal level. 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. The key policy rate forecast lies somewhat higher in the coming years than would otherwise have been the case if monetary policy had not taken into account the risk of a build-up of financial imbalances and the uncertainty surrounding the effects of monetary policy.

The analyses in this *Report* suggest a key policy rate that 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 coming year. According to the forecast, the key policy rate increases to around 1% at the end of the projection period (Charts 2.2 a–d). The key policy rate forecast is little changed compared with the September *Report*. The box on page 38 describes the factors that have contributed to the changes in the interest rate forecast.

In the coming year, the movement in the money market rate will diverge slightly from the key policy rate path (Chart 2.3), as the money market premium is expected to edge down through 2017. Further out in the projection period, the money market rate moves in line with developments in the key policy rate. A number of banks have increased their mort-

Chart 2.3 Interest rates in the baseline scenario.
Percent. 2010 Q1 – 2019 Q4 [1]

- Lending rate, households[2]
- Three-month money market rate[3]
- Key policy rate
- Money market rates for trading partners[4]
- Projections MPR 4/16
- Projections MPR 3/16

1) Projections for 2016 Q4 – 2019 Q4 (broken lines).
2) Average interest rate on all loans to households from banks and mortgage companies.
3) Key policy rate in the baseline scenario plus premiums in the Norwegian money market. The calculations are based on the assumption that the key policy rate forecast is priced into the money market.
4) The aggregate for trading partner three-month interest rates is described in *Norges Bank Memo* 2/2015.
Sources: Statistics Norway, Thomson Reuters and Norges Bank

Chart 2.4 Three-month real money market interest rate.[1]
Percent. 2010 Q1 – 2019 Q3 [2]

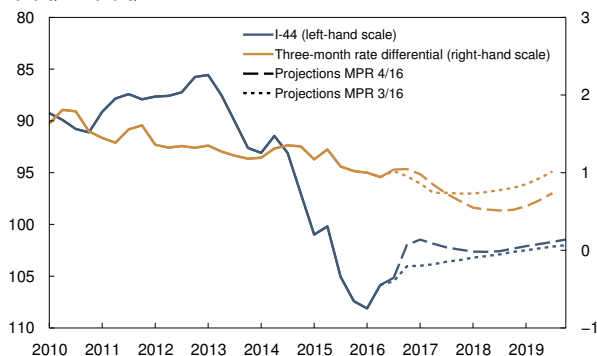- Projections MPR 4/16
- Projections MPR 3/16
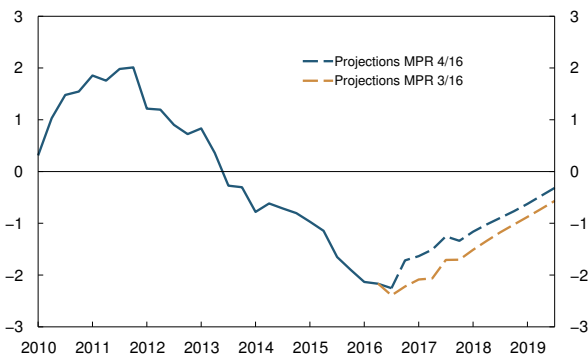
1) Key policy rate in the baseline scenario plus premiums in the Norwegian money market, deflated by four-quarter change in the CPI-ATE. The calculations are based on the assumption that the key policy rate forecast is priced into the money market.
2) Projections for 2016 Q4 – 2019 Q3 (broken lines).
Sources: Statistics Norway and Norges Bank

Chart 2.5 Three-month money market rate differential between Norway[1] and trading partners[2] and import-weighted exchange rate index (I-44)[3].
2010 Q1 – 2019 Q4[4]

- I-44 (left-hand scale)
- Three-month rate differential (right-hand scale)
- Projections MPR 4/16
- Projections MPR 3/16

1) Key policy rate in the baseline scenario plus premiums in the Norwegian money market. The calculations are based on the assumption that the key policy rate forecast is priced into the money market.
2) Forward rates for trading partners at 9 December 2016. The aggregate for trading partner interest rates is described in *Norges Bank Memo* 2/2015.
3) A positive slope denotes a stronger krone exchange rate.
4) Projections for 2016 Q4 – 2019 Q4 (broken lines).
Sources: Thomson Reuters and Norges Bank

gage interest rates somewhat in recent months, resulting in a slightly higher lending rate in the period ahead than envisaged in September. The rise is nevertheless smaller than the upward adjustment of the projected money market premium, and banks' lending margins may therefore turn out to be slightly lower in the near term than assumed in the September *Report*. Further out in the projection period, banks' lending rates follow the movement in the money market rate.

The tightness of the monetary policy stance is often measured by the real interest rate. The projections in this *Report* suggest that the real interest rate in the money market will increase through the projection period (Chart 2.4). The projection is somewhat higher than in the September *Report* as the inflation projection has been revised down since September and the money market premium is now expected to move down more slowly than anticipated earlier. At the same time, the projections imply a negative real money market rate through the entire projection period and a continued expansionary monetary policy.

The krone exchange rate is projected to remain stable in the coming years (Chart 2.5). Towards the end of the projection period, the krone is expected to be close to the September projections. A somewhat narrower interest rate differential against other countries points in isolation to a somewhat weaker krone, while the upswing in oil prices pushes in the opposite direction.

Lower inflation and persistently low capacity utilisation

The analyses indicate that inflation will recede in the coming years (Chart 2.6). The past depreciation of the krone is still fuelling the rise in prices for domestically produced goods and services, while the effect on imported goods is unwinding. The recent appreciation of the krone is expected to push down inflation somewhat faster than envisaged in September. Moderate wage growth and lower capacity utilisation than normal are also restraining inflation. Domestic inflation is likely to be somewhat lower further out than projected in September on the back of a moderation in wage growth and a pick-up in capacity utilisation further out than expected earlier. The rise in consumer

prices adjusted for tax changes and excluding energy products (CPI-ATE) is projected to drift down to between 1.5% and 2% in 2019. The projections are lower than in the September *Report* through the entire projection period.

According to Epinion's expectations survey for Norges Bank, inflation expectations have increased somewhat in the past six months (Chart 2.7). The survey indicates that the respondents still expect inflation to be close to 2.5% a few years ahead.

Capacity utilisation is projected to remain close to today's level in the coming year, albeit at a slightly lower level than envisaged in September. As a result of somewhat weaker growth prospects for the Norwegian economy in the period ahead, it will likely take somewhat longer before capacity utilisation starts to rise towards a more normal level. Owing to the upswing in oil prices, capacity utilisation is projected to be a little higher in the latter part of the projection period than envisaged in September. Productivity growth has been lower than expected, and growth in trend productivity is still expected to be low in the coming years.

Slightly lower growth, but little change in unemployment

Growth in mainland GDP will likely be somewhat lower in 2016 than projected earlier (Chart 2.8). Growth is projected to pick up further ahead. The negative contribution from petroleum investment will gradually diminish, and petroleum investment will again make a positive contribution to growth in the Norwegian economy further out (Chart 2.9). Growth is supported by a continued expansionary monetary and fiscal policy. It nevertheless appears that growth will pick up at a somewhat slower pace than envisaged in September, partly owing to lower-than-projected petroleum investment in 2017. In addition, growth in public demand is slightly lower ahead than assumed earlier. Owing to the upswing in oil prices, growth will likely be a little higher in the latter part of the projection period than anticipated in September.

In the projection, registered unemployment edges up in the near term, but remains fairly stable over the next year. Registered unemployment drifts down thereafter (Chart 2.10). Unemployment measured by

Chart 2.6 Inflation[1] and projected output gap in the baseline scenario. Percent. 2010 Q1 – 2019 Q4 [2]
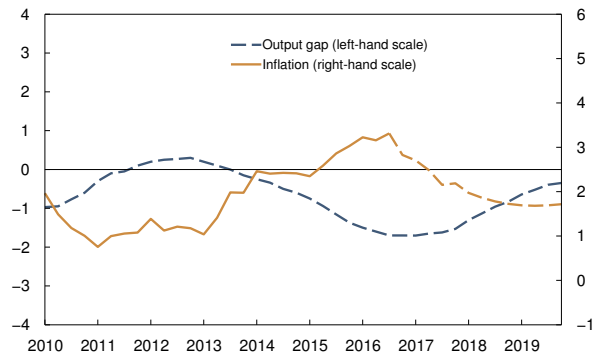

1) CPI adjusted for tax changes and excluding energy products (CPI-ATE). Four-quarter change.
2) Projections for 2016 Q4 – 2019 Q4 (broken lines).
Sources: Statistics Norway and Norges Bank

Chart 2.7 Expected consumer price inflation 2 and 5 years ahead.[1] Percent. 2005 Q1 – 2016 Q4
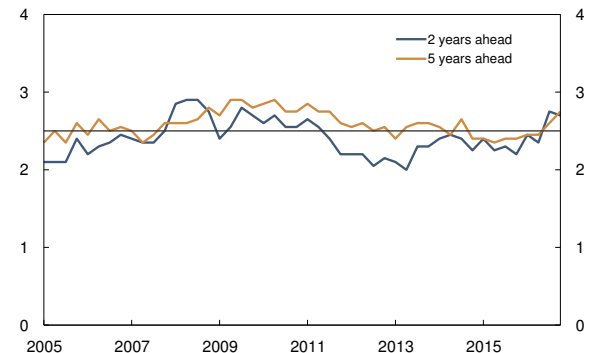

1) Average of expectations of employer/employee organisations and economists in the financial industry and academia.
Sources: Epinion and Norges Bank

Chart 2.8 GDP for mainland Norway. Annual change. Percent. 2010 – 2019 [1]
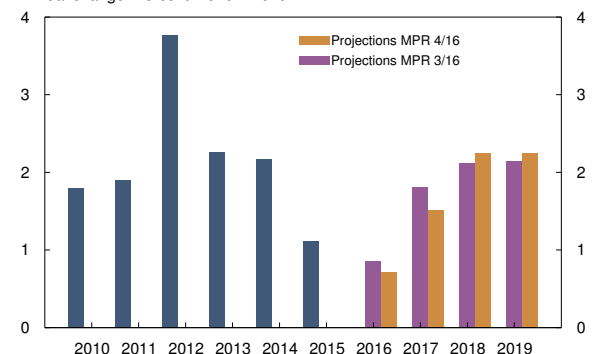
1) Projections for 2016 – 2019.
Sources: Statistics Norway and Norges Bank

Chart 2.9 Petroleum investment as a share of GDP for mainland Norway.
Percent. 1995 – 2019 [1]
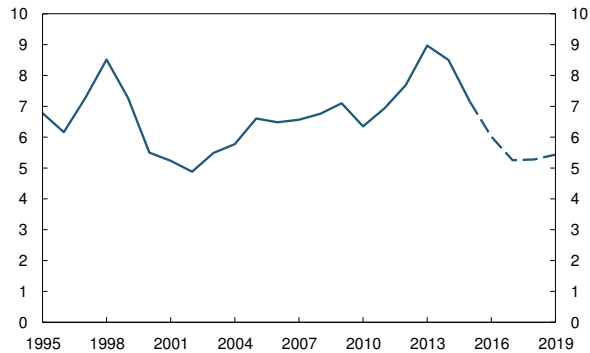
1) Projections for 2016 – 2019 (broken line).
Sources: Statistics Norway and Norges Bank

Chart 2.10 Unemployment as a share of the labour force. LFS[1] and NAV[2].
Seasonally adjusted. Percent. 2010 Q1 – 2019 Q4 [3]
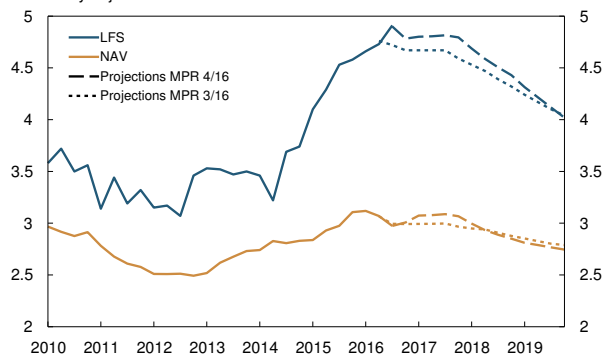
1) Labour Force Survey.
3) Registered unemployment.
2) Projections for 2016 Q4 – 2019 Q4 (broken lines).
Sources: Norwegian Labour and Welfare Administration (NAV), Statistics Norway and Norges Bank

Chart 2.11 Labour cost share for mainland Norway.[1] Percent. 1980 – 2016 [2]
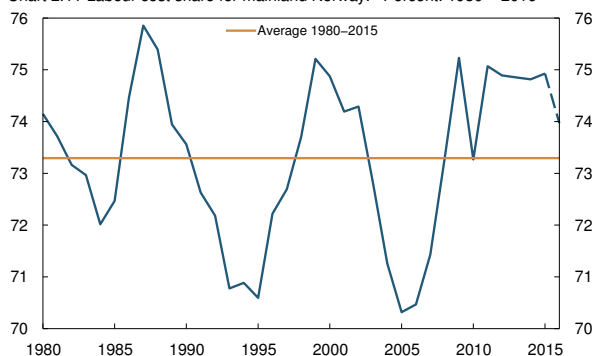
1) Compensation of employees as a percentage of factor income.
2) Projections for 2016 (broken line).
Sources: Statistics Norway and Norges Bank

the LFS also remains stable in the first part of the projection period before declining thereafter. As capacity utilisation takes somewhat longer to pick up than in the September projection, unemployment remains elevated somewhat longer than projected in September. The projections imply that the wide gap between unemployment measured by the LFS and NAV (Norwegian Labour and Welfare Administration) will persist somewhat longer than envisaged in September. Employment growth is expected to slow between 2015 and 2016 and to rise thereafter. The projections for employment growth for the coming years are nevertheless slightly lower than in September. Labour force growth in 2016 appears to be higher than projected in September. For the years ahead, labour force growth shows a small increase, but the projections for the next few years are slightly lower than in the September *Report*. Employment growth and labour force growth is dampened by slightly slower population growth ahead and slightly weaker developments in the Norwegian economy than envisaged in the September *Report*.

