



NORGES BANK

2|18

JUNE

**MONETARY
POLICY REPORT**
WITH FINANCIAL STABILITY ASSESSMENT

Norges Bank

Oslo 2018

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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 its meeting on 13 June 2018, the Executive Board discussed the economic outlook, the monetary policy stance and the need for a countercyclical capital buffer for banks. 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 20 June 2018. 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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MONETARY POLICY IN NORWAY

OBJECTIVE

Monetary policy shall maintain monetary stability by keeping inflation low and stable. The operational target of monetary policy shall be annual consumer price inflation of close to 2% over time. Inflation targeting shall be forward-looking and flexible so that it can contribute to high and stable output and employment and to counteracting the build-up of financial imbalances.

IMPLEMENTATION

Norges Bank will set the interest rate with the aim of stabilising inflation around the target in the medium term. The horizon will depend on the disturbances to which the economy is exposed and the effects on the outlook for inflation and the real economy. In its conduct of monetary policy, Norges Bank will take into account indicators of underlying consumer price inflation.

DECISION PROCESS

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

The *Monetary Policy Report* is published four times a year in connection with four of the monetary policy meetings. At a meeting one to two weeks before the publication of the *Report*, the background for the monetary policy 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 places emphasis on transparency in its monetary policy communication. The Bank reports on the conduct of monetary policy in its *Annual Report*. The assessments on which interest rate setting is based will be published regularly in the *Monetary Policy Report* and elsewhere.

COUNTERCYCLICAL CAPITAL BUFFER

The objective of the countercyclical capital buffer is to bolster banks' resilience and to lessen the amplifying effects of bank lending during downturns.

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.

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 most likely be raised in September 2018.

The economic upturn among Norway's trading partners is continuing, but recent developments indicate slightly weaker global growth prospects than envisaged earlier. Consumer price inflation among trading partners has been broadly as expected. Forward rates now indicate a more gradual rise in global interest rates than in March. Political uncertainty has contributed to volatile interest rate expectations.

Over the past year, growth in the Norwegian economy has been solid, and capacity utilisation has risen. So far in 2018, growth in the mainland economy has been broadly as projected, while labour market developments have been somewhat stronger than expected. Employment has risen and unemployment has fallen. Oil prices have increased, and both spot and futures prices are higher than assumed in the March 2018 *Monetary Policy Report*. There are prospects that growth in the Norwegian economy will be higher in 2018 than in 2017, and the projections for growth in the near term have been revised up.

Inflation has risen slightly since autumn 2017. In May, the 12-month rise in the consumer price index (CPI) was 2.3%. The 12-month rise in the CPI adjusted for tax changes and excluding energy products (CPI-ATE) has been lower than expected and was 1.2% in May. Wage growth picked up in 2017. This spring's wage settlements suggest that it will continue to rise in 2018, in line with the projection in the *March Report*. The krone exchange rate has recently been close to the March projection.

Persistently high debt growth has added to the vulnerability of the household sector. In recent months, household debt growth has moderated somewhat, but remains higher than household income growth. After falling through 2017, house prices have risen again. An increase in the interest rate level may contribute to restraining house price inflation and debt growth.

In its assessment of monetary policy, the Executive Board gives weight to the continued upturn in the Norwegian economy. Capacity utilisation appears to be close to a normal level and is likely rising faster than expected earlier. Underlying inflation is lower than the inflation target, but rising capacity utilisation implies an increase in price and wage inflation further out.

In its discussion of the risks to the outlook, the Executive Board noted in particular that global growth may prove weaker than assumed, in the light of rising protectionism among other things. Price and wage inflation in Norway may remain moderate despite the upswing in economic activity. On the other hand, the upturn may be stronger than projected in this *Report*, on the back of strong employment growth, higher oil prices and rising house prices.

Monetary policy is expansionary. The outlook for the Norwegian economy suggests that it will soon be appropriate to raise the key policy rate. Uncertainty surrounding the effects of a higher interest rate suggests a cautious approach. As in March, the overall outlook and the balance of risks imply a gradual rate rise in the years ahead.

The Executive Board 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 most likely be raised in September 2018. The decision was unanimous.

Øystein Olsen
20 June 2018

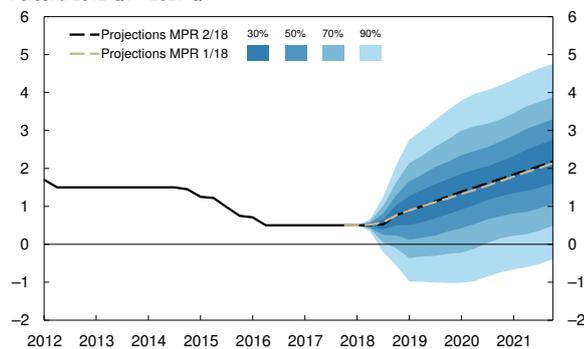
1 Overall picture

Growth in the Norwegian economy has been solid over the past year. So far in 2018, growth in the mainland economy has been broadly as projected in the March 2018 *Monetary Policy Report*, while employment has risen more than expected. Capacity utilisation is continuing to rise and is now close to a normal level. Inflation has picked up since autumn 2017, but underlying inflation has been lower than projected.

According to the forecast in this *Report*, the key policy rate will be raised in 2018 Q3, followed by a gradual increase to somewhat above 2% at the end of 2021. The interest rate path is little changed from the *March Report*.

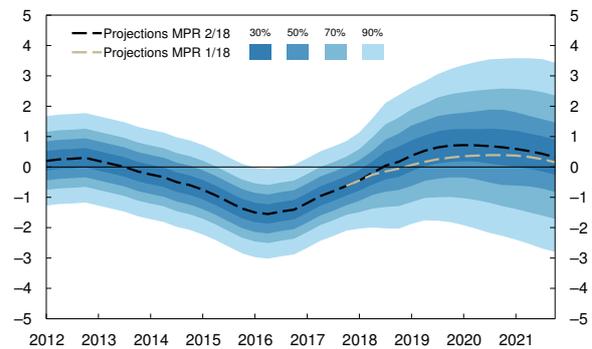
Capacity utilisation is expected to rise through 2018 and 2019, before falling back towards a normal level. The projections for capacity utilisation are somewhat higher than in the *March Report*. Underlying inflation is projected to rise ahead, albeit at a slightly slower pace than assumed in March. At the end of 2021, inflation is projected to be around 2%.

Chart 1.1a Key policy rate with fan chart¹⁾.
Percent. 2012 Q1 – 2021 Q4²⁾



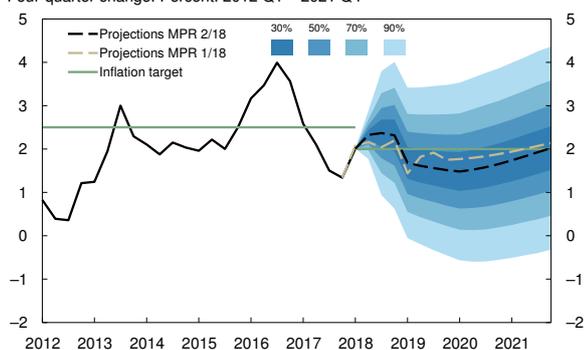
1) The fan chart is based on historical experience and stochastic simulations in Norges Bank's main macroeconomic model, NEMO. It does not take into account that a lower bound for the interest rate exists.
2) Projections for 2018 Q2 – 2021 Q4.
Source: Norges Bank

Chart 1.1b Estimated output gap¹⁾ with fan chart²⁾.
Percent. 2012 Q1 – 2021 Q4



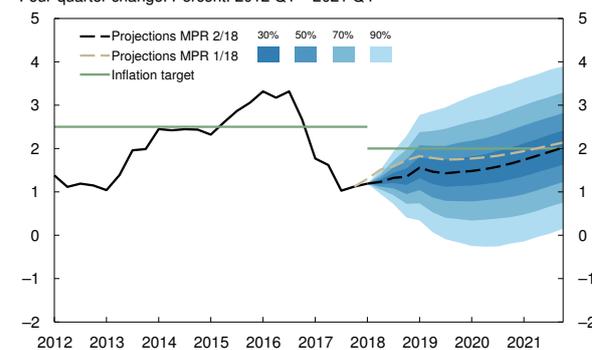
1) The output gap measures the percentage deviation between mainland GDP and estimated potential mainland GDP.
2) The fan chart is based on historical experience and stochastic simulations in Norges Bank's main macroeconomic model, NEMO.
Source: Norges Bank

Chart 1.1c Consumer price index (CPI) with fan chart¹⁾.
Four-quarter change. Percent. 2012 Q1 – 2021 Q4²⁾



1) The fan chart is based on historical experience and stochastic simulations in Norges Bank's main macroeconomic model, NEMO.
2) Projections for 2018 Q2 – 2021 Q4.
Sources: Statistics Norway and Norges Bank

Chart 1.1d CPI-ATE¹⁾ with fan chart²⁾.
Four-quarter change. Percent. 2012 Q1 – 2021 Q4³⁾



1) CPI adjusted for tax changes and excluding energy products.
2) The fan chart is based on historical experience and stochastic simulations in Norges Bank's main macroeconomic model, NEMO.
3) Projections for 2018 Q2 – 2021 Q4.
Sources: Statistics Norway and Norges Bank

Chart 1.2 Oil price.¹⁾ USD/barrel. January 2012 – December 2021²⁾



1) Brent Blend.
2) Futures prices are the average of futures prices for the period 5 March – 9 March 2018 for MPR 1/18 and 11 June – 15 June 2018 for MPR 2/18.
Sources: Thomson Reuters and Norges Bank

1.1 GLOBAL DEVELOPMENTS AND OUTLOOK

Higher oil prices

Oil prices are now around USD 75 per barrel, while prices for future delivery indicate an oil price of just over USD 65 per barrel in 2021 (Chart 1.2). Both spot and futures prices have risen and are higher than assumed in the *Monetary Policy Report* (MPR) 1/18, published on 15 March.

Higher oil prices are expected to boost global petroleum investment. At the same time, higher oil prices will probably fuel consumer price inflation abroad and thus curb global consumption growth.

Growth outlook revised down

The economic upturn among Norway's trading partners is continuing. There is solid growth in employment, and unemployment is declining. Nevertheless, economic growth so far in 2018 has been a little lower than projected in the *March Report*. Recent developments suggest that growth in the period ahead will also be somewhat weaker than projected in March.

There are prospects that GDP growth among trading partners will be lower in 2018 than in 2017. For the years ahead, growth is expected to slow further on the back of capacity constraints and tighter monetary policies (Chart 1.3). The projections are slightly lower than in the *March Report*.

Underlying inflation among trading partners is low, and developments since the *March Report* have been broadly as expected. Wage growth among Norway's main trading partners has picked up broadly in line with projections. Price and wage inflation abroad is projected to edge up a little in the coming years owing to higher capacity utilisation. Owing to higher oil prices, the inflation projections for 2018 are slightly higher than in the *March Report*, while the projections for the years ahead are little changed.

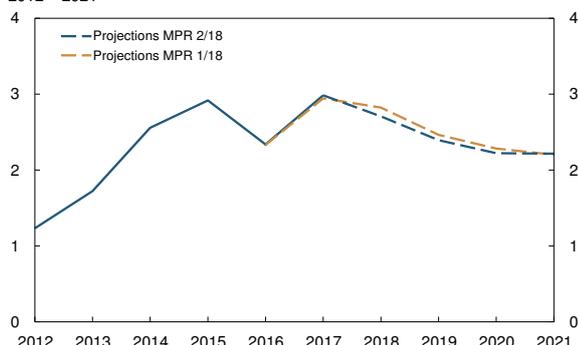
The global interest rate level remains low, but is expected to rise. Forward rates among Norway's main trading partners are lower than at the time of the *March Report* (Chart 1.4). Political uncertainty has contributed to volatile interest rate expectations.

1.2 THE ECONOMIC SITUATION IN NORWAY

Volatile money market premium

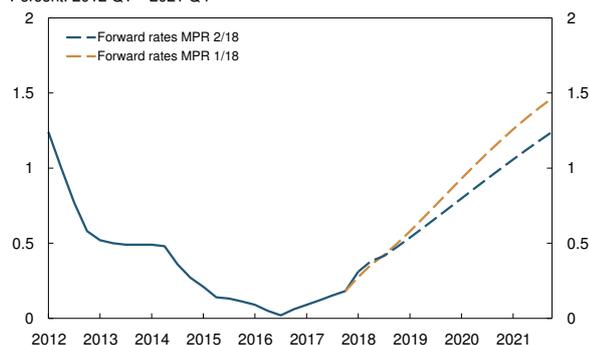
Over the past two years, the key policy rate has remained unchanged at 0.5%. Money market rates

Chart 1.3 GDP for Norway's trading partners.¹⁾ Annual change. Percent. 2012 – 2021²⁾



1) Export weights. 25 main trading partners.
2) Projections for 2018 – 2021.
Sources: Thomson Reuters and Norges Bank

Chart 1.4 Three-month money market rates for Norway's trading partners.¹⁾ Percent. 2012 Q1 – 2021 Q4²⁾



1) Based on money market rates and interest rate swaps. See *Norges Bank Papers* 2/2015 for information about the aggregate for trading partner interest rates.
2) Forward rates at 9 March 2018 for MPR 1/18 and 15 June 2018 for MPR 2/18.
Sources: Thomson Reuters and Norges Bank

rose from the beginning of 2018 until April, but have since edged lower. Developments reflect changes in the money market premium. The premium is projected to edge down further and to remain from 2019 at the same level as projected in March.

The krone has strengthened somewhat since the *March Report*, but has been weaker on average than anticipated in March.

The upturn in the Norwegian economy is continuing

Growth in the mainland economy picked up in 2017 (Chart 1.5). The upswing was partly driven by solid growth among Norway's trading partners, an expansionary fiscal policy and low domestic interest rates. In 2018 Q1, growth weakened a little, but mainland GDP was around the same level as the March projection. Growth is expected to remain firm over the next half-year and to be slightly higher than envisaged in March. The upward revision is in line with the expectations of Regional Network contacts.

The labour market has continued to improve in recent months. Unemployment has declined slightly, broadly as expected. Employment rose markedly in the first three months of 2018 (Chart 1.6). The rise was stronger than projected in the *March Report*. Regional Network contacts indicate that employment growth will remain high in the coming months, and the projections for employment growth in the near term have been revised up.

Following a moderate fall through much of 2017, house prices have risen in recent months and are higher than projected in the *March Report*.

Underlying inflation is low

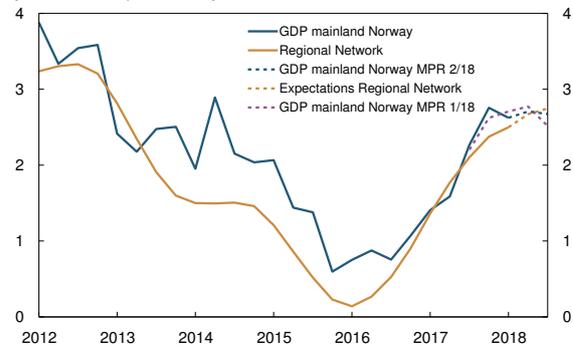
Inflation has risen since autumn 2017. In May, the 12-month rise in the consumer price index (CPI) was 2.3%. The rise primarily reflects high energy price inflation and indirect tax increases. The 12-month rise in the CPI adjusted for tax changes and excluding energy products (CPI-ATE) was 1.2% in May. This was lower than expected. Wage growth picked up in 2017. The spring wage settlement points to a further rise in 2018, in line with the projection in the *March Report*.

1.3 MONETARY POLICY AND PROJECTIONS

Rate increase in Q3

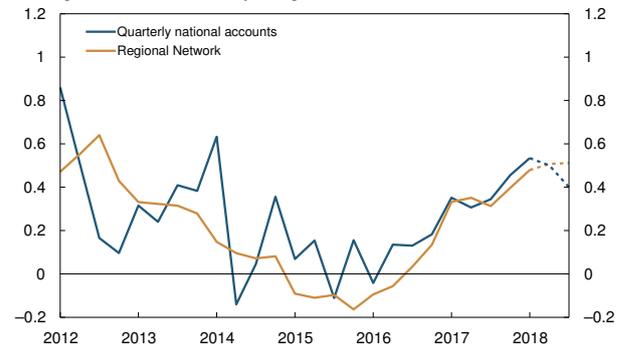
The operational target of monetary policy is annual consumer price inflation of close to 2% over time. Infla-

Chart 1.5 GDP for mainland Norway¹⁾ and Regional Network indicator of output growth²⁾. Four-quarter change. Percent. 2012 Q1 – 2018 Q3³⁾



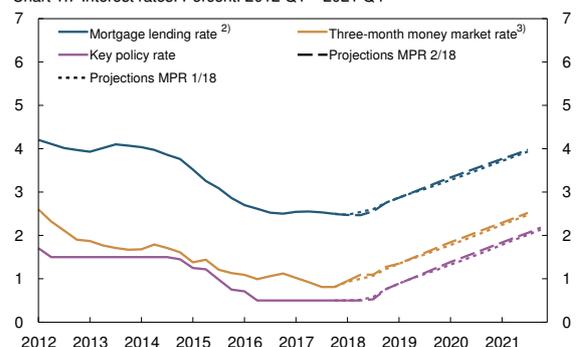
1) Seasonally adjusted.
2) Reported output growth for the past three months converted to quarterly figures. The quarterly figures are calculated by weighting together three-monthly figures based on survey timing. For 2018 Q2 expected output growth is estimated by weighting together reported growth over the past three months and expected growth in the next six months. 2018 Q3 is expected growth in the next six months measured in May.
3) Projections for 2018 Q2 – 2018 Q3.
Sources: Statistics Norway and Norges Bank

Chart 1.6 Employment growth according to the quarterly national accounts and Regional Network¹⁾. Quarterly change. Percent. 2012 Q1 – 2018 Q3²⁾



1) Reported employment growth for the past three months. Quarterly figures are calculated by weighting together three-monthly figures based on survey timing. For 2018 Q2, expected employment growth is estimated by weighting together reported growth over the past three months and expected growth in the next three months. 2018 Q3 is expected growth in the next three months measured in May.
2) Projections for 2018 Q2 – 2018 Q3 (broken lines).
Sources: Statistics Norway and Norges Bank

Chart 1.7 Interest rates. Percent. 2012 Q1 – 2021 Q4¹⁾



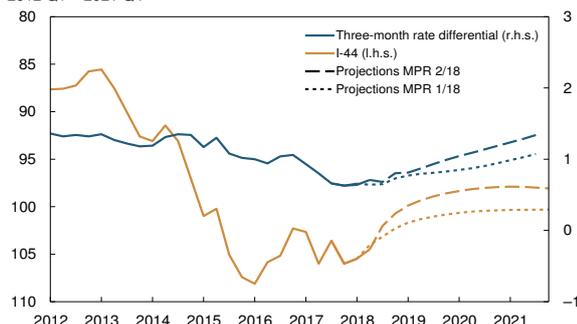
1) Projections for 2018 Q2 – 2021 Q4.
2) The mortgage lending rate is the average interest rate on outstanding mortgage loans to households. From the sample of banks and mortgage companies included in Statistics Norway's monthly interest rate statistics.
3) Projections for the money market rate are calculated as an average of the key policy rate in the current and subsequent quarter plus an estimate of the money market premium.
Sources: Statistics Norway, Thomson Reuters and Norges Bank

MONETARY POLICY SINCE MARCH

The analysis in the March 2018 *Monetary Policy Report* indicated that the key policy rate would be raised after summer 2018, followed by a gradual increase to around 2% in 2021. With this path for the key policy rate, inflation was projected to be a little above 2% in 2021. Capacity utilisation was projected to rise and reach a normal level in 2019.

At the monetary policy meeting on 2 May, new information was assessed in relation to the projections in the March *Report*. Confidence indicators suggested that growth among Norway's trading partners had been slightly weaker than projected in March, and forward rates among trading partners had edged lower. The premium in the Norwegian money market had risen and was higher than projected. The krone exchange rate was slightly weaker than assumed. Goods consumption had been somewhat lower than expected, while house prices had stabilised in line with the projections. Oil prices had risen and were higher than assumed. Labour market developments were broadly in line with projections. In the wage settlement, the Norwegian Confederation of Trade Unions (LO) and the Confederation of Norwegian Enterprise (NHO) agreed on a wage norm of 2.8% for 2018. This was consistent with the wage growth projection in the March *Report*. The 12-month rise in the CPI-ATE was 1.2% in March, which was lower than projected. The Executive Board's assessment in May was that the overall outlook and balance of risks had not changed substantially since the March *Report*. The Executive Board decided to keep the key policy rate unchanged at 0.5%.

Chart 1.8 Three-month money market rate differential between Norway¹⁾ and trading partners²⁾. Percentage points. Import-weighted exchange rate index (I-44)³⁾. 2012 Q1 – 2021 Q4⁴⁾



1) Projections for the money market rate are calculated as an average of the key policy rate in the current and subsequent quarter plus an estimate of the money market premium.
 2) Forward rates for trading partners at 9 March 2018 for MPR 1/18 and 15 June 2018 for MPR 2/18. 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 2018 Q2 – 2021 Q4.
 Sources: Thomson Reuters and Norges Bank

tion targeting shall be forward-looking and flexible so that it can contribute to high and stable output and employment and to counteracting the build-up of financial imbalances. Overall, the outlook and the balance of risks imply that the key policy rate will be raised in 2018 Q3, followed by a gradual increase to somewhat above 2% at the end of 2021. This interest rate path will help to bring inflation up to target, while unemployment remains low. If the key policy rate is not raised ahead, price and wage inflation may accelerate, with price inflation overshooting target.

The interest rate path is little changed from the March *Report* (Chart 1.1a). The rise in oil prices and a somewhat faster-than-projected rise in capacity utilisation imply in isolation a higher rate path. A relatively stable krone despite the rise in oil prices pulls in the same direction. On the other hand, lower-than-expected underlying inflation, combined with lower growth and lower interest rates abroad, suggests in isolation a lower interest rate path.

There are prospects of a gradual rise in the real interest rate ahead. The projections for the real interest rate are higher than in March, owing to a small downward adjustment of the inflation projections.

It is assumed that residential mortgage rates will be raised roughly in pace with increases in the key policy rate. The interest rate forecast implies an increase in residential mortgage rates from around 2.5% today to around 4% in 2021 (Chart 1.7).

Positive output gap and inflation close to target

With interest rate developments in line with the forecast, there are prospects that capacity utilisation will rise further and remain somewhat above a normal level in the coming years (Charts 1.1b). The positive output gap is projected to widen until the beginning of 2020, before gradually narrowing. The projections for capacity utilisation are somewhat higher than in the March *Report* throughout the projection period.

Rising capacity utilisation is expected to contribute to a gradual pick-up in underlying inflation in the years ahead (Chart 1.1c-d). At the end of 2021, inflation is projected at approximately 2%. The inflation projections are a little lower than in the March *Report*.

The projections are based on an appreciation of the krone in the period ahead, and somewhat more than

in the *March Report* (Chart 1.8), partly reflecting expectations of a more pronounced rise in Norwegian interest rates than in foreign rates.

Mainland GDP growth is projected at 2.6% in 2018, following annual growth of just below 2% in 2017 (Chart 1.9). Growth is expected to slow in the coming years, after capacity utilisation has exceeded a normal level. The growth projection for 2018 is little changed from the *March Report*, while the projection for 2019 is slightly higher and the projections for 2020 and 2021 are slightly lower.

There are prospects for a shift in demand ahead. After weak developments in 2016 and 2017, solid growth in mainland exports is expected, partly owing to an upswing in global oil investment. Petroleum investment on the Norwegian shelf is also expected to rise in the coming years, following several years of decline (Chart 1.10). On the other hand, housing investment is likely to fall in 2018 and 2019, after rising sharply for

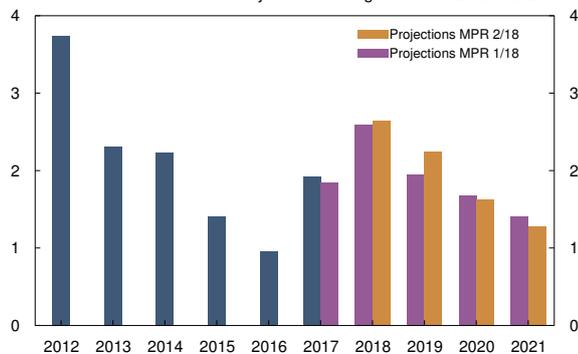
several years. While fiscal policy has made a substantial contribution to growth in the Norwegian economy in recent years, the contribution to growth is assumed to be modest from 2018.

