



NORGES BANK

4 | 17
DECEMBER

**MONETARY
POLICY REPORT**
WITH FINANCIAL STABILITY ASSESSMENT

Norges Bank

Oslo 2017

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Monetary Policy Report with financial stability assessment

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

At the Executive Board meeting on 6 December 2017, 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 13 December 2017. The Executive Board also approved Norges Bank's advice to the Ministry of Finance on the level of the countercyclical capital buffer. The Executive Board's assessment of the economic outlook and monetary policy strategy is provided in "The Executive Board's assessment". The advice on the level of the countercyclical capital buffer is submitted to the Ministry of Finance in connection with the publication of the *Report*. The advice is made public when the Ministry of Finance has made its decision.

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

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This *Monetary Policy Report* is based on information in the period to 8 December 2017. In addition, consumer price index data published on 11 December have been incorporated into the *Report*.

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. In recent years, the Executive Board has held six monetary policy meetings per year. From 2018, there will be eight 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 assessment is presented to and discussed by the Executive Board. 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 requirement will apply to all banks with activities in Norway. The buffer rate is set at 1.5% and will increase to 2.0%, effective from 31 December 2017.

Executive Board's assessment

Norges Bank's Executive Board has decided to keep the key policy rate unchanged at 0.5%. The Executive Board's current assessment of the outlook and balance of risks suggests that the key policy rate will remain at today's level in the period ahead.

Economic growth among Norway's trading partners has picked up in recent years, and unemployment has fallen. Unemployment is now below pre-crisis levels in a number of trading partner countries. Wage growth abroad has remained moderate, and core inflation is still lower than the inflation targets for most of the countries. Recent developments indicate that global economic growth will be somewhat higher in the years ahead than projected earlier. Inflation appears to be broadly in line with previous projections. Forward rates among trading partners show little change, and indicate a very gradual rise in international interest rates.

Growth in the Norwegian economy has also picked up and the output gap has narrowed. Low interest rates, improved competitiveness and an expansionary fiscal stance have contributed to the upturn. So far in 2017, economic growth has been in line with the projections in the September 2017 *Monetary Policy Report*. Employment has risen and unemployment has fallen. The improvement in the labour market has been greater than assumed in September. Oil prices have risen in recent months, but futures prices a few years ahead have shown little change.

There are prospects that spare capacity in the Norwegian economy will continue to decline in the coming years. Petroleum investment will likely expand in 2018, and growth in non-oil business investment has picked up. Higher imports among trading partners will contribute to boosting Norwegian exports. On the other hand, the correction in the housing market suggests that housing investment will decline in the coming years. In addition, fiscal policy will likely prove to be less expansionary than it has been in recent years. The overall growth outlook now suggests that growth will be somewhat higher in 2018 than projected in the September *Report*.

The operational target of monetary policy is annual consumer price inflation of close to 2.5% over time. After falling markedly since summer 2016, inflation has been fairly stable in recent months. In November, the twelve-month rise in consumer prices adjusted for tax changes and excluding energy products (CPI-ATE) was 1.0%, somewhat lower than projected. The krone is weaker than assumed in September, which in isolation implies rising inflationary impulses ahead. On the other hand, moderate wage growth will weigh down on inflation.

The rapid rise in house prices and high debt growth have increased the vulnerability of households in recent years. Since spring, house prices have fallen. The upturn in the Norwegian economy may suggest that any further decline in house prices will be limited. A housing market correction in line with the projections in this *Report* reduces the risk of an abrupt and more pronounced decline further out. Household credit growth remains high, but lower house price inflation will dampen debt growth over time.

Overall, the risks to the outlook appear to be balanced. There is uncertainty as to future movements in the krone exchange rate. The krone has weakened despite the rise in oil prices and little change in the interest rate differential against trading partner countries.

The housing market correction may prove to be more pronounced than envisaged, which may result in a more marked fall in housing investment and weaker consumption growth. On the other hand, developments in registered unemployment may indicate a faster tightening of the labour market than projected in this *Report*.

The Executive Board judges that there is a continued need for an expansionary monetary policy. Interest rates abroad are low. There is still some spare capacity in the Norwegian economy. The outlook suggests that inflation will remain below 2.5% in the coming years.

In its discussion of monetary policy, the Executive Board emphasises that the upturn in the Norwegian economy is continuing and that the output gap appears to be somewhat narrower than previously projected. Inflation is low, but a weaker krone than expected in September may lead to a faster rise in inflation than forecast earlier. As spare capacity is gradually absorbed, wage growth is also likely to edge up.

On the whole, the changes in the outlook and the balance of risks imply a somewhat earlier increase in the key policy rate than projected in the *September Report*. Uncertainty surrounding the effects of monetary policy suggests a cautious approach to interest rate setting, also when it becomes appropriate to increase the key policy rate.

The Executive Board decided to keep the key policy rate unchanged at 0.5%. The Executive Board's current assessment of the outlook and the balance of risks suggests that the key policy rate will remain at today's level in the period ahead. The decision was unanimous.

Øystein Olsen
13 December 2017

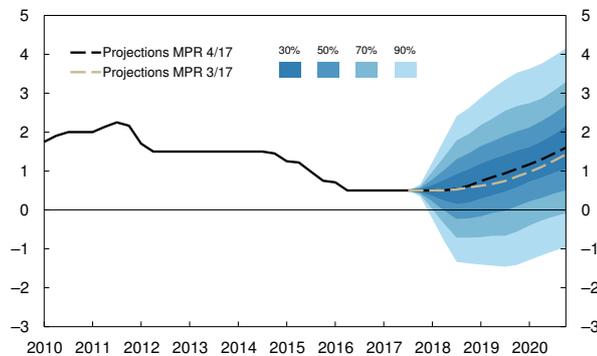
1 Overall picture

Growth in the Norwegian economy has gained momentum since autumn 2016. Since the September 2017 *Monetary Policy Report*, unemployment has fallen more than expected, while mainland GDP has grown in line with projections. There is still slack in the economy, but spare capacity is somewhat closer to a normal level than envisaged earlier. Inflation is low, and consumer prices have increased somewhat less than projected in the September *Report*.

The key policy rate is forecast to remain at 0.5% in the period to autumn 2018, followed by a gradual increase to around 1.5% in 2020. The forecast implies a somewhat earlier rate increase than in the September *Report*.

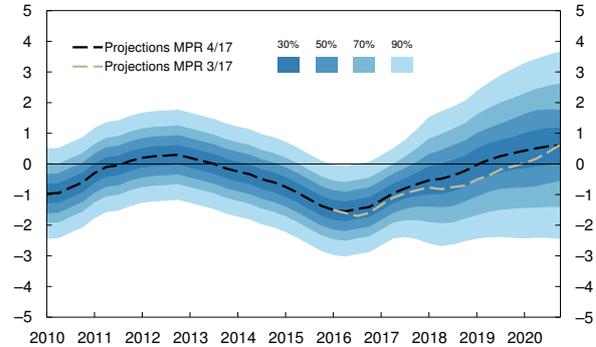
The output gap is projected to narrow gradually and to close in 2019. Compared with the September *Report*, the output gap is expected to be somewhat narrower in the coming years. Inflation is projected to edge higher to a little more than 2% at the end of 2020. Compared with the September *Report*, the projections for inflation are somewhat higher for the years ahead.

Chart 1.1a Key policy rate with fan chart¹⁾. Percent. 2010 Q1 – 2020 Q4²⁾



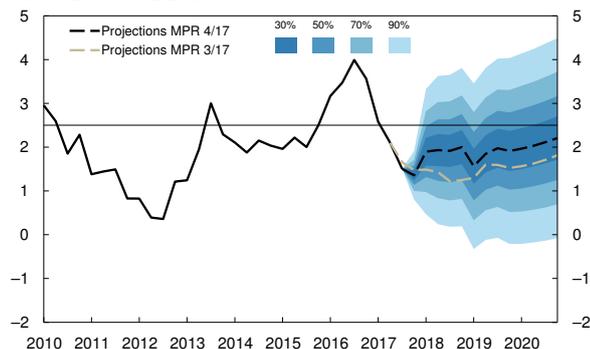
1) The fan charts are based on historical experience and stochastic simulations in Norges Bank's main macroeconomic model, NEMO. The fan chart for the key policy rate does not take into account that a lower bound for the interest rate exists.
2) Projections for 2017 Q4 – 2020 Q4 (broken line).
Source: Norges Bank

Chart 1.1b Projected output gap¹⁾ with fan chart²⁾. Percent. 2010 Q1 – 2020 Q4



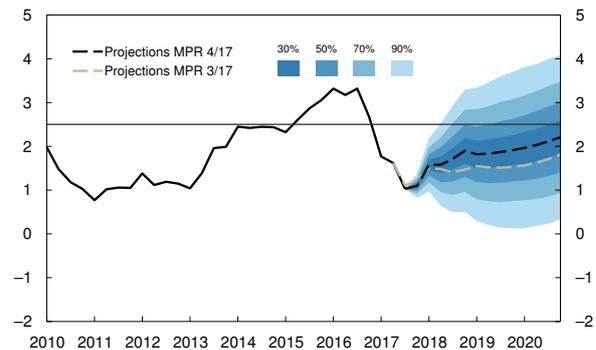
1) The output gap measures the percentage deviation between mainland GDP and projected potential mainland GDP.
2) The fan charts are based on historical experience and stochastic simulations in Norges Bank's main macroeconomic model, NEMO.
Source: Norges Bank

Chart 1.1c Consumer price index (CPI) with fan chart¹⁾. Four-quarter change. Percent. 2010 Q1 – 2020 Q4²⁾



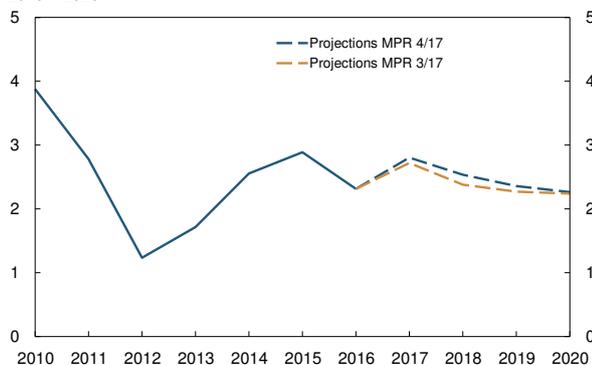
1) The fan charts are based on historical experience and stochastic simulations in Norges Bank's main macroeconomic model, NEMO.
2) Projections for 2017 Q4 – 2020 Q4 (broken lines).
Sources: Statistics Norway and Norges Bank

Chart 1.1d CPI-ATE¹⁾ with fan chart²⁾. Four-quarter change. Percent. 2010 Q1 – 2020 Q4³⁾



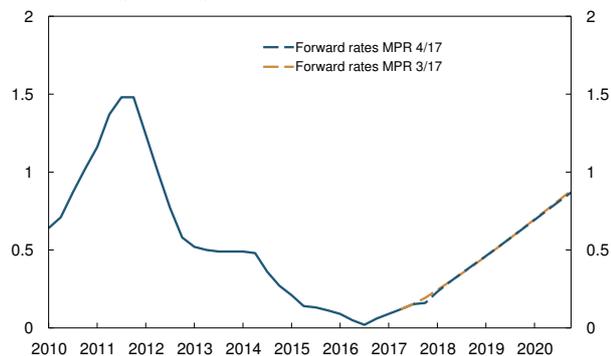
1) CPI adjusted for tax changes and excluding energy products.
2) The fan charts are based on historical experience and stochastic simulations in Norges Bank's main macroeconomic model, NEMO.
3) Projections for 2017 Q4 – 2020 Q4 (broken lines).
Sources: Statistics Norway and Norges Bank

Chart 1.2 GDP for Norway's trading partners.¹⁾ Annual change. Percent. 2010 – 2020²⁾



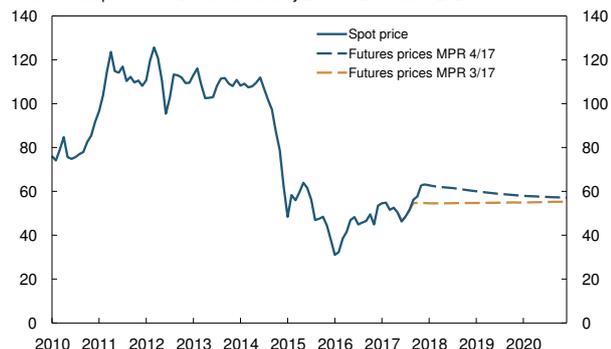
1) Export weights, 25 main trading partners.
2) Projections for 2017 – 2020 (broken lines).
Sources: Thomson Reuters and Norges Bank

Chart 1.3 Three-month money market rates for Norway's trading partners.¹⁾ Percent. 2010 Q1 – 2020 Q4²⁾



1) Based on money market rates and interest rate swaps. For information about the aggregate for trading partner interest rates, see *Norges Bank Papers* 2/2015.
2) Forward rates at 15 September 2017 (broken orange line) and 8 December 2017 (broken blue line).
Sources: Thomson Reuters and Norges Bank

Chart 1.4 Oil price.¹⁾ USD/barrel. January 2010 – December 2020²⁾



1) Brent Blend.
2) Futures prices (broken lines) are the averages of futures prices for the period 4 December – 8 December 2017 for MPR 4/17 and 11 September – 15 September 2017 for MPR 3/17.
Sources: Thomson Reuters and Norges Bank

1.1 GLOBAL DEVELOPMENTS AND OUTLOOK

The global upturn continues

Weak growth in the real economy and low price and wage inflation over several years have pushed global interest rates down to historically low levels. In recent years, global activity has gathered momentum (Chart 1.2). Unemployment is now lower than pre-crisis levels in a number of trading partner countries. Core inflation is still lower than the inflation targets for many of the countries, but is expected to edge up in the years ahead. Lower unemployment and higher inflation prospects suggest that the interest rate level abroad will increase in the years ahead.

GDP growth among trading partners is projected to edge down in response to gradual monetary and fiscal tightening. Compared with the *September Report*, external developments have been stronger than expected, and the growth projections have been revised up somewhat for the years ahead.

Despite improved growth prospects, the inflation projections are little changed since September. Looking ahead, a smaller margin of spare capacity is expected to push up price and wage inflation.

Monetary policy normalisation has begun among some trading partner countries. Forward rates are little changed since the *September Report* and indicate a very gradual rate increase through the projection period (Chart 1.3).

Higher oil prices

Oil prices have risen in recent months, but futures prices a few years ahead show little change. Oil spot prices are now at USD 63 per barrel, almost USD 7 higher than in September. Oil prices are assumed to move in line with futures prices ahead, which implies an oil price of around USD 57 per barrel in 2020 (Chart 1.4).

1.2 THE ECONOMIC SITUATION IN NORWAY

Low lending rates

Interest rates in Norway are also at historically low levels. Norges Bank's key policy rate has been kept unchanged at 0.5% since March 2016. Lower money market premiums and bond funding costs for banks have led to a decline in banks' funding costs in the same period. In the period ahead, the money market

premium is projected to stand at 0.35 percentage point, ie close to today's level and unchanged on the *September Report*.

Household lending rates have shown little change since March 2016. Corporate lending rates have edged down slightly, roughly in pace with the money market rate.

Weaker-than-expected krone exchange rate

The krone exchange rate has weakened and is weaker than projected in the *September Report* (Chart 1.5). The depreciation has occurred despite little change in the interest rate differential against trading partner countries, which may indicate an increase in the NOK risk premium. Nor can oil price developments explain the recent krone depreciation.

Growth in line with projections

Growth in the Norwegian economy has clearly firmed since autumn 2016 (Chart 1.6) on the back of low interest rates, improved competitiveness and an expansionary fiscal stance. The decline in oil investment is coming to a halt. In 2017 Q3, mainland GDP increased by 0.6%. The growth rate was roughly unchanged on the preceding quarters and in line with the projections in the *September Report*.

For the two coming quarters, GDP growth is also expected to hover around 0.6%. The projection is slightly higher than in the *September Report* and consistent with the results from Norges Bank's Regional Network. In November, Regional Network contacts reported that the growth rate had remained broadly unchanged through summer and autumn. Contacts expected output to rise at about the same pace over the next half-year.

Lower spare capacity

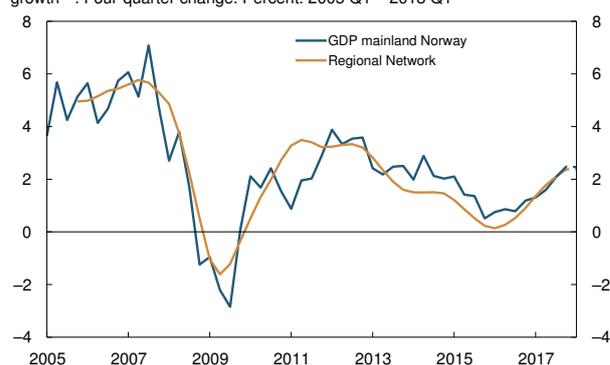
There is still some spare capacity in the Norwegian economy. However, labour market developments over the past few months indicate that there is less slack than envisaged in the *September Report*. Employment is higher than expected, and unemployment has declined more than projected. Reports from Regional Network contacts indicate a further rise in employment in the period ahead (Chart 1.7).

Chart 1.5 Oil price¹⁾ and import-weighted exchange rate index (I-44)²⁾. 1 January 2014 – 8 December 2017



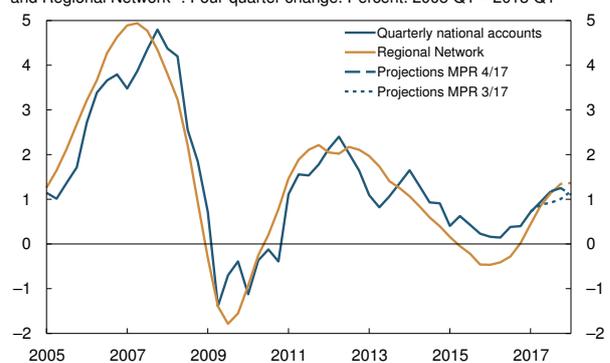
1) Brent Blend, USD/barrel.
2) A positive slope denotes a stronger krone exchange rate.
3) MPR 3/17 was based on information through 15 September 2017, indicated by the vertical line.
Sources: Thomson Reuters and Norges Bank

Chart 1.6 GDP for mainland Norway¹⁾ and Regional Network indicator of output growth²⁾. Four-quarter change. Percent. 2005 Q1 – 2018 Q1³⁾



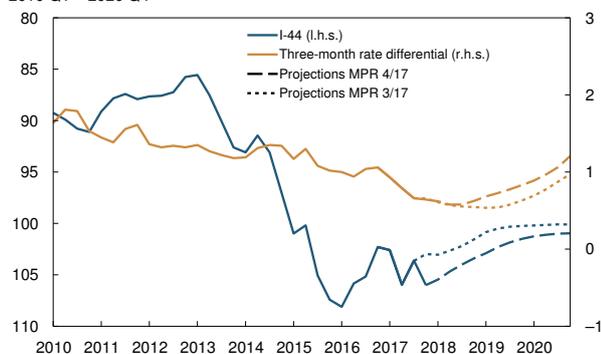
1) Seasonally adjusted.
2) Reported output growth for the past three months converted to quarterly figures. The quarterly figures are calculated by weighting together three-monthly figures based on when the survey was carried out. For 2017 Q4 expected output growth is estimated by weighting together reported growth over the past three months and expected growth in the next six months, as measured in November.
3) Projections for 2017 Q4 – 2018 Q1 (broken lines).
Sources: Statistics Norway and Norges Bank

Chart 1.7 Growth in employment in the quarterly national accounts and Regional Network¹⁾. Four-quarter change. Percent. 2005 Q1 – 2018 Q1²⁾



1) Reported employment growth for the past three months. Quarterly figures are calculated by weighting together three-monthly figures based on when the survey was carried out. For 2017 Q4, expected employment growth is estimated by weighting together reported growth over the past three months and expected growth in the next three months, as measured in November.
2) Projections for 2017 Q4 – 2018 Q1 (broken lines).
Sources: Statistics Norway and Norges Bank

Chart 1.8 Three-month money market rate differential between Norway¹⁾ and trading partners²⁾ and import-weighted exchange rate index (I-44)³⁾. 2010 Q1 – 2020 Q4⁴⁾



1) Key policy rate plus Norwegian money market premium. 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 8 December 2017 and 15 September 2017. The aggregate for trading partner interest rates is described in *Norges Bank Papers 2/2015*.
 3) A positive slope denotes a stronger krone exchange rate.
 4) Projections for 2017 Q4 – 2020 Q4 (broken lines).
 Sources: Thomson Reuters and Norges Bank

MONETARY POLICY SINCE THE SEPTEMBER REPORT

The analyses in the September 2017 *Monetary Policy Report* implied that the key policy rate would be kept unchanged at 0.5% in 2017, followed by a gradual increase to close to 1.5% towards the end of 2020. With this path for the key policy rate, inflation was projected to be a little below 2% at the end of 2020. Spare capacity was assessed to be higher than normal. The projections implied that spare capacity would fall gradually to somewhat below a normal level in 2020.

At the monetary policy meeting on 26 October, new information was assessed in relation to the projections in the September *Report*. Growth abroad appeared to be slightly higher than expected and forward rates for trading partners had risen slightly. The money market premium was broadly in line with assumptions, while the krone exchange rate was somewhat weaker than expected. The twelve-month rise in the CPI-ATE was slightly lower than projected. Labour market developments were as expected. Otherwise there was little new information about growth in the Norwegian economy. In October, the Executive Board's assessment was that the outlook and balance of risks had not changed substantially since the September *Report*. The Board therefore decided to keep the key policy rate unchanged at 0.5%.

The estimates of spare capacity in recent periods have also been revised down somewhat. The revisions reflect slightly lower-than-assumed trend productivity in the Norwegian economy in recent years.

Housing market uncertainty

In recent years, house prices and household debt have accelerated at a fast pace. House prices have declined since spring and are now lower than projected in the September *Report*. Household credit growth remains high, but over time lower house price inflation will dampen debt growth. Low unemployment and gradually rising income growth may suggest that any further fall in house prices will be limited. A housing market correction consistent with the projections in this *Report* reduces the risk of an abrupt and more pronounced decline further out.

Inflation somewhat lower than projected

Consumer price inflation has been fairly stable in recent months after falling markedly since summer 2016. In November, the twelve-month rise in consumer prices adjusted for tax changes and excluding energy products (CPI-ATE) was 1.0%, somewhat lower than projected in the September *Report*. In the period ahead, inflation is projected to move up somewhat faster than projected in September as a weaker krone is expected to push up imported goods inflation.

Annual wage growth is projected at 2.4% in 2017. The projection is unchanged on the September *Report* and in line with the wage settlement norm.

1.3 MONETARY POLICY AND PROJECTIONS

Slightly higher interest rate forecast

The key policy rate is forecast to remain at 0.5% in the period to autumn 2018, followed by a gradual increase to around 1.5% in 2020. The forecast implies a somewhat earlier rate increase than projected in September (Chart 1.1a).

Stronger growth abroad, higher oil prices and a weaker krone pull up the key policy rate path. Lower-than-expected inflation pulls down the rate path. Uncertainty regarding the effects of monetary policy suggests a cautious approach to interest rate setting. At the same time, the need for keeping the key policy rate higher with a view to preventing a further build-up of financial imbalances appears to have diminished.

These judgemental assessments also pull down the interest rate path.

Inflation is expected to remain low in the years ahead. Towards the end of 2020, four-quarter CPI inflation is projected to increase to a little more than 2%. Compared with the *September Report*, the inflation projections are somewhat higher for the years ahead (Charts 1.1c and 1.1d). The projections for spare capacity are somewhat lower for the coming years, but little changed towards the end of the projection period (Chart 1.1b).

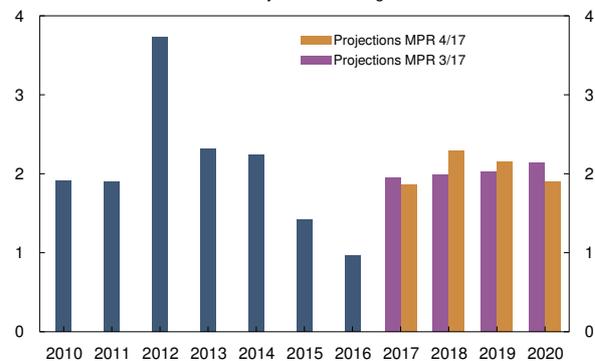
The krone is projected to firm somewhat in the years ahead in response to a gradual reversal of the risk premium and a widening of the interest rate differential against other countries (Chart 1.8). Compared with the *September Report*, the krone is projected to be slightly weaker throughout the projection period.

The mainland economy is projected to expand by 1.9% in 2017 and 2.3% in 2018, followed by modestly slower growth in 2019 and 2020 (Chart 1.9). Growth is somewhat higher in 2018 and 2019 and somewhat lower in 2020 compared with the *September Report*. The growth projection for 2018 has been revised up, primarily owing to stronger growth in oil investment (Chart 1.10).

In the years ahead, public demand growth is projected to be markedly lower than in the past few years. Moreover, the housing market correction points to lower housing investment in the coming years. Business investment, net exports and oil investment will likely account for a larger share of demand growth, while growth in household consumption is projected to slow a little.

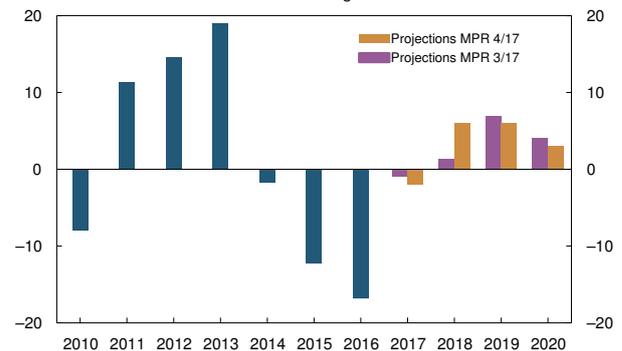
Employment is expected to move up further in the years ahead, broadly as projected in the *September Report*. The projection for the number of employed has nevertheless been revised up as employment is now higher than expected. In line with this, the projections for unemployment are lower compared with the *September Report* (Chart 1.11). A gradually tightening labour market, terms-of-trade gains and slightly higher productivity growth are expected to push up wage growth in the years ahead.