Moderation in wage growth
After moderating in 2016 to a level lower than observed for many years, wage growth is projected to edge up in the coming years in pace with a pick-up in activity and capacity utilisation. At the same time, firms' labour cost share is at a relatively high level (Chart 2.11), which in isolation suggests moderate wage growth ahead. The projections for nominal wage growth are lower than in the September *Report* (Chart 2.12), partly reflecting lower inflation in the near term than projected in September and prospects that it will now take somewhat longer for capacity utilisation to pick up than previously envisaged. On the other hand, the rise in oil prices contributes to pushing up wage growth. As in the September *Report*, real wages are expected to fall between 2015 and 2016. Downwardly revised wage growth implies that real wage growth will likely be somewhat lower in 2017 than projected in September. Overall, the projections for real wage growth in 2018 and 2019 are little changed compared with the September projections.

Pick-up in consumption growth
Growth in household consumption is projected to be lower in 2016 than in 2015 and lower than projected earlier. In the coming years, consumption growth

picks up again (Chart 2.13). Slightly lower real wage growth in 2016 and 2017 pushes down growth in household real income, and contributes to curbing growth in consumption. Over the next couple of years, slightly lower-than-projected employment growth dampens household income growth. On the other hand, higher house price inflation than projected in September will likely boost consumption. The upswing in oil prices is likely to have the same effect. Persistently low interest rates suggest continued growth in household consumption in the years ahead, but slightly higher interest rate prospects towards the end of the projection period may have a dampening impact further ahead. After declining markedly in 2016, the saving ratio also moves down a little in 2017 and remains stable thereafter (Chart 2.14).

Higher investment growth

After falling for several years, business investment is projected to increase in 2016. In the projection, investment growth picks up over the next two years as activity in the Norwegian economy rebounds (Chart 2.15). Spare production capacity has a dampening impact, while the upswing in oil prices may provide a boost to investment growth. In the projection, business investment as a share of mainland GDP gradually moves up to somewhat above its historical average (Chart 2.16). Overall, there is little change in the projections for business investment since the September *Report*.

Annual growth in housing investment is projected to show a notable increase in 2016. Higher house price inflation is expected to push up housing investment to a further extent than envisaged earlier. Further out, moderating house price inflation results in slower growth in housing investment. The projections for housing investment are higher than in the September *Report*, and housing investment as a share of mainland GDP remains relatively high in the coming years (Chart 2.17).

Moderate export growth ahead

Mainland exports excluding exports from the oil service sector are expected to decline in 2016, primarily reflecting a substantial fall in exports of refined petroleum products. In the projection, mainland exports excluding exports from the oil service sector rise again in the coming years, driven by gently rising
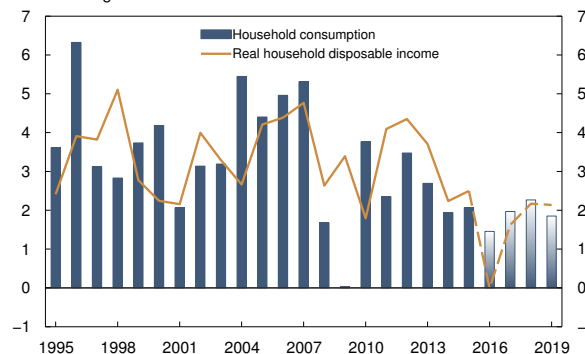
Chart 2.12 Wages.
Annual change. Percent. 1995 – 2019[1]
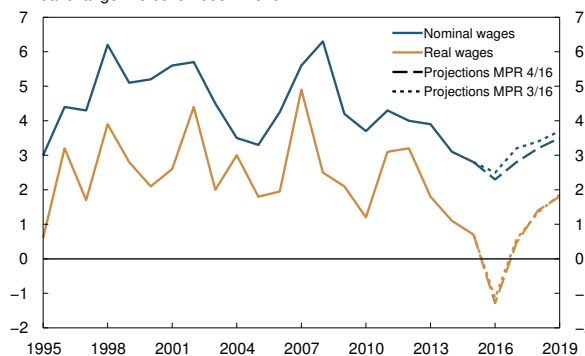
1) Projections for 2016 – 2019 (broken lines).
Sources: Norwegian Technical Calculation Committee for Wage Settlements (TBU), Statistics Norway, and Norges Bank

Chart 2.13 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]
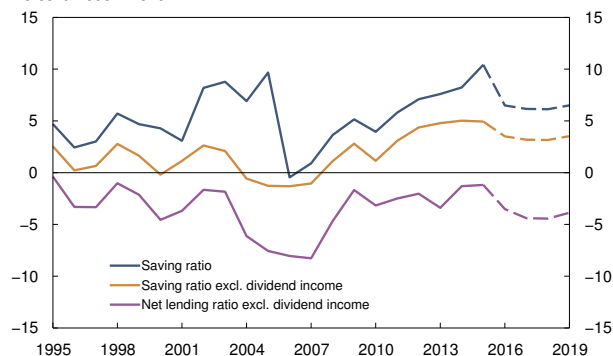
1) Projections for 2016 – 2019 (broken lines).
Sources: Statistics Norway and Norges Bank

Chart 2.15 Private investment.
Annual change. Percent. 2010 – 2019[1]
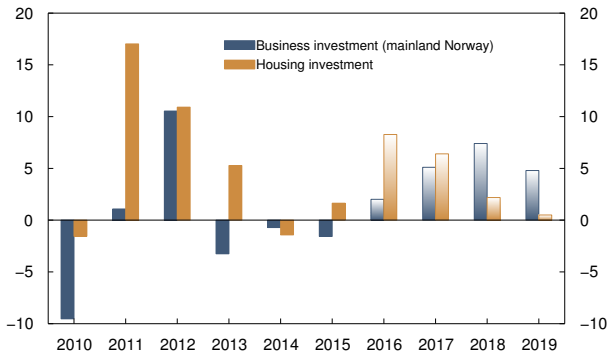
1) Projections for 2016 – 2019 (shaded bars).
Sources: Statistics Norway and Norges Bank

Chart 2.16 Business investment as a share of GDP for mainland Norway.
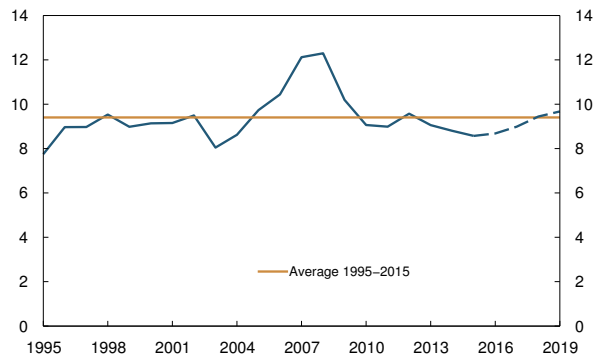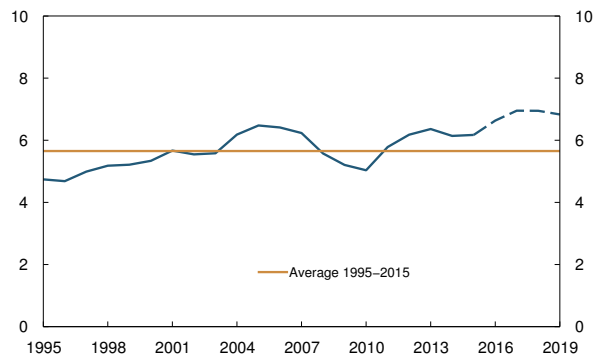Percent. 1995 – 2019[1]

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

Chart 2.17 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

growth among trading partners and a relatively weak krone.

As a result of the decline in the global petroleum industry, exports from the oil service sector have shown a pronounced fall so far in 2016. This export component also declines in the following two years before rising slightly at the end of the projection period.

Overall mainland exports show a larger decline in 2016 than projected in the September *Report*. Mainland exports are expected to grow again from 2017 (Chart 2.18), and further out growth is projected to be broadly in line with the September projections.

Higher projected house prices and debt

In the projection, house price inflation remains high in the near term before drifting down thereafter. In the first part of the projection period, the projections for house price inflation are somewhat higher compared with the September projections (Chart 2.19). This is partly because house prices have risen more than expected. Owing to higher house price inflation, household debt rises at a faster pace in the coming years than expected earlier. In the projection, household debt grows at a faster pace than disposable income, resulting in higher debt ratios. Household interest burdens nevertheless remain low in the near term as a result of low interest rates, but there are prospects that interest burdens will rise further out in the projection period (Chart 2.20).

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 key policy 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 2.2 a–d). The fans are based on estimates from 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.

The US presidential election has increased the uncertainty surrounding economic developments among Norway's trading partners. The president-elect has announced substantial tax cuts and infrastructure investment. This may lead to higher growth than projected in this *Report*, which will in turn have positive spillover effects for our other trading partners. However, higher activity in the US economy may also prompt the Federal Reserve to raise its policy rate faster, resulting in tighter global funding conditions. Many emerging economies are particularly vulnerable to such a development, and as observed earlier higher global interest rates may lead to more volatile global capital flows. The president-elect has also proposed US immigration and trade reforms that heighten uncertainty about longer-term economic developments.

After several years of moderating wage growth, a gradual rise in wage growth is expected from 2017. However, the rate of increase is uncertain. In the past few years, lower nominal wage growth has occurred in an environment of higher inflation so that real wage growth has fallen more than nominal wage growth. This may imply a faster rise in wage growth than projected in this *Report*. On the other hand, the need to maintain and improve cost competitiveness suggests a more moderate increase in wage growth.

Over the past year, house price inflation has increased, and the rate of increase has been markedly higher than growth in household disposable income. In the projection, house price inflation remains high in the near term before slowing. The projections imply a continued rise in house prices in the years ahead. The recent sharp rise in house prices has increased the extent of a potential fall in house prices. A downturn or a shift in sentiment in the Norwegian economy could trigger a reversal in the housing market and a price decline. On the other hand, house price inflation may prove to be higher than projected also in the period ahead.

Chart 2.18 Exports from mainland Norway and imports to Norway's trading partners. Annual change. Percent. 2010 – 2019[1]
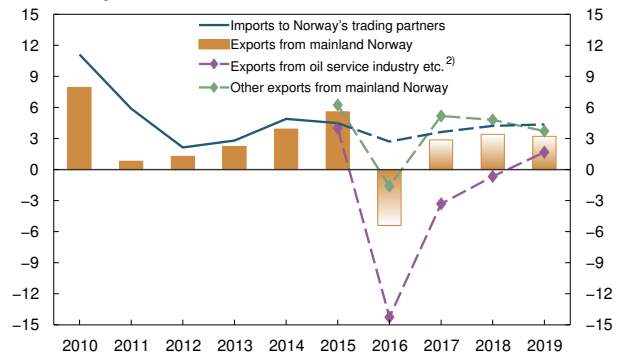
1) Projections for 2016 – 2019 (broken lines and shaded bars).
2) Groups of goods and services in the national accounts where the oil service industry accounts for a considerable share of exports.
Sources: Statistics Norway, Thomson Reuters and Norges Bank

Chart 2.19 House prices and household debt[1]. Four-quarter change. Percent. 2003 Q1 – 2019 Q4[2]
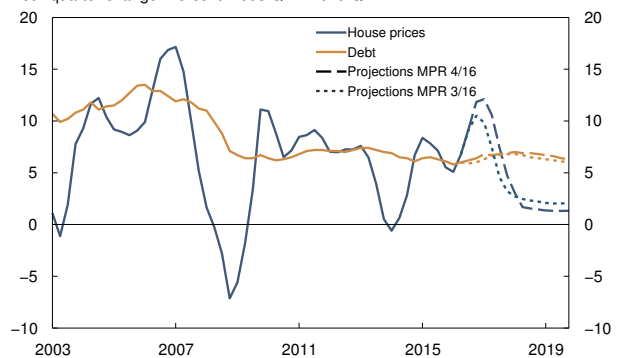
1) Domestic credit to households (C2).
2) Projections for 2016 Q4 – 2019 Q4 (broken lines).
Sources: Eiendom Norge, Eiendomsverdi, Finn.no, Statistics Norway and Norges Bank

Chart 2.20 Household interest burden and debt ratio.[1] Percent. 2003 Q1 – 2019 Q4[2]
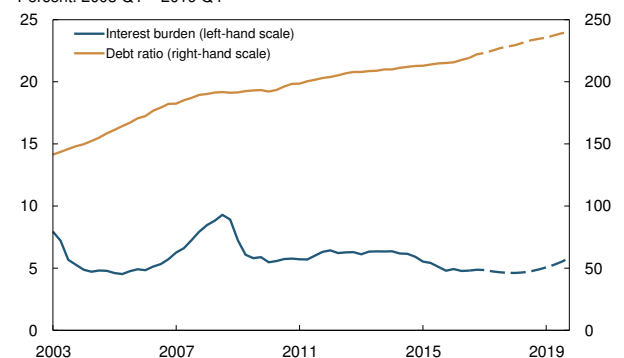
1) Interest expenses and loan debt, respectively, as a percentage of disposable income plus interest expenses. Disposable income is adjusted for estimated reinvested dividend income for 2003 – 2005 and redemption/reduction of equity capital for 2006 Q1 – 2012 Q3.
2) Projections for 2016 Q3 – 2019 Q4 (broken lines).
Sources: Statistics Norway and Norges Bank

Chart 2.21 Three-month money market rate in the baseline scenario[1]) and estimated forward rates[2]). Percent. 2010 Q1 – 2019 Q4

- – Money market rate in the baseline scenario, MPR 4/16
- – Money market rate in the baseline scenario, MPR 3/16
- Estimated forward rates, MPR 4/16
- Estimated forward rates, MPR 3/16
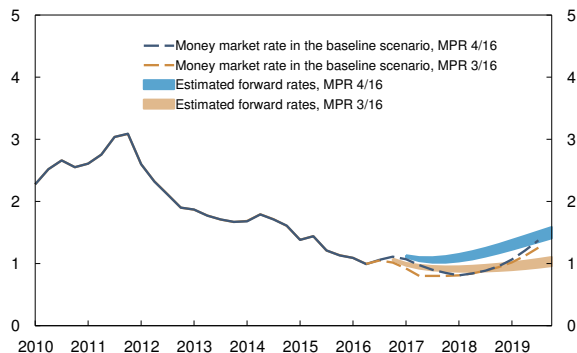
1) Key policy rate in the baseline scenario plus Norwegian money market premiums. The calculations are based on the assumption that the key policy rate forecast is priced into the money market.
2) Forward rates are based on money market rates and interest rate swaps. The orange and blue bands show the highest and lowest rates in the period 5 – 16 September 2016 and 28 November – 9 December 2016 respectively.
Sources: Thomson Reuters and Norges Bank

Chart 2.22 Key policy rate and interest rate path that follows from Norges Bank's average pattern of interest rate setting.[1]) Percent. 2005 Q1 – 2017 Q1 [2])

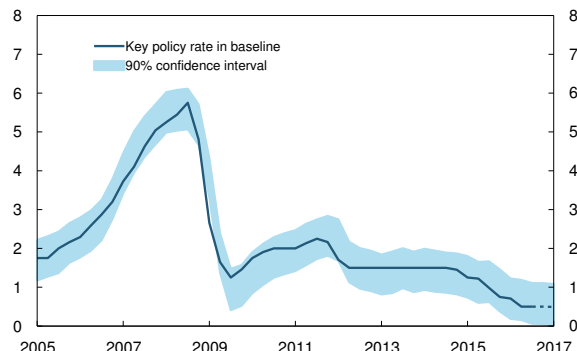- Key policy rate in baseline
- 90% confidence interval

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 Q3. See Norges Bank *Staff Memo* 3/2008 for further discussion.
2) Projections for 2016 Q4 – 2017 Q1 (broken line).
Source: Norges Bank

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 since the September *Report*, with the largest increase occurring a few years ahead. The movements in market interest rates have been closely linked to the upward shift in global interest rates and appear to be less sensitive to new information on developments in the Norwegian economy. With the exception of end-2019, estimated forward rates are higher than Norges Bank's projection for the money market rate in this *Report* (Chart 2.21).

