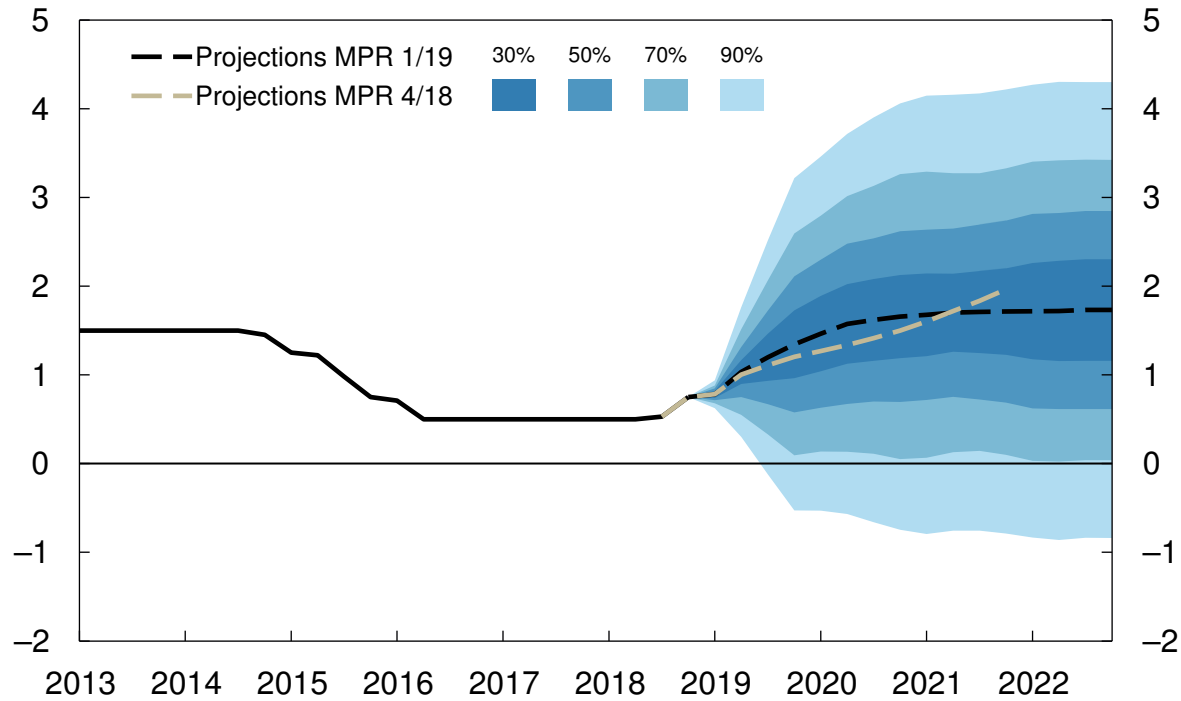


Chart 1.1a Policy rate with fan chart<sup>1)</sup>.  
 Percent. 2013 Q1 – 2022 Q4<sup>2)</sup>

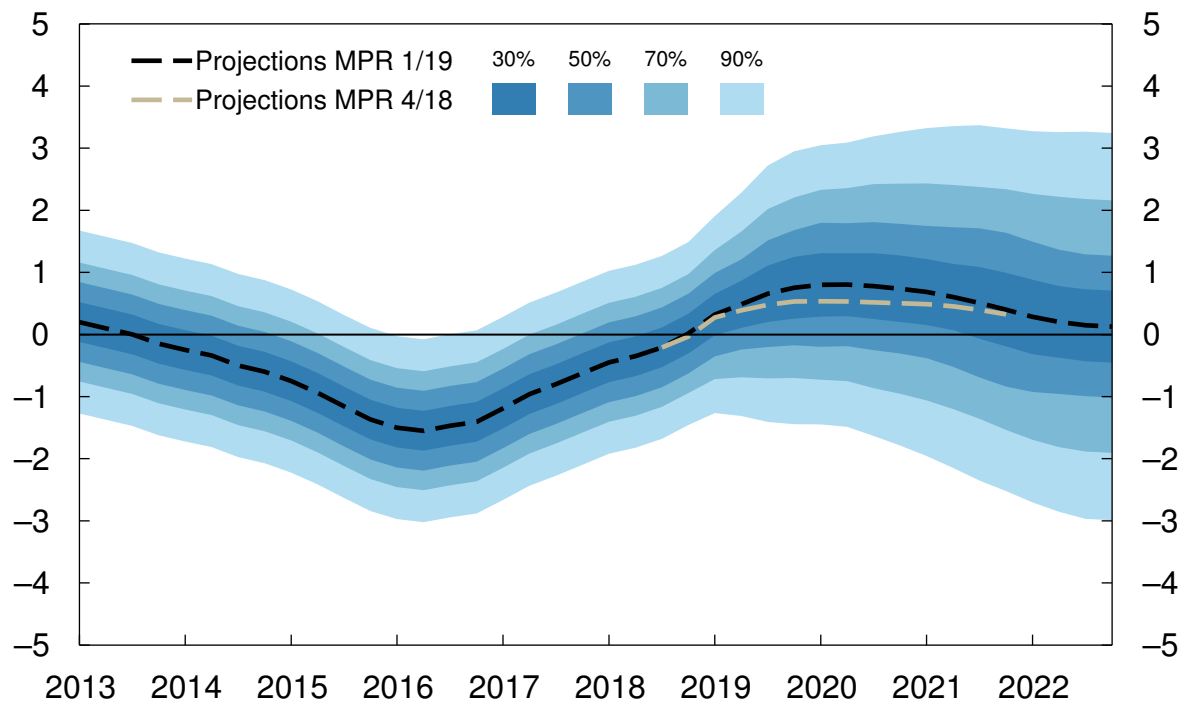


1) The fan chart is based on historical experience and stochastic simulations in Norges Bank's main macroeconomic model, NEMO. It does not take into account that a lower bound for the interest rate exists.

2) Projections for 2019 Q1 – 2022 Q4.

Source: Norges Bank

Chart 1.1b Estimated output gap<sup>1)</sup> with fan chart<sup>2)</sup>.  
 Percent. 2013 Q1 – 2022 Q4

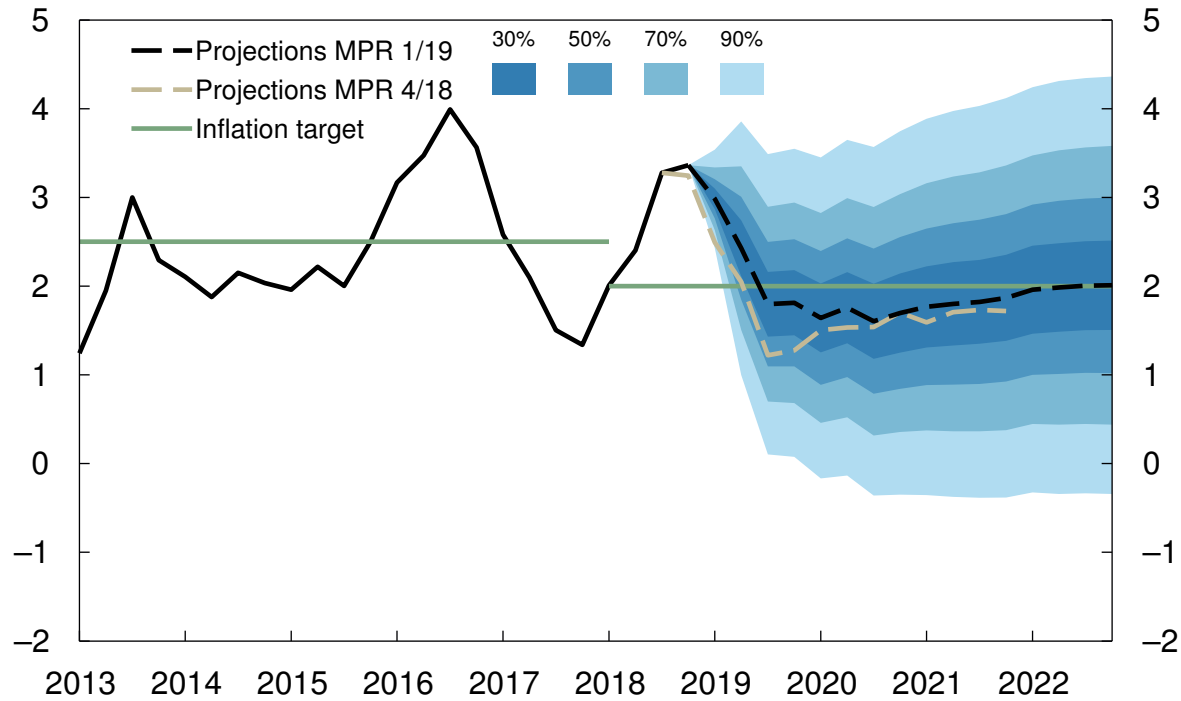


1) The output gap measures the percentage deviation between mainland GDP and estimated potential mainland GDP.

2) The fan chart is based on historical experience and stochastic simulations in Norges Bank's main macroeconomic model, NEMO.

Source: Norges Bank

Chart 1.1c Consumer price index (CPI) with fan chart<sup>1)</sup>.  
 Four-quarter change. Percent. 2013 Q1 – 2022 Q4<sup>2)</sup>

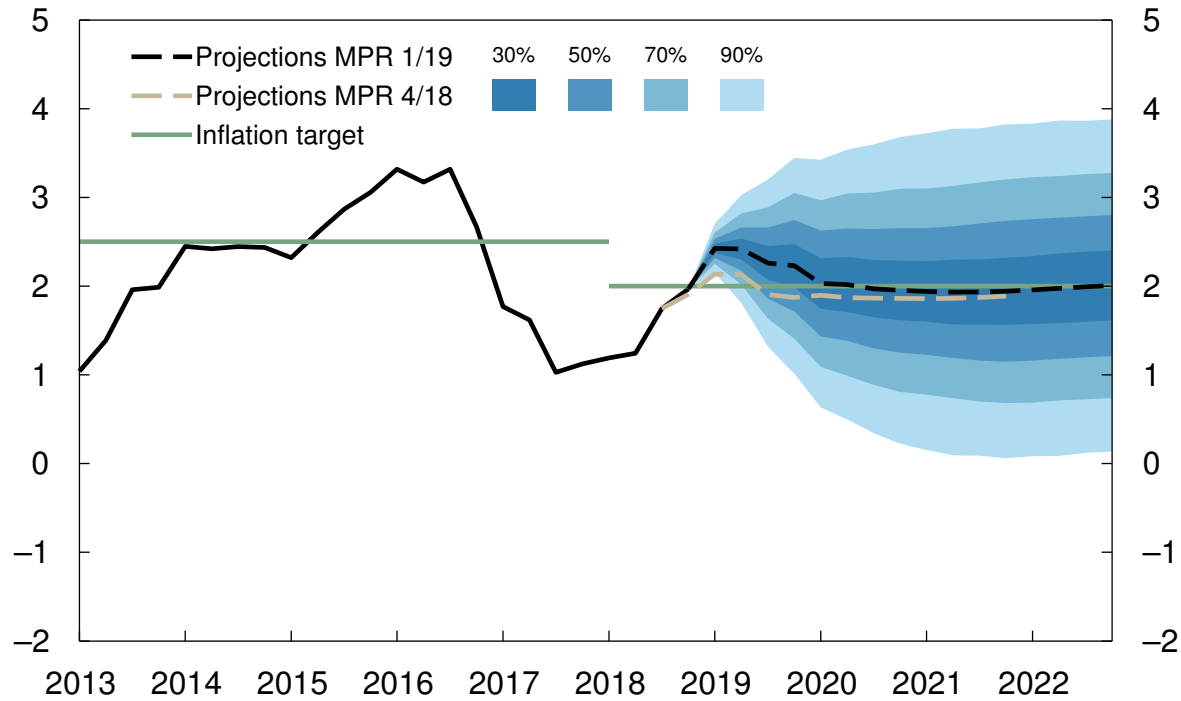


1) The fan chart is based on historical experience and stochastic simulations in Norges Bank's main macroeconomic model, NEMO.

2) Projections for 2019 Q1 – 2022 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. 2013 Q1 – 2022 Q4<sup>3)</sup>



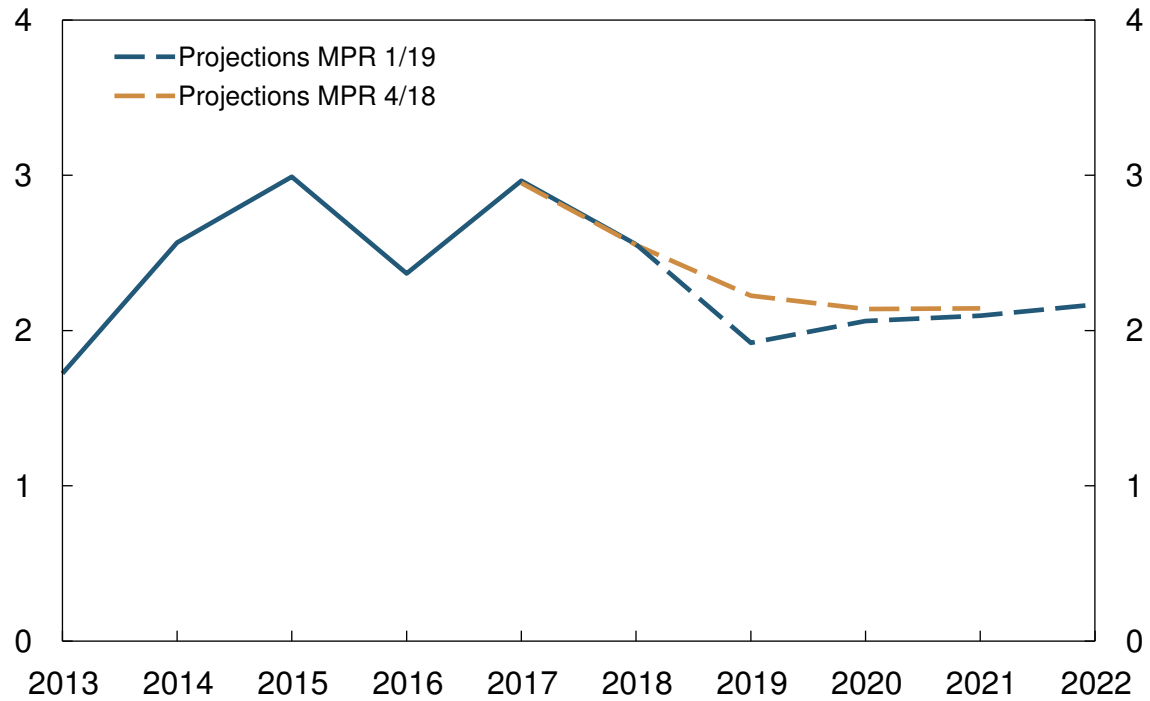
1) CPI adjusted for tax changes and excluding energy products.

2) The fan chart is based on historical experience and stochastic simulations in Norges Bank's main macroeconomic model, NEMO.

3) Projections for 2019 Q1 – 2022 Q4.

Sources: Statistics Norway and Norges Bank

Chart 1.2 GDP for Norway's trading partners.<sup>1)</sup>  
Annual change. Percent. 2013 – 2022<sup>2)</sup>

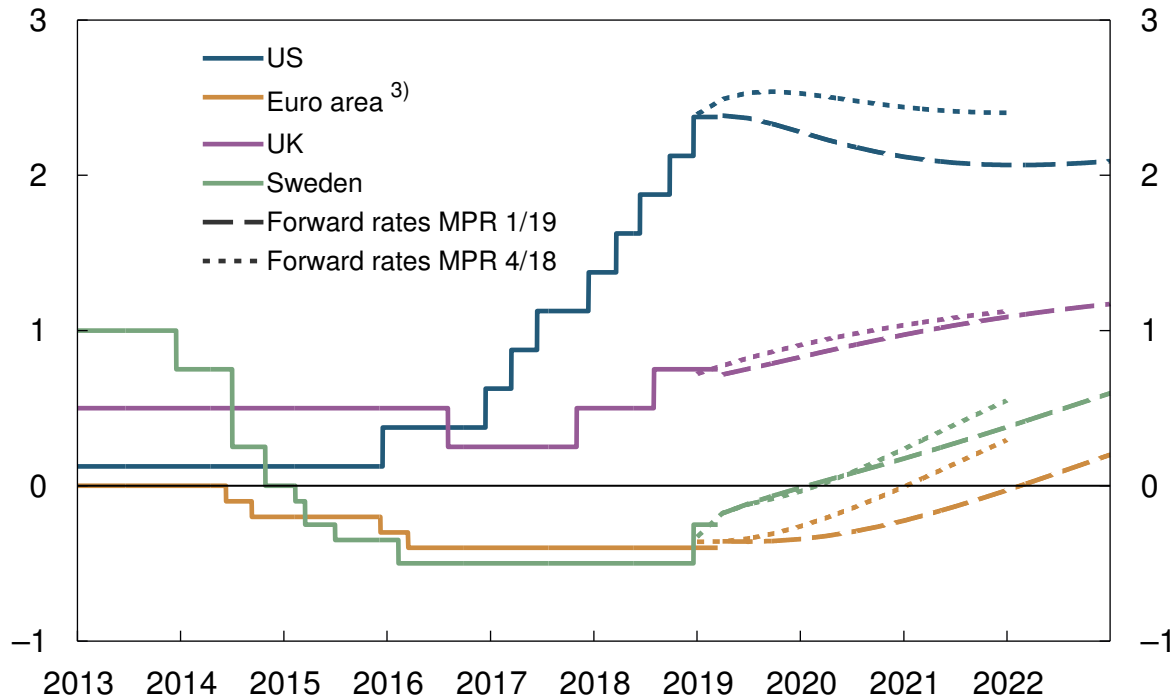


1) Export weights. Twenty-five main trading partners.

2) Projections for 2019 – 2022.