Chart 1.9 GDP for mainland Norway. Annual change. Percent. 2010 – 2020¹⁾



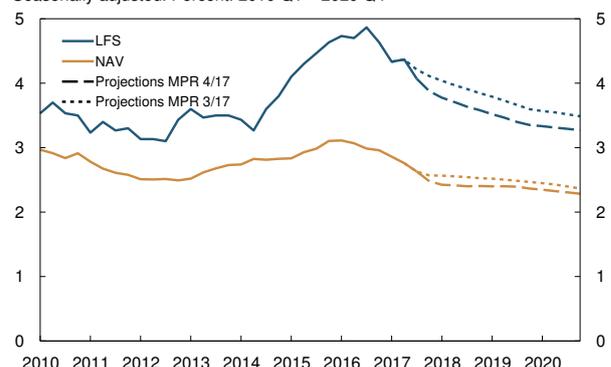
1) Projections for 2017 – 2020.
Sources: Statistics Norway and Norges Bank

Chart 1.10 Petroleum investment. Annual change. Percent. 2010 – 2020¹⁾



1) Projections for 2017 – 2020.
Sources: Statistics Norway and Norges Bank

Chart 1.11 Unemployment as a share of the labour force. LFS¹⁾ and NAV²⁾. Seasonally adjusted. Percent. 2010 Q1 – 2020 Q4³⁾

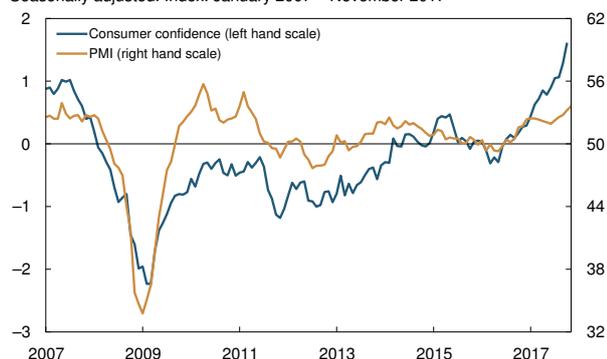


1) Labour Force Survey.
2) Registered unemployment.
3) Projections for 2017 Q4 – 2020 Q4 (broken lines).
Sources: Norwegian Labour and Welfare Administration (NAV), Statistics Norway and Norges Bank

2 The global economy

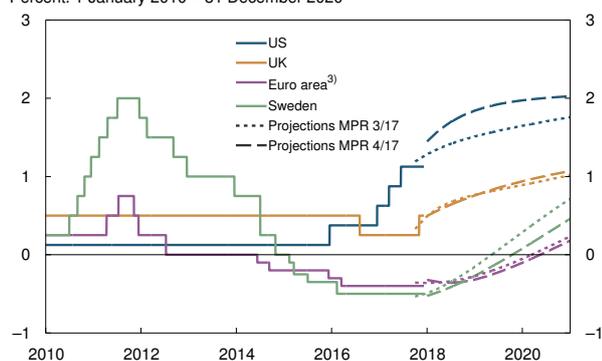
The upturn among Norway's trading partners is continuing in both advanced and emerging economies. Investment growth has picked up, and consumption growth remains strong. Unemployment continues to fall. The projections for GDP growth for trading partners have been revised up for the entire projection period. Consumer price inflation has been as expected, and the projections are broadly unchanged. Oil spot prices are somewhat higher than assumed in the September 2017 *Monetary Policy Report*, but distant futures prices are little changed. Expected money market rates among trading partners are broadly as assumed in the *September Report*.

Chart 2.1 Global confidence indicators. Consumer confidence¹⁾ and PMI²⁾. Seasonally adjusted. Index. January 2007 – November 2017³⁾



1) GDP weights. Index of standardised consumer confidence indexes for selected countries.
2) GDP weights. Manufacturing PMI for selected countries.
3) The latest observation for consumer confidence is October 2017.
Sources: Thomson Reuters and Norges Bank

Chart 2.2 Policy rates and estimated forward rates¹⁾ in selected countries. Percent. 1 January 2010 – 31 December 2020²⁾



1) Forward rates at 15 September 2017 and 8 December 2017 (broken lines). Forward rates are based on Overnight Index Swap (OIS) rates.
2) Daily data through 8 December 2017. Quarterly data from 2018 Q1.
3) ECB's deposit rate. Eonia from 2018 Q1.
Sources: Bloomberg, Thomson Reuters and Norges Bank

2.1 GROWTH, PRICES AND INTEREST RATES

Higher-than-expected growth among trading partners

Economic growth abroad has remained firm and has been higher than projected in the *September Report* for most of Norway's trading partners. GDP growth among trading partners as a whole is projected at 2.8% in 2017, before decelerating to around 2.5% in the years ahead (Annex Table 1). The projections are somewhat higher than in the *September Report* and imply lower-than-normal spare capacity among trading partners as a whole from 2018.

Household and business confidence indicators are at high levels (Chart 2.1), and consumption growth among our largest trading partners is still strong. Growth is underpinned by favourable financial conditions. The upswing in equity markets continued in both advanced and emerging economies, and global interest rate levels are very low. Despite stronger growth, market expectations for trading partners' policy rates in the coming years are little changed (Chart 2.2), probably reflecting moderate inflation in many countries (Chart 2.3). Expectations of continued expansionary monetary policy have contributed to keeping long-term interest rates low (Chart 2.4).

In the coming years, fiscal and monetary policy is expected to tighten gradually, which will weigh on economic growth further out in the projection period. The upswing in investment is expected to continue, gradually resulting in higher productivity growth. At the same time, lower employment growth is likely to restrain growth in household real income, leading to slightly lower consumption growth.

Owing to higher economic growth prospects, the projections for import growth among trading partners as a whole have also been revised up (Chart 2.5), improving the outlook for Norwegian exports.

Inflation broadly in line with expectations

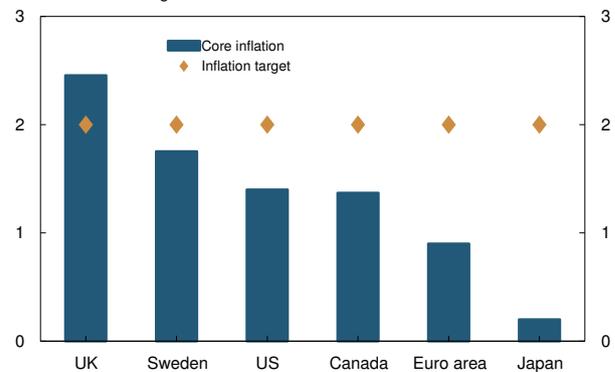
Consumer price inflation for Norway's main trading partners as a whole has been stable and roughly as expected in September. However, core inflation has moved down a little in a number of trading partners in recent months, most likely as a result of various temporary factors. At the same time, wage growth remains low, despite strong employment growth and low levels of unemployment in a number of countries. This must be viewed in the context of low productivity growth and continued labour market slack, reflected for instance in the continued high number of part-time employees who would like to work more hours. Price and wage inflation is expected to move up gradually in the coming years in pace with the decline in spare capacity. Higher oil prices will also push up consumer price inflation in 2018. Spot oil prices are now around USD 63 per barrel, nearly USD 7 higher than assumed in the *September Report*. Distant futures prices are little changed (Chart 1.4). Oil prices are discussed in a separate box on page 17.

The projections for consumer price inflation among trading partners as a whole are broadly in line with the projections in the *September Report* (Annex Table 2).

Over time, the rise in prices for imported consumer goods in Norway has been lower than consumer price inflation among trading partners, partly reflecting lower goods inflation than services inflation over many years. A shift in Norwegian imports towards low-cost countries such as China and other emerging economies has also contributed. Such compositional shifts are expected to continue to dampen external inflationary impulses to the Norwegian economy in the years ahead (Chart 2.6). The projection for inflationary impulses is little changed from the *September Report*.

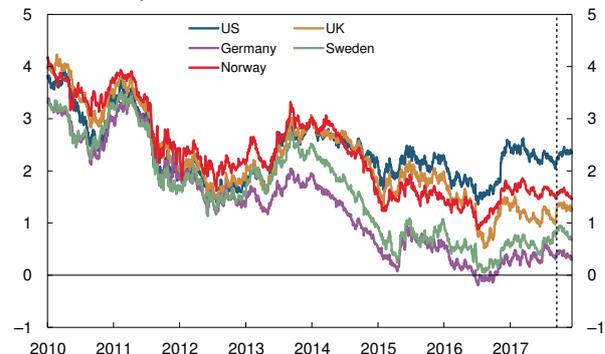
There is uncertainty surrounding global economic developments. On the one hand, given the solid household and business confidence indicators, growth may prove to be stronger than projected in this *Report*. In that case, inflation may also pick up faster. Further out, higher investment may lead to a

Chart 2.3 Core inflation¹⁾ and inflation targets in selected countries. Twelve-month change. Percent. October 2017²⁾



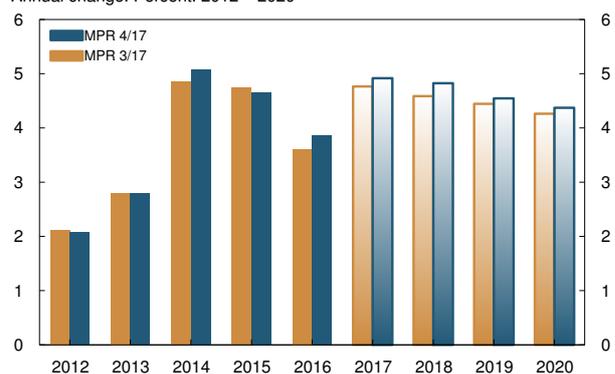
1) UK: CPIH excluding energy, food, alcohol and tobacco. Sweden: CPIF excluding energy. US: PCE excluding energy and food. Canada: CPI excluding energy and food. Euro area: HICP excluding energy, food, alcohol and tobacco. Japan: CPI excluding fresh food and energy.
2) The latest observation for the euro area is November 2017.
Source: Thomson Reuters

Chart 2.4 Yields on ten-year government bonds in selected countries. Percent. 1 January 2010 – 8 December 2017¹⁾



1) MPR 3/17 was based on information through 15 September 2017, indicated by the vertical line.
Source: Bloomberg

Chart 2.5 Imports for Norway's trading partners.¹⁾ Annual change. Percent. 2012 – 2020²⁾



1) Export weights. 25 main trading partners.
2) Projections for 2017 – 2020 (shaded bars).
Sources: Thomson Reuters and Norges Bank

larger increase in potential growth than currently expected. On the other hand, global political tensions, protectionism and the UK's exit from the EU may dampen global growth to a further extent than assumed. There is also a risk that the negative effects of monetary tightening on financial conditions in leading countries will be greater than currently envisaged. If the effects of structural changes in areas like labour markets are underestimated, weak price and wage inflation may persist longer than assumed.

2.2 COUNTRIES AND REGIONS

Solid developments in the US

Quarterly GDP growth in the US has picked up since the beginning of the year, and was 0.8% in both Q2 and Q3. Growth was higher than expected in the *September Report*. Unemployment has fallen further, with a rising number of firms reporting difficulty recruiting qualified labour. At the same time, wage growth remains lower than implied by the historical relationship between unemployment and wages. Productivity growth is also low, but somewhat stronger than real wage growth (Chart 2.7). In the period ahead, lower spare capacity is expected to contribute to somewhat stronger wage growth.

Growth in private consumption has been stronger than income growth in recent years. Looking ahead, lower employment growth is expected to have some dampening effect on growth in household consumption. At the same time, investment growth is expected to pick up. Firms report plans for increased investment, partly in anticipation of tax cuts. However, monetary policy is expected to be less expansionary. The Federal Reserve has signalled further modest tightening, and has begun to reduce the size of its balance sheet (see Special Feature on page 44). Market interest rate expectations indicate just under two rate rises in 2018. The projections for GDP growth have been revised up slightly throughout the projection period.

Inflation has edged up since summer, partly owing to higher energy and food prices. Excluding energy and food products, inflation has hovered around 1.7% over the past half-year. Overall, consumer price inflation has moved in line with that projected in the *September Report*. Looking ahead, annual inflation is expected to be around 2.3%.

Strong growth in the euro area

The upturn in the euro area continues. GDP growth in 2017 Q3 was somewhat higher than expected, and growth in the previous quarters was revised up. Private consumption, which makes up over half of GDP, has accounted for most of the rise in recent years, driven by higher employment and strong growth in purchasing power. Consumption has remained firm also in recent quarters and export growth has been strong, despite the considerable appreciation of the euro so far in 2018.

Investment has increased by around 10% over the past five years, rising faster than GDP and showing a more pronounced increase than in previous upturns. The expansion in investment must be viewed in the context of the sharp decline following the financial crisis, and the level is still lower than in 2007. Investment has primarily been driven by higher household demand and housing investment, supported by an expansionary monetary policy and favourable financial conditions. Investment growth is expected to remain solid ahead, driven by falling spare capacity, a high degree of optimism and good profitability in some business sectors. The upswing in investment is expected to fuel productivity growth and potential growth in the longer term.

Despite 18 consecutive quarters of GDP growth and solid growth in investment and employment, the catch-up after the financial and sovereign debt crisis is not completed. Even though conditions have improved, segments of the banking sector continue to be affected by low profitability and a large share of non-performing loans. Unemployment is above the long-term average for a number of euro area countries (Chart 2.8), and involuntary part-time workers account for a larger share of employment than previously. Together with weak productivity growth, this has restrained wage growth. Subdued wage growth is reflected in a low rise in prices for domestically produced goods and services. The European Central Bank (ECB) has left its policy rate unchanged since the *September Report*, but the asset purchase programme has been extended by nine months, to September 2018, while the pace of monthly purchases has been halved. In total, policy rate expectations in the euro area have declined slightly. Forward rates imply an interest rate hike in spring 2019 at the earliest.

The projections for GDP growth are higher throughout the projection period compared with the previous report. Growth is expected to be highest at 2.4% in 2017, before gradually edging lower ahead. The inflation projections are broadly unchanged on the September *Report*. Lower energy price inflation will pull down inflation somewhat in 2018. Towards the end of the projection period, inflation is projected to pick up on the back of lower spare capacity.

Moderate growth in the UK

Growth in the UK economy picked up somewhat in 2017 Q3, with growth in both services and manufacturing. GDP growth remains clearly weaker than the average for the past five years.

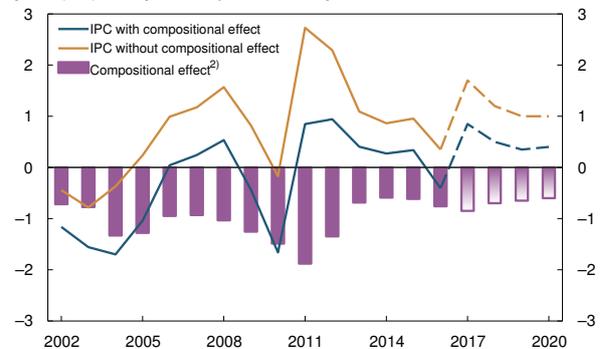
After a long period of improving labour market conditions, unemployment is at a low level (Chart 2.9). There are now signs that employment growth is slowing and unemployment is flattening. While wage growth remains moderate, consumer price inflation has jumped up in recent months, owing to weakness in sterling and higher commodity prices. Inflation is expected to remain above the 2% target to the end of the projection period. In October, the Bank of England raised its policy rate from 0.25% to 0.5%. Forward rates imply that the next rate hike will take place in summer 2018 at the earliest.

Lower employment growth and high inflation are pushing down on purchasing power, and growth in private consumption is expected to stay moderate. The projections are based on the assumption that agreement will be reached on the arrangements for withdrawal from the EU and a new trade agreement, but uncertainty in this regard will dampen business sector investment. As in the September *Report*, annual GDP growth is expected to be around 1.5% through the projection period.

Strong cyclical upswing in Sweden

In recent years, activity levels in the Swedish economy have been high. After surprisingly strong growth in the second quarter, growth was lower than expected in the third quarter, while previous quarters were revised down. Growth has been driven by higher investment, particularly in the housing market, and higher private consumption. Employment is now at a historically high level (Chart 2.10). After summer,

Chart 2.6 Indicator of external inflationary impulses to imported consumer goods (IPC). Foreign currency. Annual change. Percent. 2002 – 2020¹⁾

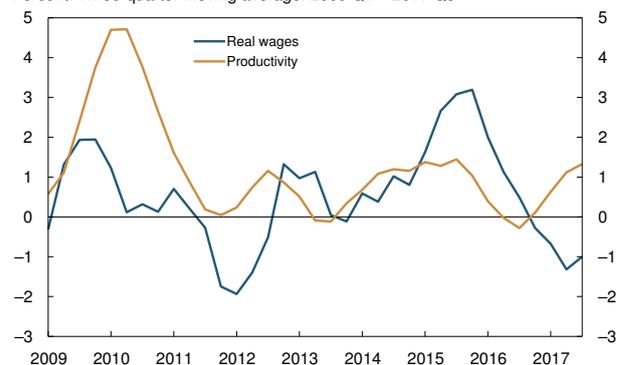


1) Projections for 2017 – 2020 (broken lines and shaded bars).

2) The compositional effect captures the negative effect on inflationary impulses when Norway shifts its imports towards countries with low price levels.

Sources: Statistics Norway, Thomson Reuters and Norges Bank

Chart 2.7 Real wages¹⁾ and productivity²⁾ in the US. Four-quarter change. Percent. Three-quarter moving average. 2009 Q1 – 2017 Q3

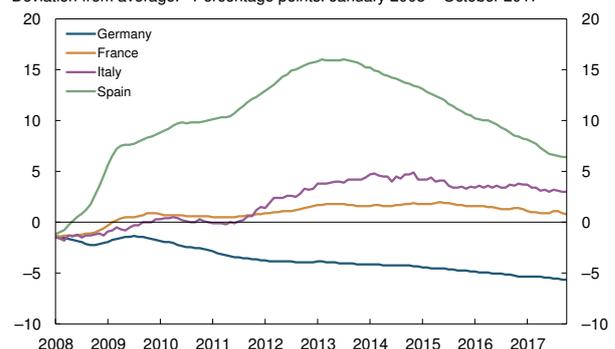


1) Real compensation per hour worked.

2) Gross output per hour.

Sources: Thomson Reuters and Norges Bank

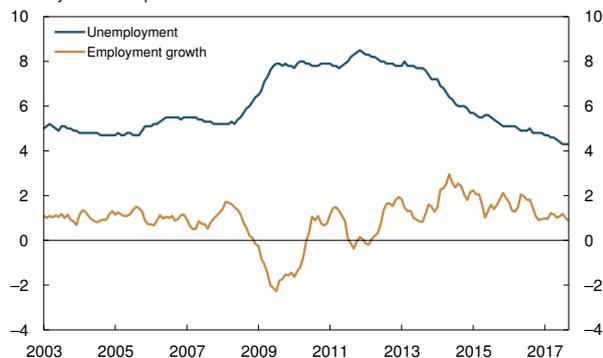
Chart 2.8 Unemployment in selected euro area countries. Deviation from average.¹⁾ Percentage points. January 2008 – October 2017



1) Average in the period 2000 – 2007.

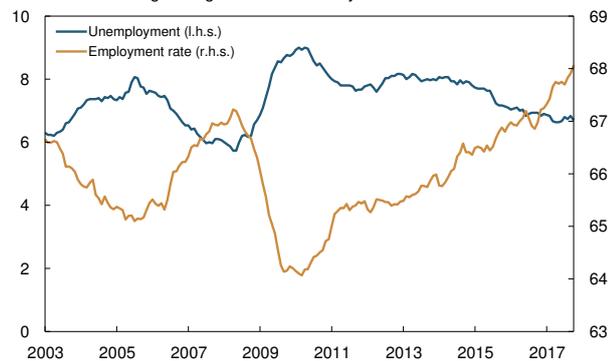
Sources: Thomson Reuters and Norges Bank

Chart 2.9 Unemployment¹⁾ and employment growth²⁾ in the UK. Percent. January 2003 – September 2017



1) Unemployed as a share of the labour force.
2) Twelve-month change. Percent.
Source: Thomson Reuters

Chart 2.10 Unemployment¹⁾ and employment rate²⁾ in Sweden. Three-month moving average. Percent. January 2003 – October 2017



1) Unemployed as a share of the labour force.
2) Employed as a share of the population aged 15 – 74.
Source: Thomson Reuters

Chart 2.11 PMI in emerging markets. Index. Three-month moving average. January 2007 – November 2017



1) Export weights. The index consists of Brazil, India, Indonesia, Poland, Russia, Thailand and Turkey.
Sources: Thomson Reuters and Norges Bank

inflation was above 2%, but the rate slowed again in October. This has contributed to a decline in Swedish interest rates and a broad depreciation of the krona in the period. Sveriges Riksbank has kept the policy rate unchanged at -0.5%, and market expectations for the first rate rise have been deferred.

Growth is expected to remain high, driven in part by stronger growth among Sweden's main trading partners and a more expansionary fiscal policy. Nevertheless, a somewhat slower pace of growth is projected for the coming years, especially owing to housing market developments. In recent years, there has been a pronounced rise in the housing supply, and house price inflation now appears to be abating. A somewhat lower level of housing investment is therefore expected in the period ahead. Growth is also restrained by demographic developments and capacity constraints. GDP is projected to grow by a little less than 3% in 2017 and 2018, before growth edges lower to around 2% in 2020. Inflation is expected to remain close to 2%.

High growth in emerging economies

In 2017 Q3, the Chinese economy continued to grow at the strong growth rates prevailing in the first half of the year. Growth was especially solid in private consumption. However, investment declined somewhat, driven by government measures to reduce credit growth. The measures introduced in 2016 and 2017 include stricter financial sector regulation, related to factors like capital requirements for banks and residential mortgage lending (see also the discussion of financial stability in Section 5). This is expected to affect developments also in the period ahead. A further decline in construction activity is expected. GDP growth is projected to decelerate from 6.8% in 2017 to 5.8% annually in 2019 and 2020. The projections are a little higher than assumed in the September Report.

Growth is also continuing at a fast pace in other emerging economies. The upswing is driven by accelerating growth in advanced economies and increased global trade and capital inflows. Confidence indicators are at high levels, and the Bank's aggregate purchasing managers index (PMI) for emerging economies is at its highest level since 2010 (Chart 2.11).

DEVELOPMENTS IN OIL AND GAS PRICES

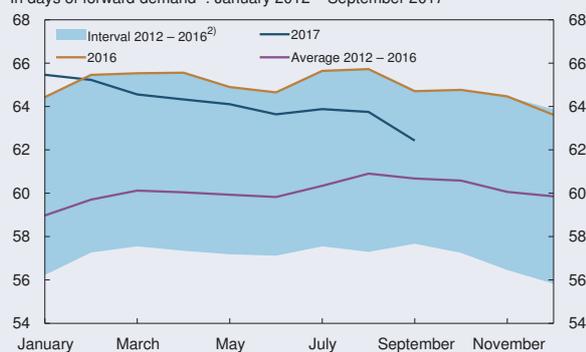
Between summer 2016 and summer 2017, oil prices hovered around USD 50 per barrel. Through autumn, prices have risen to above USD 60 per barrel. This reflects lower OECD oil inventories (Chart 2.12), and oil production shortfalls in a number of important oil exporting countries. In addition, there have been expectations that the agreement on production cuts, which OPEC and a number of other countries concluded at the end of 2016, would be extended beyond March 2018. At its meeting on 30 November, OPEC and the other countries decided to extend the agreement on production cuts to the end of 2018. Growth in global oil consumption also remains firm. The International Energy Agency (IEA) forecasts that growth in oil demand in 2017 will be above the average for the period 2005 to 2014 for the third consecutive year.

Oil prices are assumed to move in line with futures prices (Chart 1.4 in Section 1). Futures prices indicate that prices will decline from around USD 63 per barrel to USD 57 per barrel in 2020. Futures prices at the end of 2020 are broadly in line the projections in the *September Report*.

US oil production has risen sharply since autumn 2016. The number of active rigs has increased recently following a temporary decline in summer (Chart 2.13). Growth in US oil production will likely account for most of the increase in non-OPEC production in 2018. This may affect production discipline within OPEC and among the other countries that have committed to production cuts. On the other hand, continued improvement in the global economy may pull up global oil consumption further. Political tensions, including in the Middle East, may also help to keep oil prices firm.

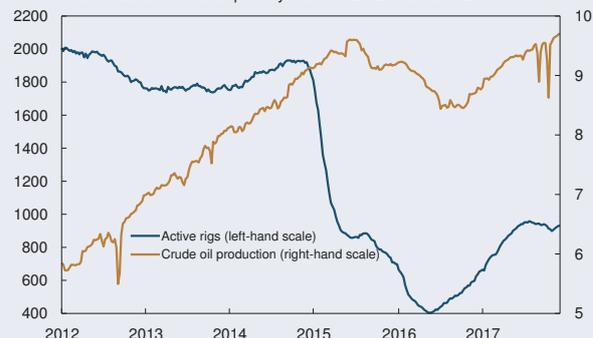
Export prices for Norwegian gas are considerably lower than a few years ago. Norwegian prices generally track UK and other European gas prices. In autumn, these prices have risen, partly reflecting a rise in gas prices in Asia and higher coal and oil prices. Futures prices for UK gas indicate that Norwegian gas prices may also remain at approximately today's level ahead.

Chart 2.12 Total OECD oil inventories.
In days of forward demand¹⁾. January 2012 – September 2017



1) Days of forward demand are calculated using average expected demand over the next three months.
2) The difference between the highest and lowest levels in the period 2012 – 2016.
Sources: IEA and Norges Bank

Chart 2.13 Active rigs and crude oil production in the US.¹⁾
Production. In millions of barrels per day. Week 1 2012 – week 49 2017



1) The abrupt changes in crude oil production in the autumn of 2017 are primarily attributable to hurricanes.
Source: Thomson Reuters

3 The Norwegian economy

Growth in the Norwegian economy has gained momentum since autumn 2016. Employment has risen and unemployment has fallen, but there is still some spare capacity in the economy. Growth in the mainland economy is projected at 1.9% in 2017 and 2.3% in 2018, before edging down modestly in 2019 and 2020. Unemployment is projected to edge down ahead, and the output gap is projected to narrow gradually and to close in 2019. Inflation is low, but is projected to move up to a little more than 2% at the end of 2020.

MONEY MARKET RATES AND RISK PREMIUMS

Changes in the key policy rate normally feed through to other Norwegian interest rates, but there is not necessarily a one-to-one relationship.

A large share of banks' funding is priced on the basis of the three-month Nibor, which is the three-month money market rate. The money market rate can be divided into two elements: the market's expectation of the average key policy rate over the next three months and a risk premium, which is generally referred to as the money market premium. Changes in the money market premium may lead to changes in banks' deposit and lending rates even when policy rate expectations are unchanged. Movements in the money market premium in Norway may be caused by factors such as changes to banks' supply and demand for NOK liquidity. In addition, international conditions, such as a higher premium in the USD rate or a higher price for converting USD into NOK, can have a direct impact on the money market premium. This is because the money market rate is constructed like a foreign exchange swap interest rate. This means that NIBOR-quoting banks start with a USD interest rate and adjust it for the price of converting USD into NOK in the foreign exchange swap market.

Banks normally rely on the bond market for longer-term wholesale funding where they have to pay a risk premium on top of the money market premium. Bond premiums vary with the bank's creditworthiness and the bond's maturity. Large non-financial corporations can also raise capital in the bond market.

3.1 FINANCIAL CONDITIONS

Low lending rates

The key policy rate has been kept unchanged at 0.50% since March 2016. Nevertheless, since the beginning of 2017, money market rates have fallen, owing to a lower money market premium (Chart 3.1).

Bank lending is funded largely by customer deposits and bonds. In the past year, banks have kept their deposit rates broadly unchanged. In the same period, the yield on bank bonds has fallen owing to a lower money market premium and a lower risk premium.

Banks' corporate lending rates are normally set equal to the money market rate plus a lending margin. This spread has shown little change in the past year, and corporate lending rates have thus tracked the money market rate (Chart 3.2). Large companies can also raise funds in the bond market, and corporate bond yields have also declined in 2017 (Chart 3.3). Corporate credit growth has risen since the start of 2017. Combined with developments in other indicators, this suggests that creditworthy enterprises have ample access to funding (see Section 5).

Household lending rates rose slightly in 2017 Q1 but they remain at a low level. The combination of lower funding costs and approximately unchanged lending rates has helped improve bank earnings from household lending. Since the September 2017 *Monetary Policy Report*, a few banks have reduced lending rates for selected groups of borrowers, but overall household lending rates show little change.

Somewhat earlier rise in lending rates

Money market rates are expected to remain close to today's level in the period to autumn 2018, followed by a gradual increase. The projections for the money

market premium for the coming years are unchanged on the *September Report*. Recent variations in money market premiums are attributed to temporary conditions.

Household and corporate lending rates are expected to rise gradually in the years ahead, but slightly less than the increase in the key policy rate. This means that lending spreads, ie the difference between lending rates and the money market rate, are expected to narrow. Historically, a low key policy rate has normally been accompanied by narrow deposit spreads. When the key policy rate increases, deposit spreads may widen again, giving banks room to reduce lending spreads while maintaining profitability. Prospects that the key policy rate will increase somewhat faster than projected in the *September Report* imply a somewhat faster rise in lending rates than envisaged in September.