A simple rule based on Norges Bank's previous interest rate setting is also a cross-check of the baseline key policy rate. Chart 2.22 shows such a rule, where the key policy rate is determined by developments in inflation, wage growth, mainland GDP growth 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 relevant variables up to and including 2017 Q1. Model uncertainty is expressed by the blue band. The chart shows that the baseline key policy rate is close to the middle of the band.

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 surround-ing 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*.

TECHNICAL MODEL-BASED INTERPRETATION OF NEW INFORMATION

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 key policy rate path is kept unchanged from the September 2016 *Monetary Policy Report*,[2] are shown in Charts 2.23 a–d. If the key policy rate path is kept unchanged from the September *Report*, the money market rate will nevertheless remain somewhat higher in the coming year than assumed earlier (Chart 2.23 b), as the premium in the Norwegian money market is now

expected to decline at a somewhat slower pace than anticipated in September.

According to the technical model-based analysis, it will now take somewhat longer before capacity utilisation starts to rise towards a more normal level. Capacity utilisation is now assessed to be slightly lower than projected in September, and in the short term capacity utilisation is dampened by factors such as lower petroleum investment than projected in September. At the same time, the analysis shows that capacity utilisation will be slightly higher in the latter part of the projection period than envisaged in September (Chart 2.23 c), partly owing to somewhat higher oil prices than expected in September.

With an unchanged path for the key policy rate, new information indicates that inflation will recede and run

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1 For exogenous variables, projections for the entire projection period have been incorporated (such as external growth, inflation abroad, foreign policy rates, petroleum investment and fiscal policy). For endogenous variables, projections up to and including 2017 Q1 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 2.23a Key policy rate in the baseline scenario from MPR 3/16.
Percent. 2010 Q1 – 2019 Q4 [1]
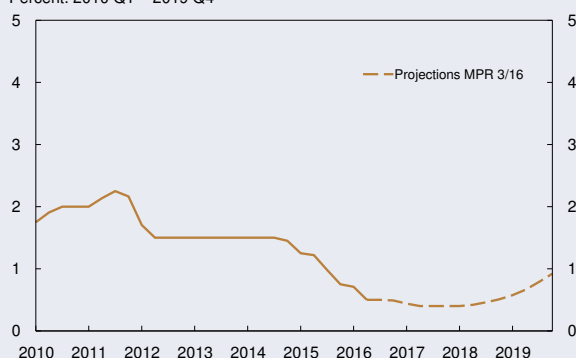
1) Projections from 2016 Q3 – 2019 Q4 (broken lines).
Source: Norges Bank

Chart 2.23b Three-month money market rate.[1] MPR 3/16 and with new information, but conditional on the key policy rate in the baseline scenario from MPR 3/16.
Percent. 2010 Q1 – 2019 Q3 [2]
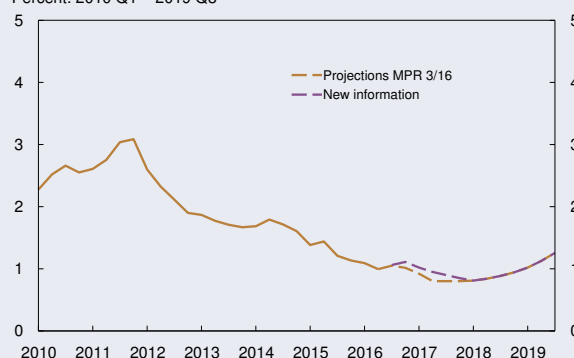
1) The calculations are based on the assumption that the key policy rate forecast from MPR 3/16 is priced into the money market.
2) Projections from 2016 Q4 – 2019 Q3 (broken lines).
Source: Norges Bank

at a lower rate through the entire projection period than projected in the September *Report* (Chart 2.23 d). Inflation will be lower than projected in September as inflation has been lower than expected and the krone has appreciated more than projected in September. Lower-than-projected wage growth in 2016 and 2017 also pulls down inflation. The model-based analysis indicates that inflation will abate to between 1.5% and 2% in 2019.

The technical model-based analysis suggests on balance a somewhat lower path for the key policy rate in the coming years. This analysis, however, 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 2.23c Projected output gap. MPR 3/16 and with new information, but conditional on the key policy rate in the baseline scenario from MPR 3/16. Percent. 2010 Q1 – 2019 Q4
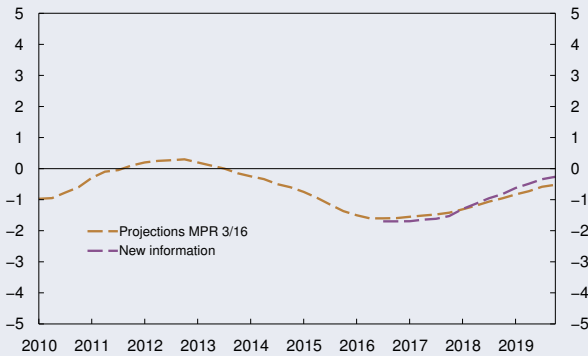
Source: Norges Bank

Chart 2.23d CPI-ATE[1]. MPR 3/16 and with new information, but conditional on the key policy rate in the baseline scenario from MPR 3/16. Four-quarter change. Percent. 2010 Q1 – 2019 Q4 [2]
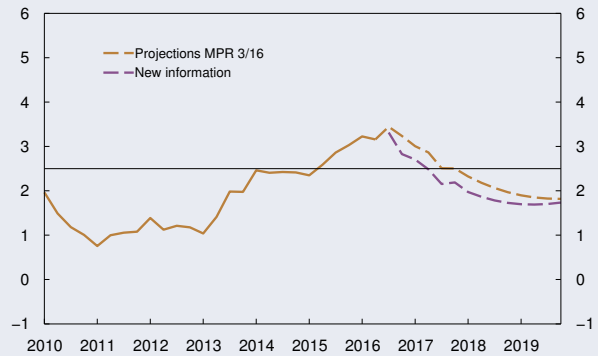
1) CPI adjusted for tax changes and excluding energy products.
2) Projections for 2016 Q4 – 2019 Q4 (broken lines).
Sources: Statistics Norway and Norges Bank

CHANGES IN THE PROJECTIONS SINCE *MONETARY POLICY REPORT 3/16*

The key policy rate forecast is little changed since the September 2016 *Monetary Policy Report* (Chart 2.24). The projections are based on the criteria for an appropriate interest rate path (see box on page 35), an overall assessment of the situation in the Norwegian and global economy and Norges Bank's perception of the functioning of the economy.

Chart 2.25 illustrates the factors that have influenced the interest rate forecast through the outlook for inflation, output and employment. There is no mechanical relationship between news that deviates from the Bank's forecasts and the effect on the interest rate path. The overall change in the interest rate forecast from the September *Report* is shown by the black line.

For trading partners as a whole, expected policy rates have risen since the September *Report*. Higher interest rates abroad suggest in isolation a weaker krone, which will both push up inflation and boost activity in Norway. Expectations of higher policy rates abroad therefore suggest a higher key policy rate also in Norway (orange bars).

The krone has continued to appreciate since the September *Report* and more than projected in September. The appreciation has been more pronounced than implied in isolation by the interest rate differential against other countries, partly owing to higher oil prices. A stronger krone contributes 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 lower than expected, partly reflecting weaker developments in consumption and exports than in the September projection. Petroleum investment is projected to fall more in 2017 than envisaged in the September *Report*, and the projections for growth in public demand ahead have been revised down. On the other hand, higher house price inflation than previously expected may give a boost to private demand. The rise in oil prices may also support growth in the Norwegian economy. Growth in petroleum investment is higher towards the end of the projection period than envisaged in September. In the near term, demand prospects suggest a somewhat lower path for the key policy rate, while prospects further out suggest a slightly higher interest rate path (dark blue bars).

Consumer price inflation has been lower than projected in September, owing to lower imported goods inflation. It appears that wage growth will be slightly lower in 2016 than projected in the September *Report*. Wage growth will likely rise less between 2016 and 2017 than projected in September as inflation is lower in the near term and growth in the Norwegian economy is picking up at a somewhat slower pace. Lower inflation and wage growth suggest a lower path for the key policy rate (purple bars).

Chart 2.24 Key policy rate.
Percent. 2010 Q1 – 2019 Q4 [1)]
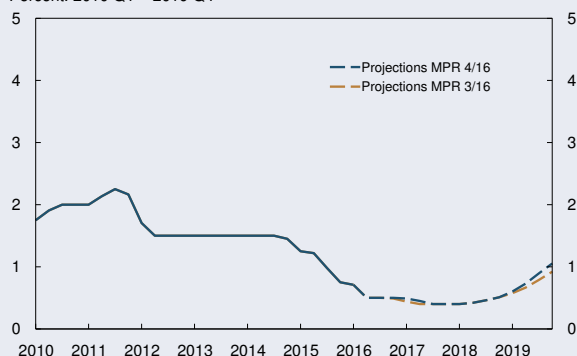
1) Projections for 2016 Q4 – 2019 Q4 (broken lines).
Source: Norges Bank

Chart 2.25 Factors behind changes in the interest rate forecast since MPR 3/16.
Cumulative contribution. Percentage points. 2017 Q1 – 2019 Q4
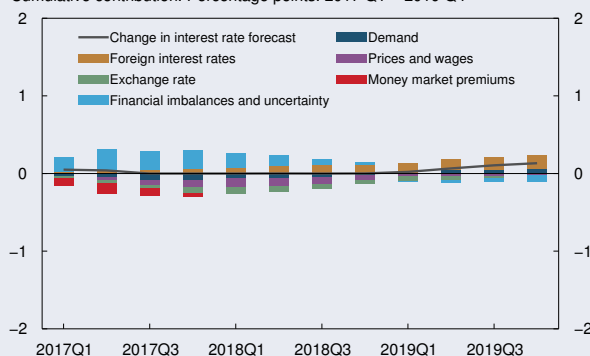
Source: Norges Bank

The premium in the Norwegian money market has so far remained higher than anticipated, and there are prospects that the premium will decline at a somewhat slower pace ahead than projected in September. This suggests a slightly lower key policy rate early in the projection period, as a higher premium, all else equal, implies a higher money market rate (red bars).

Changes in the outlook for consumer price inflation and capacity utilisation suggest, in isolation, a somewhat lower key policy rate in the coming years. The assessment of monetary policy trade-offs also takes into account uncertainty surrounding the functioning of the economy and conditions that imply a risk of particularly adverse economic outcomes. When the key policy rate is close to a lower bound, the uncertainty surrounding the effects of monetary policy is greater than when the interest rate is at a more normal level. It may then be appropriate to react somewhat less to new information than in a more normal situation.

Persistently low interest rates add to vulnerabilities in the financial system. In order to attain more stable economic developments over time, it is appropriate to take account of the risk associated with very low interest rates in the conduct of monetary policy.

The rapid rise in house prices and household debt has increased the risk of a sharp fall in demand further out. A lower key policy rate increases the risk of a further acceleration in house price inflation and debt accumulation. The risk of a build-up of financial imbalances and the uncertainty surrounding the effects of a lower key policy rate now suggest a cautious approach to interest rate setting (light blue bars).[1]

Projections for macroeconomic variables are presented in Table 1.

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[1] Norges Bank has also previously taken into account uncertainty surrounding the effects of monetary policy and the risk of a build-up of financial imbalances when setting the key policy rate. In this *Report*, we have chosen to illustrate by separate bars how judgemental assessments relating to these considerations have affected the interest rate forecast.

TABLE 1 Projections for macroeconomic aggregates in *Monetary Policy Report* 4/16.
Percentage change from previous year (unless otherwise stated).
Change from projections in *Monetary Policy Report* 3/16 in brackets

	2016	2017	2018	2019
CPI	3.6 (0)	2.3 (-0.3)	1.8 (-0.3)	1.7 (-0.1)
CPI-ATE[1]	3.1 (-0.2)	2.4 (-0.3)	1.8 (-0.3)	1.7 (-0.1)
Annual wages[2]	2.3 (-0.2)	2.8 (-0.4)	3.2 (-0.2)	3.5 (-0.2)
GDP, mainland Norway	0.7 (-0.2)	1.5 (-0.3)	2.2 (0.1)	2.2 (0.1)
Output gap, mainland Norway (level)[3]	-1.6 (0)	-1.6 (-0.1)	-1.1 (0)	-0.5 (0.2)
Employment, persons, QNA	-0.1 (0.2)	0.4 (-0.4)	0.9 (-0.2)	1.0 (0.1)
LFS unemployment (rate, level)	4.8 (0.1)	4.8 (0.1)	4.6 (0.2)	4.2 (0.1)
Registered unemployment (rate, level)	3.0 (0)	3.1 (0.1)	2.9 (0)	2.8 (0)
Level				
Key policy rate[4]	0.6 (0)	0.4 (0)	0.4 (0)	0.8 (0.1)
Import-weighted exchange rate (I-44)[5]	105.3 (-0.6)	102.0 (-1.7)	102.6 (-0.4)	101.8 (-0.4)
Money market rates, trading partners[6]	0.1 (0)	0.2 (0.1)	0.3 (0.2)	0.6 (0.4)

1 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 Based on three-month money market rates and interest rate swaps.