Sources: Thomson Reuters and Norges Bank

Chart 1.3 Policy rates and estimated forward rates<sup>1)</sup> in selected countries.  
 Percent. 1 January 2013 – 31 December 2022<sup>2)</sup>



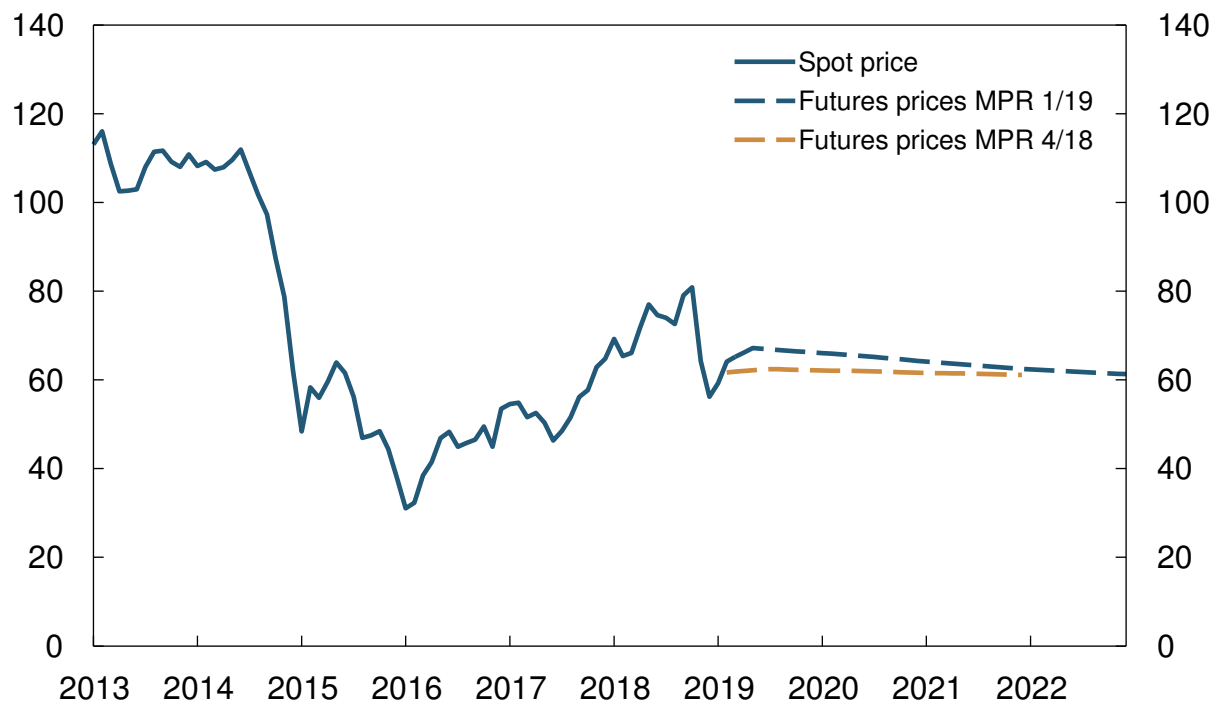
1) Forward rates at 7 December 2018 for MPR 4/18 and 15 March 2019 for MPR 1/19. Forward rates are estimated based on Overnight Index Swap (OIS) rates.

2) Daily data through 15 March 2019. Quarterly data from 2019 Q2.

3) ECB deposit facility rate. Eonia from 2019 Q2.

Sources: Bloomberg, Thomson Reuters and Norges Bank

Chart 1.4 Oil price.<sup>1)</sup> USD/barrel. January 2013 – December 2022<sup>2)</sup>

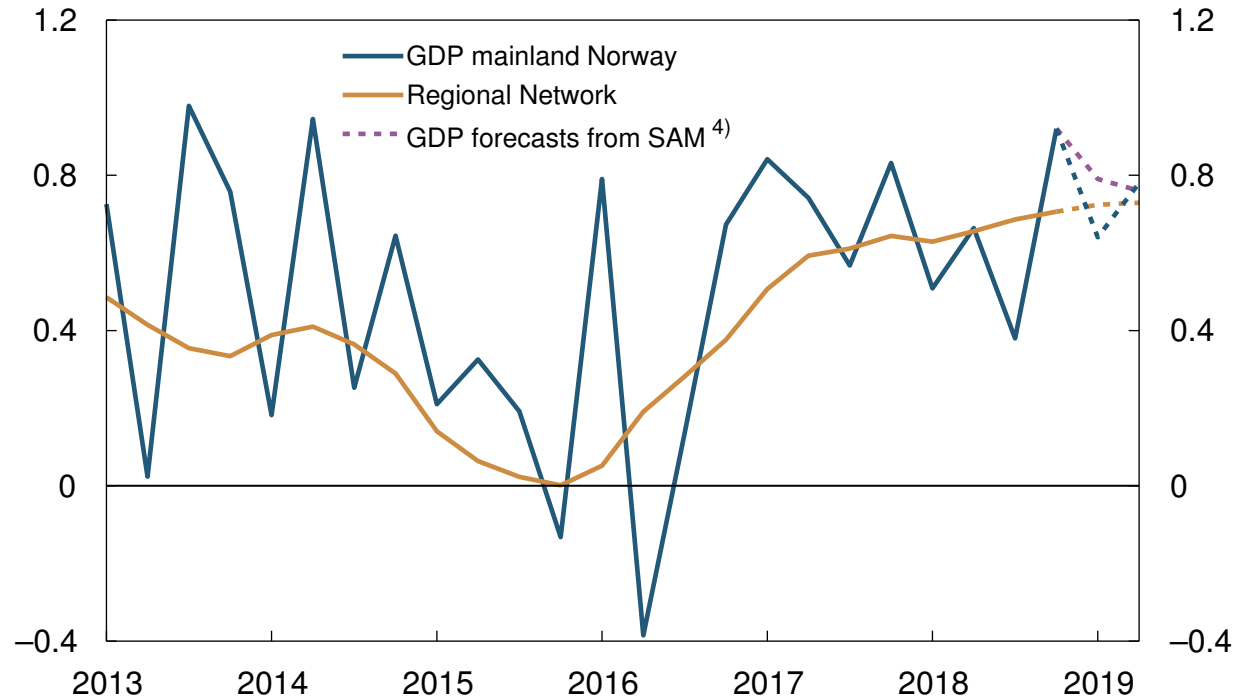


1) Brent Blend.

2) Futures prices on 7 December 2018 for MPR 4/18 and on 15 March 2019 for MPR 1/19.

Sources: Thomson Reuters and Norges Bank

Chart 1.5 GDP for mainland Norway<sup>1)</sup> and the Regional Network's indicator of output growth<sup>2)</sup>. Quarterly change. Percent. 2013 Q1 – 2019 Q2<sup>3)</sup>



1) Seasonally adjusted.

2) Reported output growth past three months converted to quarterly figures. Quarterly figures are calculated by weighting together three-month figures on the basis of survey timing. Quarterly figures are calculated by weighting together three-month figures on the basis of survey timing. For 2019 Q1, expected output growth is estimated by reported growth over the past three months and expected growth in the next six months as reported in February. 2019 Q2 is expected growth in the next six months as reported in February.

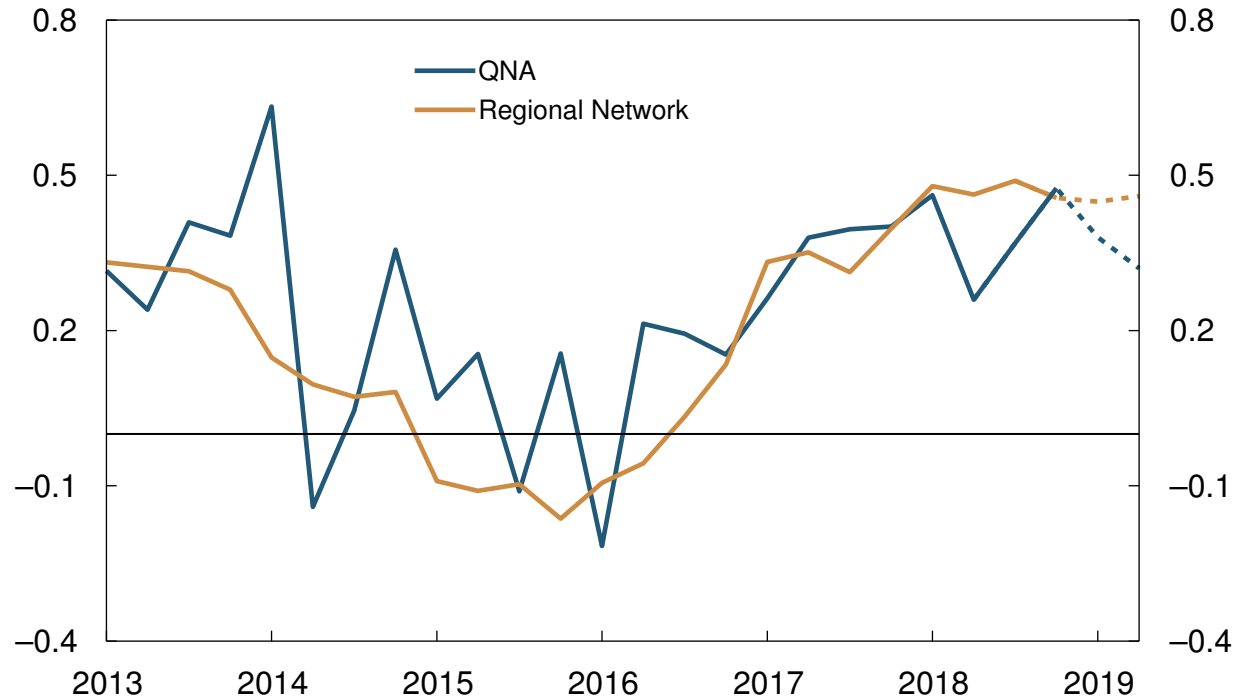
3) Projections for 2019 Q1 – 2019 Q2 (broken lines).

4) System for Averaging short-term Models.

Sources: Statistics Norway and Norges Bank



Chart 1.6 Employment growth according to the quarterly national accounts<sup>1)</sup> and Regional Network<sup>2)</sup>. Quarterly change. Percent. 2013 Q1 – 2019 Q2<sup>3)</sup>



1) Seasonally adjusted.

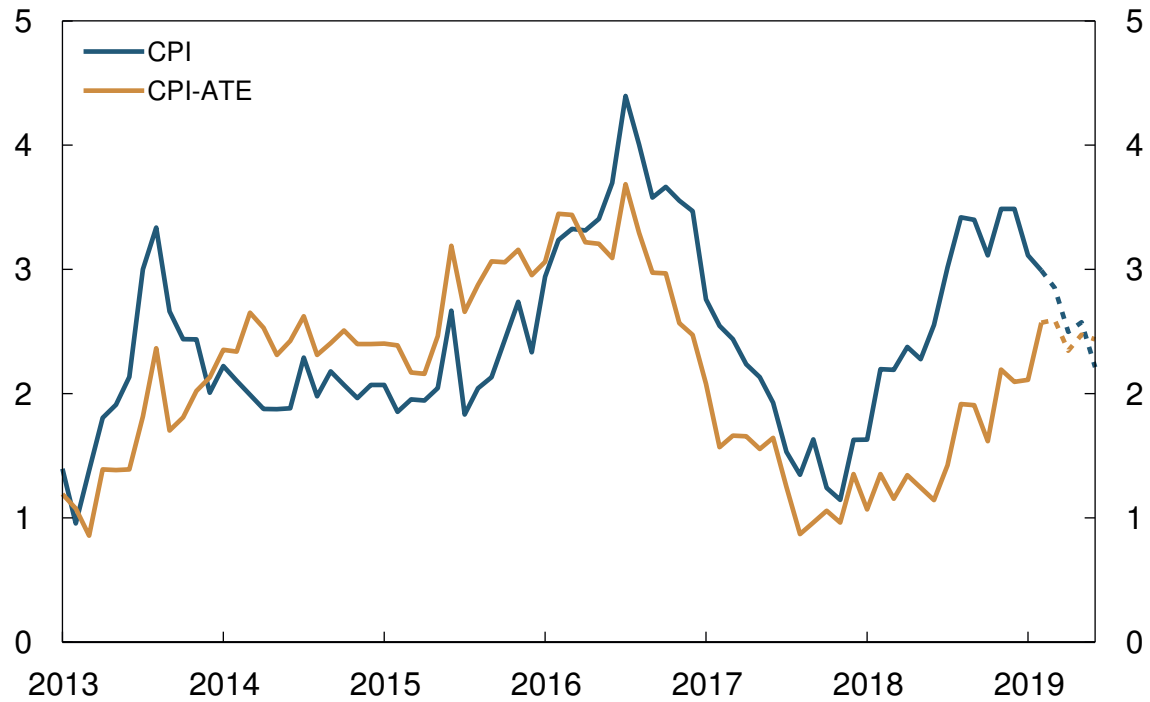
2) Reported employment growth for the past three months converted to quarterly figures. Quarterly figures are calculated by weighting together three-month figures based on survey timing. For 2019 Q1, expected employment growth is estimated by weighting together reported growth over the past three months and expected growth in the next three months as reported in February. 2019 Q2 is expected growth in the next three months as reported in February.

3) Projections for 2019 Q1 – 2019 Q2 (broken lines).

Sources: Statistics Norway and Norges Bank

Chart 1.7 CPI and CPI-ATE<sup>1)</sup>.

Twelve-month change. Percent. January 2013 – June 2019<sup>2)</sup>

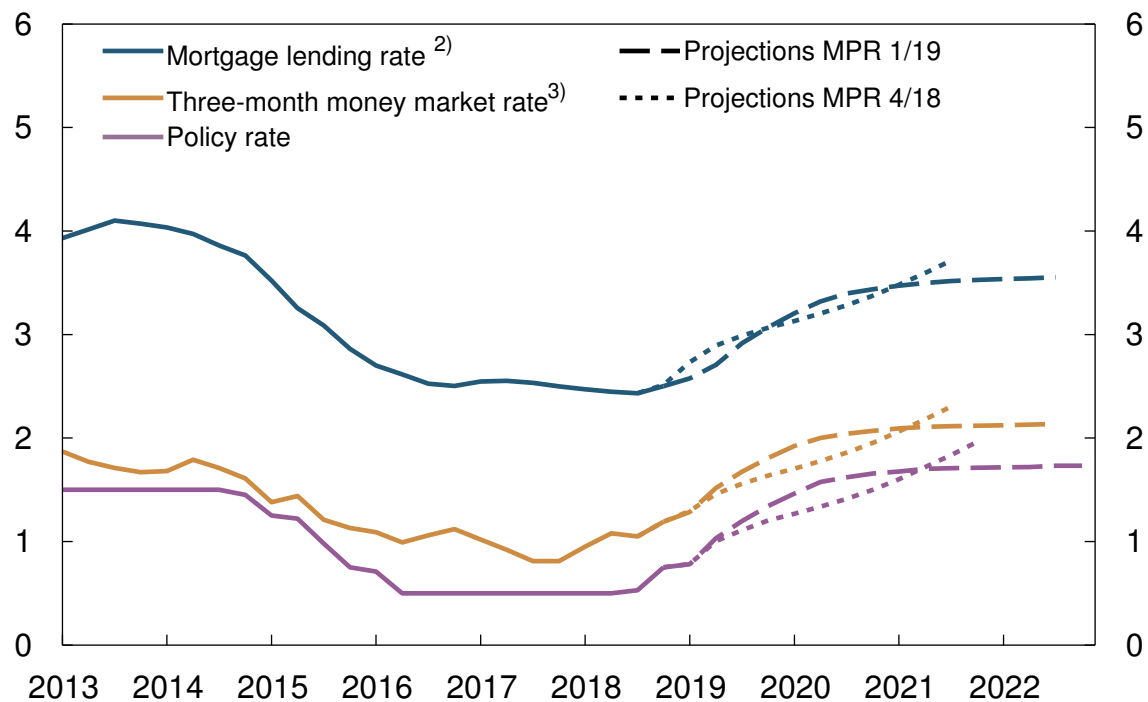


1) CPI adjusted for tax changes and excluding energy products.

2) Projections for March 2019 – June 2019 (broken lines).

Sources: Statistics Norway and Norges Bank

Chart 1.8 Interest rates. Percent. 2013 Q1 – 2022 Q4<sup>1)</sup>



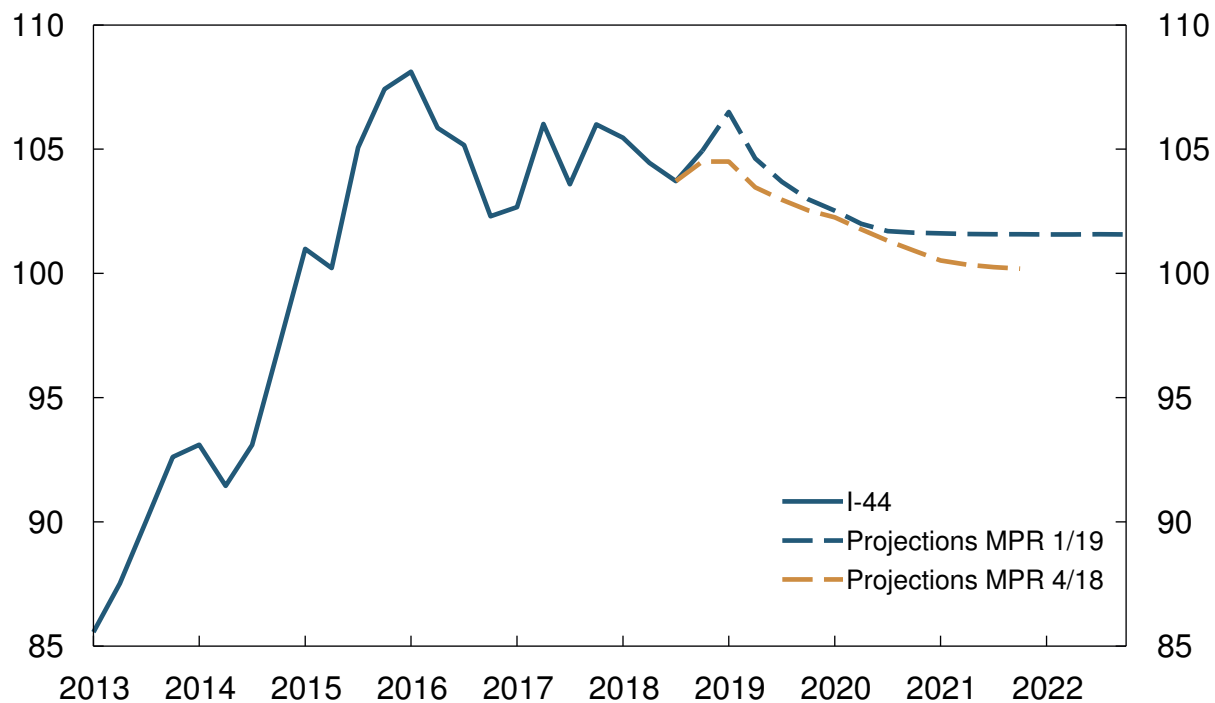
1) Policy rate projections for 2019 Q1 – 2022 Q4. For mortgage lending rate and three-month money market rate, projections for 2019 Q1 – 2022 Q3.

