



NORGES BANK

**1|18**

MARCH

**MONETARY  
POLICY REPORT**  
WITH FINANCIAL STABILITY ASSESSMENT

# Norges Bank

Oslo 2018

Address: Bankplassen 2  
Postal address: Postboks 1179 Sentrum, 0107 Oslo  
Phone: +47 22316000  
Fax: +47 22413105  
E-mail: [central.bank@norges-bank.no](mailto:central.bank@norges-bank.no)  
Website: <http://www.norges-bank.no>

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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.

On 2 March 2018, the Government laid down a new Regulation on Monetary Policy. The Executive Board discussed the new regulation at its meeting on 28 February 2018. At its meeting on 7 March 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 14 March 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](http://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.

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## COUNTERCYCLICAL CAPITAL BUFFER

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

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

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

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

# Executive Board's assessment

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*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 after summer 2018.*

On 2 March, the Government laid down a new Regulation on Monetary Policy. The operational target of monetary policy is now annual consumer price inflation of close to 2% over time. Norges Bank expressed its opinion on the regulation in a letter to the Ministry of Finance on 28 February. In the opinion of the Executive Board, the regulation clarifies the monetary policy mandate and underpins the flexible approach to inflation targeting.

The economic upturn among Norway's trading partners is continuing and interest rates abroad are on the rise. Labour markets are improving, and investment has picked up. Recent developments indicate that global economic growth will be somewhat higher in the years ahead than projected earlier. There are signs of rising wage growth in some countries, but the projections for price inflation among trading partners are little changed. Since the December 2017 *Monetary Policy Report*, both long-term and short-term interest rates abroad have risen.

Growth in the Norwegian economy picked up in 2017, and the negative output gap narrowed. Low interest rates, improved competitiveness and an expansionary fiscal policy have contributed to the upturn. Growth in the mainland economy has been approximately in line with the projection in the *December Report*. Labour market developments have been somewhat stronger than expected. Employment has risen and registered unemployment has fallen. Oil futures prices are little changed since the *December Report* and indicate that oil prices will edge down in the coming years.

There are prospects that growth in the Norwegian economy will be higher in 2018 than in 2017, and the projections have been revised up from the *December Report*. The output gap in Norway will probably close earlier than assumed in December. The upturn among trading partners is boosting Norwegian exports. There is solid growth in business investment and household consumption, and petroleum investment is expected to rise in the years ahead. On the other hand, housing investment has fallen faster than expected, and is likely to fall further.

After falling markedly in the period to autumn 2017, inflation has edged higher. In February, the twelve-month rise in the consumer price index adjusted for tax changes and excluding energy products (CPI-ATE) was 1.4%, which was somewhat lower than projected. Wage growth picked up in 2017. Since the *December Report*, the krone has strengthened broadly as projected.

Persistently high debt growth has added to the vulnerability of the household sector. High house price inflation has contributed to the increase in household debt. Over the past year, house prices have fallen. The correction in the housing market has reduced the risk of an abrupt and more pronounced decline further out. Household credit growth remains high, but over time lower house price inflation will dampen debt growth.

Overall, the risks to the outlook appear to be balanced. Solid global growth may contribute to a faster upswing in exports and business investment in Norway than anticipated. On the other hand, there is a risk of growing protectionism, which over time may weigh on growth. Price and wage inflation may remain moderate in the face of rising economic activity, as has been the case in other countries in recent years. There is also uncertainty surrounding household behaviour ahead, partly owing to the high prevailing debt burdens.

The new regulation will not result in significant changes in the conduct of monetary policy. 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.

Over time, lower inflation owing to a lower inflation target will result in a correspondingly lower nominal interest rate. The inflation targeting regime is flexible, and weight is given to developments in output and employment. A lower numerical target in and of itself is of little importance for the interest rate outlook in the coming period.

In its discussion of monetary policy, the Executive Board gives weight to the sustained upturn in both the global and Norwegian economy. Economic growth appears to be somewhat stronger than expected, and the output gap for Norway is closing. Underlying inflation is low, but rising capacity utilisation will probably push up price and wage inflation further out.

Monetary policy is expansionary. The outlook for the Norwegian economy suggests that it will soon be appropriate to raise the key policy rate. The uncertainty surrounding the effects of a higher interest rate suggests a cautious approach. Overall, the changes in the outlook and the balance of risks imply a somewhat earlier interest rate increase than in the *December Report*.

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 after summer 2018. The decision was unanimous.

Øystein Olsen  
14 March 2018

# 1 Overall picture

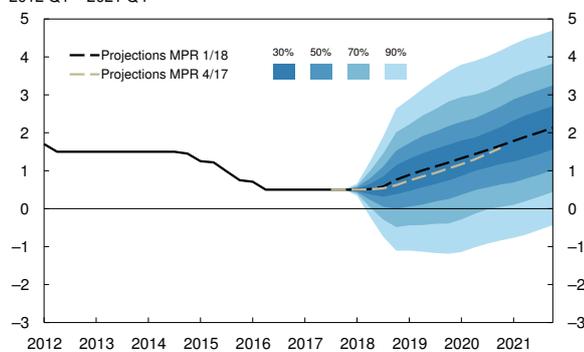
Growth in the Norwegian economy picked up in 2017. Since the December 2017 *Monetary Policy Report*, employment has risen more than expected, while growth in the mainland economy has been broadly as projected. Underlying inflation is low and has moved up a little less than expected.

According to the forecast, the key policy rate will be raised after summer 2018, followed by a gradual increase to around 2% in 2021. The new interest rate path is somewhat higher than in the December *Report* throughout the projection period.

The negative output gap is projected to continue to narrow and close in early 2019. Compared with the December *Report*, the projections for capacity utilisation are slightly higher in 2018 and slightly lower further out in the projection period. Underlying inflation is projected to rise to a little above 2% in 2021. The projections for underlying inflation are somewhat lower than in the December *Report*.

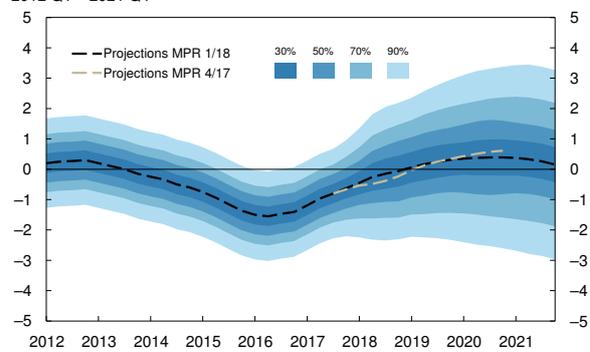
A new Regulation on Monetary Policy was laid down on 2 March 2018. The inflation target is now 2%, compared with the previous 2.5%. The regulation clarifies the monetary policy mandate and underpins the flexible approach to inflation targeting. The new regulation will not result in significant changes in the conduct of monetary policy.

Chart 1.1a Key policy rate with fan chart<sup>1)</sup>. Percent. 2012 Q1 – 2021 Q4<sup>2)</sup>



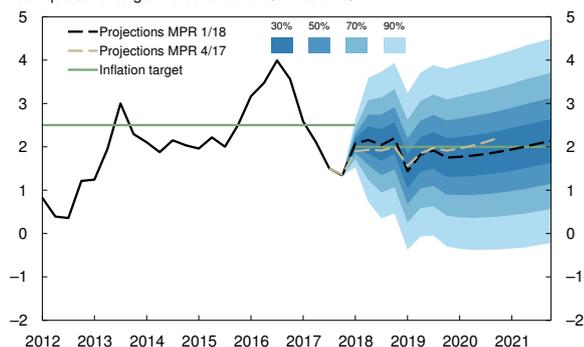
1) The fan chart is based on historical experience and stochastic simulations in Norges Bank's main macroeconomic model, NEMO. It does not take into account that a lower bound for the interest rate exists.  
2) Projections for 2018 Q1 – 2021 Q4.  
Source: Norges Bank

Chart 1.1b Projected output gap<sup>1)</sup> with fan chart<sup>2)</sup>. Percent. 2012 Q1 – 2021 Q4



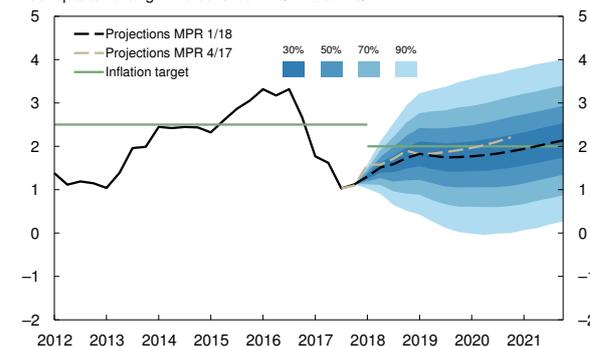
1) The output gap measures the percentage deviation between mainland GDP and projected potential mainland GDP.  
2) The fan chart is based on historical experience and stochastic simulations in Norges Bank's main macroeconomic model, NEMO.  
Source: Norges Bank

Chart 1.1c Consumer price index (CPI) with fan chart<sup>1)</sup>. Four-quarter change. Percent. 2012 Q1 – 2021 Q4<sup>2)</sup>



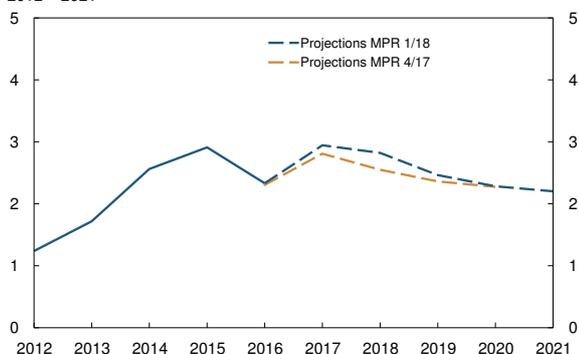
1) The fan chart is based on historical experience and stochastic simulations in Norges Bank's main macroeconomic model, NEMO.  
2) Projections for 2018 Q1 – 2021 Q4.  
Sources: Statistics Norway and Norges Bank

Chart 1.1d CPI-ATE<sup>1)</sup> with fan chart<sup>2)</sup>. Four-quarter change. Percent. 2012 Q1 – 2021 Q4<sup>3)</sup>



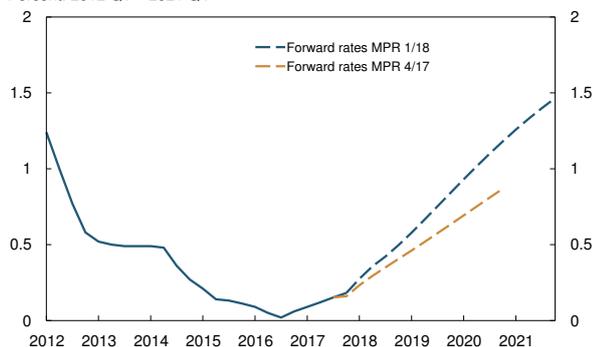
1) CPI adjusted for tax changes and excluding energy products.  
2) The fan chart is based on historical experience and stochastic simulations in Norges Bank's main macroeconomic model, NEMO.  
3) Projections for 2018 Q1 – 2021 Q4.  
Sources: Statistics Norway and Norges Bank

Chart 1.2 GDP for Norway's trading partners.<sup>1)</sup> Annual change. Percent. 2012 – 2021<sup>2)</sup>



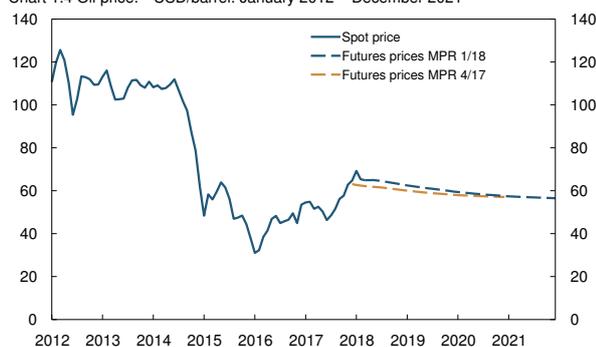
1) Export weights, 25 main trading partners.  
2) Projections for 2017 – 2021.  
Sources: Thomson Reuters and Norges Bank

Chart 1.3 Three-month money market rates for Norway's trading partners.<sup>1)</sup> Percent. 2012 Q1 – 2021 Q4<sup>2)</sup>



1) Based on money market rates and interest rate swaps. For information about the aggregate for trading partner interest rates, see *Norges Bank Papers* 2/2015.  
2) Forward rates at 8 December 2017 (orange line) and 9 March 2018 (blue line).  
Sources: Thomson Reuters and Norges Bank

Chart 1.4 Oil price.<sup>1)</sup> USD/barrel. January 2012 – December 2021<sup>2)</sup>



1) Brent Blend.  
2) Futures prices are the averages of futures prices for the period 5 March – 9 March 2018 for MPR 1/18 and 4 December – 8 December 2017 for MPR 4/17.  
Sources: Thomson Reuters and Norges Bank

## 1.1 GLOBAL DEVELOPMENTS AND OUTLOOK

### Higher-than-expected growth

The upturn among Norway's trading partners is continuing and economic growth has been a little higher than projected in the *December Report* (MPR 4/17).

Labour markets are improving and household and business confidence indicators are at very high levels. A gradual tightening of monetary policy ahead is expected to dampen growth. GDP growth among trading partners is projected at 2.8% in 2018, before slowing gradually to 2.2% in 2021 (Chart 1.2). The projections for 2018 and 2019 are higher than in the *December Report*.

Despite higher GDP growth, inflation among Norway's main trading partners has been stable and broadly as expected. In some countries, there are signs of a pick-up in wage growth, and price and wage inflation is expected to rise gradually in the coming years, as slack is absorbed. On balance, the projections for inflation among trading partners are broadly in line with the *December Report* projections.

### Higher interest rates abroad

Global interest rates have risen. Forward rates among Norway's main trading partners are higher than at the time of the *December Report* (Chart 1.3).

Oil spot prices are now around USD 65 per barrel, approximately as assumed in *December*. Oil prices are assumed to move in line with futures prices ahead, indicating an oil price of USD 57 per barrel in 2021 (Chart 1.4). Futures prices have shown little change since *December*.

## 1.2 THE ECONOMIC SITUATION IN NORWAY

### Recent rise in the money market rate

The key policy rate has been 0.5% since March 2016. Nevertheless, the money market rate fell in 2017, reflecting a decline in the money market premium. The average mortgage lending rate was around 2.5% in 2017. Lending rates drifted down through autumn, but household lending rates fell less than the money market rate. Corporate lending rates followed developments in the money market rate. Recently, the money market rate edged higher owing to higher US money market premiums.

The krone exchange rate weakened markedly towards the end of 2017. So far this year, the krone has appreciated and has on average been in line with the December projection.

### Growth gains momentum

Growth in the mainland economy gained momentum in 2017, following low growth in 2016 (Chart 1.5). Higher growth abroad, low interest rates, improved competitiveness and an expansionary fiscal policy contributed to the upswing. At the same time, the decline in petroleum investment abated. Mainland GDP grew by 0.6% in 2017 Q4 as projected in December.

Growth in the mainland economy is expected to pick up slightly from the latter half of 2017 to the first half of 2018. Projections have been revised up somewhat since December, and are in line with the Regional Network survey.

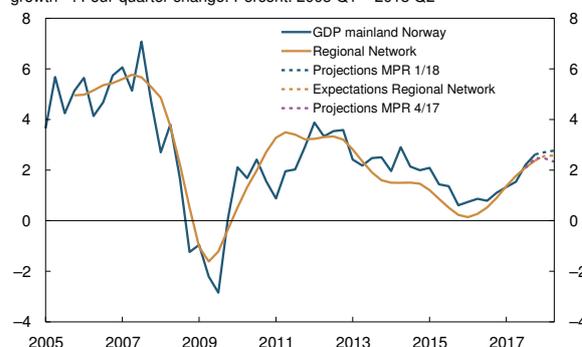
The labour market has continued to improve in recent months. Employment has risen, and registered unemployment has declined. Employment growth has been a little higher than expected, and the Bank's Regional Network indicates that employment growth will remain buoyant in the coming period (Chart 1.6). The negative output gap is assessed to have narrowed in recent months and is close to zero.

Persistently high debt growth has added to the vulnerability of the household sector. High house price inflation has contributed to the increase in debt. Over the past year, house prices have fallen (Chart 1.7). The correction in the housing market has lowered the risk of an abrupt and more pronounced decline further out. Household credit growth remains high, but over time lower house price inflation will likely dampen debt growth.

### Lower-than-expected inflation

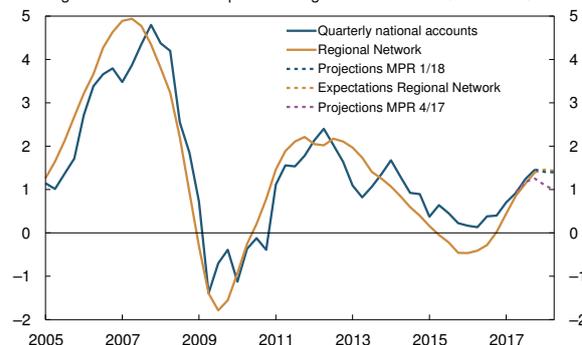
Inflation slowed considerably from summer 2016 to autumn 2017. In recent months, inflation has edged higher (Charts 1.1c-d). In February, the twelve-month rise in the consumer price index (CPI) was 2.2%, approximately in line with the December projection. Indirect tax changes from 1 January 2018 and higher energy prices pulled up inflation more than anti-

Chart 1.5 GDP for mainland Norway<sup>1)</sup> and Regional Network indicator of output growth<sup>2)</sup>. Four-quarter change. Percent. 2005 Q1 – 2018 Q2<sup>3)</sup>



1) Seasonally adjusted.  
2) Reported output growth for the past three months converted to quarterly figures. The quarterly figures are calculated by weighting together three-monthly figures based on when the survey was carried out. For 2018 Q1 expected output growth is estimated by weighting together reported growth over the past three months and expected growth in the next six months. 2018 Q2 is expected growth in the next six months, as measured in January.  
3) Projections for 2018 Q1 – 2018 Q2.  
Sources: Statistics Norway and Norges Bank

Chart 1.6 Growth in employment in the quarterly national accounts and Regional Network<sup>1)</sup>. Four-quarter change. Percent. 2005 Q1 – 2018 Q2<sup>2)</sup>



1) Reported employment growth for the past three months. Quarterly figures are calculated by weighting together three-monthly figures based on when the survey was carried out. For 2018 Q1, expected employment growth is estimated by weighting together reported growth over the past three months and expected growth in the next three months. 2018 Q2 is expected growth in the next three months as measured in January.  
2) Projections for 2018 Q1 – 2018 Q2.  
Sources: Statistics Norway and Norges Bank

Chart 1.7 House prices and household debt<sup>1)</sup>. Four-quarter change. Percent. 2005 Q1 – 2021 Q4<sup>2)</sup>



1) Domestic credit to households (C2).  
2) Projections for 2018 Q1 – 2021 Q4.  
Sources: Etendomsverdi, Finn.no, Real Estate Norway, Statistics Norway and Norges Bank

## MONETARY POLICY SINCE THE DECEMBER REPORT

The analyses in the December 2017 *Monetary Policy Report* implied that the key policy rate would remain at 0.5% in the period to autumn 2018, followed by a gradual increase to 1.5% in 2020. With this path for the key policy rate, inflation was projected to increase to a little more than 2% towards the end of 2020. The output gap was assessed as being negative. The projections implied that capacity utilisation would increase to somewhat above a normal level in 2020.

At the Executive Board's meeting of 24 January, new information was assessed against the projections in the *December Report*. Growth prospects abroad appeared to be slightly better than assumed, and forward rates among trading partners had moved up somewhat. The money market premium was broadly in line with assumptions, while the krone exchange rate had strengthened broadly in line with that projected. Oil prices had risen. Twelve-month CPI-ATE inflation had picked up approximately in line with projections. Labour market developments were also in line with projections. Otherwise there was little new information about growth in the Norwegian economy. The Executive Board's assessment in January was that the outlook and the balance of risks for the Norwegian economy had not changed substantially since the *December Report*. The Executive Board therefore decided to keep the key policy rate unchanged at 0.5%.

pated. The rise in the CPI adjusted for tax changes and excluding energy products (CPI-ATE) was 1.4% in February, somewhat lower than expected. CPI-ATE inflation is expected to move up in the coming period, but at a somewhat slower pace than projected in December.

Annual wage growth was 2.3% in 2017, a little lower than projected. Annual wage growth is projected at 2.9% in 2018. The projection is unchanged from the *December Report* and in line with the social partners' expectations, according to Norges Bank's expectations survey.

### 1.3 MONETARY POLICY AND PROJECTIONS

#### New inflation target

On 2 March, the Government laid down a new Regulation on Monetary Policy (see page 13). The operational target of monetary policy is now annual consumer price inflation of close to 2% over time, 0.5 percentage point lower than the previous numerical target. 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. Norges Bank expressed its opinion on the regulation in a letter to the Ministry of Finance on 28 February 2018 (see page 14). The regulation clarifies the monetary policy mandate and underpins the flexible approach to inflation targeting. The new regulation will not result in significant changes in the conduct of monetary policy.

Lower inflation over time owing to a lower inflation target will result in a correspondingly lower nominal interest rate, so that the long-term real interest rate is unchanged. In the near term, a lower numerical target implies a slightly less expansionary monetary policy as actual inflation is somewhat closer to target. Because the inflation targeting regime is flexible, with weight given to developments in output and employment, the effect on the key policy rate in the coming period will be marginal. See Special Feature on page 47 for a discussion of monetary policy implications of a new inflation target.

#### Somewhat earlier increase in the key policy rate

The changes in the outlook and the balance of risks suggest a somewhat earlier increase in the key policy

rate than projected in the *December Report*. According to the projection, the key policy rate will be raised after summer 2018, followed by a gradual increase to around 2% around the end of 2021. The new interest rate path is somewhat higher than in December throughout the projection period (Chart 1.1a).

The upward adjustment reflects prospects for stronger growth and higher interest rates abroad and somewhat higher domestic demand. Lower-than-expected price and wage inflation and somewhat higher prospects for money market premiums in isolation suggest a lower interest rate path. The change in the inflation target suggests a slightly higher key policy rate in the near term and a somewhat lower rate in the longer term.

The interest rate forecast implies an increase in residential mortgage rates from 2.5% today to around 4% around the end of 2021 (Chart 1.8). Banks' lending spreads are assumed to narrow slightly as the interest rate level rises.

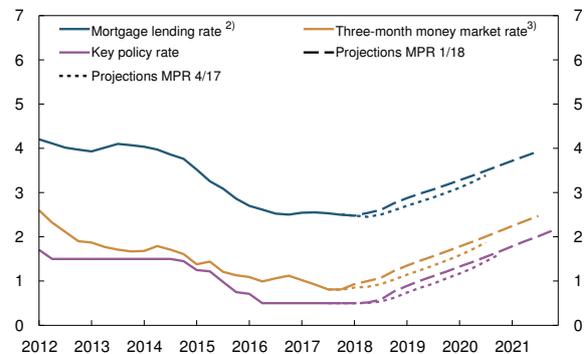
The real interest rate is projected to rise gradually throughout the projection period, turning slightly positive around the end of 2021 (Chart 1.9). Because inflation is moving higher, the rise in the real interest rate will be less than the rise in the key policy rate. The projections for the real interest rate are higher than in the *December Report*.

### Prospects for rising inflation and higher GDP growth

Underlying inflation is projected to gradually drift higher in the years ahead. Around the end of 2021, consumer price inflation is projected at a little above 2%. The projections are somewhat lower than in the *December Report* (Charts 1.1c-d).

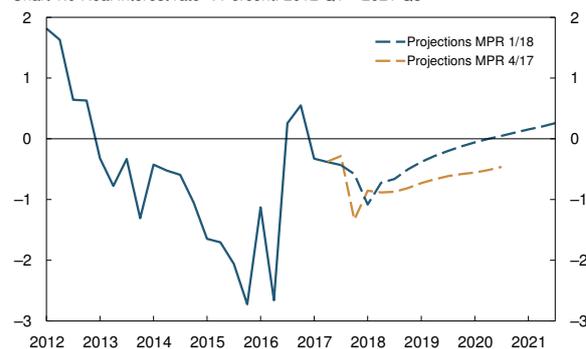
Capacity utilisation is expected to continue to rise in the coming years before edging lower in 2021. In the projection, the output gap will be positive from 2019. Towards the end of the projection period, it moves back towards zero. The projections for capacity utilisation are slightly higher in 2018 than in December and slightly lower further out in the projection period (Chart 1.1b).