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

3 FINANCIAL STABILITY ASSESSMENT – DECISION BASIS FOR THE COUNTERCYCLICAL CAPITAL BUFFER

Chart 3.1 House prices relative to disposable income[1].
Index. 1998 Q4 = 100. 1983 Q1 – 2016 Q3
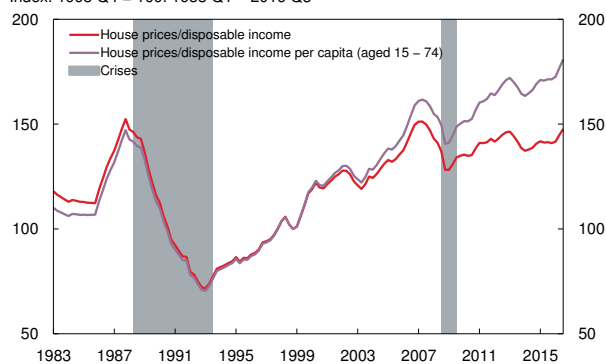
1) Disposable income adjusted for estimated reinvested dividend income for 2003 – 2005 and redemption/
reduction of equity capital for 2006 Q1 – 2012 Q3. Growth in disposable income excluding dividend income
is used for 2015 Q1 – 2016 Q3
Sources: Eiendomsverdi, Finn.no, Norwegian Association of Real Estate Agents (NEF),
Real Estate Norway, Statistics Norway and Norges Bank

Chart 3.2 House prices. Twelve-month change and seasonally adjusted monthly
change.[1] Percent. January 2010 – November 2016
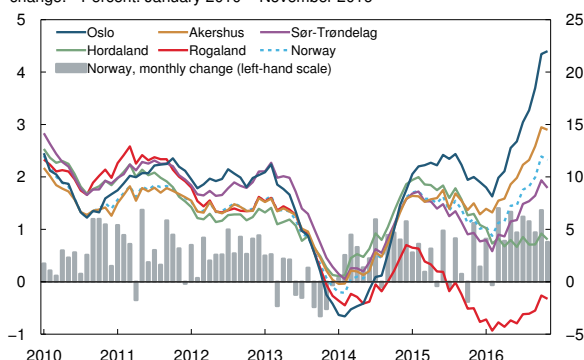
1) Twelve-month change for counties. Twelve-month change and seasonally adjusted monthly change
for Norway.
Sources: Eiendomsverdi, Finn.no and Real Estate Norway

Chart 3.3 Share of population living in regions with house price inflation above
a certain level. Percent

Sources: Eiendomsverdi, Finn.no, Real Estate Norway, Statistics Norway and Norges Bank

Norges Bank's assessment of financial imbalances is based on the credit-to-GDP ratio for the mainland economy, developments in property prices and banks' wholesale funding ratio (see box on page 46). The assessment of financial imbalances is the basis for the Bank's advice on the countercyclical capital buffer for banks. Norges Bank is tasked with presenting a decision basis and providing advice to the Ministry of Finance regarding the level of the buffer four times a year (see boxes on pages 4 and 48).

Continued high property price inflation

Over the past year, house prices have risen substantially more than household disposable income (Chart 3.1). House prices relative to per capita income are substantially higher than prior to the financial crisis. House prices have recently risen sharply in large parts of the country, even though there is still wide regional variation (Chart 3.2). Close to half of Norway's population lives in regions where house prices have risen by 10% or more over the past year (Chart 3.3). A year ago, only Oslo experienced house price inflation of 10%. In oil-dependent regions, house price inflation remains subdued.
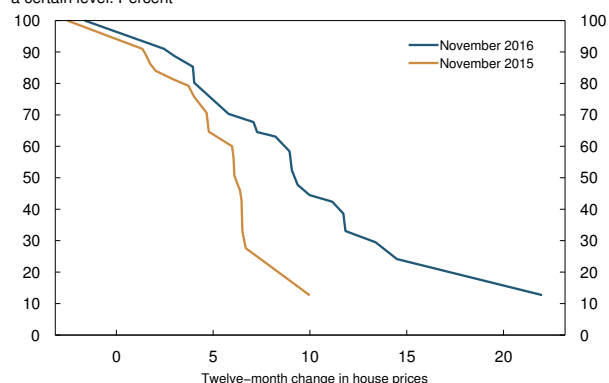
House prices have increased more than rents in recent years (Chart 3.4). Price-to-rent ratios have risen in tandem over a long period in the large cities, but house prices in Oslo have recently risen at a considerably faster pace than rents.

Over several years, the increase in the number of households has outpaced housing starts (Chart 3.5). In 2016, housing starts are expected to be higher than the increase in the number of households. New home sales have risen recently, especially in areas where house price inflation is high. The high level of residential construction could curb house price inflation further ahead.

House prices have also risen considerably in a number of other countries. In recent years, the rise in prices has been especially high in the largest cities (see box on page 44).

Selling prices for centrally located commercial property have risen sharply over several years (Chart 3.20). Recent years' decline in interest rates has been a factor in pushing down required rates of return and

pushing up selling prices. Rents for office space in Oslo were stable in the first six months of 2016. A low supply of new office space and a rapid pace of conversion of commercial property to residential use may reduce office vacancy rates ahead. Selling prices may therefore remain elevated or rise further. On the other hand, higher long-term market interest rates may push up the required rate of return and push down prices. Commercial real estate is the sector that accounts for the largest share of banks' credit exposures.

Slightly higher household debt growth

For a long time, total credit for the mainland economy has risen faster than GDP (Chart 3.6). Recently, credit growth has slowed somewhat and credit is now growing at a slower pace than GDP. Lower growth in total credit primarily reflects a decline in corporate foreign debt, attributable in part to a stronger krone. Growth in corporate debt from domestic sources has been moderate over the past year. Growth in household debt has been the main reason why total credit has risen faster than GDP over time. Recently, household debt growth has picked up.

Household debt continues to rise faster than disposable income, increasing household debt ratios (Chart 2.20 in Section 2). Household interest burdens have declined owing in part to lower lending rates (Chart 3.7). Debt service ratios, which measure both interest and principal payments relative to income, are close to the levels prevailing at the time of the banking crisis at the end of the 1980s. The persistent rise in debt ratios has increased households' vulnerability to a rise in interest rates. A 5 percentage point interest rate increase will result in an interest burden as high as it was at the beginning of the banking crisis, and a substantially higher debt service ratio.

According to Finanstilsynet's (Financial Supervisory Authority of Norway) residential mortgage lending survey for 2016, the share of approved loans with a loan-to-value (LTV) ratio of 85% or higher has declined over the past year (Chart 3.8). Borrowers' debt-to-income ratios have risen markedly over the past year, especially for young borrowers. One out of ten mortgages was approved with debt over five times gross income, a substantial increase compared with the 2015 survey.

Chart 3.4 House price-to-rent ratio.
Index. 2010 Q1 = 1. 2010 Q1 – 2016 Q3

Sources: Eiendomsverdi, Finn.no and Real Estate Norway
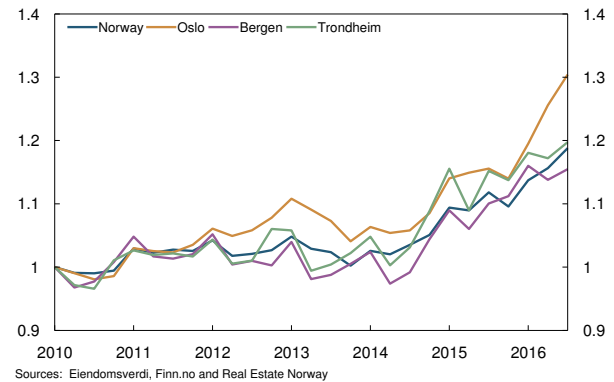
Chart 3.5 Increase in the number of households and number of housing starts per year. In thousands. 2006 – 2016[1]

1) For 2016, the increase in the number of households is based on population growth. Projections of population growth and housing starts for 2016 Q4.
Sources: Statistics Norway and Norges Bank

Chart 3.6 Total credit mainland Norway as a share of mainland GDP.
Percent. 1983 Q1 – 2016 Q3

Sources: IMF, Statistics Norway and Norges Bank

Chart 3.7 Household interest burden and debt service ratio.[1]
Percent. 1983 Q1 – 2016 Q2

- Interest burden
- Interest burden with a 5 percentage point interest rate increase
- Debt service ratio
- Debt service ratio with a 5 percentage point interest rate increase
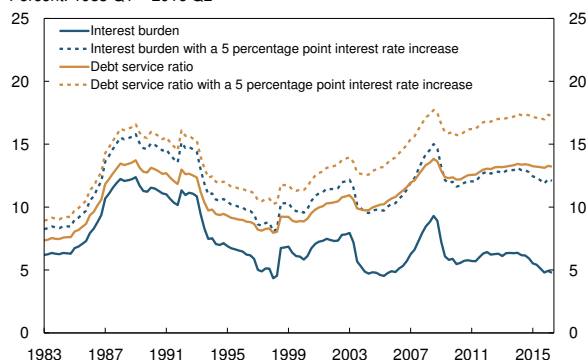
1) The interest burden is calculated as interest expenses as a percentage of disposable income plus interest expenses. The debt service ratio also includes estimated principal payments on an 18-year mortgage. Disposable income is adjusted for estimated reinvested dividend income for 2003 – 2005 and redemption/reduction of equity capital for 2006 Q1 – 2012 Q3. Growth in disposable income excluding dividend income is used for the period 2015 Q1 – 2016 Q2.
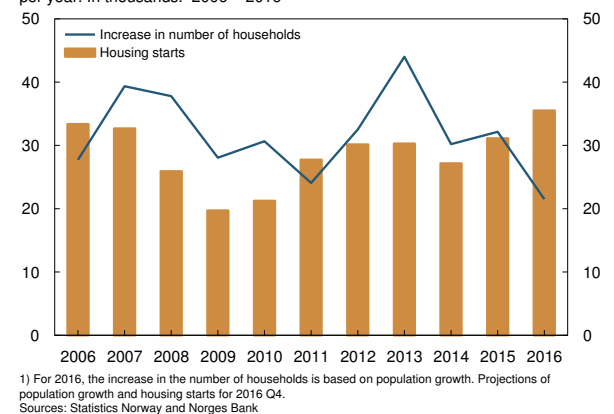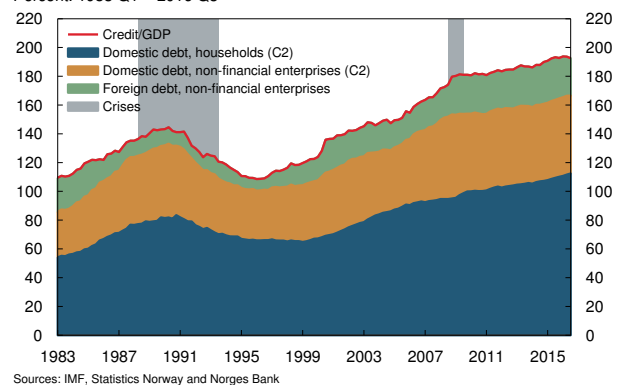Sources: Statistics Norway and Norges Bank

Chart 3.8 Share of approved mortgages with a loan-to-value (LTV) ratio of more than 85%, liquidity shortfall[1] and interest-only terms[2]. Percent

- LTV above 85%
- LTV above 85% including additional collateral
- Liquidity shortfall following a 5 pp interest rate increase
- Interest–only terms, LTV above 70%

- 2014
- 2015
- 2016
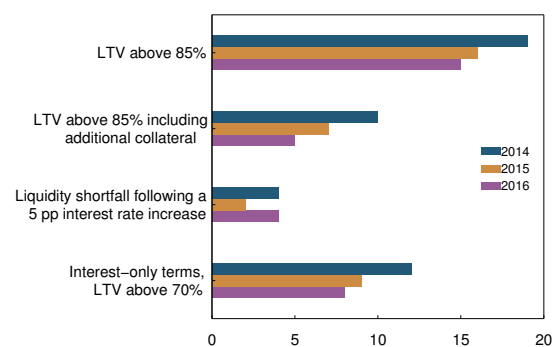
1) Loans where the borrower's income is not sufficient to service debt and cover normal living expenses following a 5 percentage point interest rate increase.
2) Share of mortgages with a LTV above 70%.
Source: The Financial Supervisory Authority of Norway

Chart 3.9 Credit to non-financial enterprises. Transactions.
Mainland Norway. Twelve-month change. Percent. January 2011 – October 2016

- Total gross debt (C3)[1]
- Gross domestic debt (C2)
- Foreign debt[1]
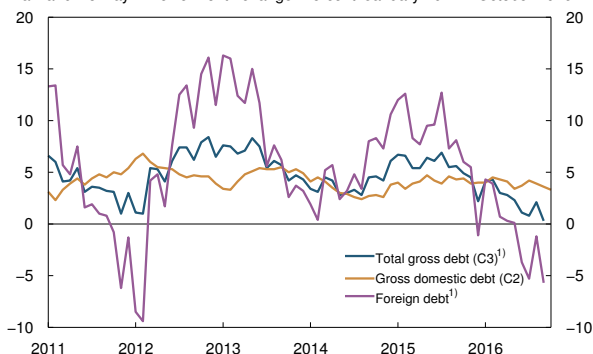
1) To end-September 2016.
Source: Statistics Norway

Mainland corporate borrowing has slowed slightly over the past year, primarily reflecting lower foreign debt (Chart 3.9). Growth in credit from domestic sources is being underpinned to a large extent by bank lending, but also partly by lending by life insurance companies and finance companies. According to Norges Bank's lending survey, banks expected overall credit demand from non-financial enterprises to remain unchanged in 2016 Q4, and banks did not plan any changes in credit standards.

Growth in non-financial corporate bond financing has been close to zero over the past year. Enterprises that have increased their bond debt in recent months are primarily in the commercial real estate sector. Bond market risk premiums have been largely unchanged since the September 2016 *Monetary Policy Report*. For high-risk oil sector enterprises, premiums remain high, and no new bonds have been issued by such companies since summer 2015.