2) Average interest rate on outstanding housing loans to households, for the sample of banks and mortgage companies included in Statistics Norway's monthly interest rate statistics.

3) Projections are calculated as an average of the policy rate in the current and subsequent quarter plus an estimate of the money market premium.

Sources: Statistics Norway, Thomson Reuters and Norges Bank

Chart 1.9 Import-weighted exchange rate index (I-44)<sup>1)</sup>. 2013 Q1 – 2022 Q4 <sup>2)</sup>

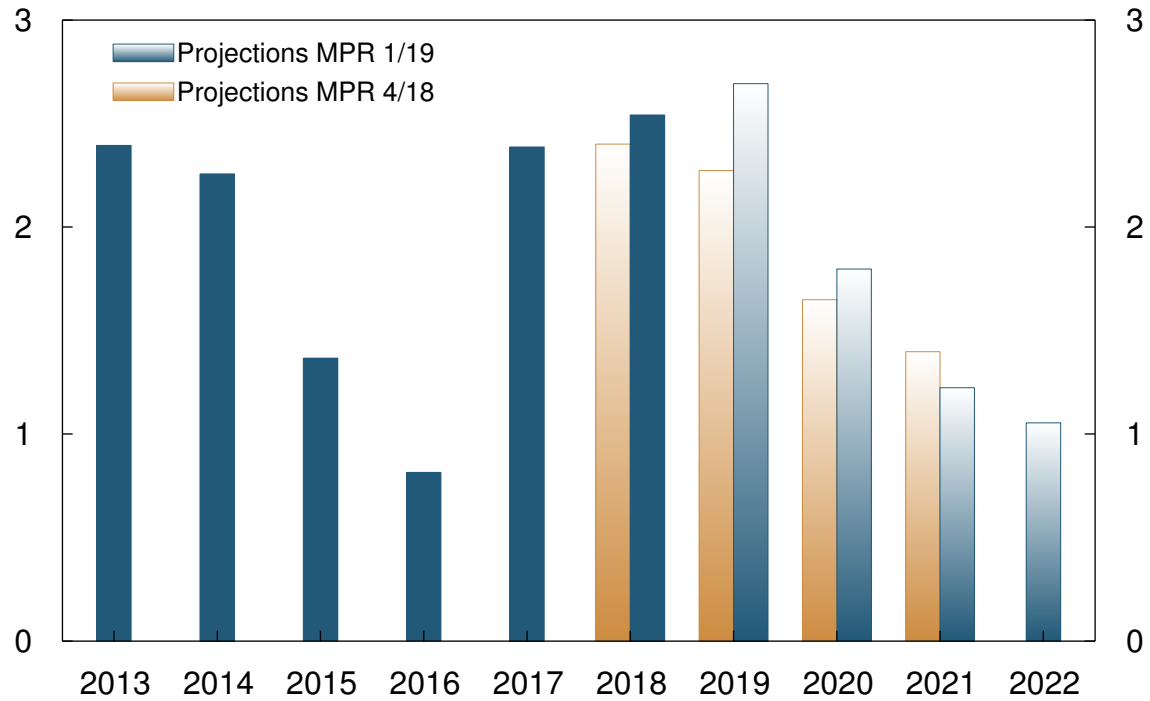


1) A positive slope denotes a weaker krone exchange rate.

2) Projections for 2019 Q1 – 2022 Q4 (broken lines).

Sources: Thomson Reuters and Norges Bank

Chart 1.10 GDP for mainland Norway.<sup>1)</sup> Annual change. Percent. 2013 – 2022<sup>2)</sup>

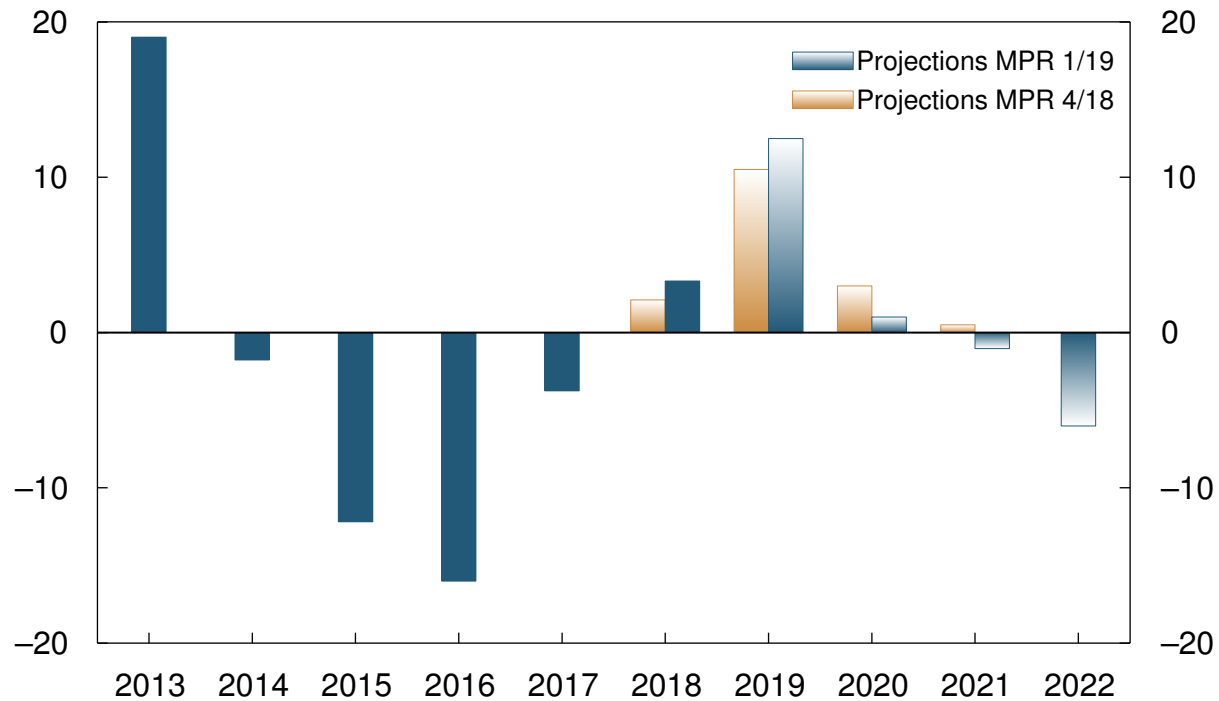


1) Working-day adjusted.

2) Projections for 2019 – 2022.

Sources: Statistics Norway and Norges Bank

Chart 1.11 Petroleum investment.<sup>1)</sup> Annual change. Percent. 2013 – 2022<sup>2)</sup>

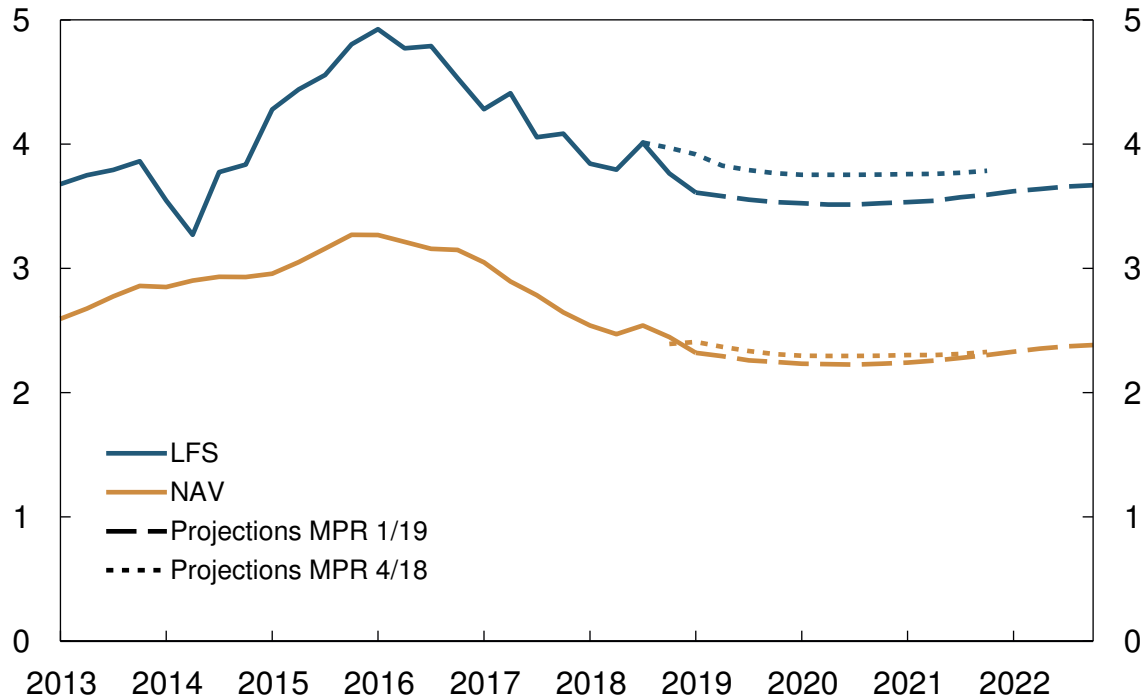


1) Working-day adjusted.

2) Projections for 2019 – 2022.

Sources: Statistics Norway and Norges Bank

Chart 1.12 Unemployment according to LFS <sup>1)</sup> and NAV <sup>2)</sup>.  
 Share of the labour force. Seasonally adjusted. Percent. 2013 Q1 – 2022 Q4 <sup>3)</sup>



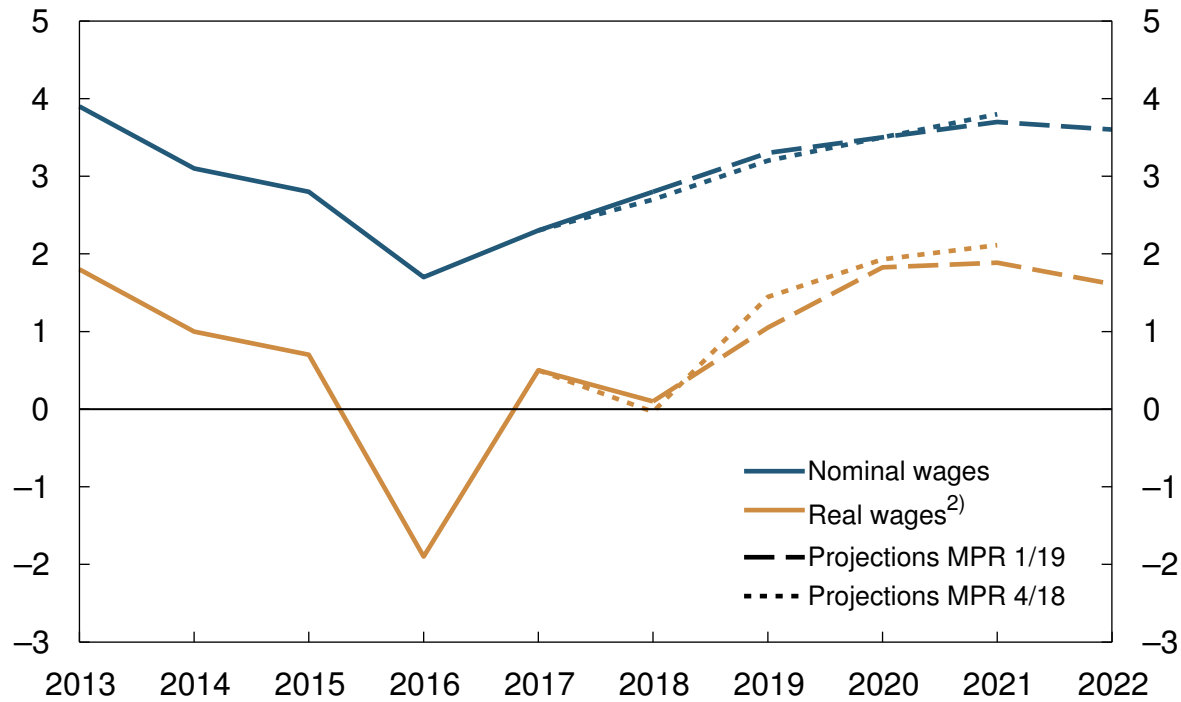
1) Labour Force Survey.

2) Registered unemployment. According to NAV, changes in NAV's routines entail, in isolation, about 0.1 percentage points higher registered unemployment as from November 2018, which is accounted for in our projections for NAV unemployment.

3) Projections for 2019 Q1 – 2022 Q4.

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

Chart 1.13 Wages. Annual change. Percent. 2013 – 2022<sup>1)</sup>



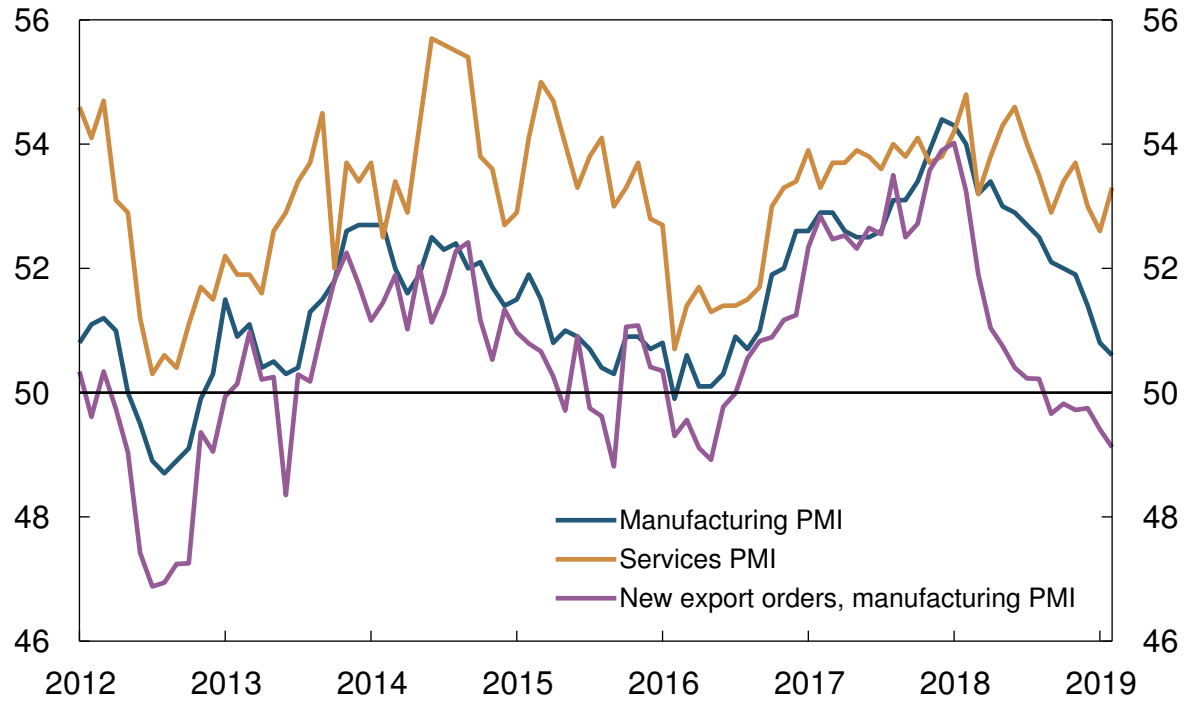
1) Projections for 2019 – 2022.

2) Nominal wage growth deflated by the CPI.

Sources: Statistics Norway and Norges Bank



Chart 2.1 Global PMI.<sup>1)</sup>  
Seasonally adjusted. Index.<sup>2)</sup> January 2012 – February 2019

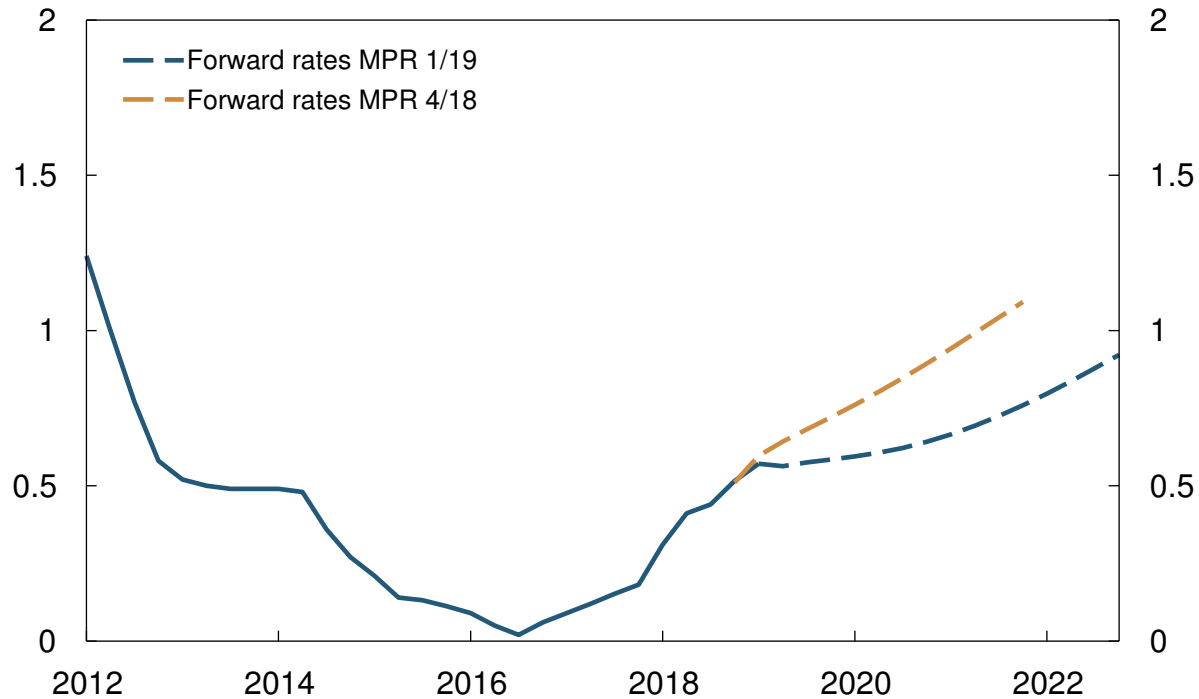


1) The weights are based on contribution to global production of goods and services.