Chart 1.8 Interest rates. Percent. 2012 Q1 – 2021 Q4 <sup>1)</sup>



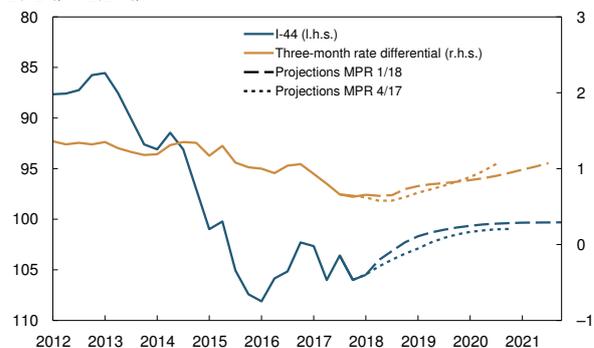
1) Projections for 2018 Q1 – 2021 Q4.  
2) The mortgage lending rate is average interest rate on outstanding mortgage loans to households. From the sample of banks and mortgage companies included in Statistics Norway's monthly interest rate statistics.  
3) Key policy rate plus Norwegian money market premium. Money market rate estimated on the basis of a two-quarter average of the key policy rate forecast and the projection for the money market premium.  
Sources: Statistics Norway, Thomson Reuters and Norges Bank

Chart 1.9 Real interest rate <sup>1)</sup>. Percent. 2012 Q1 – 2021 Q3 <sup>2)</sup>



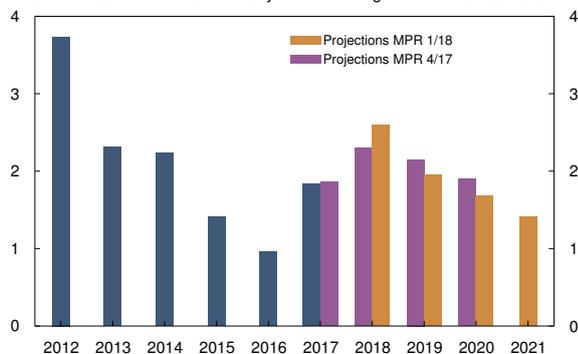
1) Three-month money market rate deflated by inflation in the next quarter, measured by annualised, seasonally adjusted quarterly growth in the CPI adjusted for tax changes and excluding energy prices (CPI-ATE).  
2) Projections for 2017 Q4 – 2021 Q3.  
Source: Statistics Norway and Norges Bank

Chart 1.10 Three-month money market rate differential between Norway <sup>1)</sup> and trading partners <sup>2)</sup>. Percentage points. Import-weighted exchange rate index (I-44) <sup>3)</sup>. 2012 Q1 – 2021 Q4 <sup>4)</sup>



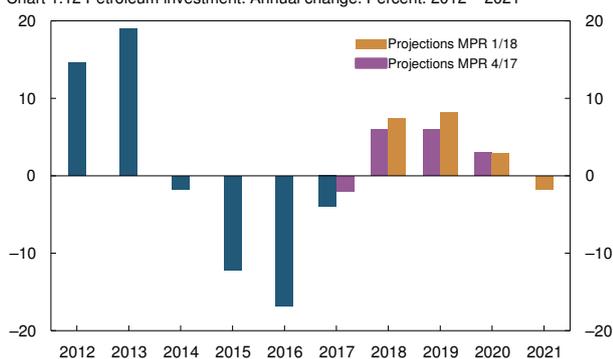
1) Key policy rate plus Norwegian money market premium. The calculations are based on the assumption that the key policy rate forecast is priced into the money market.  
2) Forward rates for trading partners at 9 March 2018 and 8 December 2017. The aggregate for trading partner interest rates is described in *Norges Bank Papers 2/2015*.  
3) A positive slope denotes a stronger krone exchange rate.  
4) Projections for 2018 Q1 – 2021 Q4.  
Sources: Thomson Reuters and Norges Bank

Chart 1.11 GDP for mainland Norway. Annual change. Percent. 2012 – 2021<sup>1)</sup>



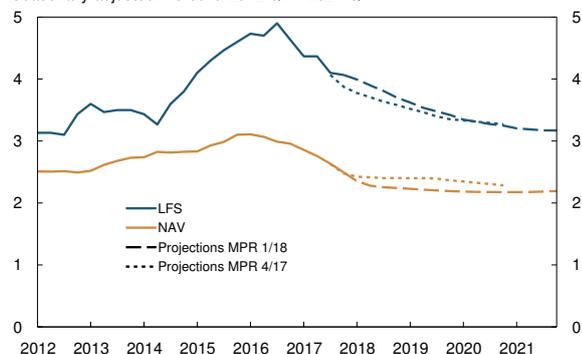
1) Projections for 2018 – 2021.  
Sources: Statistics Norway and Norges Bank

Chart 1.12 Petroleum investment. Annual change. Percent. 2012 – 2021<sup>1)</sup>



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

Chart 1.13 Unemployment as a share of the labour force. LFS<sup>1)</sup> and NAV<sup>2)</sup>. Seasonally adjusted. Percent. 2012 Q1 – 2021 Q4<sup>3)</sup>



1) Labour Force Survey.  
2) Registered unemployment.  
3) Projections for 2018 Q1 – 2021 Q4.  
Sources: Norwegian Labour and Welfare Administration (NAV), Statistics Norway and Norges Bank

The projections are based on a gradual appreciation of the krone in the years ahead, at the same time as the interest rate differential against other countries is projected to widen (Chart 1.10). The krone exchange rate is expected to be slightly stronger throughout the projection period than projected in December.

Mainland GDP growth is projected to rise to 2.6% in 2018, following annual growth of below 2% in 2017 (Chart 1.11). Growth is expected to slow gradually in the coming years, reflecting lower growth abroad, higher interest rates and a stronger krone. The growth projection for 2018 has been revised up, but the projections further out are slightly lower than in the December Report.

After several years of strong growth, housing investment is expected to fall in 2018 and 2019. On the other hand, petroleum investment is set to expand after several years of decline (Chart 1.12). Export growth is also expected to move higher. Growth in household consumption is likely to rise in 2018, slowing somewhat thereafter. Looking ahead, fiscal policy is assumed to be less expansionary than in recent years.

### Higher employment

Employment is expected to continue to grow in the years ahead on the back of the upswing in the Norwegian economy, with employment rising somewhat more than the labour supply, so that unemployment continues to edge lower. The projection for employment growth in 2018 is somewhat higher than in the December Report, while the projections for the years ahead are a little lower. The projections for registered unemployment are slightly lower than in December (Chart 1.13).

Wage growth is projected to move up further in the coming years, partly owing to rising capacity utilisation. The projections for wage growth are slightly lower than in December.

## REGULATION OF 2 MARCH 2018 ON MONETARY POLICY

Section 1 Monetary policy shall maintain monetary stability by keeping inflation low and stable.

Section 2 Norges Bank is responsible for the implementation of monetary policy.

Section 3 The operational target of monetary policy shall be annual consumer price inflation of close to 2 percent 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.

Section 4 Norges Bank shall regularly publish the assessments that form the basis of the implementation of monetary policy.

Section 5 This regulation enters into force immediately. Regulation No 278 of 29 March 2001 on Monetary Policy is repealed from the same date.

## LETTER OF 28 FEBRUARY 2018 FROM NORGES BANK TO THE MINISTRY OF FINANCE

### MODERNISATION OF THE REGULATION ON MONETARY POLICY

Norges Bank refers to the letter from the Ministry of Finance of 21 February 2018 on the guidelines for monetary policy, enclosing a draft regulation submitted to Norges Bank for comment pursuant to Section 2, third paragraph, of the Norges Bank Act.

In Norges Bank's assessment, the monetary policy framework has worked well.<sup>1</sup> Inflation has been low and stable, and the inflation target has anchored inflation expectations. During the period of inflation targeting, the Norwegian economy has been exposed to major shocks. A flexible inflation targeting regime has helped to dampen the impact on output and employment.

In the opinion of Norges Bank, the new regulation clarifies the monetary policy mandate and underpins the flexible approach to inflation targeting. In Norges Bank's assessment, the new regulation will not result in significant changes in the conduct of monetary policy.

In the following, the Bank provides a further account of its understanding of the formulation of the regulation.

Section 1 of the regulation reads as follows:

"Monetary policy shall maintain monetary stability by keeping inflation low and stable."

The regulation thus clarifies the primary task of monetary policy. Price stability is the best contribution that monetary policy can make towards sound and stable economic developments over time.

Section 3 of the regulation reads as follows:

"The operational target of monetary policy shall be annual consumer price inflation of close to 2 percent over time."

It is not possible to quantify precisely an optimal inflation target for the Norwegian economy. A numerical target of 2 percent is consistent with the inflation target of most of Norway's trading partners.

It is difficult to find compelling arguments for setting an inflation target in Norway today that differs from that of surrounding countries. In 2001, when inflation targeting was introduced, the Norwegian economy was in a situation where increasing oil revenues would gradually be phased into the economy. It was widely expected that the phasing-in of revenues would entail an appreciation of the real exchange rate. At the time, the numerical target was set at 2.5 percent. The reasoning was that an expected real appreciation could then occur partly in the form of wider price and cost differentials between Norway and its trading partners. The period of rising oil revenue spending now appears largely to be over.

Over time, lower inflation owing to a lower inflation target will result in a correspondingly lower nominal interest rate. International experience has shown that the room for manoeuvre in monetary policy is not exhausted when the policy rate is close to zero. In Norges Bank's assessment, the room for manoeuvre in monetary policy will be sufficient with a 2 percent inflation target.

<sup>1</sup> In connection with the work to modernise the Regulation on Monetary Policy, the Ministry of Finance asked Norges Bank to assess its experience with the monetary policy framework in Norway since 2001. The memo containing the Bank's assessments was submitted to the Ministry of Finance on 31 January 2017 and is published on Norges Bank's website.

Section 3 of the regulation continues:

“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.”

This formulation is consistent with how monetary policy has been conducted in practice. Over time, the horizon for achieving the inflation target has been extended. Monetary policy has become more flexible.

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.

As long as there is confidence that inflation will remain low and stable, monetary policy can contribute to smoothing fluctuations in output and employment. A flexible inflation targeting regime can prevent downturns from becoming deep and protracted. This can reduce the risk of unemployment becoming entrenched at a high level following economic contractions. Nevertheless, monetary policy cannot assume primary responsibility for high output and employment. The level of output and employment over time depends on overall economic policy, including the tax and social security system, the wage formation process and the functioning of the labour market.

The regulation and supervision of financial institutions are the primary means of addressing shocks to the financial system. To some extent, monetary policy can contribute to counteracting the build-up of financial imbalances and thereby reduce the risk of sharp economic downturns further ahead. How much weight this consideration will be given in the conduct of monetary policy will be situation-dependent and must be based on an overall assessment of the outlook for inflation, output and employment.

The krone exchange rate is important for developments in inflation, output and employment. How Norges Bank will react to movements in the exchange rate will depend on how these movements affect the economic outlook.

Section 4 of the regulation reads as follows:

“Norges Bank shall regularly publish the assessments that form the basis of the implementation of monetary policy.”

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.

Sincerely,

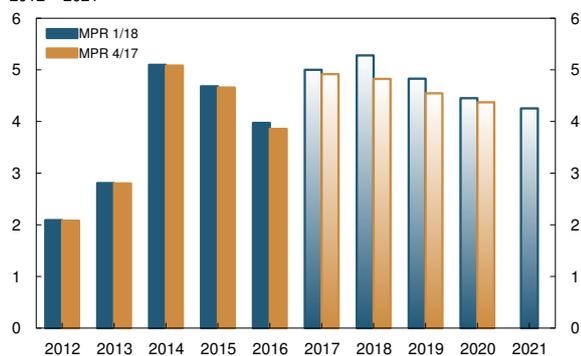
Øystein Olsen

Ida Wolden Bache

# 2 The global economy

The upturn among Norway's trading partners is continuing. Strengthening labour markets and household optimism are supporting continued strong growth in consumption. Investment growth has picked up further. The projections for GDP growth for advanced and emerging economies have been revised up. Despite higher economic growth, the projections for consumer price inflation for trading partners remain approximately unchanged. Oil futures prices are little changed. The international interest rate level is moving up. Money market expectations and long-term interest rates among trading partners are higher than in the December 2017 *Monetary Policy Report*.

Chart 2.1 Imports for Norway's trading partners.<sup>1)</sup> Annual change. Percent. 2012 – 2021<sup>2)</sup>



1) Export weights. 25 main trading partners.  
2) Projections for 2017 – 2021 (shaded bars).  
Sources: Thomson Reuters and Norges Bank

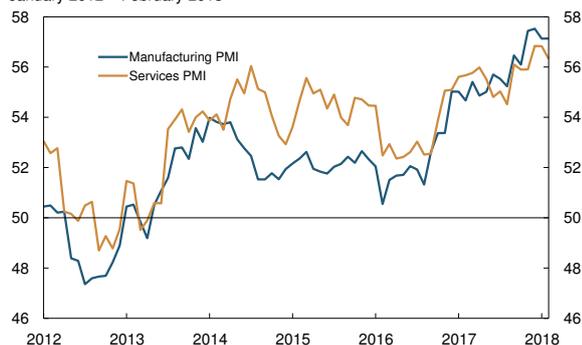
## 2.1 GROWTH, PRICES AND INTEREST RATES

### Higher growth among trading partners in 2018

Economic growth among trading partners has been slightly higher than projected in the *December Report*, and the outlook appears to have improved somewhat. Trading-partner GDP growth is expected to be 2.8% in 2018, before gradually abating in the years ahead, to 2.2% in 2021 (Annex Table 1). The projections for 2018 and 2019 are higher than in the *December Report*, implying an above-normal level of capacity utilisation for trading partners as a whole from this year. Towards the end of the projection period, growth among Norway's main trading partners is projected to be in line with, or a little lower, than the economies' potential growth rate. The projections for import growth among trading partners have also been revised up (Chart 2.1), which improves the prospects for Norwegian exports.

Household and business confidence indicators are still at high levels (Chart 2.2). Employment growth remains solid, with unemployment continuing to move down. This has contributed to high consumption growth among main trading partners. Consumption growth is projected to be somewhat higher ahead than expected earlier. Investment growth has increased, and is expected to remain high in the coming year. The global interest rate level remains low, but is moving up. Expectations of higher growth and inflation have led to an increase in market participants' policy rate expectations (Chart 2.3). Long-term interest rates have also increased (Chart 2.4). After a long period of gains, equity prices slid in February (Chart 2.5), reflecting the upward shift in interest rates. Overall, global financial conditions are a little tighter than around the time of the *December Report*.

Chart 2.2 PMI for Norway's trading partners.<sup>1)</sup> Seasonally adjusted. Index.<sup>2)</sup> January 2012 – February 2018



1) Export weights.  
2) Survey of purchasing managers. Diffusion index centered around 50.  
Sources: Thomson Reuters and Norges Bank

### Inflation in line with projections

Despite higher growth abroad, both headline and core inflation among main trading partners have been relatively stable (Chart 2.6). In recent years, the relationship between unemployment and price and wage inflation has been weaker than assumed. However, there are signs that wage growth is rising (Chart 2.7). Price and wage inflation is expected to rise gradually in the coming years in pace with higher capacity utilisation. Oil spot prices are now around USD 65 per barrel, approximately as envisaged in the December *Report*. Oil futures prices have also shown little change since December (Chart 1.4). Oil prices are further discussed in a box on page 21. Overall, the projections for consumer price inflation for trading partners are broadly unchanged on the December *Report* (Annex Table 2).

The rise in prices for consumer goods imported to Norway has been lower over time than consumer price inflation among trading partners. This is partly related 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 projections are little changed on the December *Report*.

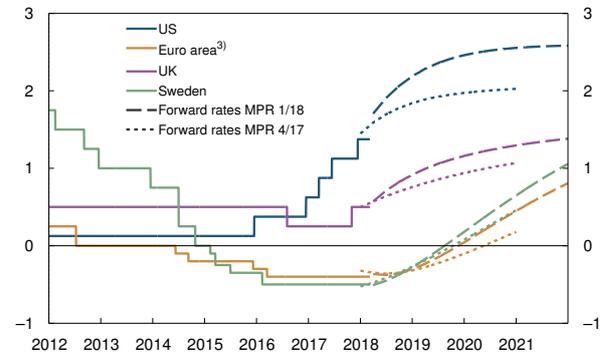
There is uncertainty surrounding global economic developments. On the one hand, given the solid household and business confidence indicators, growth may prove to be stronger than projected in this *Report*. In that case, inflation may also pick up faster. On the other hand, rising protectionism and geo-political tensions may dampen global growth to a further extent than assumed. Financial conditions may tighten further than currently envisaged if the low prevailing risk premiums increase abruptly. If the growth capacity of trading partners is underestimated, price and wage inflation may remain low for a longer period than assumed.

## 2.2 COUNTRIES AND REGIONS

### Expansionary fiscal policy boosts US growth

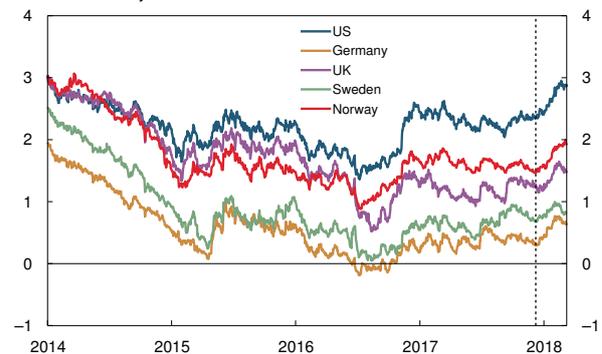
The upturn in the US has gained a firm footing, and unemployment is now at its lowest since 2000. Unemployment figures indicate in isolation that there is little to no spare capacity left in the US economy.

Chart 2.3 Policy rates and calculated forward rates<sup>1)</sup> in selected countries. Percent. 1 January 2012 – 31 December 2021<sup>2)</sup>



1) Forward rates at 8 December 2017 and 9 March 2018. Forward rates are calculated based on Overnight Index Swap (OIS) rates.  
2) Daily data through 9 March 2018. Quarterly data from 2018 Q2.  
3) ECB deposit facility rate. Eonia from 2018 Q2.  
Sources: Bloomberg, Thomson Reuters and Norges Bank

Chart 2.4 Yields on ten-year government bonds in selected countries. Percent. 1 January 2014 – 9 March 2018<sup>1)</sup>



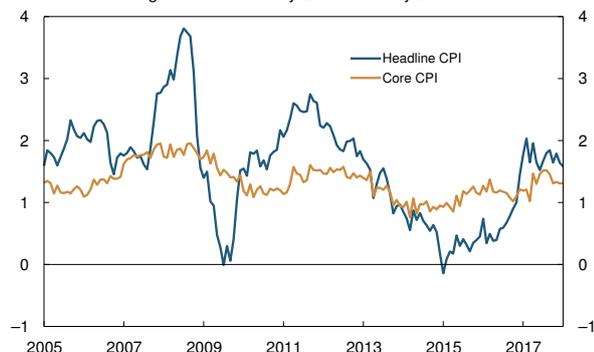
1) MPR 4/17 was based on information through 8 December 2017 indicated by the vertical line.  
Source: Bloomberg

Chart 2.5 Equity price indexes in selected countries. 4 January 2016 = 100. 4 January 2016 – 9 March 2018<sup>1)</sup>



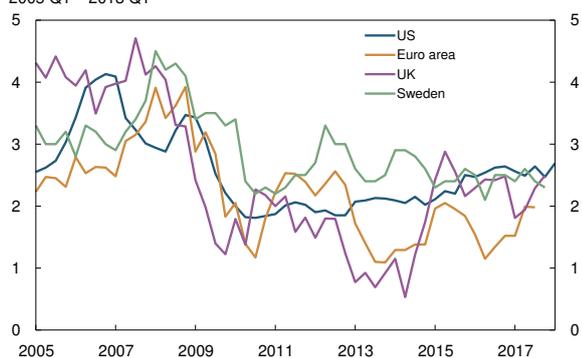
1) MPR 4/17 was based on information through 8 December 2017 indicated by the vertical line.  
2) Standard and Poor's 500 Index.  
3) Stoxx Europe 600 Index.  
4) Financial Times Stock Exchange 100 Index.  
5) OSE Benchmark Index.  
Source: Bloomberg

Chart 2.6 Headline and core CPI for Norway's main trading partners.<sup>1)</sup>  
Twelve-month change. Percent. January 2005 – January 2018



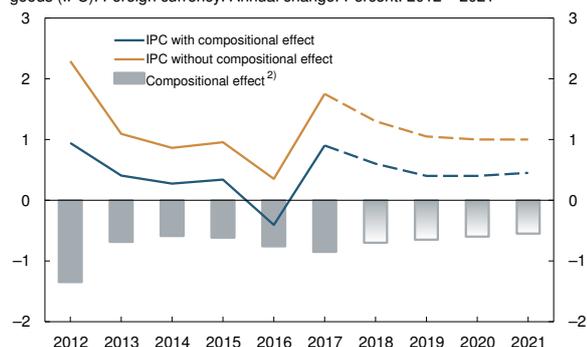
<sup>1)</sup> Import weights. US, euro area, UK and Sweden.  
Sources: Thomson Reuters and Norges Bank

Chart 2.7 Wages in selected countries. Four-quarter change. Percent.  
2005 Q1 – 2018 Q1<sup>1)</sup>



<sup>1)</sup> The latest observation is 2017 Q3 for the euro area and 2017 Q4 for the UK and Sweden.  
For the US, 2018 Q1 is calculated as the average of the twelve-month growth rates in January and February.  
Sources: Thomson Reuters and Norges Bank

Chart 2.8 Indicator of international inflationary impulses to imported consumer goods (IPC). Foreign currency. Annual change. Percent. 2012 – 2021<sup>1)</sup>



<sup>1)</sup> Projections for 2018 – 2021 (broken lines and shaded bars).  
<sup>2)</sup> The compositional effect captures the negative contribution to inflationary impulses when Norway increases its share of imports from countries with lower price levels.  
Sources: Statistics Norway, Thomson Reuters and Norges Bank

Other indicators suggest, however, that there is still some slack available. Domestic demand gained further momentum in Q4, with strong growth in both private consumption and investment. As expected, GDP growth slowed a little between Q3 and Q4.

The US tax reform is expected to generate considerable fiscal stimulus in the coming years. The tax cuts under the reform will impact the corporate sector in particular, while the tax cuts for households are more moderate. In addition, the US Congress has increased the discretionary spending caps for the next two years, which may entail a substantial increase in government spending ahead.

The Federal Reserve raised its policy rate by 0.25 percentage point in December 2017. Solid growth prospects, higher inflation expectations and prospects for increased government borrowing ahead have contributed to a marked increase in market interest rate expectations. Forward rates indicate about three rate hikes in 2018, in line with projections from the Federal Reserve. Despite the rate rise, the US dollar is weaker than at the time of the *December Report*.

Combined with higher global growth, the accommodative stance of fiscal policy will contribute to lifting both investment and consumption in the coming years. The introduction of trade restrictions increases the risk of a weaker expansion than currently envisaged, however. Wage growth has been moderate for a long time, but continued high labour demand will likely result in higher wage growth. At the same time, the household saving ratio is expected to increase somewhat after having fallen to a very low level (Chart 2.9). Growth in private consumption is expected to slow somewhat in 2019.

The projections for GDP growth in 2018 and 2019 have been revised up, with GDP growth projected at 2.7% in 2018 followed by a gradual fall to 1.9% in 2021. The projections for inflation have been revised up a little on the back of improved growth prospects and a weaker US dollar. CPI inflation is projected to edge up from 2.1% in 2017 to 2.4% in 2019.

### High growth in the euro area

Euro-area growth has picked up in recent years, with growth in 2017 at its highest level in ten years. Growth

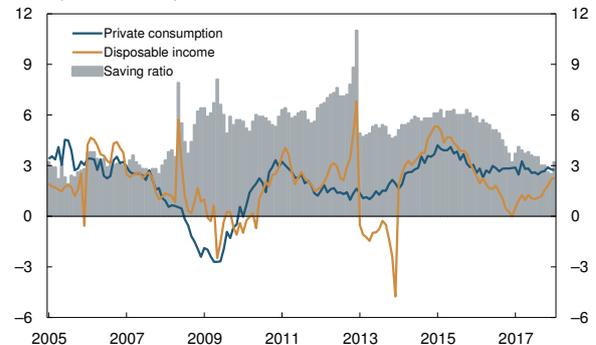
was broad-based across countries and sectors. Employment has continued to rise and is now higher than pre-crisis levels (Chart 2.10). This has contributed to strong growth in consumption. In addition, investment growth in 2017 reached its highest level since 2007.<sup>1</sup> GDP growth has been a little higher than projected in the *December Report*, and capacity utilisation for the euro area as a whole is now approaching a normal level.

The European Central Bank (ECB) has not changed its monetary stance since the *December Report*. The ECB intends to continue its asset purchase programme until autumn 2018, or beyond if necessary. The ECB has also signalled that its key policy rates will be kept unchanged well past the horizon of the net asset purchases. Market participants nevertheless expect monetary policy to be somewhat less expansionary ahead as a result of higher growth momentum, and European interest rates have risen. Forward rates now indicate that the ECB will raise the deposit facility rate by 0.25 percentage point in the course of autumn 2019.

Against the background of historically high confidence indicators, continuing employment growth and a little higher wage growth, consumption growth is expected to hold up well in the year ahead. In addition, continued low interest rates and a softening of lending conditions should support continued growth in investment, which in turn could increase potential growth in the longer run. The situation in the banking sector has improved, but challenges related to large shares of non-performing loans remain. The projections for GDP growth have been revised up for the entire projection period. Growth is projected at 2.4% in 2018. Further ahead, lower growth in the labour force and a tighter fiscal and monetary stance will likely result in growth slowing to 1.5% in 2021.

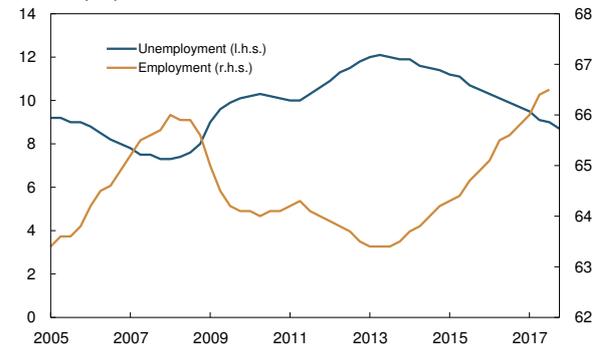
Even though growth has been revised up, the projections for inflation are broadly unchanged on the *December Report*. This partly reflects the surprisingly low growth in wages in the euro area over the past year. There are signs of a gentle rise in wage inflation, but unemployment still varies widely across countries, and remaining slack is restraining price and wage inflation in a number of countries. The euro appreciation since spring 2017 will also dampen price inflation ahead.

Chart 2.9 US. Saving ratio.<sup>1)</sup> Percent. Private consumption and disposable income. Twelve-month change. Seasonally adjusted. Percent. January 2005 – January 2018



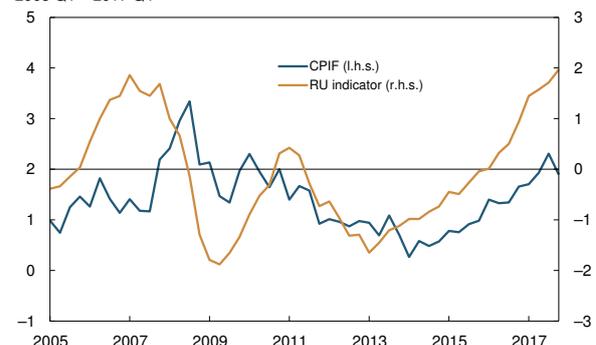
1) Share of disposable income. Seasonally adjusted. Source: Thomson Reuters

Chart 2.10 Unemployment<sup>1)</sup> and employment<sup>2)</sup> in the euro area. Seasonally adjusted. Percent. 2005 Q1 – 2017 Q4<sup>3)</sup>



1) Unemployed as a share of the labour force.  
2) Employed as a share of the population aged 15 – 64.  
3) The latest observation for the employment rate is 2017 Q3. Source: Thomson Reuters

Chart 2.11 Consumer prices and spare capacity in Sweden. CPIF.<sup>1)</sup> Four-quarter change. Percent. RU indicator. Index.<sup>2)</sup> 2005 Q1 – 2017 Q4



1) Consumer price index with a fixed interest rate. Sweden's inflation target is 2 percent measured by CPIF and indicated by the horizontal line.  
2) The RU indicator is a measure of total resource utilisation. The series has been normalised so that its mean is 0 and its standard deviation 1. Sources: The Riksbank and Thomson Reuters

1 Excluding volatile data for Ireland.

### **Moderate growth in the UK**

UK GDP growth slowed between Q3 and Q4, and growth was weaker than expected. In 2017, annual GDP growth was at its lowest since 2012. Unemployment increased a little towards the end of the year, but was still at a historically low level.