Weaker-than-projected krone exchange rate

The krone exchange rate, as measured by the import-weighted exchange rate index (I-44), has depreciated and is weaker than projected in the *September Report*. The krone has depreciated in particular against the US dollar, the euro and pound sterling, while the exchange rate against the Swedish krona is little changed.

The krone has depreciated despite little change in the interest rate differential between Norway and trading partners. This may indicate that the NOK risk premium has increased. Nor can oil price developments explain the recent krone depreciation either. The krone is now somewhat weaker than what follows from our short-term cross-check models, but the deviation is not unusually large (Chart 3.4).

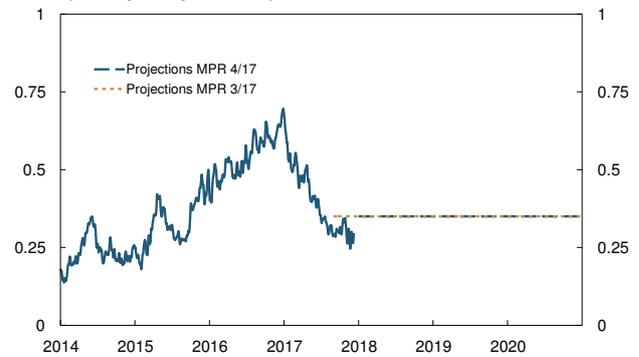
The krone is projected to firm somewhat in the years ahead in response to a gradual reversal of the risk premium and a widening of the interest rate differential against other countries. Compared with the *September Report*, the krone exchange rate is projected to be slightly weaker throughout the projection period.

3.2 OUTPUT AND DEMAND

Higher mainland growth in 2018

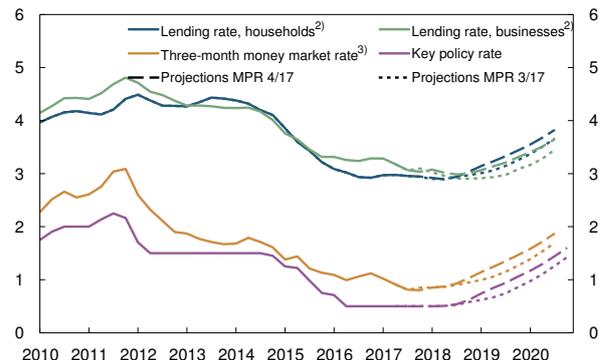
Growth in the mainland economy in 2016 was at its lowest since the financial crisis in 2009. In 2017, activity growth has picked up markedly. Low interest rates,

Chart 3.1 Norwegian three-month money market premium. ¹⁾ Percentage points. Five-day moving average. 1 January 2014 – 31 December 2020 ²⁾



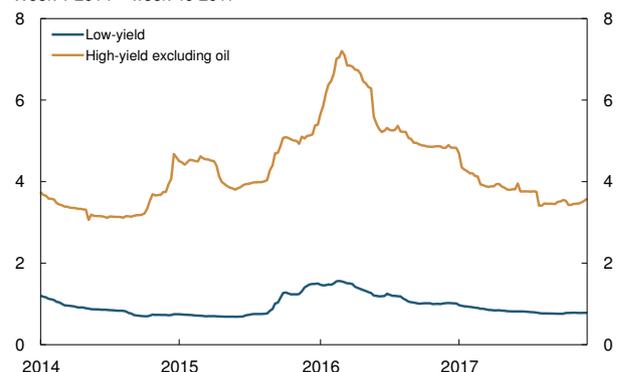
1) Norges Bank estimates of the difference between the three-month money market rate and the expected key policy rate.
2) Projections for 2018 Q1 – 2020 Q4 (broken lines).
Sources: Bloomberg, Thomson Reuters and Norges Bank

Chart 3.2 Interest rates. Percent. 2010 Q1 – 2020 Q4 ¹⁾



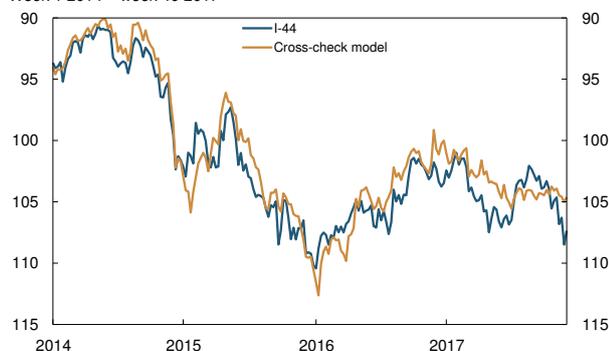
1) Projections for 2017 Q4 – 2020 Q4 (broken lines).
2) Average interest rate on outstanding loans to households and non-financial enterprises for the sample of banks and mortgage companies included in Statistics Norway's monthly interest rate statistics.
3) Key policy rate plus Norwegian money market premium. The calculations are based on the assumption that the key policy rate forecast is priced into the money market.
Sources: Statistics Norway, Thomson Reuters and Norges Bank

Chart 3.3 Risk premium on high- and low-yield corporate bonds. 5-year term to maturity. Percentage points over three-month money market rate. Week 1 2014 – week 49 2017



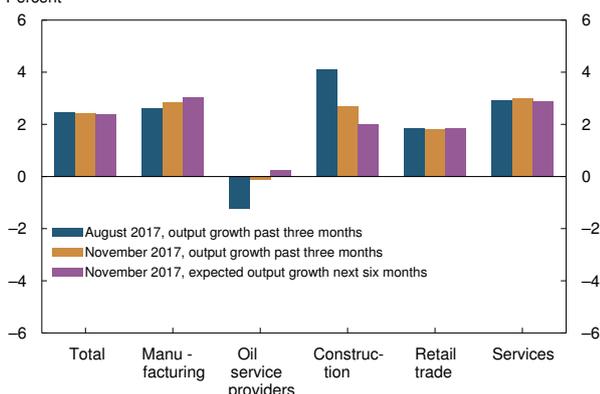
Sources: Nordic Bond Pricing, Stamdata and Norges Bank

Chart 3.4 Cross-check model for the krone exchange rate.¹⁾ Index. Week 1 2014 – week 49 2017



1) The cross-check model includes the oil price and one- and ten-year interest rate differential against Norway's trading partners.
2) Import-weighted exchange rate index. A positive slope denotes a stronger krone exchange rate.
Sources: Bloomberg, Thomson Reuters and Norges Bank

Chart 3.5 Output growth as reported by the Regional Network. Annualised. Percent



Source: Norges Bank

NORGES BANK'S REGIONAL NETWORK

Norges Bank has regular contact with a network of business leaders. The purpose is to gather information on economic developments in their businesses and industries. The network consists of around 1 500 enterprises, and each enterprise is contacted about once a year. Phone interviews are conducted each quarter and more than 300 network contacts participate in each round.

The contacts represent enterprises in Norwegian businesses and the local government and hospital sector. The sample reflects the production side of the economy both sector-wise and geographically.

The information obtained from Norges Bank's Regional Network improves our insight into developments in the Norwegian economy.

improved competitiveness and an expansionary fiscal policy have contributed to the upturn. At the same time, the decline in oil investment appears to be nearing an end and is less of a drag on mainland economic activity than in preceding years.

Mainland GDP rose by 0.6% in 2017 Q3, approximately as projected in the *September Report*. Growth was in line with developments in the preceding quarters.

In November, Norges Bank's Regional Network contacts reported that growth over the past three months had been approximately the same as in the preceding three months. While the contacts in the construction industry reported that growth had slowed, contacts in traditional manufacturing reported higher growth and oil service contacts reported that the downswing was moderating (Chart 3.5). Contacts as a whole expected growth to continue at the same pace over the next six months.

In the coming two quarters, growth in mainland GDP is projected to show little change, (Annex Table 3a). The projections are in line with the expectations of the Regional Network contacts and the projections from Norges Bank's System for Averaging short-term Models (SAM) (Chart 3.6). The projections for the period ahead are slightly higher than in the *September Report*.

Annual mainland GDP growth is projected at 1.9% in 2017. In 2018, growth is expected to pick up to 2.3%, before falling back to 2.2% in 2019 and 1.9% in 2020. In 2017, housing investment and public demand have made a substantial contribution to growth in aggregate demand. The impetus to growth from fiscal policy is expected to diminish substantially in the years ahead (see box on page 32). At the same time, housing investment is expected to decrease in 2018 and 2019. On the other hand, oil investment is expected to show renewed growth from 2018 to the end of the projection period. See box on page 33 for a further discussion of Norges Bank's projections for petroleum investment. The projections for mainland GDP growth have been revised up somewhat for 2018 and 2019, while the projection for 2020 has been revised down slightly.

Moderate consumption growth

Following the fall in oil prices, growth in household real disposable income has been weak owing to high consumer price inflation, moderate wage growth and weak employment developments. This has contributed to curbing growth in household consumption. Consumption has nevertheless increased considerably more than income, and the saving ratio has fallen (Chart 3.7).

Growth in household consumption picked up in the latter half of 2016 and into 2017 (Chart 3.8). Consumption growth edged down in 2017 Q3 at the same time as the level for Q2 was revised down.

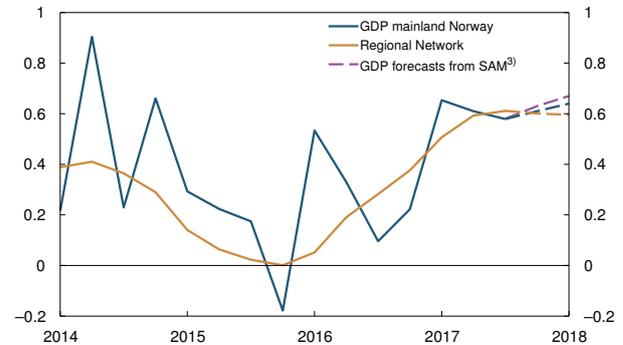
Indicators suggest that consumer confidence is high (Chart 3.9). The Kantar TNS expectations indicator increased further between 2017 Q3 and Q4 and is now at its historical average. The Opinion expectations indicator has fluctuated somewhat in recent months, but remains at a high level.

Higher employment and higher real wage growth suggest that growth in household consumption will increase ahead. On the other hand, a slower rise in house prices and housing wealth is likely to pull down consumption growth somewhat.¹ Annual growth in household consumption is projected to increase from 1.5% in 2016 to 2.4% in 2017 (Chart 3.10). Consumption growth is expected to be a little lower again in the years ahead. The projections for 2017 and 2018 are somewhat lower than in the *September Report*, mainly reflecting lower-than-projected consumption so far this year and the downward revision of the growth projection for real household disposable income in 2018. The projections imply that the saving ratio will continue to drift down in 2017, showing little change thereafter. It appears that the saving ratio will turn out to be higher in 2017 than anticipated, and is also projected to be higher in the years ahead than in the *September Report*.

Lower housing investment ahead

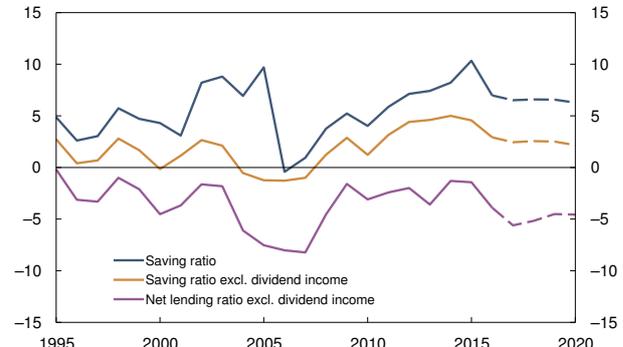
House prices rose sharply until winter 2017 (Chart 3.11). During spring this trend reversed, and house

Chart 3.6 GDP for mainland Norway and Regional Network indicator of output growth¹. Quarterly change. Percent. 2014 Q1 – 2018 Q1²



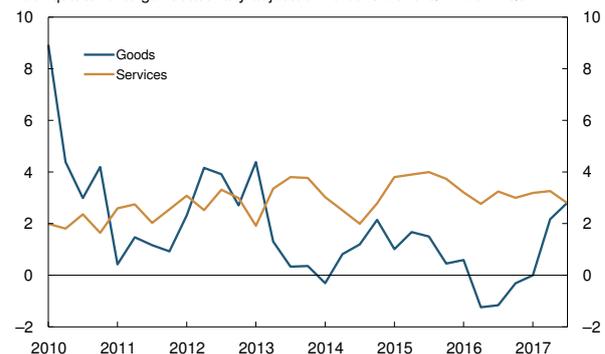
1) Reported output growth past three months converted to quarterly figures (solid line). The quarterly figures are calculated by weighting together three-monthly figures based on when the survey was carried out. For 2017 Q4 expected output growth is estimated by weighting together reported growth over the past three months and expected growth in the next six months. 2018 Q1 is expected growth in the next six months as reported in November (broken orange line).
2) Projections for 2017 Q4 – 2018 Q1 (broken lines).
3) System for Averaging short-term Models.
Sources: Statistics Norway and Norges Bank

Chart 3.7 Household saving and net lending. Share of disposable income. Percent. 1995 – 2020¹



1) Projections for 2017 – 2020 (broken lines).
Sources: Statistics Norway and Norges Bank

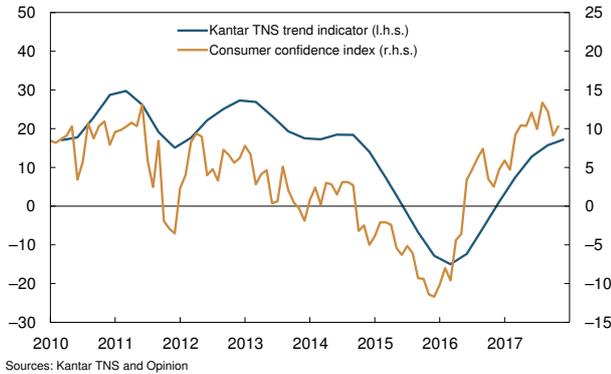
Chart 3.8 Household consumption of goods and services. Volume. Four-quarter change. Seasonally adjusted. Percent. 2010 Q1 – 2017 Q3



Source: Statistics Norway

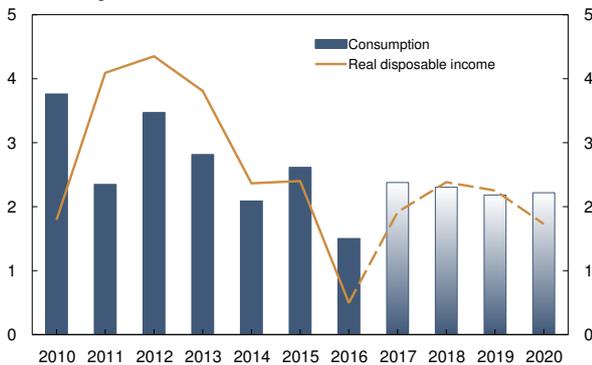
1 The relationship between house prices and household consumption is discussed in detail in Grindaker, M. (2017) "House prices and household consumption". *Staff Memo* 11/2017. Norges Bank.

Chart 3.9 Consumer confidence. Net values. Kantar TNS trend indicator for households. 2010 Q1 – 2017 Q4. Opinion consumer confidence index (CCI). January 2010 – November 2017



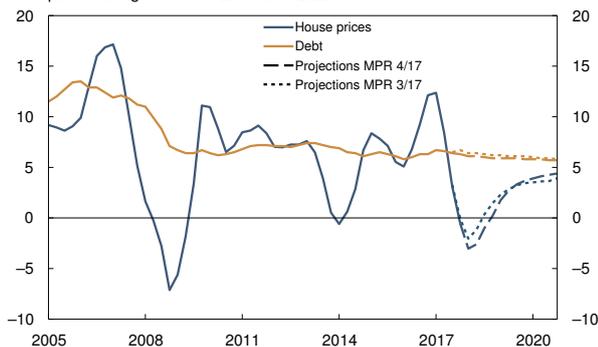
Sources: Kantar TNS and Opinion

Chart 3.10 Household consumption¹⁾ and real disposable income²⁾. Annual change. Percent. 2010 – 2020³⁾



1) Includes consumption for non-profit organisations.
2) Excluding dividend income. Including income for non-profit organisations. Deflated by the CPI.
3) Projections for 2017 – 2020 (broken line and shaded bars).
Sources: Statistics Norway and Norges Bank

Chart 3.11 House prices and household debt¹⁾. Four-quarter change. Percent. 2005 Q1 – 2020 Q4²⁾



1) Domestic credit to households (C2).
2) Projections for 2017 Q4 – 2020 Q4 (broken lines).
Sources: Eiendomsverdi, Finn.no, Real Estate Norway, Statistics Norway and Norges Bank

prices are now a little lower than a year ago, and lower than projected in the *September Report*.

There have been considerable regional differences in house price developments. House price inflation was highest in Oslo in 2016, and it is also in Oslo and surrounding areas where house prices have fallen most in 2017.

The stock of homes for sale has increased markedly in recent months (Chart 3.12). At the same time, the number of completed dwellings is likely to continue to rise ahead, reflecting the large number of housing starts in recent years. Combined with lower population growth (see Section 3.3), this will contribute to dampening house price inflation in the near term. In the coming years, the improvement in the labour market and higher income growth point to higher house prices, while higher interest rate prospects push in the opposite direction. House prices are expected to fall slightly between 2017 and 2018, followed by a small increase again thereafter. Compared with the *September Report*, the projections for house price inflation have been revised down slightly.

Household debt has continued to grow more rapidly than income, resulting in higher debt ratios. Growth has been lower than projected in the *September Report*. In the period ahead, the large number of homes that are currently being completed and will require mortgage financing is expected to sustain debt growth. Lower house price inflation and fewer completed dwellings further out will dampen growth in household debt.

The rapid rise in house prices and high debt growth have increased the vulnerability of households in recent years. A correction in the housing market in line with the projections in the *September Report* reduces the risk of an abrupt and more pronounced decline further out. Developments in house prices and debt are also discussed in Section 5.

Housing investment rose markedly through 2015 and 2016 and has continued to grow in 2017 (Chart 3.13). In 2017 Q3, housing investment was 8% higher than in 2016 Q3. After several years of strong growth, investment has reached a high level. Combined with lower house prices and reduced sales of new dwellings, this could trigger a fall in housing investment

further out. Lower population growth and higher interest rates will push in the same direction.

Housing starts are assumed to have peaked and are expected to decline ahead. Nevertheless, since many dwellings are still under construction, investment is expected to remain firm for a period. The investment level is expected to decrease in 2018 and 2019 and level off through 2020. Compared with the September *Report*, the projections have been revised up slightly in the period ahead, and revised down further out.

If the housing market correction is more pronounced than projected in this *Report*, housing investment may decline more than anticipated (see box on page 42). Moreover, the decline in population growth may result in a more marked decline in housing construction than projected.

Higher business investment

Mainland business investment slowed in the wake of the oil price decline in 2014, but increased through 2016 and into 2017. After a pronounced decline in 2017 Q2, seasonally adjusted investment rebounded sharply in 2017 Q3. The increase was stronger than projected.

Investment in the services sector has provided substantial impetus to growth in 2017 (Chart 3.14). In addition, investment in the power sector has risen markedly, and Statistics Norway's investment intentions survey indicates that investment in the power sector will continue to increase in 2018. The survey indicates that manufacturing investment will also pick up.

In November, Norges Bank's Regional Network contacts reported plans to increase investment over the next 12 months (Chart 3.15).

Business investment normally fluctuates with the business cycle (Chart 3.16). In the August and November surveys, Norges Bank asked Regional Network contacts which factors had influenced their investment decisions. The responses show that demand is an important factor. Few contacts report that investment has been restrained by limited access to financing.² The upswing in the Norwegian economy and

Chart 3.12 Unsold homes. Number of homes. January 2014 – October 2017

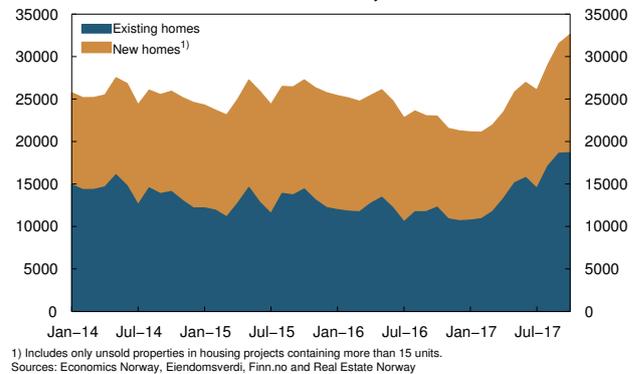


Chart 3.13 Housing investment. Annual change. Percent. 2010 – 2020¹⁾

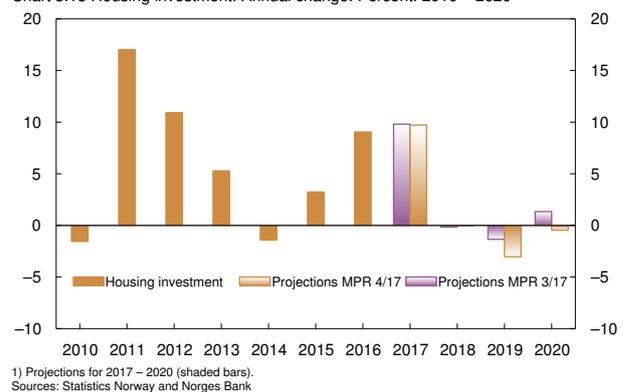
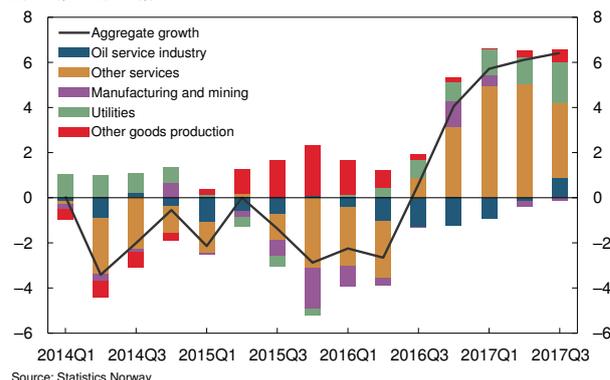
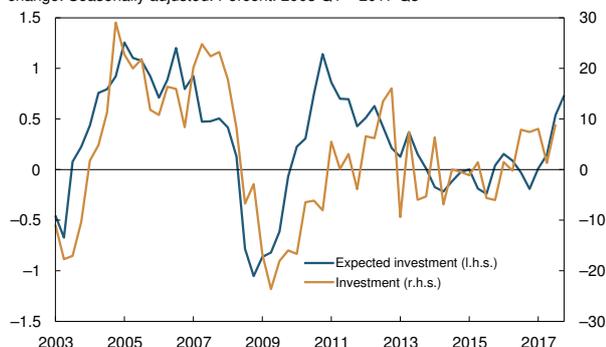


Chart 3.14 Business investment by sector. Contribution to growth in the past four quarters compared with the four preceding quarters. Percentage points. 2014 Q1 – 2017 Q3



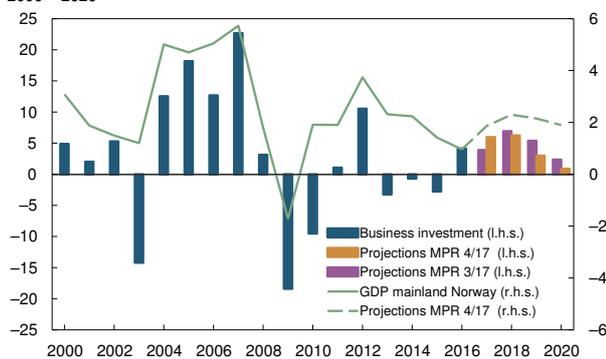
2 See Hjelseth, I. N., S.S. Meyer and M. Aa. Walle (2017) "What affects the business investment decisions?". *Economic Commentaries* 10/2017. Norges Bank (forthcoming in English).

Chart 3.15 Expected change in business investment over next 12 months.¹⁾ 2003 Q1 – 2017 Q4. Change in business investment. Four-quarter change. Seasonally adjusted. Percent. 2003 Q1 – 2017 Q3



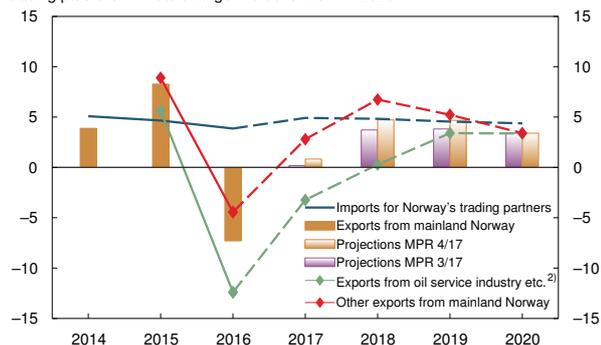
¹⁾ Norges Bank's Regional Network. Index. Weighted average of manufacturing, oil service, retail trade and services.
Sources: Statistics Norway and Norges Bank

Chart 3.16 Business investment and GDP. Annual change. Percent. 2000 – 2020¹⁾



¹⁾ Projections for 2017 – 2020.
Sources: Statistics Norway and Norges Bank

Chart 3.17 Exports from mainland Norway and imports for Norway's trading partners. Annual change. Percent. 2014 – 2020¹⁾



¹⁾ Projections for 2017 – 2020 (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

among Norway's trading partners implies that business investment will continue to increase in the coming years. Further ahead, higher interest rates will have a dampening impact on investment growth. Since investment appears to have already increased substantially in 2017, growth is expected to be slightly lower ahead than projected in the *September Report*.

Increase in mainland exports

Reduced demand from the global petroleum industry contributed to the pronounced fall in mainland exports in 2016. Stoppages and other supply-side constraints also weighed on exports in 2016. Exports have risen so far in 2017 and growth in 2017 Q3 was higher than projected in the *September Report*.

Reports from Norges Bank's regional network indicate that oil service industry exports have now bottomed out, and are expected to remain broadly unchanged over the next half-year. From 2018, exports from the oil service sector are expected to rise owing to higher investment in foreign petroleum activities. Higher demand among Norway's trading partners will boost other mainland exports. Substantial investment in commodity-based industries will also pull up exports ahead. Overall mainland exports are projected to move up slightly between 2016 and 2017, with growth picking up further in 2018 (Chart 3.17). The projections have been revised up to reflect the improved growth outlook for Norway's trading partners, higher oil prices and a weaker krone exchange rate than anticipated in the *September Report*.

Sluggish growth in the Norwegian economy has kept import growth low in recent years. Business investment tends to have a high import content, and the upswing in oil investment and mainland business investment ahead points to higher import growth. On the other hand, the improvement in cost competitiveness in recent years may imply that the import share will be lower than earlier. Recently, Norwegian firms have won a larger share of offshore contracts on the Norwegian shelf. Annual import growth is projected to increase in 2018, decelerating thereafter.

3.3 LABOUR MARKET AND SPARE CAPACITY

Employment growth on the rise

According to the quarterly national accounts, employment rose in 2016, with a further increase in 2017

(Chart 3.18). Between 2017 Q2 and Q3, employment moved up by 0.3%, as projected in the *September Report*. However, the level of employment is somewhat higher than projected as a result of the upward revision of employment in the preceding quarters.

The downsizing in the most oil-dependent industries now appears to be nearing an end, which is reflected by the rise in employment (Chart 3.19), at the same time as employment growth has continued in other sectors. Through 2017, employment has increased in construction, commercial services, and the hotel and restaurant industry in particular.