2) Survey of purchasing managers. Diffusion index centered around 50.

Source: Thomson Reuters

Chart 2.2 Three-month money market rates for Norway's trading partners.<sup>1)</sup>  
Percent. 2012 Q1 – 2022 Q4<sup>2)</sup>

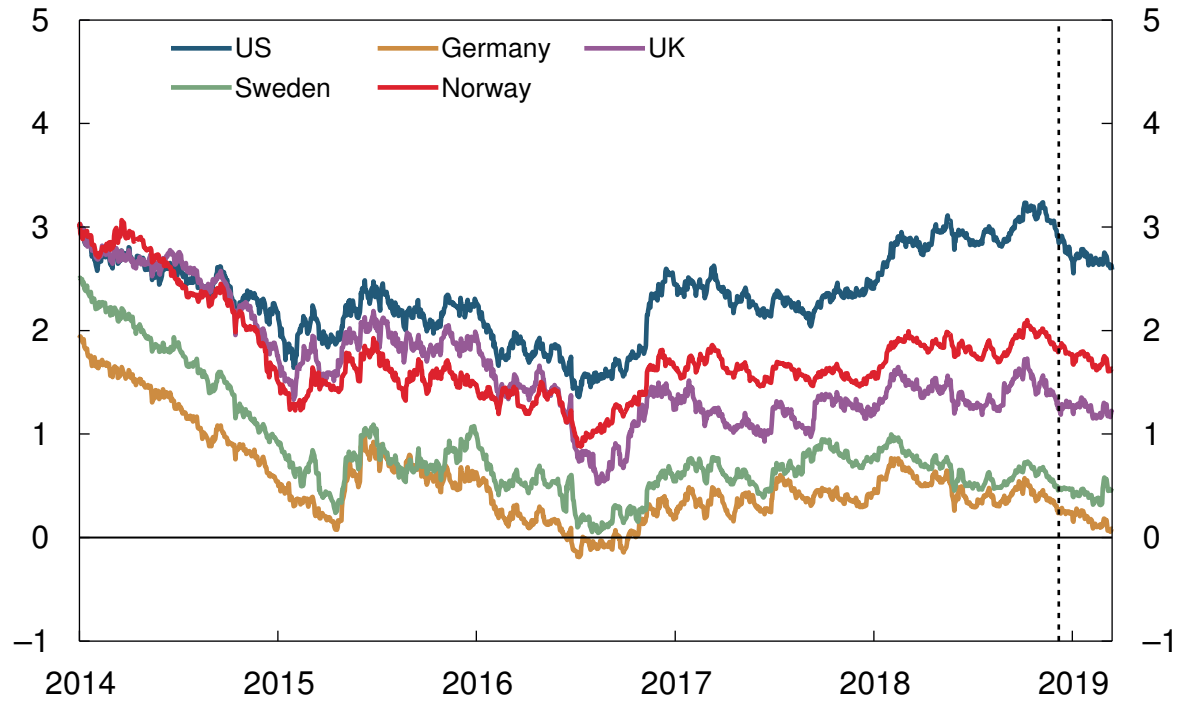


1) Based on money market rates and interest rate swaps. See Norges Bank (2015) "Calculation of the aggregate for trading partner interest rates". *Norges Bank Papers 2/2015*.

2) Forward rates at 7 December 2018 for MPR 4/18 and 15 March 2019 for MPR 1/19.

Sources: Thomson Reuters and Norges Bank

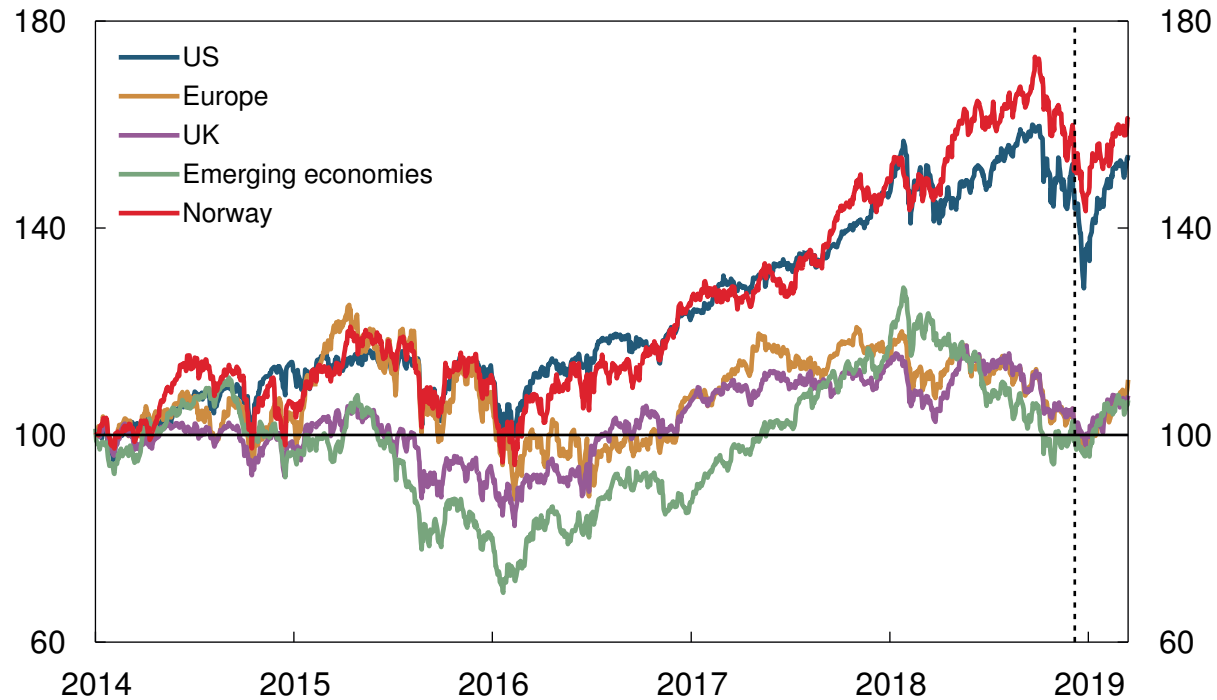
Chart 2.3 Yields on ten-year government bonds in selected countries.  
Percent. 2 January 2014 – 15 March 2019<sup>1)</sup>



1) MPR 4/18 was based on information in the period up to 7 December 2018, indicated by the vertical line.  
Source: Bloomberg

Chart 2.4 Equity price indexes in selected countries.<sup>1)</sup>

Index. 2 January 2014 = 100. 2 January 2014 – 15 March 2019<sup>2)</sup>

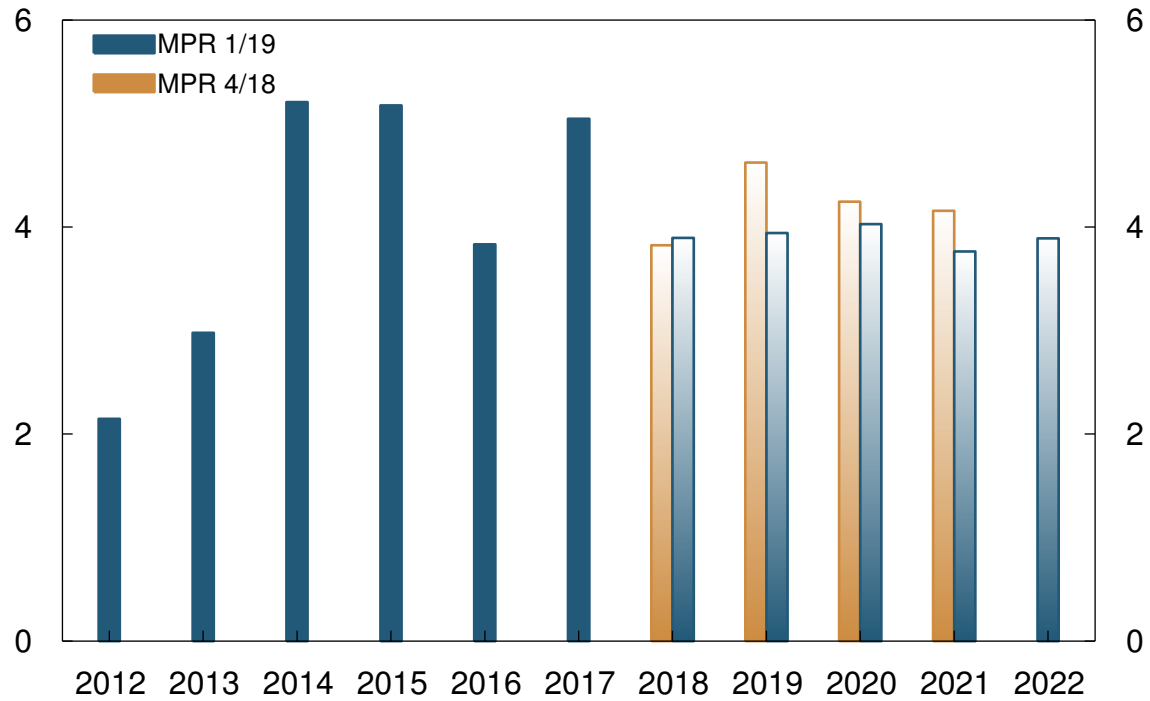


1) Standard and Poor's 500 Index (US). Euro Stoxx 50 Index (Europe).  
Financial Times Stock Exchange 100 Index (UK). MSCI Emerging Markets Index (emerging economies).  
Oslo Børs Benchmark Index (Norway).

2) MPR 4/18 was based on information in the period up to 7 December 2018, indicated by the vertical line.

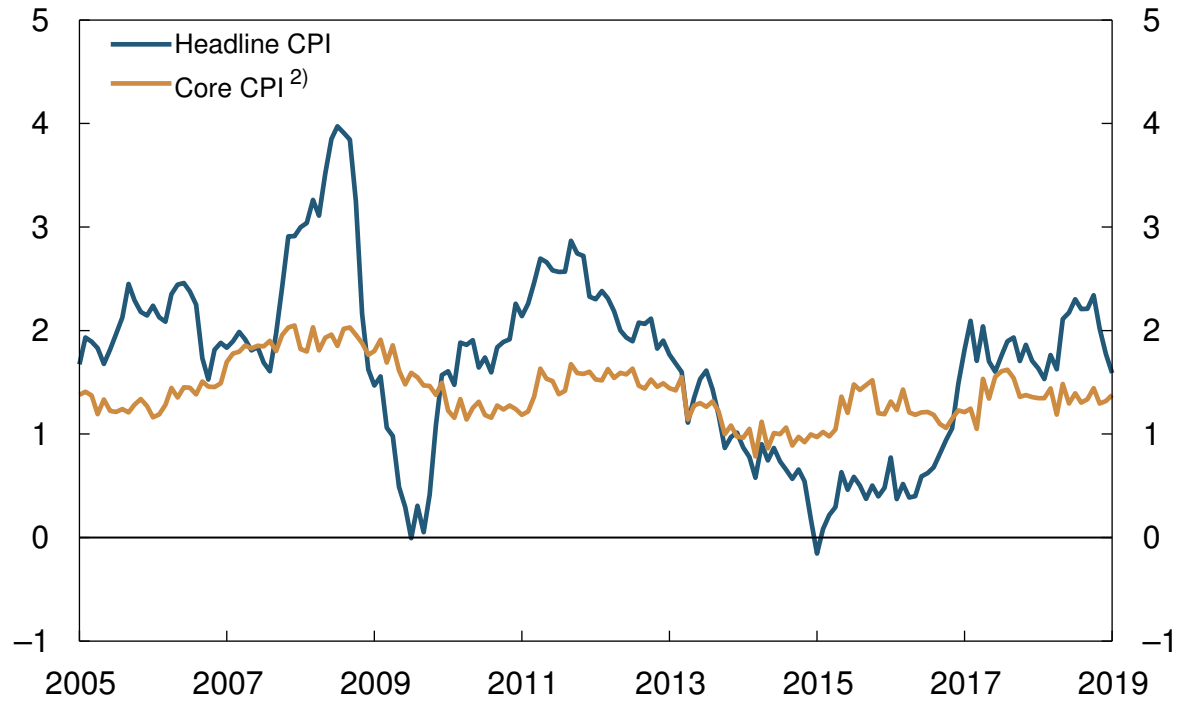
Source: Bloomberg

Chart 2.5 Imports for Norway's trading partners.<sup>1)</sup>  
 Annual change. Percent. 2012 – 2022<sup>2)</sup>



1) Export weights. 25 main trading partners.  
 2) Projections for 2018 – 2022 (shaded bars).  
 Sources: Thomson Reuters and Norges Bank

Chart 2.6 Headline and core inflation in selected countries.<sup>1)</sup>  
Twelve-month change. Percent. January 2005 – January 2019



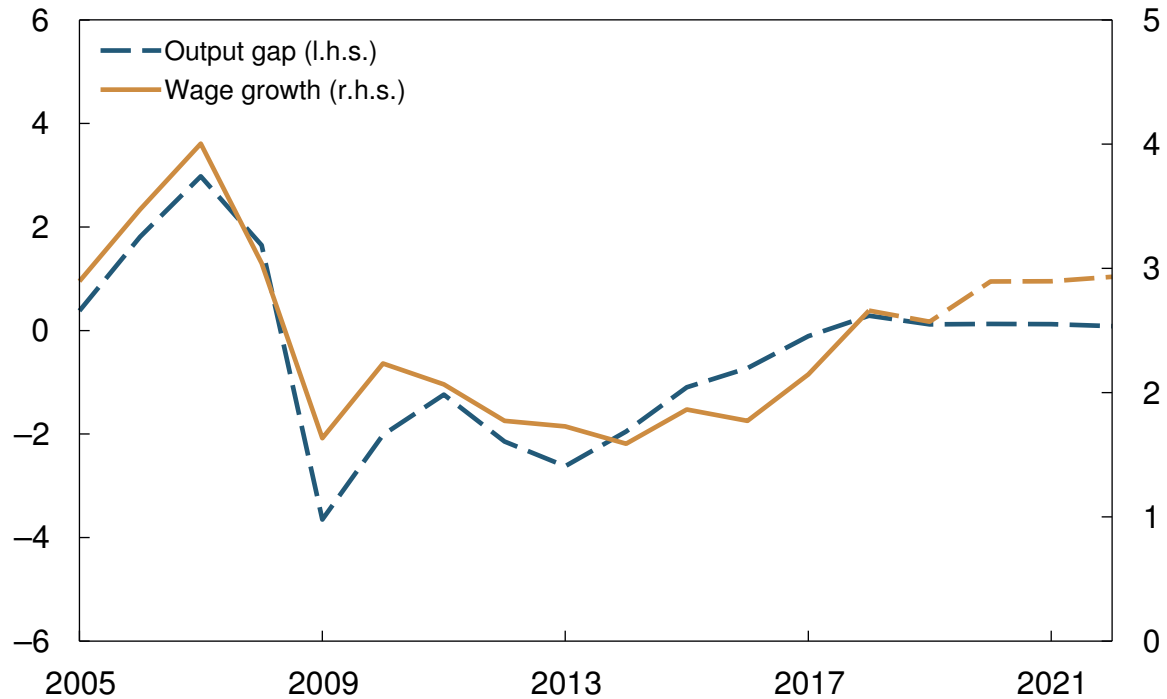
1) Import weights. US, euro area, UK and Sweden.

2) US: excluding food and energy. UK and euro area: excluding food, tobacco, alcohol and energy.

Sweden: excluding energy.

Sources: Thomson Reuters and Norges Bank

Chart 2.7 Wage growth<sup>1)</sup> and estimated output gap<sup>2)</sup> in selected countries.<sup>3)</sup>  
 Percent. 2005 – 2022<sup>4)</sup>



1) Compensation per employee. Annual percentage change.

2) The output gap measures the percentage deviation between GDP and estimated potential GDP.

IMF estimates for 2005 – 2015. Norges Bank projections for the rest of the period.

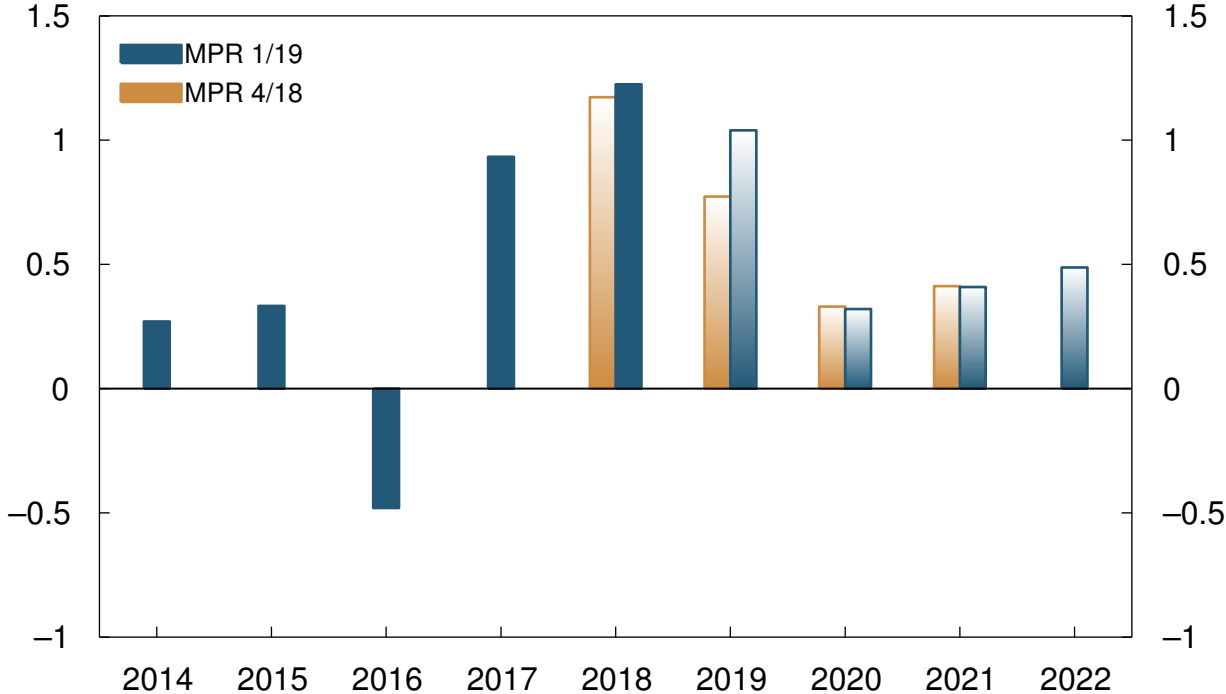
3) Export weights. US, euro area, UK and Sweden.