In recent years, listed oil service companies have recorded low profitability and recognised substantial asset impairments. This has weakened these companies' debt-servicing capacity and reduced their book equity ratios (Chart 3.10). Recently, equity ratios have increased, partly owing to issuance of additional equity and conversion of debt in connection with restructuring. The market value of oil service companies' equity is far below book value (Chart 3.11). This may reflect a need for further write-downs and restructuring ahead.

Debt-servicing capacity and book equity ratios of other listed companies have remained fairly stable in recent years, with market values of equity substantially higher than book values.

Strengthened bank capital ratios

The largest Norwegian banks have reported solid profitability in recent years. Return on equity has declined slightly. Norwegian banks' loan losses have edged up in recent quarters, especially on oil-related exposures, but losses are still at a low level (Chart 3.12). Banks expect losses related to oil exposures also in the coming years. Norwegian banks' lending to oil-related enterprises represents a limited share of banks' total corporate exposure.

Banks continue to increase their capital ratios. At the end of 2016 Q3, all large Norwegian banks fulfilled the regulatory capital requirements (Chart 3.13). Most banks are well positioned to achieve their announced capital targets, which are slightly higher than the regulatory requirements.

Norwegian banks continue to have ample access to wholesale funding. Wholesale funding ratios have been fairly stable in recent years (Chart 3.22). Risk premiums on banks' new long-term wholesale funding are somewhat higher than at the time of the September *Report* (Chart 1.13 in Section 1).

Assessment of financial imbalances

Even though growth in total credit has slowed somewhat, household debt continues to rise faster than income. Growth in corporate debt from domestic sources has been moderate. There has recently been a rapid rise in house prices. Commercial property prices in central Oslo have risen sharply for several years. Banks' loan losses have edged up over the past year but are still at low levels. Banks' profit margins continue to be solid.

Household debt accumulation is high partly owing to the rapid rise in house prices. This increases the vulnerability of many households and heightens the risk of a sharp fall in demand and an increase in loan losses for banks further out. High house price inflation and a continued rise in household debt ratios are signs that financial imbalances have built up further.
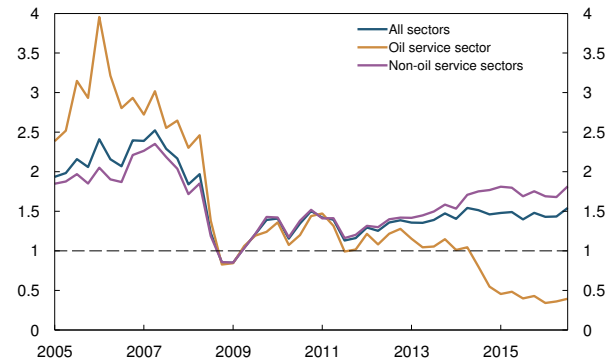
Chart 3.10 Equity ratio for listed companies.[1]
Percent. 2005 Q1 – 2016 Q3
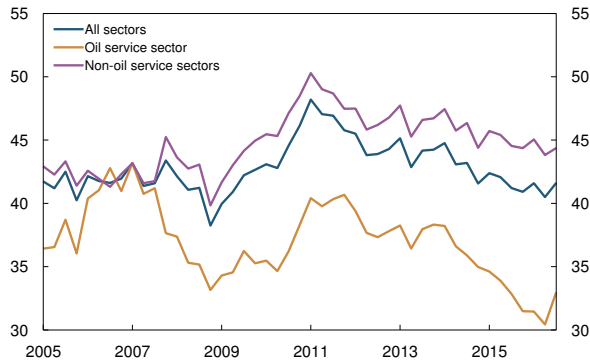
1) Norwegian non-financial companies listed on Oslo Børs excluding extraction. Norsk Hydro is excluded to end-2007 Q3.
Sources: Bloomberg and Norges Bank

Chart 3.11 Price-to-book ratio,[1] listed companies.[2]
Percent. 2005 Q1 – 2016 Q3

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 3.12 Banks'[1] loan losses as a share of gross lending.
Annualised. Percent. 1987 Q1 – 2016 Q3
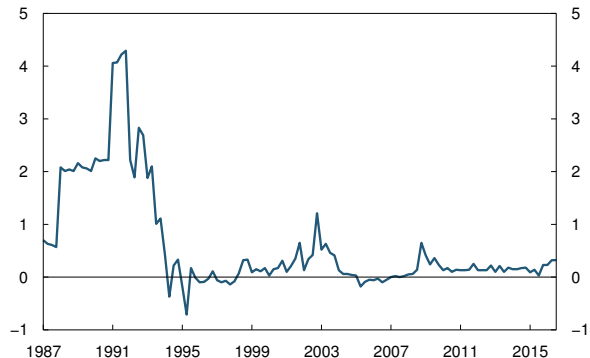
1) All banks and mortgage companies in Norway.
Source: Norges Bank

Chart 3.13 Common Equity Tier 1 (CET1) capital ratios.
Eight large banking groups. Percent
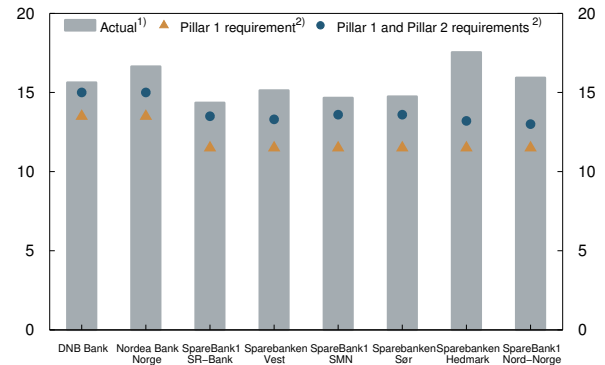
1) Actual CET1 capital ratios at 30 September 2016. Interim profits included in CET1 capital.
2) Pillar 1 requirements include a countercyclical capital buffer of 1.5% for all banks. From Q4 on, these requirements will vary according to banks' foreign exposures.
Sources: Banking groups' quarterly reports, Financial Supervisory Authority of Norway and Norges Bank

HOUSE PRICES IN SELECTED COUNTRIES AND LARGE CITIES

In recent years, house prices have risen sharply in many countries. House price inflation has been parti-cularly high in countries that were not hard hit by the financial crisis. Over time, the rise in Norwegian house prices does not differ substantially from developments elsewhere.

House prices in Sweden and in commodity exporters such as Australia, Canada and Norway fell only slightly during the financial crisis and have risen considerably in the years that followed (Chart 3.14). Since 2007, house prices overall have risen by between 60% and 70% in these countries. In Denmark, Finland, the Netherlands and the UK, house price inflation has been low. In a number of these countries, nominal house prices in 2016 are at approximately the same level as in 2007.

House prices have generally risen at a faster pace in the largest cities than in the country as a whole (Chart 3.15). House prices fell more in the large cities during the financial crisis, but have risen more in the years that followed. Among the selected cities, house prices have shown the strongest rise in Stockholm, Sydney and Toronto since 2007. Over the past year, house price inflation has been highest in Oslo.

Chart 3.14 House prices in selected countries. All dwellings.
Index. 2007 Q1 = 100. 2007 Q1 – 2016 Q3[1]
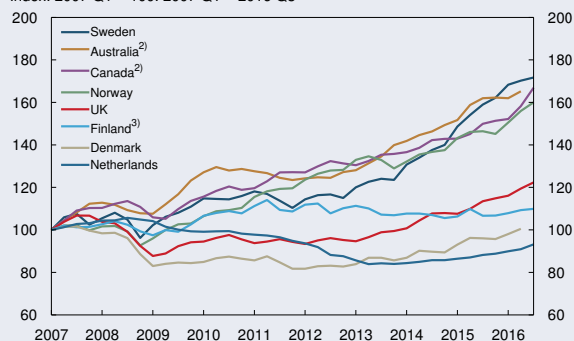
1) To end-June 2016 for Australia and Denmark.
2) The indicies are weighted averages of 11 metropolitan areas in Canada and eight in Australia.
3) Single-family houses only.
Sources: Australian Bureau of Statistics, Eiendomsverdi, Finn.no, Land Registry, Real Estate Norway,
Statistics Denmark, Statistics Finland, Statistics Netherlands, Teranet, National Bank of Canada and Valuegard

Chart 3.15 House prices in selected cities. All dwellings.
Index. 2007 Q1 = 100. 2007 Q1 – 2016 Q3[1]
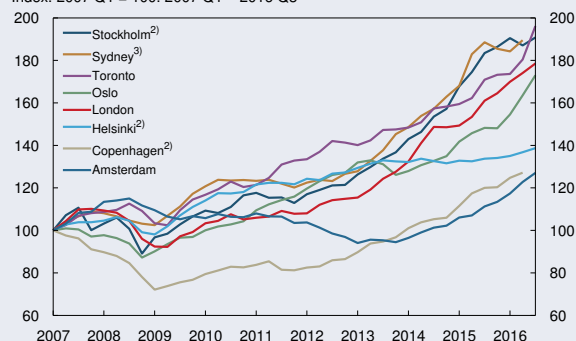
1) To end-June 2016 for Copenhagen and Sydney.
2) Flats only.
3) Greater Sydney.
Sources: Australian Bureau of Statistics, Eiendomsverdi, Finn.no, Land Registry, Real Estate Norway,
Statistics Denmark, Statistics Finland, Statistics Netherlands, Teranet, National Bank of Canada and Valuegard

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, ie 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.

The Norwegian regulation on recognition of countercyclical capital buffers entered into force on 1 October 2016. For exposures in EU countries, the buffer rate in the individual country must be recognised.[2] In principle, countercyclical capital buffer rates in non-EU countries must also be recognised. For exposures in countries that have not set their own rate, the Norwegian buffer rate applies. The Ministry of Finance may set different rates for exposures in non-EU countries, on the basis of advice from Norges Bank.

The total countercyclical buffer rate applicable to Norwegian banks will depend on the countries in which they have exposures. Most countries where Norwegian banks have fairly large exposures have set their rates at 0% (Table 1).

TABLE 1 Countercyclical capital buffers in countries where Norwegian banks' exposures are largest

Country	Current buffer rate	Norwegian banks' exposure[1]
Sweden	1.5%[2]	6.7%
US	0%	3.4%
Denmark	0%	2.3%
Lithuania	0%	1.9%
UK	0%	1.8%
Finland	0%	1.6%
Poland	0%	1.6%
Latvia	0%	1.1%
Singapore	0%[3]	1.0%

1 Share of risk-weighted assets (cf Article 3 of ESRB 2015/3). Average for the period 2014 Q3 to 2016 Q2. Covers banks that have submitted templates C09.01 and C09.02 as part of their CRD IV reporting.
2 Buffer rate of 2% will apply from 19 March 2017.
3 Effective from 1 January 2017.

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

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 rates currently applicable in EU 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*.

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 3.6). Overall credit growth has slowed somewhat over the past year, and in recent quarters credit growth has been lower than GDP growth. Recently, the gap between the credit-to-GDP ratio and its estimated trend has narrowed (Chart 3.16),[2] primarily reflecting lower foreign debt (Chart 3.17).

The buffer guide[3] is 0% in 2016 Q3 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 ¼%, down from ½% in the previous quarter (Chart 3.18).

House prices relative to disposable income have risen substantially over the past two quarters (Chart 3.1). The deviation from estimated trends has also increased (Chart 3.19). Real commercial property prices have been rising for some time (Charts [3.20] and [3.21]). The wholesale funding ratio has been fairly stable in recent years, and has fallen somewhat over the past quarter (Charts 3.22 and 3.23).

Norges Bank has developed early warning models for financial crises based on the credit and property price indicators.[4] The blue area in Chart 3.24 shows estimated crisis probabilities based on a large number of combinations of explanatory variables and trend estimation methods. The chart shows that crisis probabilities have declined since the financial crisis, but that there is some spread between the predictions from the different models.

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

Chart 3.16 Credit gap. Total credit[1] mainland Norway as a share of mainland GDP. Deviation from estimated trends[2] Percentage points. 1983 Q1 – 2016 Q3
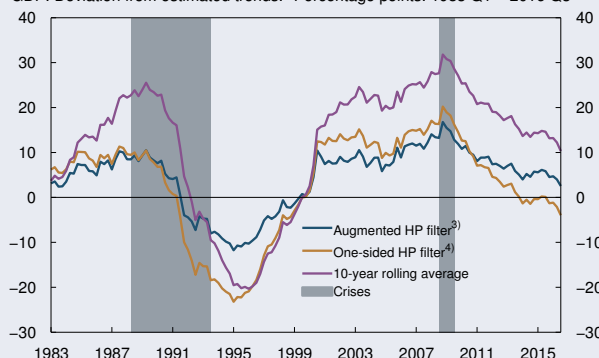
1) The sum of C2 households and C3 non-financial enterprises for mainland Norway (all non-financial enterprises pre-1995). C3 non-financial enterprises comprises C2 non-financial enterprises and foreign debt for mainland Norway.
2) The trends are estimated based on data from 1975 Q4 onwards.
3) One-sided 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 3.17 Decomposed credit cap. Total credit[1] mainland Norway as a share of mainland GDP. Deviation from trend with augmented HP-filter.[2] Percentage points. 1983 Q1 – 2016 Q3
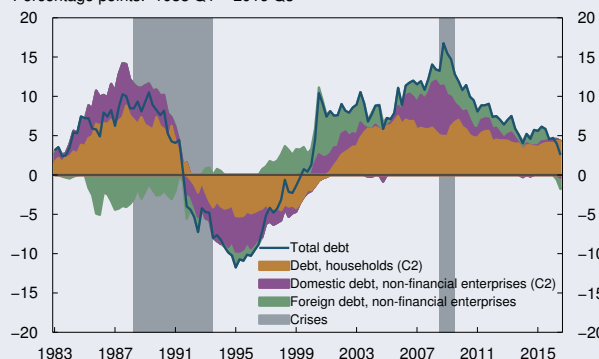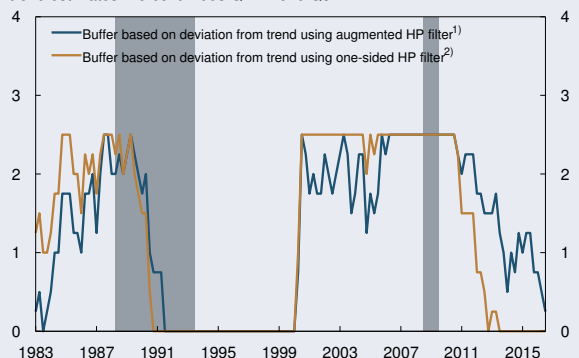