Financial conditions have become tighter. Interest rates have increased, and equity prices are lower than around year-end. The Bank of England has not changed its policy rate since December, but has signalled that there may be a need for somewhat faster and more pronounced rate rises than assumed earlier. Forward rates now indicate a rate hike in May.

Looking ahead, strong growth among the UK's trading partners is expected to sustain export growth. The depreciation of pound sterling since 2015 has improved cost competitiveness. Real wage growth has been negative over the past half-year, and household purchasing power has weakened. As the effects of the past exchange rate depreciation fade, lower price inflation and higher wage inflation are expected to result in higher consumption growth.

The projections are based on the assumption that agreement is reached on EU exit terms and a transition period for 2019–2021, but that growth in business investment is restrained by the uncertainty surrounding the final trade agreement between the UK and the EU.

GDP growth is projected at an annual rate of 1.6% through the projection period. Consumer price inflation is expected to abate from 2.6% in 2018 to 2.1% in 2021. The projections are broadly in line with the December projections.

### **Continued high growth in Sweden**

In recent years, growth in the Swedish economy has been solid, and the output gap has been positive over the past year. After surprisingly low growth in Q3, the economy grew as expected in Q4. Private consumption and exports made the main contributions to growth.

Monetary policy is expansionary, and the Riksbank kept its policy rate unchanged at -0.5% in February. Market participants expect a rate hike towards the

end of 2018. In our projection, the decline in house prices pushes down growth in housing investment in the years ahead, but with little impact on private consumption. At the same time, higher activity among main trading partners will likely boost export growth. Against this background, GDP growth is expected to remain robust in 2018. GDP growth is projected at 2.8% in 2018, before slowing to an annual rate of 2.1% from 2019. The projections are little changed on the *December Report*.

In pace with a strengthening economy, price inflation has picked up in recent years (Chart 2.11). Wage inflation appears to be running at a lower level than previously expected despite high capacity utilisation. Inflation is expected to be somewhat lower in 2018 and in 2019 than projected in December, suggesting that inflation will remain below the 2% target in the coming years.

### **High growth in emerging economies**

In 2017, GDP growth in China increased for the first time since 2010, and has been a little higher than projected in December. Net exports have turned positive again, partly reflecting strong global demand. At the same time, the contribution to growth from private consumption has continued to increase on the back of the government's aim to rebalance the economy away from debt-financed investment towards private consumption. Looking ahead, stricter regulation of the shadow banking sector and pollution reduction measures will weigh on growth. GDP growth is projected to slow from 6.4% in 2018 to 6% in 2019. The projections are slightly higher than in the *December Report*.

The vigorous economic activity in other emerging economies appears to be continuing into 2018. Against the backdrop of stronger global demand and higher commodity prices, Russia and Brazil are making a positive contribution to global GDP growth after two years of falling activity levels. In India, there are signs that growth is picking up again after reforms dampened GDP growth in 2017. As in the *December Report*, growth in emerging economies excluding China is projected at an annual rate of around 4% through the projection period.

## DEVELOPMENTS IN OIL AND GAS PRICES

Oil prices rose through 2016 and 2017 (Chart 1.4). The rebound in prices primarily reflects high growth in global oil consumption and production cuts in OPEC and a number of non-OPEC countries. OECD oil inventories declined markedly through 2017 (Chart 2.12). Geo-political tensions and a weaker US dollar have also at times pushed up oil prices.

Oil prices increased to more than USD 70 per barrel at the beginning of 2018, partly owing to improved prospects for the world economy. Prices fell again in connection with the turbulence in financial markets at the beginning of February. At the same time, new figures showed that US oil production was at a record-high level and that there had been an increase in the number of active rigs. In addition, oil production forecasts were revised up again (Chart 2.13). The forecasts indicate that growth in non-OPEC oil production may turn out to be higher in 2018 than growth in global oil consumption. OECD oil stocks may then increase again.

Oil prices are assumed to move in line with futures prices (Chart 1.4). Futures prices indicate that prices will decline from around USD 65 per barrel to USD 57 per barrel in 2021. This is broadly in line with the projections in the December *Report*.

The strong increase in US oil production could reduce production discipline among OPEC and non-OPEC countries that have cut production. This may depress prices further. On the other hand, a continued improvement in the world economy may lead to higher global oil consumption. Political tensions, for example in the Middle East and Venezuela, may also underpin oil prices.

Export prices for Norwegian gas have rebounded from the lows of 2016, as have gas prices in the UK and continental Europe. The increase partly reflects the upswing in gas prices in Asia and higher coal and oil prices. Cold weather has also pushed up prices during winter. Futures prices for UK gas indicate that Norwegian gas prices may edge down ahead.

Chart 2.12 Total OECD oil inventories.  
In days of forward demand.<sup>1)</sup> January 2016 – December 2017



1) Days of forward demand are 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 2012 – 2016.  
Sources: IEA and Norges Bank

Chart 2.13 Projections of annual change in US crude oil production from EIA's monthly reports<sup>1)</sup>. In millions of barrels per day. January 2017 – March 2018



1) Short-Term Energy Outlook.  
Sources: EIA and Norges Bank

# 3 The Norwegian economy

Growth in the Norwegian economy picked up in 2017, driven by rising growth abroad, low interest rates, improved competitiveness, and an expansionary fiscal policy. The labour market continued to improve, and capacity utilisation increased. Inflation fell markedly in the period to autumn 2017, but has since edged up somewhat.

Growth in mainland GDP is projected to increase further in 2018. In the years ahead, growth in the Norwegian economy is expected to slow gradually, reflecting lower growth abroad, higher interest rates and a stronger krone. Unemployment is projected to edge down further and wage growth to rise gradually. Capacity utilisation is expected to rise over the next two years before falling back slightly towards the end of the projection period. Inflation is projected to increase to a little more than 2% in 2021.

## 3.1 FINANCIAL CONDITIONS

### Higher money market premium

The key policy rate has been kept unchanged at 0.5% since March 2016. Nevertheless, money market rates rose in 2016 before falling in 2017, owing to changes in the money market premium (Chart 3.1). The money market premium recently rose again, and it is now higher than projected in the December 2017 *Monetary Policy Report*, primarily reflecting higher US money market premiums.

Banks' funding costs declined through 2017, reflecting a lower money market premium and a lower risk premium on bank bonds. Risk premiums continued to fall somewhat in 2018.

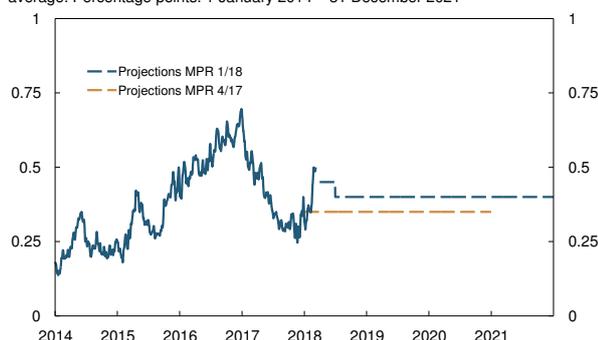
Banks' corporate lending rates have tracked the money market rate and declined in 2017. Corporate bond yields have also fallen. Corporate credit growth from domestic sources rose through 2017. Combined with developments in other indicators, this suggests that enterprises have ample access to funding (see Section 5).

The mortgage lending rate was just over 2.5% in 2017, declining slightly towards year-end (Chart 1.8). The margin on banks' residential mortgages rose in 2017 as money market rates fell more than lending rates.

### Higher lending rates ahead

Money market rates are expected to move down a little in the near term from today's level, reflecting lower money market premiums, rising thereafter in pace with the key policy rate in the coming years (Chart 1.8). The

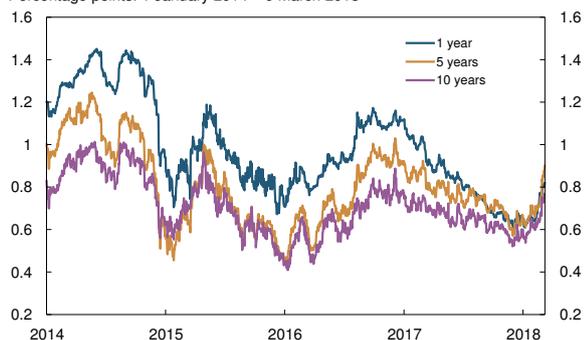
Chart 3.1 Norwegian three-month money market premium.<sup>1)</sup> Five-day moving average. Percentage points. 1 January 2014 – 31 December 2021<sup>2)</sup>



1) Norges Bank estimates of the difference between the three-month money market rate and the expected key policy rate.  
2) Projections for 2018 Q2 – 2021 Q4.

Sources: Bloomberg, Thomson Reuters and Norges Bank

Chart 3.2 Differences in interest rates<sup>1)</sup> between Norway and trading partners<sup>2)</sup>. Percentage points. 1 January 2014 – 9 March 2018



1) The interest rates are based on swap rates with maturity of 1 year, 5 years and 10 years.  
2) The aggregate for trading partner interest rates is described in *Norges Bank Papers* 2/2015.

Sources: Bloomberg and Norges Bank

money market premium is assumed to be approximately 0.40 percentage point in the coming years, i.e. somewhat lower than the current level, but a little higher than in the *December Report*. The projection is revised up as US money market premiums are expected to remain higher ahead than projected in December.

Household and corporate lending rates are expected to rise gradually in the coming years, but slightly less than the money market rate, resulting in somewhat narrower lending spreads. A low key policy rate has often been accompanied by narrow deposit spreads. When the key policy rate increases, deposit spreads may also widen again, giving banks room to reduce lending spreads. Prospects that the key policy rate will increase somewhat earlier than projected in the *December Report* imply a somewhat faster rise in lending rates than envisaged in December.

#### Krone exchange rate broadly as projected

The krone, as measured by the import-weighted exchange rate index, I-44, depreciated markedly at the end of 2017. So far in 2018, the krone has appreciated and has on average been approximately as projected in the *December Report*.

Both foreign and domestic interest rates have risen in recent months. Norwegian interest rates have risen somewhat more than trading-partner rates (Chart 3.2). The wider interest rate differential has likely contributed to the krone appreciation.

The krone is projected to appreciate gradually in the years ahead. The krone projections are based on the assumption of a widening interest rate differential against other countries and a fall in the NOK risk premium. The krone is projected to be somewhat stronger throughout the projection period than envisaged in December (Chart 1.10).

## 3.2 OUTPUT AND DEMAND

### Growth gains momentum

Growth in the mainland economy picked up in 2017, following a period of low growth in 2016. Stronger growth abroad, low interest rates, improved cost-competitiveness and an expansionary fiscal policy contributed to the upswing. At the same time, the decline in petroleum investment abated, after restraining mainland growth substantially in the preceding years.

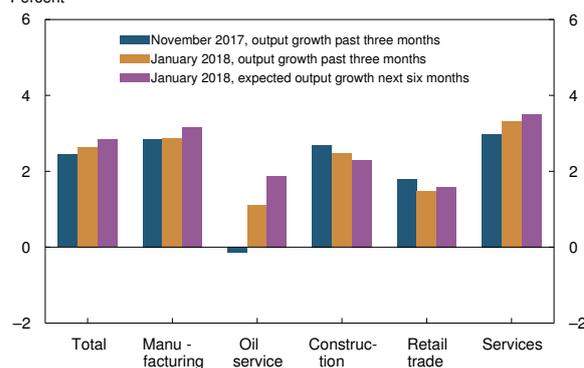
## MONEY MARKET RATES AND PREMIUMS

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

A large share of banks' funding is priced on the basis of the three-month Nibor, which is the three-month money market rate. This rate is determined by the market's expectation of the average key policy rate over the next three months and a risk premium, which is generally referred to as the money market premium. The money market premium depends on banks' supply and demand for NOK liquidity. In addition, international conditions, such as a changed premium in the USD rate or a changed price for converting USD into NOK, can influence the money market premium. This is because the money market rate is constructed as a foreign exchange swap interest rate. This means that NIBOR-quoting banks start with a USD interest rate and adjust it for the price of converting USD to NOK in the foreign exchange swap market.

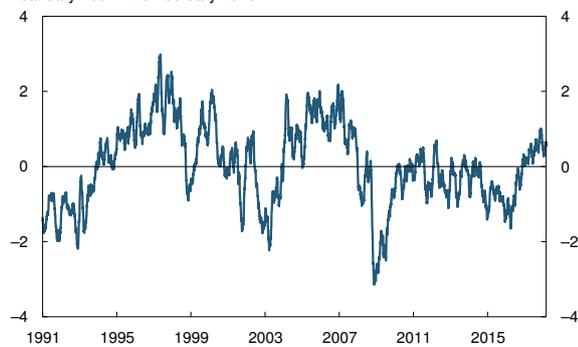
Banks normally rely on the bond market for longer-term wholesale funding where they have to pay a risk premium on top of the money market premium. Bond premiums vary with the banks' creditworthiness and the bond's maturity. Large non-financial corporations can also raise capital in the bond market.

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



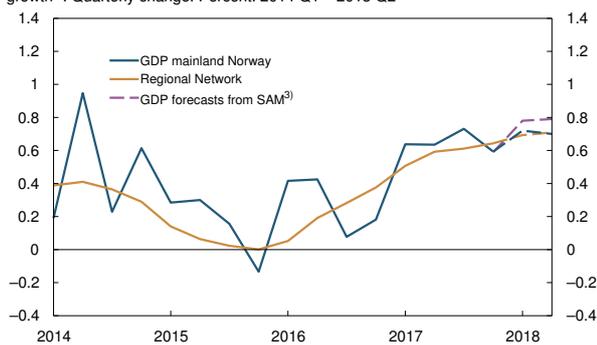
Source: Norges Bank

Chart 3.4 Financial News index (FNI).<sup>1)</sup> Index.  
1 January 1991 – 28 February 2018



<sup>1)</sup> The FNI measures activity in the Norwegian economy based on media coverage of various news topics. The index average is zero. Positive values indicate better-than-average business cycle conditions. Source: FNI – Retriever/CAMP(BI)

Chart 3.5 GDP for mainland Norway and Regional Network's indicator of output growth<sup>1)</sup>. Quarterly change. Percent. 2014 Q1 – 2018 Q2<sup>2)</sup>



<sup>1)</sup> Reported output growth past three months converted to quarterly figures (solid line). The quarterly figures are calculated by weighting together three-monthly figures based on when the survey was carried out. For 2018 Q1 expected output growth is estimated by weighting together reported growth over the past three months and expected growth in the next six months. 2018 Q2 is expected growth in the next six months as reported in January (broken orange line).  
<sup>2)</sup> Projections for 2018 Q1 – 2018 Q2 (broken lines).  
<sup>3)</sup> System for Averaging short-term Models.  
Sources: Statistics Norway and Norges Bank

## REGIONAL NETWORK

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

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

Mainland GDP grew by 0.6% in 2017 Q4, in line with the projection in the *December Report*.

In January, Norges Bank's Regional Network contacts reported somewhat higher growth over the past three months than in the preceding three months. Growth gathered pace in most sectors, and for the first time since 2014, oil services also reported output growth (Chart 3.3). Contacts as a whole expected the pace of growth to pick up over the next six months.

The Financial News Index (FNI) supports the impression of an upturn in the Norwegian economy (Chart 3.4). The FNI, which measures activity in the Norwegian economy based on Norwegian newspaper articles, has risen since spring 2016. Since the end of 2016, the FNI has been higher than its historical average.

Mainland GDP growth is expected to edge up between the latter half of 2017 and the first half of 2018 (Annex Table 3a). The projections are in line with the Regional Network contacts' expectations and close to the projections from Norges Bank's System for Averaging short-term Models (SAM) (Chart 3.5), but are somewhat higher than in December.

Following annual growth of below 2% in 2017, mainland GDP growth is projected at 2.6% in 2018. Growth is expected to slow gradually in the years ahead, dampened by weaker growth abroad, higher interest rates and a stronger krone. Fiscal policy is assumed to be less expansionary ahead than in recent years (see box on page 35). On the other hand, petroleum investment will likely increase ahead, after the recent years' decline (Chart 1.12) (see box on page 36).

The growth projections for mainland Norway are a little higher in 2018 than in the *December Report*, but the projections for 2019 and 2020 are a little lower. The upward revision of the global growth projections from December pulls up the growth projections, while a somewhat less expansionary monetary policy pulls in the opposite direction.

### Higher consumption growth in 2018

Growth in household consumption picked up markedly in 2017. Growth in goods consumption increased, while growth in services consumption showed little change (Chart 3.6). The upswing reflects higher growth in

household real disposable income owing to higher employment growth and higher real wage growth. Consumption growth in 2017 Q4 was higher than projected in December.

Indicators suggest that consumer confidence is high (Chart 3.7). The Kantar TNS trend indicator increased between 2017 Q4 and 2018 Q1 and is now a little higher than its historical average. The Opinion consumer confidence index has fluctuated somewhat in recent months, but remains at a high level.

Prospects for higher real wage growth and continued employment growth imply higher consumption growth ahead. On the other hand, higher interest rates in isolation have a dampening impact on consumption growth. First, higher real interest rates imply an increased saving preference among households. Second, higher interest rates will curb growth in real household disposable income, owing to higher interest expenses. Increased household debt ratios suggest a stronger effect on disposable income than earlier (see Special Feature on page 37 for a further discussion of the potential impact of higher interest rates on household income and spending).

Consumption growth is projected to be higher in 2018 than in 2017, slowing somewhat thereafter (Chart 3.8). The growth projection from December has been revised up a little for 2018, while the projections for 2019 and 2020 have been revised down. The projections imply little change in the saving ratio ahead (Chart 3.9).

It is uncertain how households will respond to a rise in interest rates, partly in the light of the high prevailing household debt ratios.

### Rising house prices ahead

House prices peaked early in 2017 and fell through 2017 (Chart 1.7). In recent months, house prices have shown little change, and were 2.3% lower in February than a year ago. House price developments have been slightly stronger than projected in December.

House prices are projected to show a moderate rise from 2018 Q2. A strengthening labour market and higher real wage growth point to higher house prices, but higher interest rates pull in the opposite direction. The projections for house prices have been revised up

Chart 3.6 Household consumption of goods and services. Volume. Four-quarter change. Seasonally adjusted. Percent. 2012 Q1 – 2017 Q4

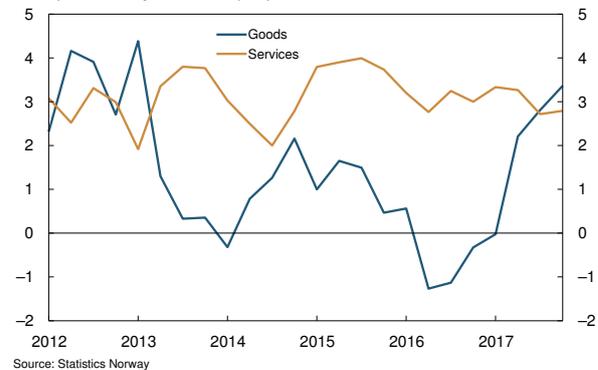


Chart 3.7 Consumer confidence. Net values. Kantar TNS trend indicator for households. 2010 Q1 – 2018 Q1. Opinion consumer confidence index (CCI). January 2012 – February 2018

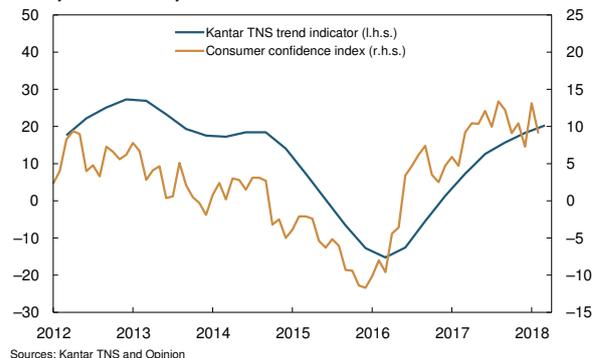
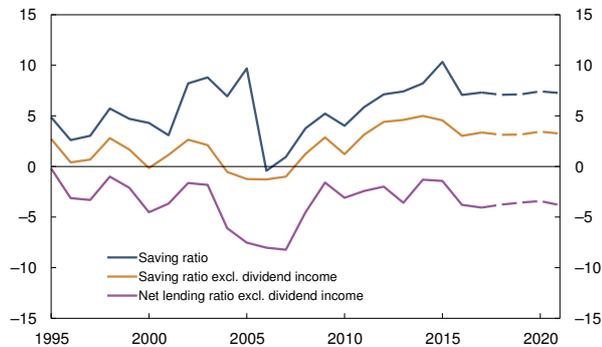


Chart 3.8 Household consumption<sup>1)</sup> and real disposable income<sup>2)</sup>. Annual change. Percent. 2012 – 2021<sup>3)</sup>



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 3.9 Household saving and net lending. Share of disposable income. Percent. 1995 – 2021<sup>1)</sup>

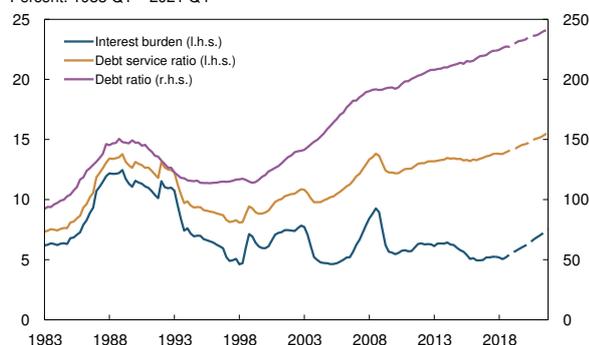


1) Projections for 2018 – 2021 (broken lines).  
Sources: Statistics Norway and Norges Bank

a little in the near term, but lowered somewhat for the years ahead, compared with the December projections.

Persistently high debt growth has increased household vulnerabilities (Chart 3.10). High house price inflation in the years to 2017 fuelled household debt accumulation. Since the December Report, household debt has continued to rise faster than income, and growth in household debt has been slightly higher than projected (Chart 1.7). In the period ahead, debt growth is expected to be sustained at the current high level as a large number of sold homes are under construction, with payment falling due on completion. The fall in house prices over the past year will gradually push down debt growth, as will higher interest rates and fewer dwelling completions in the years ahead.

Chart 3.10 Household debt ratio, debt service ratio and interest burden.<sup>1)</sup> Percent. 1983 Q1 – 2021 Q4<sup>2)</sup>



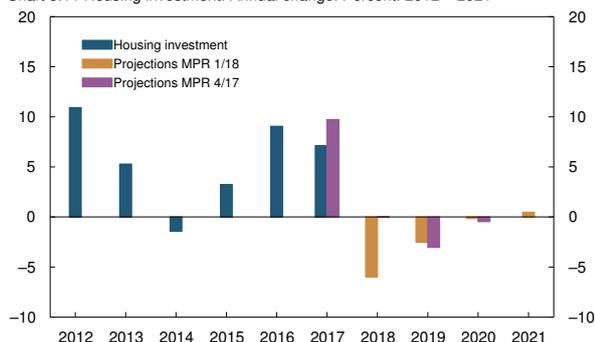
1) The debt ratio is loan debt as a percentage of disposable income. The interest burden is calculated as interest expenses as a share of disposable income including interest expenses. The debt service ratio also includes estimated principal payments on an 18-year mortgage. Disposable income is adjusted for estimated reinvested dividend income for 2000 Q1 – 2005 Q4 and reduction of equity capital for 2006 Q1 – 2012 Q3. For 2015 Q1 – 2017 Q3 growth in disposable income excluding dividends is used.  
2) Projections for 2017 Q4 – 2021 Q4 (broken lines).  
Sources: Statistics Norway and Norges Bank

There are now signs that house prices are flattening out, which is consistent with the recent months' fall in the stock of unsold existing dwellings. Combined with lower numbers of housing starts and improved economic growth prospects, the risk of a substantial fall in house prices in the near term has diminished. At the same time, the decline in house prices over the past year has reduced the extent of a potential fall in the housing market and has lowered the risk of an abrupt and more pronounced decline further out. Housing market developments remain uncertain. House prices and debt are also discussed in Section 5.

### Lower housing investment

Housing investment increased markedly through 2015 and 2016 (Chart 3.11), but abated through 2017 and declined in 2017 Q4. In 2017 Q4, the investment level returned to the same level as in 2016 Q4, lower than projected in the December Report. The decline in investment reflects the fall in housing starts. New home sales suggest weak developments in housing starts through 2018, in the multiunit segment in particular where housing starts increased the most in recent years. Lower housing starts will result in a decline in investment in the near term. The large number of dwellings still under construction will curb the decline in investment.

Chart 3.11 Housing investment. Annual change. Percent. 2012 – 2021<sup>1)</sup>



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

In the years ahead, a strengthening labour market and higher real wage growth in isolation are expected to push up housing investment. Lower population growth and higher interest rates pull in the opposite direction.

Overall, housing investment is expected to recede in the years ahead. The projections imply a lower investment level throughout the projection period than envisaged in December. The downward revision reflects both the upward revision of the interest rate forecast and the lower-than-expected investment level.

### Higher growth in business investment

Mainland business investment increased through 2016 and 2017, broadly in line with the December projections. Recently, corporate credit growth has picked up, confirming the picture that investment activity is on the rise.

Investment in the services and power sectors has increased most (Chart 3.12). Statistics Norway's investment intentions survey indicates that power sector investment will also rise sharply in 2018, and that manufacturing investment will pick up in 2018. In January, Regional Network contacts reported plans for a substantial increase in investment over the next 12 months (Chart 3.13).

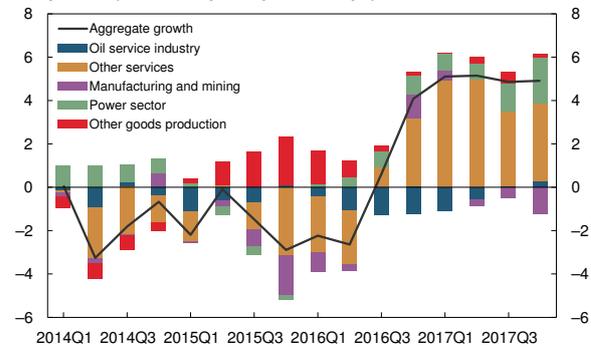
Business investment normally fluctuates with the business cycle (Chart 3.14). The upswing in Norway and among trading partners implies a sustained increase in business investment in the years ahead. Higher interest rate prospects point to slower investment growth further out. On the whole, the projections for business investment are little changed since December.