4) Projections for wage growth 2018 – 2022 (broken yellow line).

Sources: Thomson Reuters and Norges Bank

Chart 2.8 Indicator of international inflationary impulses to imported consumer goods with compositional effect (IPC).

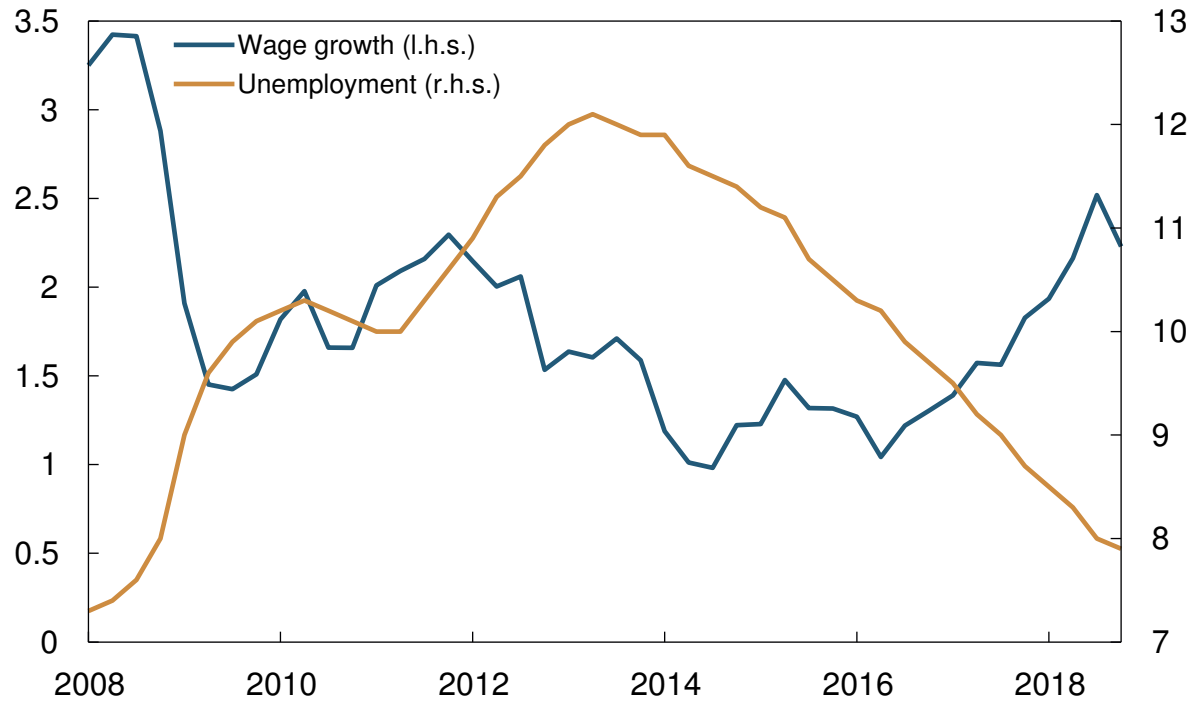
Foreign currency. Annual change. Percent. 2014 – 2022<sup>1)</sup>



1) Projections for 2019 – 2022 (shaded bars).  
Sources: Statistics Norway, Thomson Reuters and Norges Bank

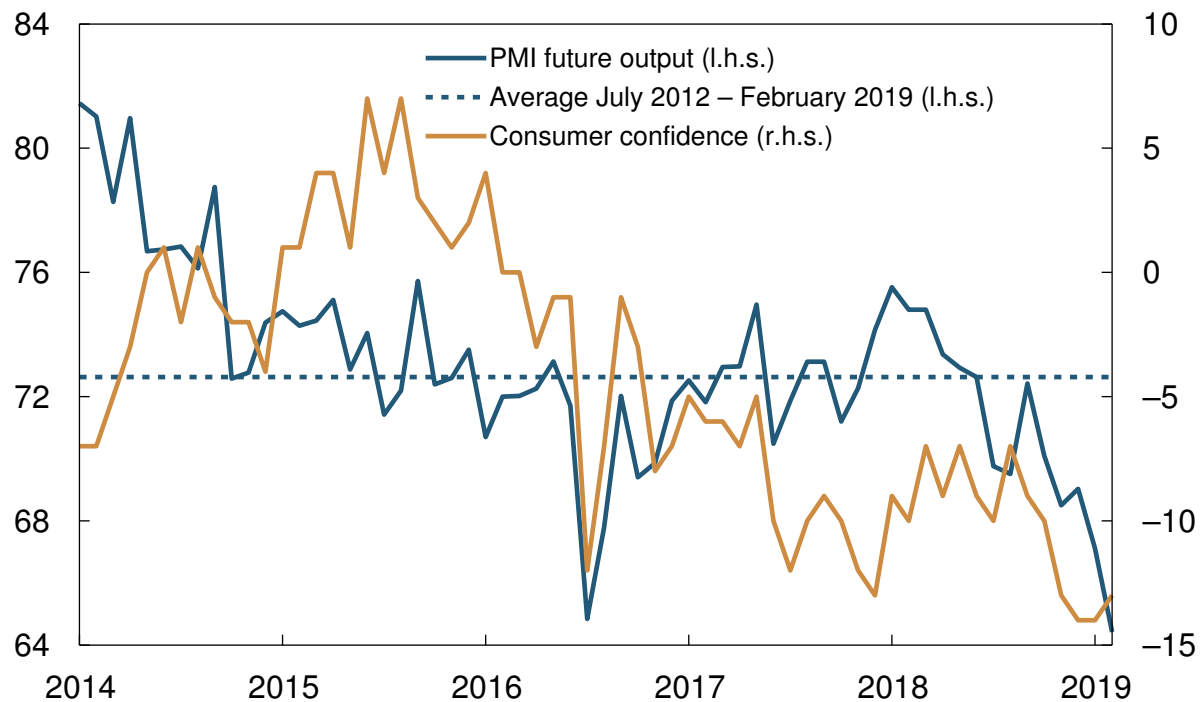


Chart 2.9 Unemployment<sup>1)</sup> and wage growth<sup>2)</sup> in the euro area.  
Seasonally adjusted. Percent. 2008 Q1 – 2018 Q4



1) Unemployed as a share of the labour force.  
2) Compensation per employee. Four-quarter change.  
Sources: Thomson Reuters and Norges Bank

Chart 2.10 Outlook for UK manufacturers<sup>1)</sup> and households<sup>2)</sup>.  
January 2014 – February 2019

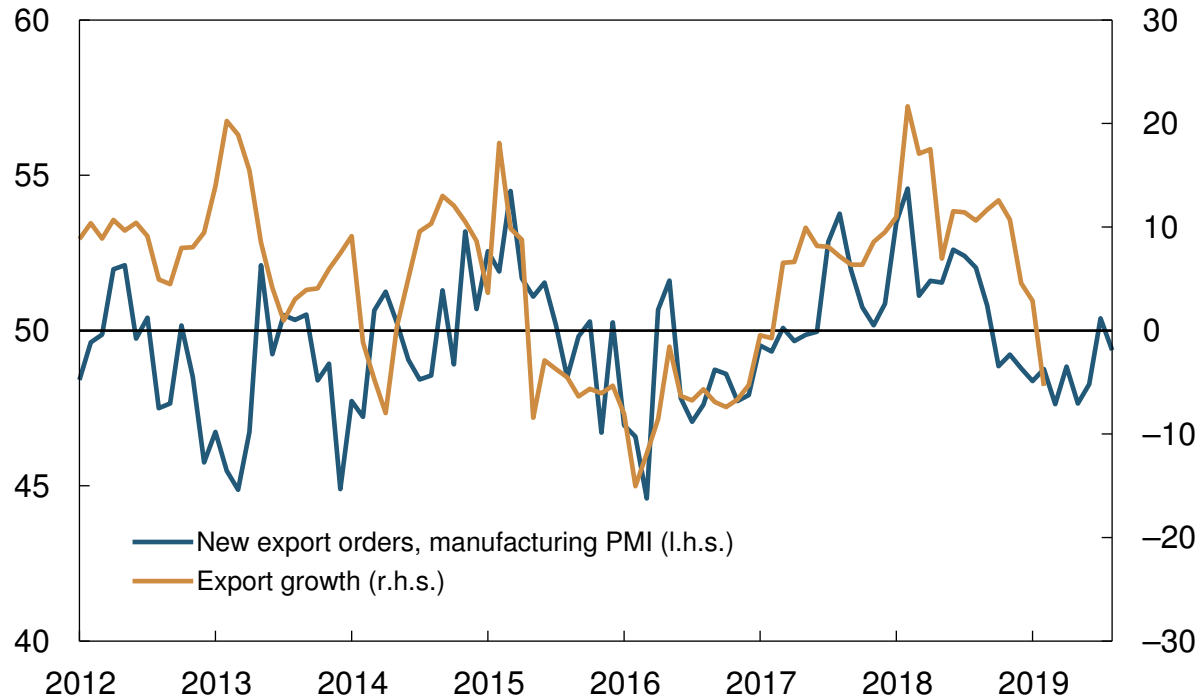


1) Future manufacturing output. Diffusion index centered around 50.

2) Macroeconomic expectations next twelve months. Diffusion index centered around 0.

Source: Thomson Reuters and Norges Bank

Chart 2.11 New export orders, manufacturing PMI<sup>1)</sup> and change in exports<sup>2)</sup> in China.  
January 2012 – August 2019<sup>3)</sup>



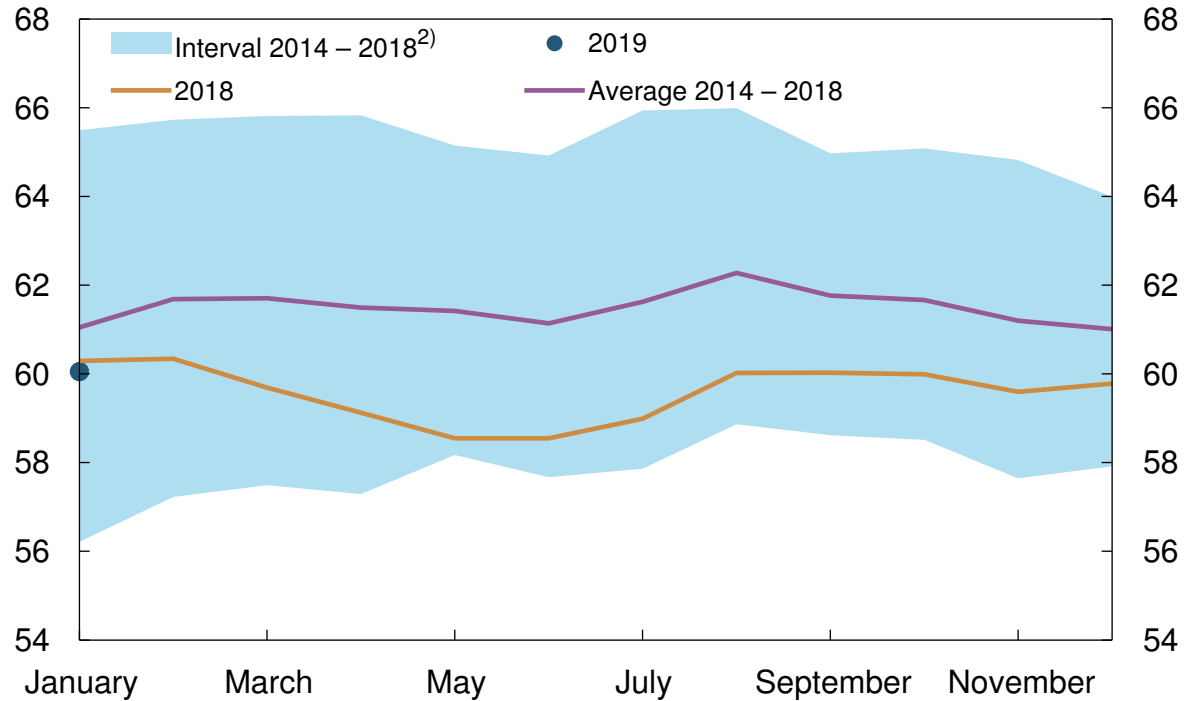
1) Caixin PMI. The data are lagged forward six months. Survey of purchasing managers. Diffusion index centered around 50. Seasonally adjusted.

2) Twelve-month change. Three-month moving average of growth has been used in order to avoid effects from the Chinese New Year.

3) Latest observation is February 2019.

Sources: Thomson Reuters and Norges Bank

Chart 2.12 Total OECD oil inventories.  
 In days of consumption.<sup>1)</sup> January 2018 – January 2019



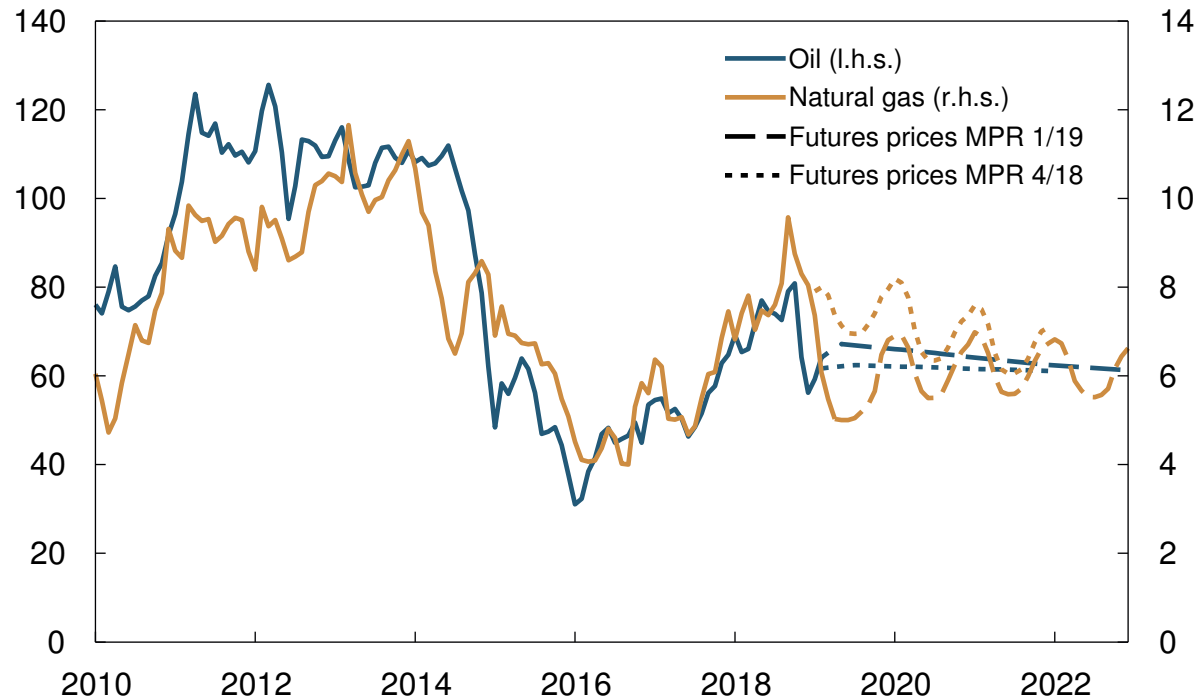
1) Days of consumption is calculated using the average expected demand over the next three months.

2) Interval between the highest and lowest level for a given month in the period 2014 – 2018.

Sources: International Energy Agency and Norges Bank

Chart 2.13 Oil and natural gas prices<sup>1)</sup>.

Oil. USD/barrel. Natural gas. USD/MMBtu. January 2010 – December 2022<sup>2)</sup>

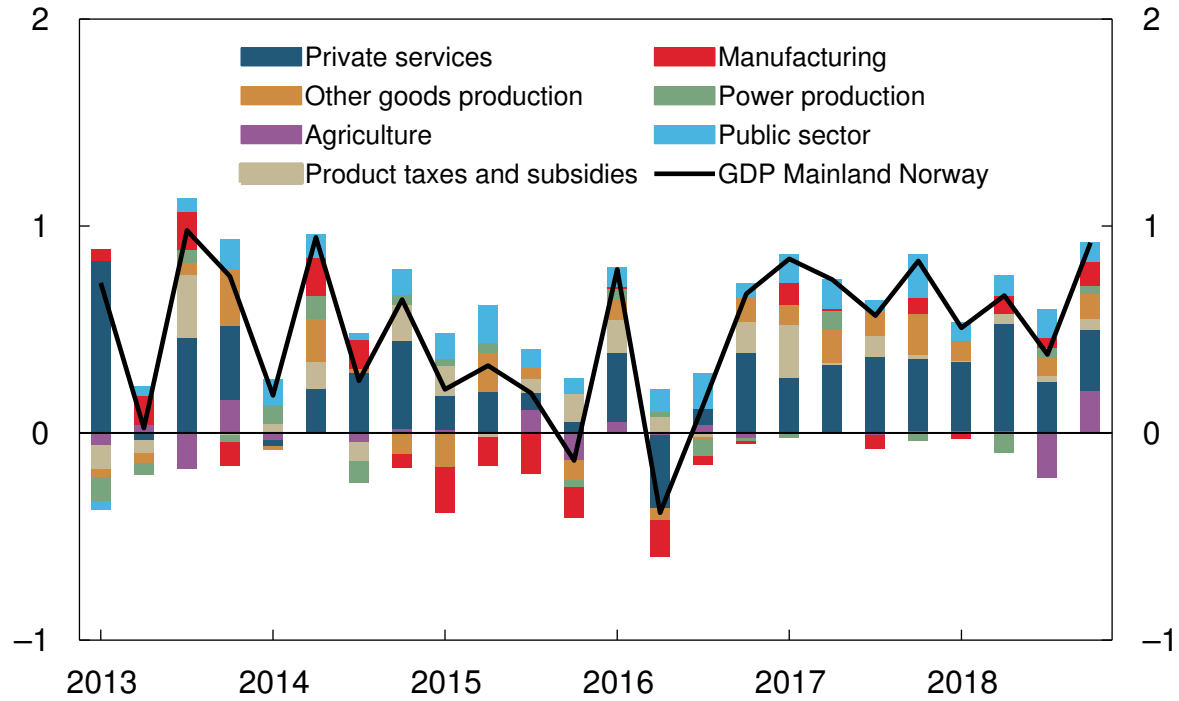


1) Average of prices on natural gas in the Netherlands and the UK.