Norges Bank's Regional Network contacts reported in November that employment will grow by 0.3% in the next three months, in line with the projections in the *September Report* (Chart 3.20). Norges Bank's expectations survey for Q4 also suggests further growth in employment.

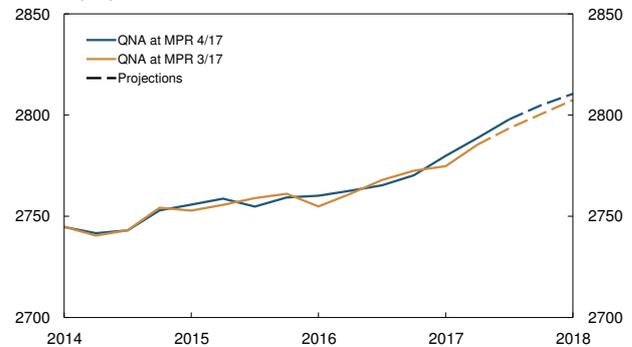
The number of job vacancies has increased since the end of 2015, which indicates rising demand for labour. Between 2017 Q2 and Q3, the stock of vacancies remained unchanged. A decrease in predominantly public sector industries was matched by a corresponding increase in other industries.

Fewer unemployed

Registered unemployment peaked at the beginning of 2016 (Chart 3.21). At the same time, the number of persons participating in labour market programmes increased through 2016 so that the sum of registered unemployed and participants in ordinary labour market programmes, ie gross unemployment, continued to rise through 2016. Since the beginning of 2017, gross unemployment has declined. In November, seasonally adjusted registered unemployment was 2.5%, while the sum of registered unemployed and participants in the programmes was 3.1% of the labour force. In November, unemployment was somewhat lower than projected in the *September Report*.

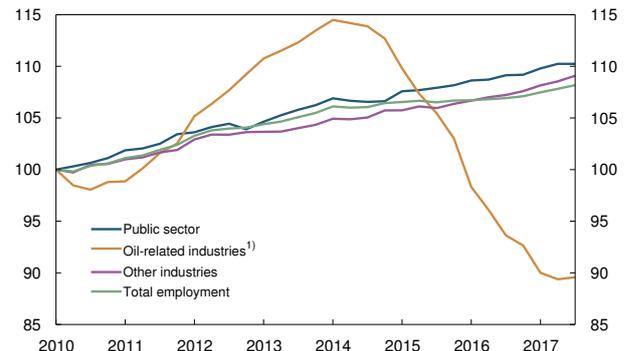
Developments in the labour market have shown wide regional variations since 2014. Unemployment rose, primarily in the south and west of Norway. In recent months, unemployment has fallen in all parts of the country, and unemployment is lower than one year earlier in all counties.

Chart 3.18 Employment according to the quarterly national accounts (QNA). Seasonally adjusted. In thousands. 2014 Q1 – 2018 Q1¹⁾



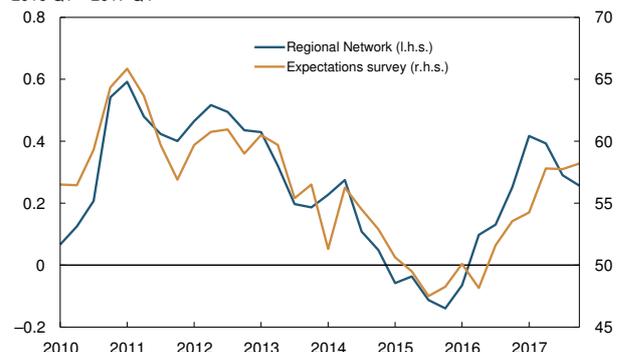
1) Projections for 2017 Q4 – 2018 Q1.
Sources: Statistics Norway and Norges Bank

Chart 3.19 Employment in selected sectors. Index. 2010 Q1 = 100. 2010 Q1 – 2017 Q3



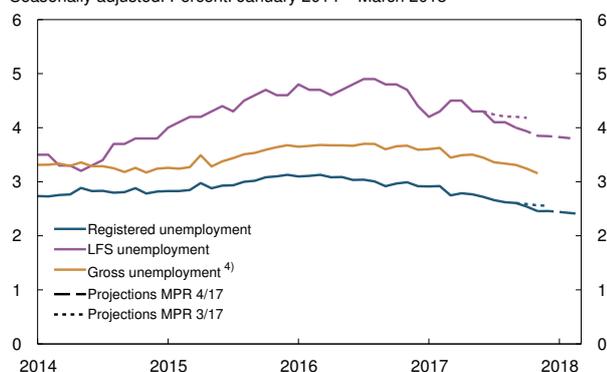
1) Includes extraction of crude oil and natural gas, including services, production of metals, electrical equipment and machines, shipbuilding and construction of other means of transport and repairs and installation of machines and equipment. These sectors employed 166 000 persons in 2010 Q1, accounting for 6 percent of total employment in Norway.
Sources: Statistics Norway and Norges Bank

Chart 3.20 Expected change in employment. Regional Network.¹⁾ Quarterly change. Percent. Norges Bank's expectations survey. Diffusion index.²⁾ 2010 Q1 – 2017 Q4



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

Chart 3.21 Unemployment as a share of the labour force. LFS¹⁾ and NAV²⁾. Seasonally adjusted. Percent. January 2014 – March 2018³⁾



1) Labour Force Survey.
 2) Registered unemployment.
 3) Projections for December 2017 – March 2018 (registered unemployment) and October 2017 – January 2018 (LFS).
 4) Registered unemployed and ordinary labour market programme participants.
 Sources: Norwegian Labour and Welfare Administration (NAV), Statistics Norway and Norges Bank

OUTPUT GAP

The output gap is a measure of the share of total economic resources in use. The output gap is defined as the deviation between actual output (GDP) and potential output in the economy. Potential output is the level of output that is consistent with stable developments in prices and wages.

The output gap is a key monetary policy variable. In interest rate setting, weight is given to avoiding excessive fluctuations in output and employment, and the aim is an output gap of close to zero in order to achieve that. Moreover, the output gap is an important indicator of future inflation, and thus a key variable in pursuing Norges Bank's primary objective of low and stable inflation.

Potential output and the output gap cannot be observed and must be estimated. In estimating the output gap, an overall assessment is made on the basis of a number of indicators and models. In this assessment, particular weight is given to labour market developments.

The number of new job seekers registered by NAV (Norwegian Labour and Welfare Administration) has fallen markedly in recent months (Chart 3.22). The decrease in the number of job seekers may indicate that unemployment will fall further in the period ahead. On the other hand, further downsizing may be on the horizon. Following a substantial fall in recent years, the number of persons affected by stoppages reported to NAV has increased somewhat in recent months (Chart 3.23).

The Labour Force Survey (LFS) suggests a slightly different picture. According to the LFS, employment growth in the past couple of years has been weaker than indicated by the quarterly national accounts, while unemployment has risen more than the unemployment figures from NAV indicate. The labour force in the LFS (sum of employed and unemployed) has grown less rapidly than the sum of employed reported in the national accounts and persons registered as unemployed with NAV. The gap between LFS unemployment and registered unemployment has been wider than normal in the past couple of years. In recent months, the gap has narrowed, but is still wider than its historical norm. The LFS is a sample survey shrouded in uncertainty. In the light of the unusually large gap, Norges Bank is currently of the view that other labour market indicators better describe labour market conditions.

Increased labour force participation rate

The large post-war cohorts have now reached statutory retirement age, with a large share exiting the labour force. In addition, net migration to Norway has fallen markedly in the past couple of years. Both these factors have restrained labour force growth.

The ageing of the population will continue to weigh down on labour force growth. In response to higher labour demand, labour immigration is expected to show a renewed rise, albeit not to the same extent as during the upturn in the mid-2000s. The projections for demographic developments are little changed on the September Report.

The labour force participation rate, ie the sum of the employed and unemployed as a share of the working-age population, normally varies with the business cycle. During downturns, many exit the labour market

to become full-time students for example. Once job prospects improve, many return to the labour market. At the same time, the labour force participation rate is trending down as the age groups featuring low participation rates account for a rising share of the labour force. The deviation from this trend may be a useful indicator of labour market pressures (Chart 3.24).

According to the LFS, the labour force participation rate has edged down recently. The sum of the employed in the national accounts and registered gross unemployment, measured as a share of the population, can be used to cross-check the labour force participation rate. While the LFS targets residents, the national accounts also comprise non-resident workers. The level of the cross-check indicator will thus systematically lie higher than the labour force participation rate according to the LFS. This indicator has changed little over the past year, and more in line with the assessment of spare capacity in this *Report*.

Cyclical developments point to a rise in the labour force participation rate in the period ahead, which will reach a normal level in 2019.

Employment is projected to increase by around 1% in 2018 and 2019, followed by slightly slowing growth in 2020. According to the projections, employment will grow somewhat more than the labour force, resulting in slightly lower unemployment ahead. The projections imply that the level of employment will be a little higher throughout the projection period than envisaged in the *September Report*. Hence, unemployment is projected to be somewhat lower than assumed in September.

Reduced slack in the economy

The output gap has been wider than normal in the Norwegian economy over the past four years. This reflects sluggish GDP growth and the rise in unemployment following the oil price decline. The economy turned around in the course of 2016, and spare capacity has since diminished.

While employment has been higher than expected, developments in output have been in line with the Bank's projections. This means that productivity growth has been lower than projected. Productivity growth has been low for some time (Chart 3.25).

Chart 3.22 New job seekers per business day. Number of persons. Seasonally adjusted. January 2005 – November 2017



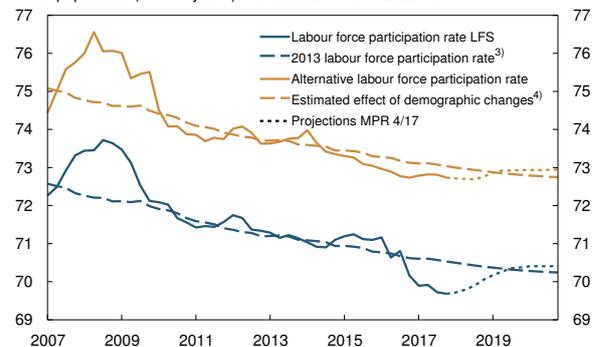
Source: Norwegian Labour and Welfare Administration (NAV)

Chart 3.23 Announced downsizing. Number of persons affected by layoff or redundancy. In thousands. Seasonally adjusted. Three-month moving average. January 2010 – October 2017



Source: Norwegian Labour and Welfare Administration (NAV)

Chart 3.24 Labour force, employment and alternative labour force¹⁾ as a share of the population (15 - 74 years). Percent. 2007 Q1 – 2020 Q4²⁾



1) Sum of employed persons in the quarterly national accounts and ordinary job training participants.

2) Projections for 2017 Q4 – 2020 Q4.

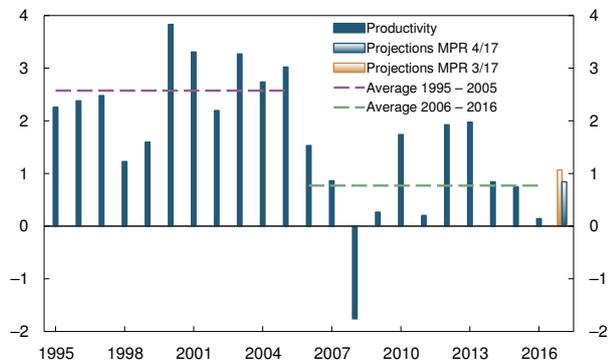
3) Rise in the rate if the rate for each five-year age cohort had been unchanged at the 2013-levels.

4) The curve falls because the population is ageing. 2013 was selected because capacity utilisation in this year is considered to have been close to a normal level. The projections also take account of non-western immigrants, who have a somewhat lower labour force participation rate than the wider population.

4) The curve is a parallel displacement of the 2013 LFS rate.

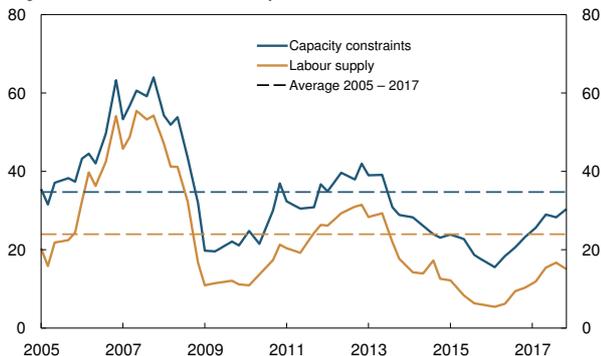
Sources: Norwegian Labour and Welfare Administration (NAV), Statistics Norway and Norges Bank

Chart 3.25 Productivity. GDP mainland Norway per hour worked. Annual change. Percent. 1995 – 2017¹⁾



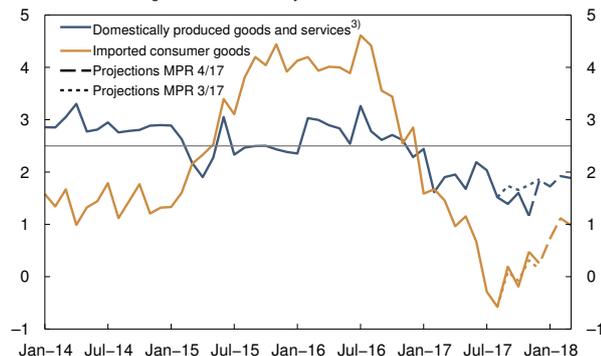
1) Projections for 2017 (shaded bar).
Sources: Statistics Norway and Norges Bank

Chart 3.26 Capacity constraints and labour supply as reported by the Regional Network.¹⁾ Percent. January 2005 – November 2017



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

Chart 3.27 CPI-ATE¹⁾ by supplier sector. Twelve-month change. Percent. January 2014 – March 2018²⁾



1) CPI adjusted for tax changes and excluding energy products.
2) Projections for December 2017 – March 2018 (broken lines).
3) Norges Bank's estimates.
Sources: Statistics Norway and Norges Bank

Owing to these developments, trend productivity growth in 2016 and 2017 has been lower than assumed so far. This now implies slightly lower potential output. At the same time, developments in GDP have been in line with expectations so that the output gap is a little narrower in 2016 and 2017 than projected.

Regional Network contacts confirmed the picture that spare capacity is lower (Chart 3.26). In November, there was an increase in the share of regional network enterprises reporting that they would have difficulties accommodating an increase in demand. At the same time, there was a slight decline in the share of enterprises citing labour supply as a production constraint, primarily reflecting a declining share of these enterprises in the local government and hospital sector.

Lower unemployment and higher employment than projected in the *September Report* also indicate that the output gap is narrower than projected. Registered unemployment is now near a level which is consistent with a normal level of spare capacity. On the other hand, the LFS indicates that there is still considerable slack. Moderate wage growth may also indicate that the output gap is still negative.

On balance, it is the Bank's assessment that there is slightly less spare capacity in the economy than envisaged earlier, but that the output gap is still somewhat negative. The projection has been revised down by 0.2 percentage point compared with the *September Report*. The assessment of spare capacity is consistent with estimates based on a broad set of models and indicators (see box on page 34). Different indicators provide somewhat different signals regarding labour market conditions and spare capacity in the economy. The decline in registered unemployment may in isolation suggest that the labour market is tightening faster than projected.

Trend productivity growth is expected to rise a little ahead with an attendant increase in potential output growth. The projections for growth in trend productivity and potential output for the years ahead are little changed on the *September Report*.

In the years ahead, GDP growth is expected to be higher than potential output growth so that spare capacity will gradually decline and reach a normal level

in 2019. The output gap is projected to be somewhat narrower than in the *September Report* for the period ahead, but little changed towards the end of 2020.

3.4 COSTS AND PRICES

Inflation somewhat lower than projected

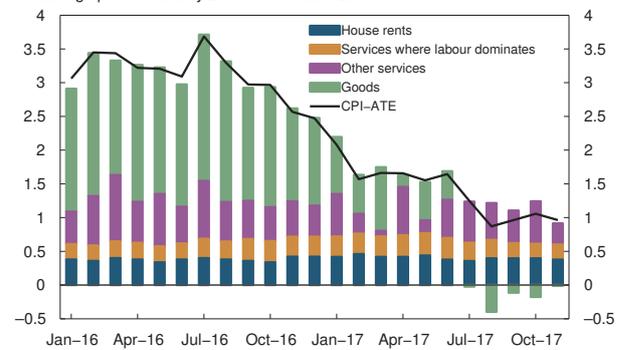
Inflation has remained broadly unchanged in recent months, after having fallen markedly since summer 2016. In November, the twelve-month rise in the consumer price index adjusted for tax changes and excluding energy products (CPI-ATE) was 1.0%, somewhat lower than projected in the *September Report*. The rise in prices for imported consumer goods was a little higher than expected, while the rise in prices for domestically produced goods and services was lower than projected (Chart 3.27). The twelve-month rise in the consumer price index (CPI) in November was lower than projected despite slightly higher energy price inflation than expected.

The deceleration in twelve-month CPI-ATE inflation between October and November primarily reflects developments in air fares. Lower air fares resulted in a decline in overall services inflation on the previous month (Chart 3.28). Goods prices were broadly unchanged on the previous years following a spell of negative twelve-month inflation.

Slightly higher inflation in the period ahead

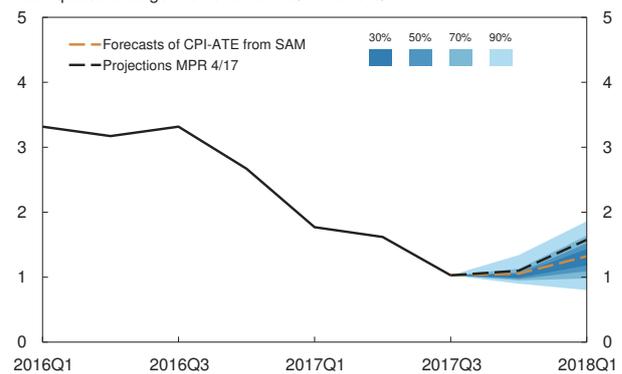
Updated forecasts from SAM indicate that CPI-ATE inflation will pick up slightly through the winter (Chart 3.29).

Chart 3.28 CPI-ATE¹⁾ by goods and services. Contributions to twelve-month change. Percentage points. January 2016 – November 2017



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

Chart 3.29 CPI-ATE¹⁾ in MPR 4/17 with fan chart given by SAM²⁾. Four-quarter change. Percent. 2016 Q1 – 2018 Q1³⁾

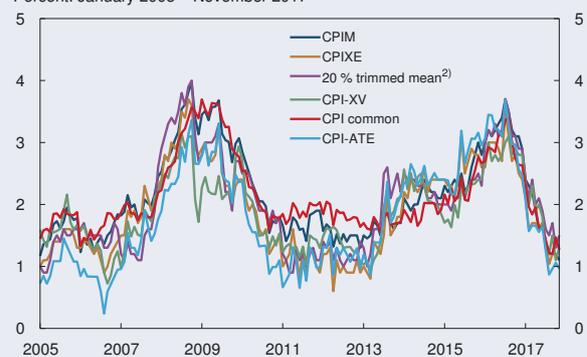


1) CPI adjusted for tax changes and excluding energy products.
2) System for Averaging short-term Models.
3) Projections for 2017 Q4 – 2018 Q1 (broken lines).
Sources: Statistics Norway and Norges Bank

CROSS-CHECK OF THE CPI-ATE

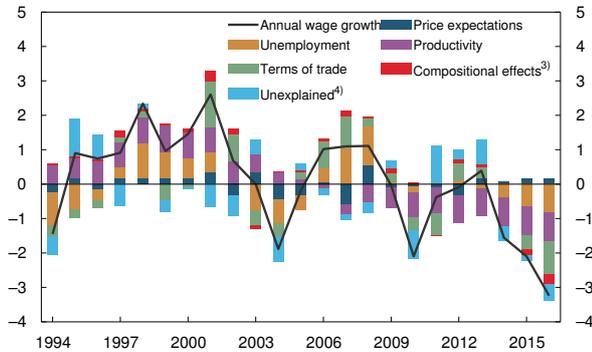
Indicators of underlying inflation, such as the CPI-ATE, can be useful in looking through temporary variations in inflation. However, due to the way the indicators are constructed, permanent price changes may be perceived as temporary and vice versa. As a cross-check, different indicators of underlying inflation are used. So far in 2017, the twelve-month rise in the CPI-ATE has fallen by 1.1 percentage point. Both the decline in CPI-ATE inflation so far this year and the level of the twelve-month rise in November are closely in line with developments in the other indicators of underlying inflation (Chart 3.30).

Chart 3.30 Indicators of underlying inflation.¹⁾ Twelve-month change. Percent. January 2005 – November 2017



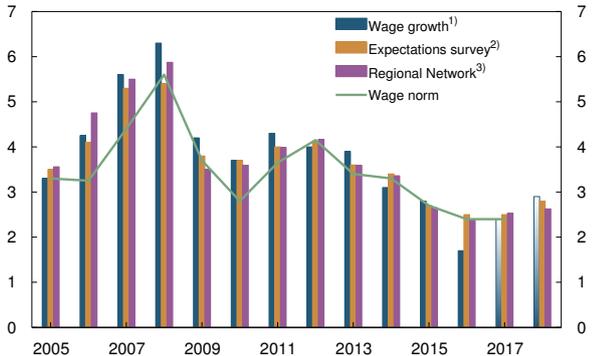
1) For a review of the indicators, see Husaba, E. (2017) "Indicators of underlying inflation in Norway". *Staff Memo*, Norges Bank (forthcoming).
2) Due to a change in the statistics at the detailed level, there are breaks in the series in January 2016 and January 2017.
Sources: Statistics Norway and Norges Bank

Chart 3.31 Annual wage growth.¹⁾ Model estimated contribution from estimated wage equation.²⁾ Percentage points. 1994 – 2016



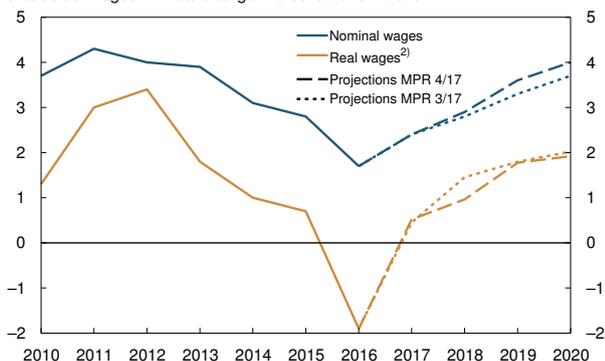
1) Annual rise in mainland hourly labour costs as the deviation from average growth in the period.
 2) Estimated values are based on a wage equation estimate for the period 1994–2016. The model explains the rise in hourly labour costs by the trend in expected inflation (TBU), registered unemployment, changes in terms of trade and trend productivity.
 3) Given by the difference between actual annual wage growth and annual wage growth given the employment rates for the previous year.
 4) The bars show the deviations between estimated and actual growth.
 Sources: Statistics Norway, TBU and Norges Bank

Chart 3.32 Wage growth, wage norm and wage expectations. Annual change. Percent. 2005 – 2018



1) Historical annual wage growth from Statistics Norway. Norges Banks' projections for 2017 and 2018 (shaded bars).
 2) Social partners' wage growth expectations for the current year as measured in Q4 each year, and expected wage growth for 2018 as measured in 2017 Q4.
 3) Expected wage growth for the current year as reported by the Regional Network in November each year, and expected wage growth for 2018 in November 2017.
 Sources: Epinion, Statistics Norway and Norges Bank

Chart 3.33 Wages. Annual change. Percent. 2010 – 2020¹⁾



1) Projections for 2017 – 2020 (broken lines).
 2) Nominal wage growth deflated by the CPI.
 Sources: Norwegian Technical Calculation Committee for Wage Settlements, Statistics Norway and Norges Bank

The projections in this *Report* are slightly higher than the SAM forecasts and have been revised up somewhat since the *September Report*. The projections have been revised up because a weaker krone than assumed in the *September Report* is expected to push up the rise in prices for imported consumer goods. The rise in prices for domestically produced goods and services is expected to remain slightly lower than projected in the *September Report*. Prospects for higher special indirect taxes and higher-than-expected energy price inflation also contribute to the upward revision of CPI inflation.

Slightly higher wage growth prospects

Wage growth has fallen markedly in recent years. A negative output gap, the oil price decline and low underlying productivity growth have contributed to the decline (Chart 3.31). Downsizing in high-wage industries has also curbed overall annual wage growth.

For 2017, annual wage growth is expected to rise to 2.4%. The projection is unchanged from the *September Report* and is consistent with the norm for this year's wage settlement, other wage statistics, Norges Bank's expectations survey and reports from Norges Bank's Regional Network (Chart 3.32). The projection for real wage growth in 2017 is also unchanged on the *September Report*.

Lower spare capacity, terms-of-trade gains and slightly higher productivity growth will contribute to a gradual rise in wage growth throughout the projection period (Chart 3.33). Compared with the *September Report*, a narrower output gap suggests that wage growth in the years ahead will be higher than anticipated earlier. On the other hand, lower-than-expected productivity growth in the recent period may indicate that the room for wage growth is smaller than envisaged earlier. Overall, the real wage projections are little changed, but a little lower for 2018 as a result of higher price inflation prospects than expected earlier. The projections imply a relatively moderate increase in wages in the coming years compared with previous upturns. The labour share is expected to move down

to close to its historical average in the course of the projection period.³

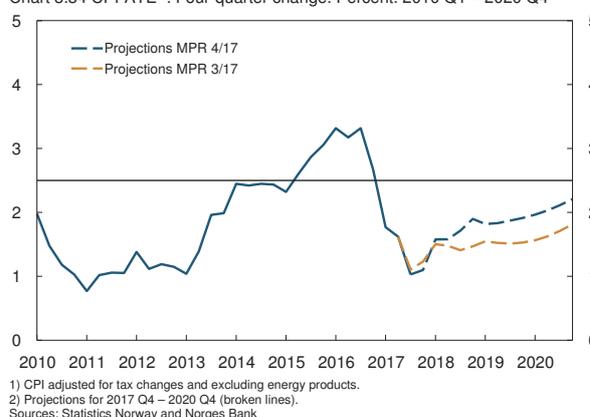
Somewhat higher inflation in the years ahead

The krone depreciation in the wake of the oil price decline contributed to high imported inflation. The decline in labour cost inflation has restrained the rise in overall inflation. In the years ahead, higher wage growth is expected to push up inflation. Imported inflation will likely decline further out owing to a gradual appreciation of the krone and continuing weak external price impulses (see Section 2).

Compared with the September *Report*, the inflation projections have been revised up somewhat for the years ahead (Chart 3.34). This primarily reflects a weaker-than-projected krone exchange rate pulling up the projections for imported inflation in the next few years. Further out in the projection period, higher wage growth and lower spare capacity than expected earlier also contribute to an upward adjustment of the projections for domestic inflation. For 2018, higher special indirect taxes are assumed to contribute 0.2 percentage point to annual CPI inflation. At the end of 2020, four-quarter CPI-ATE inflation is projected at a little above 2%.

The increase in wage inflation may prove to be more modest than projected in this *Report*. Wage inflation among several of Norway's trading partners has been lower in recent years than historical relationships between wages and unemployment would imply.⁴ A long period of low inflation may give rise to expectations that inflation will remain low. This could in itself lead to a slower rise in wage growth and inflation than currently projected. On the other hand, developments in registered unemployment may indicate that labour market conditions are tightening faster than projected. Wage inflation may therefore turn out to be higher than currently envisaged.