### Higher mainland exports

Mainland exports grew at a fast pace through 2017, after falling markedly in 2016. Nevertheless, the pace of growth was slightly lower in 2017 Q4 than projected in the December *Report*.

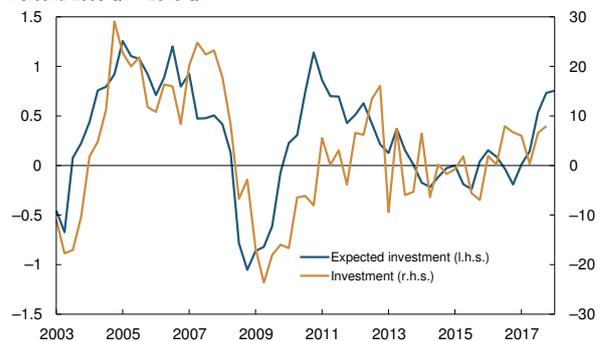
The decline in the global petroleum industry led to a sharp decline in Norwegian oil services exports in 2016 and 2017 (Chart 3.15). Regional Network contacts report a reversal in the decline, with an expected increase in the coming half-year. Oil services exports are expected to rise further in the years ahead as the global petroleum industry rebounds. Strong growth abroad will boost Norwegian non-oil exports over the next year. In addition, substantial investment in commodity-based industries, which have increased the industry's production capacity, will push up exports. Overall mainland exports are projected to grow at a

Chart 3.12 Mainland business investment by sector. Contribution to four-quarter change. Four-quarter moving average. Percentage points. 2014 Q1 – 2017 Q4



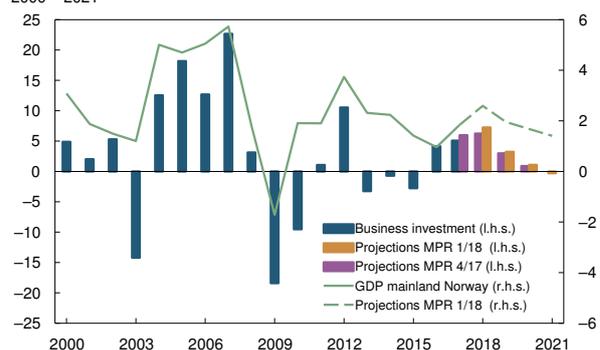
Sources: Statistics Norway og Norges Bank

Chart 3.13 Expected change in business investment over next 12 months.<sup>1)</sup> Change in business investment. Four-quarter change. Seasonally adjusted. Percent. 2003 Q1 – 2018 Q1<sup>2)</sup>



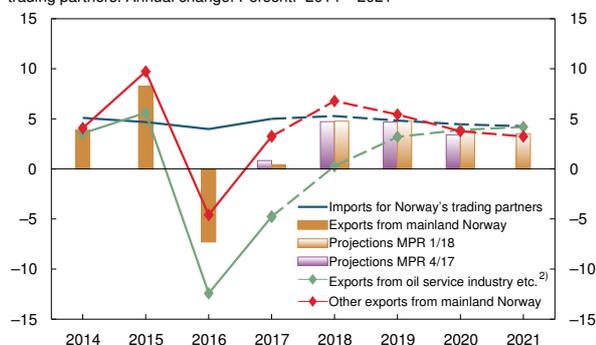
1) Regional Network. Weighted average of manufacturing, oil service, retail trade and services.  
2) Last observation for investment 2017 Q4.  
Sources: Statistics Norway and Norges Bank

Chart 3.14 Business investment and GDP. Annual change. Percent. 2000 – 2021<sup>1)</sup>



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

Chart 3.15 Exports from mainland Norway and imports for Norway's trading partners. Annual change. Percent. 2014 – 2021<sup>1)</sup>



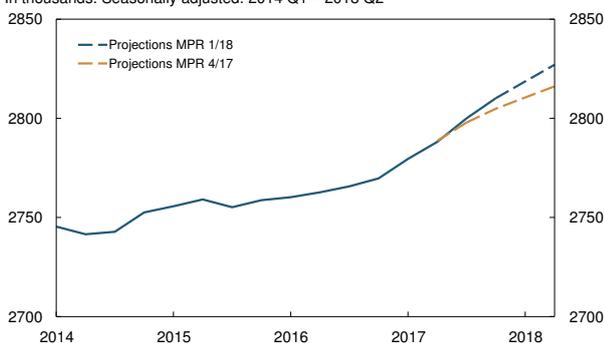
1) Projections for 2018 – 2021 (broken lines).  
 2) Groups of goods and services in the national accounts where the oil service industry accounts for a considerable share of exports.

Sources: Statistics Norway, Thomson Reuters and Norges Bank

rapid pace in 2018 and in 2019. Thereafter, export growth is expected to slow, reflecting lower growth among trading partners and a gradual appreciation of the krone. The projections for export growth are slightly higher than in the *December Report*, mainly as growth abroad is expected to be higher than projected in December.

The upturn in the Norwegian economy suggests higher import growth ahead. Oil and non-oil business investment tend to have a high import content. Prospects for a faster rise in this component than other demand therefore imply rising import growth. On the other hand, the improvement in cost competitiveness in the period to 2017 suggests that the import share will be lower than its historical level. Recently, Norwegian oil service companies have won a larger share of offshore contracts on the Norwegian shelf. Annual import growth is projected to increase in 2018, with growth decelerating from 2020.

Chart 3.16 Employment according to the quarterly national accounts (QNA). In thousands. Seasonally adjusted. 2014 Q1 – 2018 Q2<sup>1)</sup>



1) Projections for 2018 Q1 – 2018 Q2.  
 Sources: Statistics Norway and Norges Bank

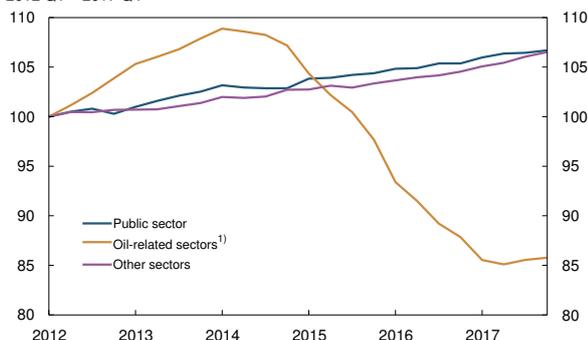
Solid global growth may contribute to a more rapid upswing in exports and business investment in Norway than projected. On the other hand, there is a risk of growing protectionism, which may over time restrain growth.

### 3.3 LABOUR MARKET AND SPARE CAPACITY

#### Stronger employment growth

According to the quarterly national accounts (QNA), after a gentle increase in 2015 and 2016, employment rose markedly in 2017 (Chart 3.16). In 2017 Q4, employment moved up by 0.4%, somewhat more than projected in the *December Report*.

Chart 3.17 Employment by sector. Index. 2012 Q1 = 100. 2012 Q1 – 2017 Q4



1) Extraction of crude oil and natural gas, including services, production of metals, electrical equipment and machines, shipbuilding and construction of other means of transport and repairs and installation of machines and equipment. These sectors accounted for 7% of the total employment in Norway in 2012 Q1.

Sources: Statistics Norway and Norges Bank

In the past few years, employment picked up in construction, hotels and restaurants and commercial services in particular. Employment in the most oil-related industries rose somewhat towards the end of 2017, after a marked fall in the wake of the oil price decline in 2014 (Chart 3.17).

Register-based employment statistics show that the employment rate, the ratio of employed persons to the working-age population, increased between 2016 and 2017 in all counties. The Labour Force Survey (LFS) also shows employment growth in 2017, albeit clearly weaker than indicated by QNA data and register-based statistics. The LFS only counts residents, and some of

the difference between LFS and other statistics may reflect an increase in the number of wage earners on short-term contracts. At the same time, the LFS is a sample survey shrouded in uncertainty.

In January, Regional Network contacts indicated employment growth of approximately 0.4% over the next three months (Chart 3.18), somewhat higher than projected in December. Norges Bank's expectations survey also indicates that employment will continue to grow.

According to job vacancy data, labour demand has risen since the end of 2015 (Chart 3.19), with a rise in most sectors through 2017.

### Unemployment has declined

Registered unemployment declined through 2016 and 2017, and into 2018. In February, seasonally adjusted unemployment was 2.4%, in line with the projection in the December *Report* (Chart 3.20). The sum of the fully unemployed and job seekers participating in labour market programmes (gross unemployment) fell through 2017, and the decline has continued into 2018. In February, seasonally adjusted gross unemployment was 3.0%.

There have been wide regional differences in the labour market. After the fall in oil prices in summer 2014, unemployment rose, primarily in southern and western Norway. Through 2017, unemployment declined countrywide, and registered unemployment is now lower than one year earlier in all counties.

The inflow of new job seekers registered with NAV (Norwegian Labour and Welfare Administration) has fallen over the past two years, and is now clearly lower than in 2014. The low inflow suggests a further decline in the period ahead. At the same time, the number of persons participating in labour market programmes is likely to decrease, which may curb the decline.

LFS unemployment has risen slightly since the December *Report* and was 4.1% in December. This was higher than envisaged.

### Higher employment and lower unemployment ahead

Labour force growth has slowed considerably in recent years, partly owing to changes in the age composition of the population. The large post-war cohorts have gradually exited the labour force and reached statutory

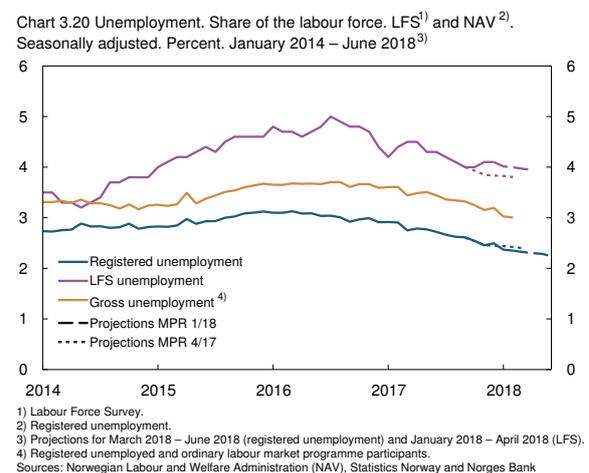
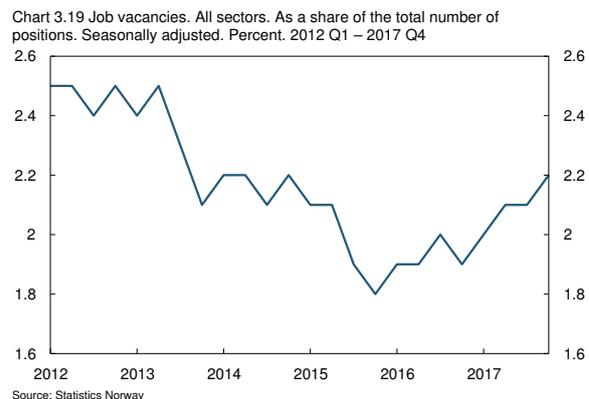
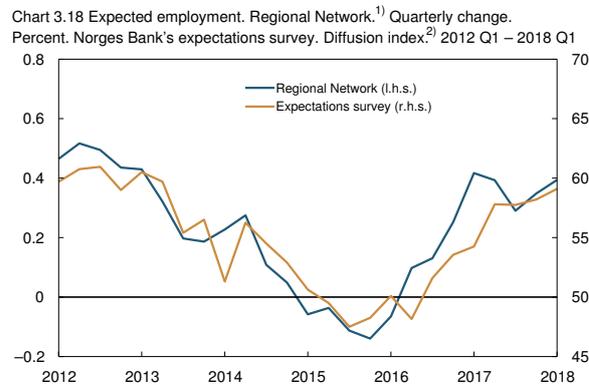
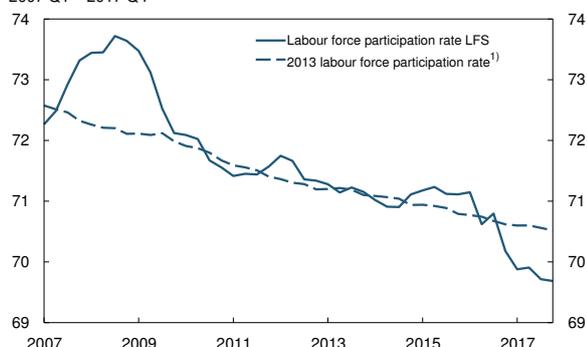
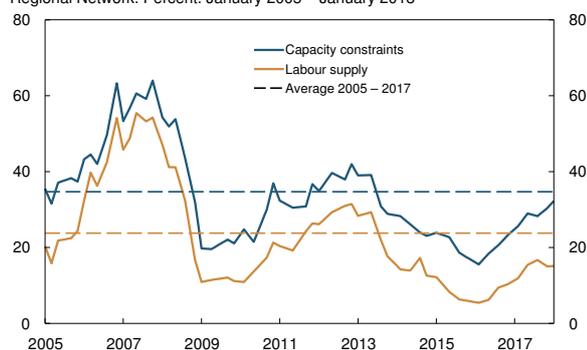


Chart 3.21 Labour force. Share of the population (15 - 74 years). Percent. 2007 Q1 – 2017 Q4



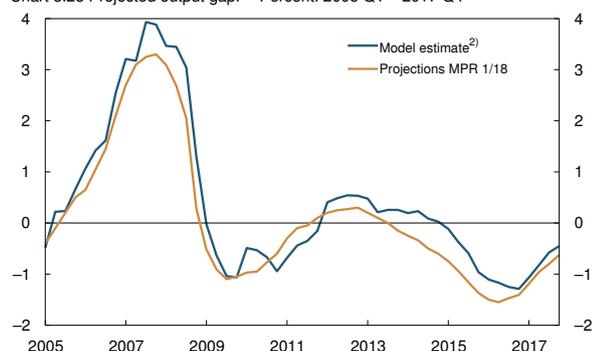
1) Change in the rate if the rate for each five-year age cohort had been unchanged at 2013-levels. The curve falls because the population is ageing. 2013 was selected because the output gap in that year is considered to have been close to zero. The calculations also take into account non-Western immigrants' somewhat lower labour force participation rate than the population as a whole.  
Sources: Statistics Norway and Norges Bank

Chart 3.22 Capacity constraints<sup>1)</sup> and labour supply<sup>2)</sup> as reported by the Regional Network. Percent. January 2005 – January 2018



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

Chart 3.23 Projected output gap.<sup>1)</sup> Percent. 2005 Q1 – 2017 Q4



1) The output gap measures the percentage deviation between mainland GDP and projected potential mainland GDP.  
2) For a review, see box on page 34 in *Monetary Policy Report 4/17*.  
Source: Norges Bank

retirement age. In addition, net migration has fallen markedly in the past few years.

In the years ahead, an ageing population will be less important for labour force developments. In response to higher labour demand, labour immigration is expected to edge up again, albeit not to the same extent as during the upturn in the mid-2000s. The projections for labour immigration are little changed from the *December Report*.

According to the LFS, the labour force participation rate, i.e. the labour force as a share of the working-age population, has recently declined (Chart 3.21). Even though an ageing population has pushed down the participation rate, the upturn in the Norwegian economy suggests that the rate will pick up ahead. Normally, more people will enter the labour market when job prospects improve. The projections in this *Report* imply a higher participation rate ahead.

Employment is expected to continue to grow in the years ahead, owing to a sustained upturn in the Norwegian economy. Employment growth is projected at 1.3% in 2018, edging lower in the years ahead. Employment is expected to outpace labour supply growth, so that unemployment declines further. The projection for employment growth in 2018 is somewhat higher than in the *December Report*, while the projections in the coming years are a little lower. The projections for registered unemployment are somewhat lower than in December (Chart 1.11).

### Diminishing slack

The output gap in the Norwegian economy has been negative in recent years, with higher unemployment than normal. The output gap widened in the period to 2016, but has since narrowed.

Demographic developments imply that the potential labour force will grow at an annual rate of 0.5% ahead. At the same time, average productivity growth is projected at 1.1% in the coming years, somewhat higher than in recent years. The projections are little changed on the *December Report* and imply annual average growth in potential output of 1.6% for the years 2018–2021.

In 2017, growth in the mainland economy was higher than estimated potential output growth. The decline

in unemployment and the increase in employment also suggest that the output gap narrowed through 2017 and into 2018. Growth in the Norwegian economy appears to be somewhat higher in the first half-year than projected in December.

Registered unemployment is now at such a low level that it suggests in isolation a positive output gap. On the other hand, wage growth appears to remain moderate, indicating that there is still labour market slack. In January, there was an increase in the share of Regional Network enterprises reporting that they would have difficulties accommodating an increase in demand (Chart 3.22). The share of enterprises citing labour supply as a production constraint was approximately unchanged. Both indicators are lower than during periods when the output gap in the Norwegian economy has been estimated to be positive.

The negative output gap is assessed to have narrowed in recent months and is approaching zero, in line with calculations based on a broad set of models and indicators (Chart 3.23). Capacity utilisation in the first half of 2018 is estimated to be somewhat higher than envisaged in December.

In the years ahead, GDP growth is expected to be higher than potential output growth so that the output gap gradually narrows and reaches zero in early 2019. Capacity utilisation is projected to rise further in 2019 and 2020, before edging lower in 2021. Compared with the December *Report*, the projections for capacity utilisation are slightly higher for 2018 and slightly lower further out in the projection period.

### 3.4 COSTS AND PRICES

#### Underlying inflation somewhat lower than projected

Inflation fell markedly between summer 2016 and autumn 2017, rising again in recent months. In February, the twelve-month rise in the consumer price index (CPI) was 2.2%, approximately in line with the projections in the December *Report* (Annex Table 3d). Indirect tax changes from 1 January 2018 and higher energy prices pulled up inflation more than anticipated, while underlying inflation was somewhat lower than projected. The twelve-month rise in the CPI adjusted for tax changes and excluding energy products (CPI-ATE) was 1.4% in February. The rise in prices was in line with that projected in the December *Report* for domestically

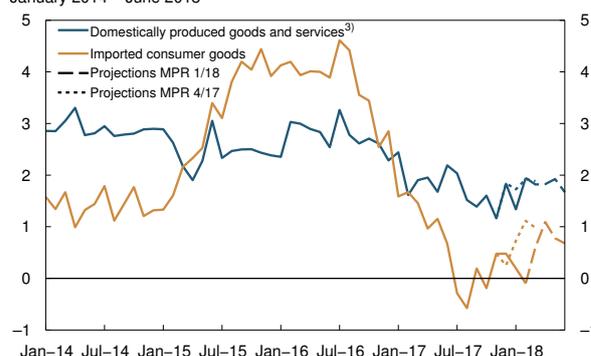
### OUTPUT GAP

The output gap, also referred to as capacity utilisation, is a measure of the share of total economic resources in use. The output gap is defined as the deviation between actual output (GDP) and potential output in the economy. Potential output is the level of output that is consistent with stable developments in prices and wages. Growth in potential output is determined by growth in the labour supply and productivity trend growth.

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

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

Chart 3.24 CPI-ATE<sup>1)</sup> by supplier sector. Twelve-month change. Percent. January 2014 – June 2018<sup>2)</sup>



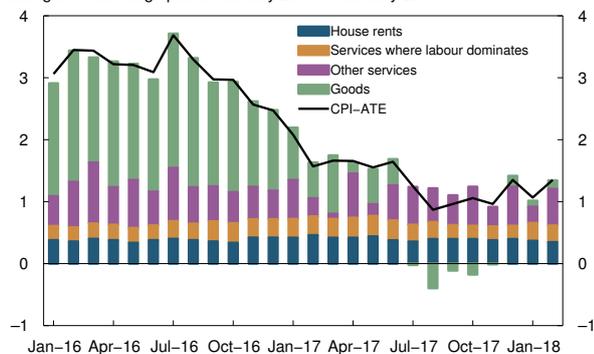
1) CPI adjusted for tax changes and excluding energy products.

2) Projections for March 2018 – June 2018.

3) Norges Bank's estimates.

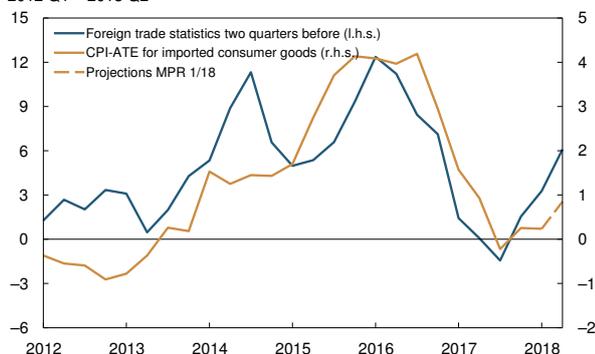
Sources: Statistics Norway and Norges Bank

Chart 3.25 CPI-ATE<sup>1)</sup> by goods and services. Contributions to twelve-month change.<sup>2)</sup> Percentage points. January 2016 – February 2018



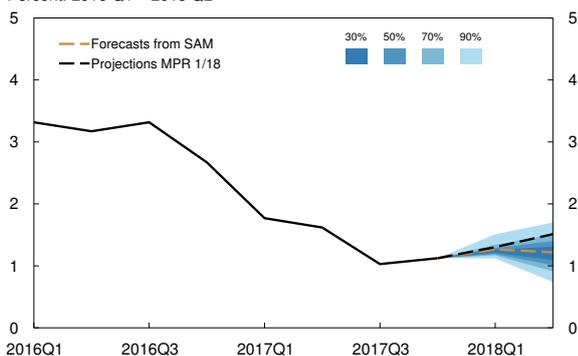
1) CPI adjusted for tax changes and excluding energy products.  
2) The contributions do not sum to the twelve-month rise in the CPI-ATE due to rounding.  
Sources: Statistics Norway and Norges Bank

Chart 3.26 Prices for imported consumer goods from the foreign trade statistics and imported consumer goods in the CPI-ATE<sup>1)</sup>. Four-quarter change. Percent. 2012 Q1 – 2018 Q2<sup>2)</sup>



1) CPI adjusted for tax changes and excluding energy products.  
2) Projections for 2018 Q1 – 2018 Q2.  
Sources: Statistics Norway and Norges Bank

Chart 3.27 CPI-ATE<sup>1)</sup> with fan chart given by SAM<sup>2)</sup>. Four-quarter change. Percent. 2016 Q1 – 2018 Q2<sup>3)</sup>



1) CPI adjusted for tax changes and excluding energy products.  
2) System for Averaging short-term Models.  
3) Projections for 2018 Q1 – 2018 Q2.  
Sources: Statistics Norway and Norges Bank

produced goods and services in the CPI-ATE, while it was lower for imported consumer goods (Chart 3.24). See box on page 34 for developments in other indicators of underlying inflation.

Twelve-month CPI-ATE inflation rose between January and February, pushed up by services inflation, particularly air fares (Chart 3.25). The twelve-month rise in the CPI-ATE is expected to edge up in the coming months, reflecting higher imported consumer goods inflation. The krone depreciated in autumn 2017. Together with higher external inflationary impulses in 2017 (Chart 2.8), this has pulled up imported consumer goods inflation as measured in external trade statistics (Chart 3.26). Part of this price rise is expected to push up consumer prices in the period ahead. The projections for the CPI-ATE are slightly lower than in the *December Report*, but higher than the projections derived from SAM (Chart 3.27). The projections for CPI inflation in the coming months are higher than in the *December Report* because the indirect tax changes on 1 January 2018 had a somewhat stronger impact on the CPI than assumed and energy price inflation appears to be higher ahead than envisaged earlier.

### Higher wage growth prospects

Wage growth picked up somewhat in 2017, after having fallen over the preceding years. Lower unemployment probably contributed to the rise. In addition, downsizing in high-wage industries restrained overall wage growth less in 2017 than in 2016.

Annual wage growth was 2.3% in 2017, slightly lower than envisaged in the *December Report*. Wage growth is projected at 2.9% in 2018. This is in line with the social partners' expectations according to Norges Bank's expectations survey, but a little higher than expected by Norges Bank's Regional Network contacts (Chart 3.28). The wage projection is unchanged on the *December Report*. The projections for wage growth and CPI inflation imply annual wage growth of 0.8% in 2018, up from 0.5% in 2017.

Wage growth is expected to pick up ahead as a result of rising capacity utilisation and higher productivity growth than in the preceding years. Compared with the *December Report*, the projections for nominal wage growth are revised down somewhat for 2019 and 2020, while the projection for real wage growth is a little lower

for 2018 (Chart 3.29). A somewhat lower projection for inflation ahead in isolation pushes down the nominal wage projections. The labour cost share, which measures the share of GDP accruing to wage earners, is expected to move down in the coming years, but will continue to be above its historical average.<sup>1</sup>

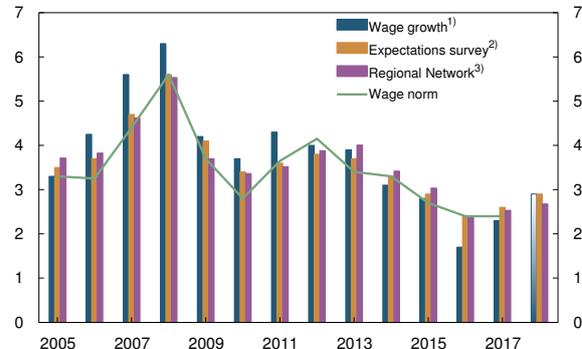
### Somewhat higher inflation ahead

The decline in wage growth in the years up to and including 2016 pushed down inflation, while the past depreciation of the krone has pulled up inflation. Higher wage growth is expected to push up inflation in the years ahead. Higher demand may also induce enterprises to pass on a larger share of costs to consumers. On the other hand, somewhat higher productivity growth than in the preceding years and a somewhat stronger krone will probably have a dampening impact on inflation.

The inflation projections for the years ahead are somewhat lower than in the *December Report* (Chart 3.30). Price and wage inflation has risen slightly less than expected, and the krone is projected to be somewhat stronger in the coming years than anticipated in December. It is assumed that lower inflation expectations, owing to a lower inflation target, will curb the rise in price and wage inflation (see Special Feature on page 47). Four-quarter CPI-ATE inflation is projected to rise to slightly above 2% in the course of 2021. Owing to higher indirect taxes and higher energy prices, annual CPI inflation is projected to be 0.6 percentage point higher than annual CPI-ATE inflation in 2018. In the years ahead, the CPI is expected to rise in pace with the CPI-ATE.