2) Futures prices on 7 December 2018 for MPR 4/18 and on 15 March 2019 for MPR 1/19.

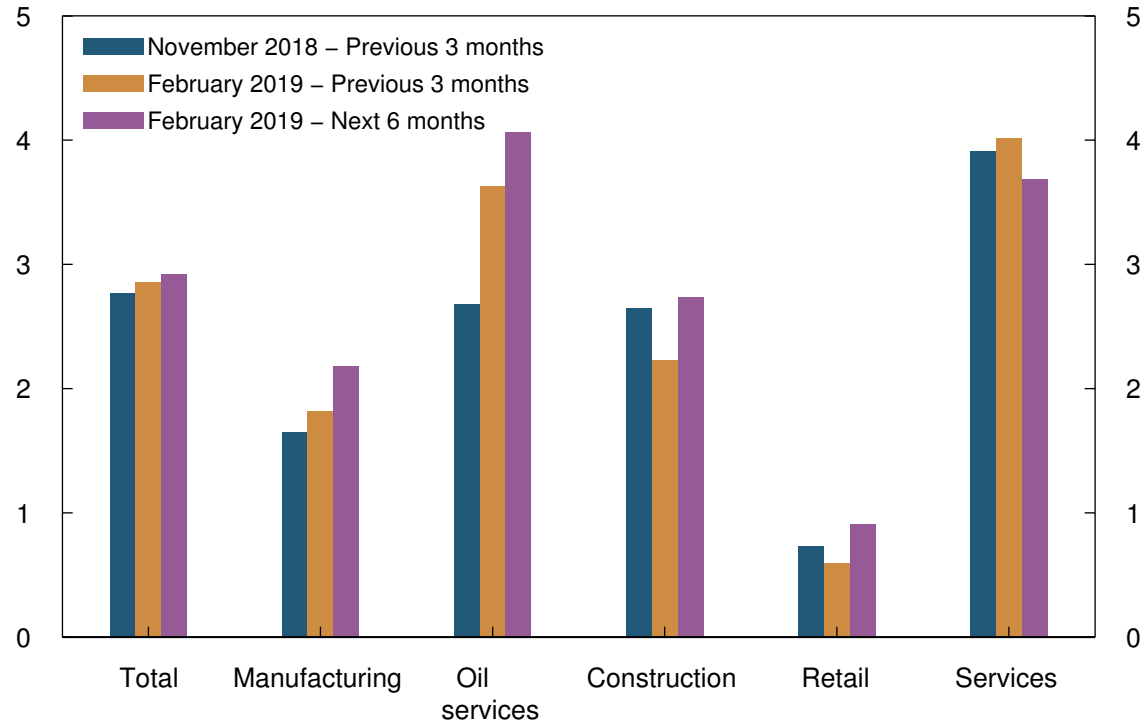
Sources: Norwegian Petroleum, Thomson Reuters and Norges Bank

Chart 3.1 GDP for mainland Norway. Market value. Contribution to four-quarter growth. Seasonally adjusted. Percentage points. 2013 Q1 – 2018 Q4



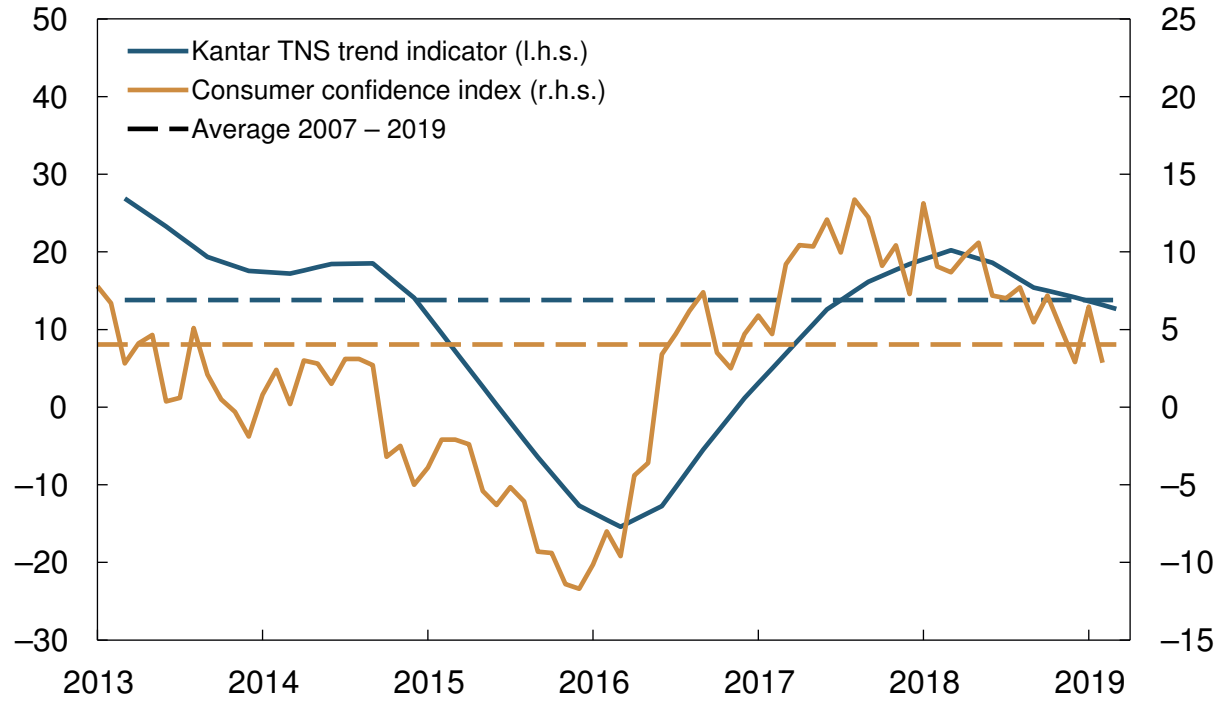
Sources: Statistics Norway and Norges Bank

Chart 3.2 Output growth by sector as reported by the Regional Network.  
Annualised. Percent



Source: Norges Bank

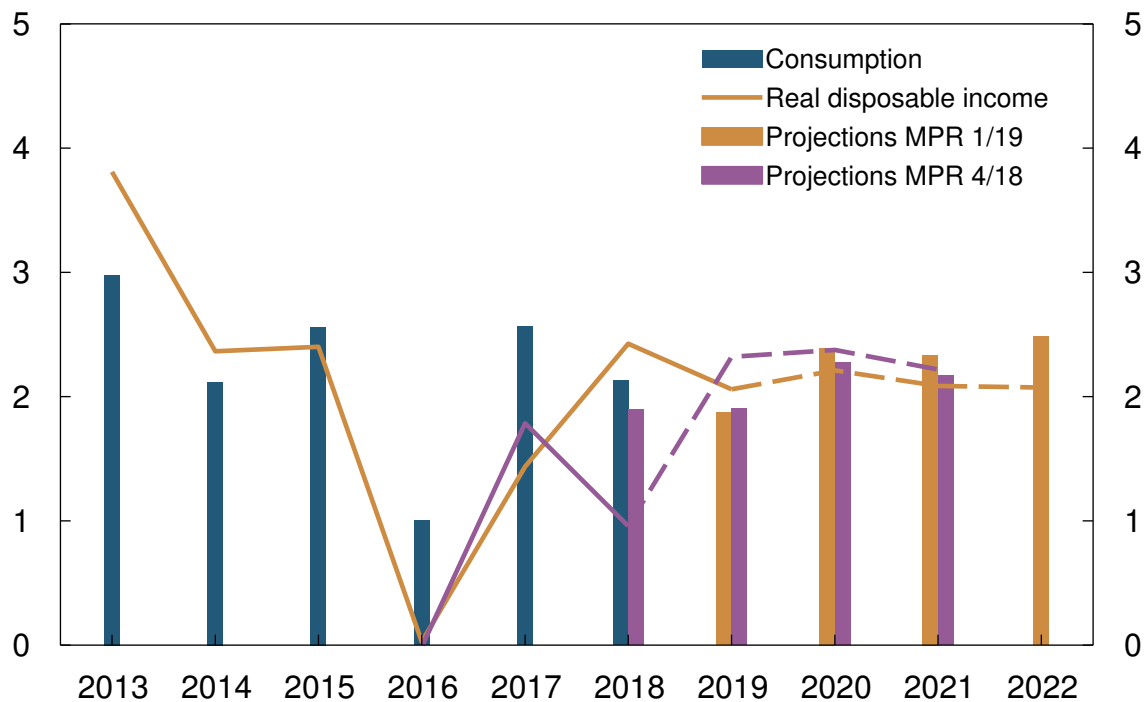
Chart 3.3 Consumer confidence. Net values. Kantar TNS trend indicator for households. 2013 Q1 – 2019 Q1. Opinion consumer confidence index (CCI). January 2013 – February 2019



Sources: ForbrukerMeteret™ from Opinion, Kantar TNS and Norges Bank



Chart 3.4 Household consumption<sup>1) 2)</sup> and real disposable income<sup>3)</sup>.  
Annual change. Percent. 2013 – 2022<sup>4)</sup>



1) Includes consumption for non-profit organisations.

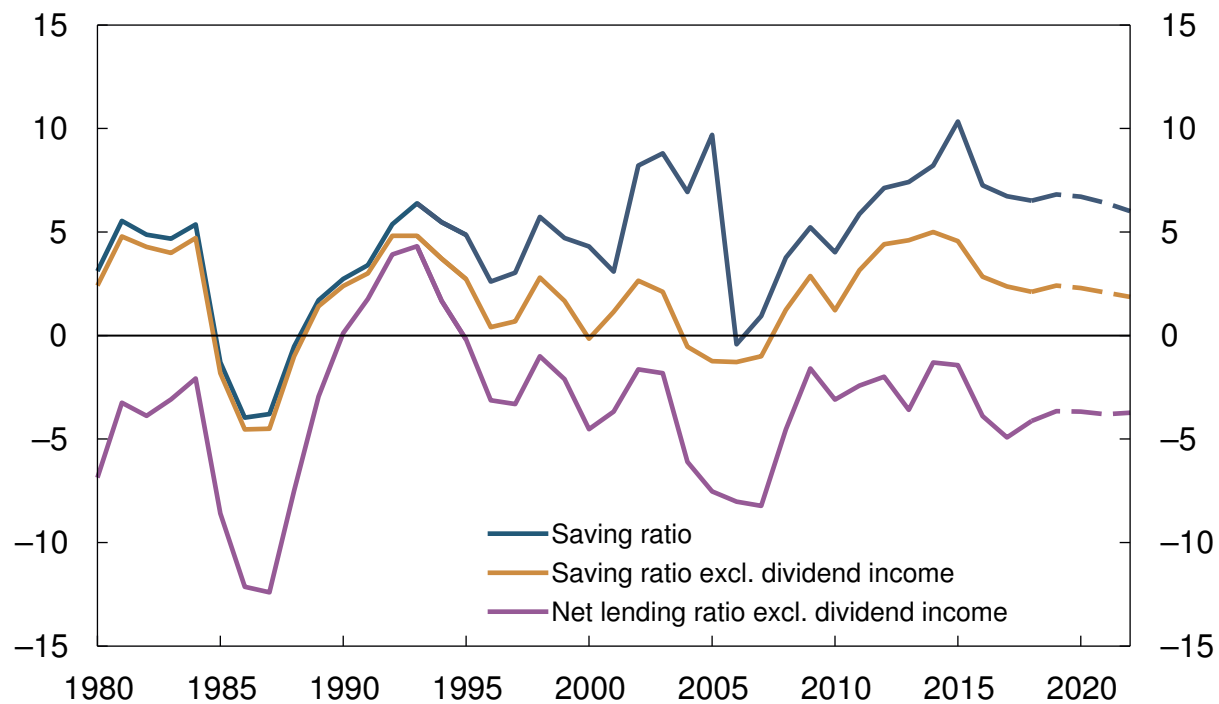
2) Working-day adjusted.

3) Excluding dividend income. Including income for non-profit organisations.

4) Projections for 2019 – 2022 (broken lines).

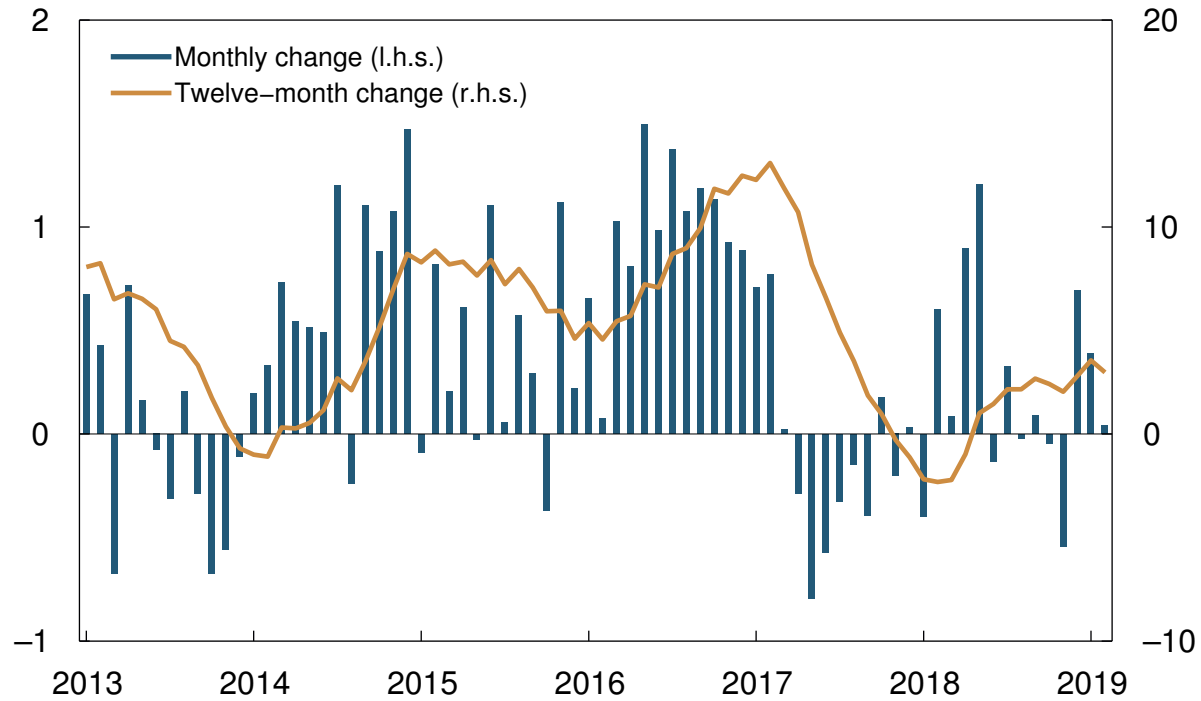
Sources: Statistics Norway and Norges Bank

Chart 3.5 Household saving and net lending.  
Share of disposable income. Percent. 1980 – 2022<sup>1)</sup>



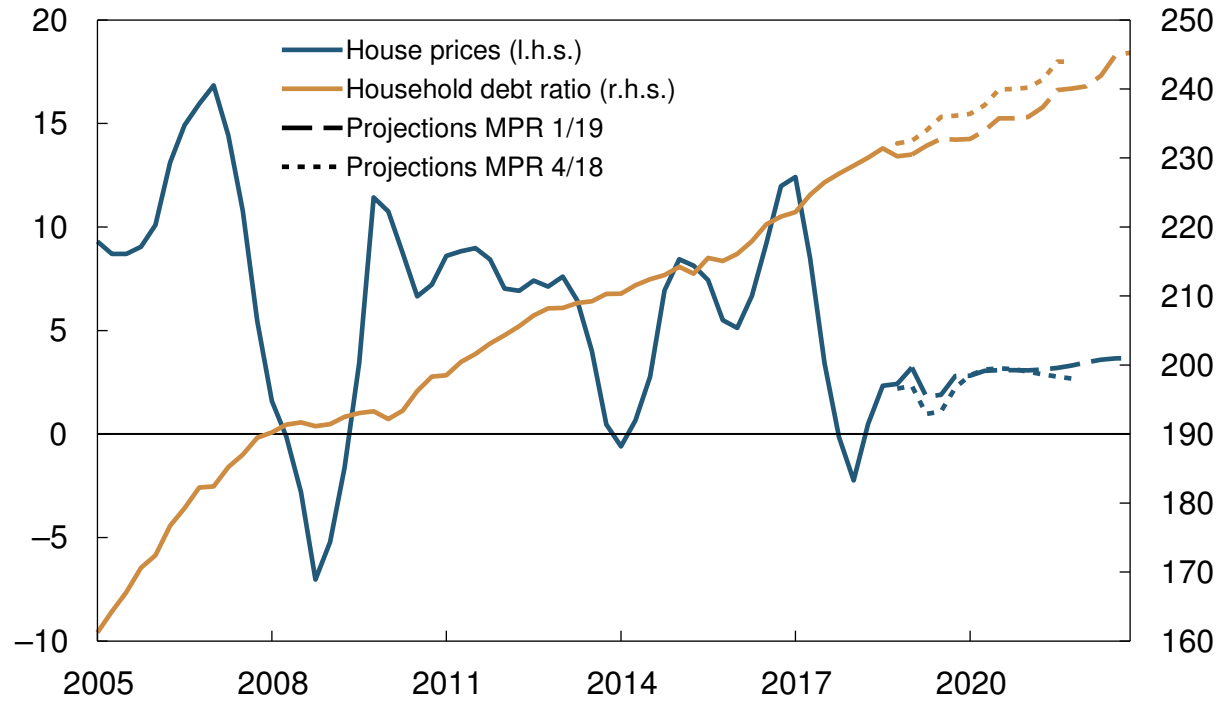
1) Projections for 2019 – 2022 (broken lines).  
Sources: Statistics Norway and Norges Bank

Chart 3.6 House prices. Twelve-month change and seasonally adjusted monthly change. Percent. January 2013 – February 2019



Sources: Eiendomsverdi, Finn.no and Real Estate Norway

Chart 3.7 House prices. Four-quarter change. Percent. Household debt<sup>1)</sup>. Percent.  
2005 Q1 – 2022 Q4<sup>2)</sup>

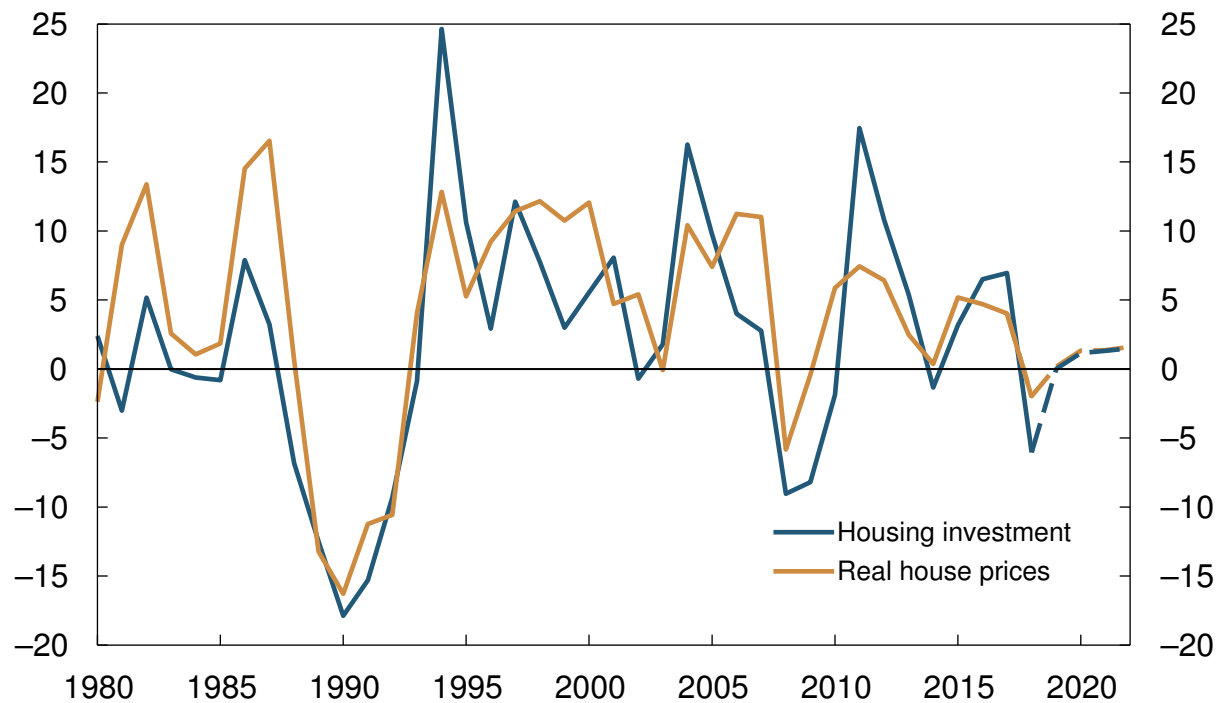


1) Loan debt as a percentage of disposable income.