Gradually higher wage growth

A gradual decline in employment growth is expected through the projection period, following a marked rise in 2018. The labour force is also expected to increase, but unemployment is still expected to edge lower (Chart 1.11). Compared with the *March Report*, employment growth is now projected to be higher in 2018 and 2019, and slightly lower further ahead. The unemployment projections for the next two years are slightly lower than in the *March Report*.

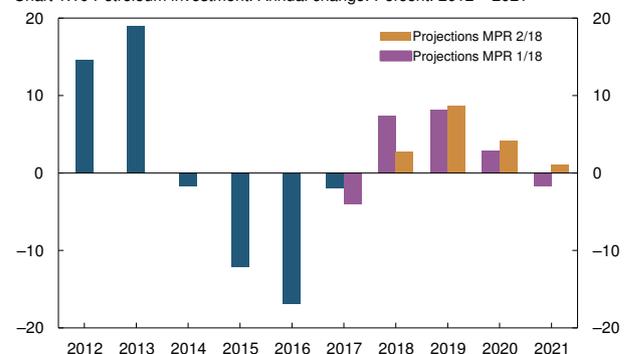
A gradually tightening labour market is expected to push up wage growth in the years ahead (Chart 1.12). The projections are little changed from the *March Report*.

Chart 1.9 GDP for mainland Norway. Annual change. Percent. 2012 – 2021¹⁾



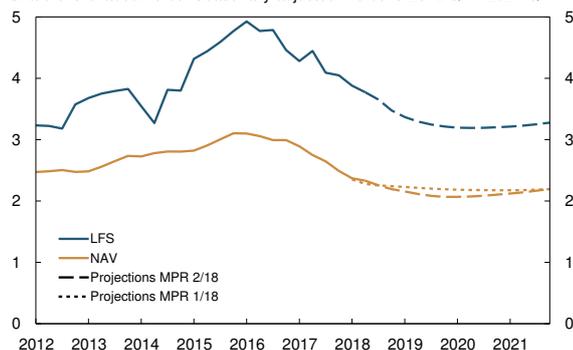
1) Projections for 2018 – 2021.
Sources: Statistics Norway and Norges Bank

Chart 1.10 Petroleum investment. Annual change. Percent. 2012 – 2021¹⁾



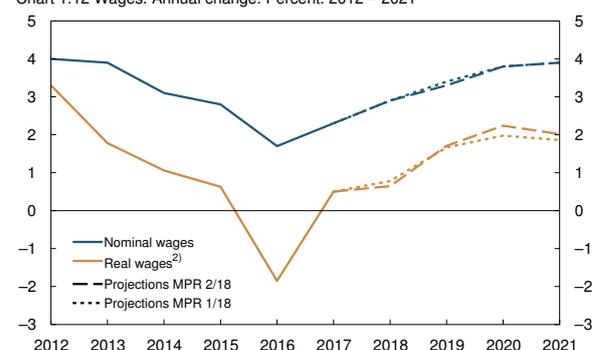
1) Projections for 2018 – 2021.
Sources: Statistics Norway and Norges Bank

Chart 1.11 Unemployment according to LFS¹⁾ and NAV²⁾. Share of the labour force. Seasonally adjusted. Percent. 2012 Q1 – 2021 Q4³⁾



1) Labour Force Survey. The LFS has been revised, and projections from MPR 1/18 are not directly comparable with the projections in this *Report*. The projections from the previous *Report* are therefore not shown in the chart.
2) Registered unemployment.
3) Projections for 2018 Q2 – 2021 Q4.
Sources: Norwegian Labour and Welfare Administration (NAV), Statistics Norway and Norges Bank

Chart 1.12 Wages. Annual change. Percent. 2012 – 2021¹⁾

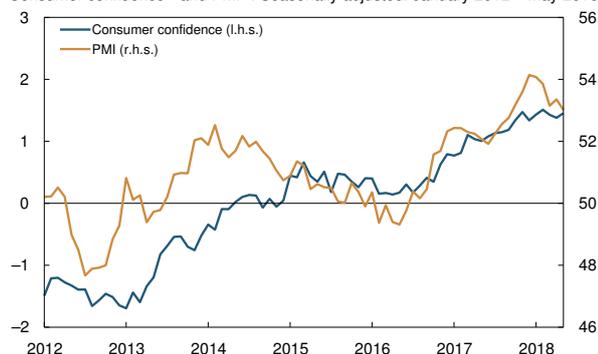


1) Projections for 2018 – 2021.
2) Nominal wage growth deflated by the CPI.
Sources: Norwegian Technical Calculation Committee for Wage Settlements (TBU), Statistics Norway and Norges Bank

2 The global economy

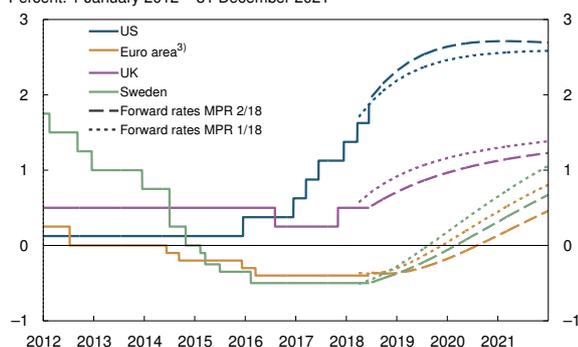
The economic upturn among Norway's trading partners continues, but growth so far this year has been a little lower than expected. The projections for advanced economy GDP growth have been revised down from the March 2018 *Monetary Policy Report*, while they are little changed for emerging economies. Consumer price inflation among trading partners has been broadly as expected so far this year, but the projection for 2018 is slightly higher than in the March Report. Both oil spot and futures prices have risen since March. The level of global interest rates is expected to rise, but expected money market rates among trading partners are lower than in the March Report. Long-term interest rates have edged down.

Chart 2.1 Global confidence indicators. Consumer confidence¹⁾ and PMI²⁾. Seasonally adjusted. January 2012 – May 2018



1) GDP weights. Standardised consumer confidence indexes in selected countries.
2) GDP weights. Manufacturing PMI in selected countries.
Sources: Thomson Reuters and Norges Bank

Chart 2.2 Policy rates and estimated forward rates¹⁾ in selected countries. Percent. 1 January 2012 – 31 December 2021²⁾



1) Forward rates at 9 March 2018 for MPR 1/18 and 15 June 2018 for MPR 2/18. Forward rates are estimated based on Overnight Index Swap (OIS) rates.
2) Daily data through 15 June 2018. Quarterly data from 2018 Q3.
3) ECB deposit facility rate. Eonia from 2018 Q3.
Sources: Bloomberg, Thomson Reuters and Norges Bank

2.1 GROWTH, PRICES AND INTEREST RATES

Slightly weaker growth prospects

There has been a broad-based upswing in growth among trading partners over the past year. Employment growth has been solid, and unemployment has fallen below the long-term average in many countries. Household and business confidence indicators have been at high levels, although the latter has now fallen (Chart 2.1). So far this year, GDP growth has been a little weaker than expected in the March Report. Some of the weakening probably reflects temporary factors.

The level of global interest rates remains low, but is expected to rise. Market interest rate expectations have fluctuated, partly owing to political uncertainty. Since the March Report, market key policy rate expectations have fallen, partly reflecting lower-than-expected growth (Chart 2.2). Long-term interest rates have also edged down (Chart 2.3). Equity market developments have been mixed (Chart 2.4). There has been financial market volatility in a number of emerging economies, which is partly attributable to the tightening of monetary policy in the US.

Capacity utilisation for Norway's trading partners is projected to be above a normal level from this year, and to continue to rise throughout the projection period. Higher oil prices and mounting uncertainty related to the ongoing trade conflicts will have a dampening impact on growth. In addition, capacity constraints and tighter monetary policies will con-

tribute to a gradual slowing of advanced economy growth in the coming years. Economic growth is expected to remain robust in emerging economies. The projections for growth in GDP and imports for trading partners are slightly lower than in the March Report (Chart 2.5 and Annex Table 1).

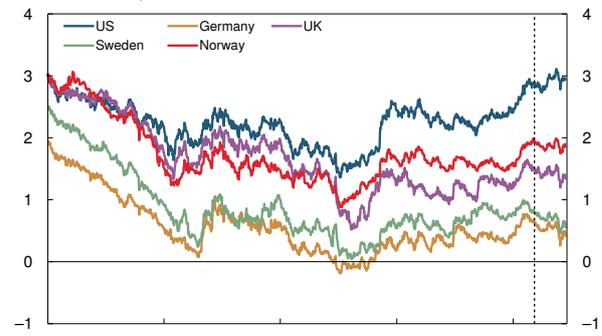
There is uncertainty surrounding global economic developments. In the projection, the trade policy measures implemented so far are assumed to have a limited impact on growth. Increased protectionism may dampen global growth to a further extent than projected. Financial conditions may also prove tighter than envisaged in this Report. On the other hand, economic growth may remain higher for longer than expected if there is more spare capacity than currently envisaged. This may also result in a longer-than-expected period of low wage and price inflation.

Higher oil prices

Since the March Report, consumer price inflation has been broadly in line with projections. Core inflation has been broadly unchanged since October 2017 (Chart 2.6). Oil prices have continued to rise and are expected to pull up consumer price inflation in 2018. Oil spot prices are around USD 75 per barrel. Both spot and futures prices up to 2021 are about USD 10 higher than anticipated in March (Chart 1.2). Oil prices are discussed in a box on page 17. Wage growth among Norway's main trading partners has edged up broadly in line with that expected in the March Report. Both wage growth and core inflation are projected to increase slightly over the coming years in pace with rising capacity utilisation (Chart 2.7 and Annex Table 2).

Imported consumer goods inflation in Norway has over time been lower than consumer price inflation among trading partners. This is partly due to a shift in Norwegian imports to low-cost countries such as China and other emerging economies. Such compositional effects are expected to continue to dampen external inflationary impulses to the Norwegian economy in the coming years (Chart 2.8). The projection for this inflation indicator in 2018 has been revised up slightly from the March Report.

Chart 2.3 Yields on ten-year government bonds in selected countries. Percent. 2 January 2014 – 15 June 2018¹⁾



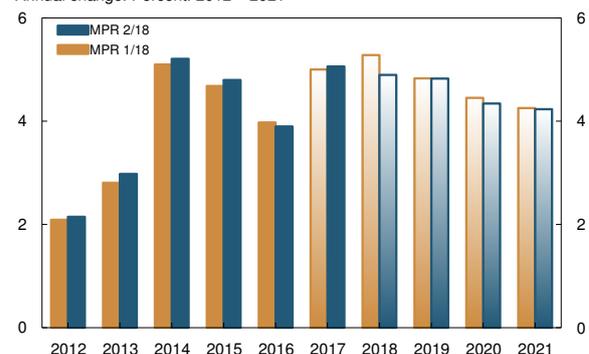
¹⁾ MPR 1/18 was based on information in the period to 9 March 2018 indicated by the vertical line. Source: Bloomberg

Chart 2.4 Equity price indexes in selected countries.¹⁾ Index. 2 January 2014 = 100. 2 January 2014 – 15 June 2018²⁾



¹⁾ Standard and Poor's 500 Index (US), Stoxx Europe 600 Index (Europe), Financial Times Stock Exchange 100 Index (UK), Oslo Børs Benchmark Index (Norway), MSCI Emerging Markets Index (emerging economies).
²⁾ MPR 1/18 was based on information in the period to 9 March 2018 indicated by the vertical line. Source: Bloomberg

Chart 2.5 Imports for Norway's trading partners.¹⁾ Annual change. Percent. 2012 – 2021²⁾



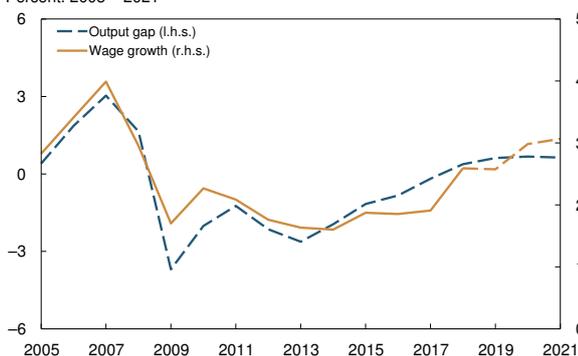
¹⁾ Export weights. 25 main trading partners.
²⁾ Projections for 2018 – 2021 (shaded bars).
Sources: Thomson Reuters and Norges Bank

Chart 2.6 Headline and core CPI in selected countries.¹⁾
Twelve-month change. Percent. January 2005 – May 2018



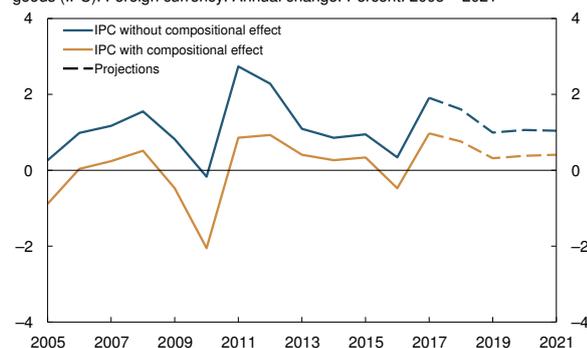
1) Import weights. US, euro area, UK and Sweden.
Sources: Thomson Reuters and Norges Bank

Chart 2.7 Wage growth¹⁾ and estimated output gap²⁾ in selected countries.³⁾
Percent. 2005 – 2021⁴⁾



1) Annual percentage change. Compensation per employee in the total economy.
2) The output gap measures the percentage deviation between GDP and estimated potential GDP.
3) IMF estimates for 2005 – 2015. Norges Bank projections for the rest of the period.
4) Export weights. US, euro area, UK and Sweden.
4) Projections for wage growth 2018 – 2021 (broken yellow line).
Sources: Thomson Reuters and Norges Bank

Chart 2.8 Indicator of international inflationary impulses to imported consumer goods (IPC). Foreign currency. Annual change. Percent. 2005 – 2021¹⁾



1) Projections for 2018 – 2021.
Sources: Statistics Norway, Thomson Reuters and Norges Bank

2.2 COUNTRIES AND REGIONS

Temporary slowdown in the US

The expansion in the US has now lasted for more than eight years. Employment growth is solid, and unemployment has declined further. Unemployment is now at its lowest level since 2000. Growth in 2018 Q1 was weaker than in the preceding quarters. The slowdown was slightly more pronounced than projected. A good part of the slowdown appears to have reflected temporary conditions. Wage and price inflation has increased moderately, broadly in line with the March projections.

The Federal Reserve raised its policy rate by 0.25 percentage point in March and June. Forward money market rates have edged up, while long-term interest rates have remained broadly unchanged since the *March Report*. Forward rates indicate one additional rate hike in 2018. The US dollar depreciated at the beginning of the year, but has since appreciated, and the trade-weighted exchange rate is markedly stronger than in March.

Rising US oil production over the past decade has led to a change in oil price effects on the US economy. Since the start of 2017, plant investments in the oil sector have accounted for a little less than a quarter of private investment growth (Chart 2.9). It is assumed that the positive effects of higher oil prices on private investment broadly offset the negative effects of the rise in oil prices on household purchasing power.

The ongoing trade conflicts are likely to have a limited impact on growth in the coming years. The US tax reform and increases in public spending are expected to contribute to slightly higher growth in 2018 and 2019 than projected in the *March Report*. Growth is expected to taper off ahead as monetary and fiscal policy is tightened and capacity constraints start to bite. Rising capacity utilisation with somewhat higher wage growth will push up core inflation through the projection period. The increase in oil prices will contribute to higher overall inflation in 2018, but declining oil prices in line with futures prices will dampen consumer price inflation ahead.

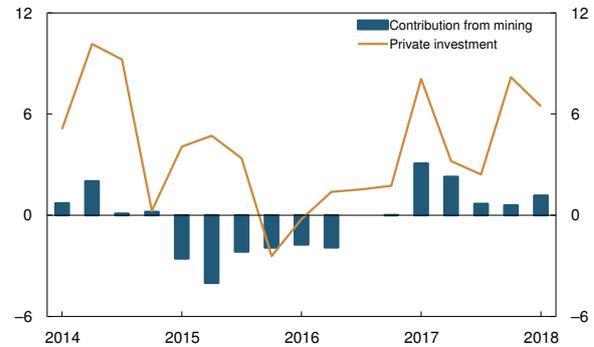
Lower growth in the euro area

In 2017, euro-area growth was at its highest level in ten years, and for the first time since 2007, GDP increased across all member countries. So far this year, however, growth has slowed more than expected in the *March Report*. The slowdown has been broad across countries and sectors, and is partly attributable to temporary factors such as a cold winter, direct and indirect tax increases and strikes. There has been a broad decline in confidence indicators, and new manufacturing orders have fallen. This may reflect heightened business caution in response to the uncertainty linked to a global trade conflict, which may have a dampening impact on investment and trade. The recent increase in oil prices is expected to curb consumption growth ahead.

The European Central Bank (ECB) has not changed its monetary stance since the *March Report*. The ECB had announced that it will reduce asset purchases from 2018 Q4, and end the asset purchase programme if inflation moves in line with expectations. The ECB has indicated that its key policy rates will be kept on hold until after summer 2019. Forward rates are consistent with this. Weaker developments in the real economy and political uncertainty in Italy have led to a decline in money market rates and long-term interest rates in Germany and France, while long-term interest rates in Italy have increased. The trade-weighted exchange rate of the euro has weakened since the *March Report*.

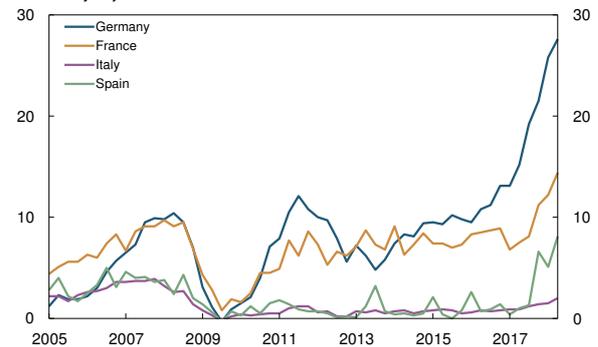
Capacity utilisation for the euro area is approaching a normal level. Unemployment is lower than the average in the years leading up to the financial crisis, and a rising number of businesses report that labour and production equipment shortages are limiting growth. At the same time, there are wide cross-country variations (Chart 2.10). We expect GDP growth to slow ahead. Compared with the *March Report*, the projections are slightly lower for the coming years. Consumer price inflation is expected to hover around today's level until the end of the projection period. Underlying inflation is projected to show a gradual rise on the back of rising capacity utilisation and higher wage growth.

Chart 2.9 Private investment and contribution from investment in mining structures in the US. Annualised quarterly change. Seasonally adjusted. Percent. 2014 Q1 – 2018 Q1



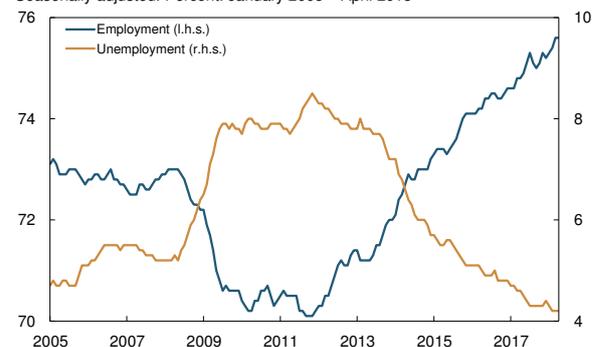
Source: Thomson Reuters

Chart 2.10 Labour shortages in selected countries in the euro area.¹⁾ Seasonally adjusted. Percent. 2005 Q1 – 2018 Q2



¹⁾ Survey from the European Commission. Share of businesses in manufacturing that report labour as a factor limiting production.
Source: Thomson Reuters

Chart 2.11 Employment¹⁾ and unemployment²⁾ in the UK. Seasonally adjusted. Percent. January 2005 – April 2018



¹⁾ Employment as a share of the population aged 16 – 64.
²⁾ Unemployment as a share of the labour force.
Source: Thomson Reuters

Slowdown in the UK

UK GDP growth slowed in Q1, and growth was weaker than expected in the *March Report*. Some of that slowing appears to have reflected a cold winter. Developments in both services and manufacturing were weak. At the same time, unemployment is at a historically low level, and employment is high (Chart 2.11). Against the background of weaker economic developments and lower inflation, the next rate hike is pushed back, and forward rates now indicate a rate rise in the latter half of 2018.

GDP growth is projected to remain at today's moderate pace throughout the projection period. The projections are slightly lower than in March. The rise in oil prices will restrain real wage growth, with muted investment growth pending further clarification of the UK's future relationship with the EU. The projection for headline inflation in 2018 has been revised down a little as inflation has been somewhat lower than expected so far this year. Headline inflation is expected to slow further in the period ahead.

Strong growth in Sweden

The Swedish economy has expanded at a brisk pace in recent years. Capacity utilisation has been higher than normal, and inflation has edged up. Inflation, as measured by the consumer price index with a fixed interest rate (CPIF), has been close to the target of 2% over the past year. Monetary policy remains expansionary, and the Riksbank kept its policy rate unchanged in April. Market participants have now pushed back a rate hike to 2019 Q1.

Growth was revised down a little for the latter half of 2017, but Q1 growth was broadly as expected in the *March Report*. GDP growth is projected to slow from 2019. The projections are a touch lower than in the *March Report*. The decline in house prices, low wage growth and high saving are weighing on growth. Inflation is projected to remain close to target in the coming years.

High growth in China

Chinese GDP continued to grow at a fast pace in 2018 Q1, and was higher than expected in the *March Report*. Consumption, as a share of GDP, increased in line with the government's aim to rebalance the economy away from debt-financed investment towards private consumption. The rebalancing, stricter regulation of the shadow banking sector and pollution reduction measures will have a dampening impact on growth in the years ahead. In addition, uncertainty surrounding the consequences of the trade policy conflict with the US will in isolation weigh on growth prospects for China. GDP growth is projected to slow in the period ahead, in line with that envisaged in March.

The rise in US interest rates and the US dollar appreciation have resulted in higher financing costs for a number of emerging economies. Exchange rates of the currency of Argentina, Turkey and Brazil have depreciated markedly. Despite the turbulence in financial markets, growth remains robust in emerging economies, and in Russia and Brazil there are signs that activity is picking up after a period of weak growth. Against the background of the uncertainty surrounding the ongoing trade conflicts, the growth prospects for emerging economies excluding China have been revised down slightly.

DEVELOPMENTS IN OIL AND GAS PRICES

Oil spot prices have risen from USD 30 per barrel in January 2016 to around USD 75. The price rise reflects strong growth in global oil consumption and production cuts in OPEC and a number of non-OPEC countries. OECD oil inventories declined markedly through 2017 and into 2018 (Chart 2.12). Global political tensions also pushed up oil prices. Recently, oil prices have risen despite a stronger US dollar.

Since the *March Report* futures prices have also risen (Chart 1.2). This may indicate that market participants expect some of the conditions that have contributed to the price rise to persist. The reintroduction of US sanctions against Iran may reduce Iranian oil production from 2019 onwards. Oil production in Venezuela has declined substantially since 2016 and may fall further. Although US oil production has increased markedly and is expected to continue to rise, limited pipeline capacity from the most productive areas in Texas may constrain growth somewhat over the next year. Price differences for local production have increased (Chart 2.13). Increased pipeline capacity is not expected until the latter half of 2019.

Growth in global oil consumption has so far remained elevated despite the rise in oil prices. In addition, environmental regulations effective from 2020 are expected to boost demand for middle distillates to replace sulphur bunker oil in maritime transport. High-quality crude oil is particularly well suited to produce these distillates. This could push up demand for such crude oil grades further, including Brent, in the coming years.

Oil prices are assumed to move in line with futures prices (Chart 1.2), which indicate that prices will decline from around USD 75 per barrel to slightly above USD 65 in 2021. This is higher than in the *March Report*.

The next OPEC meeting will be held on 22 June, where the current production quotas will be assessed. Increased OPEC oil production may contribute to stabilising oil inventories, depressing prices somewhat. Relatively high prices could also lead to weaker growth in oil consumption and stronger growth in non-OPEC oil production, as in the period leading up to the oil price fall in 2014. On the other hand, political tensions in, for example, the Middle East may pull up oil prices.

European gas prices have increased since March during a period where they normally show a seasonal decline. Gas prices are considerably higher than in the same period one year earlier.

Chart 2.12 Total OECD oil inventories.
In days of consumption.¹⁾ January 2017 – April 2018



1) Days of consumption is calculated using average expected demand over the next three months.
2) Interval between the highest and lowest level for a given month in the period 2013 – 2017.