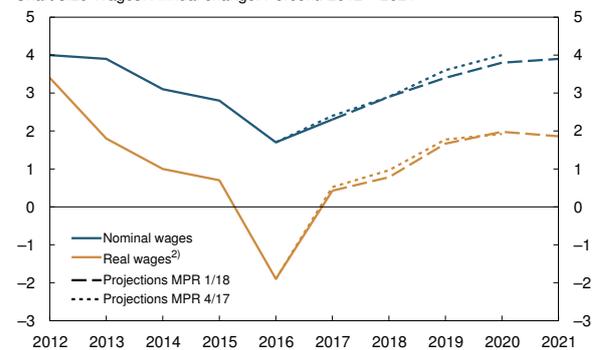
The inflation projections are based on the assumption that wage growth will pick up in the years ahead. The increase in wage inflation may prove to be more modest than projected. Global price and wage inflation has long been weaker than developments in the output gap alone might indicate. On the other hand, stronger economic growth and improvements in the labour market may lead to a higher-than-projected rise in wage growth. The impact of a new inflation target on economic agents' inflation expectations is also uncertain. This in turn has a bearing on how quickly it would take for a lower numerical target to result in lower price and wage inflation.

Chart 3.28 Wage growth, wage norm and wage expectations. Annual change. Percent. 2005 – 2018



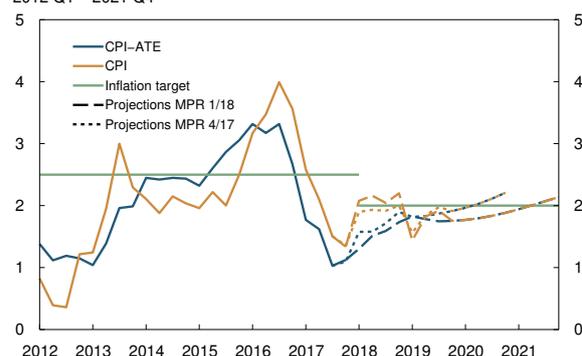
1) Historical annual wage growth from Statistics Norway. Norges Banks' projections for 2018 (shaded bars).  
2) Social partners' wage growth expectations for the current year as measured by Norges Banks expectations survey in Q1 each year.  
3) Expected wage growth for the current year as reported by the Regional Network in Q1 each year.  
Sources: Epinion, Statistics Norway and Norges Bank.

Chart 3.29 Wages. Annual change. Percent. 2012 – 2021<sup>1)</sup>



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

Chart 3.30 CPI-ATE<sup>1)</sup> and CPI. Four-quarter change. Percent. 2012 Q1 – 2021 Q4<sup>2)</sup>



1) CPI adjusted for tax changes and excluding energy products.  
2) Projections for 2018 Q1 – 2021 Q4.  
Sources: Statistics Norway and Norges Bank

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

## UNDERLYING INFLATION INDICATORS

Indicators of underlying inflation, such as the CPI-ATE, can be useful in order to look through temporary variations in inflation. However, due to the way the indicators are constructed, permanent price changes may also be perceived as temporary and vice versa. As a cross-check, different indicators of underlying inflation are used. Twelve-month CPI-ATE inflation fell by 3 percentage points from summer 2016 to autumn 2017. Growth has subsequently edged up again. Other indicators of underlying inflation have followed a similar path (Chart 3.31).

Chart 3.31 CPI and indicators of underlying inflation. Twelve-month change. Percent. January 2005 – February 2018



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

## INFLATION EXPECTATIONS

Expectations about future inflation have a bearing on many economic decisions such as price and wage setting. Anchored inflation expectations may 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 described as anchored when medium- and long-term inflation expectations show little reaction to new information and stay close to the inflation target. In recent years, longer-term inflation expectations, as measured in Norges Bank's expectations survey, have generally remained close to 2.5% (Chart 3.32).<sup>1</sup> Expectations among both the social partners and economists in academia and in the financial industry were approximately unchanged between 2017 Q4 and 2018 Q1.

Chart 3.32 Expected consumer price inflation five years ahead. Twelve-month change. Percent. 2002 Q1 – 2018 Q1



Sources: Epinion, Opinion and TNS Gallup

The inflation target for monetary policy was lowered from 2.5% to 2.0% on 2 March 2018, while the expectations survey for the first quarter was conducted in the period from 31 January to 14 February. Thus, the expectations survey does not yet reflect changes in inflation expectations owing to the changed inflation target.

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

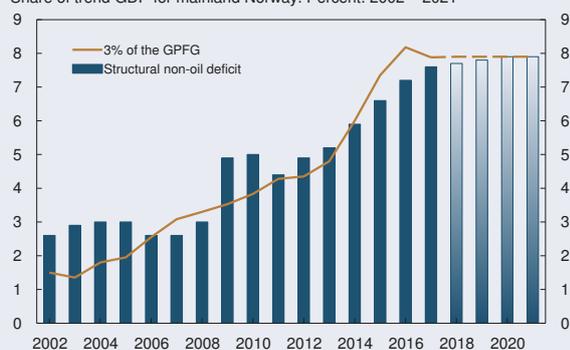
## ASSUMPTIONS CONCERNING FISCAL POLICY

The fiscal policy assumptions in this *Report* are based on the approved budget for 2018. Petroleum revenue spending, as measured by the structural non-oil deficit, is estimated at NOK 231bn in 2018, or 7.7% of trend mainland GDP, an increase of 0.1 percentage point from 2017. The technical assumption is applied that there will be corresponding increases in 2019 and 2020 (Chart 3.33). The projections are unchanged from the December *Report*.

Under the assumption that the value of the Government Pension Fund Global (GPFG) increases in line with the projections in the National Budget for 2018, spending of petroleum revenues will grow somewhat faster than the value of the GPFG over the next few years. In 2020, spending will amount to 3% of the GPFG and is assumed to be equal to the expected real return thereafter. In that case, the structural non-oil deficit will be unchanged as a share of GDP between 2020 and 2021.

In recent years, petroleum revenue spending has increased considerably as a share of GDP. Fiscal impulses to growth are expected to be appreciably weaker ahead. This is reflected in the projections for public sector demand. In the past five years, demand has increased by an average 2.6% on an annual basis. In 2018, growth is projected at 1.5%, and the pace of growth is expected to decline further towards the end of the projection period (Chart 3.34). The projections in this *Report* are based on no further net tax cuts in the period ahead.

Chart 3.33 Structural non-oil deficit and 3% of the GPFG<sup>1)</sup>.  
Share of trend GDP for mainland Norway. Percent. 2002 – 2021<sup>2)</sup>



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

Chart 3.34 Public sector demand. Annual change. Percent. 2012 – 2021<sup>1)</sup>



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

## PROJECTIONS FOR PETROLEUM INVESTMENT

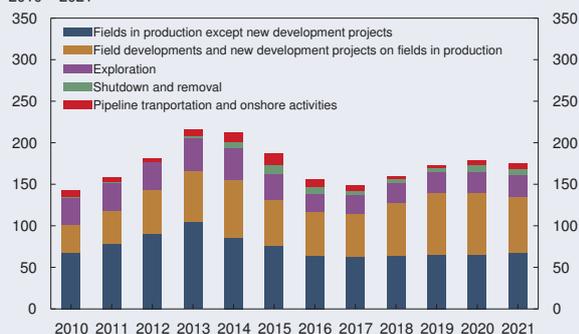
Investment on the Norwegian continental shelf has declined by over 30% in recent years (Chart 3.35). The decline reflects weak profitability in the petroleum industry, owing to both the fall in oil and gas prices in 2014 and 2015 and the rapid rise in costs in the industry in the preceding years. In response to weak profitability, oil companies introduced cost-cutting measures. The measures have led to a marked decline in break-even prices for new development projects to between USD 10–40 per barrel. Oil companies are therefore expected to carry out a number of development projects in the coming years.

Figures from Statistics Norway and the Regional Network indicate that investment bottomed out in 2017 Q4. Investment is projected to increase by 7.4% in 2018 and by more than 11% between 2018 and 2020. In 2021, investment is expected to edge down. The projections for the investment level between 2018 and 2020 are slightly higher than in December. It is assumed that the investment prices in the national accounts will remain unchanged between 2017 and 2018, in line with the measured price change through 2017 and information from the Regional Network.

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 started 10 development projects in new and existing fields in 2017, and they are expected to start up to 15 development projects in 2018 and 2019. These development projects will result in a clear investment increase between 2017 and 2020 (Chart 3.36), with investment drifting down thereafter as the projects are completed. At the same time, oil companies are likely to launch fewer large development projects in 2020 and 2021 than in the preceding three years. This is partly because few viable discoveries have been made in recent years and there are few large upgrade projects under evaluation. Investment in development is therefore expected to decline towards the end of the projection period. Investment in fields in production, excluding new development projects, is projected to show a moderate and gradual rise between 2017 and 2021.

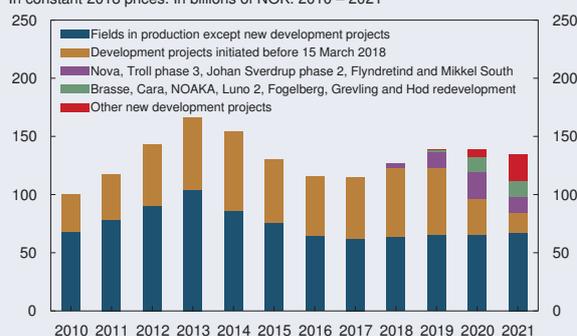
Investment in *exploration* has fallen by half since 2013 and 2014, owing partly to a decline in exploration activity and partly to the decline in drilling costs. Exploration investment is projected to increase by almost 30% between 2017 and 2021, driven by the decline in drilling costs and prospects that oil prices will remain well above USD 50. The increase will be held back as exploration has yielded relatively meagre result in recent years.

Chart 3.35 Petroleum investment. In constant 2018 prices. In billions of NOK. 2010 – 2021 <sup>1)</sup>



<sup>1)</sup> 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 remain unchanged between 2017 and 2018. Sources: Statistics Norway and Norges Bank

Chart 3.36 Investment in field development and fields in production. In constant 2018 prices. In billions of NOK. 2010 – 2021 <sup>1)</sup>



<sup>1)</sup> 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 investments. Sources: Statistics Norway and Norges Bank

# The potential impact of higher interest rates on household income and spending

After remaining low for a number of years, interest rates can be expected to rise gradually in the period ahead as a result of the improved outlook for the Norwegian economy. Household spending showed solid growth in the latter half of 2017, and there are prospects for higher wage growth and increased employment in the years ahead. This Special Feature presents analyses of the direct effect of higher interest rates on household income and spending.<sup>1</sup>

Higher interest rates have an impact on household disposable income and result in a redistribution of income from net borrowers to net savers. Household debt has risen substantially over the past 15–20 years (Chart 1). In 2017, household debt was more than 2½ times household bank deposits. This means that an increase in interest rates will reduce household disposable income more than previously.

Chart 2 shows a time series for the estimated effect of a 1 percentage point increase in deposit and lending rates on aggregate disposable household

income.<sup>2</sup> In 2004, such an increase would have reduced household disposable income by 0.6%; today, household income would be reduced by about 1%.

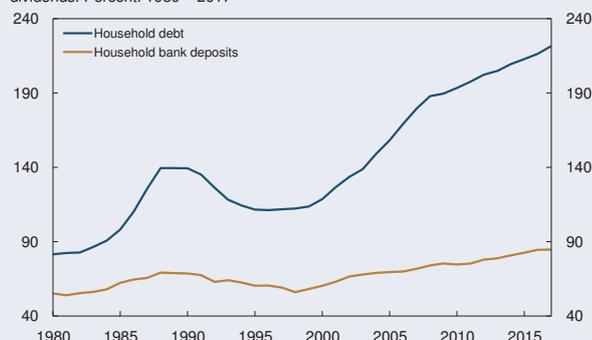
The impact on the individual household will depend on the household's debt and assets. Younger and middle-aged households have the highest debt-to-income ratios and the lowest deposit-to-income ratios (Chart 3).<sup>3</sup> This is in line with a life cycle pattern in which a household gradually trades up in the housing market, then pays off the debt and saves for retirement and to leave any inheritance. Chart 4 shows the

1 The analyses are discussed in more detail in Torstensen, K. N. and K. Gerdrup (2018) "The potential impact of higher interest rates on household income and spending". *Staff Memo 3/18*. Norges Bank. (forthcoming).

2 The analysis in this Special Feature shows the effect of a one percentage point increase in annual deposit and lending rates on household disposable income. The effect has been calculated based only on household loan debt and bank deposits. The analysis is static and does not take account of financial effects of the interest rate increase on for example labour income and prices for other assets. The calculated effect takes account of tax deductions for interest payments and taxation of interest income. For households with self-amortising loans, principal payments will fall when interest rates increase. This will dampen the effect of a change in interest rates on income disposable for consumption, but has not been taken into account in this analysis. An interest rate increase is assumed to have an immediate impact on income since the share of fixed-rate loans is small. In 2017 Q3, the share of fixed-rate loans with a maturity of one year or more was 5%.

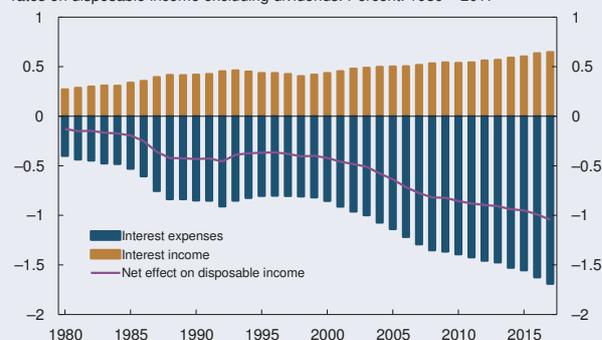
3 Household data are from Statistics Norway's income and wealth statistics for households. The stock of debt and deposits is the stock as at 31 December each year, and income is total annual post-tax income. The analyses include all households where the main income earner is between 20 and 90 years. For the self-employed, it is difficult to distinguish private wealth from business assets. Households in which at least one person has income from self-employment that exceeds labour income are therefore omitted from the analysis. Total debt comprises loans from private individuals and foreign banks, Norwegian banks and credit institutions and government lending institutions.

Chart 1 Household bank deposits and debt. Share of disposable income excluding dividends. Percent. 1980 – 2017



Sources: Statistics Norway and Norges Bank

Chart 2 Effect of a 1 percentage point increase in lending and deposit rates on disposable income excluding dividends. Percent. 1980 – 2017



Sources: Statistics Norway and Norges Bank

change in net interest expenses as a percentage of disposable income for the various age groups when deposit and lending rates are increased by 1 percentage point.<sup>4</sup> In line with the life cycle profile in Chart 3, Chart 4 shows that the direct effect on household income is greatest for the 30–39 age group.

Chart 5 shows the change in annual net interest expenses as a percentage of post-tax income when households are divided into ten equal groups by net debt as a share of post-tax income. For six out of ten households, interest expenses rise more than interest income, while net interest income rises for three out of ten households. The chart shows how much post-tax income for indebted households has to increase to fully compensate for the increase in net interest expenses. For the group of households with the highest level of net debt, income has to increase by 4.4% to compensate for the increase in the interest rate. For all household groups with net debt, income has to increase more than in 2004 to compensate for higher interest expenses. For the group of households with the highest net deposits, the interest rate increase corresponds to a rise in income of 2.6% in 2015, which is higher than in 2004.

4 The calculation of the change in net interest expenses in 2015 is based on tax rates for 2018.

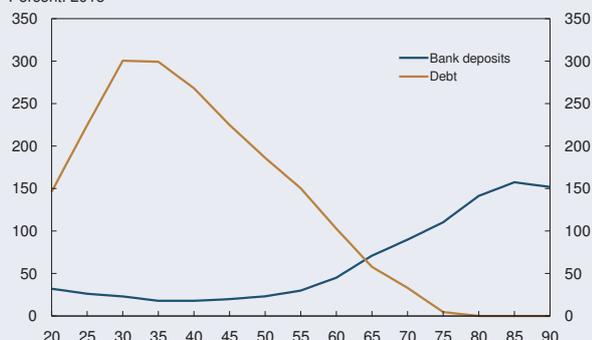
Even though the effect of a rise in the interest rate on disposable household income has generally increased over time, households will be able to smooth consumption, mitigating the impact on consumption, whether income rises or falls. The direct effect on household spending of a change in disposable income is referred to as the cash-flow channel. Via this channel, consumption will fall to the extent there is net debt in the household sector or if the cash-flow channel generates a stronger effect on households holding net debt than on households with net bank deposits.<sup>5</sup>

Households with low liquid assets and limited opportunities to borrow more will not be able to smooth consumption over time. They are likely to cut spending significantly in response to a decrease in income. Changes in the distribution of households' liquid assets can therefore have an impact on the cash-flow channel.

Chart 6 shows the change in annual net interest expenses as a percentage of households' bank deposits. Households are divided into groups in the same way as in Chart 5, by net debt as a share of post-tax

5 Flodén, M., M. Kilstrom, J. Sigurdsson and R. Vestman (2017) "Household debt and monetary policy: Revealing the cash-flow channel", CEPR Discussion Papers 12270, C.E.P.R. Discussion Papers, find that highly indebted Swedish households reduce consumption more than other households when interest rates increase.

Chart 3 Debt and bank deposits. Share of disposable income. By age cohort.<sup>1)</sup> Percent. 2015



1) Median share for each age cohort. Sources: Statistics Norway and Norges Bank

Chart 4 Change in net interest expenses following a 1 percentage point interest rate increase. Share of disposable income. By age cohort.<sup>1)</sup> Percent. 2015



1) Median share for each age cohort. Sources: Statistics Norway and Norges Bank

income. The chart shows that an interest rate increase could constitute a substantial portion of bank deposits for households with a high level of net debt, as households with a high level of net debt often hold limited liquid assets. For the group with the highest level of net debt as a share of post-tax income in 2015, the increase in annual interest expenses constitutes 32% of bank deposits. Households that have to use a high proportion of their bank deposits to meet higher interest payments will likely tighten consumption more than others since they have limited funds available to cope with an extra increase in expenses.<sup>6</sup> For net borrowers with lower net debt and higher bank deposits, the effect on consumption will typically be weaker. Net savers will experience an increase in income. Since this group of households can distribute an increase in income over a long period, and thereby smooth consumption over time, the cash-flow effect on their consumption may be small.

Even though the cash-flow channel can have a particularly strong effect for groups of households with a high level of net debt and limited liquid assets, Chart

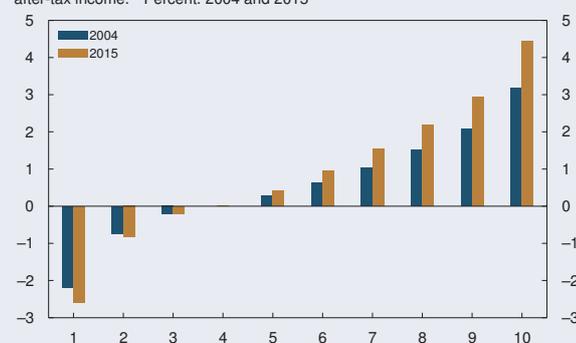
6 shows that the increase in interest expenses constitutes a smaller share of bank deposits in 2015 than in 2004.<sup>7</sup> This is because the groups with the highest level of net debt have used some of their funds to build up their stock of liquid assets. This could indicate that the increase in the cash-flow effect in recent years is somewhat smaller than the total increase in net interest expenses in isolation would imply.

The aggregate impact on consumption of a change in interest rates is influenced by several factors in addition to the effect on household income. For both net borrowers and net savers, higher interest rates will increase the cost of consumption now relative to the future (the substitution channel), suggesting that consumption will decrease. Thus, for net borrowers the cash-flow and the substitution channel both pull in the direction of lower consumption. For net savers, the two effects pull in different directions. Higher interest rates will also affect household consumption via changes in employment, wages and asset prices. The duration of an interest rate increase also plays a role. If households expect persistently higher interest rates, it can reasonably be assumed that the effect will be stronger than if households expect the interest rate increase to be transient.

6 See for example Kaplan, G., G. L. Violante and J. Weidner (2014) "The Wealthy Hand-to-Mouth", *Brookings Papers on Economic Activity*. In a study of Norwegian households' consumption response to lottery winnings, Fagereng, A., M. B. Holm and G. J. Natvik (2016) "MPC heterogeneity and household balance sheets", *Discussion Papers 852*, Statistics Norway, Research Department, find that the response is higher for households with limited bank deposits.

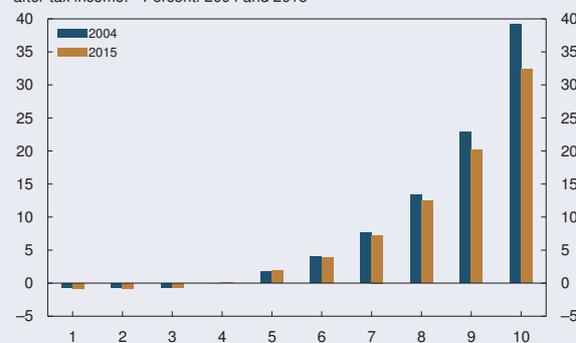
7 The share is smaller despite a lower tax deduction rate. In 2004, the tax deduction rate was 28%, and the calculation for 2015 is based on the current rate of 23%.

Chart 5 Change in net interest expenses following a 1 percentage point interest rate increase. Share of total after-tax income. By deciles for net debt as a share of after-tax income.<sup>1)</sup> Percent. 2004 and 2015



1) Net debt is debt less bank deposits. Median share in each group.  
Sources: Statistics Norway and Norges Bank

Chart 6 Change in net interest expenses following a 1 percentage point interest rate increase. Share of bank deposits. By deciles for net debt as a share of after-tax income.<sup>1)</sup> Percent. 2004 and 2015

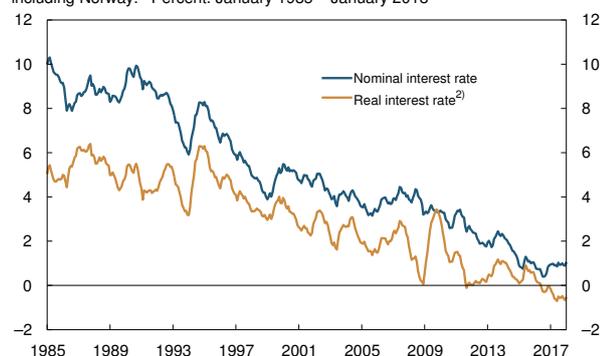


1) Net debt is debt less bank deposits. Median share in each group.  
Sources: Statistics Norway and Norges Bank

# 4 Monetary policy analysis

According to the forecast, the key policy rate will be raised after summer 2018, followed by a gradual increase to around 2% in 2021. The interest rate path is somewhat higher than in the December 2017 *Monetary Policy Report* throughout the projection period. Stronger growth and higher interest rates abroad suggest a higher key policy rate path than in December. Higher domestic demand pulls in the same direction. On the other hand, lower price and wage inflation than projected and a higher money market premium suggest a lower rate path. The change in the inflation target suggests a slightly higher key policy rate in the near term and a somewhat lower rate in the longer term.

Chart 4.1 Interest rates for 10-year government bonds. 14 OECD countries including Norway.<sup>1)</sup> Percent. January 1985 – January 2018



1) The other countries are Austria, Belgium, Canada, Denmark, France, Germany, Italy, Japan, Netherlands, Sweden, Switzerland, UK and US. Unweighted average.  
2) The real interest rate is the nominal government bond yield less the average inflation rate over the past year.  
Sources: OECD and Norges Bank

## NEUTRAL REAL INTEREST RATE

The real interest rate is defined as the nominal interest rate less expected inflation, while the neutral real interest rate is the rate that is neither expansionary nor contractionary. Over time, Norges Bank has revised down its estimate of the neutral real interest rate for Norway, in line with global developments (see the Special Feature in *Monetary Policy Report 3/16*).

## 4.1 OBJECTIVES AND RECENT DEVELOPMENTS

### New Regulation on Monetary Policy

On 2 March 2018, the Government laid down a new Regulation on Monetary Policy (see page 13). The operational target of monetary policy is now annual consumer price inflation of close to 2% over time. Norges Bank expressed its opinion on the regulation in a letter to the Ministry of Finance on 28 February (see page 14). In the opinion of the Executive Board, the regulation clarifies the monetary policy mandate and underpins the flexible approach to inflation targeting.

The new regulation will not result in significant changes in the conduct of monetary policy. 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. See the box on page 46 for a further account of the trade-offs underlying the monetary policy assessment.

Lower inflation over time owing to a lower inflation target will result in a correspondingly lower nominal interest rate. The inflation targeting regime is flexible and weight is given to developments in output and employment. A lower numerical target in and of itself is of little importance for the interest rate outlook in the coming period. The Special Feature on page 47

presents a discussion of monetary policy implications of the new inflation target.

### Expansionary monetary policy

The interest rate level in recent years has been very low, both internationally and in Norway (Chart 4.1). This reflects the decline over time in the level of the neutral real interest rate and the need for an expansionary monetary policy. Weak developments abroad and the decline in oil-related sectors following the fall in oil prices in 2014 had a dampening effect on growth in Norway. Capacity utilisation declined. After a temporary increase owing to a weaker krone, inflation fell. Since autumn 2016, the output gap has narrowed and is now approaching zero. Inflation has also edged up again, but underlying inflation is still below the inflation target.

Monetary policy is expansionary. Since March 2016, the key policy rate in Norway has been 0.5%. The real interest rate is lower than what is assessed to be a neutral real interest rate.

## 4.2 NEW INFORMATION AND ASSESSMENTS

### Model-based analysis suggests a higher key policy rate

To assess whether developments since December indicate in isolation a change in the interest rate path, a model-based analysis is performed where the key policy rate forecast from the previous *Report* is applied (Chart 4.2a). Using Norges Bank's macroeconomic model NEMO<sup>1</sup>, the effects of updated projections for the current and following quarter and new projections for non-model variables for the entire projection period are analysed. The change in the inflation target is disregarded in this analysis.

Compared with the projections in the December *Report*, the model-based analysis suggests that inflation will be somewhat lower in 2018, but somewhat higher in 2019 and 2020 (Chart 4.2b). Capacity utilisation will increase more quickly and then remain at a higher level throughout the projection period (Chart 4.2c). In this scenario, the krone is somewhat weaker than projected in the December *Report*.