2) Projections for 2019 Q1 – 2022 Q4.

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

Chart 3.8 Housing investment <sup>1)</sup> and real house prices <sup>2)</sup>.  
Annual change. Percent. 1980 – 2022 <sup>3)</sup>



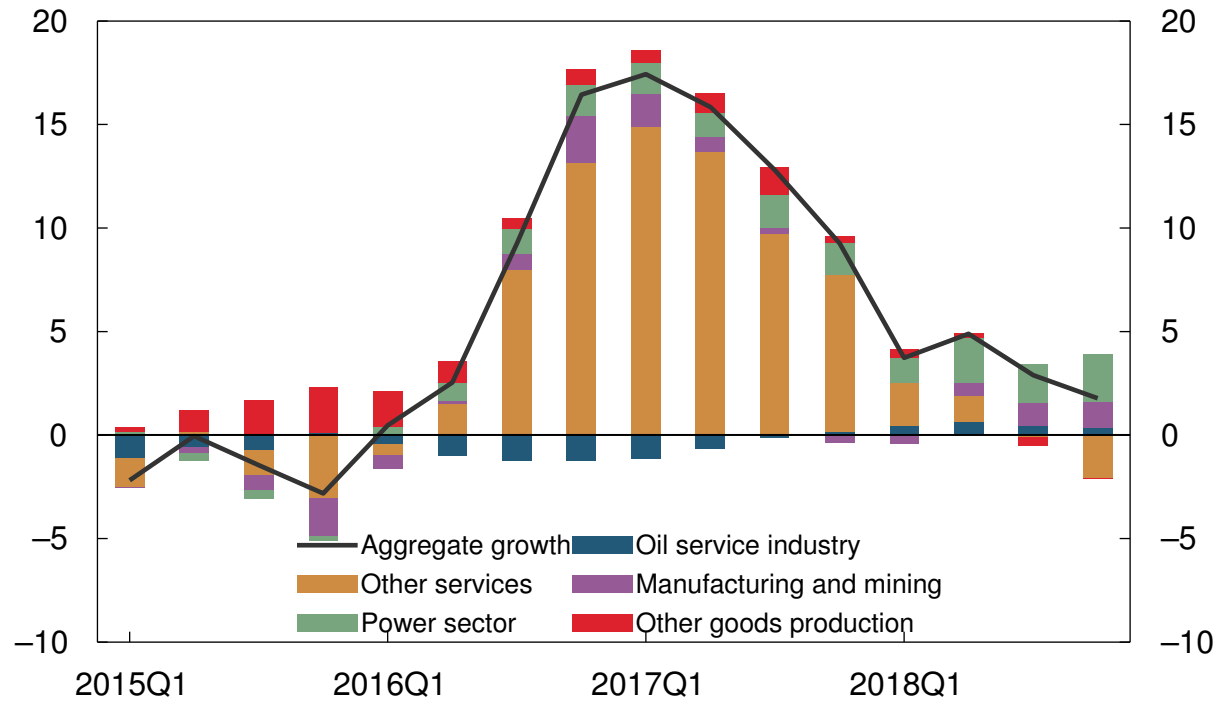
1) Working-day adjusted.

2) Prices for existing homes deflated by the CPI.

3) Projections for 2019 – 2022 (broken lines).

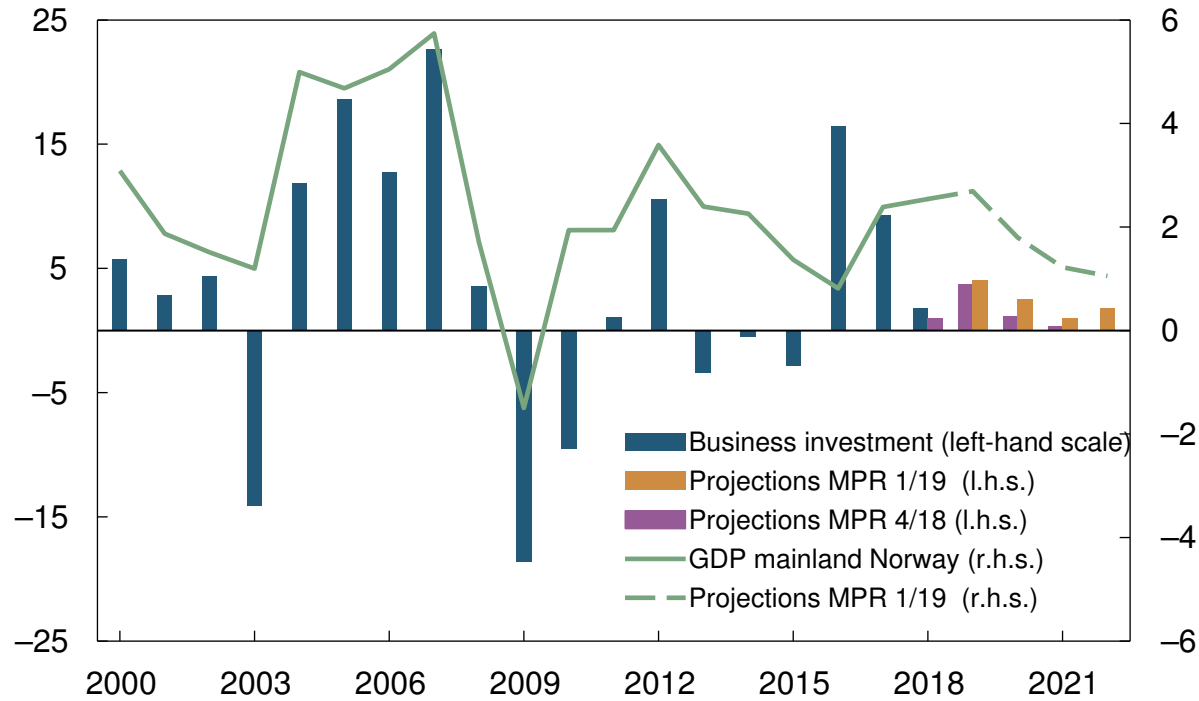
Sources: Eiendomsverdi, Finn.no, Norwegian Association of Real Estate Agents (NEF), Real Estate Norway, Statistics Norway and Norges Bank

Chart 3.9 Mainland business investment by sector. Contribution to four-quarter change. Percentage points. 2015 Q1 – 2018 Q4



Sources: Statistics Norway og Norges Bank

Chart 3.10 Business investment for mainland Norway and GDP for mainland Norway.<sup>1)</sup>  
 Annual change. Percent. 2000 – 2022<sup>2)</sup>



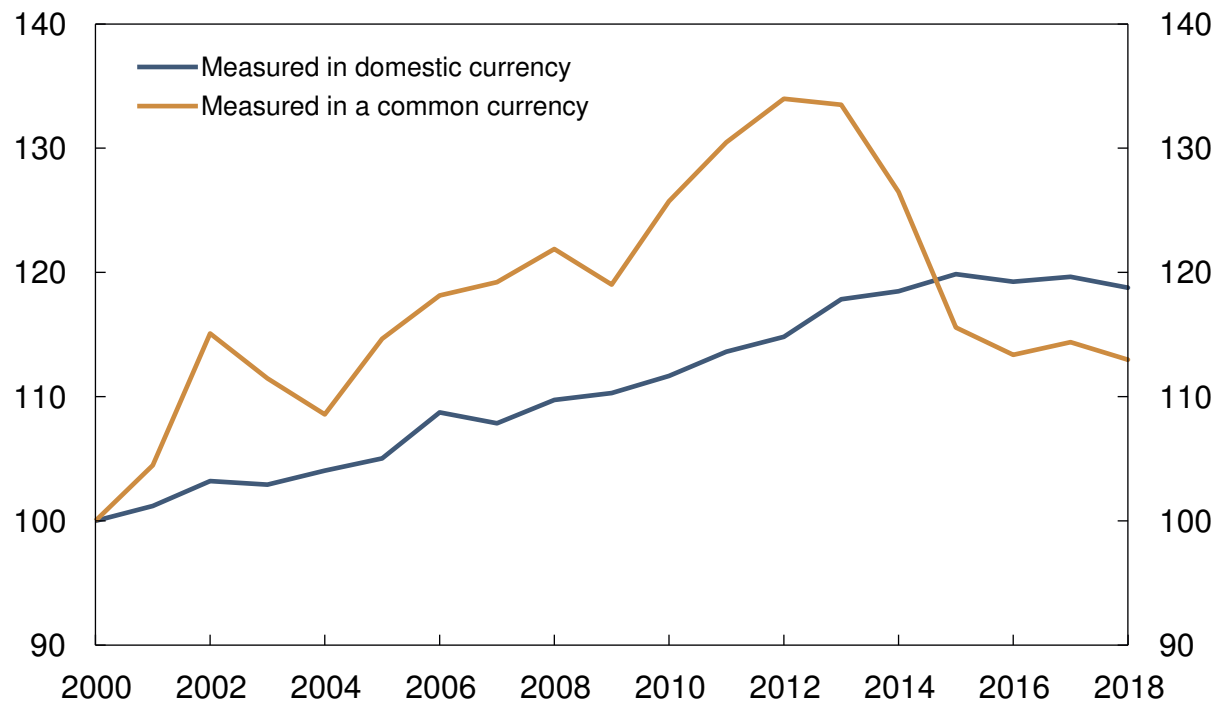
1) Working-day adjusted.

2) Projections for 2019 – 2022.

Sources: Statistics Norway and Norges Bank

Chart 3.11 Labour costs in Norway relative to trading partners.<sup>1)</sup>

Index. 2000 = 100. 2000 – 2018

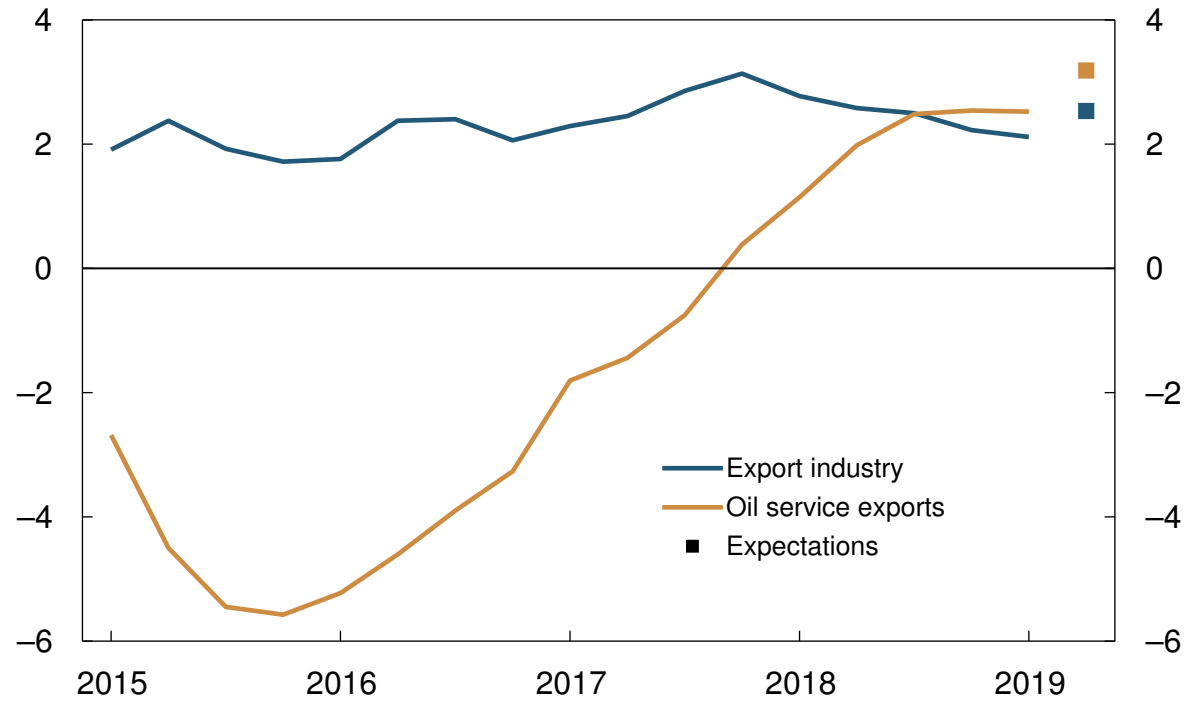


1) Hourly labour costs in manufacturing.

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



Chart 3.12 Export-oriented output according to the Regional Network. <sup>1)</sup>  
 Quarterly change. Annualised. Percent. 2015 Q1 – 2019 Q2 <sup>2)</sup>

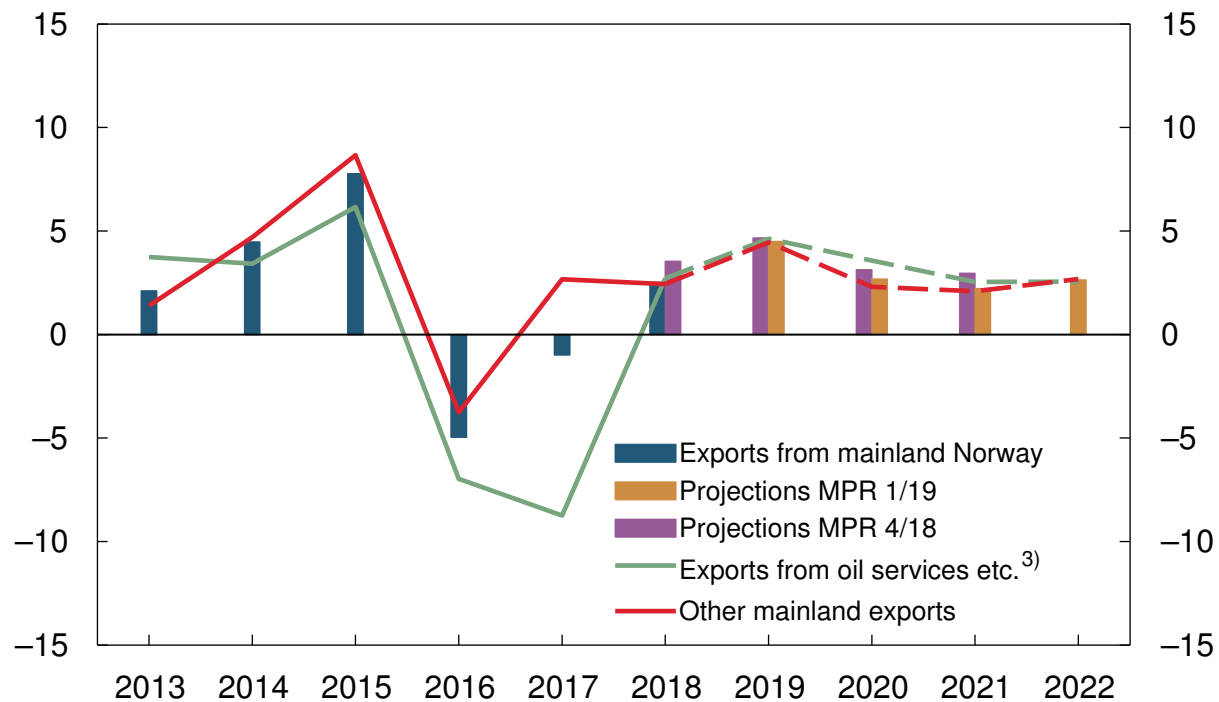


1) Reported growth for the past three months. Quarterly figures are calculated by weighting together three-month figures based on survey timing.

2) In 2019 Q2, expected growth in the next six months is as measured in February.