1) The sum of C2 households and C3 non-financial enterprises for mainland Norway (all non-financial enterprises pre-1995). C3 non-financial enterprises comprises C2 non-financial enterprises and foreign debt for mainland Norway.
2) One-sided Hodrick-Prescott filter estimated on data augmented with a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

Chart 3.18 Reference rates for the countercyclical capital buffer under alternative trend estimates. Percent. 1983 Q1 – 2016 Q3

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.
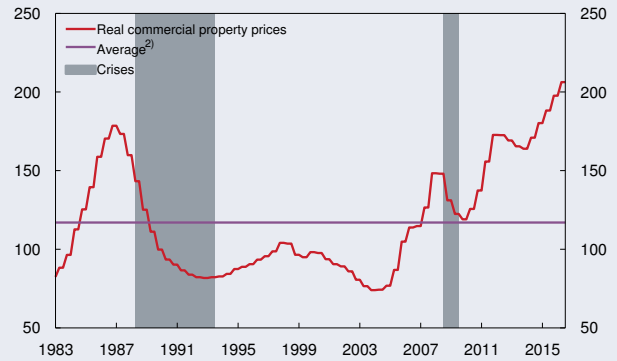Sources: IMF, Statistics Norway and Norges Bank

Chart 3.19 House price gap. House prices relative to disposable income[1] as deviation from estimated trends.[2] Percent. 1983 Q1 – 2016 Q3
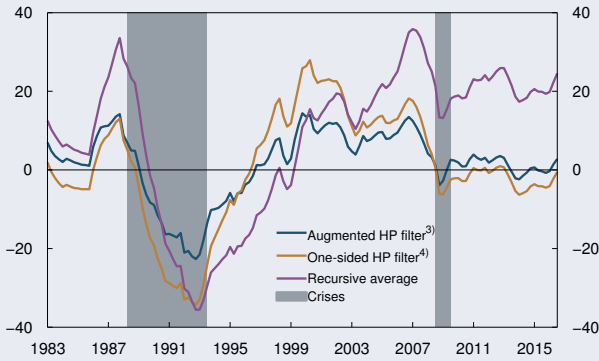
- Augmented HP filter[3]
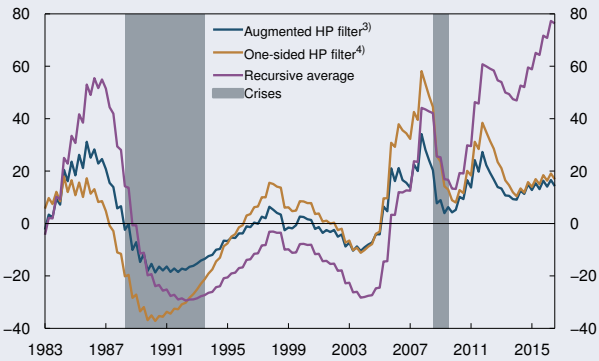- One-sided HP filter[4]
- Recursive average
- Crises

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 Q3.
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 3.20 Real commercial property prices.[1] Index. 1998 = 100. 1983 Q1 – 2016 Q3

- Real commercial property prices
- Average[2]
- Crises

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 3.21 Commercial property price gap. Real commercial property prices[1] as deviation from estimated trends.[2] Percent. 1983 Q1 – 2016 Q3

- Augmented HP filter[3]
- One-sided HP filter[4]
- Recursive average
- Crises

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 3.22 Banks'[1] wholesale funding ratio. Percent. 1983 Q1 – 2016 Q3
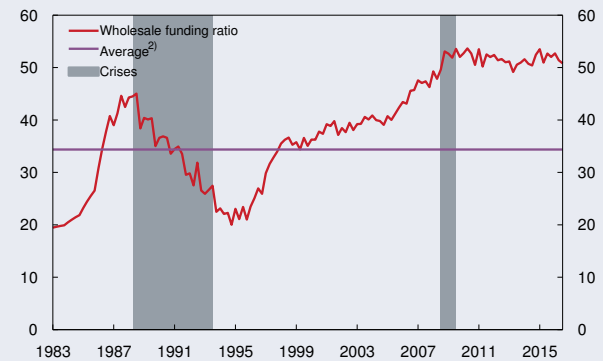
- Wholesale funding ratio
- Average[2]
- Crises

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 3.23 Wholesale funding gap. Banks'[1] wholesale funding ratio as deviation from estimated trends.[2] Percentage points. 1983 Q1 – 2016 Q3
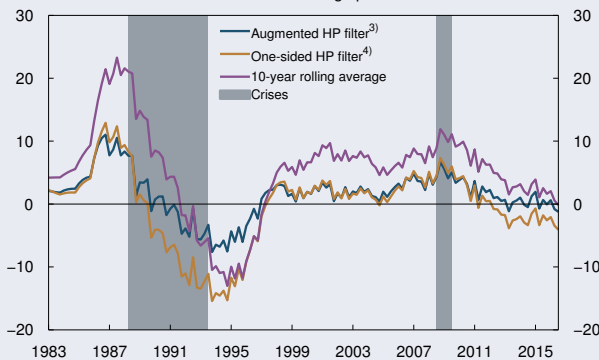
- Augmented HP filter[3]
- One-sided HP filter[4]
- 10-year rolling average
- Crises

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

Chart 3.24 Estimated crisis probabilities based on various model specifications. 1983 Q1 – 2016 Q3

- Model variation
- Crises
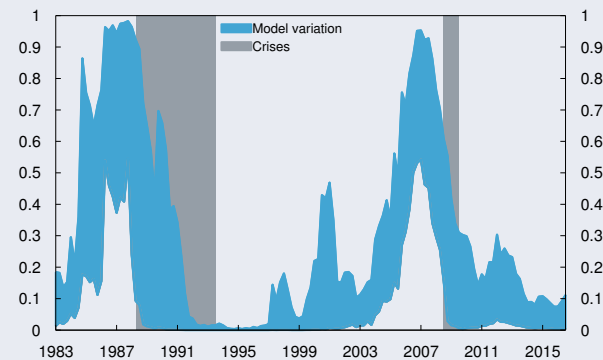
Source: Norges Bank

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 46). 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.

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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".

SPECIAL FEATURES

The global economy – developments in different regions and countries

Unemployment and capacity utilisation

In the US, economic growth has picked up through 2016, broadly in line with the projections in the September *Monetary Policy Report*. Solid employment growth over a long period and low unemployment (Chart 1) point to a tight labour market and close to full capacity utilisation. On the other hand, labour force participation has fallen to a considerably greater extent than implied by demographic developments in recent years, and the employment rate is still lower than its pre-crisis level (Chart 2). It is uncertain whether this reflects continued weak labour demand or also more persistent changes in labour supply. Firms report relatively high capacity utilisation, but investment growth has continued to decelerate in all sectors.

The improvement in the labour market will support continued solid growth in private consumption. Higher demand could also lead to increased investment. In addition, the president-elect has proposed substantial tax cuts and extensive infrastructure investment. Both of these factors point to higher growth in both public and private demand. The combined effect of the fiscal policy measures is, however, very uncertain and will partly depend on how tax cuts and infrastructure investment are financed. The distribution of the tax cuts across the different income groups will also play an important role. Furthermore, immigration, healthcare and trade reforms and changes in government regulation in a number of

sectors will likely have substantial longer-term economic consequences. Many of the proposed changes could push up inflation. Financial conditions have tightened since the presidential election. The US dollar has appreciated, and there has been a marked rise in both short-term and long-term interest rates. Overall, GDP growth is assumed to remain around 2% to the end of the projection period, unchanged from the September *Report*.

Growth in the UK economy lost some momentum between Q2 and Q3, but was markedly higher than assumed in September. A more pronounced slowdown in the aftermath of the referendum had been anticipated as heightened uncertainty was expected to take a toll on both consumption and investment. Solid growth in the service sector is compensating for weak developments in construction and in manufacturing output. Despite the depreciation of sterling since the EU referendum, strong domestic demand has led to a substantial current account deficit, now the largest of the major advanced economies (Chart 3). The labour market has continued to improve. The employment rate is now at a historically high level, partly as the result of a rising retirement age for women, while unemployment is at a historically low level (Charts 1 and 2). Nevertheless, a number of factors indicate that labour market slack persists. For example, the share of the labour force in part-time

Chart 1 UK and US. Unemployment as a share of the labour force. Seasonally adjusted. Percent. January 1992 – November 2016[1]
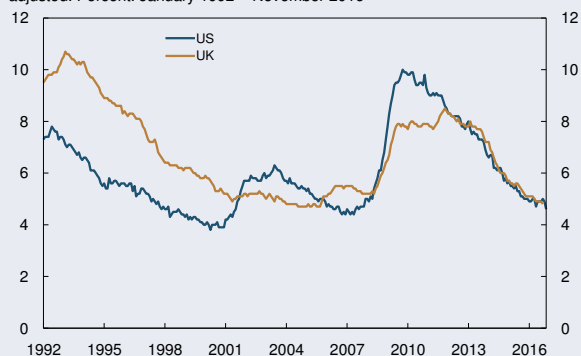
1) The latest observation for the UK is September 2016.
Source: Thomson Reuters

Chart 2 UK and US. Employment and participation rate as a share of the working–age population. Percent. January 1992 – November 2016[1]
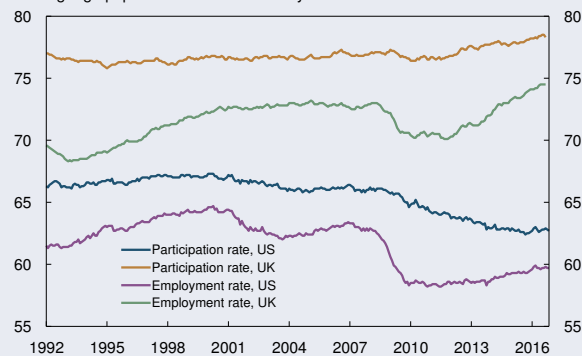
1) The latest observation for the UK is September 2016.
Source: Thomson Reuters

employment or self-employment has increased further and wage growth has remained moderate.

Looking ahead, growth in private consumption is expected to be somewhat lower than the average for recent years as growth in purchasing power is dampened by higher inflation. On the other hand, the Government's new budget indicates that fiscal policy will be tightened to a lesser extent than previously assumed, which in isolation contributes to a higher growth projection. The longer-term outlook for the UK economy still seems weak, primarily owing to considerable uncertainty with regard to the economic framework conditions in the coming years. Although this uncertainty is expected to continue to weigh on business investment, a somewhat less pronounced fall in investment is now expected compared with the September *Report*. The UK will retain full membership of the EU until the withdrawal process has been completed, but households and businesses are expected to begin making adjustments as the future relationship between the UK and the EU is clarified. Prime Minister May has announced that the formal withdrawal process will start in spring 2017. Overall, GDP growth is expected to slow from 2.1% in 2016 to 1.4% in 2017, before gradually picking up in the subsequent years. The projection for 2017 has been revised up since the September *Report*, while the projections for 2018 and 2019 have been revised down somewhat.

The moderate recovery in the euro area continues, driven by solid growth in domestic demand. GDP growth was approximately unchanged between Q2 and Q3, as assumed in the September *Report*. So far in Q4, growth has held up somewhat better than expected. Private consumption has accounted for half of the increase in GDP over the past two years. Employment has shown stable growth, and household purchasing power has increased as a result of low inflation. Unemployment has declined to somewhat below 10%. Consumption is expected to continue to make the strongest contribution to GDP growth ahead, driven by a gradual rise in wages. However, the pace of growth is projected to be slightly slower than in the previous two years, reflecting expectations of somewhat slower employment growth while consumer prices edge up as the contribution from the earlier decline in commodity prices fades.

Euro area investment has grown faster than GDP so far in 2016, driven by improved financing conditions, increased capacity utilisation and higher profitability in some segments of the business sector. At the same time, the housing market is on the path to recovery in many euro area countries. The number of building permits has increased considerably in recent quarters, pointing towards higher housing investment (Chart 4). A number of confidence indicators have also picked

Chart 3 Current account balance as a share of GDP. Percent. Annual averages.[1) 2000 – 2016
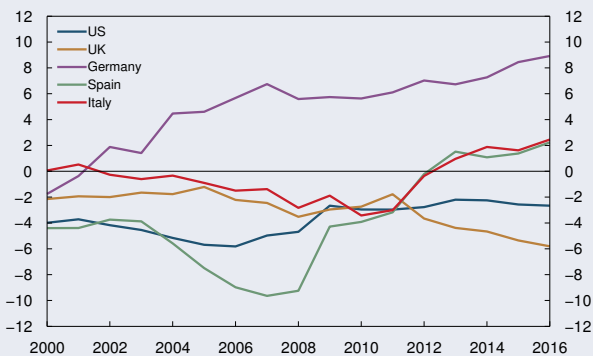
1) Observations for 2016 are averages of available data.
Source: Thomson Reuters

Chart 4 Euro area. Housing investment, building permits and house prices. Seasonally adjusted. Index, 2007 Q1 = 100. 2006 Q1 – 2016 Q2
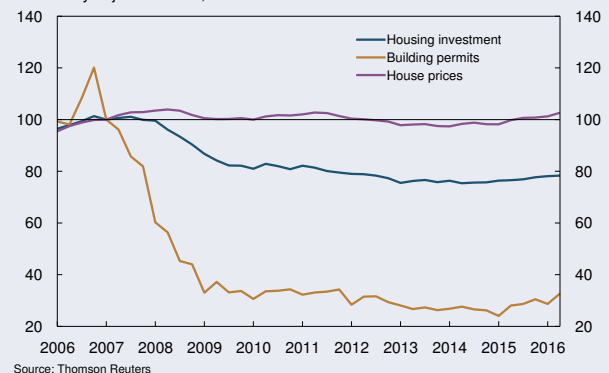
Source: Thomson Reuters

up so far in Q4 (Chart 5), and the production of capital goods is exhibiting solid growth. Capacity utilisation in manufacturing has increased in recent quarters and is now higher than the pre-crisis average according to some indicators. Investment growth ahead is expected to be somewhat stronger than previously assumed, although still lower than in previous upturns, partly owing to prospects for moderate growth in domestic demand combined with expectations of declining growth potential. Political uncertainty, both with regard to the UK's withdrawal from the EU and political processes in a number of euro area countries, is also likely to have a dampening effect on investment. In addition, low profitability and a high percentage of non-performing loans for many European banks are limiting the banking sector's capacity to support a faster recovery in investment.