Chart 4.2a Key policy rate. Projections in MPR 4/17. Percent. 2012 Q1 – 2020 Q4<sup>1)</sup>

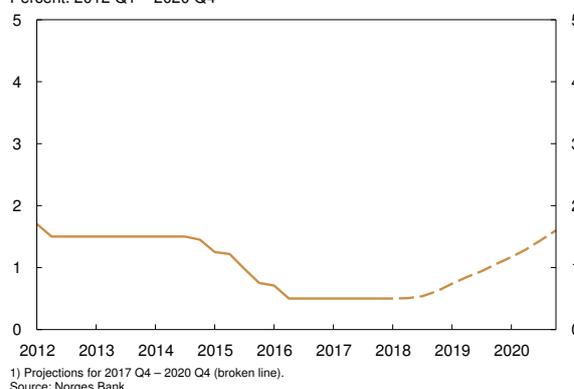


Chart 4.2b CPI-ATE<sup>1)</sup>. Projection conditional on new information and key policy rate forecast in MPR 4/17. Four-quarter change. Percent. 2012 Q1 – 2020 Q4<sup>2)</sup>

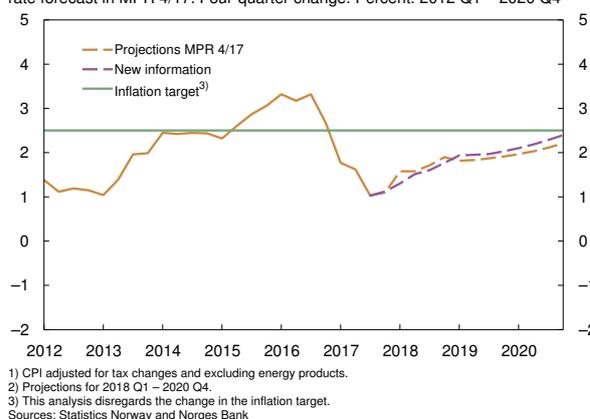
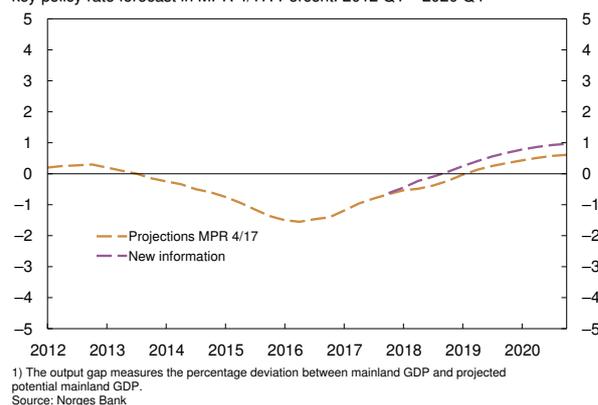


Chart 4.2c Projected output gap<sup>1)</sup>. Projection conditional on new information and key policy rate forecast in MPR 4/17. Percent. 2012 Q1 – 2020 Q4



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.

The model-based analysis suggests a slightly higher path for the key policy rate than in the December *Report*, owing to prospects for a more positive output gap and slightly higher inflation further out.

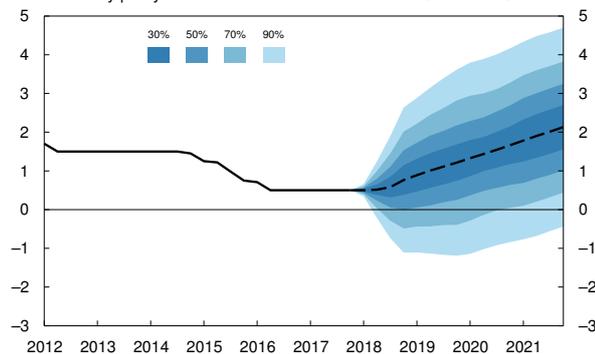
**New forecast indicates a somewhat earlier rate hike**

The upturn abroad and in Norway is continuing and economic growth appears to be stronger than expected. The output gap for Norway is approaching zero. Rising capacity utilisation will push up price and wage inflation further ahead, but underlying inflation will likely remain lower than the inflation target for some time.

Monetary policy is expansionary. The outlook for the Norwegian economy suggests that it will soon be appropriate to raise the key policy rate. The uncertainty regarding the effects of a higher interest rate suggests a cautious approach. Overall, the changes in the outlook and balance of risks suggest a somewhat earlier interest rate increase than in the December *Report*.

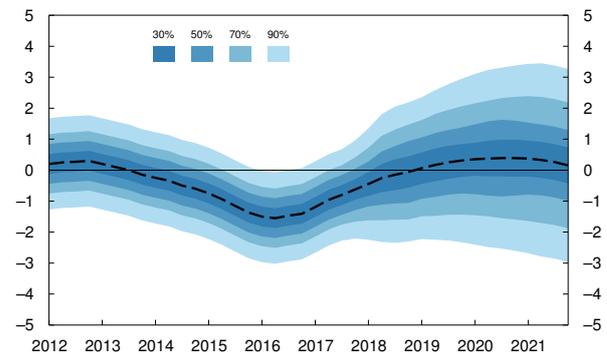
According to the forecast, the key policy rate will be raised after summer 2018 (Chart 4.3a). The key policy rate forecast then indicates a gradual increase to around 2% in 2021. The new interest rate path is

Chart 4.3a Key policy rate with fan chart<sup>1)</sup>. Percent. 2012 Q1 – 2021 Q4<sup>2)</sup>



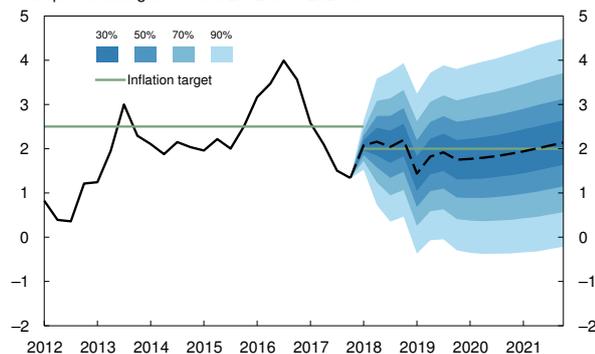
1) The fan chart is based on historical experience and stochastic simulations in Norges Bank's main macroeconomic model, NEMO. It does not take into account that a lower bound for the interest rate exists.  
2) Projections for 2018 Q1 – 2021 Q4 (broken line).  
Source: Norges Bank

Chart 4.3b Projected output gap<sup>1)</sup> with fan chart<sup>2)</sup>. Percent. 2012 Q1 – 2021 Q4



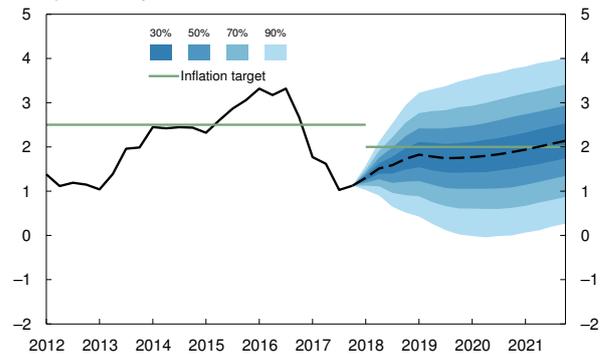
1) The output gap measures the percentage deviation between mainland GDP and projected potential mainland GDP.  
2) The fan chart is based on historical experience and stochastic simulations in Norges Bank's main macroeconomic model, NEMO.  
Source: Norges Bank

Chart 4.3c CPI with fan chart<sup>1)</sup>. Four-quarter change. Percent. 2012 Q1 – 2021 Q4<sup>2)</sup>



1) The fan chart is based on historical experience and stochastic simulations in Norges Bank's main macroeconomic model, NEMO.  
2) Projections for 2018 Q1 – 2021 Q4 (broken line).  
Sources: Statistics Norway and Norges Bank

Chart 4.3d CPI-ATE<sup>1)</sup> with fan chart<sup>2)</sup>. Four-quarter change. Percent. 2012 Q1 – 2021 Q4<sup>3)</sup>



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 Q1 – 2021 Q4 (broken line).  
Sources: Statistics Norway and Norges Bank

somewhat higher than in the December *Report* throughout the projection period (Chart 4.4).

In the analysis, the money market rate is projected to edge lower in the near term, reflecting a reduction in the money market premium, thereafter rising in pace with the increase in the key policy rate (Chart 1.8). The projection for the money market rate has been revised up slightly more than the projection for the key policy rate because the money market premium ahead is expected to remain slightly higher than projected in the December *Report*. Household lending rates are projected to rise by around 1.5 percentage points in the period to the end of 2021. The projections entail a slight decrease in lending spreads as interest rates rise.

The real interest rate is projected to increase gradually throughout the projection period, so that it will be slightly positive around the end of 2021 (Chart 1.9). 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 December *Report*.

#### A higher interest rate will restrain the upswing

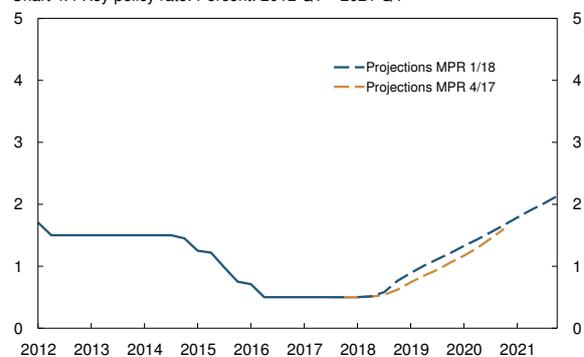
With a key policy rate consistent with the interest rate forecast in this *Report*, the output gap is expected to turn positive at the beginning of 2019, and rise further in 2019 and 2020, before narrowing in 2021 (Chart 4.3b). Compared with the December *Report*, the projections for capacity utilisation are somewhat higher in 2018, but somewhat lower further out in the projection period. A somewhat less expansionary monetary policy than in the December *Report* contributes in isolation to restraining the rise in capacity utilisation.

Underlying inflation is projected to rise gradually to a little above 2% in 2021 (Charts 4.3d). The projections are somewhat lower than in December. Price and wage inflation has risen slightly less than expected, and the krone is projected to be somewhat stronger than anticipated in December. It is assumed that lower inflation expectations, owing to a lower inflation target, will curb the rise in price and wage inflation.

#### Factors behind changes in the interest rate forecast

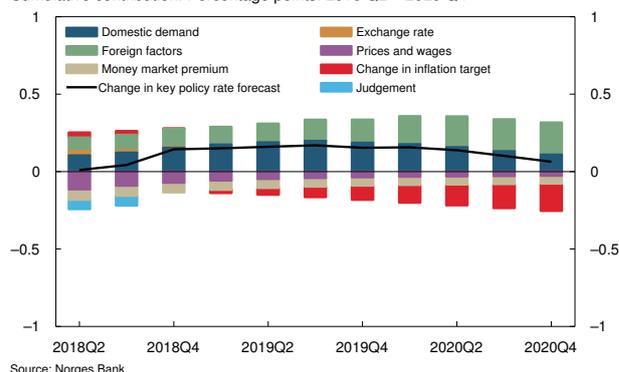
The forecast for the key policy rate is based on an assessment of various considerations (see box on

Chart 4.4 Key policy rate. Percent. 2012 Q1 – 2021 Q4<sup>1)</sup>



1) Projections for 2018 Q1 – 2021 Q4.  
Source: Norges Bank

Chart 4.5 Factors behind changes in key policy rate forecast since MPR 4/17. Cumulative contribution. Percentage points. 2018 Q2 – 2020 Q4



Source: Norges Bank

page 46), an overall assessment of the situation in the Norwegian and global economy and Norges Bank's perception of the functioning of the economy. Chart 4.5 illustrates the factors that have contributed to the changes in the interest rate forecast. The overall change in the interest rate forecast since the December *Report* is shown by the black line. The model NEMO is used as a tool for identifying the driving forces in the economy, but there is no mechanical relationship between news that deviates from the Bank's forecasts in the December *Report* and the effect on the new interest rate path.

Global growth has been higher than expected, and the projections for GDP growth among trading partners have been revised up. This suggests in isolation an increase in Norwegian exports. Policy rate expectations among trading partners have also risen since the December *Report*. A faster rate rise abroad contributes, all else equal, to a weaker krone. A weaker krone pushes up the rise in prices for imported goods and contributes to stronger exports by improving competitiveness. Prospects for inflation abroad are little changed. The changes in the global economic outlook suggest a higher interest rate path (green bars).

New information, including from the Regional Network, points to higher growth in the Norwegian economy in the first half of 2018 than expected in December. Housing investment has been lower than expected and will probably continue to drift down, while consumption and business investment appear to be expanding at a faster pace than projected. In addition, the projections for petroleum investment for the years ahead have been revised up. Stronger domestic demand pulls up the interest rate path (dark blue bars).

Underlying inflation has risen somewhat less than projected, and wage growth in 2017 was a little lower than expected. Despite prospects for a slightly higher capacity utilisation than assumed in the December *Report*, the wage projection for 2018 remains unchanged. Lower price and wage inflation pull down the interest rate forecast somewhat (purple bars).

Since the December *Report*, the projection for the money market premium has been revised up slightly

throughout the projection period. In isolation, this pulls down the interest rate path (beige bars).

The krone has appreciated broadly in line with the December projections. The wider interest rate differential against other countries would in isolation imply a stronger krone appreciation. The movement in the krone therefore pulls up the interest rate path a little (orange bars).

In the near term, a lower numerical inflation target implies a slightly less expansionary monetary policy as actual inflation is somewhat closer to target. As the inflation targeting regime is flexible, and weight is given to developments in output and employment, the effect on the key policy rate in the coming period will be limited. Lower inflation over time owing to a lower inflation target will result in a correspondingly lower nominal interest rate, so that the long-term real interest rate is unchanged. The changes in the interest rate path owing to a lower inflation target are illustrated by the red bars.

Since the December *Report*, new information suggests on balance an upward adjustment of the interest rate path throughout the projection period. The uncertainty surrounding the effects of monetary policy suggests a cautious approach. The Bank's overall judgement suggests that the interest rate path is adjusted up somewhat less in the coming quarters than new information alone would indicate. This use of judgement is expressed by the light blue bars.

#### **Forward rates have risen**

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 risen since the December *Report*. The rise in forward rates is higher than the upward adjustment of the Bank's interest rate forecast, and forward rates have recently been close to the Bank's new money market rate projections (Chart 4.6).

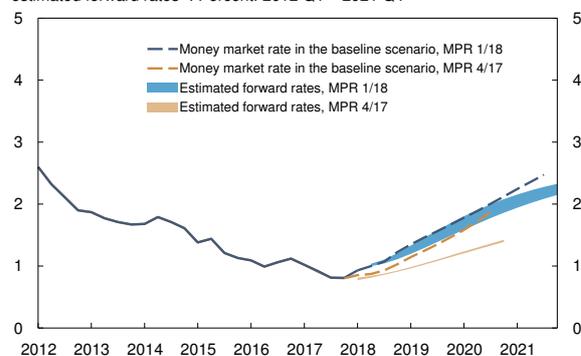
### 4.3 UNCERTAINTY

#### 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.

Overall, the risks to the outlook appear to be balanced. On the one hand, the upswing in the Norwegian economy may prove stronger than currently envisaged. Solid growth abroad may lead to a stronger-than-projected rise in exports and business investment in Norway. On the other hand, there is a risk of growing trade protectionism, which over time may dampen growth both abroad and in Norway. Price and wage inflation may also move up less than expected. So far, cost inflation has been lower than projected, and among many of Norway's trading partners, wage growth in recent years has been lower than historical relationships between wages and unemployment would suggest. There is also uncertainty surrounding household behaviour ahead, partly owing to the prevailing high debt ratios.

Chart 4.6 Three-month money market rate in the baseline scenario<sup>1)</sup> and estimated forward rates<sup>2)</sup>. Percent. 2012 Q1 – 2021 Q4<sup>3)</sup>



1) Key policy rate in the baseline scenario plus Norwegian money market premiums. The calculations are based on the assumption that the key policy rate forecast is priced into the money market.  
 2) Forward rates are based on money market rates and interest rate swaps. The orange and blue bands show the highest and lowest rates in the period 27 November – 8 December in 2017 and 26 February – 9 March in 2018, respectively.  
 3) Projections for 2018 Q1 – 2021 Q4.  
 Sources: Thomson Reuters and Norges Bank

## 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.

### **1. Monetary policy shall bring inflation to target:**

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.

### **2. Monetary policy shall contribute to high and stable output and employment:**

The interest rate path should provide a reasonable balance between the path for inflation and the path for output and employment. As long as there is confidence that inflation will remain low and stable, monetary policy can contribute to smoothing fluctuations in output and employment. A flexible inflation targeting regime can prevent downturns from becoming deep and protracted and reduce the risk of unemployment becoming entrenched at a high level following an economic downturn. Nevertheless, monetary policy cannot assume primary responsibility for high output and employment.

The regulation and supervision of financial institutions are the primary means of addressing shocks to the financial system. To some extent, monetary policy can contribute to counteracting the build-up of financial imbalances and thereby reduce the risk of sharp economic downturns further ahead. If there are signs that financial imbalances are building up, the consideration of economic stability over time may in some situations suggest keeping the key policy rate somewhat higher than would otherwise be the case.

### **3. Monetary policy shall take account of uncertainty:**

The interest rate path should take account of the uncertainty surrounding the functioning of the economy. Uncertainty surrounding the effects of monetary policy normally suggests a cautious approach to interest rate setting. This may reduce the risk that monetary policy will have unintended consequences.

In situations where the risk of particularly adverse outcomes is substantial, or where confidence in the nominal anchor is in jeopardy, it may be appropriate in some cases to pursue a more active monetary policy than normal.

## Monetary policy implications of a new inflation target

The monetary policy implications of a change in the inflation target depend on a number of factors. Of greatest importance is probably the effect of the new numerical target on economic agents' inflation expectations, which in turn may have an impact on price and wage inflation. Among advanced economies, there are few examples of countries that have changed their inflation target.<sup>1</sup> The empirical basis for estimating these effects precisely is therefore limited. This Special Feature presents a discussion of the possible effect of a change in the numerical target on monetary policy.

When capital flows freely across countries, the long-term real interest rate in Norway is largely determined by the global real interest rate. A lower inflation target will then result in a correspondingly lower long-term nominal interest rate.

In the near term, a lowering of the inflation target normally implies some monetary tightening. This is true in principle regardless of the prevailing economic situation. If inflation is below target, monetary policy will normally be expansionary in order to bring inflation gradually back to target. With a lower numerical target, the distance to the target will be smaller, and monetary policy will not have to be as expansionary to bring inflation to target.

The monetary policy response depends on how forward-looking economic agents are in their expectations formation, which in turn is important for how quickly a lower numerical target passes through to lower price and wage inflation. The importance of expectations formation can be illustrated with the aid of a simple theoretical model. See box on page 50 for a further discussion of the model. With fully rational

and forward-looking agents, price and wage inflation will immediately adjust to the new target. In this case, the adjustment may take place without the need for monetary tightening.<sup>2</sup> The blue lines in Chart 1 are based on this assumption. Inflation and the nominal interest rate immediately fall by 0.5 percentage point in this case, while the real interest rate and the output gap are unchanged.

That price and wage inflation immediately adjusts to the new target is a strong assumption that is hardly realistic. If agents are not fully forward-looking, or if there is not full credibility about the new target, monetary policy would have to be tightened somewhat to bring inflation to the new target.

What monetary tightening means in practice depends on how monetary policy is assumed to influence total demand. In the literature, it is the *real interest rate*<sup>3</sup> that is most often assumed to be the primary channel through which monetary policy influences demand.<sup>4</sup> Monetary tightening then implies a short-term increase in the real interest rate. The real interest rate can increase either through a rise in the nominal interest rate or a decline in economic agents' near-term inflation expectations. If inflation expectations fall to some extent, but are slightly backward-looking so that they do not fully reflect a lower numerical target, the nominal interest rate may have to be reduced somewhat to prevent the real interest rate from rising more than is desirable from a central bank perspective. This is illustrated by the solid orange lines in Chart 1.

1 For an analysis of the implications of changes in the inflation target for New Zealand, see Lewis, M. and C. J. McDermott: "New Zealand's Experience with Changing its Inflation Target and the Impact on Inflation Expectations". Reserve Bank of New Zealand Discussion Paper Series 2016/07.

2 In theoretical models where it is assumed that agents are forward-looking and that the inflation target enjoys full credibility, this will normally be the case.

3 The real interest rate is defined as the nominal interest rate less expected price inflation.

4 In practice, the nominal interest rate will likely be of importance for demand in the near term, partly because of the high debt ratios of many households. An increase in the nominal interest rate, for a given real rate, will reduce these households' disposable income and thus probably their demand.

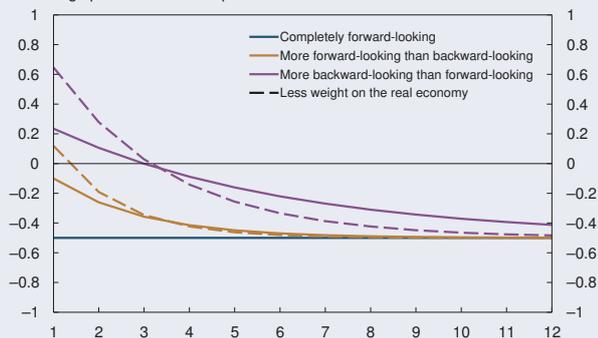
If inflation expectations are mostly backward-looking, thereby falling only a little, the nominal interest rate may have to be increased to bring up the real interest rate to the extent implied by monetary policy considerations. This is illustrated by the solid purple lines in the chart. The simple theoretical model illustrates that the implications of a lower numerical inflation target for the nominal interest rate in the near term are not unambiguous.

In addition, the extent of monetary policy tightening depends on the weight given to the consideration of

stable developments in output and employment. If the central bank gives less weight to output and employment, and more weight to reaching the new inflation target quickly, monetary policy will be tightened to a greater extent. This is illustrated by the broken lines in the chart.

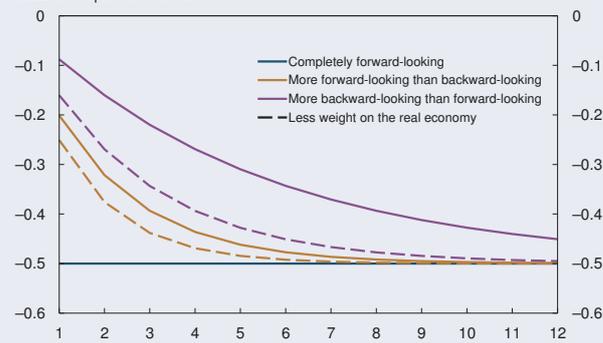
To shed light on possible implications of a lower inflation target within a more realistic model that has been quantified for the Norwegian economy, we have used Norges Bank's main model NEMO to perform various technical calculations. This also required making

Chart 1a Change in the nominal interest rate following a 0.5 percentage point reduction in the inflation target. Different scenarios for expectations formation. Percentage points. Number of quarters ahead



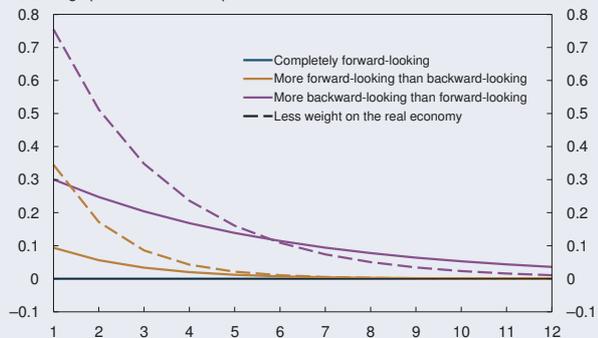
Source: Norges Bank

Chart 1b Change in inflation following a 0.5 percentage point reduction in the inflation target. Different scenarios for expectations formation. Percentage points. Number of quarters ahead



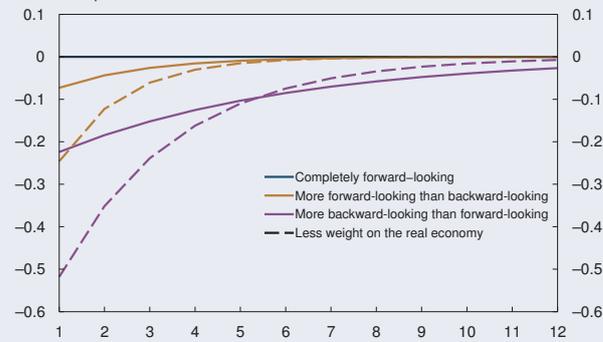
Source: Norges Bank

Chart 1c Change in the real interest rate following a 0.5 percentage point reduction in the inflation target. Different scenarios for expectations formation. Percentage points. Number of quarters ahead



Source: Norges Bank

Chart 1d Change in the output gap following a 0.5 percentage point reduction in the inflation target. Different scenarios for expectations formation. Percentage points. Number of quarters ahead



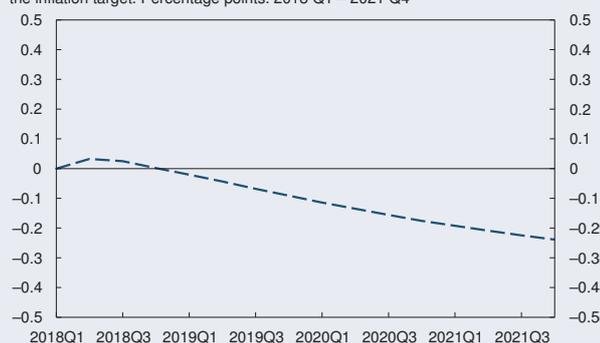
Source: Norges Bank

assumptions regarding the response of economic agents to the downward revision of the numerical target. Some lag in expectations formation is assumed, so that it takes some time before the new inflation target fully passes through to price and wage formation. The estimated effects are uncertain, partly because there is uncertainty surrounding economic agents' expectations formation.