Chart 3.34 CPI-ATE¹. Four-quarter change. Percent. 2010 Q1 – 2020 Q4²

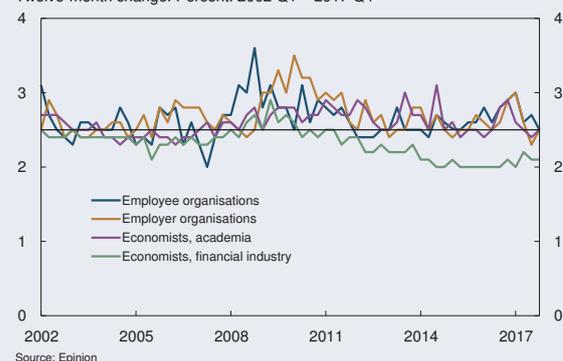


INFLATION EXPECTATIONS

Expectations about future inflation have a bearing on many economic decisions such as price and wage setting. Anchored inflation expectations will make it easier for monetary policy to achieve the objective of price stability and contribute to stable developments in output and employment. Inflation expectations are often described as anchored when medium- and long-term inflation expectations show little reaction to new information and stay close to the inflation target. In recent years, longer-term inflation expectations have on the whole remained close to 2.5% (Chart 3.35).¹ Between 2017 Q3 and Q4, expectations remained unchanged for the social partners as a whole, while expectations for economists as a whole increased somewhat.

1 For a further discussion, see Erlandsen, S. and P. B. Ulvedal (2017) "Are inflation expectations in Norway well anchored?" *Staff Memo*, 12/2017. Norges Bank.

Chart 3.35 Expected consumer price inflation five years ahead. Twelve-month change. Percent. 2002 Q1 – 2017 Q4



3 For a review of historical developments in the labour share in Norway, see Hagelund, K., E. W. Nordbø and L. Sauvik (2017) "Lønnsandelen" [Labour share]. *Economic Commentaries* 9/2017. Norges Bank (Norwegian only).

4 See box on page 18 of *Monetary Policy Report* 2/17.

ASSUMPTIONS CONCERNING FISCAL POLICY

The fiscal policy assumptions in this *Report* are based on the budget compromise for 2018. Oil revenue spending, as measured by the structural non-oil deficit, is estimated at NOK 231bn in 2018, or 7.7% of trend mainland GDP (Chart 3.36). The change in the deficit as a share of trend GDP is used as a simple measure of the effect of the budget on demand for goods and services. For 2018, this fiscal impulse is assumed to be 0.1 percentage point, as projected in the *September Report*. In the past four years, this impulse has averaged 0.6 percentage point. Hence, there are prospects that fiscal policy will be substantially less expansionary from 2018.

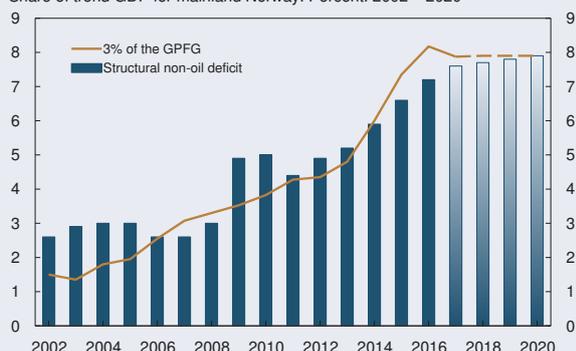
The structural deficit is assumed to be equivalent to 2.9% of the value of the Government Pension Fund Global (GPFG) in 2018, 0.1 percentage point lower than assumed in the *September Report*. In the National Budget for 2018, the estimated value of the GPFG was revised up for 2018, and even though the fiscal impulse appears to be in line with assumptions, the level of petroleum revenue spending in 2018 is also at a somewhat lower level than assumed.

The technical assumption is applied that petroleum revenue spending will gradually increase so that the structural deficit will be equivalent to 3% of the GPFG in 2020. This entails a fiscal impulse of 0.1 percentage point in both 2019 and 2020. The assumption in the *September Report* was that petroleum revenue spending would remain unchanged as a share of GDP from 2018, reflecting the assumption that the deficit would be equivalent to the expected real return on the GPFG from 2018. The projections in this *Report* are based on performance of the GPFG in line with the assumption in the 2018 National Budget. The value of the GPFG may turn out to be higher than this owing to the recent krone depreciation.

In the National Budget for 2018, growth in public demand in 2018 is projected to be somewhat weaker than assumed in the *September Report*, but as a result of the changes made following the deliberations in the Storting (Norwegian parliament), public demand growth in this *Report* is assumed to be only slightly lower in 2018. As public demand growth was weaker than assumed in 2017 Q3, public demand growth is also expected to be somewhat lower in 2017. On the other hand, growth in public spending on goods and services has been revised up for both 2019 and 2020 (Chart 3.37), partly due to the assumption of a somewhat stronger increase in petroleum revenue spending in these years. In recent years, growth in public sector demand has been clearly higher than activity in the wider economy. Looking ahead, there are prospects that public sector demand growth will be lower than growth in the mainland economy.

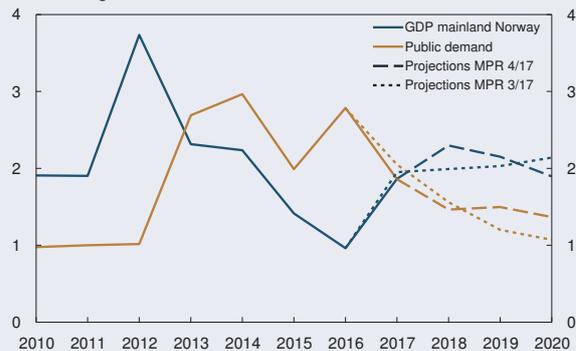
In recent years, the substantial increase in petroleum revenue spending reflects a combination of relatively strong spending growth and tax cuts. The tax rate on ordinary income, for example, has been reduced from 28% to 24%. This tax rate will be further reduced to 23% at the start of 2018. For the remainder of the projection period, the technical assumption that there will be no further net tax cuts is applied.

Chart 3.36 Structural non-oil deficit and 3% of the GPFG¹⁾.
Share of trend GDP for mainland Norway. Percent. 2002 – 2020²⁾



1) Government Pension Fund Global.
2) Projections for 2017 – 2020 (broken line and shaded bars).
Sources: Ministry of Finance and Norges Bank

Chart 3.37 Public sector demand and GDP for mainland Norway.
Annual change. Percent. 2010 – 2020¹⁾



1) Projections for 2017 – 2020 (broken lines).
Sources: Statistics Norway and Norges Bank

PROJECTIONS FOR PETROLEUM INVESTMENT

Investment in the petroleum industry has declined considerably in recent years (Chart 3.38). The decline primarily reflects weak industry profitability as a result of the fall in oil and gas prices in 2014 and 2015 and the rapid rise in costs in the industry in the preceding years. Oil companies have cut costs substantially to restore profitability. As a result, break-even prices for new projects have fallen from USD 60–80 to USD 15–35 per barrel. Several new projects will therefore be profitable if oil price developments are in line with assumptions (see Section 1).

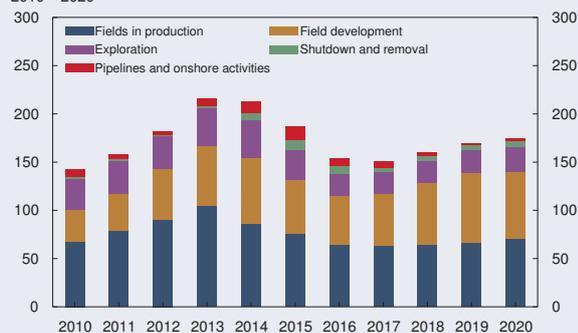
The decline in petroleum investment has slowed, but to a lesser extent than projected in the *September Report*. The fall in petroleum investment between 2016 and 2017 is now estimated at 2% in volume terms and 7.5% in value terms. For the coming years, investment is expected to pick up, driven by the decline in the cost level and the outlook for oil prices.

Investment in *field development* and *fields in production* has fallen by nearly a third since 2013. The decline has been cushioned by the considerable investment in the development of the Johan Sverdrup project since its launch in 2015. In addition, several small and medium-sized development projects have also commenced over the past two years. Oil companies plan to start a number of development projects in new and existing fields. They are expected to submit seven development plans in December 2017 and between 15 and 20 development plans in the period 2018 to 2020. The new development projects will provide a considerable boost to investment between 2017 and 2020 (Chart 3.39). The decline in investment in ongoing development projects in the period ahead will have a dampening impact. Investment in fields in production excluding new development projects is expected to increase moderately in the coming years.

Investment in *exploration* has fallen by almost half since 2013 and 2014. Exploration investment is projected to be at approximately the same level in 2017 as in 2016, rising moderately thereafter to 2020. Exploration will in isolation increase as a result of the rise in oil prices over the past two years and the decline in drilling costs since 2014. Recent years' weak drilling results will probably restrain the rise.

The latest investment intentions survey indicates that investment will increase more between 2017 and 2018 than projected in the *September Report*. The projection for the level of investment in 2018 has therefore been revised up. The projections for investment in 2019 and 2020 are also higher than in the *September Report*. Oil companies' expected cash flow has increased, as projected oil prices for 2018 and 2019 are higher than in September. Some of the additional cash flow will probably be spent on increased exploration and drilling in fields in production. Investment in new development projects will probably not be affected by the expected increase in cash flow. Since long-term futures prices have remained nearly unchanged since the *September Report*, there is reason to believe that the expected profitability of new investment has not changed substantially.

Chart 3.38 Petroleum investment. At constant 2017 prices. In billions of NOK. 2010 – 2020 ¹⁾



¹⁾ Projections for 2017 – 2020. Figures for 2010 – 2016 are from the investment intentions survey by Statistics Norway, deflated by the price index for petroleum investment in the national accounts. The index is projected to fall by 5.5% between 2016 and 2017 and to be unchanged between 2017 and 2018. Sources: Statistics Norway and Norges Bank

Chart 3.39 Investment in field development and fields in production. At constant 2017 prices. In billions of NOK. 2010 – 2020 ¹⁾



¹⁾ Projections for 2017 – 2020. Figures for 2010 – 2016 are from Statistics Norway's investment intentions survey, 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, Statistics Norway's investment intentions survey and current information about development investment. Sources: Statistics Norway and Norges Bank

MODEL ESTIMATES OF THE OUTPUT GAP

Potential output and the output gap cannot be observed and must be estimated. There are many techniques for estimating the output gap, and different methods yield different estimates. In retrospect, the output gap estimates may be revised. This may be due to statistical revisions or to information obtained subsequently that alters the assessment of potential output.

When estimating the output gap, we take into account developments in a number of indicators, such as GDP, unemployment, inflation, wage growth, house prices and credit growth. As an aid in summarising all this information and in order to ensure consistency over time, the Bank has developed a new set of models in which the indicators mentioned are included as explanatory variables of the output gap.¹ The set of models comprises nine individual models that differ in their model specification and/or information base² Lower unemployment and higher GDP growth, inflation and wage growth imply a decrease in spare capacity. Higher house price inflation and debt growth than what is sustainable over time may indicate that spare capacity is lower than normal.

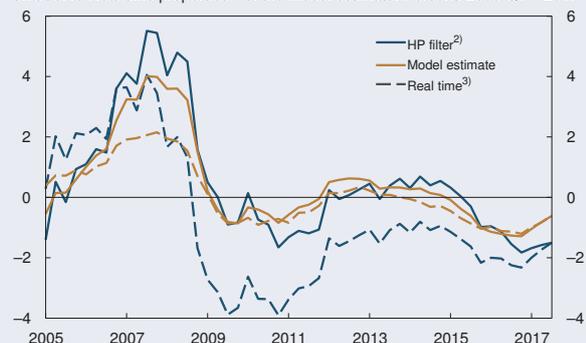
Since the output gap cannot be observed, there is no direct way of evaluating the model estimates. Criteria for a good estimate of the output gap may, however, be the extent to which the estimates of the output gap provide information about future developments in GDP growth, inflation and unemployment. Measured this way, the forecasting properties of the system of models are good compared with simple trend estimates that are exclusively based on GDP data. The forecasting properties of an average of the models prove to be better than for each individual model. The estimates of the output gap from the system of models have good real-time properties³, that is, the historical estimates of the output gap show little change as a result of new information (Chart 3.40).

Even though the model system contains key information, a number of indicators are not included in the model system that may provide useful additional information about the output gap, especially as regards labour market conditions. Examples are employment, spare capacity in the regional network and the stock of job vacancies. These indicators will therefore serve as useful cross-checks of the model estimates. We will continue to develop new models, in order to incorporate additional indicators of the output gap into the system of models.

The model estimates show that developments in the output gap are on the whole closely in line with earlier projections. At the same time, the estimates indicate that the output gap has recently been somewhat less negative than previously assumed (Chart 3.41).

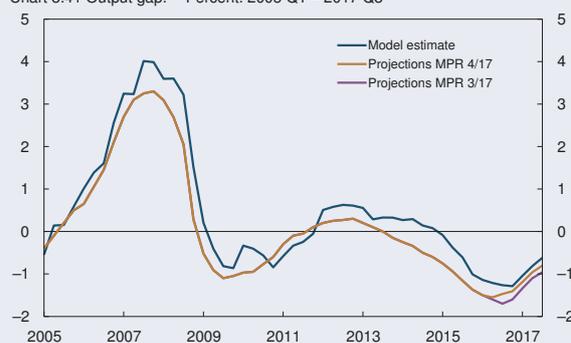
- 1 See Hagelund, K., F. Hansen and Ø. Robstad (2018) "Model estimates of the output" forthcoming *Norges Bank Staff Memo* for documentation of the models.
- 2 Two classes of models are used: multivariate unobserved components models and structural vector autoregressive models. For examples of the two model classes see Blagrove, Garcia-Saltos, Laxton and Zhang (2015) "A Simple Multivariate Filter for Estimating Potential Output" IMF Working Paper 15/79 and Blanchard and Quah (1989) "The dynamic effects of aggregate demand and supply disturbances" *The American Economic Review* 79(4), September, pages 655–673.
- 3 For a discussion of real-time properties, see Orphanides, A. and S. van Norden (2002): "The Unreliability of Output-Gap Estimates in Real Time", *Review of Economic and Statistics*, 84 (4), pages 569–583.

Chart 3.40 Real time properties¹⁾ of the model estimate. Percent. 2005 Q1 – 2017 Q3



- 1) The degree to which projections in real time change due to new information.
 - 2) Lambda = 40 000.
 - 3) The projections and model estimate are based on the information available up to the period the projection applies.
- Source: Norges Bank

Chart 3.41 Output gap.¹⁾ Percent. 2005 Q1 – 2017 Q3



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

4 Monetary policy analysis

The key policy rate is forecast to remain at 0.5% in the period to autumn 2018, followed by a gradual increase to around 1.5% in 2020. The forecast implies a somewhat earlier rate increase than in the September 2017 *Monetary Policy Report*. Stronger growth abroad, higher oil prices and a weaker krone pull up the key policy rate path. Lower-than-expected inflation pulls down the rate path. Uncertainty regarding the effects of monetary policy suggests a cautious approach to interest rate setting. At the same time, the need for keeping the key policy rate higher with a view to preventing a further build-up of financial imbalances appears to have diminished somewhat. These judgemental assessments also pull down the rate path. Spare capacity is projected to decline gradually, reaching a normal level in 2019. Inflation is projected to move up to a little more than 2% around the end of the projection period.

4.1 OBJECTIVES AND RECENT DEVELOPMENTS

Low and stable inflation

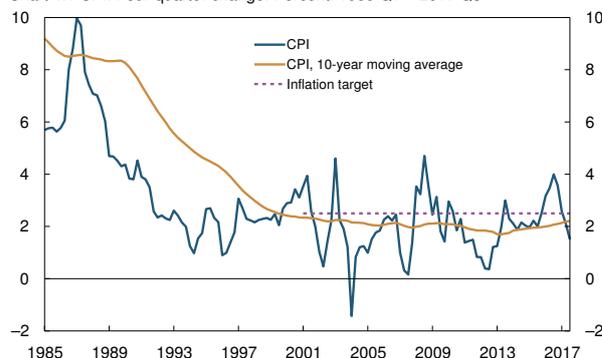
Monetary policy is geared towards keeping inflation low and stable. The operational target of monetary policy is annual consumer price inflation of close to 2.5% over time. In the period since the introduction of inflation targeting, inflation has on average been around 2% (Chart 4.1).

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 trade-offs take account of conditions that imply a risk of particularly adverse outcomes for the economy and of uncertainty regarding the functioning of the economy (see box on criteria for an appropriate interest rate path on page 41).

Very low key policy rate

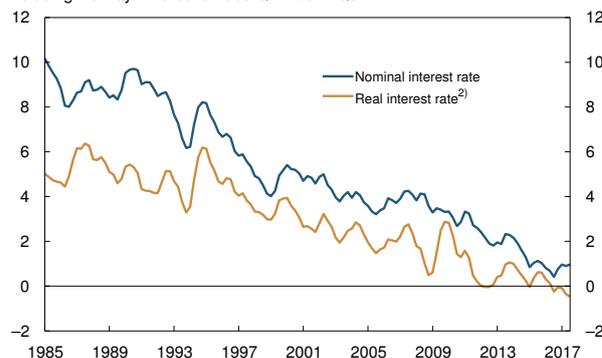
The interest rate level is very low both internationally and in Norway (Chart 4.2). This must be seen in the light of the fact that the level of the neutral real interest rate has also decreased. The neutral real interest rate is the rate that is neither expansionary nor contractionary. Norges Bank's estimate of the neutral real interest rate has gradually been revised down in line with global developments. The neutral nominal money market rate in Norway is assumed to range between 2½% and 3½% (see Special Feature in *Monetary Policy Report* 3/16).

Chart 4.1 CPI. Four-quarter change. Percent. 1985 Q1 – 2017 Q3



Sources: Statistics Norway and Norges Bank

Chart 4.2 Interest rates for 10-year government bonds. 14 OECD countries including Norway.¹⁾ Percent. 1985 Q1 – 2017 Q3

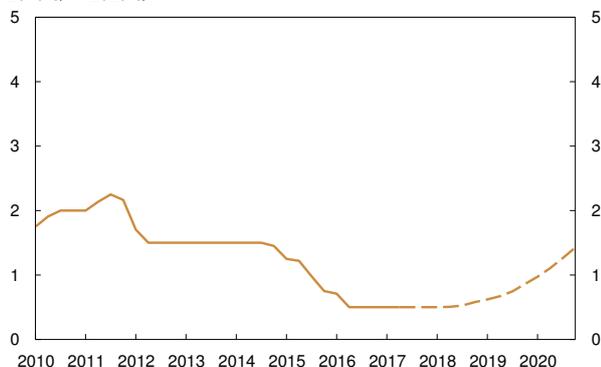


¹⁾ The other countries are Austria, Belgium, Canada, Denmark, France, Germany, Italy, Japan, Netherlands, Sweden, Switzerland, UK and US. Unweighted average.

²⁾ The real interest rate is the nominal government bond yield less the average inflation rate over the past year.

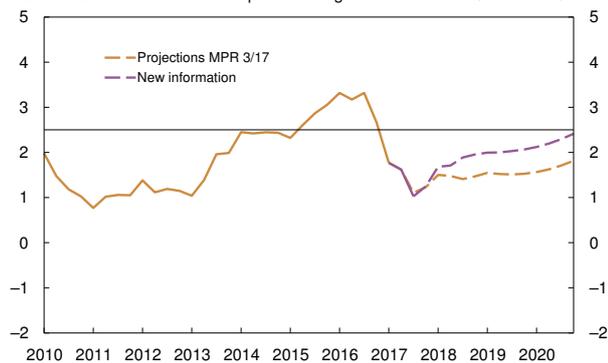
Sources: OECD and Norges Bank

Chart 4.3a Key policy rate. Projections in MPR 3/17. Percent. 2010 Q1 – 2020 Q4¹⁾



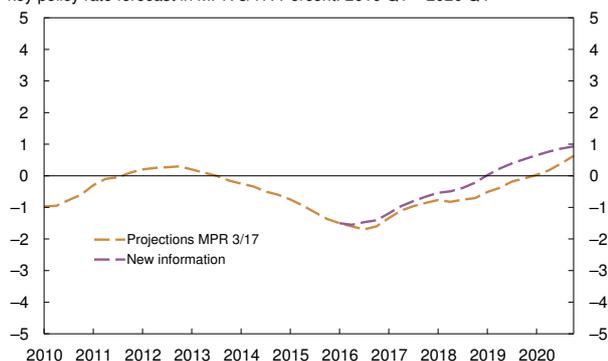
1) Projections for 2017 Q3 – 2020 Q4 (broken line).
Source: Norges Bank

Chart 4.3b CPI-ATE¹⁾. Projection conditional on new information and key policy rate forecast in MPR 3/17. Four-quarter change. Percent. 2010 Q1 – 2020 Q4²⁾



1) CPI adjusted for tax changes and excluding energy products.
2) Projections for 2017 Q4 – 2020 Q4 (broken lines).
Sources: Statistics Norway and Norges Bank

Chart 4.3c Projected output gap¹⁾. Projection conditional on new information and key policy rate forecast in MPR 3/17. Percent. 2010 Q1 – 2020 Q4



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

The oil price decline from 2014 and a sluggish global economy had a dampening effect on inflation and growth in Norway. There is still some spare capacity in the Norwegian economy and inflation is below 2.5%. The key policy rate is therefore lower than what the Bank considers to be a neutral level.

Persistently low interest rates add to the vulnerabilities in the financial system. In the interest of long-term economic stability, the key policy rate has been set somewhat higher in recent years than the projections for inflation and the output gap in the coming years would in isolation imply.

4.2 NEW INFORMATION AND ASSESSMENTS

New information implies a higher interest rate path

With the aid of Norges Bank's macroeconomic model NEMO, the effects of new information, new projections for the current and following quarter and new projections for non-model variables have been analysed.¹ The key policy rate forecast from the previous *Report* is applied in this analysis (Chart 4.3a).

The model-based analysis suggests that with an unchanged path for the key policy rate inflation will be somewhat higher throughout the projection period compared with the projections in the September *Report* (Chart 4.3b). The output gap will be narrower (Chart 4.3c). According to the analysis, the krone exchange rate will remain slightly weaker than projected in September throughout the projection period.

The model-based analysis suggests a higher path for the key policy rate, reflecting prospects for slightly narrower output gap and inflation.

Slightly higher interest rate forecast

The uncertainty regarding the effects of monetary policy suggests a cautious approach to interest rate setting, also when it becomes appropriate to increase the key policy rate. A housing market correction in line with the projections in this *Report* reduces the risk of an abrupt and more pronounced decline further out. The risk of a further build-up of financial imbalances therefore appears to have diminished some-

¹ The analysis is described in Gerdrup, K.R., E.M. Kravik, K.S. Paulsen and Ø. Robstad (2017) "Documentation of NEMO - Norges Bank's core model for monetary policy analysis and forecasting". *Staff Memo* 8/2017. Norges Bank.

what. The Bank’s overall judgement suggests that the interest rate path is adjusted up somewhat less than the changes in the outlook for inflation and the output gap alone would indicate.

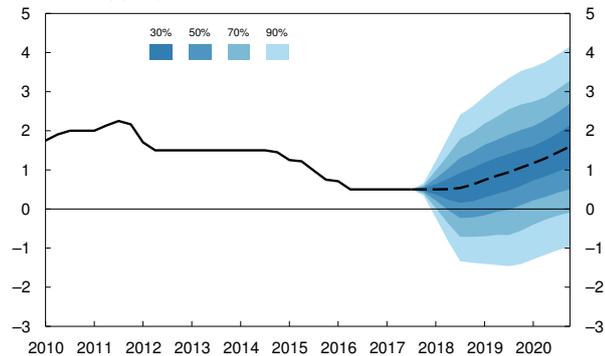
The key policy rate is forecast to remain at 0.5% in the period to autumn 2018, followed by a gradual increase to around 1.5% in 2020 (Chart 4.4a-d). The forecast suggests a somewhat earlier increase in the key policy rate than in the September Report (Chart 4.5).

The labour market has improved more than expected and the output gap appears to be somewhat narrower

than previously projected. With a key policy rate consistent with the interest rate forecast in this Report, the output gap is expected to close in 2019 and be positive in 2020. The projections imply that the output gap will be somewhat narrower in the years ahead, but that the level at the end of the projection period will be broadly as projected in the September Report. Inflation is expected to pick up gradually to a little above 2% at the end of 2020. Compared with the September Report, the projections for inflation are somewhat higher for the years ahead.

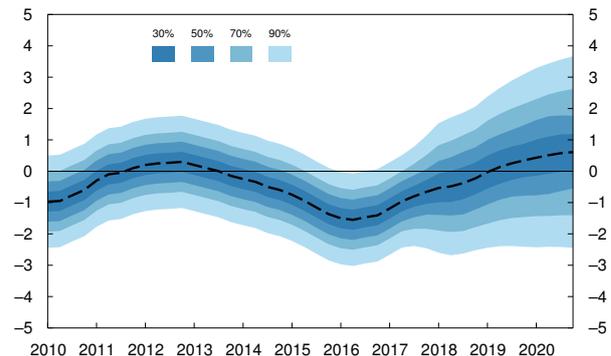
The projections imply an increase in the money market rate in pace with the increase in the key policy

Chart 4.4a Key policy rate with fan chart¹⁾. Percent. 2010 Q1 – 2020 Q4²⁾



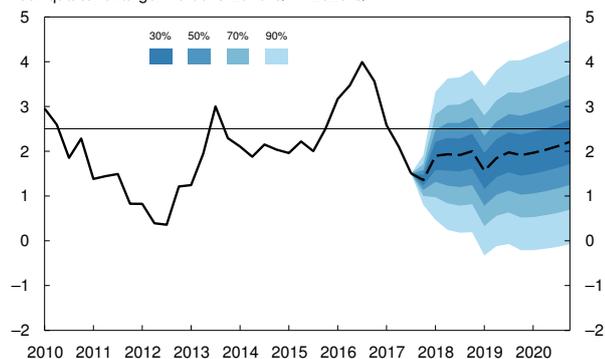
1) The fan charts are based on historical experience and stochastic simulations in Norges Bank’s main macroeconomic model, NEMO. The fan chart for the key policy rate does not take into account that a lower bound for the interest rate exists.
2) Projections for 2017 Q4 – 2020 Q4 (broken line).
Source: Norges Bank

Chart 4.4b Projected output gap¹⁾ with fan chart²⁾. Percent. 2010 Q1 – 2020 Q4



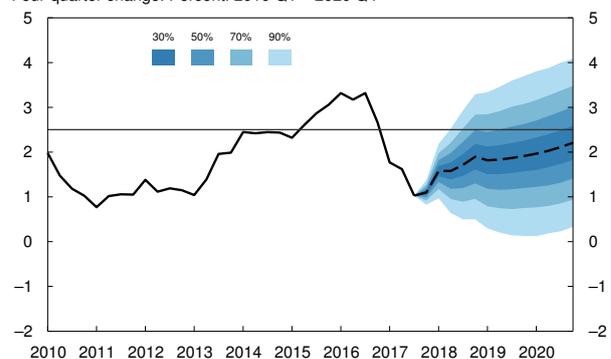
1) The output gap measures the percentage deviation between mainland GDP and projected potential mainland GDP.
2) The fan charts are based on historical experience and stochastic simulations in Norges Bank’s main macroeconomic model, NEMO.
Source: Norges Bank

Chart 4.4c CPI with fan chart¹⁾. Four-quarter change. Percent. 2010 Q1 – 2020 Q4²⁾



1) The fan charts are based on historical experience and stochastic simulations in Norges Bank’s main macroeconomic model, NEMO.
2) Projections for 2017 Q4 – 2020 Q4 (broken line).
Sources: Statistics Norway and Norges Bank

Chart 4.4d CPI-ATE¹⁾ with fan chart²⁾. Four-quarter change. Percent. 2010 Q1 – 2020 Q4³⁾



1) CPI adjusted for tax changes and excluding energy products.
2) The fan charts are based on historical experience and stochastic simulations in Norges Bank’s main macroeconomic model, NEMO.
3) Projections for 2017 Q4 – 2020 Q4 (broken line).
Sources: Statistics Norway and Norges Bank

rate and a slightly higher money market rate than projected in the *September Report*.