Sources: IEA and Norges Bank

Chart 2.13 Difference between US oil benchmarks.
WTI Midland¹⁾ minus WTI Cushing²⁾. USD/barrel. 2 January 2018 – 15 June 2018



1) WTI Midland is the benchmark price for oil in Midland, Texas. The oil is primarily from the Permian Basin.
2) WTI Cushing is the benchmark price for oil in Cushing, Texas. This price is the primary benchmark for US crude oil.

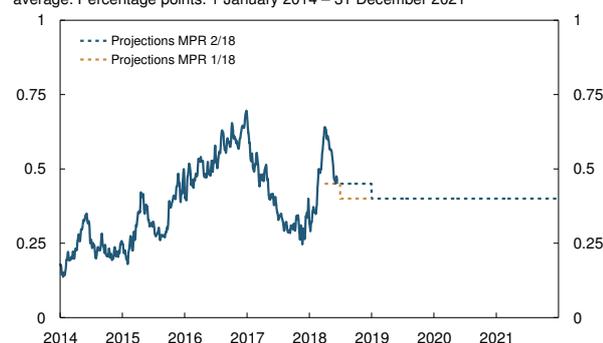
Source: Thomson Reuters

3 The Norwegian economy

After several years of weak developments, growth in the mainland economy picked up in 2017, primarily driven by solid growth among Norway's trading partners, an expansionary fiscal policy and low domestic interest rates. Growth has continued into 2018 and employment has risen markedly. Capacity utilisation is now close to a normal level. Inflation has risen since autumn 2017, mainly reflecting higher energy prices. Underlying inflation remains below the 2% target.

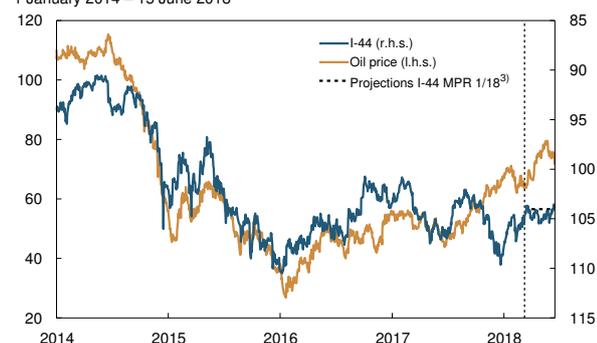
Growth in mainland GDP is projected to be higher in 2018 than in 2017. In the years ahead, growth is expected to slow after capacity utilisation has exceeded a normal level. Capacity utilisation is expected to rise over the next two years before falling back slightly towards the end of the projection period. Unemployment is expected to edge down, while wage growth is set to pick up gradually. Inflation is projected at around 2% at the end of 2021.

Chart 3.1 Norwegian three-month money market premium.¹⁾ Five-day moving average. Percentage points. 1 January 2014 – 31 December 2021²⁾



1) Norges Bank estimates of the difference between the three-month money market rate and the expected key policy rate.
2) Projections for 2018 Q3 – 2021 Q4.
Sources: Thomson Reuters and Norges Bank

Chart 3.2 Import-weighted exchange rate index (I-44)¹⁾ and oil price²⁾. 1 January 2014 – 15 June 2018



1) A positive slope denotes a stronger krone exchange rate
2) Brent Blend, USD/barrel.
3) MPR 1/18 was based on information through 9 March 2018, indicated by the vertical line.
Sources: Thomson Reuters and Norges Bank

3.1 FINANCIAL CONDITIONS

Volatile money market premium

The key policy rate has been kept unchanged at 0.5% over the past two years. The money market rate rose from beginning of 2018 to April, but has since fallen somewhat. These movements reflect changes in the money market premium (Chart 3.1), which in turn may be attributed to conditions in the US money market. Since March, the money market premium has on average been somewhat higher than projected in the March 2018 *Monetary Policy Report*, but is now broadly in line with the projection for Q2.

The money market premium is expected to edge lower to around 0.4 percentage point, thereafter remaining steady in the coming years. Compared with the March *Report*, the projections are somewhat higher for 2018, but unchanged for the years ahead. The projections imply that the money market rate will rise in line with the increase in the key policy rate (Chart 1.7).

Higher residential mortgage rates ahead

The rise in the money market rate at the start of 2018 pushed up banks' funding costs. Risk premiums on bank bonds are little changed so far in 2018.

Banks' lending rates to businesses are closely linked to the money market rate, and have risen so far in 2018. Risk premiums on corporate bonds are approximately unchanged so far in 2018. Growth in domestic credit to non-financial enterprises has continued to rise after showing a marked increase through 2017. Combined with developments in other indicators, this

suggests that enterprises have ample access to funding (see Section 5).

Residential mortgage rates averaged just over 2.5% in 2017 and remained approximately unchanged in 2018 Q1 (Chart 1.7). As the money market rate has risen, banks' lending margins on residential mortgages have fallen so far in 2018. Household and corporate lending rates are expected to move in line with the money market rate. The projections for lending rates are little changed from the *March Report*.

Prospects for a somewhat stronger krone

The krone, as measured by the import-weighted exchange rate index I-44, appreciated at the beginning of 2018 after a marked depreciation through autumn 2017 (Chart 3.2). Since the *March Report*, the exchange rate has appreciated somewhat, but has on average been somewhat weaker than projected. A more pronounced decline in Norwegian interest rates than in trading partner interest rates may have pushed down demand for NOK, whereas the rise in oil prices may have pulled in the opposite direction. The krone is weaker than implied by the historical comovement with the interest rate differential against trading partners and the oil price.

The krone is projected to continue to appreciate in the years ahead in the light of the prospects of a gradual widening of the interest rate differential against trading partners (Chart 1.8). Compared with the *March Report*, the krone is projected to be stronger throughout the projection period.

3.2 OUTPUT AND DEMAND

Continued growth in the Norwegian economy

After several years of weak developments, growth in the mainland economy picked up in 2017, partly driven by solid growth among Norway's trading partners, an expansionary fiscal policy and low domestic interest rates.

In 2018 Q1, growth dipped and was slightly lower than projected in the *March Report*. At the same time, mainland GDP for Q4 was revised up slightly, bringing the level in Q1 into line with the projection.

In May, Norges Bank's Regional Network contacts reported solid growth over the past three months

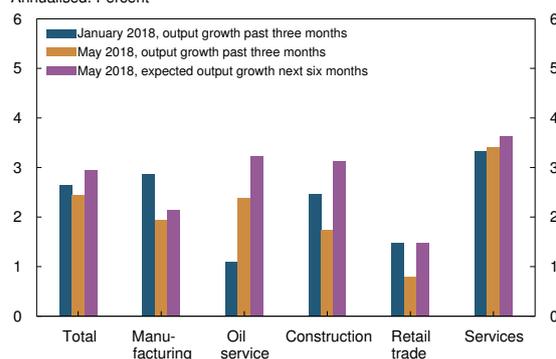
MONEY MARKET RATES AND RISK PREMIUMS

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

A large share of banks' funding is priced on the basis of three-month Nibor, which is the three-month money market rate. This rate is determined partly by the average policy rate expected by the market over the next three months and partly a risk premium, which is generally referred to as the money market premium. The money market premium depends on banks' supply and demand for NOK liquidity. International conditions, such as a changed premium in USD rates, can also influence the money market premium as Nibor reflects the prices in foreign money markets where Nibor panel banks can borrow and invest. Nibor panel banks start with a USD interest rate and adjust it for the price of converting USD into NOK on the foreign exchange swap market (see also Special Feature on the work on alternative krone reference rates on page 43).

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

Chart 3.3 Output growth by sector as reported by the Regional Network. Annualised. Percent



Source: Norges Bank

REGIONAL NETWORK

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

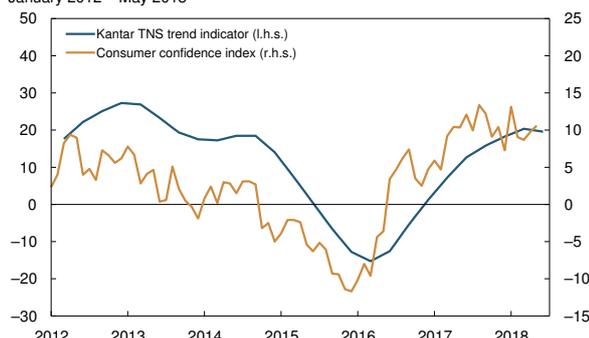
The contacts represent enterprises in the Norwegian business sector and the local government and hospital sector that reflect the production side of the economy both sector-wise and geographically.

Chart 3.4 GDP for mainland Norway¹⁾ and the Regional Network's indicator of output growth²⁾. Quarterly change. Percent. 2014 Q1 – 2018 Q3³⁾



1) Seasonally adjusted.
 2) Reported output growth past three months converted to quarterly figures. Quarterly figures are calculated by weighting together three-month figures on the basis of survey timing. For 2018 Q2 expected output growth is estimated by weighting together reported growth over the past three months and expected growth in the next six months. 2018 Q3 is expected growth in the next six months as reported in May.
 3) Projections for 2018 Q2 – 2018 Q3 (broken lines).
 4) System for Averaging short-term Models.
 Sources: Statistics Norway and Norges Bank

Chart 3.5 Consumer confidence. Net values. Kantar TNS trend indicator for households. 2012 Q1 – 2018 Q2. Opinion consumer confidence index (CCI). January 2012 – May 2018



Sources: ForbrukerMeteret™ from Opinion and Kantar TNS

(Chart 3.3). Growth had nevertheless been slightly lower than in the preceding three-month period. While manufacturing, construction and retail trade reported slower growth, oil services reported that growth had picked up markedly. In all sectors, contacts expected higher growth over the next six months.

Mainland GDP growth is expected to be slightly higher in 2018 Q2 and Q3 than in Q1 (Annex Table 3a). The projections are in line with Regional Network expectations and the projections from Norges Bank's System for Averaging short-term Models (SAM) (Chart 3.4). The projections imply that growth will remain firm for somewhat longer than projected in the *March Report*.

Mainland GDP growth is projected at 2.6% in 2018. Further ahead, growth is expected to slow after capacity utilisation has exceeded a normal level. In 2021, growth is projected at 1.3%, slightly lower than projected trend growth. The contribution to demand growth from fiscal policy is assumed to be modest ahead (see box on page 30), while petroleum investment is set to rise in the coming years (see box on page 31).

The growth projection for 2018 is little changed from the *March Report*, while the projection for 2019 has been revised up somewhat. The growth projections for 2020 and 2021 have been revised down slightly. In the projection, GDP growth is pushed up by higher house prices and oil prices, while a somewhat higher real interest rate in Norway and slightly weaker growth abroad pull in the opposite direction.

Solid income growth lifts consumption

After a marked rise in 2017, household consumption remained unchanged in 2018 Q1 and was lower than projected in March, reflecting weak developments in goods consumption in January and February. Goods consumption has since picked up. At the same time, consumer confidence remains high (Chart 3.5). Consumption growth is expected to pick up again in Q2.

Higher wage growth and higher employment are expected to contribute to a further rise in consumption in the years ahead (Chart 3.6), partly curbed by a gradual rise in interest rates. Owing to high household debt burdens, it is assumed that a given interest rate increase will dampen consumption more than previously. The projection for consumption growth

in 2018 has been revised down slightly compared with the *March Report*, while the projections for 2019 and 2020 have been revised up somewhat. The growth projection for 2021 is little changed.

The projections imply that household saving as a share of disposable income will remain roughly constant (Chart 3.7).

Moderate house price inflation ahead

So far in 2018, house prices have risen by a seasonally adjusted 2.6%, following a moderate fall through much of 2017. In May, house prices were about 1% higher than 12 months earlier and are higher than projected in the *March Report* (see Section 5 for a further discussion).

The number of new homes for sale will likely remain high in the near term as a large number of new dwellings are completed. This may curb house price inflation in the coming year.

House prices are expected to rise by 2% to 3% annually in the years ahead (Chart 3.8). An improving labour market and higher wage growth point to a rise in house prices, while higher interest rates and strong residential construction activity relative to population growth will curb house price inflation. The projections for house price inflation have been revised up for 2018 and 2019 compared with the *March Report* and thereafter revised down slightly.

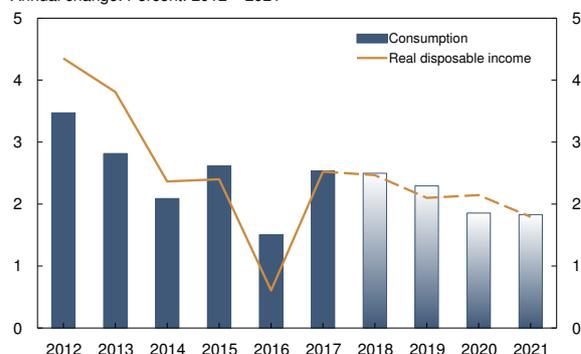
Lower housing investment

Housing investment, as measured in the quarterly national accounts (QNA), fell markedly towards the end of 2017 following a sharp rise through 2016 and into 2017. The decline continued in 2018 Q1, and was more pronounced than expected. The decline reflects a fall in housing starts, probably owing to the steep drop in new home sales through 2017.

New home sales have picked up slightly in recent months. Combined with higher house prices, this will likely curb the decline in housing starts.

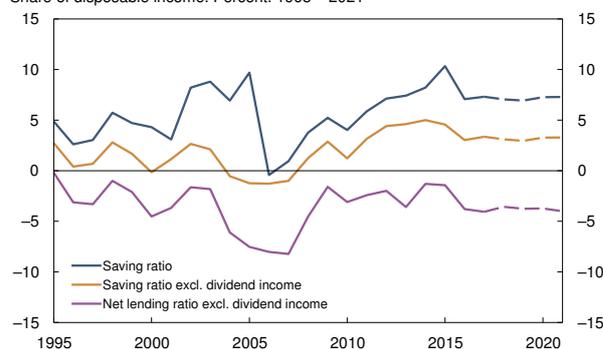
Housing investment is projected to fall markedly in 2018 and slightly into 2019 (Chart 3.9). In 2020 and 2021, housing investment is projected to show a moderate rise, on the back of the prospects for lower

Chart 3.6 Household consumption¹⁾ and real disposable income²⁾. Annual change. Percent. 2012 – 2021³⁾



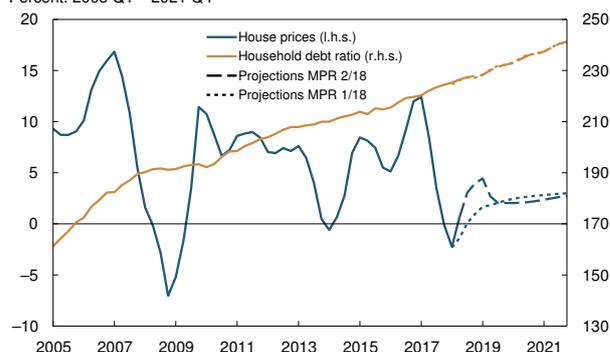
1) Includes consumption from non-profit organisations.
2) Excluding dividend income. Including income from non-profit organisations.
3) Projections for 2018 – 2021 (broken line and shaded bars).
Sources: Statistics Norway and Norges Bank

Chart 3.7 Household saving and net lending. Share of disposable income. Percent. 1995 – 2021¹⁾



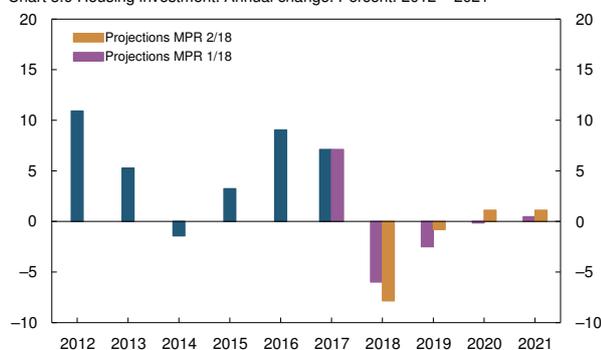
1) Projections for 2018 – 2021 (broken lines).
Sources: Statistics Norway and Norges Bank

Chart 3.8 House prices. Four-quarter change. Percent. Household debt ratio¹⁾. Percent. 2005 Q1 – 2021 Q4²⁾



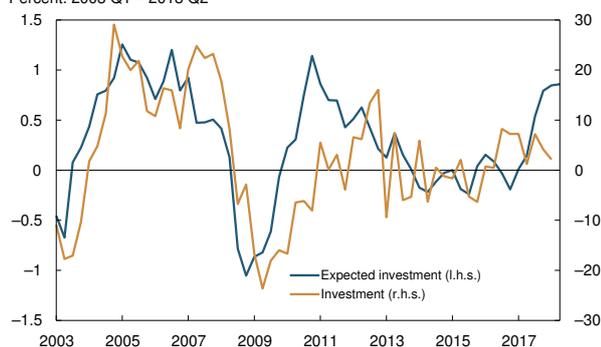
1) Loan debt as a percentage of disposable income.
2) Projections for 2018 Q2 – 2021 Q4.
Sources: Eiendomsverdi, Finn.no, Real Estate Norway, Statistics Norway and Norges Bank

Chart 3.9 Housing investment. Annual change. Percent. 2012 – 2021¹⁾



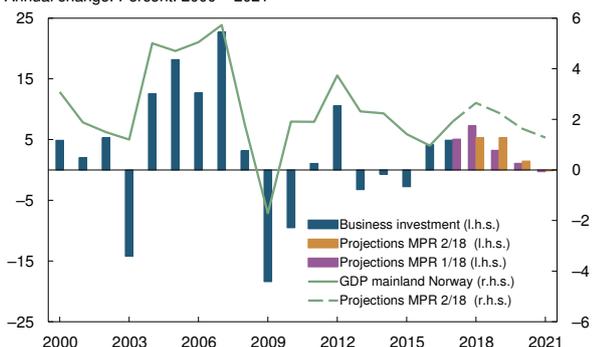
1) Projections for 2018 – 2021.
Sources: Statistics Norway and Norges Bank

Chart 3.10 Expected change in business investment over the next 12 months.¹⁾ Index. Business investment for mainland Norway. Four-quarter change. Percent. 2003 Q1 – 2018 Q2²⁾



1) Regional Network. Weighted average of manufacturing, oil services, retail trade and services.
2) Latest observation for investment is 2018 Q1.
Sources: Statistics Norway and Norges Bank

Chart 3.11 Business investment for mainland Norway and GDP for mainland Norway. Annual change. Percent. 2000 – 2021¹⁾



1) Projections for 2018 – 2021.
Sources: Statistics Norway and Norges Bank

unemployment and higher house prices. Low population growth and higher interest rates pull in the opposite direction. The growth projection for 2018 has been revised down somewhat compared with the *March Report*. For the remainder of the projection period, the growth projections have been revised up a little.

Growth in business investment ahead

Mainland business investment fell in Q1, while a rise had been expected. Regional Network contacts have for a period reported plans for a marked increase in investment over the next 12 months, and there has been a gradual increase in growth expectations (Chart 3.10). Investment plans for oil service companies and other manufacturing have been revised up markedly since January.

Higher domestic and global demand point to higher business investment in the years ahead. Higher interest rates will curb growth. Solid growth in investment is projected for 2018 and 2019, gradually softening further out (Chart 3.11). Investment growth is now projected to be somewhat lower in 2018 compared with the *March Report*, and somewhat higher in 2019. The projections for the years thereafter are little changed, and the investment level at the end of the projection period is at about the same level as in March.

Higher export prospects

Mainland exports have been sluggish in recent years. Despite considerable competitive gains (Chart 3.12), exports were at about the same level in 2017 as in 2014. The weakness in exports largely reflects the marked fall in global offshore investment, which has led to a decline in Norwegian oil service exports. In addition, exports of seafood and industrial raw materials have been limited by domestic capacity constraints. Travel services have increased sharply in the context of improved competitiveness.

Mainland exports declined in 2018 Q1, and were slightly weaker than projected in the *March Report*. Regional Network contacts indicate that exports from the oil service sector and other export-oriented manufacturing will pick up in the near term.

Further ahead, an upswing in the global petroleum industry is expected to contribute to solid growth in petroleum-related exports (Chart 3.13). The global

expansion will provide a boost to non-oil mainland exports. There are prospects for solid export growth in some segments of commodity-based manufacturing, following substantial investment in added production capacity. On the other hand, a stronger krone, as projected in this *Report*, will weigh on exports. Growth in overall mainland exports is projected to be markedly higher in 2018 than in 2017 and to pick up further in 2019. Thereafter, growth is expected to slow somewhat as a result of lower growth among Norway's trading partners and weakened cost competitiveness. Export growth in 2019 is projected to be slightly higher compared with the *March Report*, while the projections for 2018, 2020 and 2021 have been revised down somewhat. Higher oil prices have pushed up the projections, while a stronger krone and weaker growth abroad have had the opposite effect.

The upturn in the Norwegian economy will also boost imports. Oil and non-oil business investment tends to have a high import content. An expected faster rise in business investment than in other demand components points to higher import growth. On the other hand, improved competitiveness in the period to 2017 suggests a lower import share. Import growth is projected to pick up in 2018 and then slow a little. The projections have been revised up from the *March Report*, primarily because the krone is now projected to be somewhat stronger.

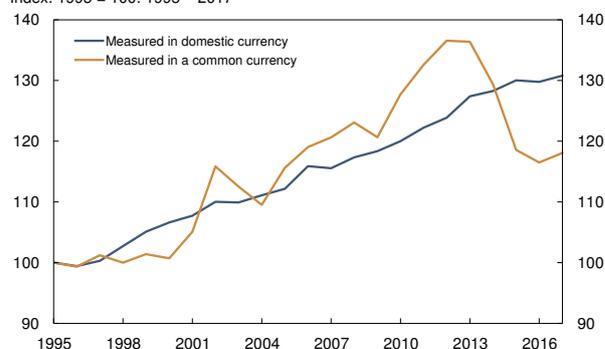
Developments are uncertain

Both household and business demand has been weaker than expected over the past quarter, but is assumed to reflect temporary conditions, and growth is projected to pick up again. Nevertheless, developments may reflect more permanent conditions and growth may prove weaker than projected ahead. There is also a risk that export growth will be lower than projected owing to rising global protectionism.

On the other hand, growth in the Norwegian economy may prove to be stronger than currently envisaged. High employment growth, higher oil prices and rising house prices may boost household and business optimism, increasing the pace of demand growth.