The effects of lowering the numerical target by half a percentage point are illustrated in Chart 2. In this case, it is assumed that the economy is initially in

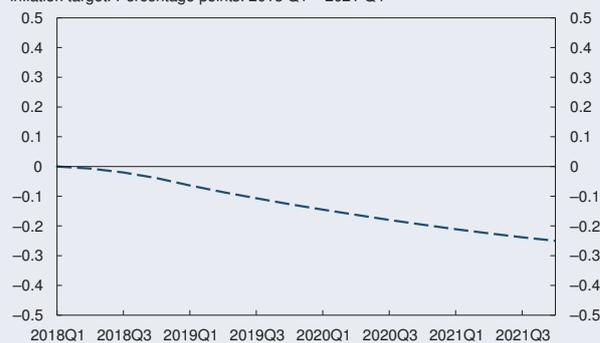
equilibrium with an inflation rate equal to the old target, but in principle the implications are approximately the same regardless of the initial conditions. Inflation expectations do not fall to the same extent in the short term as the pass-through from the new inflation target to price and wage formation is assumed to be gradual. To bring inflation down to the new target, the key policy rate will have to be raised somewhat. The flexible approach to inflation targeting implies a limited tightening of monetary policy.

Chart 2a Change in the key policy rate following a 0.5 percentage point reduction in the inflation target. Percentage points. 2018 Q1 – 2021 Q4



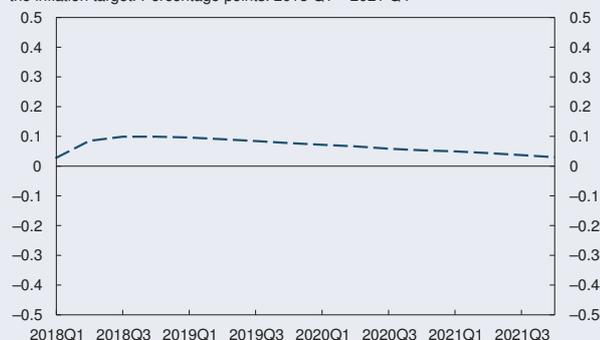
Source: Norges Bank

Chart 2b Change in inflation following a 0.5 percentage point reduction in the inflation target. Percentage points. 2018 Q1 – 2021 Q4



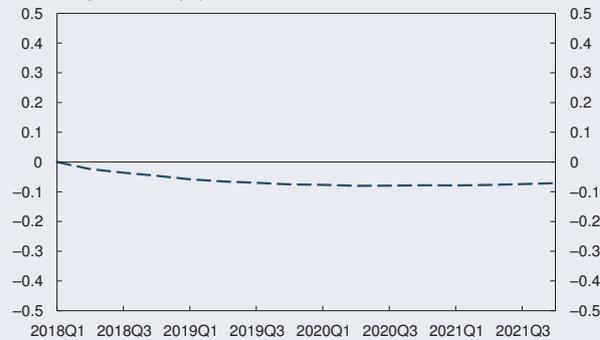
Source: Norges Bank

Chart 2c Change in the real interest rate following a 0.5 percentage point reduction in the inflation target. Percentage points. 2018 Q1 – 2021 Q4



Source: Norges Bank

Chart 2d Change in the output gap following a 0.5 percentage point reduction in the inflation target. Percentage points. 2018 Q1 – 2021 Q4



Source: Norges Bank

The krone exchange rate is assumed to appreciate somewhat as a consequence of the moderate monetary tightening.<sup>5</sup> A somewhat higher real interest rate and stronger krone result in a slight decline in inflation in the near term. A monetary policy oriented towards a somewhat lower inflation target will curb inflation expectations, and push down inflation towards the new target further out. After a period, the nominal interest rate will have to be reduced to

prevent the real interest rate from becoming too high. In the long term, inflation and the nominal interest rate will fall by half a percentage point. It is assumed that the inflation target does not influence the neutral real interest rate.

<sup>5</sup> Foreign exchange market participants are largely assumed to be forward-looking. Owing to expectations of somewhat higher real interest rates, the exchange rate appreciates immediately after the new lower inflation target is announced.

## MODEL

The model comprises three equations:

$$(i) \quad y_t = \alpha E_t y_{t+1} - \sigma(i_t - \pi_{t+1}^e)$$

$$(ii) \quad \pi_t = \pi_{t+1}^e + \kappa y_t$$

$$(iii) \quad \pi_{t+1}^e = \beta E_t \pi_{t+1} + \delta \pi_{t-1} + (1 - \beta - \delta) \pi_t^*$$

$y_t$  is the output gap,  $i_t$  is the nominal interest rate,  $\pi_t$  is inflation and  $\pi_{t+1}^e$  is inflation expectations. Inflation expectations are assumed to be a weighted average of a rational, forward-looking component,  $E_t \pi_{t+1}$ , inflation in the previous period,  $\pi_{t-1}$ , and the inflation target,  $\pi_t^*$ . The Phillips curve (ii) is specified so that it generalizes both a standard theoretical New Keynesian Phillips curve ( $\delta = \pi_t^* = 0$ ) and a traditional Phillip curve ( $\beta = 0$ ,  $\delta = 1$ ). The demand curve (i) captures the conventional neoclassical IS equation as a special case ( $\alpha = 1$ ).

It is assumed that the central bank minimises a standard loss function:  $L_t = (\pi_t - \pi_t^*)^2 + \lambda y_t^2$ . In the solid lines,  $\lambda = 1$ , while in the broken lines,  $\lambda = 0.2$ .

Parameter values for the particular cases:

Blue lines:  $\alpha = 1$ ,  $\beta = 0.99$ ,  $\delta = 0$

Orange lines:  $\alpha = 0.6$ ,  $\beta = 0.99 * 0.6$ ,  $\delta = 0.4$

Purple lines:  $\alpha = 0.4$ ,  $\beta = 0.99 * 0.4$ ,  $\delta = 0.6$

# 5 Financial stability assessment

## – decision basis for the countercyclical capital buffer

House prices have fallen moderately since the correction in spring 2017. The housing market correction has lowered the risk of an abrupt and more pronounced decline further out. At the same time, household debt growth remains high. Over time, lower house price inflation will dampen debt growth and thereby help to reduce household vulnerability. Enterprises have ample access to credit, and credit growth has picked up. The profitability of the largest Norwegian banks increased in 2017 and all banks achieved their capital targets at year-end.

### 5.1 INTERNATIONAL DEVELOPMENTS

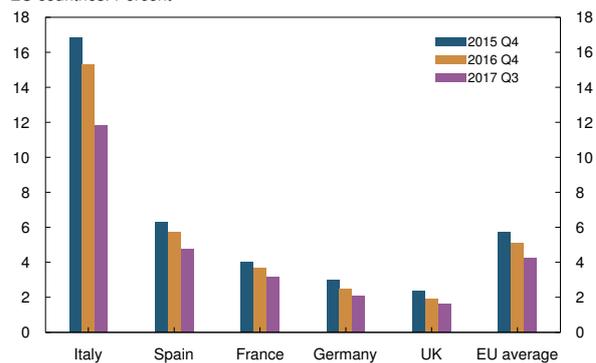
Equity market volatility was fairly high at the beginning of February (Chart 2.5). The turbulence is regarded as reflecting a marked rise in long-term interest rates and reinforced expectations of a continued rise. Bond market risk premiums increased somewhat at the beginning of February, but remain at very low levels. The vulnerability of issuers in the bond market to higher interest rates has decreased somewhat in recent years owing to an increase in the average time to refixing of bonds outstanding. However, with high global debt levels, many issuers are still vulnerable to a marked rise in interest rates. A sharp increase in risk premiums therefore continues to pose a substantial threat to international financial stability.

Both capital ratios and profitability increased further for European banks in 2017 Q3. The share of non-performing loans has declined in several countries (Chart 5.1). The euro area recovery may further improve the situation for banks. A normalisation of the interest rate level may increase banks' interest margins, which have been under pressure because banks have only to a limited extent applied negative deposit rates. Banks' borrowers will also be more resilient to any increase in lending rates. Despite signs of improvement in the situation for European banks, the performance of European bank shares lags behind that of US bank shares (Chart 5.2).

### 5.2 CREDIT

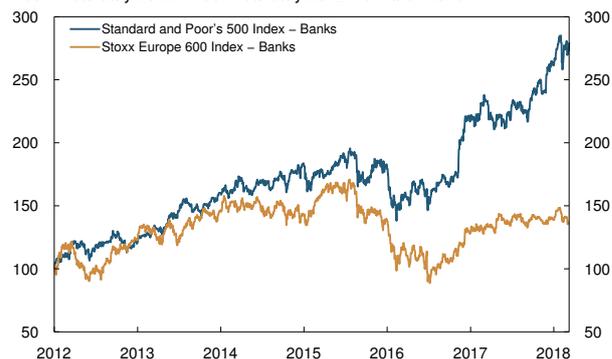
Credit has long been rising faster than GDP for mainland Norway (see credit indicator in Chart 5.3). The credit indicator increased between 2017 Q3 and 2017 Q4. The credit gap, ie the difference between the

Chart 5.1 Non-performing loans as a share of total bank lending in selected EU countries. Percent



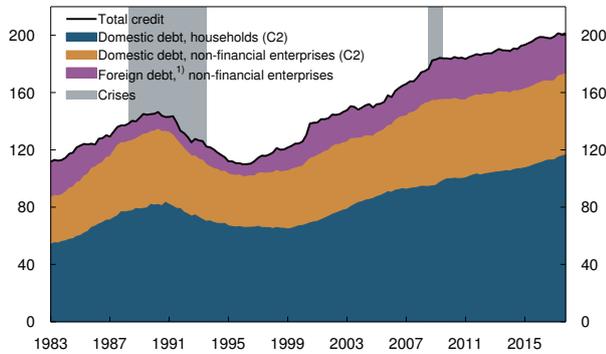
Source: European Banking Authority (EBA), Risk Dashboard 2017 Q3

Chart 5.2 Index of prices for US and European bank shares. Index. 1 January 2012 = 100. 1 January 2012 – 9 March 2018



Source: Thomson Reuters

Chart 5.3 Credit mainland Norway as a share of mainland GDP. Percent. 1983 Q1 – 2017 Q4



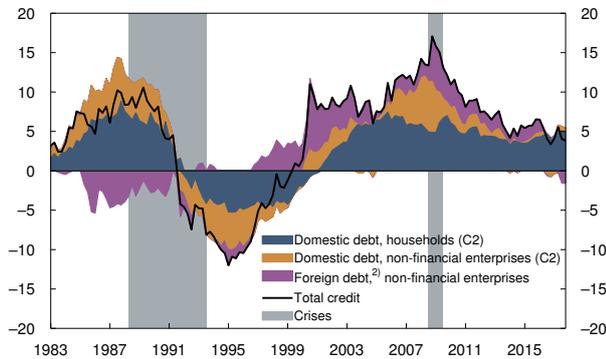
1) Preliminary figures on foreign debt for 2017 Q4.  
Sources: IMF, Statistics Norway and Norges Bank

credit indicator and an estimated trend, narrowed slightly (Chart 5.4). Both corporate and household debt growth accelerated towards the end of 2017, with the exception of corporate foreign debt, which continued to fall.

### Household debt growth remains high

The high level of household debt is a major source of vulnerability in the Norwegian financial system (see Norges Bank's 2017 *Financial Stability Report*). Growth in household debt slowed slightly through 2017, but picked up again towards the end of the year (Chart 5.5). Repayment loans secured on dwellings in particular have contributed to the rise.

Chart 5.4 Decomposed credit gap<sup>1)</sup>. Credit mainland Norway as a share of mainland GDP. Percentage points. 1983 Q1 – 2017 Q4

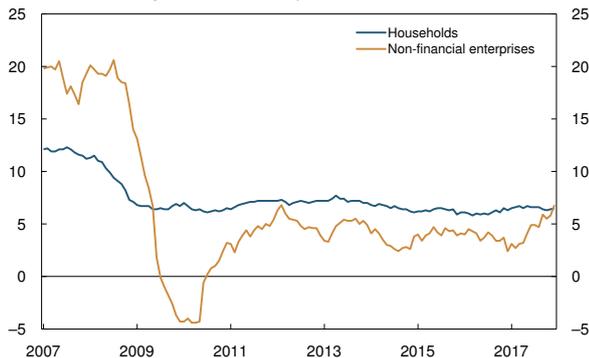


1) Deviation from trend with augmented Hodrick-Prescott (HP) filter. One-sided HP filter estimated on data augmented with a simple projection. Lambda = 400 000.  
2) Preliminary figures on foreign debt for 2017 Q4.  
Sources: IMF, Statistics Norway and Norges Bank

Household debt has risen faster than household income for many years, and debt ratios increased further through 2017 (Chart 5.6). Owing to high and rising household debt, and despite the low level of interest rates, the household debt service ratio, ie the ratio of interest and normal principal payments to income, has reached the levels prevailing at the time of the banking crisis at the end of the 1980s. The household debt service ratio increased through 2017, and signals high risk in the heatmap (see Chart 5.24 on page 59).

Analyses in the 2017 *Financial Stability Report* show that most households have ample capacity to service debt at somewhat higher interest rates. A 1 percentage point increase in lending rates will nevertheless increase the credit risk associated with loans to

Chart 5.5 Credit to households and non-financial enterprises in mainland Norway. Twelve-month change. Percent. January 2007 – December 2017



Sources: Statistics Norway and Norges Bank

## COUNTERCYCLICAL CAPITAL BUFFER

Banks should build and hold a countercyclical capital buffer when financial imbalances are building up or have built up. The assessment of financial imbalances forms the basis for Norges Bank's advice to the Ministry of Finance on the level of the countercyclical capital buffer (see box on page 61 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.

households somewhat, particularly among first-time buyers in the housing market. The 2017 *Financial Stability Report* also included an analysis of the share of households that may abruptly tighten consumption in the event of a shock. The results of the analysis show that a 1 percentage point increase in lending rates will have little effect on the share of households. Higher interest rates will, however, curb growth in household consumption (see Section 3 and Special Feature on page 37).

In 2017 Q4, the banks in Norges Bank's Survey of Bank Lending reported that residential mortgage demand had shown little change. In 2018 Q1, the banks expect a slight decline in demand. Credit standards for households were reported by the banks to be unchanged in the second half of 2017 following some tightening in the first half of 2017 as a result of changes to the regulation on new residential mortgage loans. Banks expect credit standards to remain unchanged in the period ahead.

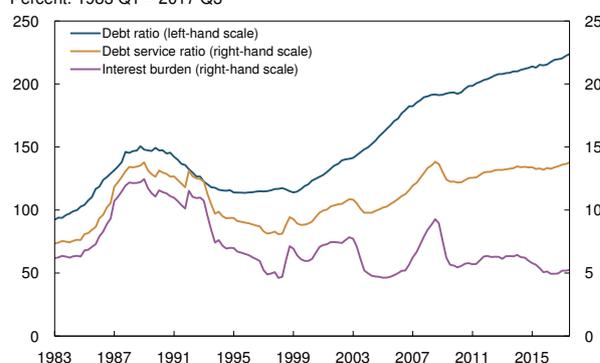
The tightening of credit standards may prevent the vulnerability of highly indebted households from building up to the same extent as earlier. Finanstilsynet's (Financial Supervisory Authority of Norway) residential mortgage lending survey for 2017 showed that fewer new loans were granted to borrowers with debt of more than 5 times their income or loan-to-value (LTV) ratios above 85%. The decline was most pronounced among younger borrowers, which is a group with high LTV and debt-to-income ratios. Over time, lower house price inflation will dampen debt growth and thereby help to reduce household vulnerabilities.

### Higher corporate credit growth

Enterprises have ample access to credit. After remaining moderate in recent years, growth in corporate credit from domestic sources increased in 2017 (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). Corporate foreign debt has continued to fall. Corporate credit growth remains low compared with previous periods, and signals low risk in the heatmap (see Chart 5.24 on page 59).

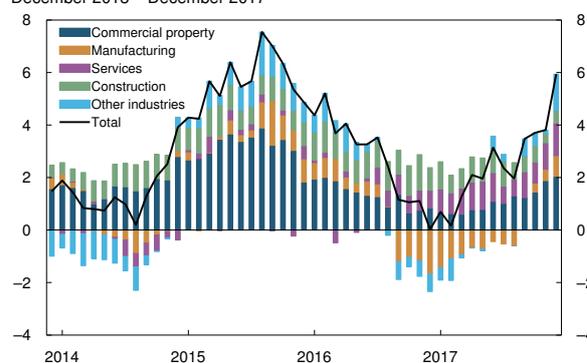
Risk premiums in the Norwegian bond market declined through 2017, in both high-yield and low-yield

Chart 5.6 Household debt ratio, debt service ratio and interest burden.<sup>1)</sup> Percent. 1983 Q1 – 2017 Q3



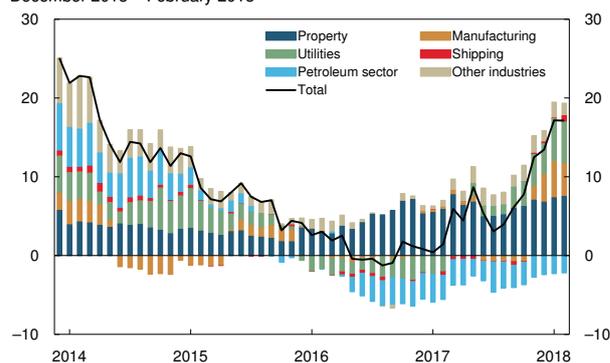
<sup>1)</sup> The debt ratio is loan debt as a percentage of disposable income. The interest burden is calculated as interest expenses as a percentage of disposable income plus interest expenses. The debt service ratio also includes estimated principal payments on an 18-year mortgage. Disposable income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

Chart 5.7 Bank and mortgage company lending to non-financial enterprises by industry. Twelve-month change in stock. Percent. December 2013 – December 2017



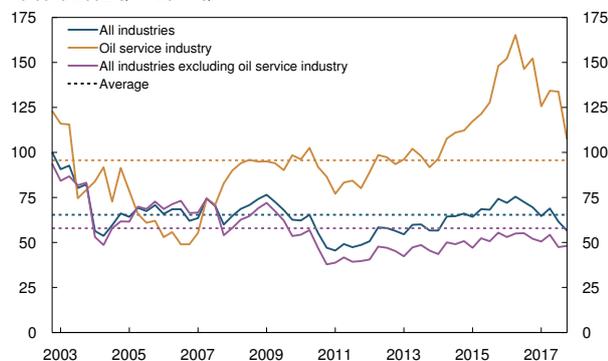
Sources: Statistics Norway and Norges Bank

Chart 5.8 Lending to Norwegian non-financial enterprises in the Norwegian bond market by industry. Twelve-month change in stock. Percent. December 2013 – February 2018



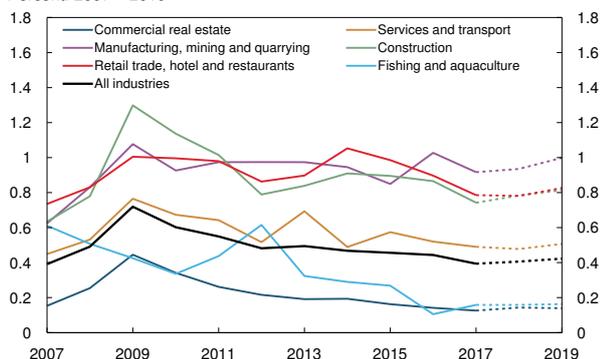
Sources: Stamdاتا and Norges Bank

Chart 5.9 Net debt ratio,<sup>1)</sup> Listed companies.<sup>2)</sup>  
Percent. 2002 Q4 – 2017 Q4



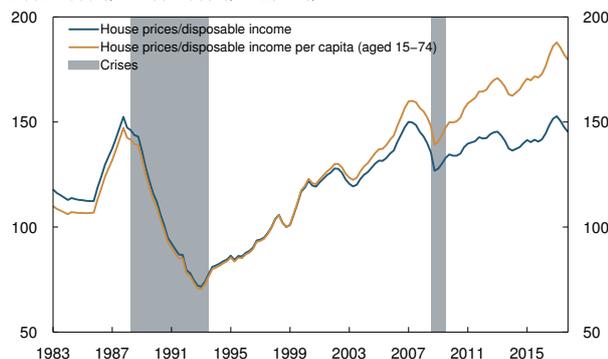
1) Net interest-bearing debt as a share of equity.  
2) Norwegian non-financial enterprises listed on Oslo Børs, excluding oil and gas extraction.  
Sources: Bloomberg and Norges Bank

Chart 5.10 Estimated credit risk<sup>1)</sup> by industry.  
Percent. 2007 – 2019<sup>2)</sup>



1) Estimated bankruptcy-exposed bank debt as a share of total bank debt in each industry.  
2) Broken lines are projections.  
Source: Norges Bank

Chart 5.11 House prices relative to disposable income.<sup>1)</sup>  
Index. 1998 Q4 = 100. 1983 Q1 – 2017 Q4



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 – 2017 Q4.  
Sources: Eiendomsverdi, Finn.no, Norwegian Association of Real Estate Agents (NEF), Real Estate Norway, Statistics Norway and Norges Bank

segments. Low risk premiums have helped make bond market funding more attractive. In 2017, almost NOK 90bn in corporate bonds was issued by Norwegian enterprises, which is almost twice as much as in 2015 and 2016. The beginning of 2018 has also been marked by a fairly high volume of bond issuance.

Commercial real estate accounts for the largest share of the growth in credit from banks and the bond market, with growth accelerating in 2017. Over the past year, bond issues have increased markedly, not only in volume, but also in number. This may suggest that the number of real estate companies raising credit in the bond market has increased.

Growth in lending to manufacturing has been weak in the past few years, but picked up towards the end of 2017. Large bond issues by Norsk Hydro and Yara contributed to the high volume of bond issuance in manufacturing around the turn of the year.

Despite increased corporate credit growth, debt ratios of listed companies have shown a downward trend since 2016 Q2 (Chart 5.9). For non-oil service industries, equity capital has increased faster than overall debt. Net interest-bearing debt in the oil service industry has fallen, resulting in a marked decline in debt ratios since 2015 Q2. Debt ratios are nevertheless high and debt-servicing capacity is low for companies in this industry compared with the period prior to the fall in oil prices.

According to estimated bankruptcy probabilities, corporate credit risk in 2018 is broadly unchanged on 2017 (Chart 5.10).<sup>1</sup> Credit risk is highest in manufacturing, mining and quarrying, followed by retail trade, hotels and restaurants and construction. These industries account for approximately 30% of bank debt in the estimation sample.

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

<sup>1</sup> 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.

### 5.3 PROPERTY PRICES

Residential and commercial property prices have risen sharply over a long period. The ratio of house prices to disposable income has declined in recent quarters owing to the decrease in house prices (Chart 5.11). The correction in the housing market has reduced the risk of an abrupt and more pronounced decline further out. In commercial real estate, estimated selling prices for the most attractive office premises in Oslo continued to rise through 2017 (Chart 5.16).

#### Moderate fall in house prices

Following a sharp rise in house prices 2016, a sharp correction in the housing market occurred in 2017. House prices have fallen in most months since the peak in spring 2017, but increased in February (Chart 5.12).<sup>2</sup> From the peak, prices have fallen by 3% for Norway as a whole. House price inflation was very high in 2016, particularly in Oslo, where the steepest falls have also occurred (Chart 5.13).

The changes to the regulation on residential mortgage loans have likely contributed to the housing market correction, but the fall in prices must also be viewed in the context of the sharp rise in prices in 2016 and an increase in the supply of dwellings. Norges Bank has recently recommended retaining the requirements in the regulation except for the special requirements for Oslo.<sup>3</sup>

Sales of existing homes have remained elevated through 2017. However, owing to the high supply of dwellings, the stock of unsold existing homes rose in the period to autumn 2017 (Chart 5.14). Supply was particularly high in Oslo. In recent months, the number of unsold existing homes has fallen, partly reflecting the likely omission of many dwellings from the statistics because they have remained unsold for longer than six months (see also the box on page 58). So far in 2018, the number of home sales has been the same as the number of homes listed for sale in Norway as a whole. In Oslo, more homes were sold than were listed for sale. This has contributed to reducing the stock of unsold homes in Oslo so far in 2018.

Chart 5.12 House prices. Twelve-month change and seasonally adjusted monthly change. Percent. January 2012 – February 2018

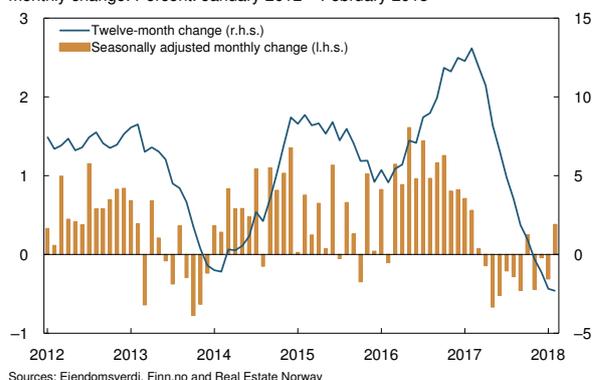


Chart 5.13 House prices in Norwegian cities. Twelve-month change. Percent. January 2012 – February 2018

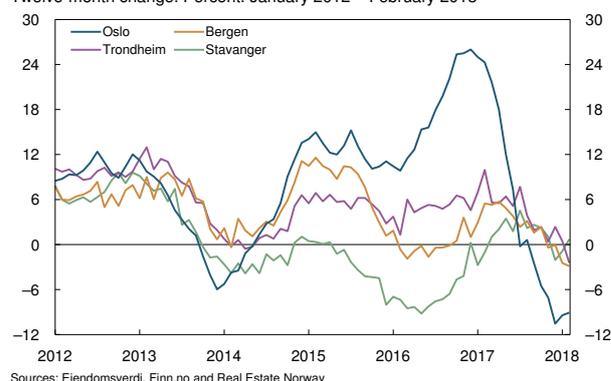
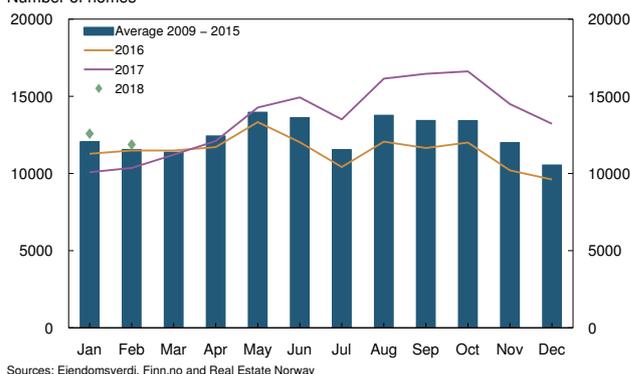


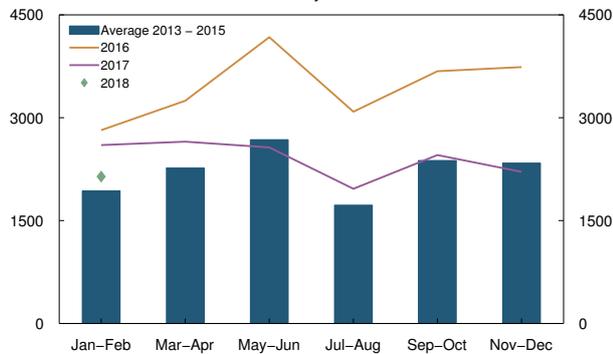
Chart 5.14 Stock of unsold existing homes at month-end. Number of homes



<sup>2</sup> There was a methodological change to the calculation of house price statistics in January 2018 (see box on page 58).