Both the nominal and real interest rate can influence household and business behaviour. The real interest rate, defined as the money market rate less the current inflation rate, will rise gradually throughout the projection period. As inflation edges higher, the real interest rate will rise less than the key policy rate. The projections for the real interest rate are somewhat lower than in the *September Report* throughout the projection period.

Factors behind changes in the interest rate forecast

The forecast for the key policy rate is based on the criteria for an appropriate interest rate path (see box on page 41), an overall assessment of the situation in the Norwegian and global economy and Norges Bank's perception of the functioning of the economy. Chart 4.6 illustrates the factors that have contributed to the changes in the interest rate forecast. The overall change in the interest rate forecast from the *September Report* is shown by the black line. The model NEMO is used as a tool for interpreting the driving forces in the economy, but there is no mechanical relationship between news that deviates from the Bank's forecasts in the *September Report* and the effect on the new interest rate path.

Global growth has been higher than expected, and the projections for GDP growth among trading partners have been revised up. This suggests in isolation an increase in Norwegian exports. Neither the inflation outlook nor forward rates for trading partners have substantially changed. On balance, the changes in the global outlook for growth, inflation and interest rates suggest a higher interest rate path (green bars).

Oil prices are higher than envisaged in the *September Report*, which pushes up exports, petroleum investment and wage growth. In the Bank's model apparatus, higher oil prices also suggest a stronger krone. The overall effect of higher oil prices is somewhat higher activity in the Norwegian economy, with inflation slightly lower in the near term and slightly higher in the long term. Higher oil prices pull up the interest rate path (beige bars).

The krone exchange rate is weaker than assumed and markedly weaker than movements in oil prices and the interest rate differential against other countries might suggest. A weaker krone contributes to higher inflation and higher activity in the Norwegian economy. In isolation, this suggests a higher interest rate path (orange bars).

Higher growth in petroleum investment is largely explained by the rise in oil prices. Similarly, somewhat higher export growth is explained by higher import growth among trading partners and a weaker krone exchange rate. The dark blue bars illustrate the effects on the interest rate path of changes in domestic demand that are not explained by the other factors in Chart 4.6. The bars pull down the interest rate path in part because of weaker-than expected developments in house prices and private consumption and because public demand growth is now assumed to be somewhat lower in 2017 and 2018 than anticipated in the *September Report*. The upward revision of the projection for public demand growth for 2019 and 2020 contributes to positive bars towards the end of the projection period.

Less spare capacity normally implies higher wage growth. However, the wage projections for 2017 and 2018 are little changed on the *September Report*. Combined with somewhat lower inflation than projected, this pulls down the interest rate path (purple bars).

Since the *September Report*, new information suggests on balance an upward adjustment of the interest rate path throughout the projection period. When the key policy rate is very low, the uncertainty surrounding the effects of monetary policy is greater than when the rate is at a more normal level. Even minor changes in monetary policy may then lead to reactions that are difficult to predict and may result in fluctuations in financial markets and asset prices. The uncertainty surrounding the effects of monetary policy suggests a cautious approach to interest rate setting, also when it becomes appropriate to increase the key policy rate. A housing market correction in line with the projections in this *Report* reduces the risk of an abrupt and more pronounced decline further out. The need for keeping the key policy rate higher

with a view to preventing a further build-up of financial imbalances therefore appears to have diminished somewhat. The Bank's overall judgement suggests that the interest rate path is adjusted up somewhat less than new information alone would indicate. This use of judgement is expressed by the light blue bars.

4.3 UNCERTAINTY AND CROSS-CHECKS

The interest rate forecast is uncertain

The projections in this *Report* are based on Norges Bank's assessment of the economic situation and the functioning of the economy and the effects of monetary policy. Projections are uncertain. If the economic outlook changes or if our understanding of the relationship between the interest rate level, inflation and the real economy changes, the key policy rate forecast may be adjusted.

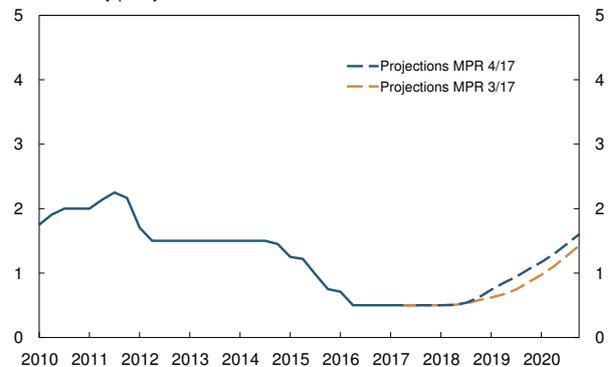
Registered unemployment is now at its lowest level since the fall in oil prices in 2014 and is near a level consistent with a normal level of spare capacity. This may suggest faster-than-projected labour market tightening. A tighter labour market may lead to a faster pick-up in wage growth than anticipated. Higher wage growth suggests in isolation a higher interest rate path.

On the other hand, the relationship between wages and unemployment may have changed. In recent years, wage growth among many of Norway's trading partners has been lower than historical relationships between wages and unemployment would imply. A long period of low inflation may generate expectations that inflation will remain low. This could in itself lead to a slower rise in wage growth and inflation than currently projected. Lower-than-projected inflation and cost growth would suggest a lower interest rate path than projected in this *Report*.

At the same time, the decline in house prices may prove to be more pronounced than assumed (see box on uncertainty in the housing market on page 42). That may result in a steeper-than-projected fall in housing investment and weaker consumption growth, which would suggest a lower interest rate path.

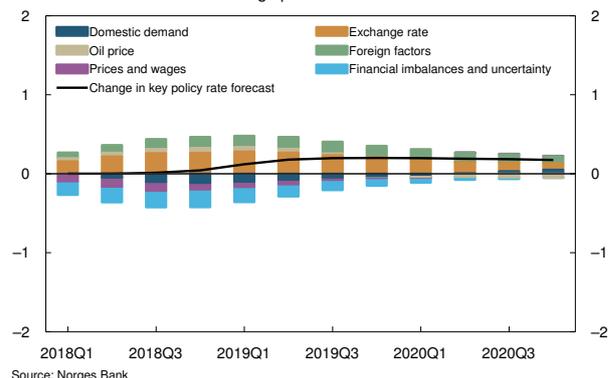
The krone exchange rate has weakened since the September *Report* despite the rise in oil prices and

Chart 4.5 Key policy rate. Percent. 2010 Q1 – 2020 Q4¹⁾



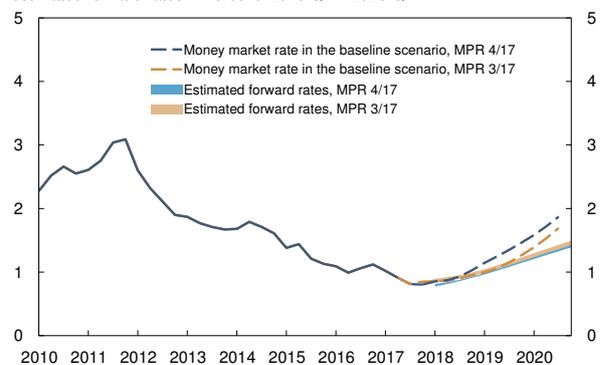
1) Projections for 2017 Q4 – 2020 Q4 (broken lines).
Source: Norges Bank

Chart 4.6 Factors behind changes in key policy rate forecast since MPR 3/17. Cumulative contribution. Percentage points. 2018 Q1 – 2020 Q4



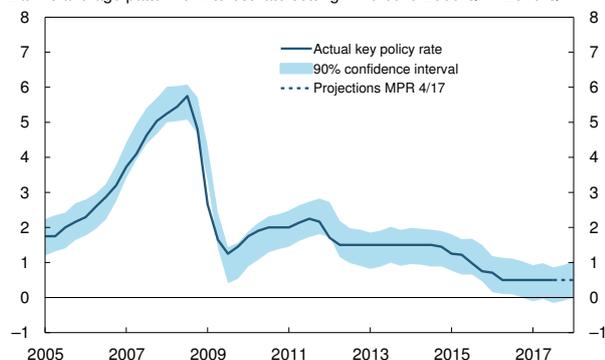
Source: Norges Bank

Chart 4.7 Three-month money market rate in the baseline scenario¹⁾ and estimated forward rates²⁾. Percent. 2010 Q1 – 2020 Q4³⁾



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 4 September – 15 September and 27 November – 8 December, respectively.
3) Projections for 2017 Q4 – 2020 Q4 (broken lines).
Sources: Thomson Reuters and Norges Bank

Chart 4.8 Key policy rate and interest rate path that follows from Norges Bank's average pattern of interest rate setting.¹⁾ Percent. 2005 Q1 – 2018 Q1²⁾



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 key policy rate in the preceding period. The equation is estimated over the period 1999 Q1 – 2017 Q3. For further discussion, see *Staff Memo 3/2008*, Norges Bank.
²⁾ Projections for 2017 Q4 – 2018 Q1 (broken line).
 Source: Norges Bank

little change in the interest rate differential against trading partner countries. In recent years, higher oil prices have normally been followed by a stronger krone. The exchange rate is projected to appreciate somewhat in the coming period. If the krone remains close to its current level, imported inflation may prove to be higher than currently projected, which would in isolation suggest a higher interest rate path. If the krone should appreciate faster than assumed, inflation may prove to be lower than projected. This suggests a lower interest rate path.

Overall, the risks to the outlook appear to be balanced.

Cross-checks little changed

Forward rates in the money and bond markets can function as a cross-check of whether monetary policy is consistent with earlier communication and the Bank's response pattern. Experience shows that at times the Bank's projection for the money market rate will diverge from forward rates. Since September, estimated forward rates are little changed and are somewhat below Norges Bank's money market rate projections (Chart 4.7). Norwegian forward rates seem to have been driven primarily by external interest rate developments, particularly developments in Sweden and the euro area.

A simple estimated rule based on Norges Bank's previous interest rate setting can also be a cross-check of monetary policy consistency over time. According to this rule, the key policy rate is determined by developments in inflation, wage growth, mainland GDP growth and foreign interest rates. The key policy rate in the previous period is also incorporated. The model parameters are estimated on historical data from 1999 to the present. The blue area in Chart 4.8 shows a historical band for the level of the key policy rate according to the model. The dark blue line shows the actual key policy rate, while the broken line shows the forecast for the key policy rate in this Report. The projections are based on the estimates for the relevant variables up to and including 2018 Q1. The model now implies a slight increase in the key policy rate in the period ahead.

CRITERIA FOR AN APPROPRIATE INTEREST RATE PATH

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 Bank regards the following set of criteria 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 overall spare capacity in the economy.

3. Monetary policy is robust

The interest rate path should take account of conditions that imply a risk of particularly adverse economic outcomes and of uncertainty surrounding the functioning of the economy. A build-up of financial imbalances may increase the risk of sudden shifts in demand further out. A robust monetary policy should therefore seek to mitigate the risk of a build-up of financial imbalances. Uncertainty surrounding the effects of monetary policy normally suggests a cautious approach to interest rate setting. This may reduce the risk that monetary policy will have unintended consequences. In situations where the risk of particularly adverse outcomes is substantial, or where confidence in the nominal anchor is in jeopardy, it may be appropriate in some cases to pursue a more active monetary policy than normal.

The consideration of robustness is 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.

UNCERTAINTY IN THE HOUSING MARKET

After rising sharply through 2016, seasonally adjusted house prices have fallen by 2.6% since March 2017. The increase in house prices led to a marked rise in residential construction and housing investment. With traditional explanatory variables such as unemployment, income growth, credit conditions, housing stock and the interest rate, the Bank's empirical model¹ is not fully able to explain the rise in house prices through 2016 (Chart 4.9). The price correction in 2017 has now brought the level of house prices more closely in line with the level implied by the historical relationships in the empirical model. The model forecasts moderate house price inflation in the coming years, reflecting higher income growth, lower unemployment and continued low lending rates.² The projections for house price inflation in this *Report* are somewhat lower than those indicated by the empirical model.

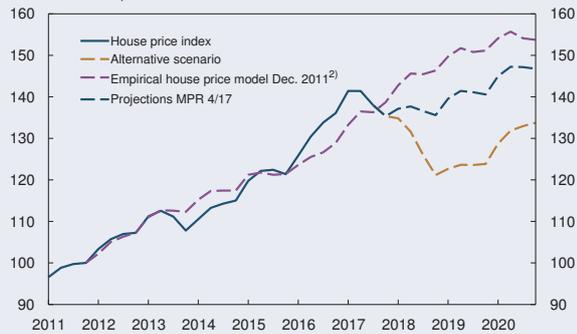
There is uncertainty surrounding developments in the housing market further ahead. In recent years, population growth has slowed considerably. House prices have climbed to high levels, and residential construction has increased sharply in recent years. An alternative scenario has therefore been considered where the fall in house prices and housing investment is more pronounced than projected in this *Report*.

Historically, there is a close relationship between growth in housing investment and real house price inflation (Chart 4.10). It is assumed that a sharper decline in house prices will entail a more pronounced correction in housing investment in line with the historical correlation between house prices and housing investment (Chart 4.11). In the alternative scenario, both house prices and housing investment are about 10%-15% lower than in the baseline scenario in the period 2018–2020. Lower house prices will in isolation dampen consumption growth, for example by limiting households' room for home equity withdrawal. Charts 4.12 and 4.13 show how such a scenario may affect the Bank's projections for the output gap and inflation. In the scenario, the increase in the key policy rate will be deferred while the krone exchange rate remains close to the current level in the period ahead before gradually appreciating. The krone is nevertheless weaker than in the baseline scenario throughout the projection period. A lower interest rate and weaker krone than projected in the baseline scenario will dampen the negative effects of the fall in housing investment on the output gap. In the near term, a weaker krone exchange rate pushes up inflation, while lower wage growth results in projected inflation in 2020 at around 2%, as in the baseline scenario.

1 The model is a reestimated version of the model described in Jacobsen, D.H. and B. Naug (2004) "What drives house prices?". *Economic Bulletin* 1/2005. Norges Bank.

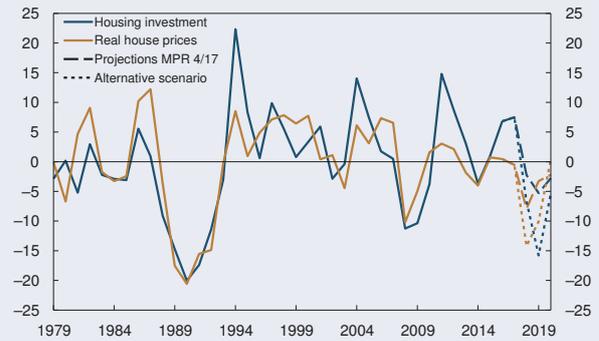
2 A reestimated version of the model up to and including 2017 Q3 that also contains information about actual house price developments in recent years indicates broadly the same growth ahead as the model estimated up to and including 2011 Q4 (illustrated by the broken purple line in Chart 4.9).

Chart 4.9 House prices. Index. 2011 Q4 = 100. 2011 Q4 – 2020 Q4¹⁾



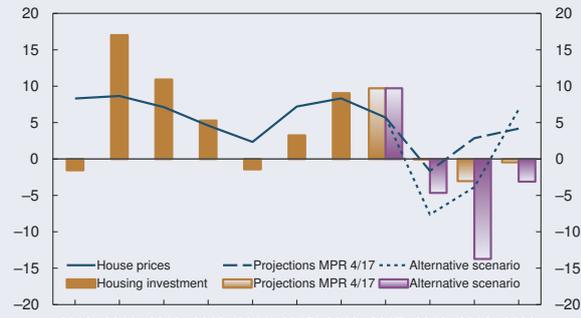
1) Projections for 2017 Q4 – 2020 Q4.
 2) Norges Bank's empirical house price model based on Jacobsen, D.H. and B. Naug (2004).
 "What drives house prices?". *Economic Bulletin* 1/2005. The model is estimated as a cross check through December 2011 and gives projections after this. The housing market is assumed to have been in equilibrium in December 2011.
 Sources: Finn.no, Real Estate Norway, Statistics Norway and Norges Bank

Chart 4.10 House prices and housing investment. Annual change.¹⁾ Percent. 1979 – 2020²⁾



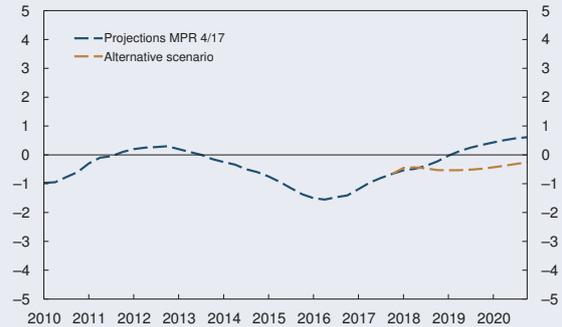
1) Deviations from average annual growth in the period 1979 – 2016.
 2) Projections for 2017 – 2020.
 Sources: Statistics Norway and Norges Bank

Chart 4.11 House prices and housing investment. Annual change. Percent. 2010 – 2020¹⁾



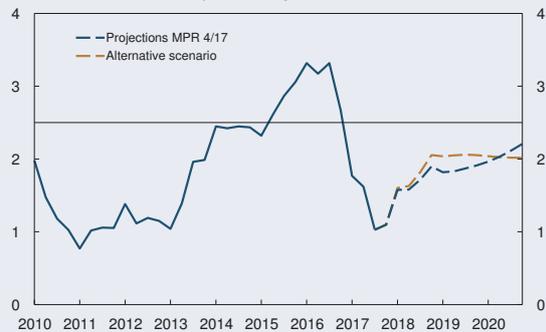
1) Projections for 2017 – 2020 (broken lines and shaded bars).
 Source: Norges Bank

Chart 4.12 Projected output gap¹⁾. Percent. 2010 Q1 – 2020 Q4



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

Chart 4.13 CPI-ATE.¹⁾ Four-quarter change. Percent. 2010 Q1 – 2020 Q4²⁾



1) CPI adjusted for tax changes and excluding energy products.
 2) Projections for 2017 Q4 – 2020 Q4
 Source: Norges Bank

Unwinding unconventional monetary policies in the US and Europe

After lowering policy rates to close to zero following the financial crisis, a number of central banks have in recent years purchased securities in the open market in order to bring down long-term interest rates. The US Federal Reserve (Fed) and the Bank of England (BoE) were the first to embark on quantitative easing after the crisis and began to buy large quantities of government bonds in 2009. In Japan, quantitative easing was first used to a limited extent in the early 2000s, but it was not until in 2013 that the Bank of Japan (BoJ) expanded its asset purchase programme in earnest. In 2015, the European Central Bank (ECB) launched a broad purchase programme including bonds issued by euro area sovereigns. Sweden's central bank has also purchased government bonds since 2015. Such quantitative easing can have an impact both through a signalling effect, ie the central bank signals that policy rates will be kept low for a prolonged period, and through a portfolio effect, as investor demand for securities other than those purchased by the central bank increases and prices for these securities then rise. Even though it is difficult to quantify the effect through the different channels, many studies indicate that quantitative easing has pushed down long-term interest rates.¹

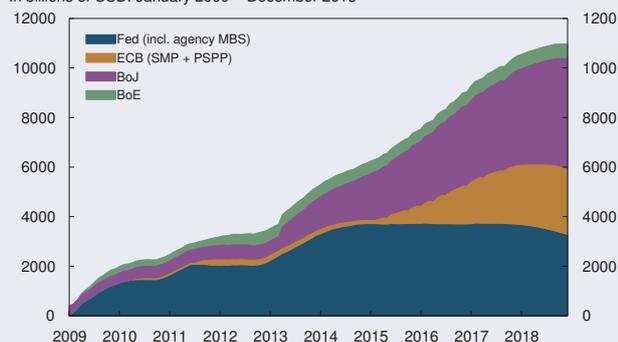
¹ See Haldane, A. G., M. Roberts-Sklar, T. Wieladek and C. Young (2016) "QE: the story so far". Bank of England Working Papers 624, Borio, C. and A. Zabai (2016) "Unconventional monetary policies: a re-appraisal". BIS Working Papers 570 and De Rezende, R. B., D. Kjellberg and O. Tysklind (2015) "Effects of the Riksbank's government bond purchases on financial prices", Riksbanken *Economic Commentaries* 13/2015. For a discussion of the channels for alternative instrument, see also Bernhardsen, T., A. Kloster and O. Syrstad (2016) "Alternative virkemidler i pengepolitikken – den nødvendige monetære økosirk" [Unconventional monetary policy instruments and the circulation of money], *Staff Memo* 12/2016. Norges Bank.

As economic conditions have improved, some central banks have announced changes to their unconventional monetary policies. In June 2017, the Fed announced a plan to scale back its balance sheet by gradually reducing reinvestment of the proceeds from maturing bonds. The process of unwinding started in October when the Fed allowed USD 10bn in government and mortgage-backed securities to roll off its balance sheet. An upper limit has been set on the monthly reduction in the Fed's holdings of securities. The limit for the monthly reduction of the Fed's holdings will be raised gradually in the coming quarters, until it reaches USD 50bn in 2018 Q4, comprising USD 30bn in government bonds and USD 20bn in mortgage-backed securities.

The ECB's asset purchase programme has also been changed in recent years. The size and composition of purchases has varied over time, but starting in 2016 Q2, the ECB undertook monthly asset purchases amounting to EUR 80bn. In 2017 Q1, the ECB announced a reduction in its monthly purchases to around EUR 60bn. A further reduction was announced earlier this autumn. As from 2018 Q1, the ECB will cut its monthly purchases to around EUR 30bn. The programme is set to continue until the end of 2018 Q3. However, the ECB has emphasised that the size and duration of the programme can be increased if necessary.

Even though some central banks have announced that a less expansionary balance sheet policy will now

Chart 1 Stock of securities¹⁾ held by the Fed, ECB, BoE and BoJ. In billions of USD. January 2009 – December 2018



¹⁾ Government and government-related securities. Sources: Bank of England, Bloomberg and Norges Bank

Chart 2 Implied forward rates among trading partners and in Norway. Percent. 2018 Q1 – 2020 Q4



Sources: Bloomberg and Norges Bank

be pursued, this will be a very gradual process. The Fed's balance sheet will be large for a long time to come, despite the announced reductions. The ECB's plan is to continue to expand its balance sheet ahead, albeit at a slower pace. Neither the BoJ nor the BoE have announced changes. Chart 1 shows the accumulated asset purchases made by the Fed, ECB, BoE and BoJ since January 2009. For 2018, the chart shows a projection based on the changes announced by the Fed and the ECB. The chart is based on the assumption that the BoJ will maintain the current pace of its asset purchases and that the BoE will not change the size of its balance sheet in 2018. Under these assumptions, there are prospects that these four central banks' balance sheets as a whole will continue to increase through 2018.

For Norway, an important effect of monetary policy abroad is that interest rates among Norway's trading partners are very low and are expected to remain low for several years ahead (Chart 2). The announcements of a balance sheet reduction by the Fed and a reduced pace of asset purchases by the ECB have not changed this picture. Expected money market rates among Norway's main trading partners are only marginally higher now than prior to these announcements (Chart 2). This probably reflects signals from the central banks that these adjustments will be made very gradually and that policy rates are likely to remain low for a number of years ahead.

Chart 3 Risk premiums on covered bonds. Premium over swap rate. Basis points.
5 August 2009 – 5 December 2017



Sources: DNB, Thomson Reuters and Norges Bank

Low government bond yields abroad may result in a search for higher yield in other markets. The willingness to accept lower-than-normal compensation for risk may push up equity prices and push down risk premiums in corporate bond markets. It is very difficult to estimate to what extent this has occurred and to predict what would have to occur for investors to resume their demand for higher risk compensation.

Risk premiums on European bank bonds backed by residential mortgages (equivalent to Norwegian covered bonds) have fallen since the ECB launched its current government bond purchase programme in 2015 (Chart 3). In Germany, premiums on such bonds have been negative for the past couple of years. Risk premiums on euro-denominated covered bonds issued by Norwegian banks have shown similar developments and are considerably lower than in 2010. This may indicate a spillover to the Norwegian bond market, even though the ECB has not directly purchased any Norwegian securities. That said, to finance lending in Norway, a financial institution must exchange EUR for NOK in the foreign exchange swap market. The price of exchanging EUR for NOK in this market has risen since the ECB started its quantitative easing programme in 2015. As a result, the risk premium on NOK funding, as illustrated by the blue line in Chart 3, has not fallen to the same extent in recent years.

On the whole, the financial markets have priced in a low level of interest rates that will persist for several years ahead even though both the Fed and the ECB have announced changes in their unconventional monetary policy. Continued low expected policy rates and the search for yield may imply that risk premiums in equity and credit markets will remain low ahead. Nevertheless, the pricing of long-term government bonds, corporate bonds and equities may be sensitive to shocks that result in higher expected policy rates. On the other hand, the IMF and others have emphasised that normalising monetary policy too slowly could entail a higher risk of a build-up of financial imbalances and of a more pronounced correction further ahead.²

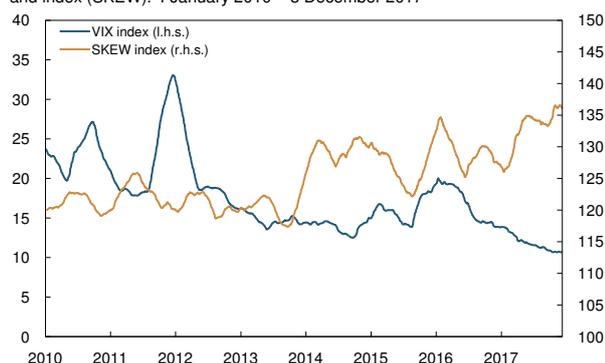
² See the IMF's *Global Financial Stability Report*, October 2017.

5 Financial stability assessment

– decision basis for the countercyclical capital buffer

Household credit growth remains high. Low house price inflation will have a dampening impact on debt growth, but it will take time for household vulnerabilities to recede. Growth in corporate debt from domestic sources has picked up and creditworthy enterprises appear to have ample access to credit. The largest banks continued to increase their capital ratios in 2017 Q3 and have met their capital targets.

Chart 5.1 Chicago Board Options Exchange Volatility Index (VIX) and the SKEW Index¹⁾, 100-day moving average. Percentage points (VIX) and index (SKEW). 4 January 2010 – 8 December 2017



¹⁾ The CBOE SKEW index is a measure of tail risk related to expected S&P 500 returns based on option prices. A value of 100 indicates that the options market has priced in a low probability of very low returns. Rising values express an increasing probability of very adverse outcomes.
Source: Thomson Reuters

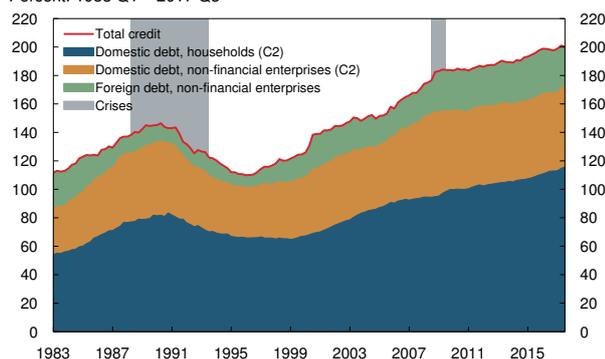
5.1 INTERNATIONAL DEVELOPMENTS

Very low volatility still prevails in financial markets (Chart 5.1). At the same time, options prices indicate a somewhat higher probability of very adverse outcomes. Any abrupt repricing in financial markets may reduce asset values and increase debt-servicing costs. The upswing in global equity markets has continued through autumn, while bond prices have shown little change.