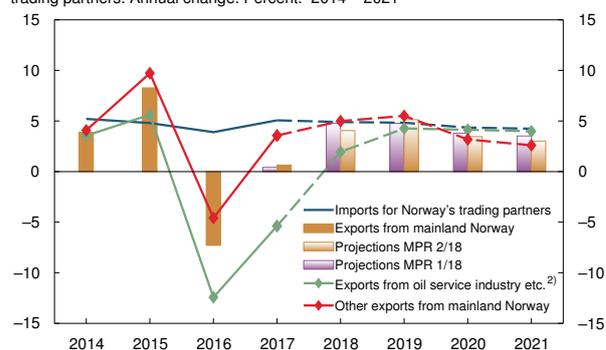
The effects of higher oil prices on developments ahead are uncertain. The oil industry now accounts for a smaller share of the economy than only a few

Chart 3.12 Norwegian labour costs relative to trading partners¹⁾
Index. 1995 = 100. 1995 – 2017



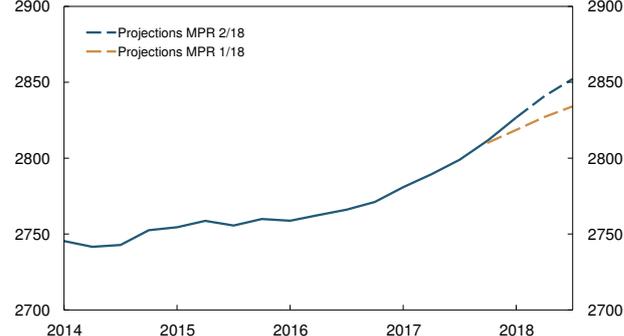
1) Hourly labour costs in manufacturing.
Sources: Norwegian Technical Calculation Committee for Wage Settlements (TBU), Statistics Norway and Norges Bank

Chart 3.13 Exports from mainland Norway and imports for Norway's trading partners. Annual change. Percent. 2014 – 2021¹⁾



1) Projections for 2018 – 2021 (broken lines and shaded bars).
2) Groups of goods and services in the national accounts where the oil service industry accounts for a considerable share of exports.
Sources: Statistics Norway, Thomson Reuters and Norges Bank

Chart 3.14 Employment.¹⁾ Seasonally adjusted. In thousands. 2014 Q1 – 2018 Q3²⁾



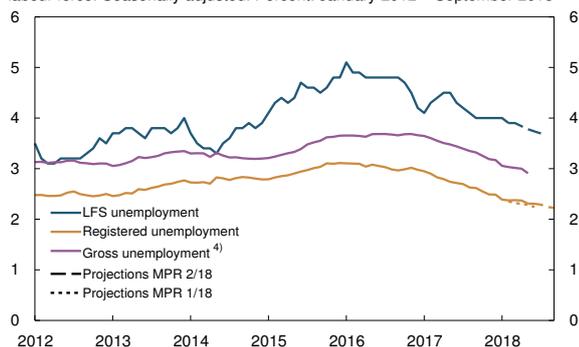
1) According to the quarterly national accounts.
2) Projections for 2018 Q2 – 2018 Q3.
Sources: Statistics Norway and Norges Bank

Chart 3.15 Job vacancies. Share of the total number of positions. Seasonally adjusted. Percent. 2012 Q1 – 2018 Q1



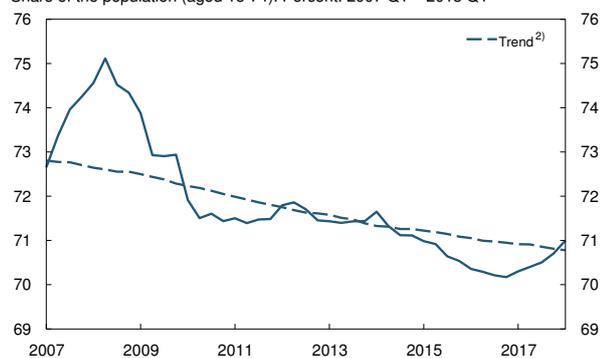
Source: Statistics Norway

Chart 3.16 Unemployment according to LFS¹⁾ and NAV²⁾. Share of the labour force. Seasonally adjusted. Percent. January 2012 – September 2018³⁾



1) Labour Force Survey. Due to revision of LFS, the projections from MPR 1/18 are not directly comparable to the projections in this Report. The projections from the March Report are therefore not shown in the chart.
 2) Registered unemployment.
 3) Projections for June 2018 – September 2018 (NAV) and April 2018 – July 2018 (LFS).
 4) Registered unemployed and ordinary labour market programme participants.
 Sources: Norwegian Labour and Welfare Administration (NAV), Statistics Norway and Norges Bank

Chart 3.17 Employment rate.¹⁾ Share of the population (aged 15-74). Percent. 2007 Q1 – 2018 Q1



1) Employment rate in quarterly national accounts.
 2) Change in the employment rate if the rate for each five-year age cohort had been unchanged at 2013 levels. The curve slopes downward because the population is ageing. 2013 was selected because capacity utilisation in that year was close to a normal level. The projections also take into account non-Western immigrants' somewhat lower labour force participation rate than the population as a whole.
 Sources: Statistics Norway and Norges Bank

years ago, which also affects spillovers into the mainland economy. The impact of higher oil prices on the Norwegian economy will partly depend on the extent to which economic agents perceive the rise to be permanent.

3.3 LABOUR MARKET AND THE OUTPUT GAP

High employment growth

Employment grew markedly in 2017, rising further in 2018 Q1 (Chart 3.14). According to the QNA, the number of employed increased by 41 000 in 2018 Q1 from one year earlier, more than projected in the March Report. Employment growth continued in construction and the public sector. On the other hand, employment edged down again in the industries dependent on oil, after a slight increase towards the end of 2017.

According to job vacancy statistics, labour demand continued to rise in Q1 (Chart 3.15).

Low unemployment

Registered unemployment declined in 2017 (Chart 3.16). The decline has continued in 2018, and in May, seasonally adjusted unemployment was 2.3%, in line with the projection in the March Report. According to the Labour Force Survey (LFS), unemployment remains at a relatively high level, but has edged down since the March Report.

The labour force, which is the sum of unemployed and employed persons, normally fluctuates with the business cycle. The number of job-seekers rises when job prospects improve. According to the LFS, labour force growth has picked up recently.

Higher employment and lower unemployment ahead

In May, Regional Network contacts reported that employment had risen markedly over the previous three months, and that growth would continue at the same pace over the next three months (Chart 1.6). Norges Bank's expectations survey also indicates that employment growth will remain high, and the projections for employment growth in Q2 have therefore been revised up.

Solid growth in the Norwegian economy will continue to boost employment growth ahead. In the first half of 2018, it appears that employment growth will be

close to GDP growth, resulting in very low productivity growth. As productivity growth is expected to pick up again from the latter half of 2018, employment growth will be weaker than output growth. In the projection in this *Report*, employment growth is stronger in 2018 and 2019 and slightly weaker in 2020 and 2021 than in the March projection. The level of employment at the end of the projection period is slightly higher than in the March *Report*.

Growth in the labour force is expected to be solid ahead as a result of higher labour demand. Even so, unemployment is set to edge lower (Annex Table 3b and 3c). Compared with the March *Report*, the projections for registered unemployment are slightly lower in the coming years and little changed at the end of the projection period (Chart 1.11).

Close to normal capacity utilisation

In recent years, the degree of slack in the economy has been higher than normal, and goods and services production has been lower than implied by potential output. Capacity utilisation is assessed to have declined in the period to 2016 and has since picked up.

Registered unemployment has fallen to a low level, now in isolation implying higher-than-normal capacity utilisation. The employment rate has increased recently. The ageing of the population suggests a decline in the employment rate over time. The employment rate is now close to an estimated long-term trend (Chart 3.17), indicating limited labour market slack. Regional Network contacts indicated in May that capacity utilisation is now approaching a normal level (Chart 3.18). The share of enterprises reporting that they would encounter problems accommodating a rise in demand was higher than in the previous survey and was close to its historical average. There was also a slight increase in the share of enterprises citing labour supply as a constraint on output. This share was still somewhat lower than its historical average. Accelerating wage growth indicates that capacity utilisation is increasing. Estimates based on a broad set of models and indicators suggest that capacity utilisation is close to a normal level (Chart 3.19). Overall, capacity utilisation is assessed to have increased in recent months, approximately as projected in the March *Report*, which implies that the output gap is closing.

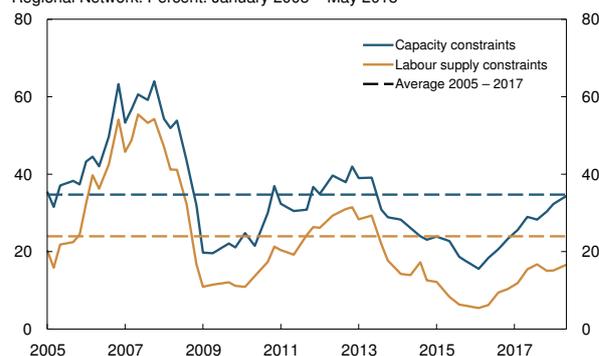
OUTPUT GAP

The output gap, also referred to as capacity utilisation, captures the overall utilisation of resources in the economy. The output gap is defined as the difference between actual output (GDP) and potential output in the economy. Potential output is the highest possible level of output that is consistent with stable developments in prices and wages over time. This level depends on how high employment can be before wage growth accelerates, which is determined by the functioning of the labour market, the tax and social security system and wage formation. Over time, potential output growth is determined by population growth and trend productivity growth.

Capacity utilisation is a key monetary policy variable. In interest rate setting, weight is given to smoothing fluctuations in output and employment. To achieve this, the aim is to keep the output gap close to zero. This is referred to as normal capacity utilisation. Capacity utilisation is also an important indicator of future inflation and is thus related to Norges Bank's objective of low and stable inflation.

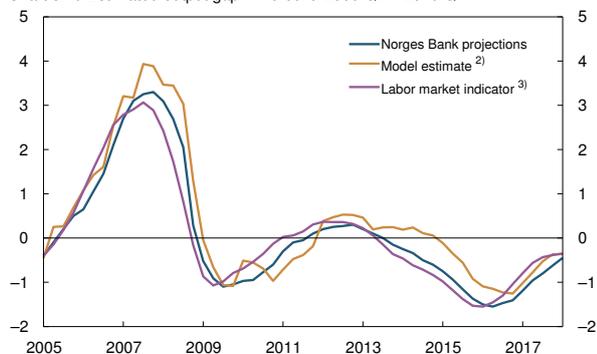
Potential output and the output gap cannot be observed and must be estimated. Norges Bank's output gap estimates are the result of an overall assessment of a number of indicators and models. In this assessment, particular weight is given to labour market developments.

Chart 3.18 Capacity¹⁾ and labour supply²⁾ constraints as reported by the Regional Network. Percent. January 2005 – May 2018



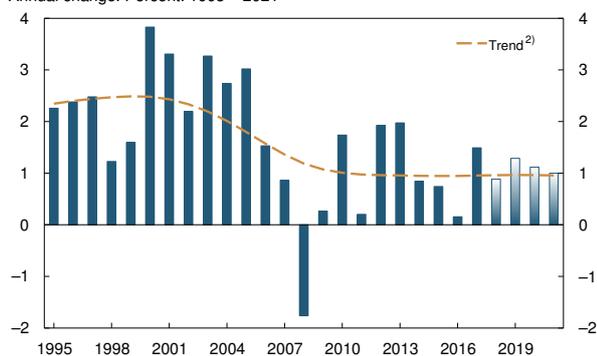
1) Share of contacts that will have some or considerable problems accommodating an increase in demand.
2) Share of contacts reporting that output is being constrained by labour supply.
Source: Norges Bank

Chart 3.19 Estimated output gap¹⁾. Percent. 2005 Q1 – 2018 Q1



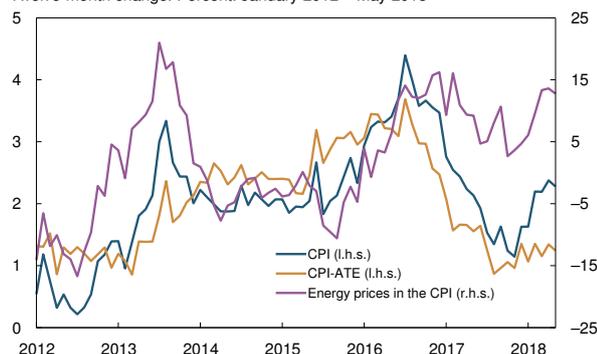
1) The output gap measure the percentage difference between mainland GDP and estimated potential mainland GDP.
 2) See box on page 34 in *Monetary Policy Report 4/17* for a review of the model estimate.
 3) Indicator of the output gap based on the labour market. See Hagelund, K., F. Hansen and Ø. Robstad (2018) "Model estimates of the output gap". *Staff Memo 4/2018*. Norges Bank, for a further discussion.
 Source: Norges Bank

Chart 3.20 Productivity. Mainland GDP per hour worked. Annual change. Percent. 1995 – 2021¹⁾



1) Projections for 2018 – 2021 (shaded bars).
 2) The trend is calculated using an HP filter with $\lambda = 100$. The data set is extended with projections for the years 2018 – 2021.
 Sources: Statistics Norway and Norges Bank

Chart 3.21 CPI, CPI-ATE¹⁾ and energy prices in the CPI²⁾. Twelve-month change. Percent. January 2012 – May 2018



1) CPI adjusted for tax changes and excluding energy products.
 2) Transport fuels, lubricants, electricity and other fuels.
 Sources: Statistics Norway and Norges Bank

Moderate growth in potential output

Potential output is assumed to grow by about 1.5% ahead. After several years of substantial growth in labour immigration, immigration from Europe was close to zero in 2017. Labour immigration is projected to pick up somewhat ahead, but be clearly lower than during the upturn at the beginning of the 2010s. Changes in the age composition of the population will continue to dampen trend labour force growth somewhat owing to a rise in the number of persons in age groups where participation rates are normally low. Trend labour force growth is projected at an annual rate of 0.5% in the period to 2021. Trend productivity is expected to rise by 1% annually, which is slightly higher than the average for the past 10 years and in line with trend estimates (Chart 3.20). The projections are little changed from the *March Report*.

As GDP growth is expected to be higher than potential output growth for 2018 and 2019, capacity utilisation is expected to continue to increase. Capacity utilisation is projected to fall back and approach a normal level through 2020 and 2021. The projections for capacity utilisation are slightly higher than in the *March Report*.

There is uncertainty surrounding potential output growth. If business investment increases more than anticipated, trend productivity growth may also prove to be higher. The recent strong employment growth may indicate that the potential of the labour force is greater than assumed earlier. On the other hand, labour force participation for the age group 25–54 has declined over time and may reflect a downward trend in employment unrelated to demographic changes.

3.4 COSTS AND PRICES

Higher energy prices have pushed up inflation

Inflation has increased over the past half-year. The 12-month rise in the consumer price index (CPI) was 2.3% in May, about one percentage point higher than in autumn (Chart 3.21). The rise primarily reflects high energy price inflation and indirect tax increases. The 12-month rise in the CPI adjusted for tax changes and excluding energy products (CPI-ATE) was 1.2% in May. Other indicators of underlying inflation have risen somewhat more than the CPI-ATE over the past half-year (see box on page 29).

Underlying inflation lower than expected

Since the *March Report*, CPI inflation has been slightly higher than projected, while CPI-ATE inflation has been lower than expected (Annex Table 3d). Inflation has been somewhat lower than projected for both domestically produced goods and services and for imported consumer goods in the CPI-ATE (Chart 3.22). The pass-through to consumer prices from the exchange rate depreciation in 2017 appears to have been weaker than previously assumed. Energy prices, on the other hand, have risen more than expected.

Accelerating wage growth

Wage growth picked up in 2017 and is projected to increase further in 2018 to an annual rate of 2.9%. The projection is unchanged from the *March Report* and is consistent with the spring wage settlement and feedback from the Regional Network and Norges Bank's expectations survey (Chart 3.23).

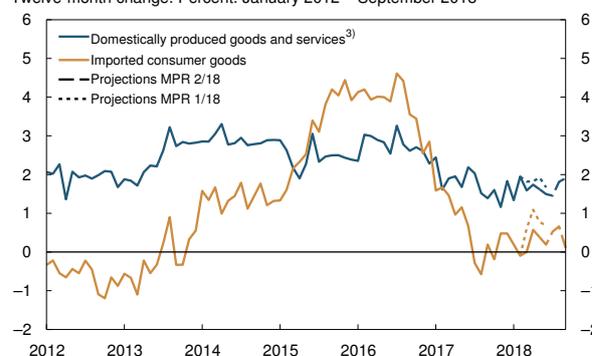
Rising capacity utilisation and a tighter labour market are expected to push up wage growth further in the years ahead. Compared with the *March Report*, the projections for nominal wage growth are a little lower for 2019 and unchanged for 2020 and 2021 (Chart 1.12). The projections for real wage growth are slightly lower for 2018, but somewhat higher for 2020 and 2021. The upward revision of the projections for real wage growth further out in the projection period reflects somewhat higher-than-expected capacity utilisation ahead and potential room for somewhat higher wages owing to increased corporate profitability as a result of the oil price rise.

The improvement in Norway's terms of trade suggests somewhat higher wage growth in Norway than among main trading partners in the coming years (Chart 3.24). Compared with previous upturns, wage growth is nevertheless projected to be moderate, reflecting prospects for continued weak productivity growth. The labour share, which measures the share of GDP allocated to wage earners, is expected to edge down further out in the projection period (Chart 3.25).

Underlying inflation expected to rise

Higher wage growth is assumed to push up underlying inflation a little in the near term. On the other hand, imported consumer goods inflation appears to be lower than previously expected. CPI-ATE inflation

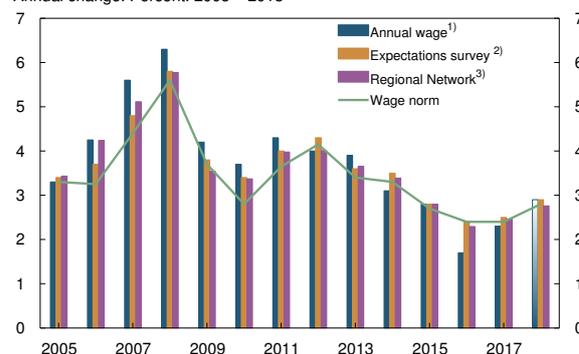
Chart 3.22 CPI-ATE¹⁾ by supplier sector.
Twelve-month change, Percent. January 2012 – September 2018²⁾



1) CPI adjusted for tax changes and excluding energy products.
2) Projections for June 2018 – September 2018.
3) Norges Bank's estimates.

Sources: Statistics Norway and Norges Bank

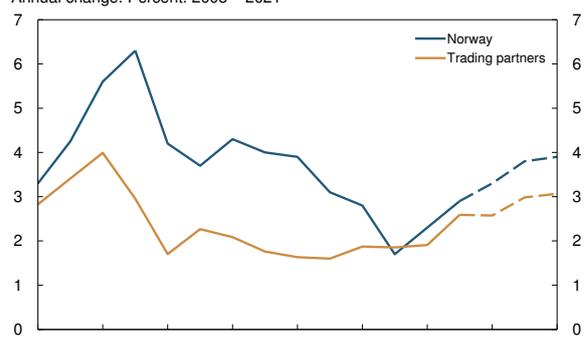
Chart 3.23 Wage, wage norm and wage expectations.
Annual change, Percent. 2005 – 2018



1) Actual annual wage growth from Statistics Norway. Norges Bank's projections for 2018 (shaded bars).
2) Social partners' wage growth expectations for the current year as measured by Norges Bank's expectations survey in Q2 each year.
3) Expected wage growth for the current year as reported by the Regional Network in Q2 each year.

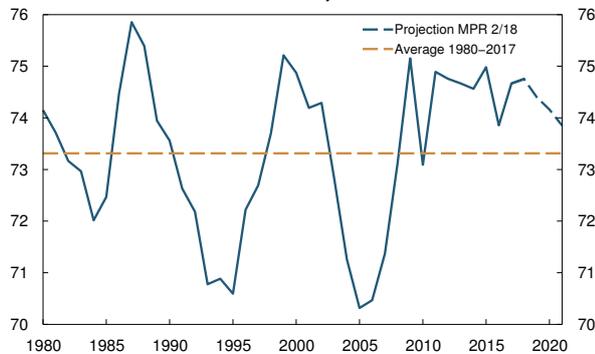
Sources: Epinion, Opinion, Statistics Norway, Kantar TNS and Norges Bank.

Chart 3.24 Wage growth in Norway and for main trading partners¹⁾.
Annual change, Percent. 2005 – 2021²⁾



1) Aggregate for wage growth is based on labour cost growth in the euro area, US, UK and Sweden.
2) Projections for 2018 – 2021 (broken lines).
Sources: Norwegian Technical Calculation Committee for Wage Settlements (TBU), Statistics Norway, Thomson Reuters and Norges Bank

Chart 3.25 Labour share for mainland Norway.¹⁾ Percent. 1980 – 2021²⁾

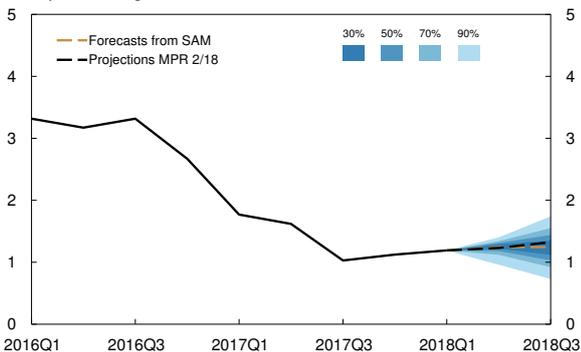


1) Labour costs as a share of the sum of labour costs and operating profit.
2) Projections for 2018 – 2021.
Sources: Statistics Norway and Norges Bank

is projected to be somewhat lower in the near term than in the *March Report*. The projections are closely in line with the SAM-based projections for Q2 and Q3 (Chart 3.26).

In the coming years, higher capacity utilisation and higher wage growth are expected to push up inflation (Chart 3.27). However, a stronger krone is expected to have the opposite effect. In addition, external inflationary impulses, measured in foreign currency, are expected to moderate compared with 2017 (Chart 2.8). Overall, four-quarter CPI-ATE inflation is projected to rise somewhat in the quarters ahead (Chart 1.1d), resulting in annual CPI-ATE inflation of 1.3% in 2018. Thereafter, inflation is expected to level off before picking up again towards the end of the projection period to approximately 2% around the end of 2021. The projections for CPI-ATE inflation in the years ahead have been revised down slightly compared with the *March Report*, mainly because the krone is projected to be stronger through the projection period than anticipated in March.

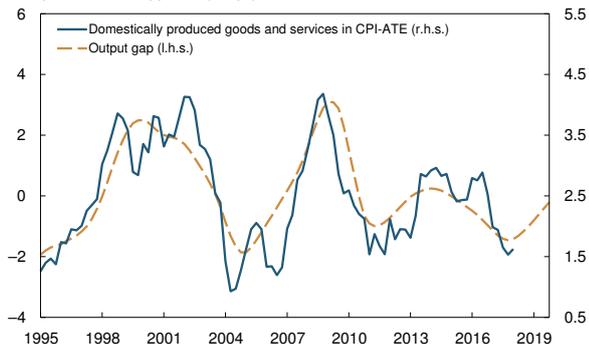
Chart 3.26 CPI-ATE¹⁾ with fan chart given by SAM²⁾. Four-quarter change. Percent. 2016 Q1 – 2018 Q3³⁾



1) CPI adjusted for tax changes and excluding energy products.
2) System for Averaging short-term Models.
3) Projections for 2018 Q2 – 2018 Q3.
Sources: Statistics Norway and Norges Bank

Annual CPI inflation is expected to be 2.3% in 2018, markedly higher than the projection for annual CPI-ATE inflation. The difference reflects indirect tax increases and high energy price inflation. CPI inflation and CPI-ATE inflation are expected to converge and remain approximately equal thereafter. Compared with the *March Report*, the projections for CPI inflation are slightly higher for 2018 and somewhat lower for the next three years (Chart 1.1c). There are prospects for higher energy price inflation in the coming year than assumed in March.

Chart 3.27 Domestically produced goods and services in CPI-ATE. Four-quarter change. Percent. Lagged output gap.¹⁾ Percent. 1995 Q1 – 2019 Q4



1) The output gap is measured by the percentage difference between mainland GDP and estimated potential mainland GDP. The gap is a five-quarter moving average lagged by four quarters.
Sources: Statistics Norway and Norges Bank

The projections are uncertain

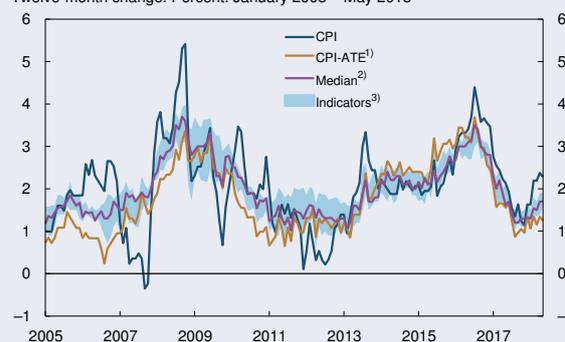
There is uncertainty surrounding developments in price and wage inflation ahead. Price and wage inflation in Norway may remain moderate even if economic activity picks up. On the other hand, the upturn and the tightening of the labour market may prove to be more pronounced than projected, further pushing up price and wage inflation ahead. Moreover, there is uncertainty associated with the effects of the change in the inflation target in March 2018 on economic agents' inflation expectations ahead (see box on inflation expectations on page 29).

INDICATORS OF UNDERLYING INFLATION

Inflation targeting should be forward-looking and flexible. Norges Bank set the interest rate with a view to stabilising annual consumer price inflation (CPI) in the medium term. Temporary conditions may lead to substantial short-term fluctuations in CPI inflation. Indicators of underlying inflation can be useful in order to see through such fluctuations.¹

The most important indicator of underlying inflation in Norges Bank's analyses is the CPI adjusted for tax changes and excluding energy products (CPI-ATE). In the past two years, CPI-ATE inflation has been lower than CPI inflation, primarily reflecting high energy price inflation, but also indirect tax increases particularly in 2018. In this period, other measures of underlying inflation have indicated somewhat higher inflation than the CPI-ATE, but lower than the CPI (Chart 3.28). Since summer 2017, 12-month CPI-ATE inflation and the median of the other underlying inflation indicators have risen by 0.4 and 0.6 percentage point respectively. These developments are consistent with rising wage growth.