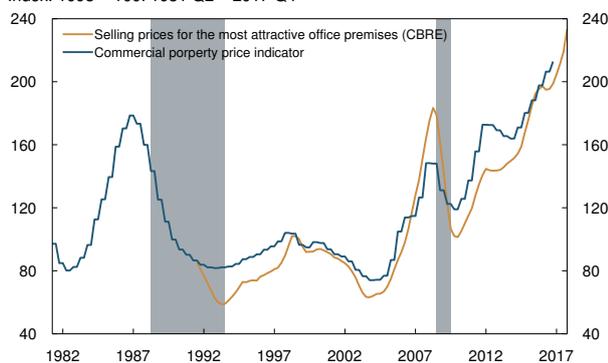
<sup>3</sup> See Norges Bank's submission to Finanstilsynet of 9 February 2018 on the regulation on requirements for new residential mortgage loans.

Chart 5.15 Total new home sales in Norway.<sup>1)</sup> Number of homes



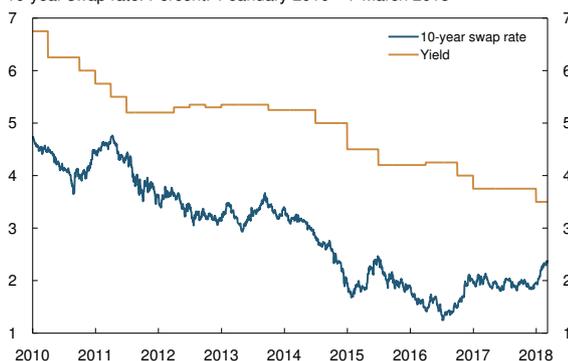
1) Statistics for Norway as from October 2013. Figures for the earlier part of 2013 have been chained back in time using the rise in sales for eastern Norway. The statistics only include homes sold in housing projects of more than 15 units. The statistics cover most of the housing market in eastern Norway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

Chart 5.16 Commercial property price indicator<sup>1)</sup> and selling prices for the most attractive office premises in Oslo<sup>2)</sup>. Deflated by the GDP deflator. Index. 1998 = 100. 1981 Q2 – 2017 Q4



1) The most recent figures for the commercial property price indicator are from 2016 Q4.  
2) Calculated based on average selling prices for the past four quarters. Annual figures 1991–1994 only. Quarterly figures are constructed using linear interpolation.  
Sources: CBRE, Dagens Næringsliv, OPAK, Statistics Norway and Norges Bank

Chart 5.17 Yields<sup>1)</sup> for the most attractive office premises in Oslo and 10-year swap rate. Percent. 1 January 2010 – 7 March 2018



1) The yield is based on data from CBRE. Quarterly observations.  
Sources: CBRE, Dagens Næringsliv and Thomson Reuters

The number of new home sales was lower in 2017 than in 2016, but close to the average for the years 2013–2015 (Chart 5.15). The most recent figures suggest that sales of new homes are stabilising. In January and February 2018, turnover was broadly unchanged from November and December 2017 and increased somewhat in eastern Norway. The supply of new homes for sale has declined in most regions, especially in Oslo. The stock of unsold new homes has remained approximately unchanged in recent months.

There are now signs that the fall in house prices is flattening out. Together with a lower number of housing starts and improved economic growth prospects, this reduces the risk of a substantial fall in house prices in the period ahead. At the same time, the decline in house prices over the past year has reduced the extent of a potential fall in the housing market. This has lowered the risk of an abrupt and more pronounced decline further out. There is nonetheless uncertainty surrounding developments, partly owing to a high level of residential construction in recent years and lower population growth.

### Higher commercial property prices

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

Selling prices for the most attractive office premises in Oslo rose markedly through 2017 (Chart 5.16).<sup>4</sup> 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.

According to *Konsensusrapporten* by the real estate company Entra, office vacancy rates fell in Oslo and Bærum in 2017, and some decline in vacancy rates is also expected by market participants in 2018. This may further push up rents and hence selling prices. On the other hand, construction activity is expected to pick up a little in the period ahead. In the slightly longer term, this may restrain the rise in rents.

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

Estimated yields on the most attractive office premises in Oslo have remained stable since end-2016, but declined slightly towards the end of 2017 (Chart 5.17). 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 increased. If the rise in long-term interest rates continues, the result may be an increase in yields, which may exert downward pressure on commercial property prices.

#### 5.4 BANKS

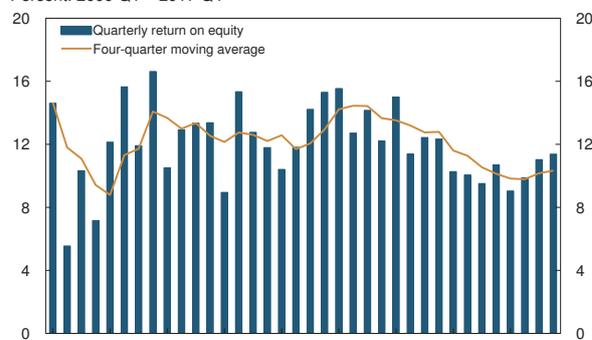
The return on equity for large Norwegian banks rose through 2017 (Chart 5.18). Stronger lending growth, increased margins and lower losses contributed to higher profitability in 2017 compared with 2016. Loan losses increased somewhat between the first and second half of 2017, but the level in 2017 was considerably lower compared with 2016 (Chart 5.19). Oil-related industries continued to be the largest source of losses.

Large Norwegian banks met the total Common Equity Tier 1 (CET1) capital requirement (Pillar 1 and Pillar 2) at end-2017. Figures for 2017 Q4 show that CET1 capital ratios, taking into account proposed dividends, are in line with banks' long-term capital targets (Chart 5.20). Banks' CET1 targets are higher than the total requirement. Several large Norwegian banks have proposed a higher dividend payout ratio for 2017 than in 2016. Banks report that as earnings are solid and capital requirements have been met, there is room for higher dividend payout ratios. All Norwegian banks satisfy the leverage ratio requirement.

Twelve-month growth in bank lending to the corporate sector showed a rising trend in 2017. Lending growth for Norwegian banks and branches increased somewhat through 2017. Norwegian banks accounted for more than half of the growth in bank lending to the corporate sector in 2017.

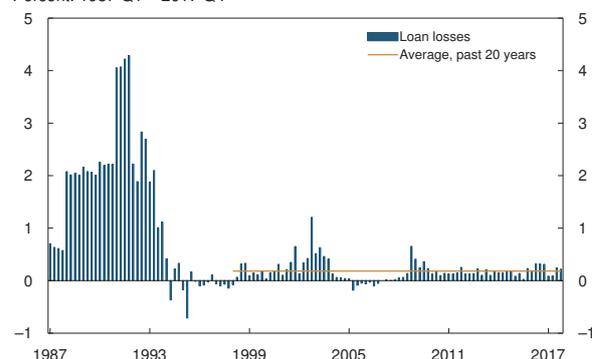
Banks have ample access to wholesale funding. In 2017, Norwegian banks obtained about the same amount of new funding in wholesale markets as in 2016. Risk premiums on senior bonds and covered bonds have fallen somewhat since the *December Report*. Banks' wholesale funding ratio has long been stable, but has decreased somewhat over the past few years.

Chart 5.18 Return on equity for large Norwegian banks.<sup>1)</sup> Percent. 2009 Q1 – 2017 Q4



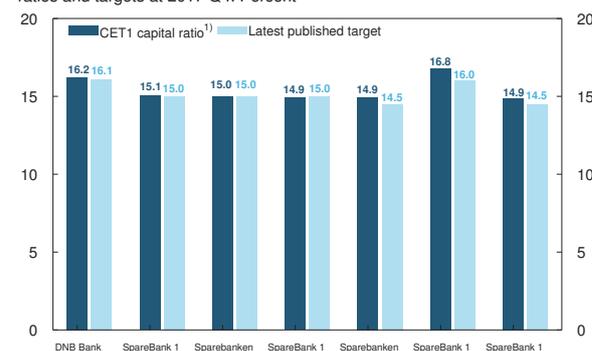
<sup>1)</sup> Banks included in 2017: DNB bank, Sparebank 1 SR-bank, Sparebanken Vest, Sparebank 1 SMN, Sparebanken Sør, Sparebank 1 Nord-Norge and Sparebanken Østlandet.  
Sources: Banks' quarterly reports and Norges Bank

Chart 5.19 Banks' loan losses as a share of gross lending to customers. Quarterly annualised. All banks and mortgage companies in Norway. Percent. 1987 Q1 – 2017 Q4



Source: Norges Bank

Chart 5.20 Large Norwegian banks' Common Equity Tier 1 (CET1) capital ratios and targets at 2017 Q4. Percent



<sup>1)</sup> Banks' reported figures for 2017 Q4, which take account of their proposed dividend payout ratios.  
Sources: Banks' quarterly reports and Norges Bank

## METHODOLOGICAL CHANGE TO THE CALCULATION OF HOUSE PRICE STATISTICS

The methodology for calculating Real Estate Norway's house price indexes has been changed and applies as from January 2018. The historical data have been updated accordingly. The methodological change has resulted in marginal changes to the national house price index (Chart 5.21), which is now an aggregation of seven regional indexes that together cover the entire country. Previously, a separate national index had been calculated based on all dwellings transacted in Norway.

In the new statistics, there is somewhat less smoothing of regional price indexes, which will therefore fluctuate more from month to month than previously. The new index for Oslo shows a somewhat higher rise in prices in 2016 and that prices began to fall earlier in 2017 (Chart 5.22). In Trondheim and Bergen, the new indexes show that house price inflation was somewhat weaker in 2016, but stronger at the beginning of 2017. The total fall in prices from peak to trough in the three cities over the past year is fairly similar before and after the methodological change.

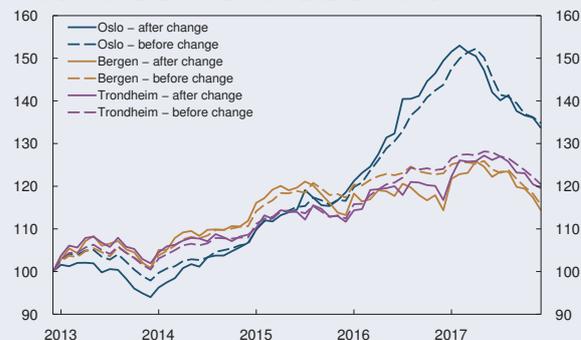
The definition of unsold homes has also been changed in connection with the methodological change (Chart 5.23). Unsold homes indicate the number of homes listed for sale on Finn.no, a classified advertisements website, but that have not been recorded as sold. Homes that had not been recorded as sold were previously excluded after nine months. Following the methodological change, homes are now excluded after six months.

Chart 5.21 House prices before and after the methodological change to the calculation of house price statistics.  
Index. December 2012 = 100. December 2012 – December 2017



Sources: Eiendomsverdi, Finn.no and Real Estate Norway

Chart 5.22 House prices before and after the methodological change to the calculation of house price statistics. Norwegian cities.  
Index. December 2012 = 100. December 2012 – December 2017



Sources: Eiendomsverdi, Finn.no and Real Estate Norway

Chart 5.23 Stock of unsold homes before and after the methodological change.<sup>1)</sup>  
Three-month moving average. Number of homes. March 2009 – December 2017



<sup>1)</sup> Before the methodological change, homes that had not been recorded as sold were excluded after nine months. Following the methodological change, homes are now excluded after six months.

Sources: Eiendomsverdi, Finn.no and Real Estate Norway

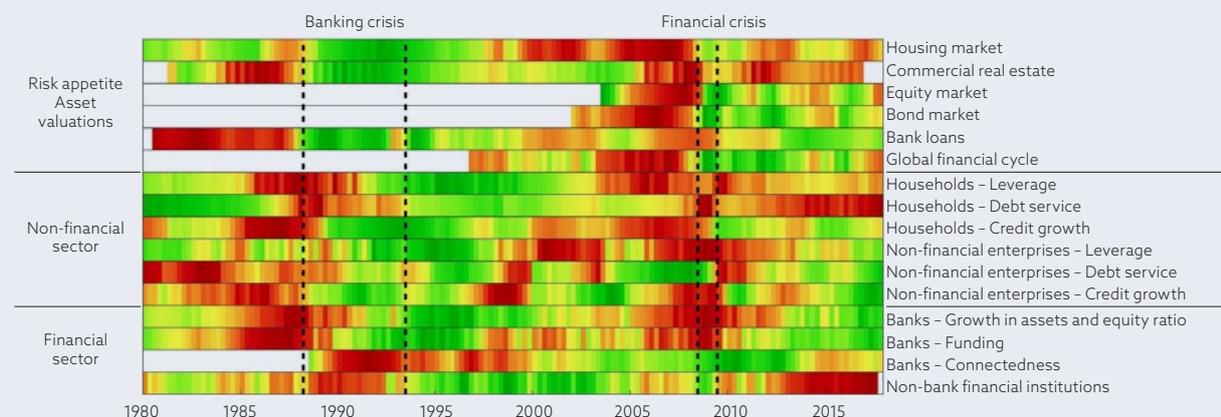
## A HEATMAP FOR MONITORING SYSTEMIC RISK

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.<sup>1</sup>

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.

<sup>1</sup> 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 5.24: Composite indicators in the heatmap. 1980 Q1 – 2017 Q4



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

## 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.<sup>1</sup> 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.<sup>2</sup> 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 <sup>1</sup>
Sweden	2%	8.7%
US	0%	4.2%
Denmark	0%	3.1%
UK	0%	2.5%
Lithuania	0%	2.0%
Finland	0%	2.0%
Poland	0%	1.8%
Canada	-	1.2%
Latvia	0%	1.2%
Marshall Islands	-	1.1%

<sup>1</sup> Share of risk-weighted assets (cf Article 3 of ESRB 2015/3). Average for the period 2016 Q1 to 2017 Q4. Includes banks that have submitted Templates C09.01 and C09.01 as part of their CRD IV reporting, with the exception of Nordea, which is no longer a Norwegian bank as from 1 January 2017.

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

<sup>1</sup> Buffer rates of up to 2.5% must be automatically recognised between EU countries. The limit is lower than 2.5% during a phasing-in period between 2016 and 2019. The European Systemic Risk Board (ESRB) recommends in general that higher rates should also be recognised (see ESRB (2014) *Recommendation on guidance for setting countercyclical buffer rates*. ESRB, July 18).

<sup>2</sup> 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 BUFFER<sup>1</sup>

The countercyclical capital buffer should satisfy the following criteria:

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

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

Experience from previous financial crises in Norway and other countries shows that both banks and borrowers often take on considerable risk in periods of strong credit growth. In an upturn, credit that rises faster than GDP can signal a build-up of imbalances. In periods of rising real estate prices, debt growth tends to accelerate. When banks grow rapidly and raise funding for new loans directly from financial markets, systemic risk may increase.

Norges Bank's advice to increase the countercyclical capital buffer will as a main rule be based on four key indicators: i) the ratio of total credit (C2 households and C3 mainland non-financial enterprises) to mainland GDP, ii) the ratio of house prices to household disposable income, iii) real commercial property prices and iv) wholesale funding ratios for Norwegian credit institutions. 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.<sup>2</sup>

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 ESRB<sup>3</sup> 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.

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

<sup>2</sup> See "Indicators of financial imbalances" on Norges Bank's website. As experience and insight are gained, the set of indicators can be developed further.

<sup>3</sup> See European Systemic Risk Board (2014) "Recommendation on guidance for setting countercyclical buffer rates". ESRB, 18 June.



# Annex

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**Monetary policy meetings in Norges Bank**

**Tables and detailed projections**

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## Monetary policy meetings in Norges Bank

Date <sup>1</sup>	Key policy rate <sup>2</sup>	Change
20 June 2018		
2 May 2018		
<b>14 March 2018</b>	<b>0.50</b>	<b>0</b>
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 <sup>3</sup>	0.50	0
14 December 2016	0.50	0
26 October 2016	0.50	0
21 September 2016	0.50	0
22 June 2016	0.50	0
11 May 2016	0.50	0
16 March 2016	0.50	-0.25
16 December 2015	0.75	0
4 November 2015	0.75	0
23 September 2015	0.75	-0.25
17 June 2015	1.00	-0.25
6 May 2015	1.25	0
18 March 2015	1.25	0
10 December 2014	1.25	-0.25
22 October 2014	1.50	0
17 September 2014	1.50	0
18 June 2014	1.50	0
7 May 2014	1.50	0
26 March 2014	1.50	0
4 December 2013	1.50	0
23 October 2013	1.50	0
18 September 2013	1.50	0
19 June 2013	1.50	0
8 May 2013	1.50	0
13 March 2013	1.50	0
19 December 2012	1.50	0
31 October 2012	1.50	0
29 August 2012	1.50	0
20 June 2012	1.50	0
10 May 2012	1.50	0

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 4/17</i> in brackets	Share of world GDP <sup>1</sup>			Percentage change from previous year. Percent				
	PPP	Market exchange rates	Trading partners <sup>4</sup>	2017	2018	2019	2020	2021
US	15	24	9	2.3 (0.1)	2.7 (0.3)	2.4 (0.2)	2 (0)	1.9
Euro area	12	16	32	2.4 (0)	2.4 (0.4)	1.9 (0.2)	1.7 (0.1)	1.5
UK	2	4	10	1.7 (0.1)	1.6 (0.1)	1.6 (0)	1.6 (0)	1.6
Sweden	0.4	0.7	11	2.5 (-0.2)	2.8 (0.1)	2.1 (0)	2.1 (0)	2.1
Other advanced economies <sup>2</sup>	7	10	19	2.4 (0)	2.3 (0.2)	2.1 (0)	1.9 (-0.1)	2.0
China	18	15	7	6.9 (0.1)	6.4 (0.2)	6 (0.2)	5.8 (0)	5.8
Other emerging economies <sup>3</sup>	19	11	12	3.7 (0.1)	3.9 (0.1)	4 (0)	4 (0)	4.0
Trading partners <sup>4</sup>	73	79	100	2.9 (0.1)	2.8 (0.3)	2.5 (0.1)	2.3 (0)	2.2
World (PPP) <sup>5</sup>	100	100		3.7 (0.1)	3.9 (0.2)	3.8 (0.1)	3.7 (0)	3.7
World (market exchange rates) <sup>5</sup>	100	100		3.2 (0.1)	3.3 (0.2)	3.1 (0.1)	2.9 (0)	2.9

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 4/17</i> in brackets	Trading partners <sup>4</sup>	Trading partners in the interest rate aggre- gate <sup>5</sup>	Percentage change from previous year. Percent				
			2017	2018	2019	2020	2021
US	7	20	2.1 (-0.1)	2.3 (0.1)	2.4 (0.1)	2.4 (0.1)	2.3
Euro area	34	54	1.5 (0)	1.5 (0.1)	1.5 (0)	1.6 (0)	1.7
UK	7	5	2.6 (-0.1)	2.6 (0)	2.3 (0)	2.1 (0)	2.1
Sweden <sup>1</sup>	14	12	2 (0.1)	1.7 (-0.2)	1.9 (-0.2)	2 (0)	2.0
Other advanced economies <sup>2</sup>	15		1.2 (0.1)	1.3 (0)	1.7 (0)	1.8 (0)	1.7
China	12		1.6 (0)	2.4 (0.2)	2.4 (0)	2.7 (0)	2.7
Other emerging economies <sup>3</sup>	10		4 (0)	4.3 (0)	4.4 (0)	4.4 (0)	4.4
Trading partners <sup>4</sup>	100		1.9 (0)	2 (0)	2.1 (0)	2.1 (0)	2.2
Trading partners in the interest rate aggregate <sup>5</sup>			1.7 (-0.1)	1.8 (0.1)	1.8 (0)	1.9 (0)	1.9

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

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

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

4 Import weights, 25 main trading partners.

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

Sources: IMF, Thomson Reuters and Norges Bank

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

	2017		2018	
	Q3	Q4	Q1	Q2
Actual	0.7	0.6		
Projections in MPR 4/17		0.6	0.6	
Projections in MPR 1/18			0.7	0.7

Sources: Statistics Norway and Norges Bank

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

	2017	2018			2018		
	Dec	Jan	Feb	Mar	Apr	May	Jun
Actual	2.4	2.4	2.4				
Projections in MPR 4/17	2.5	2.4	2.4	2.4			
Projections in MPR 1/18				2.3	2.3	2.3	2.2

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

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

	2017			2018			
	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Actual	4.0	4.1	4.1				
Projections in MPR 4/17	3.9	3.8	3.8	3.8			
Projections in MPR 1/18				4.0	4.0	4.0	3.9

Sources: Statistics Norway and Norges Bank

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

	2017			2018			
	Dec	Jan	Feb	Mar	Apr	May	Jun
<b>Consumer price index (CPI)</b>							
Actual	1.6	1.6	2.2				
Projections in MPR 4/17	1.7	1.7	2.1	1.9			
Projections in MPR 1/18				2.4	2.4	2.1	1.9
<b>CPI-ATE<sup>1</sup></b>							
Actual	1.4	1.1	1.4				
Projections in MPR 4/17	1.3	1.4	1.7	1.6			
Projections in MPR 1/18				1.5	1.6	1.6	1.4
<b>IMPORTED GOODS IN THE CPI-ATE<sup>1</sup></b>							
Actual	0.5	0.2	-0.1				
Projections in MPR 4/17	0.3	0.7	1.1	1.0			
Projections in MPR 1/18				0.6	1.1	0.8	0.7
<b>DOMESTICALLY PRODUCED GOODS AND SERVICES IN THE CPI-ATE<sup>1,2</sup></b>							
Actual	1.8	1.3	1.9				
Projections in MPR 4/17	1.8	1.7	1.9	1.9			
Projections in MPR 1/18				1.8	1.8	1.9	1.7

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 4/17</i> in brackets	In billions of NOK 2017	Percentage change from previous year (unless otherwise stated)				
		Projections				
		2017	2018	2019	2020	2021
<b>Prices and wages</b>						
Consumer price index (CPI)		1.8 (-0.1)	2.1 (0.2)	1.7 (-0.1)	1.8 (-0.3)	2.0
CPI-ATE <sup>1</sup>		1.4 (0)	1.5 (-0.2)	1.8 (-0.1)	1.8 (-0.3)	2.0
Annual wages <sup>2</sup>		2.3 (-0.1)	2.9 (0)	3.4 (-0.2)	3.8 (-0.2)	3.9
<b>Real economy</b>						
Gross domestic product (GDP)	3279	1.8 (-0.1)	1.9 (1.0)	1.4 (-0.1)	2.3 (0.2)	1.9
GDP, mainland Norway	2804	1.8 (-0.1)	2.6 (0.3)	2.0 (-0.2)	1.7 (-0.2)	1.4
Output gap, mainland Norway (level) <sup>3</sup>		-0.9 (0)	-0.2 (0.2)	0.2 (0)	0.4 (-0.1)	0.3
Employment, persons, QNA		1.1 (0.1)	1.3 (0.3)	0.9 (-0.1)	0.7 (-0.1)	0.4
Labour force, LFS <sup>4</sup>		-0.4 (0.1)	1.1 (0.2)	1.0 (-0.3)	0.7 (-0.1)	0.4
LFS unemployment (rate, level)		4.2 (0)	3.8 (0.1)	3.5 (0.1)	3.3 (0)	3.2
Registered unemployment (rate, level)		2.7 (0)	2.3 (-0.1)	2.2 (-0.2)	2.2 (-0.1)	2.2
<b>Demand</b>						
Mainland demand <sup>5</sup>	2903	3.0 (0)	2.0 (-0.2)	1.7 (0)	1.4 (-0.2)	1.3
- Household consumption <sup>6</sup>	1475	2.3 (-0.1)	2.6 (0.3)	2.0 (-0.2)	1.8 (-0.4)	1.8
- Business investment	255	5.1 (-0.9)	7.2 (1.0)	3.2 (0.2)	1.1 (0.2)	-0.3
- Housing investment	203	7.1 (-2.6)	-6.0 (-6.0)	-2.5 (0.5)	-0.1 (0.4)	0.5
- Public demand <sup>7</sup>	969	2.6 (0.7)	1.5 (0)	1.6 (0.1)	1.3 (-0.1)	1.0
Petroleum investment <sup>8</sup>	150	-4.0 (-2.0)	7.4 (1.4)	8.2 (2.2)	2.9 (-0.1)	-1.7
Mainland exports <sup>9</sup>	607	0.4 (-0.4)	4.8 (0.1)	4.8 (0.1)	3.8 (0.4)	3.5
Imports	1082	2.2 (0.5)	3.3 (0.4)	3.3 (1.0)	2.4 (0.1)	1.8
<b>House prices and debt</b>						
House prices		5.9 (0.2)	-0.7 (0.9)	2.0 (-0.9)	2.6 (-1.6)	2.9
Credit to households (C2) <sup>10</sup>		6.5 (0.2)	6.2 (0.3)	6.0 (0.2)	5.7 (0)	5.5
<b>Interest rate and exchange rate (level)</b>						
Key policy rate <sup>11</sup>		0.5 (0)	0.6 (0.1)	1.1 (0.2)	1.5 (0.1)	2.0
Import-weighted exchange rate (I-44) <sup>12</sup>		104.5 (0)	103.7 (-0.7)	101.2 (-0.9)	100.5 (-0.6)	100.3
Money market rates, trading partners <sup>13</sup>		0.1 (0)	0.4 (0.1)	0.7 (0.2)	1.1 (0.3)	1.4
<b>Oil price</b>						
Oil price, Brent Blend. USD per barrel <sup>14</sup>		54 (0)	65 (4)	61 (2)	58 (1)	57

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.

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

6 Includes consumption for non-profit organisations.

7 General government gross fixed investment and consumption.

8 Extraction and pipeline transport.

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

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

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

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

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

14 Spot price 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 5-9 March 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

NORGES BANK  
Bankplassen 2, P.O. Box 1179 Sentrum, N-0107 Oslo, Norway  
[www.norges-bank.no](http://www.norges-bank.no)

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