Growth in euro area exports is projected to slow in 2016 as a result of weak export market growth combined with some appreciation of the euro over the past year. The euro area is not expected to increase its market shares ahead and export growth is therefore projected to be in line with demand growth in the coming years. Import growth is expected to pick up in pace with higher investment growth, and the contribution to GDP growth from net exports may thus be negative in the years ahead.

Overall, euro area growth is expected to decline from 1.6% in 2016 to 1.4% in 2017. The growth projections for both years have been revised up slightly compared with the September *Report* as a result of more positive developments than expected so far in 2016 and prospects for somewhat higher investment growth. The projection for 2019 has been revised down a little, to 1.4%, as a result of revised assessments of the growth potential of the French and Italian economies.

In Sweden, GDP growth is slowing, following very high growth in 2014 and 2015 driven by strong domestic demand. While high immigration has contributed to an increase in public spending in recent years, the number of new asylum applications is now falling sharply, from more than 160 000 in 2015 to a little more than 25 000 so far in 2016. As a result, the projection for public demand has been revised down. GDP grew by 0.5% in Q3, about half the average rate of quarterly growth in 2015. Private consumption has exhibited weak developments so far in 2016, but made a positive contribution to growth in Q3. Looking ahead, there are signs of a further improvement in private consumption, with a rise in household and business confidence indicators in recent months (Chart 6). In addition, a weaker Swedish krone will boost export industry competitiveness. As in the September *Report*, the Swedish economy is expected to grow

Chart 5 Euro area. GDP. Quarterly change. Percent. 2006 Q1 – 2016 Q3. Confidence indicators. Normalised around 0. January 2006 – November 2016
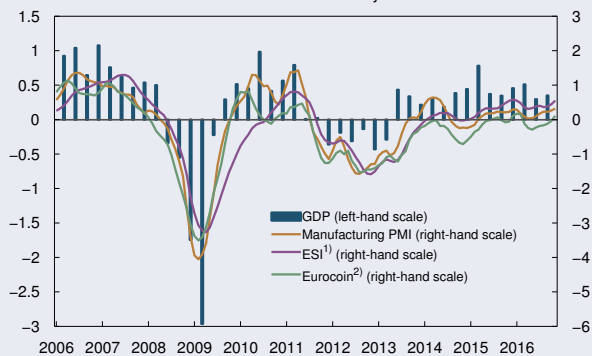
1) Economic Sentiment Indicator (ESI) is a euro area confidence indicator.
2) Eurocoin is a composite index of the current economic situation in the euro area.
Sources: Thomson Reuters and Norges Bank

Chart 6 Sweden. Confidence indicators. Deviations from historical average. January 2006 – November 2016
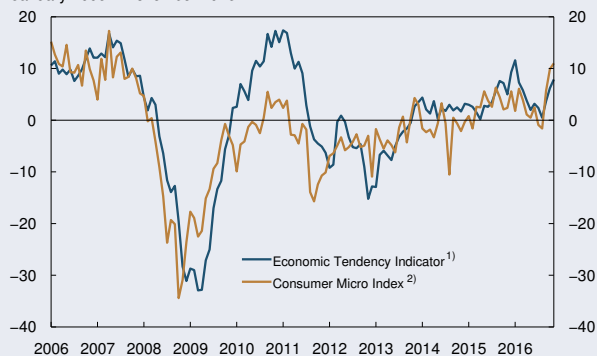
1) Composite indicator for households and businesses.
2) Households' perception of their financial situation.
Source: The National Institute of Economic Research

by 3.1% in 2016 and by somewhat above 2% in the following years.

In China, growth continues to be supported by government economic policy measures. Growth has been stronger than anticipated in the September *Report*, fuelled primarily by a renewed recovery in the housing market. This has reduced the probability of an abrupt fall in the pace of growth in the short term. Growth in overall investment slowed considerably in the first half of 2016, but has now edged up again, driven by a further rise in housing investment (Chart 7). New property market regulations and measures to curb credit growth are expected to restrain housing investment growth in 2017. The projections for GDP growth have been revised up to 6.5% in 2016 and 6.1% in 2017, while the longer-term projections remain unchanged.

In emerging market economies excluding China, the growth outlook has weakened somewhat as a result of high financial market volatility and tighter financing conditions following the US presidential election. Equity and bond prices have fallen, and broad-based exchange rate depreciation reflects substantial capital outflows. Many companies rely on US dollar funding, and a stronger US dollar will increase the cost of debt servicing. Expectations of higher interest rates in the

US had a similar effect on financial markets in emerging market economies in spring 2013 and contributed to slower growth in many countries. The fundamentals of several of the most vulnerable countries have subsequently improved. Current account deficits, for example, have been reduced substantially (Chart 8). Growth is therefore not expected to be affected to the same extent now. The growth projections for emerging market economies as a whole, excluding China, has been revised down by 0.1 percentage point in 2016 and 2017.

In Brazil and Russia, there are still prospects for a modest recovery, supported by higher commodity prices, improved consumer confidence and monetary policy easing following a decline in inflation from very high levels. Political uncertainty in Brazil remains high, particularly with regard to which of the reforms proposed by the interim government will be approved. In India, growth remains solid, driven by high domestic demand growth. The growth projections for 2016 and 2017 have nevertheless been revised down as the implementation of a number of structural reforms is expected to dampen growth in the short term. In the longer term, the reforms are expected to boost India's growth potential.

Chart 7 China. Investment in selected sectors. Volume. Twelve-month change. Three-month moving average. Percent. January 2010 – October 2016
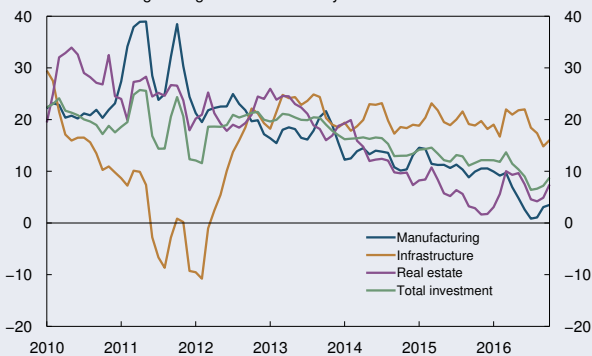
Sources: CEIC, Thomson Reuters and Norges Bank

Chart 8 Current account balance as a share of GDP in selected emerging market economies. Percent. Averages of 2012 and 2013 compared with data for 2016.[1]
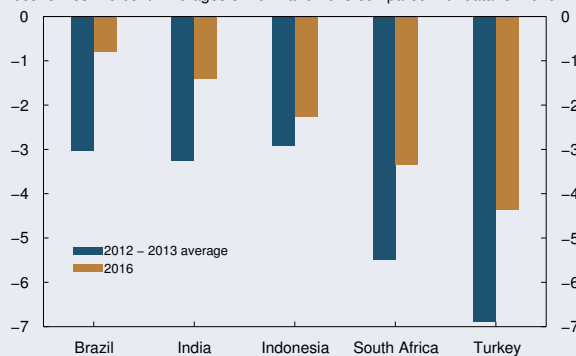
1) Current account balances for 2016 given by published data for India and projections for the remaining countries.
Source: IMF

UNEMPLOYMENT AND CAPACITY UTILISATION

The assessment of capacity utilisation plays an important role in monetary policy. Capacity utilisation, or the output gap, is defined as the deviation between actual and potential output. Potential output and capacity utilisation cannot be observed and must be estimated.

Norges Bank's estimates of potential output are the result of an overall assessment of a number of indicators and models and not a mechanical calculation based on one single indicator.[1] Retrospective trend estimates based on GDP figures can be used to estimate potential output in the economy. However, GDP figures are revised and there is considerable uncertainty surrounding trend output towards the end of the historical series.

There is a close relationship between capacity utilisation and unemployment. Unemployment in itself represents slack in the economy. There is also a close correlation between unemployment and the output gap. This relationship is often referred to as *Okun's law*[2] and can be expressed in the following form:

$$u - u^* = \beta\,(y - y^*) + \varepsilon \qquad (1)$$

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1 See Sturød, M. and K. Hagelund (2012) "Norges Bank's output gap estimates". *Staff Memo* 8/2012. Norges Bank.
2 Named after Arthur M. Okun, who proposed the relationship in 1962.

where u stands for the unemployment rate and y stands for (the logarithm of) GDP. The trend values of these variables are marked by *. The output gap is defined as $(y - y^*)$. As is the case for potential output, the trend level of unemployment cannot be observed and must be estimated. The Okun coefficient β indicates the magnitude of the change in the unemployment gap $(u - u^*)$ when capacity utilisation is changed by one percentage point.[3]

Simple estimations on annual data for the period 1972–2015 result in a β for Norway of around -0.3 (Charts 1a and 1b).[4] This means that a 1 percentage point increase in capacity utilisation leads to a reduction in the unemployment gap of 0.3 percentage point. There has over time been a clear and relatively stable relationship between unemployment, both as measured by the Labour Force Survey (LFS) and as registered by the Norwegian Welfare and Labour Administration (NAV), and capacity utilisation. Norges Bank therefore gives considerable weight to develop-

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3 Okun's law applied to Norwegian data was also discussed in the Special Feature "The relationship between fluctuations in economic activity and unemployment" in *Monetary Policy Report* 1/15. For an international study, see Ball, L.M., D. Leigh and P. Loungani (2013) "Okun's Law: Fit at Fifty?". *NBER Working Paper* No. 18668.
4 The trend values for output and unemployment were estimated using an HP filter with lambda = 100. The Okun coefficient is -0.26 (standard deviation = 0.03) for registered unemployment, while the coefficient is -0.27 (standard deviation = 0.03) for LFS unemployment.

Chart 1a Estimated Okun's law based on NAV unemployment[1].
1972 – 2014
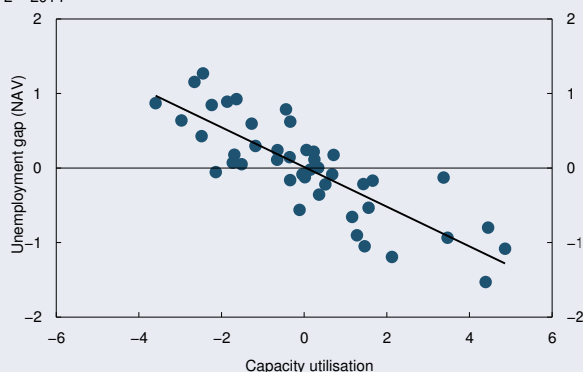
1) Registered unemployment.
Sources: Norwegian Labour and Welfare Administration (NAV) and Norges Bank

Chart 1b Estimated Okun's law based on LFS unemployment[1].
1972 – 2014
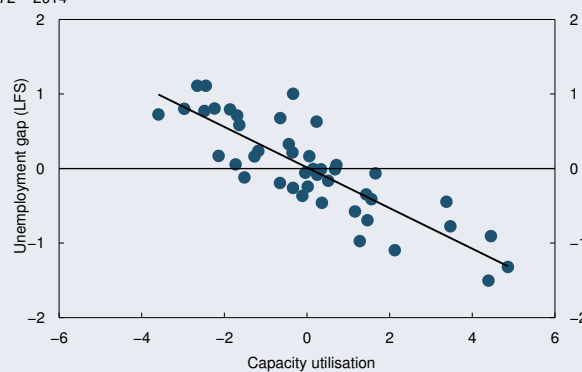
1) Labour Force Survey.
Sources: Statistics Norway and Norges Bank

ments in unemployment in its assessment of capacity utilisation in the Norwegian economy. Although the LFS has over time shown somewhat higher unemployment than NAV, the two unemployment measures have followed a fairly similar path through the business cycle. As registered unemployment is a full count and is quickly available, little affected by 'noise' and seldom revised, it has been a particularly important indicator in the assessment of capacity utilisation.

An Okun coefficient of -0.3 is high by international standards and reflects the relatively small increase in unemployment historically observed in Norway compared with other countries in conjunction with a fall in capacity utilisation (Chart 2). This is because labour force participation in Norway has been cyclically sensitive. In cyclical downturns, many people have chosen to pursue an education or have exited the labour force for other reasons.

Developments in the most recent downturn seem to deviate from this pattern. Since 2014, the employment rate has fallen by about 1 percentage point, while the labour force participation rate has remained approximately unchanged (Chart 3). By comparison, the employment rate fell by almost 3 percentage points during the financial crisis, but the labour force

participation rate decreased by 2 percentage points, limiting the increase in measured unemployment.[5] The increase in LFS unemployment over the past couple of years has been higher than during the financial crisis.

The increase in registered unemployment has been more modest. Relatively few of the LFS survey respondents seeking work have registered as unemployed and renewed their registration every 2 weeks, as required to be regarded as unemployed in NAV's statistics. To some extent, the difference can be explained by the marked rise in unemployment among young people that has been captured by the LFS, many of whom will not be entitled to unemployment benefit and who will consequently have less incentive to register as unemployed. However, we do not have a full explanation for the difference between the two unemployment measures.[6]

The unusually wide gap between LFS and registered unemployment increases uncertainty about the current degree of slack in the Norwegian economy. Based on the estimated relationships, LFS unemployment implies that capacity utilisation is about 4%

5   Change from 2008 to 2010.
6   See Nordbø, E.W. (2016) "How many are unemployed?". *Economic Commentaries* 9/2016. Norges Bank.

Chart 2 Okun coefficients for selected countries. Estimation period 1980 – 2011

Source: Ball, L. M., D. Leigh and P. Loungani (2013) "Okun's law: Fit at fifty?" *NBER Working Paper* No. 18668.