Chart 3.28 CPI and indicators of underlying inflation. Twelve-month change. Percent. January 2005 – May 2018



1) CPI adjusted for tax changes and excluding energy products.
2) Median of CPIM, CPIXE, 20% trimmed mean, CPI-XV and CPI common. See Husabø, E. (2017) "Indicators of underlying inflation in Norway". Staff Memo 13/2017. Norges Bank, for a review of the indicators.
3) The band shows the highest and lowest values for CPIM, CPIXE, 20% trimmed mean, CPI-XV and CPI common.
Sources: Statistics Norway and Norges Bank

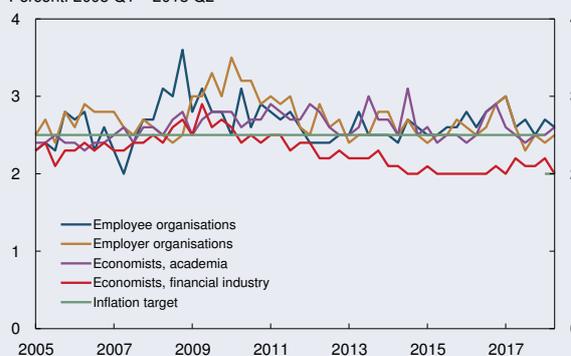
1 See Husabø, E. (2017) "Indicators of underlying inflation in Norway". Staff Memo 13/2017. Norges Bank, for a more detailed review of the various indicators.

INFLATION EXPECTATIONS

Expectations with regard to future inflation are an important factor in many economic decisions, such as price and wage setting. Anchored inflation expectations can make it easier for monetary policy to achieve the objective of price stability and contribute to smoothing fluctuations in output and employment. Inflation expectations are often referred to as anchored when medium- and long-term inflation expectations show little reaction to new information, remaining stable and close to the target. In recent years, longer-term inflation expectations, as measured in Norges Bank's expectations survey, have generally remained close to 2.5% (Chart 3.29).¹

The inflation target for monetary policy was lowered from 2.5% to 2.0% in March 2018. The expectations survey for 2018 Q2 was conducted after the change, in the period between 1 and 18 May. For financial industry economists, expectations with regard to inflation five years ahead fell from 2.2% in Q1 to 2.0% in Q2. The long-term expectations of economists in academia and the social partners showed little change, remaining close to 2.5%. In the March Report, it was assumed that it would take some time for inflation expectations to adjust to the new target. These assumptions have not been changed in the light of the responses given in the most recent expectations survey.

Chart 3.29 Expected 12-month change in consumer price five years ahead. Percent. 2005 Q1 – 2018 Q2



Sources: Epinion, Opinion and Kantar TNS

1 See Erlandsen, S. K. and P. B. Ulvedal (2017) "Are inflation expectations anchored in Norway?". Staff Memo 12/2017. Norges Bank, for a more detailed review.

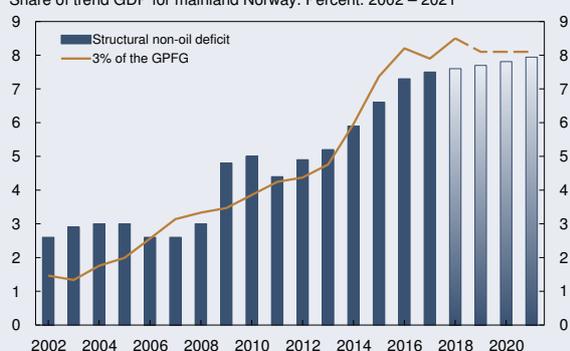
ASSUMPTIONS CONCERNING FISCAL POLICY

The fiscal policy assumptions in this *Report* are based on the revised budget for 2018. Petroleum revenue spending, as measured by the structural non-oil deficit, is estimated at NOK 226bn in 2018, or 7.6% of trend mainland GDP, an increase of 0.1 percentage point from 2017.

The deficit is estimated at 2.7% of the value of the Government Pension Fund Global (GPF) in 2018. Petroleum revenue spending is assumed to rise somewhat faster than the value of the GPF in the coming years. This implies that petroleum revenue spending will also grow as a share of the economy. The technical assumption applied is that the non-oil deficit will increase by 0.1 percentage point as a share of GDP each year to the end of the projection period. In that case, fiscal impulses to growth in the coming years will be broadly in line with the estimates for 2018. At the same time there are prospects that the deficit will be somewhat below the 3% path also at the end of the projection period (Chart 3.30).

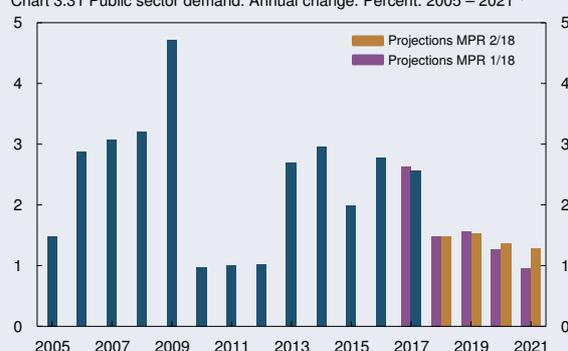
Public demand has expanded rapidly in recent years (Chart 3.31), at an annual average of 2.6% over the past five years. Growth in public demand is assumed to slow to 1.5% in 2018, falling further in 2020 and 2021. Nevertheless, the growth projections towards the end of the projection period are somewhat higher than in March, as the value of the GPF is now expected to be somewhat higher than assumed earlier.

Chart 3.30 Structural non-oil deficit and 3% of the GPF¹⁾.
Share of trend GDP for mainland Norway. Percent. 2002 – 2021²⁾



1) Government Pension Fund Global.
2) Projections for 2018 – 2021 (broken line and shaded bars).
Sources: Ministry of Finance and Norges Bank

Chart 3.31 Public sector demand. Annual change. Percent. 2005 – 2021¹⁾



1) Projections for 2018 – 2021.
Sources: Statistics Norway and Norges Bank

PROJECTIONS FOR PETROLEUM INVESTMENT

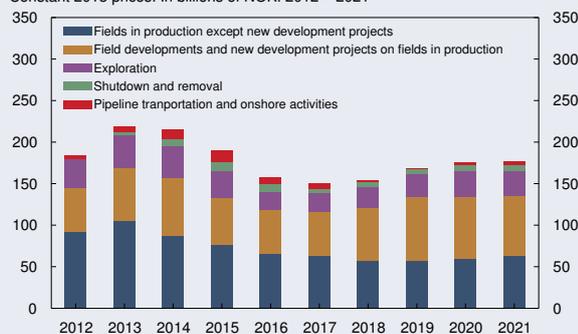
After falling markedly over several years, there are now prospects of a rise in petroleum investment (Chart 3.32). In recent years, oil companies have cut costs substantially, with a marked fall in break-even prices for new development projects to between USD 10–40 per barrel. Oil companies will therefore launch a number of development projects ahead if oil prices evolve as assumed (Chart 1.2).

Petroleum investment is projected to increase by close to 3% in volume terms in 2018 and by almost 15% between 2018 and 2021. The projections for the investment level between 2018 and 2020 are lower than in March, while the projection for 2021 is higher. The projections for investment in fields in production and ongoing field development projects have been revised down in the light of the Q2 investment intentions survey. At the same time, the projections for investment in exploration have been revised up in the light of higher oil prices and higher-than-expected survey-based exploration estimates. The oil price rise since mid-March points to slightly higher investment in new development projects than in the *March Report*, but will likely have a limited impact between 2018 and 2021 as oil and futures prices in mid-March were probably markedly higher than break-even prices for most of the development projects under evaluation by oil companies.

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. Oil companies have started a number of development projects in new and existing fields over the past year, and are expected to start up three development projects in the latter half of 2018 and around 20 development projects between 2019 and 2021. This will contribute to a pronounced increase in investment ahead (Chart 3.33), but the increase is curbed by a fall in investment in the development projects underway. Investment in fields in production excluding new developments will continue to fall in 2018 in line with the survey, but is expected to rise thereafter as a result of improved profitability in the petroleum industry.

Exploration expenditure has almost halved since 2014. Investment in exploration is projected to show a solid rebound between 2017 and 2021, led by the decline in drilling costs in recent years and prospects of an oil price between USD 60–70 ahead.

Chart 3.32 Petroleum investment.
Constant 2018 prices. In billions of NOK. 2012 – 2021¹⁾



¹⁾ Projections for 2018 – 2021. Figures for 2010 – 2017 are from the investment intentions survey by Statistics Norway and deflated by the price index for petroleum investment in the national accounts. The index is projected to increase by 1% between 2017 and 2018.
Sources: Statistics Norway and Norges Bank

Chart 3.33 Investment in field development and fields in production.
Constant 2018 prices. In billions of NOK. 2012 – 2021¹⁾



¹⁾ Projections for 2018 – 2021. Figures for 2010 – 2017 are from Statistics Norway's investment intentions survey and deflated by the price index for petroleum investment in the national accounts. The projections are based on reports to the Storting, impact analyses, forecasts from the Norwegian Petroleum Directorate, Statistics Norway's investment intentions survey and current information about development projects.
Sources: Statistics Norway and Norges Bank

4 Monetary policy analysis

According to the forecast in this *Report*, the key policy rate will be raised in 2018 Q3, followed by a gradual increase to somewhat above 2% at the end of 2021. The interest rate path is little changed from the *March Report*. The rise in oil prices and prospects of higher capacity utilisation suggest in isolation a higher interest rate path. The fact that the krone exchange rate has remained relatively stable despite higher oil prices pulls in the same direction. On the other hand, lower-than-expected underlying inflation and lower growth and interest rates abroad pull in the direction of a lower interest rate path.

4.1 OBJECTIVES AND RECENT DEVELOPMENTS

Low and stable inflation

The primary objective of monetary policy is low and stable inflation. From 2001, the operational target of monetary policy was annual consumer price inflation of close to 2.5% over time. In March 2018, the target was changed to 2%. Average annual consumer price inflation has been around 2% since 2001 (Chart 4.1).

The new Regulation on Monetary Policy specifies that inflation targeting shall be forward-looking and flexible so that it can contribute to high and stable output and employment and to counteracting the build-up of financial imbalances. In recent years, output and employment volatility has been relatively limited despite large shocks to the Norwegian economy (Chart 4.2). A flexible inflation targeting regime has helped to dampen the impact on the real economy.

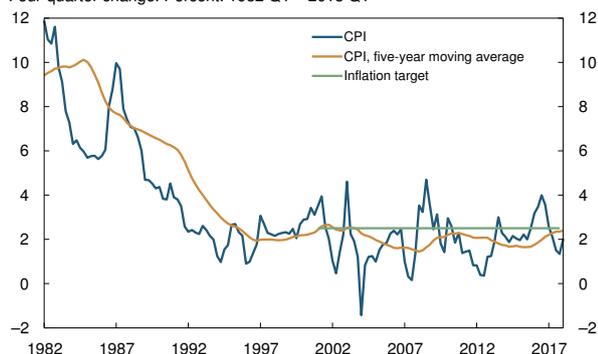
Monetary policy objectives and trade-offs are described further on page 37. The Special Feature on page 38 discusses how monetary policy can contribute to high and stable output and employment.

Expansionary monetary policy

The interest rate level in recent years has been very low, both globally and in Norway. This reflects in part the decline over time in the level of the neutral real interest rate and in part the need for an expansionary monetary policy.

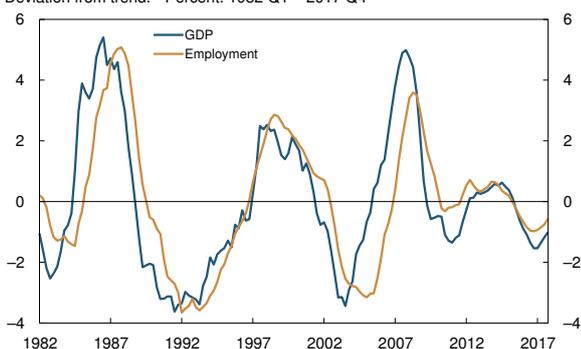
The neutral interest rate, which is the rate that is neither expansionary nor contractionary, cannot be observed. The neutral real interest rate in Norway is estimated to be in the range of 0%–1%, though subject to considerable uncertainty (see Special Feature on estimates of the neutral interest rate on page 40). The key policy rate in Norway is 0.5%, while

Chart 4.1 Consumer price index (CPI). Four-quarter change. Percent. 1982 Q1 – 2018 Q1



Sources: Statistics Norway and Norges Bank

Chart 4.2 GDP for mainland Norway and employment. Deviation from trend.¹⁾ Percent. 1982 Q1 – 2017 Q4



¹⁾ The trend for both series is calculated using an HP filter with $\lambda = 40\,000$. Calculations are based on data from 1978 Q1 – 2018 Q1. The deviation from trend is smoothed over three quarters. Sources: Statistics Norway and Norges Bank

the money market rate is around 1%. The real interest rate is lower than the Bank's estimate of the neutral real interest rate (Chart 4.3).

The analysis in the March *Report* implied that it would soon be appropriate to raise the key policy rate. According to the March forecast, the key policy rate would most likely be raised after summer 2018 and increased gradually to around 2% in 2021. The real interest rate was projected to be slightly positive at the end of 2021.

4.2 NEW INFORMATION AND ASSESSMENTS

Higher capacity utilisation, but lower inflation

To assess how the outlook for inflation and the output gap are affected by new information, a model-based exercise is performed where the key policy rate forecast from the previous *Report* is held constant. Norges Bank's macroeconomic model NEMO¹ is used to analyse updated projections for Q2 and Q3. For variables that are not determined in the model, updated projections for the entire projection period are used.

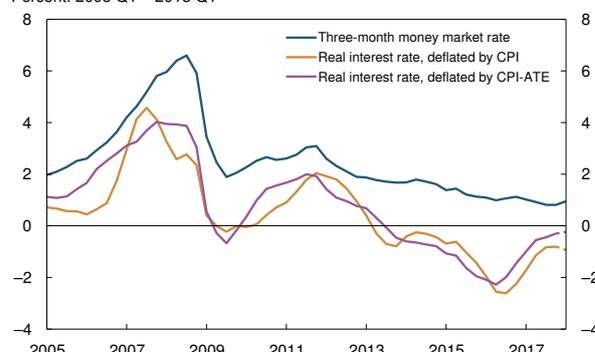
Compared with the projections in the March *Report*, the model-based analysis suggests that CPI-ATE inflation will be somewhat lower in the coming years (Chart 4.4a). Capacity utilisation rises slightly faster than envisaged in March and remains at a higher level throughout the projection period (Chart 4.4b). Higher capacity utilisation contributes to pushing up inflation further ahead. At the end of the projection period, inflation is a little higher than 2%, roughly as projected in March. The analysis implies little change in the interest rate path in the light of new information.

New forecast indicates a gradual interest rate rise

The upturn in the Norwegian economy is continuing. Capacity utilisation appears to be close to a normal level and there are prospects that it will increase faster than expected earlier. Underlying inflation is below the inflation target, but higher capacity utilisation implies an increase in price and wage inflation further ahead.

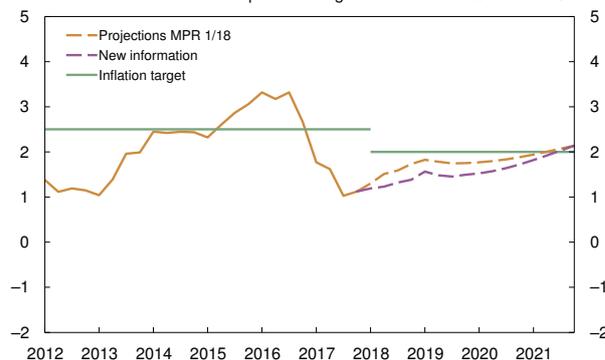
The outlook for the Norwegian economy suggests that it will soon be appropriate to raise the key policy

Chart 4.3 Three-month money market rate and real interest rates¹⁾. Percent. 2005 Q1 – 2018 Q1²⁾



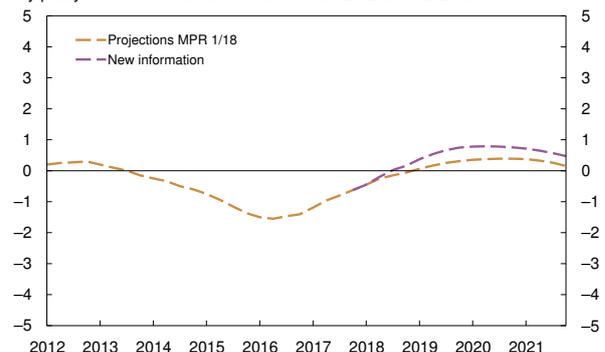
1) Three-month money market rate deflated by a three-quarter centered moving average of inflation, measured by four-quarter CPI inflation and CPI inflation adjusted for tax changes and excluding energy prices (CPI-ATE).
2) Projections for 2018 Q1 (broken lines).
Sources: Statistics Norway and Norges Bank

Chart 4.4a CPI-ATE¹⁾. Projection conditional on new information and key policy rate forecast in MPR 1/18. Four-quarter change. Percent. 2012 Q1 – 2021 Q4²⁾



1) CPI adjusted for tax changes and excluding energy products.
2) Projections for 2018 Q2 – 2021 Q4.
Sources: Statistics Norway and Norges Bank

Chart 4.4b Estimated output gap¹⁾. Projection conditional on new information and key policy rate forecast in MPR 1/18. Percent. 2012 Q1 – 2021 Q4



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

1 NEMO 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.

rate. Uncertainty surrounding the effects of a higher interest rate suggests a cautious approach. As in March, the overall outlook and the balance of risks imply a gradual rate rise in the years ahead. This will help to bring inflation up to target, while unemployment remains low. If the key policy rate is not raised ahead, price and wage inflation may accelerate, with price inflation overshooting target further out.

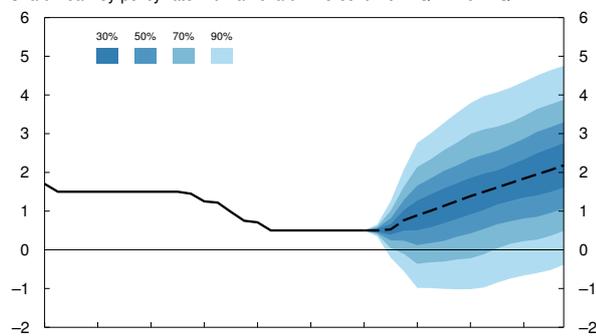
The consideration of counteracting the build-up of financial imbalances may also indicate a gradual interest rate rise. Persistently high credit growth has added to the vulnerability of the household sector. In recent months, household credit growth has moderated somewhat, but remains higher than household income growth. After falling through 2017, house prices have risen again. An increase in the interest

rate level may contribute to restraining house price inflation and credit growth.

The forecast implies that the key policy rate will be raised by 0.25 percentage point in 2018 Q3, followed by a gradual increase to somewhat above 2% at the end of 2021 (Chart 4.5a). The interest rate path is little changed from the *March Report* (Chart 4.6).

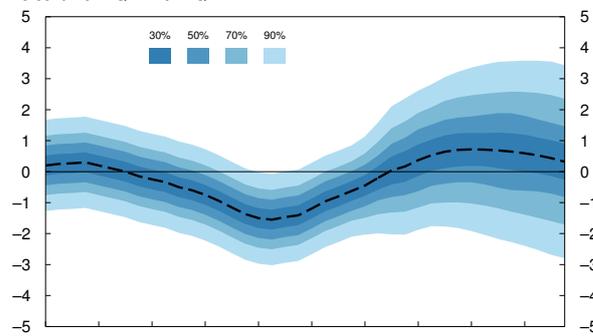
In the analysis, the money market rate is projected to rise as the key policy rate increases (Chart 1.7). Banks' lending margins are expected to remain close to today's level throughout the projection period. Household lending rates are projected to rise by around 1.5 percentage points in the period to the end of 2021.

Chart 4.5a Key policy rate with fan chart¹⁾. Percent. 2012 Q1 – 2021 Q4²⁾



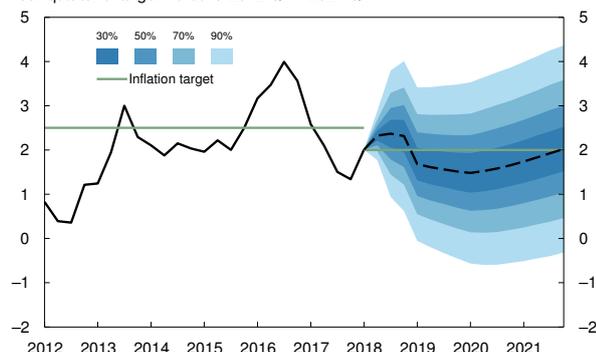
1) The fan chart is based on historical experience and stochastic simulations in Norges Bank's main macroeconomic model, NEMO. It does not take into account that a lower bound for the interest rate exists.
2) Projections for 2018 Q2 – 2021 Q4 (broken line).
Source: Norges Bank

Chart 4.5b Estimated output gap¹⁾ with fan chart²⁾. Percent. 2012 Q1 – 2021 Q4



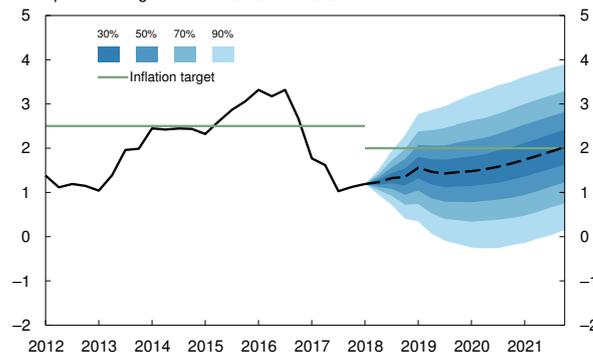
1) The output gap measures the percentage deviation between mainland GDP and estimated potential mainland GDP.
2) The fan chart is based on historical experience and stochastic simulations in Norges Bank's main macroeconomic model, NEMO.
Source: Norges Bank

Chart 4.5c CPI with fan chart¹⁾. Four-quarter change. Percent. 2012 Q1 – 2021 Q4²⁾



1) The fan chart is based on historical experience and stochastic simulations in Norges Bank's main macroeconomic model, NEMO.
2) Projections for 2018 Q2 – 2021 Q4 (broken line).
Sources: Statistics Norway and Norges Bank

Chart 4.5d CPI-ATE¹⁾ with fan chart²⁾. Four-quarter change. Percent. 2012 Q1 – 2021 Q4³⁾



1) CPI adjusted for tax changes and excluding energy products.
2) The fan chart is based on historical experience and stochastic simulations in Norges Bank's main macroeconomic model, NEMO.
3) Projections for 2018 Q2 – 2021 Q4 (broken line).
Sources: Statistics Norway and Norges Bank

The real interest rate is projected to rise gradually ahead (Chart 4.7). Because inflation is moving higher, the real interest rate will rise less than the key policy rate. The projections for the real interest rate are higher than in the *March Report* for the entire projection period.

Positive output gap and inflation close to target

With a key policy rate consistent with the interest rate forecast in this *Report*, capacity utilisation is expected to rise further and remain somewhat above a normal level in the coming years. Capacity utilisation is projected to peak at the beginning of 2020, gradually declining thereafter (Chart 4.5b). Compared with the *March Report*, the projections for capacity utilisation are somewhat higher throughout the projection period. Higher oil prices and improved growth prospects for the mainland economy in the coming period will contribute to a more positive output gap, while a slightly higher real interest rate will have a dampening effect.

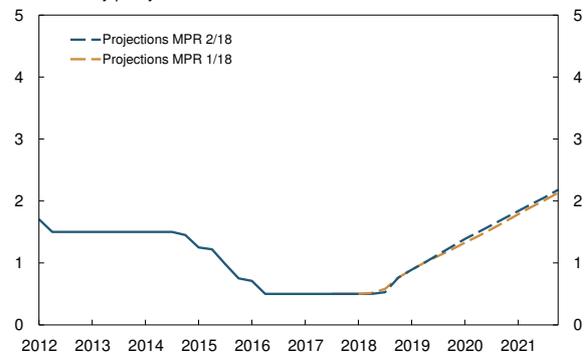
Accelerating wage growth is expected to pull up underlying inflation throughout the projection period, but a stronger krone will curb the rise in inflation. Inflation, as measured by both the CPI and the CPI-ATE, is projected at around 2% at the end of 2021 (Charts 4.5c-d). With the exception of the projection for CPI inflation for 2018, the inflation projections are somewhat lower than in March throughout the projection period. The downward revision primarily reflects a stronger krone exchange rate than projected in the *March Report*.

Factors behind changes in the interest rate path

The forecast for the key policy rate is based on trade-offs between various considerations (see box on page 37), an overall assessment of the situation in the Norwegian and global economy and Norges Bank's perception of the functioning of the economy. Chart 4.8 illustrates the factors that have contributed to the changes in the interest rate forecast. The overall change in the interest rate path from the *March Report* is shown by the black line. The macro 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 *March Report* and the effect on the new interest rate path.