In Europe, stronger economic growth has contributed to improving the situation for banks. Capital ratios have increased and the volume of non-performing loans has declined. For a selection of the largest banks, the default rate fell to 4.5% of total lending in 2017 Q2 from 5.4% in the same period in 2016. At the same time, profitability has edged up from low levels. Return on equity rose to 7% in 2017 Q2 from 5.7% one year earlier. Bank lending growth in the same period has been fairly weak.

In China, the authorities have introduced measures to restrain credit growth and to enhance the resilience of the financial system to shocks. Supervision has been strengthened and the shadow banking sector is subject to stricter regulation. In addition, amortisation requirements for residential mortgage loans have been tightened and banks' capital requirements have been raised. This has dampened credit growth and house price inflation. At the same time, debt levels are very high and a number of sectors appear vulnerable to abrupt corrections. The risk related to financial conditions therefore remains considerable. Any financial instability in China could also spread to other countries, both directly through the financial system and indirectly through lower GDP growth in China.

Chart 5.2 Credit mainland Norway as a share of mainland GDP. Percent. 1983 Q1 – 2017 Q3



Sources: IMF, Statistics Norway and Norges Bank

5.2 CREDIT

Credit has long been rising faster than GDP for mainland Norway (see credit indicator in Chart 5.2). In 2017 Q3, the credit indicator was higher than one year earlier, particularly as a result of strong growth in household debt. Household debt growth is also the main reason why the indicator has remained higher than an estimated trend (see credit gap in Chart 5.3). The credit gap has also widened over the past year owing to an increase in corporate debt from domestic sources. At the same time, corporate foreign debt has pulled in the opposite direction so that the credit gap is slightly smaller than at the same time in 2016.

Continued high household debt growth

The high level of household debt is a major source of vulnerability in the Norwegian financial system¹. Household debt has risen faster than household income for many years, pushing up debt ratios (Chart 5.4), which have continued to rise since the turn of the year owing to high household credit growth.

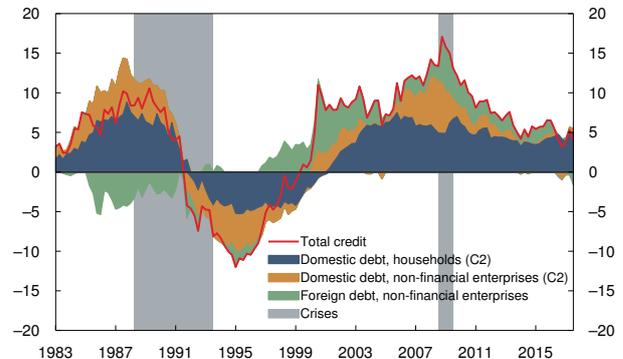
In addition, the household debt service ratio, ie the ratio of interest and normal principal payments to income, is high and close to the levels prevailing at the time of the banking crisis at the end of the 1980s, despite substantially lower interest rates. The debt service ratio has also increased somewhat since 2016, which in the heatmap is a signal of high risk (see box

1 See Norges Bank's *Financial Stability Report*, 2017.

COUNTERCYCLICAL CAPITAL BUFFER

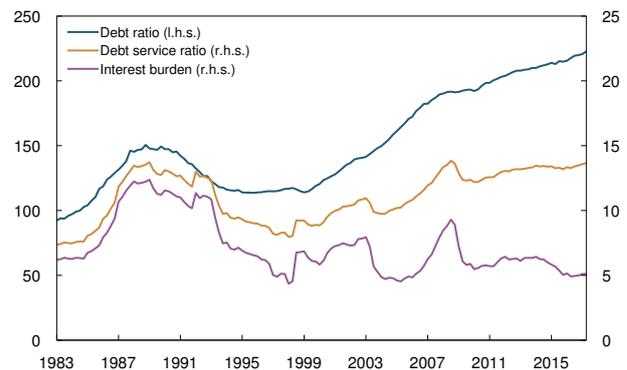
Banking regulation and macroprudential measures are the first line of defence against financial instability. Banks should build and hold a countercyclical capital buffer when financial imbalances are building up or have built up. Norges Bank's assessment of financial imbalances is based on developments in credit, property prices and bank funding. The assessment of financial imbalances forms the basis for the Bank's advice to the Ministry of Finance on the level of the countercyclical capital buffer (see boxes on pages 4 and 56). The buffer rate is set at 1.5% and will increase to 2.0%, effective from 31 December 2017.

Chart 5.3 Decomposed credit gap. Credit mainland Norway as a share of mainland GDP. Deviation from trend with augmented HP filter.¹⁾ Percentage points. 1983 Q1 – 2017 Q3



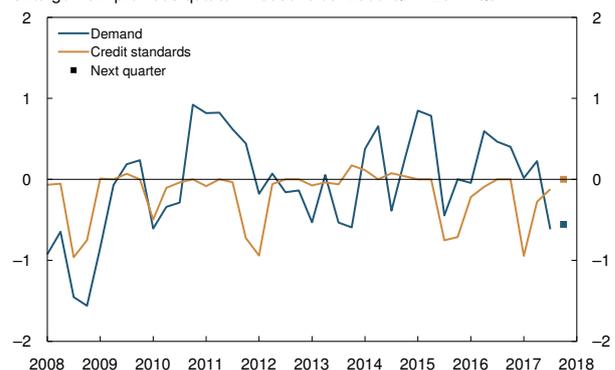
¹⁾ One-sided Hodrick-Prescott filter estimated on data augmented with a simple projection. Lambda = 400 000. Sources: IMF, Statistics Norway and Norges Bank

Chart 5.4 Household debt ratio, debt service ratio and interest burden.¹⁾ Percent. 1983 Q1 – 2017 Q2



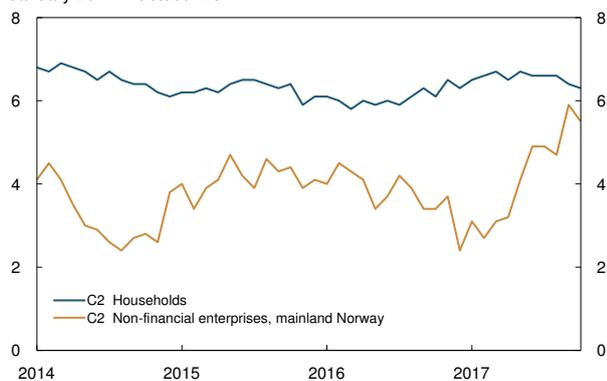
¹⁾ The debt ratio is loan debt as a percentage of disposable income. The interest burden is calculated as interest expenses as a percentage of disposable income plus interest expenses. The debt service ratio also includes estimated principal payments on an 18-year mortgage. Disposable income is adjusted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

Chart 5.5 Credit demand and banks' credit standards.¹⁾ Change from previous quarter. Households. 2008 Q1 – 2017 Q3



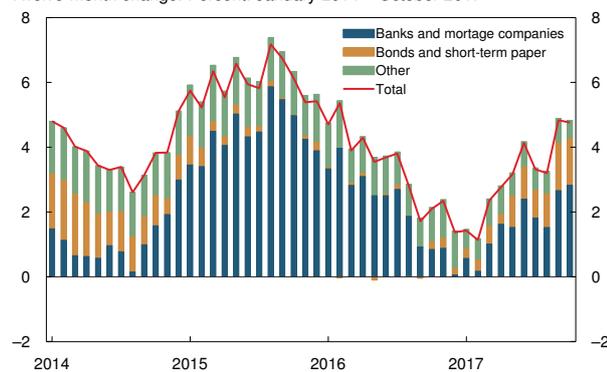
¹⁾ The banks respond on a scale of +/-2. In the aggregated figures, banks are weighted by the size of their balance sheets. Negative values denote lower demand or tighter credit standards. Source: Norges Bank's Survey of Bank Lending

Chart 5.6 Credit to households and non-financial enterprises in mainland Norway. Twelve-month change. Percent. January 2014 – October 2017



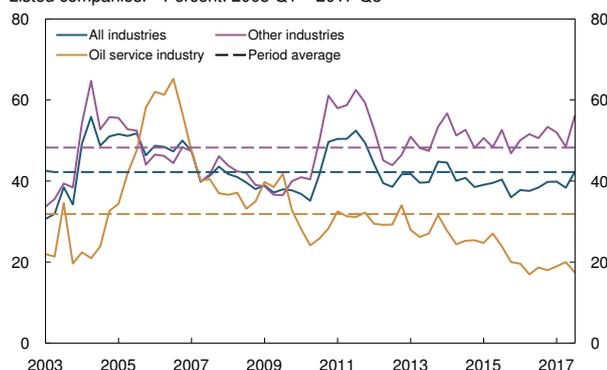
Sources: Statistics Norway and Norges Bank

Chart 5.7 Domestic credit to non-financial enterprises, by source. Twelve-month change. Percent. January 2014 – October 2017



Source: Norges Bank

Chart 5.8 Debt-servicing capacity¹⁾ and historical averages. Listed companies.²⁾ Percent. 2003 Q1 – 2017 Q3



1) Earnings before interest, tax, depreciation and amortisation (EBITDA) for the previous four quarters as a percentage of net-interest bearing debt.

2) Norwegian non-financial companies listed on Oslo Børs, excluding oil and gas extraction. Norsk Hydro is excluded to end-2007 Q3.

Sources: Bloomberg and Norges Bank

on page 54 for further discussion). With high and rising household debt, an increase in interest rates will have a greater impact on the interest burden and debt service ratio than previously.

The banks in Norges Bank's Survey of Bank Lending reported some decline in household residential mortgage demand in 2017 Q3 (Chart 5.5). Banks expect a similar decline in demand in Q4. Credit standards for households are reported to be little changed following some tightening in the first half of 2017 as a result of changes to the regulation on new residential mortgage loans. Banks expect unchanged credit standards ahead.

In the coming months, an increase in the number of completed dwellings that will require a mortgage is expected to contribute to sustaining debt growth. House price inflation has slowed considerably since the turn of the year. Low house price inflation will curb credit growth further ahead (see Section 3), which will help to reduce household sector vulnerabilities. The residential mortgage loan survey conducted by Finans-tilsynet (Financial Supervisory Authority of Norway) suggests that the share of new residential mortgages extended to borrowers with very high debt-to-income and loan-to-value ratios is lower than in 2016.

Ample access to credit for enterprises

Creditworthy enterprises appear to have ample access to credit. Growth in corporate credit from domestic sources has picked up since spring from the moderate level prevailing in recent years (Chart 5.6). At the same time, corporate foreign debt has declined.

Both banks and the bond market have contributed to the pick-up in credit growth from domestic sources (Chart 5.7). In recent months, growth in bank lending has been pulled up by increased lending to services and commercial real estate (CRE) enterprises. At the same time, the decline in lending to manufacturing and other industries, including oil and gas extraction, has slowed. Bond market risk premiums have fallen since 2016, particularly in the high-yield segment, making bond market funding relatively more attractive compared with bank funding. So far this year, bond issuance has been highest in the real estate sector, while the petroleum sector has continued to pull down

on the overall level of issuance activity. Since the turn of the year, Norwegian enterprises have raised just over NOK 75bn in bonds, which is considerably higher than in recent years. Both low- and high-yield enterprises have ample access to bond market funding.

The banks in Norges Bank's lending survey reported slightly higher credit demand and unchanged credit standards for enterprises in 2017 Q3. The banks do not expect any changes in credit demand or credit standards in Q4.

The debt-servicing capacity of listed companies increased from 2017 Q2 to Q3 (Chart 5.8) owing to both higher earnings and lower net interest-bearing debt. This mainly applies to non-oil service firms. As average earnings in the oil service industry fell from Q2 to Q3, debt-servicing capacity declined.

According to Norges Bank's bankruptcy probability model², corporate sector credit risk was slightly lower in 2017 than in 2016 (Chart 5.9). In the model, an improvement in macroeconomic indicators dampens credit risk somewhat in 2017, while weaker credit rating agency ratings contribute to slightly higher credit risk. Credit risk is expected to show little change in 2018.

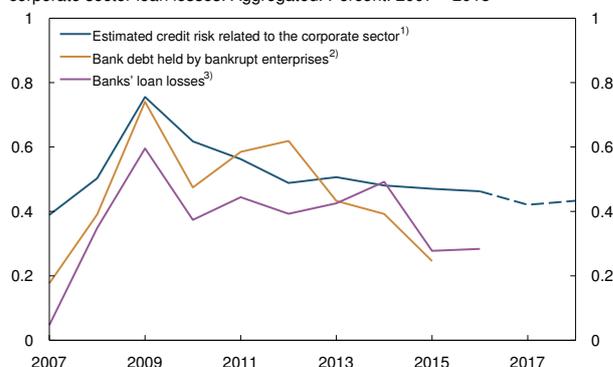
5.3 PROPERTY PRICES

Residential and commercial property prices have risen sharply over a long period, contributing to increased debt accumulation. The ratio of house prices to disposable income has declined somewhat in recent quarters owing to the decrease in house prices, but remains close to the level prevailing prior to the financial crisis (Chart 5.10). Measured relative to per capita disposable income, the level of house prices is substantially higher than the pre-crisis level.

Correction in the housing market

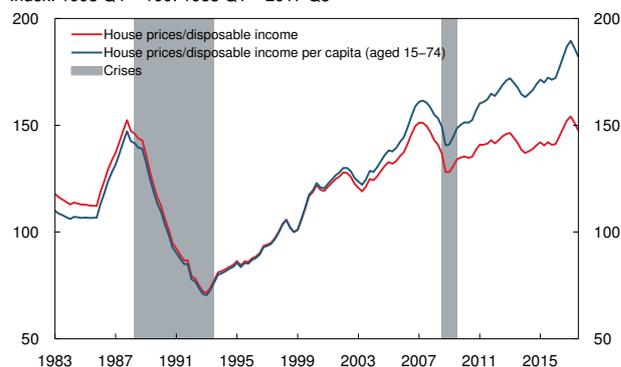
House price inflation has slowed markedly since the beginning of the year, following a sharp rise in 2016. Since the peak in spring, prices have fallen in most months (Chart 5.11). The price level for Norway as a whole is now slightly lower than at the same time in 2016. House prices have fallen sharply, particularly in

Chart 5.9 Estimated credit risk, bank debt held by bankrupt enterprises and corporate sector loan losses. Aggregated. Percent. 2007 – 2018



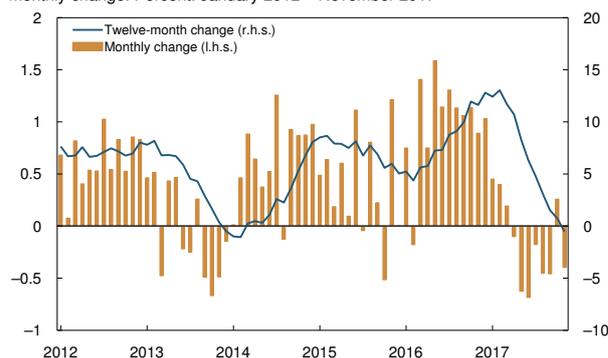
1) Estimated bank debt at risk as a share of total bank debt in the corporate sector.
2) Bank debt held by enterprises declared bankrupt one-two years after the most recently submitted accounts as a share of total bank debt.
3) Loan losses as a share of total corporate lending. Only includes industries used in the model.
Source: Norges Bank

Chart 5.10 House prices relative to disposable income.¹⁾ Index. 1998 Q4 = 100. 1983 Q1 – 2017 Q3



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

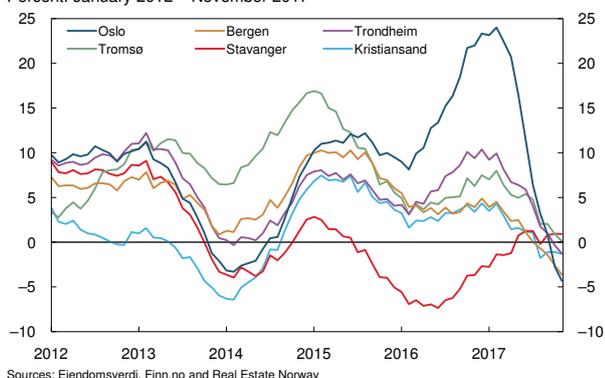
Chart 5.11 House prices. Twelve-month change and seasonally adjusted monthly change. Percent. January 2012 – November 2017



Sources: Eiendomsværdi, Finn.no and Real Estate Norway

2 The model is documented in Hjelseth, I. N. and A. Raknerud (2016) "A model of credit risk in the corporate sector based on bankruptcy prediction". Staff Memo 20/2016. Norges Bank.

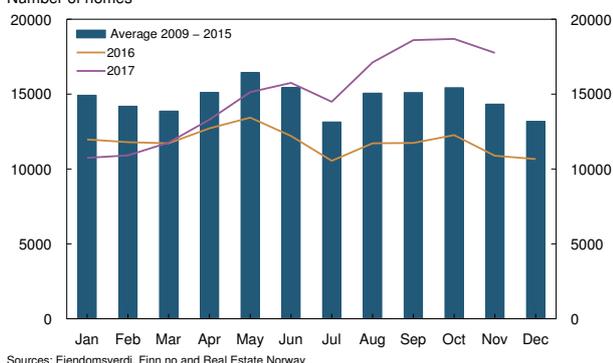
Chart 5.12 House prices. Twelve-month change. Percent. January 2012 – November 2017



Oslo, where the fall so far has been about twice that of house prices in Norway as a whole. House price inflation has also slowed in most of the other cities. The price level in Bergen and Trondheim is lower than at the same time in 2016 (Chart 5.12).

The high level of residential construction over the past few years and weaker population growth may have had a dampening effect on house price inflation. Changes to the regulation on residential mortgage loans have likely contributed to the housing market correction.

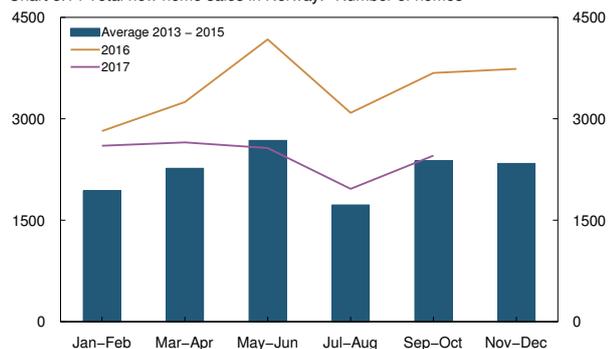
Chart 5.13 Stock of unsold existing homes for sale at month-end. Number of homes



Sales of existing homes have remained close to the average for the years 2009–2015, but the number of unsold existing homes has risen in recent months (Chart 5.13). The stock of unsold homes was low in 2016 but is now higher than the average for the years 2009–2015. The number of unsold existing homes has increased in Oslo in particular, where the stock was especially low in 2016, primarily reflecting the increased number of homes advertised for sale since the turn of the year.

Although new home sales have fallen since 2016, the level is nevertheless close to the average for the years 2013–2015 (Chart 5.14). New home sales have declined and the number of unsold new homes has risen in eastern Norway in particular. In the rest of the country, the stock of unsold homes has been more stable. For most unsold new homes, construction has not yet started, while just under a third of the stock is under construction.

Chart 5.14 Total new home sales in Norway.¹⁾ Number of homes



In the period ahead, the number of completed dwellings in eastern Norway is expected to rise further owing to a sharp pick-up in housing starts in the past couple of years. Combined with the increase in the stock of unsold existing homes and prospects for continued low population growth, this will have a dampening effect on house price inflation ahead (see Section 3). At the same time, an improvement in the labour market and rising income growth may pull up house price inflation.

The decline in house prices in 2017 has reduced the extent of a fall in the housing market, but uncertainty remains surrounding housing market developments ahead. The combination of a high level of residential

construction and low population growth entails a risk that the housing market may become weaker than expected and that house prices may fall further (see box on page 42). A substantial fall in house prices could lead to an abrupt tightening in household consumption (see *Financial Stability Report 2017*).

Somewhat higher commercial property prices

Developments in the commercial property market are important for banks as bank lending to this sector is substantial.

Selling prices for prime real estate in Oslo have increased in the first half of 2017, after remaining fairly stable through 2016 (Chart 5.15).³ Commercial property prices are dependent on factors such as net rental income and yields. Lower yields will push up selling prices. According to market participants, yields on prime office premises have been stable over the past six months, while yields on standard office premises in Oslo have fallen. Yields on short-term office space have also declined, which is partly explained by expectations of some rise in office rents (Chart 5.16). According to Entra's *Consensus Report*, office vacancy rates in Oslo are expected to decline further in the coming years, partly owing to somewhat higher demand.

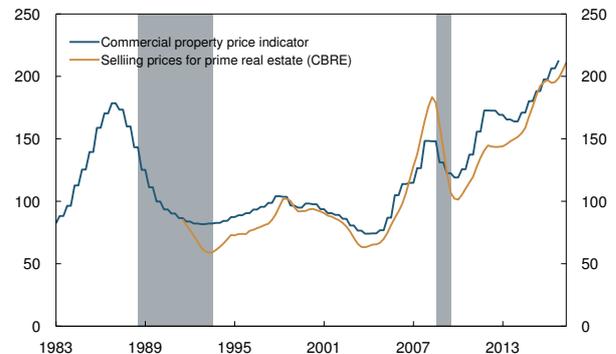
In Stavanger, Bergen and Trondheim, where office vacancy rates are higher than in Oslo, rents have shown little change or declined somewhat over the past half-year. In parts of Stavanger closely linked to the oil industry, rents continued to decline in line with the trend for the past three years.

5.4 BANKS

Profitability for large Norwegian banks has been solid in recent years and equity has increased. Through spring and summer 2017, lower loan losses, stronger lending growth and improved margins have contributed to higher return on equity for the largest Norwegian banks.

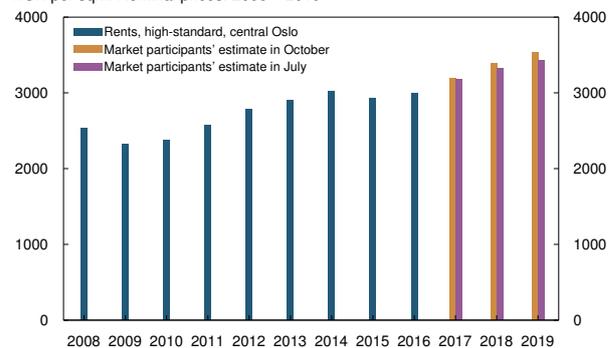
Banks' loan losses as a whole fell markedly in the first half of 2017 (Chart 5.17). Losses edged up again in Q3, but remain lower than at the same time in 2016. Completed restructurings in the oil-related sector have contributed to the decrease in losses. In addition,

Chart 5.15 Commercial property price indicator¹⁾ and selling prices for prime real estate²⁾. Deflated by the GDP deflator. Index. 1998 = 100. 1983 Q1 – 2017 Q2



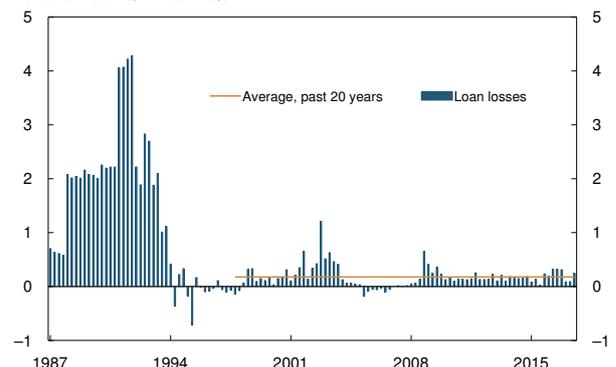
1) We have not received figures for commercial property prices in 2017 due to a reorganisation of the statistics. The most recent figures for the commercial property price indicator are from 2016 Q4.
2) Calculated based on average selling prices for the past four quarters. Annual figures 1991–1994 only. Quarterly figures are constructed using linear interpolation.
Sources: CBRE, Dagens Næringsliv, OPAK, Statistics Norway and Norges Bank

Chart 5.16 Rents for high-standard office space in central Oslo.¹⁾ NOK per sqm. Nominal prices. 2008 – 2019



1) Calculated as an average of estimates from market specialists.
Source: Entra Consensus Report

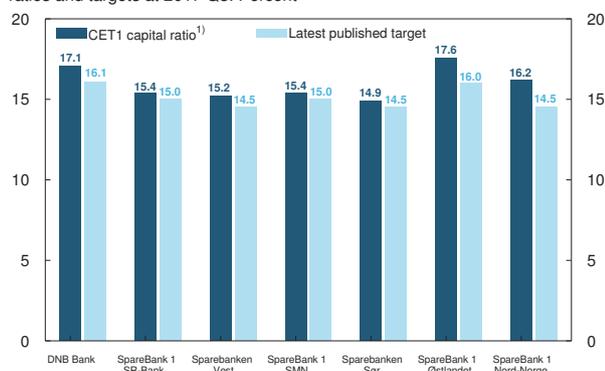
Chart 5.17 Banks' loan losses as a share of gross lending to customers. Quarterly annualised. All banks and mortgage companies in Norway. Percent. 1987 Q1 – 2017 Q3



Source: Norges Bank

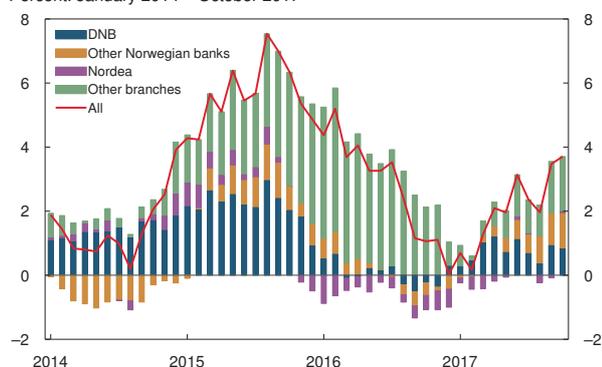
3 Based on data from CBRE, one of the world's largest CRE consultancies.

Chart 5.18 Large Norwegian banks' Common Equity Tier 1 (CET1) capital ratios and targets at 2017 Q3. Percent



1) Includes quarterly result for 2017 Q3.
Sources: Banks' quarterly reports and Norges Bank

Chart 5.19 Domestic credit to non-financial enterprises from banks and mortgage companies. Stock. Twelve-month change. Percent. January 2014 – October 2017



Source: Norges Bank

spillovers to other industries from the oil industry decline have been less pronounced than banks had expected. A number of large Norwegian banks expect loan losses to be lower in 2017 than in 2016.

At the end of 2017 Q3, all the largest banks met the total Common Equity Tier 1 (CET1) capital requirement (Pillar 1 and Pillar 2) that applies from end-2017. Most banks have also met their own CET1 targets, which are higher than the total requirement (Chart 5.18). Since summer 2017, banks have also been required to meet the leverage ratio requirement. DNB, which is regarded as a systemically important bank, is subject to a 6% requirement, while the requirement for other banks is 5%. All Norwegian banks satisfy the leverage ratio requirement.

In recent years, banks have built up considerable buffer capital, comprising the capital conservation buffer, systemic risk buffer, countercyclical capital buffer and the buffer for systemically important banks. Higher equity strengthens banks' future loss-absorbing capacity. A stress test in *Financial Stability Report 2017* shows that the largest banks' capital buffers are sufficient to absorb losses in the event of a pronounced downturn in the Norwegian economy.

Twelve-month growth in bank lending to non-financial enterprises has shown a rising trend so far in 2017 (Chart 5.19). Growth in lending by Norwegian banks to the corporate market has risen. At the same time, growth in lending by branches of foreign banks has declined from high levels. In 2017 Q2 and Q3, Norwegian banks accounted for approximately half of the growth in bank lending to non-financial enterprises. Since Norwegian banks now meet their capital targets, there is room for lending growth ahead.