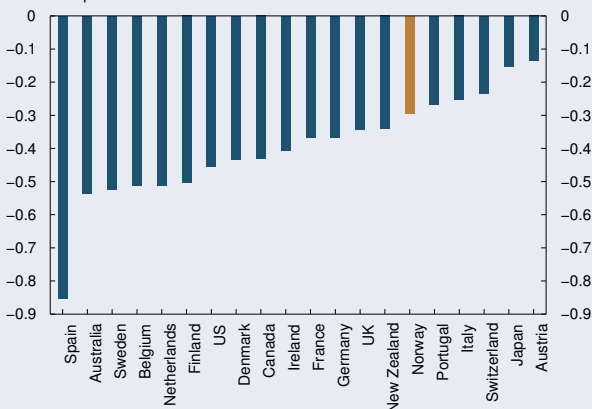Chart 3 Labour force and LFS employment. Percentage of the population aged 15 – 74. 1985 – 2016[1]
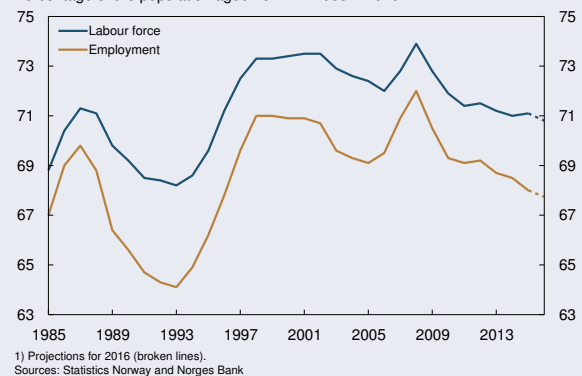
1) Projections for 2016 (broken lines).
Sources: Statistics Norway and Norges Bank

lower than in a normal situation, while registered unemployment points towards a level around 1% lower than normal.[7]

The LFS is a survey. Changes may have occurred resulting in an increase in the number of unemployed that are captured by the survey. Within the Okun framework as formulated in equation (1), this could be interpreted as a rise in trend unemployment, u^*. In this case, the marked increase in LFS unemployment in the past couple of years will overestimate the decline in capacity utilisation.

Alternatively, the marked increase in LFS unemployment could reflect a decrease in the cyclical sensitivity of labour force participation in Norway. In previous downturns, labour force participation has declined in particular for the youngest age group. However, in the current downturn, the participation rate for this group has held steady. This may also explain why the increase in registered unemployment has been smaller as persons in this age group have little incentive to register as unemployed. If the Norwegian labour force has become less flexible, this will also

entail a change in the relationship between LFS unemployment and capacity utilisation. The Okun coefficient β will become more negative. Unemployment will increase more in a downturn and be reduced more in an upturn than previously. A given increase in unemployment will thereby correspond to a smaller decline in capacity utilisation than previously. Nor in this case does capacity utilisation fall to the extent implied in isolation by the relatively high level of LFS unemployment.

At the same time, the possibility that capacity utilisation is as low as suggested by LFS unemployment cannot of course be excluded. The unexpectedly strong rise in LFS unemployment may reflect a considerably higher potential for growth in the labour force than previously assumed. Weaker income prospects owing to the fall in oil prices and the effects of the pension reform are among the factors that may have boosted the number of people who want to work. If a substantial number of those who previously chose to remain outside the labour force now actively search for work, it is likely that many of these jobseekers will not qualify for unemployment benefit. This may explain why they are not captured by NAV's statistics.

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7   These calculations are based on actual LFS and registered unemployment figures, the estimated Okun relationships and unchanged estimated trend levels for LFS and registered unemployment from 2015.

Chart 4 Norges Bank's output gap[1] and capacity constraints as reported by the regional network [2]. Percent. 2005 Q1 – 2016 Q4
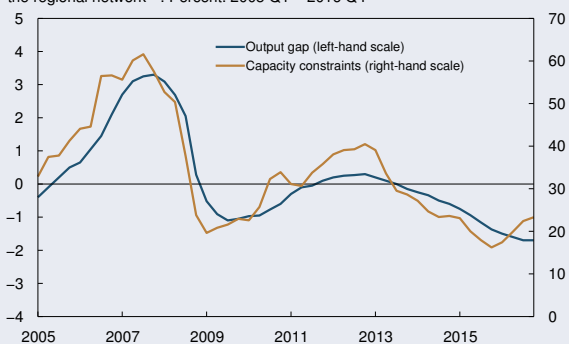
1) The output gap measures the percentage deviation between mainland GDP and projected potential mainland GDP. One–year lag.
2) Share of contacts that will have some or considerable problems accommodating an increase in demand.
Source: Norges Bank

Chart 5 Norges Bank's output gap[1] and employment rate gap[2].
Employed as a share of the population aged 25–54. Percent. 1994 Q1 – 2016 Q3
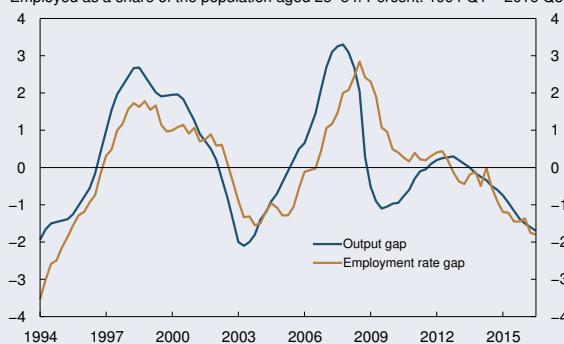
1) The output gap measures the percentage deviation between mainland GDP and projected potential mainland GDP.
2) Deviation from the mean 1994–2016.
Sources: Statistics Norway and Norges Bank

Owing to the uncertainty regarding the significance for capacity utilisation of the gap between the two unemployment measures, indicators other than unemployment should also be given weight.

Simple trend estimates of GDP for mainland Norway indicate that capacity utilisation is around 1%–2¼% below a normal level. The share of regional network enterprises reporting capacity constraints has increased somewhat in recent quarters. This is higher than during the financial crisis, but is still well below a normal level (Chart 4).

Employment as a share of the working-age population can also provide information about the level of capacity utilisation and can be particularly useful when there is uncertainty about total labour supply. Lower-than-normal employment rates are an indication of economic slack. Labour market attachment is strong in the 25–54 age group, and the normal labour force participation rate can be expected to be fairly stable over time. Employment rates for this age group have fallen in the past couple of years and are 1½–2 percentage points below the average level for the past 20 years (Chart 5).

The current comparatively high rate of domestic consumer price inflation may imply that capacity utilisation is relatively elevated, even though the inflation rate to some extent reflects the depreciation of the krone in recent years. On the other hand, the current low rate of wage growth may indicate that capacity utilisation is relatively low.

In sum, capacity utilisation in the second half of the year is assumed to be around -1¾%. This is somewhat lower than indicated by registered unemployment, but above the level implied by LFS unemployment in isolation (Chart 6).

Chart 6 Norges Bank's output gap[1] and measure of capacity utilisation derived unemployment data[2]. Percent. 2011 Q1 – 2016 Q3
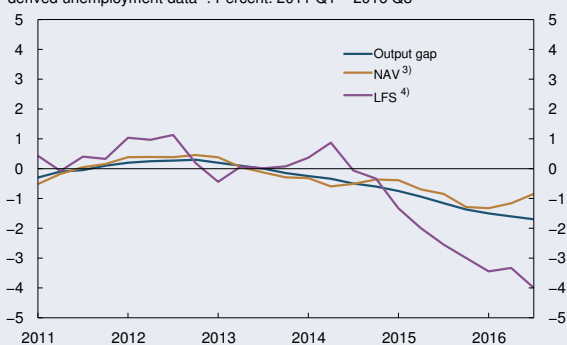
1) The output gap measures the percentage deviation between mainland GDP and projected potential mainland GDP.
2) Based on estimated Okun relations and unchanged estimated trend levels of unemployment from 2015.
3) Registered unemployment.
4) Labour Force Survey.
Sources: NAV, Statistics Norway and Norges Bank

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
3 May 2017		
14 March 2017[3]		
14 December 2016	**0.50**	**0**
26 October 2016	0.50	0
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

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.
3 *Monetary Policy Report* 1/17 will be published on 16 March 2017.

TABLE 1 PROJECTIONS FOR GDP GROWTH IN OTHER COUNTRIES

Change from projections in *Monetary Policy Report* 3/16 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	1.6 (0.1)	2.1 (0)	2.2 (0)	2.1 (0)
Euro area	12	17	32	1.9	1.6 (0.1)	1.4 (0.1)	1.5 (0)	1.4 (-0.1)
UK	2	4	10	2.2	2.1 (0.3)	1.4 (0.6)	1.5 (-0.1)	1.6 (-0.3)
Sweden	0.4	0.7	11	3.8	3.1 (0)	2.2 (0)	2.2 (0)	2.1 (0)
Other advanced economies[2]	7	10	20	1.5	1.5 (0)	1.7 (-0.1)	2.1 (-0.1)	2 (-0.1)
China	18	14	6	6.9	6.5 (0.1)	6.1 (0.2)	5.7 (0)	5.7 (0)
Other emerging economies[3]	19	11	12	1.1	1.8 (-0.1)	3.2 (-0.1)	3.9 (0)	4 (0)
Trading partners[4]	73	78	100	2.7	2.2 (0.1)	2.1 (0.1)	2.3 (0)	2.2 (-0.1)
World (PPP)[5]	100	100		3.2	3.1 (0.1)	3.4 (0)	3.6 (0)	3.7 (0)
World (market exchange rates)[5]	100	100		2.6	2.4 (0.1)	2.8 (0.1)	2.9 (-0.1)	2.9 (-0.1)

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.
5 GDP weights. Three-year moving average. Norges Bank's estimates for 25 trading partners, other estimates from the IMF.

Sources: IMF, Thomson Reuters and Norges Bank

TABLE 2 PROJECTIONS FOR CONSUMER PRICES IN OTHER COUNTRIES

Change from projections in *Monetary Policy Report* 3/16 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	1.3 (0.1)	2.3 (0.3)	2.5 (0.4)	2.5 (0.3)
Euro area	34	53	0.0	0.2 (0)	1.3 (0.1)	1.3 (0)	1.5 (0)
UK	8	7	0.0	0.7 (-0.1)	2.5 (0.1)	2.5 (0.3)	2.3 (0.3)
Sweden	15	12	0.0	1 (-0.1)	1.3 (-0.4)	2.1 (-0.4)	2.9 (0.1)
Other advanced economies[1]	15		0.4	0.4 (-0.1)	1.4 (0.1)	1.6 (0)	1.8 (0)
China	12		1.4	2 (0.1)	2.3 (0.4)	2.4 (0)	2.7 (0)
Other emerging economies[2]	10		8.1	5.5 (-0.1)	4.9 (-0.2)	4.9 (-0.1)	4.8 (-0.1)
Trading partners[3]	100		0.9	1.1 (0)	1.9 (0.1)	2.1 (0)	2.3 (0)
Trading partners in the interest rate aggregate[4]			0.0	0.6 (0)	1.6 (0.1)	1.8 (0.1)	2.0 (0.1)
Oil price, Brent Blend. USD per barrel[5]			52	44 (1)	56 (6)	57 (4)	57 (2)

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 Import weights, 25 main trading partners.
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 are used. Change from MPR 3/16 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). Change from projections in *Monetary Policy Report* 3/16 in brackets | | | |
| | | Projections | | | |
	2015	**2015**	**2016**	**2017**	**2018**	**2019**
Prices and wages						
CPI		2.1	3.6 (0)	2.3 (-0.3)	1.8 (-0.3)	1.7 (-0.1)
CPI-ATE[1]		2.7	3.1 (-0.2)	2.4 (-0.3)	1.8 (-0.3)	1.7 (-0.1)
Annual wages[2]		2.8	2.3 (-0.2)	2.8 (-0.4)	3.2 (-0.2)	3.5 (-0.2)
Real economy						
GDP	3117	1.6	0.7 (0)	0.5 (-0.8)	1.3 (-0.2)	1.6 (-0.1)
GDP, mainland Norway	2620	1.1	0.7 (-0.2)	1.5 (-0.3)	2.2 (0.1)	2.2 (0.1)
Output gap, mainland Norway (level)[3]		-1.1	-1.6 (0)	-1.6 (-0.1)	-1.1 (0)	-0.5 (0.2)
Employment, persons, QNA		0.3	-0.1 (0.2)	0.4 (-0.4)	0.9 (-0.2)	1.0 (0.1)
Labour force, LFS		1.4	0.5 (0.1)	0.5 (-0.2)	0.6 (-0.3)	0.6 (0)
LFS unemployment (rate, level)		4.4	4.8 (0.1)	4.8 (0.1)	4.6 (0.2)	4.2 (0.1)
Registered unemployment (rate, level)		3.0	3.0 (0)	3.1 (0.1)	2.9 (0)	2.8 (0)
Demand						
Mainland demand[4]	2609	1.8	2.6 (0.1)	2.7 (0)	2.5 (0.3)	1.9 (-0.2)
- Household consumption[5]	1341	2.1	1.5 (-0.4)	2.0 (-0.1)	2.3 (0.3)	1.8 (0)
- Business investment	226	-1.6	2.0 (-0.1)	5.1 (-0.4)	7.4 (2.0)	4.8 (-0.5)
- Housing investment	162	1.6	8.3 (0.7)	6.4 (2.4)	2.2 (0.7)	0.5 (0)
- Public demand[6]	880	2.2	3.4 (0.7)	2.5 (-0.1)	1.6 (-0.2)	1.6 (-0.2)
Petroleum investment[7]	187	-15.0	-15.2 (0.3)	-11.4 (-7.2)	2.7 (2.7)	5.3 (2.3)
Mainland exports[8]	609	5.6	-5.4 (-1.4)	2.9 (-0.2)	3.4 (0.2)	3.2 (-0.1)
Imports	996	1.6	1.4 (0.8)	3.0 (0)	2.0 (-0.1)	2.1 (-0.6)
Interest rate and exchange rate (level)						
Key policy rate[9]		1.0	0.6 (0)	0.4 (0)	0.4 (0)	0.8 (0.1)
Import-weighted exchange rate (I-44)[10]		103.5	105.3 (-0.6)	102.0 (-1.7)	102.6 (-0.4)	101.8 (-0.4)
Money market rates, trading partners[11]		0.1	0.1 (0)	0.2 (0.1)	0.3 (0.2)	0.6 (0.4)

1 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.
11 Based on three-month money market rates and interest rate swaps.

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

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