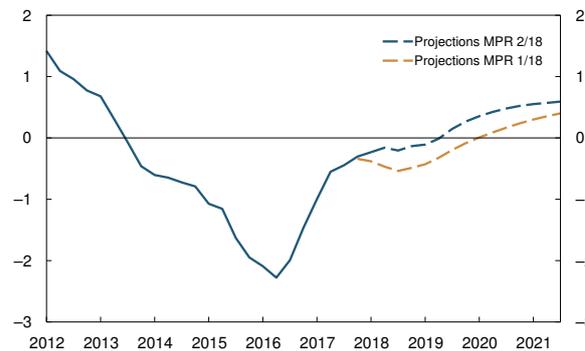
Economic growth among trading partners has been slightly lower than expected, and recent develop-

Chart 4.6 Key policy rate. Percent. 2012 Q1 – 2021 Q4¹⁾



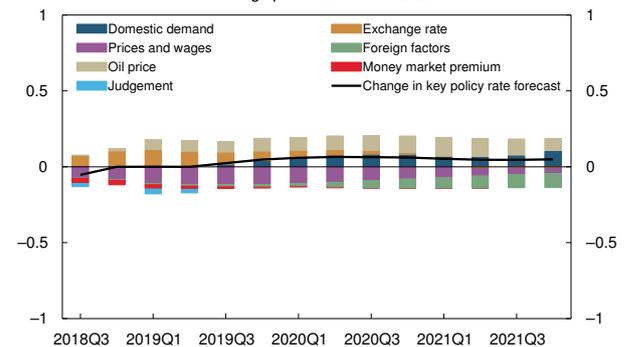
1) Projections for 2018 Q2 – 2021 Q4.
Source: Norges Bank

Chart 4.7 Real interest rate.¹⁾ Percent. 2012 Q1 – 2021 Q3²⁾



1) Three-month money market rate deflated by a three-quarter centered moving average of inflation, measured by four-quarter CPI inflation adjusted for tax changes and excluding energy prices (CPI-ATE).
2) Projections for 2018 Q1 – 2021 Q3.
Source: Statistics Norway and Norges Bank

Chart 4.8 Factors behind changes in key policy rate forecast since MPR 1/18. Cumulative contribution. Percentage points. 2018 Q3 – 2021 Q4



Source: Norges Bank

ments point to a slightly weaker global growth outlook than assumed earlier. This suggests in isolation a decrease in Norwegian exports. Policy rate expectations have also fallen since March, especially further out in the projection period. A less pronounced rate rise abroad contributes, all else equal, to a stronger krone. A stronger krone restrains the rise in prices for imported goods and reduces exports by weakening competitiveness. Changes in the global outlook suggest a lower interest rate path towards the end of the projection period (green bars).

In line with futures prices, oil prices are projected to remain at a higher level than assumed in the *March Report*. Persistently higher oil prices will boost oil-related exports and oil investment. This may also push up consumption and investment through higher household and business optimism. On the other hand, the positive contribution from higher oil prices is dampened by new information indicating lower petroleum investment in the coming years than assumed in the *March Report*. Pulling in the direction of a lower interest rate path are a stronger krone and somewhat weaker growth among trading partners owing to higher oil prices. On balance, higher oil prices pull up the interest rate path throughout the projection period (beige bars).

The upturn in the Norwegian economy is continuing, and capacity utilisation is close to a normal level. Higher house prices and the upward revision of the projection for public sector demand will boost domestic demand, pulling up the interest rate path (dark blue bars).

CPI-ATE inflation has risen somewhat less than projected, and the projection for underlying inflation in the near term has been revised down. Developments in inflation pull down the interest rate path somewhat (purple bars).

The krone has on average been a little weaker than projected in the *March Report*, despite higher oil prices. A weaker exchange rate than implied by overall developments suggests in isolation a higher interest rate path (orange bars).

Since the *March Report*, the money market premium has on average been somewhat higher than projected. The projected premium for 2018 has been revised up slightly. In isolation, this pulls down the interest rate path (red bars).

On balance, the factors described above imply little change in the interest rate path, but a small upward adjustment from 2019. In the light of the uncertainty surrounding the effects of a higher interest rate, it may be appropriate to assess the effects of a first rate hike before raising the key policy rate further. The interest rate path has therefore been adjusted up somewhat less at the beginning of the projection period than new information alone would indicate (light blue bars).

Norwegian forward rates have fallen

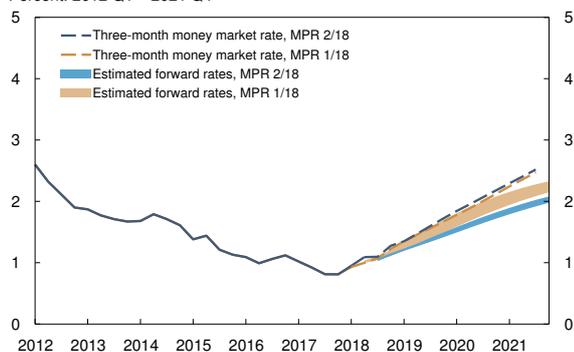
Forward rates in the money and bond markets can function as a cross-check of whether monetary policy is consistent with the Bank's earlier communication and response pattern. Experience shows that at times the Bank's projection for the money market rate will diverge from forward rates. Estimated forward rates have fallen since the *March Report*, and forward rates are lower than the Bank's projection for the money market rate (Chart 4.9).

4.3 UNCERTAINTY

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. The 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.

Chart 4.9 Three-month money market rate¹⁾ and estimated forward rates²⁾. Percent. 2012 Q1 – 2021 Q4³⁾



1) Projections for the money market rate are calculated as an average of the key policy rate in the current and subsequent quarter plus an estimate of the money market premium.
 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 26 February – 9 March in 2018 for MPR 1/18 and 4 June – 15 June in 2018 for MPR 2/18 respectively.
 3) Projections for 2018 Q2 – 2021 Q4.
 Sources: Thomson Reuters and Norges Bank

Global growth may prove weaker than assumed, in the light of rising protectionism among other things. Lower global growth and lower interest rates normally lead to weaker Norwegian exports and a stronger krone. It is also possible that wage growth in Norway will increase less than projected even if economic

activity picks up. This will likely lead to lower-than-projected inflation. On the other hand, the upturn may be stronger than projected in this *Report*, on the back of high employment growth, higher oil prices and rising house prices. Price and wage inflation may then move up faster than projected.

MONETARY POLICY OBJECTIVES AND TRADE-OFFS

The operational target of monetary policy is annual consumer price inflation of close to 2% over time. Inflation targeting shall be forward-looking and flexible so that it can contribute to high and stable output and employment and to counteracting the build-up of financial imbalances. The various considerations are weighed against each other.

The key policy rate is set with a view to stabilising inflation at the target in the medium term. The horizon will depend on the disturbances to which the economy is exposed and the effects on the outlook for inflation and for output and employment.

Monetary policy should contribute to stabilising output and employment at around the highest possible level consistent with price stability over time. This level is determined by structural conditions such as the tax and social security system, wage formation and labour force composition.

When shocks occur, a short-term trade-off may arise between reaching the inflation target and supporting high and stable output and employment. Monetary policy should achieve a reasonable trade-off between these considerations.

A flexible inflation targeting regime, in which sufficient weight is given to the real economy, can prevent downturns from becoming deep and protracted. This can reduce the risk of unemployment becoming entrenched at a high level following an economic downturn.

If there are signs that financial imbalances are building up, the consideration of high and stable output and employment may in some situations suggest keeping the key policy rate somewhat higher than would otherwise be the case. To some extent, this can contribute to reducing the risk of sharp economic downturns further ahead. The regulation and supervision of financial institutions are the primary means of addressing shocks to the financial system.

The conduct of monetary policy takes account of uncertainty regarding the functioning of the economy. Uncertainty surrounding the effects of monetary policy normally suggests a cautious approach to interest rate setting. This can reduce the risk that monetary policy will have unintended consequences. The key policy rate will normally be changed gradually so that the effects of interest rate changes and other new information about economic developments can be assessed.

In situations where the risk of particularly adverse outcomes is pronounced, or if there is no longer confidence that inflation will remain low and stable, it may in some cases be appropriate to react more strongly in interest rate setting than normal.

How can monetary policy contribute to high and stable output and employment?

The new Regulation on Monetary Policy of 2 March 2018 states that "Inflation targeting shall be forward-looking and flexible so that it can contribute to high and stable output and employment and to counteracting the build-up of financial imbalances". Compared with the previous regulation, the word "high" is new, and the wording of the regulation corresponds with the wording of the Central Bank Law Commission's proposal for an objects clause for Norges Bank. Even though the wording of the new regulation is somewhat different, it is in line with how monetary policy has been conducted. Monetary policy has gradually become more flexible, in the sense that more weight has been given to developments in output and employment since inflation targeting was introduced in 2001.

Other countries have formulated their goals in similar ways. The Federal Reserve Act states that the central bank shall "promote effectively the goals of maximum employment, stable prices, and moderate long-term interest rates".¹ The Federal Reserve has interpreted "maximum employment" to mean "maximum sustainable employment" in order to make it clear that monetary policy should not attempt to increase employment beyond the level that is consistent with long-term price stability. A new mandate was recently added for the Reserve Bank of New Zealand that is similar to the Federal Reserve mandate.² According to the mandate, the central bank shall "contribute to supporting maximum sustainable employment within the economy".

In the conduct of monetary policy, the word "high" must be interpreted operationally in a way that takes into account what monetary policy can and cannot influence. The most important contribution monetary policy can make to achieving high output and employment is to maintain monetary value through low and stable inflation. There is broad consensus among economists that monetary policy cannot raise the

long-run level of employment. Monetary policy can nonetheless contribute to stabilising employment around the highest level that is consistent with price stability over time. This level is determined by structural conditions such as the tax and social security system, the system of wage formation and the composition of the labour force. Attempting to raise employment above this level through systematically expansionary monetary policy will over time only lead to accelerating wage and price inflation.

Simplifying somewhat, the monetary policy trade-offs under flexible inflation targeting can be illustrated by means of the following "loss function":

$$(1) L_t = (\pi_t - \pi^*)^2 + \lambda(y_t - y^*)^2,$$

where L_t measures the "loss" resulting from deviations from the targets. π_t is inflation, π^* is the inflation target and y_t is output, here assumed to be proportionate to employment. y^* represents the highest level of output that is consistent with price stability over time.³ $(y_t - y^*)$ can thus be interpreted as the "output gap". λ represents the weight placed by the central bank on stabilising output and employment relative to stabilising inflation in the short term.

The average loss, EL_t , can be written as

$$(2) EL_t = \text{var}(\pi_t) + (E\pi_t - \pi^*)^2 + \lambda[\text{var}(y_t) + (Ey_t - y^*)^2],$$

where E is the (unconditional) expected value. The average loss depends on the variation in both inflation and output (and thereby employment), represented by the variance terms in the equation, and by average inflation, $E\pi_t$, and average output, Ey_t . Inflation in the long term is the responsibility of monetary policy, and monetary policy will be able to ensure that $E\pi_t$ is equal to π^* . Monetary policy cannot, on the other hand, determine average output and employment to the same extent.

1 See Federal Reserve Act of 1913.

2 See Reserve Bank of New Zealand (2018). *Policy Targets Agreement*. Reserve Bank of New Zealand, 26 March 2018.

3 y^* will vary over time as a result of developments in productivity and the labour force, but the fact that it is to some extent stochastic is disregarded here for the sake of simplicity.

In most economic models where the relationships between the economic variables are assumed to be linear, monetary policy will not be able to influence average output, Ey_t . In reality, there is reason to believe that many economic relationships are non-linear and that monetary policy could, in principle, influence Ey_t (even though it cannot influence y^*).

An example of such non-linearity is so-called hysteresis in the labour market: It can be more difficult to bring unemployment down again from a high level than to bring it up when it has fallen below a level that is consistent with stable wage and price inflation.⁴ If monetary policy contributes to preventing unemployment from becoming entrenched at a high level after a downturn, average output and employment, Ey_t , could be higher and closer to y^* .

When there is hysteresis in the labour market, the way the output gap is measured can affect monetary policy. After a downturn, the short-run NAIRU, that is the level of unemployment that results in stable wage and price inflation, can increase even if the long-run NAIRU is not necessarily affected.⁵ If the central bank seeks to stabilise unemployment around the short-run NAIRU, it will conduct a less expansionary monetary policy than if its estimate of capacity utilisation is based on the long-run NAIRU. With an output gap based on the long-run NAIRU, the central bank accepts that inflation temporarily moves slightly above target while labour market conditions normalise. The gain is somewhat higher average employment than under a less flexible inflation targeting regime. Thus, both the weight given by the central bank to output and employment (λ in the loss function) and its assessment of the output gap will affect how monetary policy can contribute to high and stable output and employment.

In practice, however, it is often difficult to determine whether changes in the NAIRU are temporary or permanent. If the central bank assumes that a rise in the NAIRU is temporary, while it proves to be permanent, wage and price inflation could remain persistently too high. It could then be more costly to bring inflation down again.

Another example of non-linearity is severe downturns triggered or amplified by financial imbalances. Such relatively rare, though severe, downturns, such as a financial crisis, can result in somewhat lower average output and employment than would otherwise have been the case. This is because financial crises are not counterbalanced by correspondingly strong positive shocks, so that $Ey_t < y^*$. A monetary policy that to some extent contributes to preventing the build-up of financial imbalances can reduce the risk of such severe downturns.⁶ To the extent severe downturns can be avoided or dampened, $var(y_t)$ could decrease and Ey_t could increase and move closer to y^* .

The primary objective of monetary policy is to ensure that inflation is low and stable, illustrated by the values of $var(\pi_t)$ and $(E\pi_t - \pi^*)^2$ in equation (2), which should be sufficiently low.⁷ In addition, monetary policy can dampen business cycles, that is reduce $var(y_t)$. As described above, monetary policy can also to some extent contribute to bringing average output and employment, Ey_t , closer to y^* by acting to prevent unemployment from becoming entrenched at a high level and by counteracting the build-up of financial imbalances. The level of output and employment over time is nonetheless primarily determined by factors other than monetary policy. The contribution monetary policy can make over time will therefore be limited.

4 Unemployment may become entrenched at a high level because of insider-outsider mechanisms in wage formation, skill losses and reduced motivation to seek employment.

5 "Full hysteresis", where the NAIRU rises in both the short and the long term, is disregarded here.

6 See Special Feature in *Monetary Policy Report 3/16* for a detailed discussion and illustration.

7 $(E\pi_t - \pi^*)^2$ should be close to zero.

Estimates of the neutral real interest rate

Norges Bank's previous estimates of the neutral real interest rate, published in the September 2016 *Monetary Policy Report*, suggested that the neutral real interest rate in Norway was between 0% and 1%. The estimates have now been updated based on a broader set of analytical models. The new estimates are in line with the previous estimates.

The neutral real interest rate is a key concept in the assessment of the *tightness* of monetary policy.¹ The rate is not observable and the estimates are uncertain. The difference between the actual real interest rate and the neutral real interest rate gives some indication of whether monetary policy is expansionary or contractionary. A real interest rate that is lower than the neutral level stimulates economic activity, while a real interest rate that is higher than the neutral level has a dampening effect. This means that the real interest rate can be regarded as the neutral real interest rate plus the contribution from monetary policy.

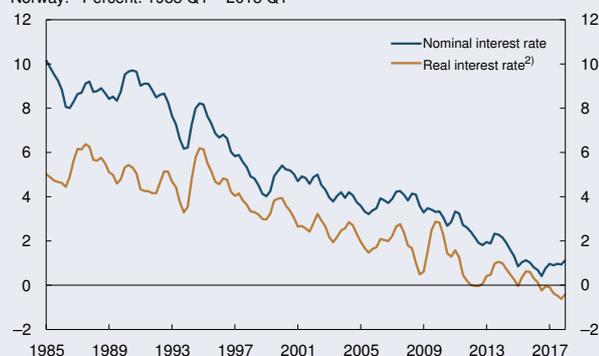
1 In the literature, the terms *normal interest rate*, *equilibrium interest rate* and *natural interest rate* are used interchangeably. The concept was first introduced in Wicksell, K. (1898) "Interest and Prices". London: Macmillan (translated by R. F. Kahn in 1936) and was defined as the real interest rate that is consistent with stable developments in commodity prices. The concept was subsequently formalised and further developed in Woodford, M. (2003) *Interest and Prices: Foundations of a Theory of Monetary Policy*. Princeton University Press.

Norges Bank defines the neutral real interest rate as the rate that is consistent with balanced economic developments in the medium term when the impact of transitory shocks has unwound (normally within five to ten years).² Balanced economic developments refer to output in line with potential output and inflation at target. The neutral real interest rate, according to this definition, is primarily determined by structural conditions. In a small open economy such as Norway, underlying conditions are influenced to a great extent by international developments. This means that the neutral real interest rate in Norway will likely remain close to the global neutral real interest rate over time.

Long-term global interest rates have shown a clearly falling trend since the mid-1980s (Chart 1). The decline in the first part of the period reflects lower actual and expected inflation. In the past decades, most of the decline in nominal interest rates is probably the result of the decrease in real interest rates. As monetary policy cannot influence the real interest rate over time, developments must primarily be interpreted as a fall in the neutral real interest rate.

2 The various definitions of the neutral real interest rate differ primarily with regard to the persistence of the shocks included. There is good reason to disregard factors regarded as transitory in a definition of the neutral interest rate. Transitory shocks are demanding to identify in real time, and a measure of the neutral real interest rate that differs widely from one quarter to the next is not suitable as a reference point for monetary policy.

Chart 1 Ten-year government bond yields in 14 OECD countries including Norway.¹ Percent. 1985 Q1 – 2018 Q1



1) The other countries are Austria, Belgium, Canada, Denmark, France, Germany, Italy, Japan, Netherlands, Sweden, Switzerland, UK and US. Unweighted average.
2) Real interest rate measured by the nominal rate less average inflation in the latest year.
Sources: OECD and Norges Bank

Norges Bank uses a range of methods to estimate the neutral real interest rate. Model estimates are now used in addition to purely market-based measures. Long-term market rates provide an indication of market expectations of future interest rates. As the effects of past transitory shocks to the economy can be expected to unwind in the course of five to ten years, it can be assumed that their effect on long-term interest rate expectations is limited. Adjusted for expected inflation, implied long-term interest rate expectations can express market estimates of the neutral real interest rate. Chart 2 shows implied five-year rates five years ahead based on swap rates for Norway and four selected trading partners.³ Over the past year, these rates have on average been in the interval 1.5% to 2.5% in nominal terms. Assuming long-term inflation expectations of around 2%, this may indicate a neutral real money market rate in the interval -0.5% to 0.5%.⁴

- 3 A swap rate refers to the rate on an interest rate swap in which two parties agree to exchange a floating rate (for example six-month Libor) for a fixed rate for a specific period. One party receives payments at a fixed rate, the swap rate, and makes payments at a floating rate, while the other party makes fixed-rate payments and receives floating rate payments. The swap rate is used as an indication of market interest rate expectations for that period.
- 4 In this simple calculation, any forward premiums, which could result in differences between long-term rates and expected short-term rates, are disregarded. There are several reasons why today's low levels of long-term implied forward rates do not necessarily reflect market expectations with regard to the neutral real interest rate. Central banks' large-scale bond purchases have contributed to a marked decrease in government bond yields, which has spread to swap rates.

The model estimates are based on two types of empirical model, a vector autoregressive (VAR) model and a state-space (SS) model.⁵ The models mainly differ in their degree of theoretical foundation.

The VAR model is a purely statistical model with time-varying parameters.⁶ The model is based on the interplay between output, inflation and the real interest rate, but includes time variation in these relationships. The neutral real interest rate is defined as the model's current estimate of the actual real interest rate five years ahead.

The SS model relies to a greater extent on economic theory.⁷ In this model, there is a direct relationship between the level of capacity utilisation in the economy and the difference between the actual and the neutral real interest rate (IS curve). Capacity utilisation in turn affects inflation (Phillips curve).⁸ The

- 5 See Brubakk, L., J. Ellingsen and Ø. Robstad (2018) «Estimates of the neutral real interest rate». *Staff Memo*. Norges Bank. (Forthcoming).
- 6 See Lubik, T. A. and C. Matthes (2015) "Calculating the natural rate of interest: A comparison of two alternative approaches". *Richmond Fed Economic Brief October 2015*. Federal Reserve Bank of Richmond, for a description of the method.
- 7 The model is inspired by Holston, K., T. Laubach and J. C. Williams (2017) "Measuring the natural rate of interest: International trends and determinants". *Journal of International Economics*, 108, January, pages 59–75.
- 8 The figures used are for the rise in prices for domestically produced goods and services that have historically been higher when correlated with domestic capacity utilisation than aggregate consumer price inflation. We also estimate a version of the model where wage growth is used as the observable variable instead of inflation.

Chart 2 Five-year interest rates five years ahead.¹⁾ Percent. 2003 Q1 – 2018 Q1



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

neutral real interest rate depends on both potential output and other unspecified factors that influence saving and investment decisions. Based on data and the assumed relationships, the most likely historical path of the neutral real interest rate can be estimated using statistical methods.⁹

Chart 3 shows estimates of the neutral real interest rate using the different methods described above. All the estimates suggest a downward trend over the past 15 years. In some periods, not least around the time of the financial crisis, the estimates vary quite substantially. In addition, individual model estimates are highly uncertain. Towards the end of the period, the estimates are in the interval -0.1% to 0.7%, which is in line with our previous estimates.¹⁰

We estimate the neutral real interest rate to be in the interval 0% to 1%. As inflation expectations in Norway adjust to the new inflation target of 2%, this implies a neutral nominal money market rate of between 2% and 3%. For the key policy rate, the neutral level is somewhat lower because the money market rate is

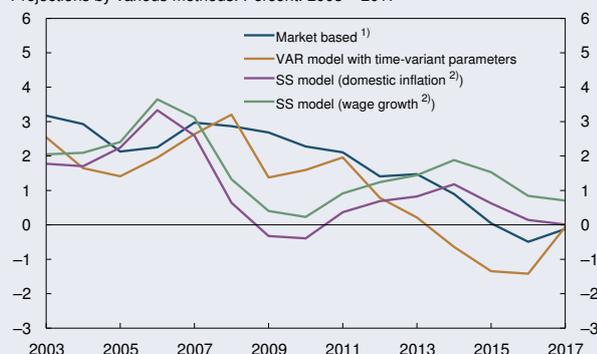
equal to the expected key policy rate plus a premium.¹¹ It is assumed that the money market rate will be 0.4 percentage point higher than the expected key policy rate in the years ahead.

There is considerable uncertainty regarding both the current level of the neutral real interest rate and developments in the coming years. In the period since the financial crisis, productivity growth has been at its weakest for many years in Norway and in other countries. Underlying productivity growth is assumed to remain low in the years ahead. If underlying productivity growth picks up more quickly than assumed, the neutral real interest rate may also prove to be higher than projected. Underlying demographic conditions may contribute to a reduction in the global supply of savings ahead, which in isolation also implies a somewhat higher neutral interest rate further ahead. At the same time, the possibility of new shocks that pull the neutral real interest rate down further cannot be excluded.

9 We use the so-called Kalman filter (see for example Hamilton, J. D. (1994). *Time Series Analysis*. Princeton University Press).
10 See *Monetary Policy Report* 3/16.

11 The difference between the money market rate and the expected key policy rate (the Nibor risk premium) can vary over time. The risk premium in the three-month money market rate in Norway is discussed in more detail in Lund, K., K. Tafjord and M. Øwre-Johnsen (2016) "What drives the risk premium in Nibor?", *Economic Commentaries* 10/2016. Norges Bank.

Chart 3 Neutral real interest rate. Projections by various methods. Percent. 2003 – 2017



1) Implied five-year forward rates five years ahead based on swap rates with 5- and 10-year maturities for Norway.
2) The variable used in the Phillips curve.
Sources: Thomson Reuters and Norges Bank

Working group on alternative reference rates

Norges Bank has taken the initiative to establish a working group on alternative reference rates in NOK. A reference rate is a standardised rate used as a benchmark in the pricing of loans and other financial instruments.¹ Reference rates play an important role in the global financial system. The most important reference rates today are based on unsecured interbank loans.²

The working group comprises representatives of Norwegian banks and of foreign branches with a good understanding of the Norwegian fixed income market and the use of Norwegian reference rates. The working group will prepare an official report containing recommendations for alternatives to today's Norwegian reference rates, with the aim of publishing the report by the end of 2019 Q1.³

Similar working groups have been established in a number of countries in recent years, partly owing to the marked decline in activity in the unsecured interbank market in the aftermath of the financial crisis.⁴

Attempts to manipulate international benchmark rates were also uncovered.

In response, the G20 countries, via the Financial Stability Board (FSB), launched an initiative to reform interest rate benchmarks. The FSB recommended the development of alternative, near risk-free interest rate benchmarks in 2014. According to the FSB, risk-free rates will in many cases be more suitable as benchmarks, particularly in transactions involving interest rate derivatives.