Banks have ample access to wholesale funding. Overall, Norwegian banks and mortgage companies have raised more funding so far in 2017 than in the same period in 2016. Risk premiums on senior bonds have edged up since the *September Report*, while premiums on covered bonds are approximately unchanged. Banks' wholesale funding ratio has long been stable, but has decreased somewhat over the past few years (Chart 5.25).

COUNTERCYCLICAL CAPITAL BUFFERS IN OTHER COUNTRIES

The objective of the countercyclical capital buffer is to mitigate systemic risk, and the buffer 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 comply with 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 relevant 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, and Norges Bank is to provide advice on these rates.

The total countercyclical buffer requirement 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	2%	8.6%
US	0%	4.2%
Denmark	0%	3.0%
UK	0%	2.5%
Lithuania	0%	2.1%
Finland	0%	1.9%
Poland	0%	1.7%
Latvia	0%	1.2%
Singapore	0%	1.2%
Canada	-	1.1%

¹ Share of risk weighted assets (cf Article 3 of ESRB 2015/3). Average for the period 2015 Q4 to 2017 Q3. Includes banks that have submitted Templates C09.01 and C09.01 as part of their CRD IV reporting, with the exception of Nordea, which is no longer a Norwegian bank as from 1 January 2017.

Sources: Bank for International Settlements (BIS), the 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*. ESRB, July 18).

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 jurisdictions is available on the BIS website: *Countercyclical capital buffer*.

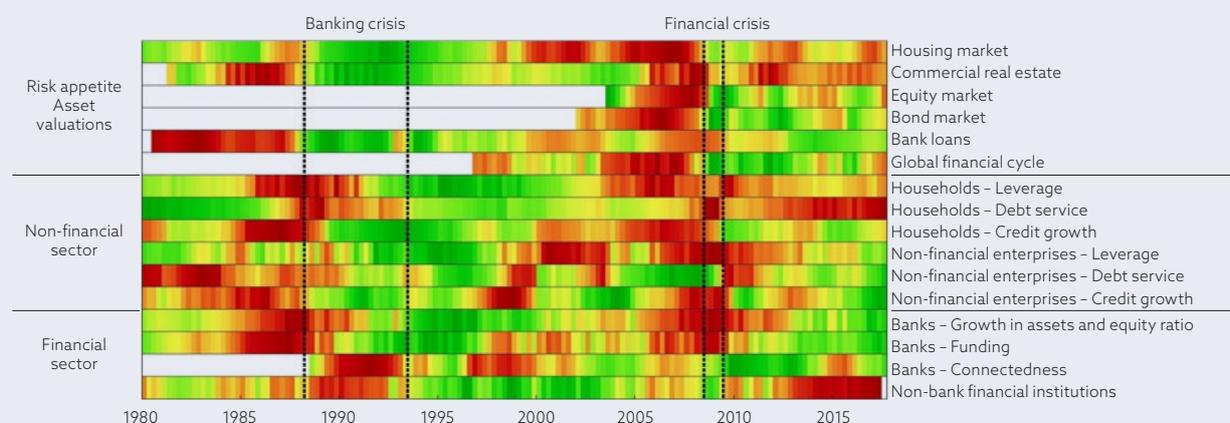
A HEATMAP FOR MONITORING SYSTEMIC RISK

Norges Bank has developed a ribbon heatmap as a tool for assessing systemic risk in the Norwegian financial system. The heatmap tracks developments in a broad range of indicators for three main areas: risk appetite and asset valuations, non-financial sector vulnerabilities (household and corporate) and financial sector vulnerabilities.¹

Developments in each individual indicator are mapped into a common colour coding scheme, where green (red) reflects low (high) levels of vulnerability. The heatmap thus provides a visual summary of current vulnerabilities in the Norwegian financial system compared with historical episodes. The composite indicators are constructed by averaging individual indicators. As shown in Chart 5.20, many of the indicators were high prior to the banking crisis in the early 1990s and before the financial crisis in 2008.²

- 1 For a detailed description of the heatmap and the individual indicators, see Arbatli, E.C. and R.M. Johansen (2017) "A Heatmap for Monitoring Systemic Risk in Norway". Norges Bank *Staff Memo* 10/2017.
- 2 Although the financial crisis was not triggered by domestic conditions, the heatmap shows that the financial system was vulnerable before the crisis.

Chart 5.20: Composite indicators in the heatmap 1980 Q1–2017 Q3



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

The heatmap can provide signals about where in the financial system vulnerabilities may be building up. For risk appetite and asset valuations, the heatmap provides an overview of developments in the housing, commercial real estate, equity and bond markets and the global financial cycle. For the household and corporate sectors, the heatmap tracks vulnerabilities related to debt-servicing capacity, debt ratios and credit growth. For the banking system, the heatmap captures vulnerabilities related to growth in assets and low equity ratios, exposure to liquidity or funding risks, and increased connectivity. A separate component is also included to reflect developments in the non-bank financial system.³

By providing a visual summary of developments in vulnerabilities, the heatmap offers information about the correlation between the indicators. Empirical analyses of the correlation show that higher risk appetite and elevated asset valuations have historically transmitted risk in both the non-financial and the financial sector.⁴ The analyses also show that the risks to which the household and corporate sectors are exposed are closely related to financial sector vulnerabilities.

The heatmap complements the four key indicators of financial imbalances on which the assessment of the countercyclical capital buffer is based. The four key indicators have historically proved to provide accurate signalling of crises ahead of time and cover important segments of the Norwegian financial system. Some of the key indicators are therefore included in the heatmap. Moreover, empirical analyses show that there is a close correlation between the key indicators and other indicators in the heatmap. For example, the house price gap and the credit gap are highly correlated with heatmap indicators capturing credit growth in the non-financial sector, growth in bank assets and banks' exposure to funding risk. The house price gap is also strongly correlated with indicators capturing risk appetite and asset valuations.

Historical relationships may change owing to shifts in financial regulation and structural conditions. Vulnerabilities may also emerge in parts of the financial system that are not covered as extensively by the four key indicators. In the interest of financial system resilience to such conditions, monitoring a broader set of indicators will be useful.

³ Includes money market funds, other mutual funds, finance companies, state lending institutions, insurance companies and pension funds.

⁴ Cf footnote 1. This is consistent with the findings in Aikman, D., M. Kiley, S.J. Lee, M. G. Palumbo and M. Warusawitharana (2017) "Mapping heat in the U.S. financial system". *Journal of Banking & Finance*, 81, pages 36–64.

MEASURING FINANCIAL IMBALANCES AND BUFFER GUIDE¹

Norges Bank's assessment of financial imbalances is based on the credit-to-GDP ratio, developments in property prices and banks' wholesale funding ratio.

Total household and corporate debt has long been rising faster than mainland GDP (Chart 5.2). Over the past year, total credit has continued to grow faster than GDP, but the gap between the total credit-to-GDP ratio and an estimated trend has narrowed marginally since 2016 (Chart 5.21).² This is because growth in corporate foreign debt has been below the estimated trend over the past year (Chart 5.3). Corporate debt from domestic sources and household debt as a share of GDP has risen faster than trend over the past year.

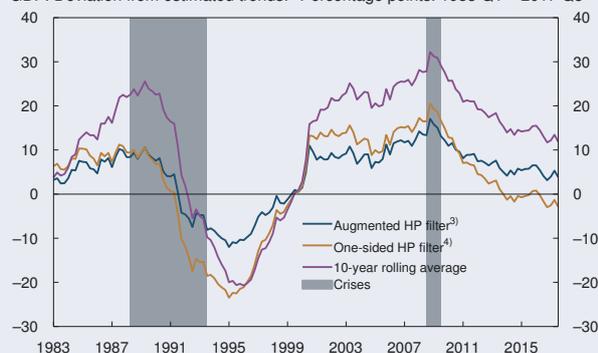
The Basel Committee on Banking Supervision has proposed a simple rule for calculating a reference rate for the countercyclical capital buffer (a buffer guide) based on the credit-to-GDP ratio.³ The buffer guide is 0.5% in 2017 Q3 when the trend is estimated using a one-sided HP filter augmented with a simple projection (Chart 5.22). When the trend is estimated using a one-sided HP filter, the buffer guide remains at 0%.

House prices relative to disposable income fell between 2017 Q2 and Q3 after rising substantially through 2016 to the beginning of 2017 (Chart 5.10). The deviation from estimated trends has decreased further between Q2 and Q3 and is now negative and lower than at the same time in 2016 (Chart 5.23). Real commercial property prices have risen considerably in recent years and deviations from estimated trends have increased (Chart 5.15 and 5.24). The latest observation for the commercial property price indicator is for 2016 Q4. Banks' wholesale funding ratio has long been stable, but has edged down in the past couple of years. The ratio was broadly unchanged in 2017 Q3, and the deviation from estimated trends declined slightly (Charts 5.25 and 5.26).

Norges Bank has developed early warning models for financial crises based on credit and property price indicators.⁴ The blue area in Chart 5.27 shows estimated crisis probabilities based on a large number of combinations of explanatory variables and trend estimation methods. The chart shows that the estimated crisis probabilities have declined since the financial crisis, and that the spread between the predictions from the different models has narrowed since earlier in 2017.

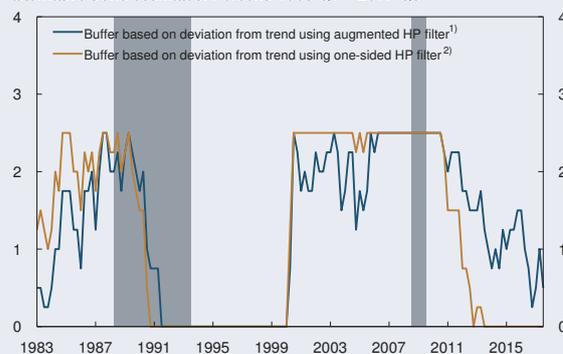
1 See also "Criteria for an appropriate countercyclical capital buffer", *Norges Bank Papers* 1/2013.
 2 There is considerable uncertainty related to trend estimation. Norges Bank has so far applied three different methods of trend estimation (see page 30 in Norges Bank (2013), *Monetary Policy Report* 2/13).
 3 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 5.21 Credit gap. Total credit mainland Norway¹⁾ as a share of mainland GDP. Deviation from estimated trends²⁾ Percentage points. 1983 Q1 – 2017 Q3



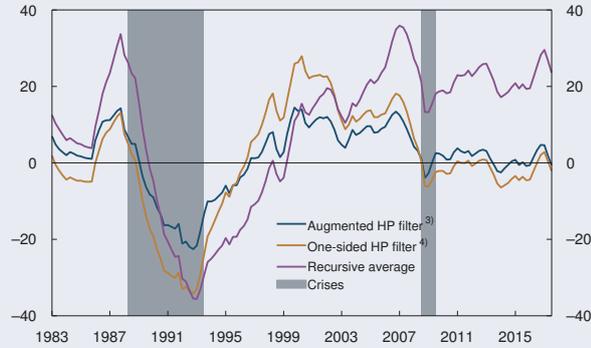
1) The sum of C2 households and C3 non-financial enterprises for mainland Norway (all non-financial enterprises pre-1995). C3 non-financial enterprises comprises C2 non-financial enterprises and foreign debt for mainland Norway.
 2) The trends are estimated based on data from 1975 Q4 onwards.
 3) One-sided 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 5.22 Reference rates for the countercyclical capital buffer under alternative trend estimates. Percent. 1983 Q1 – 2017 Q3



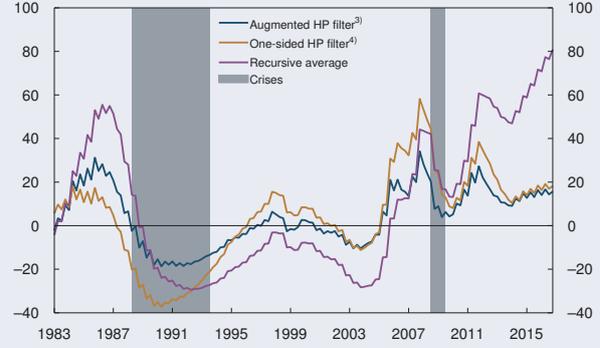
1) One-sided Hodrick-Prescott filter estimated on data augmented with a simple projection. Lambda = 400 000.
 2) One-sided Hodrick-Prescott filter. Lambda = 400 000.
 Sources: IMF, Statistics Norway and Norges Bank

Chart 5.23 House price gap. House prices relative to disposable income¹⁾ as deviation from estimated trends.²⁾ Percent. 1983 Q1 – 2017 Q3



1) Disposable income adjusted for estimated reinvested dividend income for 2003 – 2005 and reduction of equity capital for 2006 Q1 – 2012 Q3. Growth in disposable income excluding dividend income is used for 2015 Q1 – 2017 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 5.24 Commercial property price gap. Real commercial property prices¹⁾ as deviation from estimated trends.²⁾ Percent. 1983 Q1 – 2016 Q4



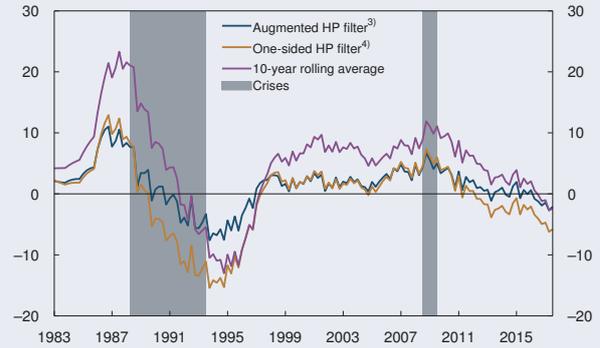
1) Estimated selling prices for high-standard office space in central Oslo deflated by the GDP deflator for mainland Norway.
 2) The trends are estimated based on data from 1981 Q2 onwards.
 3) One-sided Hodrick-Prescott filter estimated on data augmented with a simple projection. Lambda = 400 000.
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

Chart 5.25 Banks¹⁾ wholesale funding ratio. Percent. 1983 Q1 – 2017 Q3



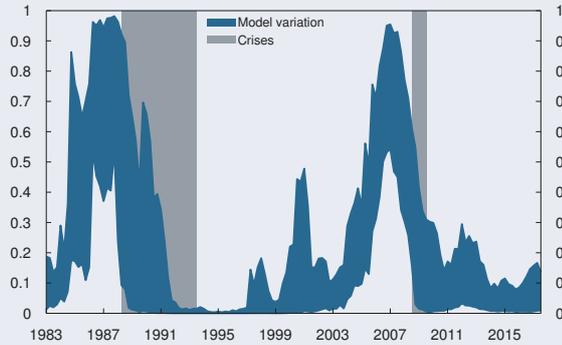
1) All banks and covered bond mortgage companies in Norway except branches and subsidiaries of foreign banks.
 2) Based on data from 1975 Q4 onwards.
 Source: Norges Bank

Chart 5.26 Wholesale funding gap. Banks¹⁾ wholesale funding ratio as deviation from estimated trends.²⁾ Percentage points. 1983 Q1 – 2017 Q3



1) All banks and covered bond mortgage companies in Norway except 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 5.27 Estimated crisis probabilities based on various model specifications. 1983 Q1 – 2017 Q3



Source: Norges Bank

CRITERIA FOR AN APPROPRIATE COUNTERCYCLICAL CAPITAL BUFFER¹

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 56). 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 the recommendations from the ESRB³ and Norges Bank's advice on the countercyclical capital buffer. The advice will be based on the Bank's professional judgement, which will also take other factors into account. Other requirements applying to banks will be part of the assessment, particularly when new requirements are introduced.

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

The buffer rate can be reduced in the event of an economic downturn and large bank losses. If the buffer functions as intended, banks will tighten lending to a lesser extent in a downturn than would otherwise 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 loan loss prospects for the banking sector, will then be more relevant.

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

² As experience and insight 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". ESRB, 18 July.

Annex

Monetary policy meetings in Norges Bank

Tables and detailed projections

Monetary policy meetings in Norges Bank

Date ¹	Key policy rate ²	Change
14 March 2018		
24 January 2018		
13 December 2017	0.50	0
25 October 2017	0.50	0
20 September 2017	0.50	0
21 June 2017	0.50	0
3 May 2017	0.50	0
14 March 2017 ³	0.50	0
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

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* was published on 16 March 2017, two days after the monetary policy meeting.

TABLE 1 Projections for GDP growth in other countries

Change from projections in <i>Monetary Policy Report 3/17</i> in brackets	Share of world GDP ¹			Change from previous year. Percent				
	PPP	Market exchange rates	Trading partners ⁴	2016	2017	2018	2019	2020
US	15	23	9	1.5 (0)	2.2 (0.1)	2.4 (0.2)	2.2 (0.1)	2 (0)
Euro area	12	17	32	1.8 (0)	2.4 (0.3)	2 (0.3)	1.7 (0.1)	1.6 (0.1)
UK	2	4	10	1.8 (0)	1.6 (0)	1.5 (0)	1.6 (0)	1.6 (0)
Sweden	0.4	0.7	11	3 (-0.1)	2.7 (-0.5)	2.7 (0.2)	2.1 (0)	2.1 (0)
Other advanced economies ²	7	10	20	2 (0.1)	2.4 (0.2)	2.1 (0)	2.1 (0)	2 (0)
China	18	14	6	6.7 (0)	6.8 (0.2)	6.2 (0.2)	5.8 (0.1)	5.8 (0.1)
Other emerging economies ³	19	12	12	2 (0)	3.6 (0)	3.8 (-0.1)	4 (0)	4 (0)
Trading partners ⁴	73	78	100	2.3 (0)	2.8 (0.1)	2.5 (0.1)	2.4 (0.1)	2.3 (0.1)
World (PPP) ⁵	100	100		3.2 (0)	3.6 (0)	3.7 (0.1)	3.7 (0.1)	3.7 (0.1)
World (market exchange rates) ⁵	100	100		2.4 (0)	3.1 (0.1)	3.1 (0.1)	3 (0.1)	2.9 (0)

1 Country's share of global output measured in a common currency. Average 2013–2015.

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

3 Emerging economies in the trading partner aggregate excluding China: Brazil, India, Indonesia, Russia, Turkey, Poland and Thailand. GDP weights (market exchange rates) are used to reflect the countries' contribution to global growth.

4 Export weights, 25 main trading partners.

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

Sources: IMF, Thomson Reuters, Statistics Norway and Norges Bank

TABLE 2 Projections for consumer prices in other countries

Change from projections in <i>Monetary Policy Report 3/17</i> in brackets	Trading partners ⁴	Trading partners in the interest rate aggregate ⁵	Change from previous year. Percent				
			2016	2017	2018	2019	2020
US	7	20	1.3 (0)	2.2 (0.2)	2.2 (0)	2.3 (0)	2.3 (0)
Euro area	34	54	0.2 (0)	1.5 (-0.1)	1.4 (0.1)	1.5 (0)	1.6 (0)
UK	8	5	0.7 (0)	2.7 (0.1)	2.6 (0.1)	2.3 (0)	2.1 (-0.1)
Sweden ¹	15	12	1.4 (0.4)	1.9 (0.1)	1.9 (-0.3)	2.1 (-0.8)	2 (-0.9)
Other advanced economies ²	15		0.2 (-0.1)	1.1 (0)	1.3 (0)	1.7 (0)	1.8 (0)
China	12		2 (0)	1.6 (-0.3)	2.2 (0)	2.4 (-0.3)	2.7 (0)
Other emerging economies ³	10		6 (0)	3.9 (-0.2)	4.3 (-0.2)	4.4 (-0.4)	4.4 (-0.3)
Trading partners ⁴	100		1.2 (0.1)	1.9 (0)	2 (0)	2.1 (-0.1)	2.1 (-0.2)
Trading partners in the interest rate aggregate ⁵			0.6 (0)	1.8 (0)	1.7 (0)	1.8 (-0.1)	1.9 (-0.1)

1 From this Report, Swedish inflation refers to the consumer price index with a fixed rate (CPIF). This reduces our projections further ahead.

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

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

4 Import weights, 25 main trading partners.

5 Norges Bank's aggregate for trading partner interest rates includes the euro area, Sweden, UK, US, Canada, Poland and Japan. Import weights. For more information, see "Calculation of the aggregate for trading partner interest rates", *Norges Bank Papers 2/2015*.

Sources: IMF, Thomson Reuters, Statistics Norway and Norges Bank

Table 3a GDP for mainland Norway. Quarterly change. Seasonally adjusted. Percent

	Q2	2017 Q3	Q4	2018 Q1
Actual	0.6	0.6		
Projections in MPR 3/17		0.6	0.6	
Projections in MPR 4/17			0.6	0.6

Sources: Statistics Norway and Norges Bank

Table 3b Registered unemployment (rate). Percent of labour force. Seasonally adjusted

	Sep	2017			Jan	2018	
		Oct	Nov	Dec	Feb	Mar	
Actual	2.6	2.5	2.5				
Projections in MPR 3/17	2.6	2.6	2.6	2.6			
Projections in MPR 4/17				2.5	2.4	2.4	2.4

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

Table 3c LFS unemployment (rate). Percent of labour force. Seasonally adjusted

	Jul	Aug	2017		Nov	Dec	2018 Jan
			Sep	Oct			
Actual	4.1	4.1	4.0				
Projections in MPR 3/17	4.2	4.2	4.2	4.2			
Projections in MPR 4/17					3.9	3.8	3.8

Sources: Statistics Norway and Norges Bank

Table 3d Consumer prices. Twelve-month change. Percent

	Sep	2017			Jan	2018	
		Oct	Nov	Dec	Feb	Mar	
Consumer price index (CPI)							
Actual	1.6	1.2	1.1				
Projections in MPR 3/17	2.1	1.5	1.4	1.5			
Projections in MPR 4/17				1.7	1.7	2.1	1.9
CPI-ATE¹							
Actual	1.0	1.1	1.0				
Projections in MPR 3/17	1.2	1.1	1.3	1.3			
Projections in MPR 4/17				1.3	1.4	1.7	1.6
IMPORTED GOODS IN THE CPI-ATE¹							
Actual	0.2	-0.2	0.5				
Projections in MPR 3/17	0.1	-0.1	0.3	0.1			
Projections in MPR 4/17				0.3	0.7	1.1	1.0
DOMESTICALLY PRODUCED GOODS AND SERVICES IN THE CPI-ATE^{1,2}							
Actual	1.4	1.6	1.2				
Projections in MPR 3/17	1.7	1.7	1.7	1.9			
Projections in MPR 4/17				1.8	1.7	1.9	1.9

1 CPI adjusted for tax changes and excluding energy products.

2 The aggregate "domestically produced goods and services in the CPI-ATE" is calculated by Norges Bank.

Sources: Statistics Norway and Norges Bank

TABLE 4 Projections for main economic aggregates

Change from projections in Monetary Policy Report 3/17 in brackets	In billions of NOK	Percentage change from previous year (unless otherwise stated) Projections				
		2016	2017	2018	2019	2020
Prices and wages						
Consumer price index (CPI)		3.6 (0)	1.9 (0)	1.9 (0.6)	1.8 (0.3)	2.1 (0.4)
CPI-ATE ¹		3.0 (0)	1.4 (0)	1.7 (0.2)	1.9 (0.4)	2.1 (0.4)
Annual wages ²		1.7 (0)	2.4 (0)	2.9 (0.1)	3.6 (0.3)	4.0 (0.3)
Real economy						
Gross domestic product (GDP)	3117	1.1 (0)	1.9 (0.4)	0.9 (-0.2)	1.5 (0.1)	2.1 (-0.2)
GDP, mainland Norway	2717	1.0 (0)	1.9 (-0.1)	2.3 (0.3)	2.2 (0.2)	1.9 (-0.2)
Output gap, mainland Norway (level) ³		-1.5 (0.1)	-0.9 (0.2)	-0.4 (0.4)	0.2 (0.5)	0.5 (0.2)
Employment, persons, QNA		0.3 (0.1)	1.0 (0.1)	1.0 (0)	1.0 (0.1)	0.8 (-0.1)
Labour force, LFS ⁴		0.3 (0)	-0.5 (-0.2)	0.9 (-0.2)	1.3 (0.3)	0.8 (0)
LFS unemployment (rate, level)		4.7 (0)	4.2 (-0.1)	3.7 (-0.2)	3.4 (-0.3)	3.3 (-0.2)
Registered unemployment (rate, level)		3.0 (0)	2.7 (0)	2.4 (-0.1)	2.4 (-0.1)	2.3 (-0.1)
Demand						
Mainland demand ⁵	2764	2.6 (0)	3.0 (0)	2.2 (-0.3)	1.7 (-0.2)	1.6 (-0.1)
- Household consumption ⁶	1419	1.5 (0)	2.4 (-0.3)	2.3 (-0.4)	2.2 (0)	2.2 (0.2)
- Business investment	238	4.1 (0)	6.0 (2.1)	6.2 (-0.7)	3.0 (-2.4)	0.9 (-1.5)
- Housing investment	185	9.0 (0)	9.7 (-0.1)	0.0 (0.2)	-3.0 (-1.6)	-0.5 (-1.8)
- Public demand ⁷	922	2.8 (0)	1.9 (-0.1)	1.5 (-0.1)	1.5 (0.3)	1.4 (0.3)
Petroleum investment ⁸	165	-16.9 (0)	-2.0 (-1.0)	6.0 (4.7)	6.0 (-1.0)	3.0 (-1.1)
Mainland exports ⁹	590	-7.3 (0)	0.8 (0.6)	4.7 (1.0)	4.7 (0.9)	3.4 (0)
Imports	1037	2.3 (1.5)	1.7 (-2.6)	2.9 (2.5)	2.3 (0.2)	2.3 (-0.1)
House prices and debt						
House prices		8.3 (0)	5.7 (-0.3)	-1.6 (-1.2)	2.9 (-0.1)	4.2 (0.5)
Credit to households (C2) ¹⁰		6.3 (0)	6.3 (-0.4)	5.9 (-0.3)	5.8 (-0.3)	5.7 (-0.1)
Interest rate and exchange rate (level)						
Key policy rate ¹¹		0.6 (0)	0.5 (0)	0.5 (0)	0.9 (0.2)	1.4 (0.2)
Import-weighted exchange rate (I-44) ¹²		105.3 (0)	104.5 (0.7)	104.4 (2.0)	102.1 (1.6)	101.1 (1.0)
Money market rates, trading partners ¹³		0.1 (0)	0.1 (0)	0.3 (0)	0.5 (0)	0.8 (0)
Oil price						
Oil price, Brent Blend. USD per barrel ¹⁴		44 (0)	54 (2)	61 (6)	59 (4)	57 (2)

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. 2016 data are from the quarterly national accounts.

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

4 Labour Force Survey.

5 Household consumption and private mainland gross fixed investment and public demand.

6 Includes consumption for non-profit organisations.

7 General government gross fixed investment and consumption.

8 Extraction and pipeline transport.

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

10 The method for calculating credit growth has been changed since MPR 3/17. The changes from the projections in MPR 3/17 are therefore not consistent with Table 4 in MPR 3/17. Credit growth is now calculated as the four-quarter change at year-end.

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

12 The weights are estimated on the basis of imports from 44 countries, which comprise 97% of total imports. A higher value denotes a weaker krone exchange rate.

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

14 Spot price 2016. The spot price for 2017 is calculated as the average spot price so far in 2017 and futures prices for the remainder of the year. Futures prices for 2018-2020. Futures prices are calculated as the average for the period 4-8 December 2017.

Sources: Eiendomsverdi, Finn.no, Norwegian Labour and Welfare Administration (NAV), Norwegian Technical Calculation Committee for Wage Settlements (TBU), Real Estate Norway, Statistics Norway, Thomson Reuters and Norges Bank

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