Several of the working groups in other countries have published their recommendations, and work has progressed to a new phase of planning how the proposed reference rates can be used. All the new reference rates proposed so far are overnight rates. This is partly because it is only in this part of the money market that activity is considered sufficiently robust for the rate to satisfy the international standards and regulatory requirements a reference rate should meet.

1 An interest rate swap, for example, is an instrument in which payments based on an agreed fixed rate are exchanged for payments based on a floating reference rate. Reference rates are also widely used as the basis for floating rate loans and bonds.

2 The most important reference rates are the so-called ibor rates (interbank offered rate), such as Nibor and Libor. Nibor is intended to reflect the interest rates on unsecured interbank loans in NOK and is quoted at five maturities. Libor gives an indication of the interest rate on short-term unsecured bank funding at various maturities. Libor is calculated for five different currencies.

3 See Working group on alternative reference rates (ARR) for more information.

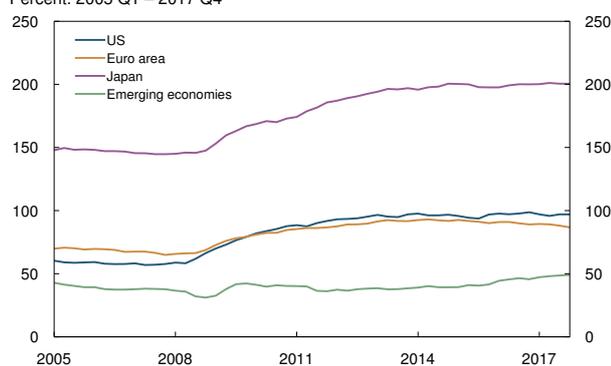
4 On the whole, unsecured interbank trading now only takes place in the overnight market.

5 Financial stability assessment

– decision basis for the countercyclical capital buffer

Household debt has long risen faster than income. In recent months, household debt growth has edged down. House prices have risen again following the decline in 2017, and have shown a sharp increase over the past two months. The upswing in the Norwegian economy and continued low interest rates entail a risk of high house price inflation ahead. This may lead to a renewed rise in household debt growth and vulnerabilities. On the other hand, an increase in the interest rate level will help curb debt growth. The sharp rise in commercial real estate prices in recent years has increased the risk of a marked decline in value further out. Corporate credit growth accelerated through 2017, but is not particularly high compared with previous periods. For the largest Norwegian banks, profitability is solid, losses are low and these banks meet their total Common Equity Tier 1 (CET1) capital requirement.

Chart 5.1 Public sector debt as a share of GDP in selected countries. Percent. 2005 Q1 – 2017 Q4



Source: BIS

Chart 5.2 Yields on 10-year government bonds in selected euro area countries. Percent. 1 January 2017 – 15 June 2018



Source: Thomson Reuters

5.1 INTERNATIONAL DEVELOPMENTS

The near-term outlook for global financial stability has improved thanks to solid economic growth, despite a slowdown in early 2018. On the other hand, continued low interest rates may fuel debt accumulation, which may increase vulnerability in the slightly longer term. Debt levels are already very high in many countries. Public sector debt in particular has risen considerably since the financial crisis (Chart 5.1). In the context of the prevailing high debt levels, abrupt increases in interest rates and risk premiums are among the main risks to global financial stability.

Political uncertainty surrounding the election in Italy gave rise to financial market turbulence at the end of May. Italian government bond yields increased markedly (Chart 5.2). The turbulence also spread to bond markets in a number of other southern European countries, while bond yields in Germany and France fell. After the new Italian government took office in early June, these market movements reversed to some extent.

The tightening of US monetary policy and the appreciation of the US dollar have raised concerns regarding debt-servicing capacity in emerging economies, where a considerable share of borrowing in recent years has been in USD. In May, doubts emerged among investors regarding Argentina's debt-servicing capacity and the country's currency depreciated sharply. Even though the authorities have concluded a borrowing agreement with the IMF, raised the policy rate and intervened in the foreign exchange market, its currency has depreciated further. The turbulence spread to other emerging economies to some extent.

The heatmap signals medium risk with regard to developments in the global financial cycle (Chart 5.23 on page 52).

5.2 CREDIT

Credit has long been rising faster than GDP for mainland Norway (see credit indicator in Chart 5.3). The credit indicator declined slightly between 2017 Q4 and 2018 Q1. The credit gap, ie the difference between the credit indicator and an estimated trend, narrowed (Chart 5.4). The narrowing was driven by a reduction in corporate foreign debt, reflecting the fall in corporate intragroup borrowing from foreign sources. Growth in corporate debt from domestic sources picked up through 2017 and has remained elevated so far in 2018. Household debt growth has slowed slightly in recent months (Chart 5.5), but continues to grow faster than GDP.

Somewhat lower household debt growth

The high level of household debt is an important source of vulnerability in the Norwegian financial system (see

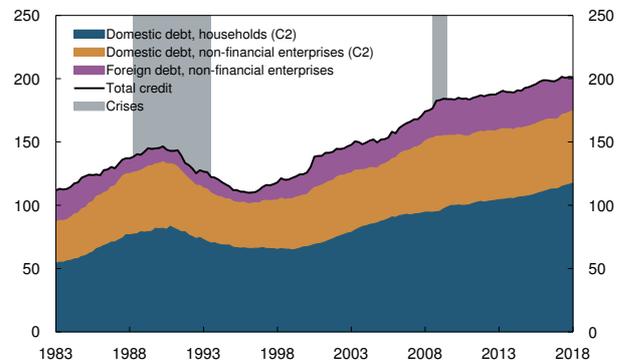
COUNTERCYCLICAL CAPITAL BUFFER

The countercyclical capital buffer is an additional capital requirement for banks. The objective of the buffer is to bolster banks' resilience and to lessen the amplifying effects of bank lending during downturns.

Banks should build and hold a countercyclical capital buffer when financial imbalances are building up or have built up. 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.

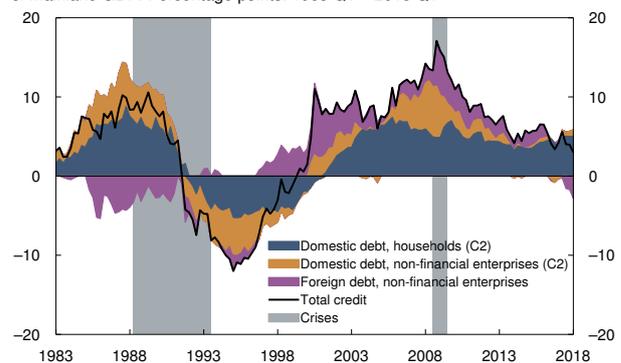
The Ministry of Finance sets the level of the buffer four times a year. Norges Bank draws up a decision basis and provides advice to the Ministry regarding the level of the buffer. The assessment of financial imbalances forms the basis for Norges Bank's advice on the level of the countercyclical capital buffer (see box on page 54 and submission to the Ministry of Finance on the Norges Bank website). Norges Bank's assessment of financial imbalances is based on developments in credit, property prices and bank funding. The buffer rate is set at 2.0%, effective from 31 December 2017.

Chart 5.3 Credit mainland Norway as a share of mainland GDP. Percent. 1983 Q1 – 2018 Q1



Sources: IMF, Statistics Norway and Norges Bank

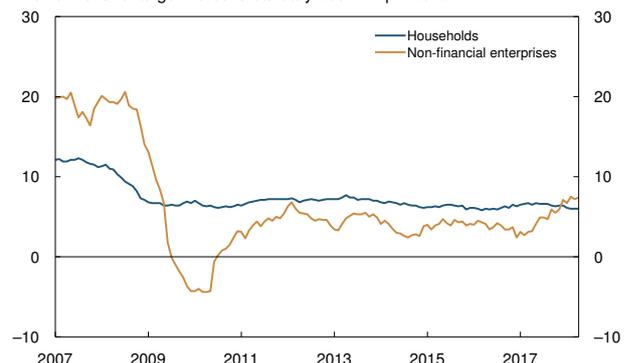
Chart 5.4 Decomposed credit gap.¹⁾ Credit mainland Norway as a share of mainland GDP. Percentage points. 1983 Q1 – 2018 Q1



¹⁾ Calculated as deviation from trend. The trend is estimated using a one-sided HP filter with lambda = 400 000. The HP filter is estimated on data augmented with a simple projection.

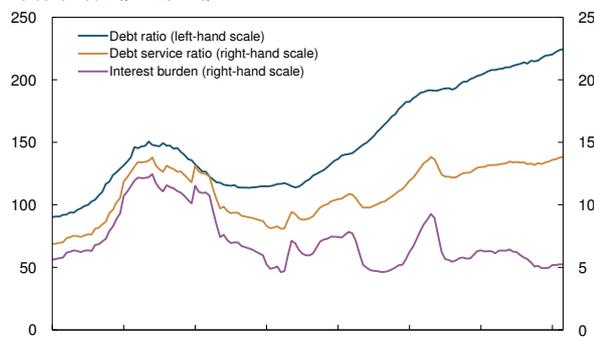
Sources: IMF, Statistics Norway and Norges Bank

Chart 5.5 Credit to households and non-financial enterprises in mainland Norway. Twelve-month change. Percent. January 2007 – April 2018



Sources: Statistics Norway and Norges Bank

Chart 5.6 Household debt ratio¹⁾, debt service ratio²⁾ and interest burden³⁾. Percent. 1982 Q1 – 2017 Q4

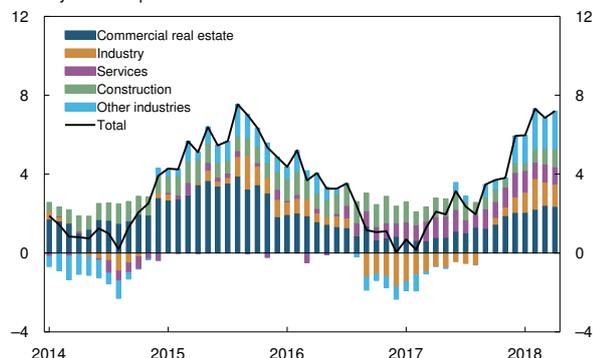


1) The debt ratio is loan debt as a percentage of disposable income. Disposable income is adjusted for estimated reinvested dividend income for 2000 Q1 – 2005 Q4 and reduction of equity capital for 2006 Q1 – 2012 Q3. For 2015 Q1 – 2017 Q4, growth in disposable income excluding dividends is used.
2) The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

Norges Bank's 2017 *Financial Stability Report*). Household debt has long risen faster than income, contributing to the build-up of financial imbalances (Chart 5.6). Debt growth has edged down in recent months. Both the debt ratio and the household debt service ratio, ie the ratio of interest and normal principal payments to income, signal high risk in the heatmap (Chart 5.23 on page 52).

According to the banks in Norges Bank's Survey of Bank Lending, overall household demand for residential mortgage loans was unchanged in 2018 Q1 but is expected to increase slightly in Q2. Demand for fixed-rate loans rose in 2018 Q1 and banks expect a further rise in demand in Q2. This probably reflects the signalled increase in interest rates. Banks' credit standards have remained unchanged since the regulation on requirements for new residential mortgage loans was tightened in the beginning of 2017, and no changes are expected ahead.

Chart 5.7 Bank and mortgage company lending to Norwegian non-financial enterprises by industry. Contribution to 12-month change in stock. Percent. January 2014 – April 2018

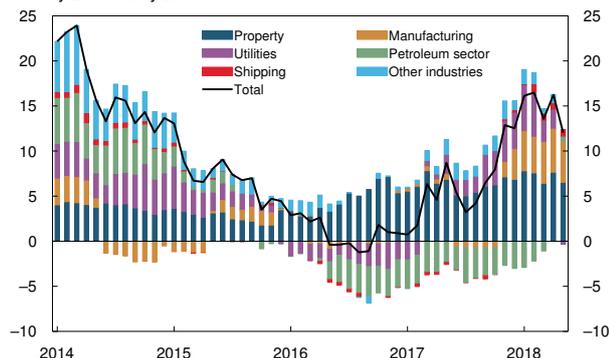


Sources: Statistics Norway and Norges Bank

With prospects for a gradual rate increase ahead, households will devote a larger share of their income to servicing debt. Analyses in the 2017 *Financial Stability Report* show that most households have ample capacity to service debt at somewhat higher interest rates.¹ Nevertheless, credit risk associated with loans to households will increase somewhat, particularly among first-time buyers in the housing market.

Somewhat higher interest rates will dampen credit growth ahead. The regulation on requirements for new residential mortgage loans can mitigate the further build-up of vulnerabilities of highly indebted households. The Ministry of Finance has recently decided to retain the regulation until end-2019.² The maximum debt-to-income (DTI) ratio requirement that was introduced in 2017 appears to have had an effect. Preliminary analyses show that debt growth in 2017 was lower in municipalities with a high share of homebuyers with high DTIs than in other municipalities.³

Chart 5.8 Lending to Norwegian non-financial enterprises in the Norwegian bond market by industry. Contribution to 12-month change in stock. Percent. January 2014 – May 2018



Sources: Stamdata and Norges Bank

Corporate credit growth remains elevated

Enterprises have ample access to credit. Growth in corporate debt from domestic sources gained

1 See also box on page 37 of *Monetary Policy Report 1/18* and Gerdrup, K. and K. N. Torstensen (2018) "The effect of higher interest rates on household disposable income and consumption – a static analysis of the cash-flow channel". *Staff Memo 3/18*. Norges Bank
2 See Ministry of Finance press release of 19 June 2018: "New regulation on requirements for residential mortgage loans".
3 See Borchgrevink, H. and K. N. Torstensen (2018) "Analyses of effects of the residential mortgage loan regulation". *Economic Commentaries 1/2018*. Norges Bank.

momentum through 2017 and has remained elevated so far in 2018 (Chart 5.5). Growth in credit from both banks and the bond market has increased and has risen in several industries (Charts 5.7 and 5.8). Developments in debt from domestic sources are in line with an upswing in investment and credit growth is not particularly high compared with previous periods.

Risk premiums in the Norwegian bond market declined through 2017, in both high-yield and low-yield segments. So far in 2018, premiums have remained at a low level. Low risk premiums have helped make bond market funding more attractive. Following high issuance activity through 2017 Q4 and January 2018, issue volumes have shown a slight decline in recent months. Volumes are nevertheless at approximately the same level as in the corresponding period in 2017.

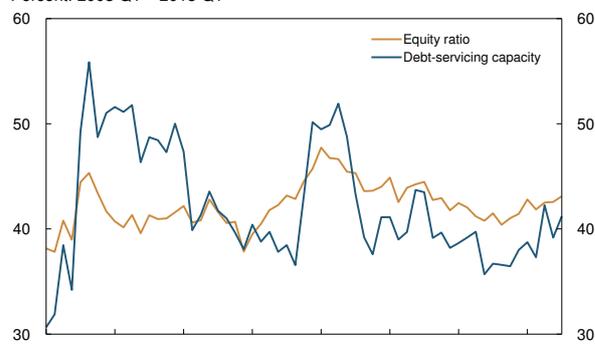
Commercial real estate accounts for the largest share of the growth in credit from banks and the bond market. Issuance in the bond market is generally concentrated on major real estate companies in the low-yield segment, but several smaller participants have also been active.

Following weak credit growth in manufacturing over the past few years, growth has shown a marked rise since autumn 2017. Loans to oil-related industries from both banks and the bond market have also reversed from pushing down on corporate credit growth to pushing it up.

The debt-servicing capacity of listed companies has picked up gradually over the past few years, primarily driven by higher earnings (Chart 5.9). The equity ratio has also increased somewhat in the same period. For oil service companies, both debt-servicing capacity and equity ratios remain at substantially lower levels than before the fall in oil prices.

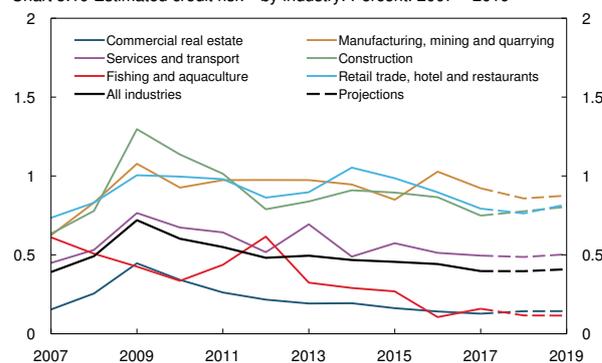
According to estimated bankruptcy probabilities, overall corporate credit risk is largely unchanged in 2018 compared with 2017 (Chart 5.10).⁴ Credit risk has declined slightly in manufacturing, mining and quarrying, and fishing and fish farming. In other industries, changes were only minor. Credit risk is expected to show little change in 2019.

Chart 5.9 Debt-servicing capacity¹⁾ and equity ratio of listed companies²⁾. Percent. 2003 Q1 – 2018 Q1



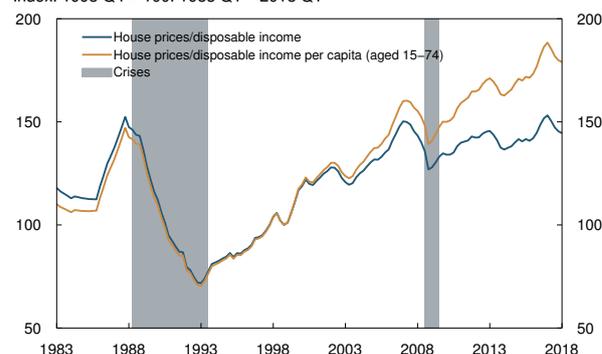
1) Earnings before interest, tax, depreciation and amortisation (EBITDA) for the previous four quarters as a percentage of net-interest bearing debt.
2) Norwegian non-financial enterprises listed on Oslo Børs, excluding oil and gas extraction. Norsk Hydro is excluded to end-2007 Q3.
Sources: Bloomberg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

Chart 5.10 Estimated credit risk¹⁾ by industry. Percent. 2007 – 2019²⁾



1) Estimated bankruptcy-exposed bank debt as a share of total bank debt in each industry.
2) Projections for 2018 – 2019.
Source: Norges Bank

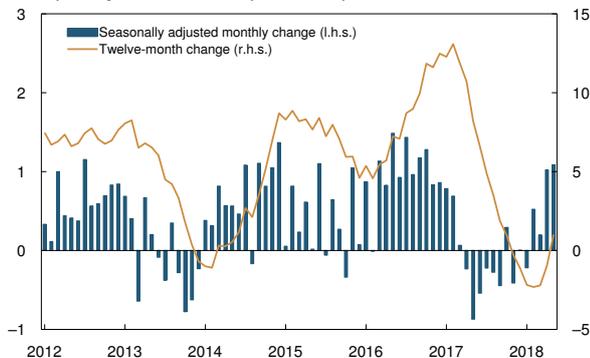
Chart 5.11 House prices relative to disposable income.¹⁾ Index. 1998 Q4 = 100. 1983 Q1 – 2018 Q1



1) Disposable income adjusted for estimated reinvested dividend income for 2003 – 2005 and reduction of equity capital for 2006 Q1 – 2012 Q3. Change in disposable income excluding dividend income is used for 2015 Q1 – 2018 Q1.
Sources: Eiendomsverdi, Finn.no, Norwegian Association of Real Estate Agents (NEF), Real Estate Norway, Statistics Norway and Norges Bank

⁴ Bankruptcy probabilities are estimated using Norges Bank's bankruptcy probability model. 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 and seasonally adjusted monthly change. Percent. January 2012 – May 2018



Sources: Eiendomsverdi, Finn.no and Real Estate Norway

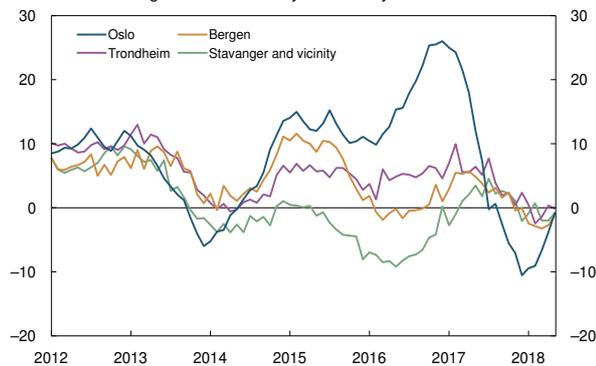
The banks in Norges Bank's lending survey reported unchanged credit demand and unchanged credit standards for enterprises in 2018 Q1. The banks expect no changes in demand and approximately unchanged credit standards ahead.

In the heatmap, all the corporate indicators show low risk (Chart 5.23 on page 52).

5.3 PROPERTY PRICES

Residential and commercial property prices have risen sharply over a long period (Charts 5.11 and 5.17). In 2017, a housing market correction occurred, with a moderate price decline. In recent months, house prices have again risen. In commercial real estate, estimated selling prices for prime office space in Oslo have continued to rise in 2018 Q1. In the heatmap, the housing market signals medium risk and the commercial real estate market signals high risk (Chart 5.23 on page 52).

Chart 5.13 House prices in Norwegian cities. Twelve-month change. Percent. January 2012 – May 2018

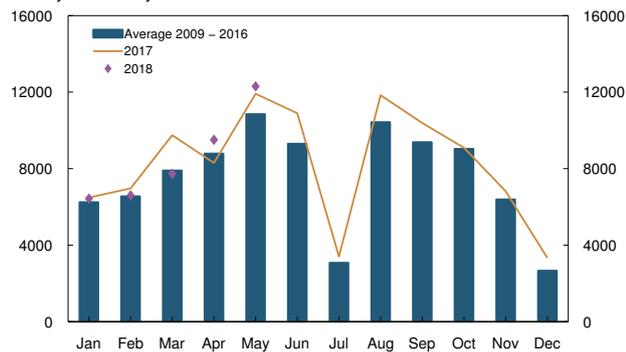


Sources: Eiendomsverdi, Finn.no and Real Estate Norway

Renewed rise in house prices

After declining in 2017, house prices have picked up again in 2018 (Chart 5.12), rising sharply over the past two months. House prices have risen markedly in Oslo, where the price decline was steepest following the sharp rise in 2016 (Chart 5.13). Countrywide, prices are now at the same level as the peak in spring 2017, while prices in Oslo are 4.5% below peak.

Chart 5.14 Existing homes listed for sale. Number of homes. January 2009 – May 2018



Sources: Eiendomsverdi, Finn.no and Real Estate Norway

The number of existing homes listed for sale was high in May, compared with the average since 2009 (Chart 5.14). Even though turnover was also higher than average, the addition of dwellings led to an increase in the stock of unsold existing homes (Chart 5.15). The pick-up in the number of units listed for sale was particularly pronounced in western and central Norway. So far this year in Oslo, fewer units than normal have been listed for sale, and in May the stock of homes for sale was below the average since 2009. Housing completions are expected to increase in the coming quarters. Given that many of the buyers of the new homes will sell their existing dwellings, the number of homes listed for sale may also remain elevated ahead owing to the completions. This is expected to have a dampening effect on house price inflation in the latter half of 2018.

The number of new home sales was lower in 2017 than in 2016, but close to the average for the years

2013–2015 (Chart 5.16). So far in 2018, sales have picked up and the supply of new homes for sale has declined somewhat. This has contributed to a slight decline in the stock of unsold new homes.

House prices are expected to rise by between 2% and 3% per year in the years ahead (Chart 3.8). A high level of residential construction, lower population growth and a gradual rise in lending rates suggest a moderate rise in prices ahead. On the other hand, the upswing in the Norwegian economy and continued low interest rates entail a risk of continued high house price inflation. High house price inflation may lead to an increase in household debt growth and a further build-up of financial imbalances.

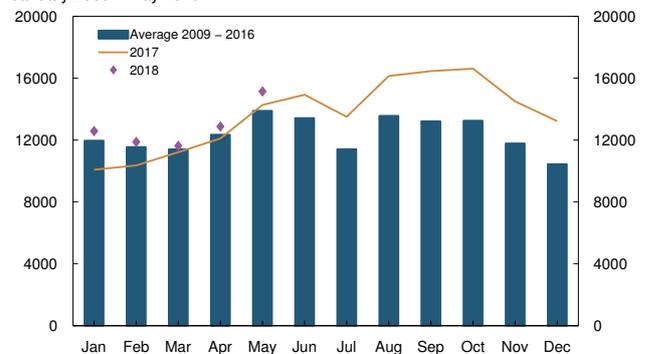
High commercial property price inflation

Developments in the commercial property market are important for banks as bank lending to this sector is substantial. Experience shows that commercial property prices have often risen sharply ahead of financial crises.

Estimated selling prices for prime office space in Oslo rose sharply through 2017 (see commercial property prices indicator in Chart 5.17). The indicator rose further in 2018 Q1. Valuations show that office property values in all areas of Oslo have increased over several years (Chart 5.18).⁵ In 2017, the rise in values picked up in all non-prime areas. In Bergen and Trondheim, values edged up in 2017, while falling in Stavanger.⁶

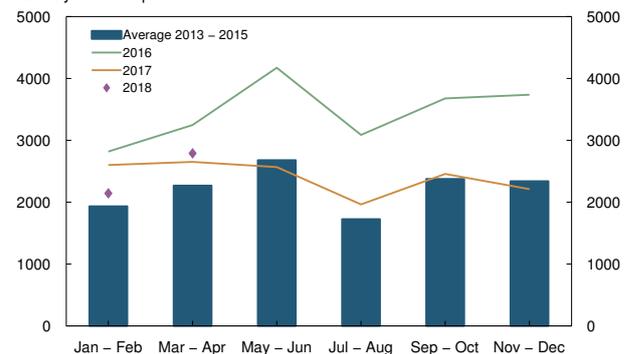
Commercial property prices depend on factors such as net rental income and yields. Office rents increased in most areas of Oslo in 2017. Rents also increased in Trondheim, while remaining stable in Bergen. In Stavanger, rents have continued to fall in areas with substantial oil industry presence. Market participants expect rents in Oslo to continue to rise as a result of stronger demand for office buildings and an under-supply of new buildings. At the same time, participants expect construction activity to increase somewhat in the coming years, which may dampen the rise in rents.

Chart 5.15 Stock of unsold existing homes at month-end. Number of homes. January 2009 – May 2018



Sources: Eiendomsverdi, Finn.no and Real Estate Norway

Chart 5.16 New home sales in Norway.¹⁾ Number of homes. January 2013 – April 2018



¹⁾ Statistics for Norway as from October 2013. Data for the earlier part of 2013 have been chained back in time using the rise in sales for eastern Norway. The statistics only include homes sold in housing projects of more than 15 units. The statistics cover most of the housing market in eastern Norway and a somewhat smaller share in the other regions.

Source: Economics Norway

Chart 5.17 Real commercial property prices.¹⁾ Index. 1998 = 100. 1983 Q1 – 2018 Q1



¹⁾ Estimated real selling prices per square metre for prime office space in Oslo. Deflated by the GDP deflator for mainland Norway. Average selling price for the previous four quarters.

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

⁵ Based on data from Investment Property Databank (IPD). IPD estimates commercial property values on the basis of valuations of real estate companies' properties.

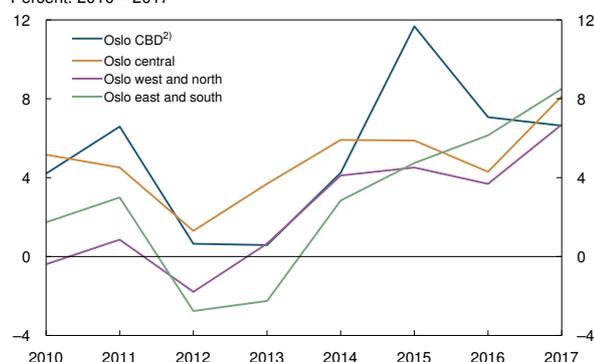
⁶ The data for value increases for Stavanger are more uncertain as the statistics are based on a small number of valuations.

Estimated yields on prime office space in Oslo have remained stable since end-2016, but declined slightly towards the end of 2017.⁷ So far in 2018, yields have remained stable. Yields on standard office premises in Oslo have fallen for a long period and continued to decline in 2017. Since the turn of the year, long-term risk-free interest rates have moved up slightly. A further rise in long-term rates may push up yields, which may contribute to restraining the rise in commercial property prices in the coming years.

The sharp rise in commercial property prices in Oslo in recent years has increased the risk of a sudden and marked fall in prices further out. A sudden and sharp rise in long-term interest rates or a substantial fall in rents can potentially trigger such a correction in commercial property prices.

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

Chart 5.18 Office property values¹⁾ in Oslo. Annual change. Percent. 2010 – 2017



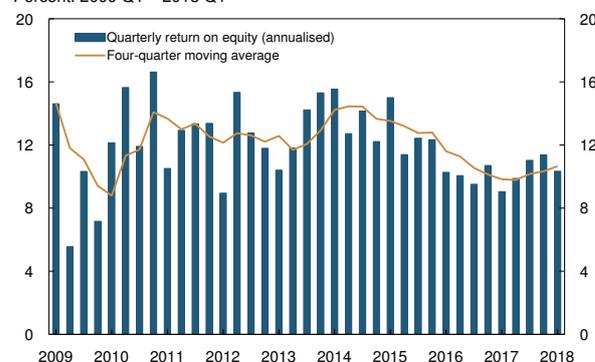
1) Estimated property values based on valuations of real estate companies' properties.
2) Central business district.
Source: MSCI (IPD)

5.4 BANKS

The return on equity for large Norwegian banks declined in 2018 Q1 after having risen through 2017. Profitability was nevertheless higher than at the same time in 2017 (Chart 5.19). Banks report slightly weaker results in 2018 Q1 than in 2017 Q4, primarily because of weaker developments in the value of financial assets and instruments. Lower revenues in 2018 Q1 were partly offset by reduced costs and lower losses. Improved prospects in oil-related industries contributed to lower losses.

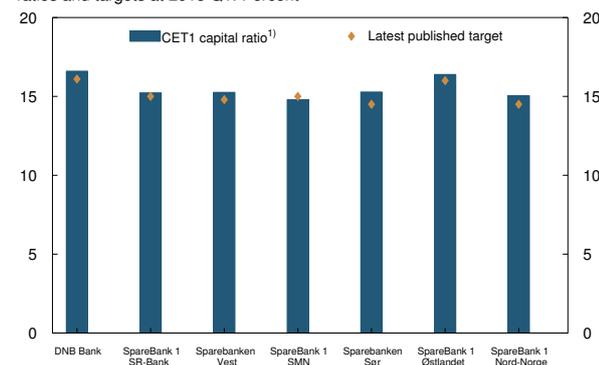
Large Norwegian banks satisfy the total Common Equity Tier 1 (CET1) capital requirement (Pillar 1 and Pillar 2). Capital ratios are also in line with banks' long-term targets, which are higher than the total requirement (Chart 5.20). All Norwegian banks satisfy the leverage ratio requirement.

Chart 5.19 Return on equity for large Norwegian banks.¹⁾ Percent. 2009 Q1 – 2018 Q1



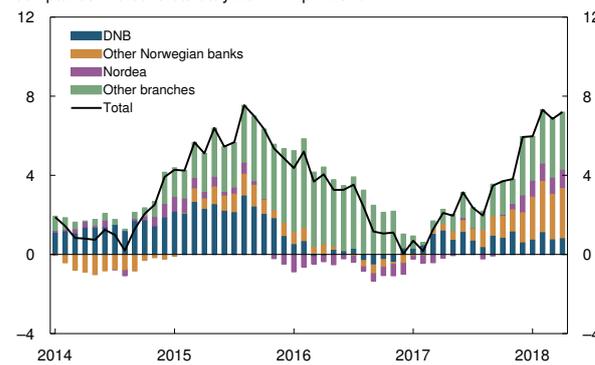
1) Banks included in 2017 and 2018: DNB Bank, SpareBank 1 SR-bank, Sparebanken Vest, SpareBank 1 SMN, Sparebanken Sør, SpareBank 1 Østlandet and SpareBank 1 Nord-Norge.
Sources: Banks' quarterly reports and Norges Bank

Chart 5.20 Large Norwegian banks' Common Equity Tier 1 (CET1) capital ratios and targets at 2018 Q1. Percent



1) Includes the entire profit for the quarter 2018 Q1.
Sources: Banks' quarterly reports and Norges Bank

Chart 5.21 Bank and mortgage company lending to non-financial enterprises. Contribution to 12-month change in stock of loans by banks and mortgage companies. Percent. January 2014 – April 2018



Sources: Statistics Norway and Norges Bank

Branches of foreign banks have recently experienced the strongest growth in corporate lending. These branches account for slightly more than a third of corporate lending, but accounted for over half the growth in lending (Chart 5.21). The 12-month rise in banks' retail lending has been around 7% since end-2016. Norwegian banks have made the largest contribution to growth.

Banks have ample access to wholesale funding, both in foreign currency and in NOK. Risk premiums on senior bonds and covered bonds have risen slightly in recent months. So far in 2018, Norwegian banks have raised somewhat less wholesale funding than in the corresponding period in 2017, but banks' wholesale funding ratio has been fairly stable.

In the heatmap, the banking indicators signal low or medium risk (Chart 5.23 on page 52).

EFFECTS OF A METHODOLOGICAL CHANGE TO THE CALCULATION OF CREDIT STATISTICS (C2)

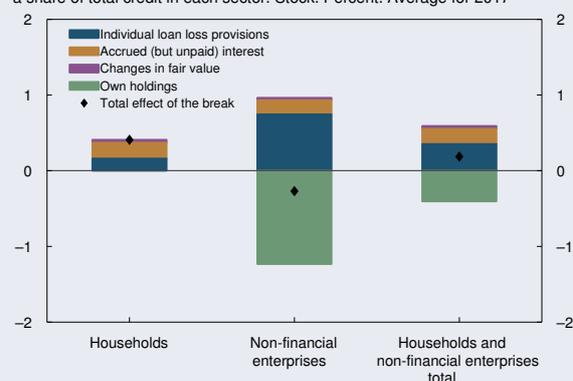
The implementation of international guidelines for the presentation of statistics¹ and new international financial reporting rules (IFRS 9)² has resulted in a break in the C2 credit indicator (the general public's domestic debt) in January 2018. Transactions and growth rates are break-adjusted by Statistics Norway, but the stock series are not break-adjusted and will be affected by the break. The break reflects changes in the accounting treatment of the following five types of loan portfolio data:

- **Individual loan loss provisions** will no longer be deducted from financial institutions' gross lending.
- **Accrued (but unpaid) interest** is to be added to the stock of loans.
- Certain types of loans from financial institutions are to be carried at **fair value**.
- An issuer's **own holdings** of a debt security are to be deducted from holdings outstanding of the same debt security.
- Revisions of the method for calculating **exchange rate valuation adjustments**.

The total effect of the break on the stock of credit to households and non-financial enterprises is an increase of 0.2% (Chart 5.22). The break affects C2 households and C2 non-financial enterprises differently. For households, the break pushes up credit by 0.4%, while pulling down credit to non-financial enterprises by 0.3%.

The key indicator for total credit is based on the stock series and is not break-adjusted. The indicator shows little impact from the break. Credit as a share of GDP fell by 0.2% from 2017 Q4 to 2018 Q1 (Chart 5.3). A break-adjustment would have shown a decline of 0.3%. The credit gap, ie the difference between the credit indicator and an estimated trend, was 3 percentage points in 2018 Q1 (Chart 5.4). A break-adjusted gap would have been 2.75 percentage points. The buffer guide (reference rate) would have remained unchanged at 0.25% after a break-adjustment.³

Chart 5.22 Effects of break in domestic credit to households and enterprises as a share of total credit in each sector. Stock. Percent. Average for 2017



Sources: Statistics Norway and Norges Bank

¹ See IMF *Monetary and Financial Statistics Manual*.

² IFRS = International Financial Reporting Standards. See Ministry of Finance news story of 18 December 2018 "Gjennomføring av IFRS 9 i norsk rett" [Implementation of IFRS 9 in Norwegian law] (in Norwegian only).

³ See Norges Bank's website "Indicators of financial imbalances" for an overview of reference rates for the countercyclical capital buffer.

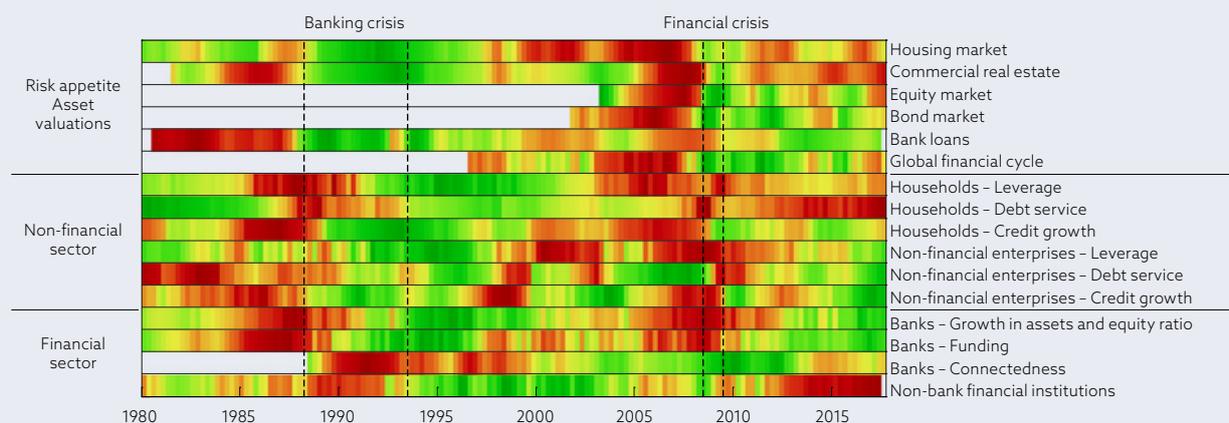
A HEATMAP FOR MONITORING SYSTEMIC RISK

Norges Bank's ribbon heatmap is 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.

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". *Staff Memo 10/2017*. Norges Bank. See also box on page 54 of *Monetary Policy Report 4/17*.

Chart 5.23 Composite indicators in the heatmap. 1980 Q1–2018 Q1



Sources: BIS, Bloomberg, CBRE, 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

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%	8.5%
US	0%	4.1%
Denmark	0%	3.1%
UK	0%	2.5%
Finland	0%	2.1%
Lithuania	0%	1.9%
Poland	0%	1.7%
Latvia	0%	1.1%
Marshall Islands	-	1.1%
Germany	0%	1.0%

¹ Share of risk-weighted assets (cf Article 3 of ESRB 2015/3). Average for the period 2016 Q2 to 2018 Q1. Includes banks that have submitted Templates C09.01 and C09.02 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*).

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*.

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 bolster banks' resilience and lessen the amplifying effects of bank lending during downturns. Moreover, a countercyclical capital buffer may curb high credit growth and mitigate the risk that financial imbalances trigger 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. 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.²

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, substantial loan loss prospects for the banking sector and significant credit supply tightening, will then be more relevant.

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

² See Norges Bank's website "Indicators of financial imbalances". 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".

Annex

Monetary policy meetings in Norges Bank

Tables and detailed projections

Monetary policy meetings in Norges Bank

Date ¹	Key policy rate ²	Change
19 September 2018		
15 August 2018		
20 June 2018	0.50	0
2 May 2018	0.50	0
14 March 2018	0.50	0
24 January 2018	0.50	0
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

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 1/18</i> in brackets	Share of world GDP ¹			Percentage change from previous year. Percent				
	PPP	Market exchange rates	Trading partners ⁴	2017	2018	2019	2020	2021
US	15	24	9	2.3 (0)	2.8 (0.1)	2.5 (0.1)	2 (0)	1.9 (0)
Euro area	12	16	32	2.5 (0.1)	2.2 (-0.2)	1.8 (-0.1)	1.6 (-0.1)	1.5 (0)
UK	2	4	10	1.8 (0.1)	1.4 (-0.2)	1.5 (-0.1)	1.5 (-0.1)	1.5 (-0.1)
Sweden	0.4	0.7	11	2.5 (0)	2.7 (-0.1)	2 (-0.1)	2 (-0.1)	2.1 (0)
Other advanced economies ²	7	10	19	2.5 (0.1)	2.2 (-0.1)	2.1 (0)	1.9 (0)	2 (0)
China	18	14	7	6.9 (0)	6.4 (0)	6 (0)	5.8 (0)	5.8 (0)
Other emerging economies ³	19	11	12	3.8 (0.1)	3.8 (-0.1)	3.9 (-0.1)	3.9 (-0.1)	4 (0)
Trading partners ⁴	73	79	100	3 (0.1)	2.7 (-0.1)	2.4 (-0.1)	2.2 (-0.1)	2.2 (0)
World (PPP) ⁵	100	100		3.8 (0.1)	3.8 (-0.1)	3.8 (0)	3.7 (0)	3.7 (0)
World (market exchange rates) ⁵	100	100		3.2 (0)	3.3 (0)	3.1 (0)	2.9 (0)	3 (0.1)

1 Country's share of global output measured in a common currency. Average 2014–2016.

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 and Norges Bank

TABLE 2 Projections for consumer prices in other countries

Change from projections in <i>Monetary Policy Report 1/18</i> in brackets	Trading partners ⁴	Trading partners in the interest rate aggregate ⁵	Percentage change from previous year. Percent				
			2017	2018	2019	2020	2021
US	7	20	2.1 (0)	2.4 (0.1)	2.4 (0)	2.3 (-0.1)	2.3 (0)
Euro area	34	54	1.5 (0)	1.7 (0.2)	1.6 (0.1)	1.6 (0)	1.7 (0)
UK	7	5	2.6 (0)	2.4 (-0.2)	2.3 (0)	2.1 (0)	2 (-0.1)
Sweden ¹	14	12	2 (0)	1.9 (0.2)	2 (0.1)	2 (0)	2 (0)
Other advanced economies ²	15		1.1 (-0.1)	1.3 (0)	1.7 (0)	1.7 (0)	1.7 (0)
China	12		1.6 (0)	2.5 (0.1)	2.5 (0.1)	2.7 (0)	2.7 (0)
Other emerging economies ³	10		4 (0)	4.4 (0.1)	4.6 (0.2)	4.4 (0)	4.4 (0)
Trading partners ⁴	100		1.9 (0)	2.1 (0.1)	2.1 (0)	2.1 (0)	2.2 (0)
Trading partners in the interest rate aggregate ⁵			1.7 (0)	1.9 (0.1)	1.9 (0.1)	1.8 (-0.1)	1.9 (0)
Core inflation ⁶			1.4	1.5	1.8	1.9	1.9
Wage growth ⁷			1.9	2.6	2.6	3.0	3.1

1 Consumer price index with a fixed interest rate (CPIFI).

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.

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

6 The aggregate for core inflation includes: the euro area, UK, Sweden and US. Import weights.

7 Projections for compensation per employee in the total economy. The aggregate includes: the euro area, UK, Sweden and US. Export weights.

Sources: IMF, Thomson Reuters and Norges Bank

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

	2017 Q4	Q1	2018 Q2	Q3
Actual	0.7	0.6		
Projections in MPR 1/18		0.7	0.7	
Projections in MPR 2/18			0.7	0.7

Sources: Statistics Norway and Norges Bank

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

	Mar	Apr	May	2018 Jun	Jul	Aug	Sep
Actual	2.4	2.4	2.3				
Projections in MPR 1/18	2.3	2.3	2.3	2.2			
Projections in MPR 2/18				2.3	2.3	2.2	2.2

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

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

	Jan	Feb	Mar	2018 Apr	May	Jun	Jul
Actual	4.0	3.9	3.9				
Projections in MPR 2/18 ¹				3.8	3.8	3.7	3.7

¹ Labour Force Survey. Owing to a revision of the LFS, the projections from MPR 1/18 are not directly comparable with the projections in this Report. The projections from the March Report are therefore not shown in the table.

Sources: Statistics Norway and Norges Bank

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

	Mar	Apr	May	2018 Jun	Jul	Aug	Sep
Consumer price index (CPI)							
Actual	2.2	2.4	2.3				
Projections in MPR 1/18	2.4	2.4	2.1	1.9			
Projections in MPR 2/18				2.3	2.3	2.5	2.3
CPI-ATE¹							
Actual	1.2	1.3	1.2				
Projections in MPR 1/18	1.5	1.6	1.6	1.4			
Projections in MPR 2/18				1.1	1.2	1.5	1.3
Imported goods in the CPI-ATE¹							
Actual	0.0	0.6	0.4				
Projections in MPR 1/18	0.6	1.1	0.8	0.7			
Projections in MPR 2/18				0.2	0.5	0.7	0.1
Domestically produced goods and services in the CPI-ATE^{1,2}							
Actual	1.6	1.7	1.6				
Projections in MPR 1/18	1.8	1.8	1.9	1.7			
Projections in MPR 2/18				1.5	1.5	1.8	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 <i>Monetary Policy Report 1/18</i> in brackets	In billions of NOK 2017	Percentage change from previous year (unless otherwise stated)				
		Projections				
		2017	2018	2019	2020	2021
Prices and wages						
Consumer price index (CPI)		1.8 (0)	2.3 (0.2)	1.6 (-0.1)	1.6 (-0.2)	1.9 (-0.1)
CPI-ATE ¹		1.4 (0)	1.3 (-0.2)	1.5 (-0.3)	1.6 (-0.2)	1.9 (-0.1)
Annual wages ²		2.3 (0)	2.9 (0)	3.3 (-0.1)	3.8 (0)	3.9 (0)
Real economy						
Gross domestic product (GDP)	3299	1.9 (0.1)	2.0 (0.1)	1.6 (0.2)	2.2 (-0.1)	1.8 (-0.1)
GDP, mainland Norway	2802	1.9 (0.1)	2.6 (0)	2.3 (0.3)	1.6 (-0.1)	1.3 (-0.1)
Output gap, mainland Norway (level) ³		-0.9 (0)	-0.1 (0.1)	0.6 (0.4)	0.7 (0.3)	0.5 (0.2)
Employment, persons, QNA		1.1 (-0.2)	1.8 (0.5)	1.0 (0.1)	0.5 (-0.2)	0.3 (-0.1)
Labour force, LFS ^{4,5}		-0.2	1.4	1.2	0.8	0.5
LFS unemployment (rate, level)		4.2	3.7	3.3	3.2	3.2
Registered unemployment (rate, level)		2.7 (0)	2.3 (0)	2.1 (-0.1)	2.1 (-0.1)	2.2 (0)
Demand						
Mainland demand ⁶	2904	3.1 (0.1)	1.7 (-0.3)	2.1 (0.4)	1.6 (0.2)	1.4 (0.1)
- Household consumption ⁷	1477	2.5 (0.2)	2.5 (-0.1)	2.3 (0.3)	1.9 (0.1)	1.8 (0)
- Business investment	255	4.9 (-0.2)	5.3 (-1.9)	5.3 (2.1)	1.5 (0.4)	-0.1 (0.2)
- Housing investment	203	7.1 (0)	-7.8 (-1.8)	-0.8 (1.7)	1.1 (1.2)	1.1 (0.6)
- Public demand ⁸	969	2.6 (-0.1)	1.5 (0)	1.5 (-0.1)	1.4 (0.1)	1.3 (0.3)
Petroleum investment ⁹	153	-2.0 (2.1)	2.8 (-4.6)	8.7 (0.5)	4.2 (1.3)	1.1 (2.8)
Mainland exports ¹⁰	608	0.6 (0.2)	4.1 (-0.7)	5.1 (0.3)	3.5 (-0.3)	3.0 (-0.5)
Imports	1090	2.8 (-0.5)	3.6 (0.3)	3.3 (0)	3.0 (0.6)	2.7 (0.9)
House prices and debt						
House prices		5.9 (0)	1.3 (2.0)	2.8 (0.8)	2.1 (-0.5)	2.5 (-0.4)
Credit to households (C2) ¹¹		6.4 (-0.1)	5.9 (-0.3)	5.8 (-0.2)	5.8 (0.1)	5.7 (0.2)
Interest rate and exchange rate (level)						
Key policy rate ¹²		0.5 (0)	0.6 (0)	1.1 (0)	1.6 (0.1)	2.0 (0)
Import-weighted exchange rate (I-44) ¹³		104.5 (0)	103.2 (-0.5)	99.2 (-2.0)	98.1 (-2.4)	98.0 (-2.3)
Money market rates, trading partners ¹⁴		0.1 (0)	0.4 (0)	0.6 (-0.1)	0.9 (-0.2)	1.1 (-0.2)
Oil price						
Oil price, Brent Blend. USD per barrel ¹⁵		54 (0)	73 (8)	72 (11)	69 (11)	66 (9)

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. 2017 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. Labour Force Survey. Owing to a revision of the LFS, the projections from MPR 1/18 are not directly comparable with the projections in this Report. The projections from the March Report are therefore not shown in the table.

5 The projections reflect the assumption of stronger growth in LFS employment than in QNA employment.

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

7 Includes consumption for non-profit organisations.

8 General government gross fixed investment and consumption.

9 Extraction and pipeline transport.

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

11 Credit growth is calculated as the four-quarter change at year-end.

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

13 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.

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

15 Spot price 2017. The spot price for 2018 is calculated as the average spot price so far in 2017 and futures prices for the remainder of the year. Futures prices for 2019-2021. Futures prices are calculated as the average for the period 11-15 June 2018.

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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