Source: Norges Bank

Chart 3.13 Exports from mainland Norway.<sup>1)</sup> Annual change. Percent. 2013 – 2022<sup>2)</sup>



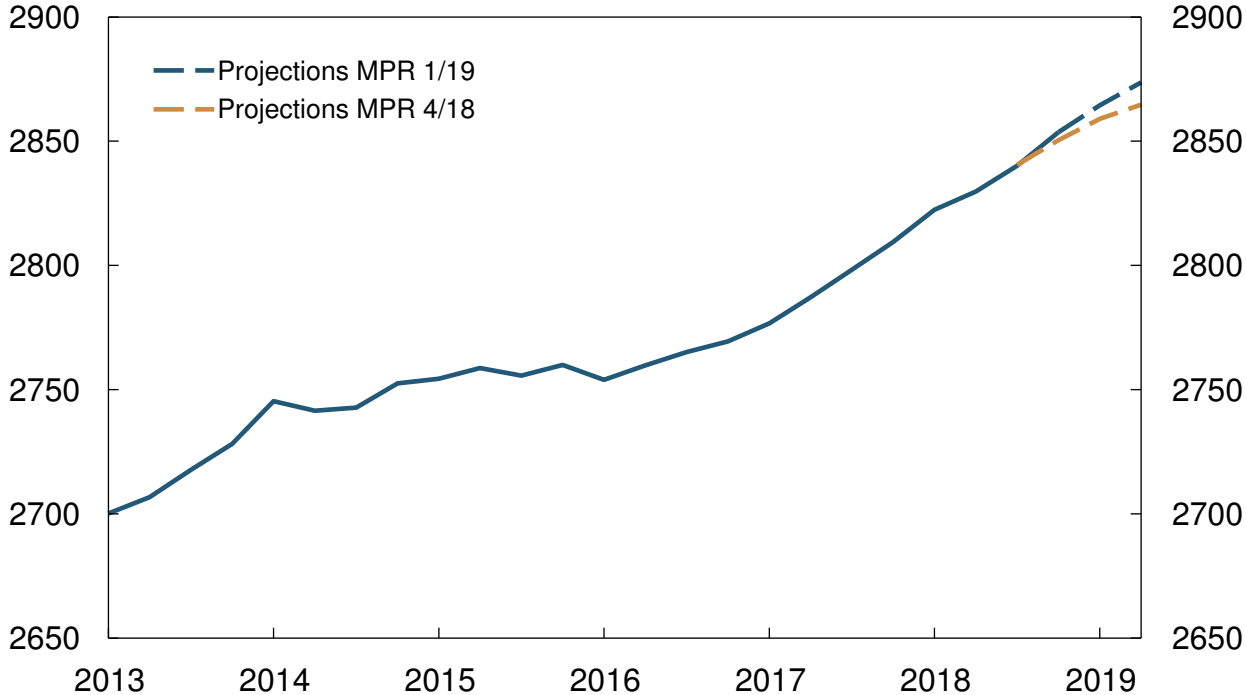
1) Working-day adjusted.

2) Projections for 2019 – 2022 (broken lines).

3) Groups of goods and services in the national accounts where the oil service industry accounts for a considerable share of exports.

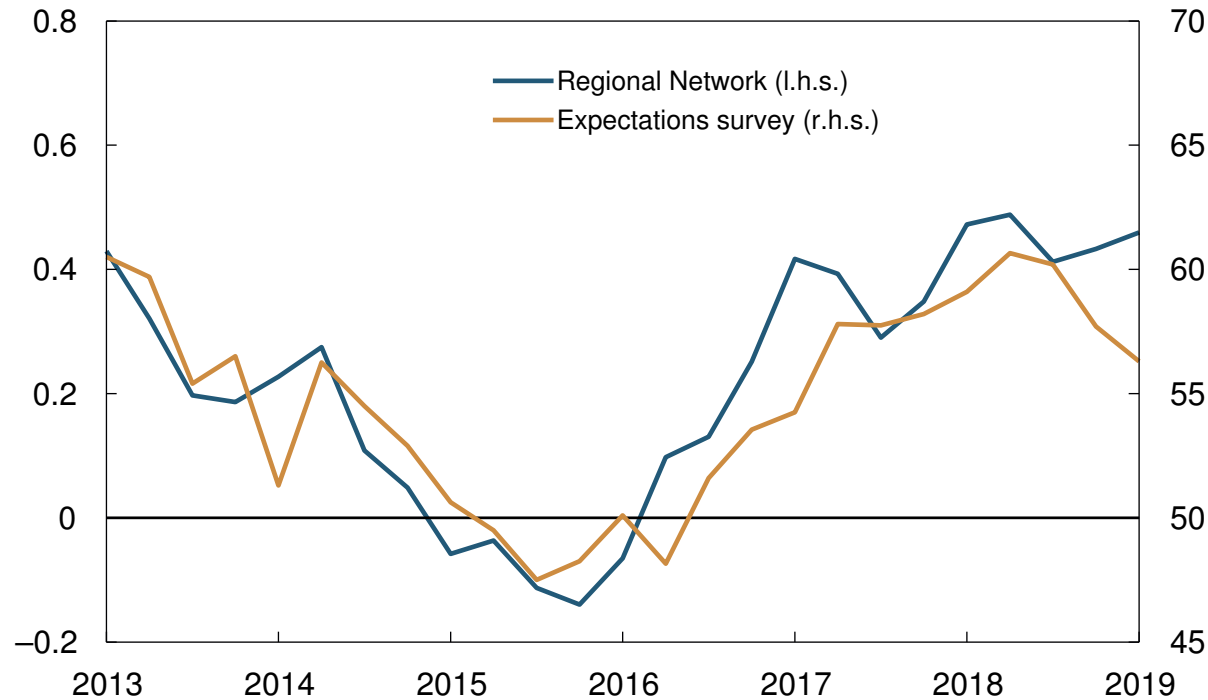
Sources: Statistics Norway and Norges Bank

Chart 3.14 Employment. Seasonally adjusted. In thousands. 2013 Q1 – 2019 Q2<sup>1)</sup>



1) Projections for 2019 Q1 – 2019 Q2.  
Sources: Statistics Norway and Norges Bank

Chart 3.15 Expected employment. Regional Network.<sup>1)</sup> Quarterly change. Percent. Norges Bank's expectations survey. Diffusion index.<sup>2)</sup> 2013 Q1 – 2019 Q1

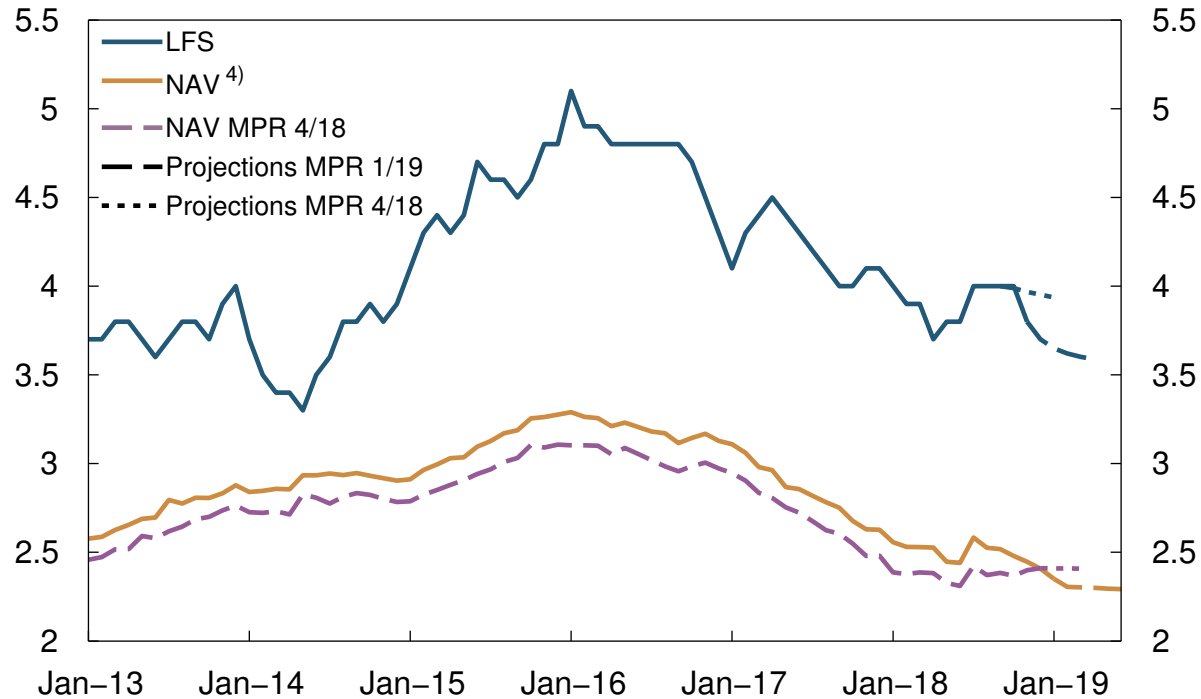


1) Expected change in employment next three months.

2) Share of business leaders expecting "more employees" in their own firm in the following 12 months + 1/2 \* share expecting "unchanged number of employees".

Sources: Epinion and Norges Bank

Chart 3.16 Unemployment according to LFS <sup>1)</sup> and NAV <sup>2)</sup>.  
 Share of the labour force. Seasonally adjusted. Percent. January 2013 – June 2019 <sup>3)</sup>



1) Labour Force Survey.

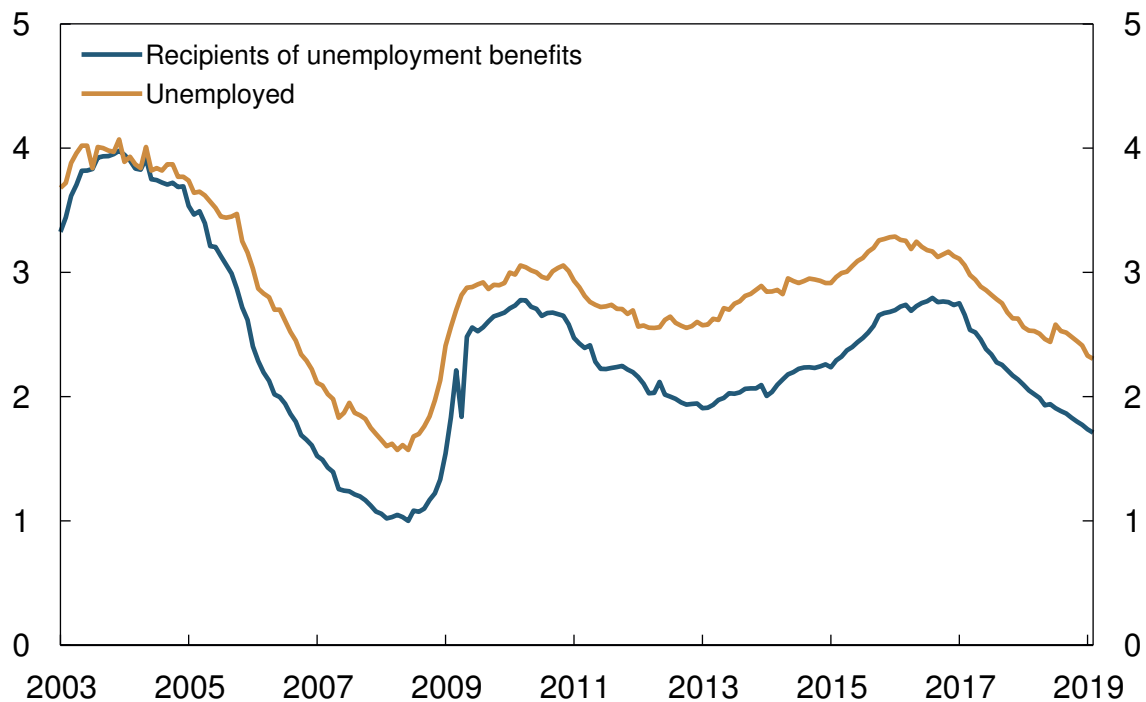
2) Registered unemployment.

3) Projections for March 2019 – June 2019 (NAV) and January 2019 – April 2019 (LFS).

4) Changes in NAV's routines have contributed, in isolation, to a rise in unemployment of about 0.1 percentage point as of November 2018. NAV has retrospectively revised the statistics to ensure comparability before and after the break in the series.

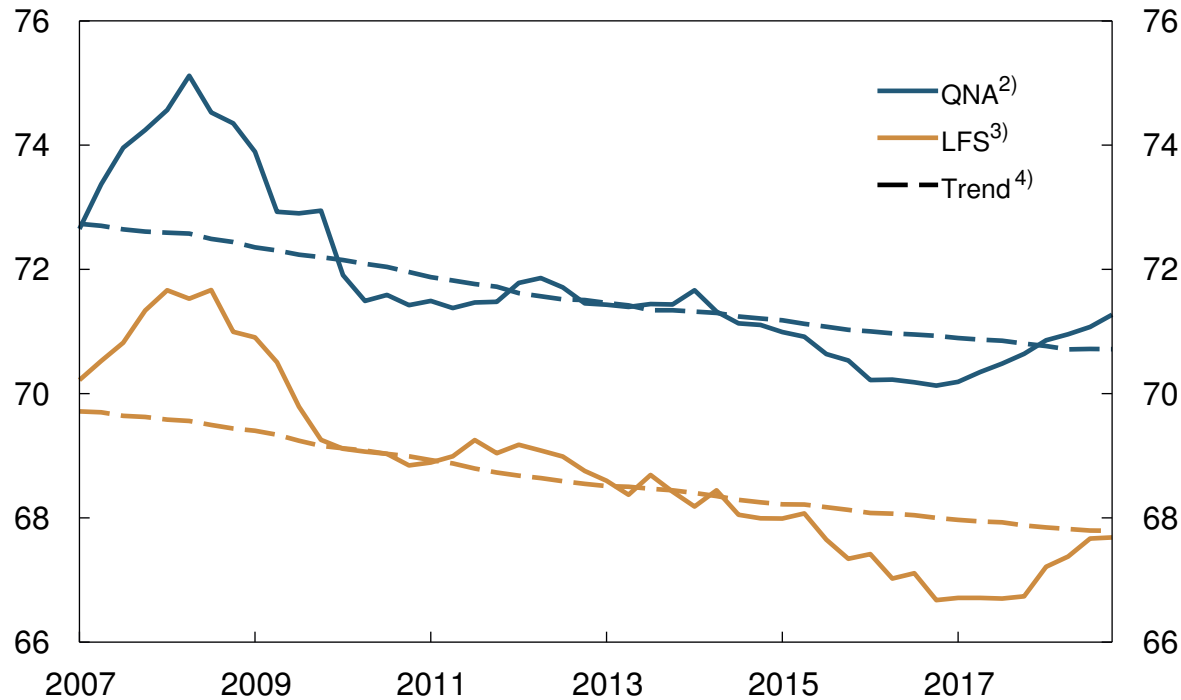
Sources: Norwegian Labour and Welfare Administration (NAV), Statistics Norway and Norges Bank

Chart 3.17 Registered unemployment and unemployment benefit recipients<sup>1)</sup>.  
Share of labour force. Seasonally adjusted. Percent.  
January 2003 – February 2019



1) Approximately half of those unemployed receive unemployment benefits. Some partly unemployed persons and labour market programme participants are also eligible for unemployment benefits.  
Sources: Norwegian Labour and Welfare Administration (NAV) and Norges Bank

Chart 3.18 Employment share<sup>1)</sup>. Percent. 2007 Q1 – 2018 Q4



1) Employment as a share of the population (aged 15-74). The difference between LFS and QNA employment partly reflects the inclusion of temporary residents in the QNA, while the LFS only counts permanent residents.

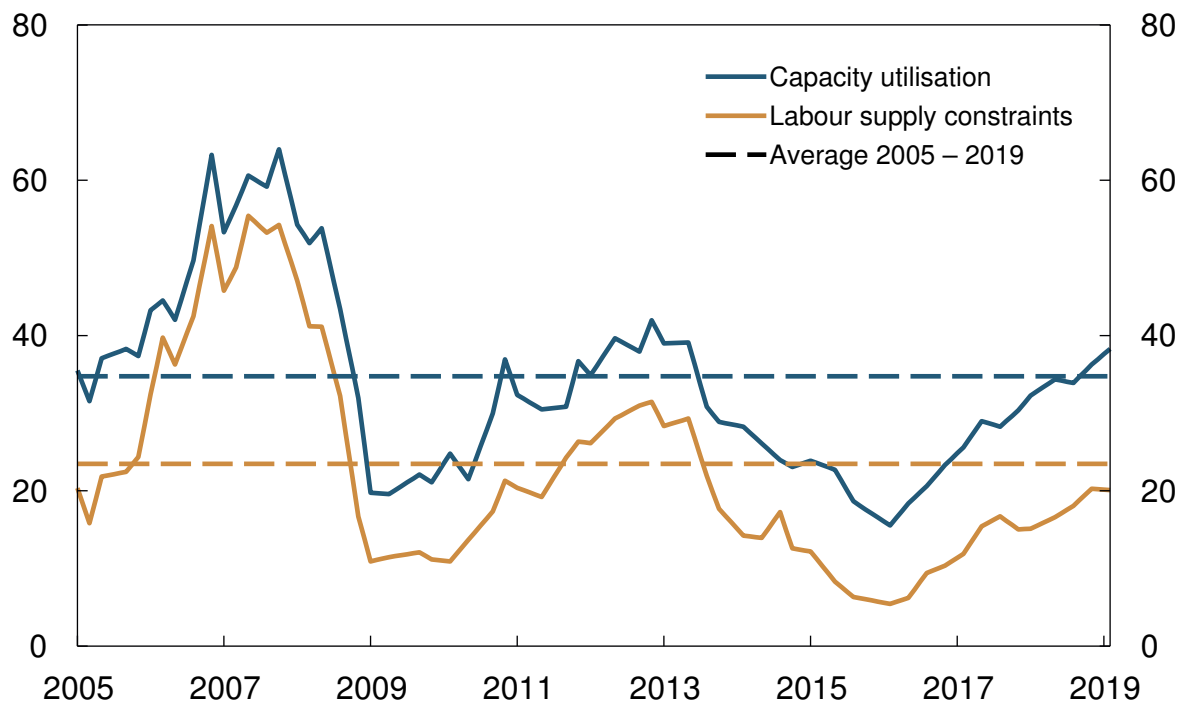
2) Quarterly National Accounts.

3) Labour Force Survey.

4) Employment share if the share for each five-year age cohort had been unchanged at 2013 levels. The curve slopes downward because the population is ageing. 2013 was selected because capacity utilisation in that year was close to a normal level.

Sources: Statistics Norway and Norges Bank

Chart 3.19 Capacity utilisation<sup>1)</sup> and labour supply constraints<sup>2)</sup> as reported by the Regional Network. Percent. January 2005 – February 2019



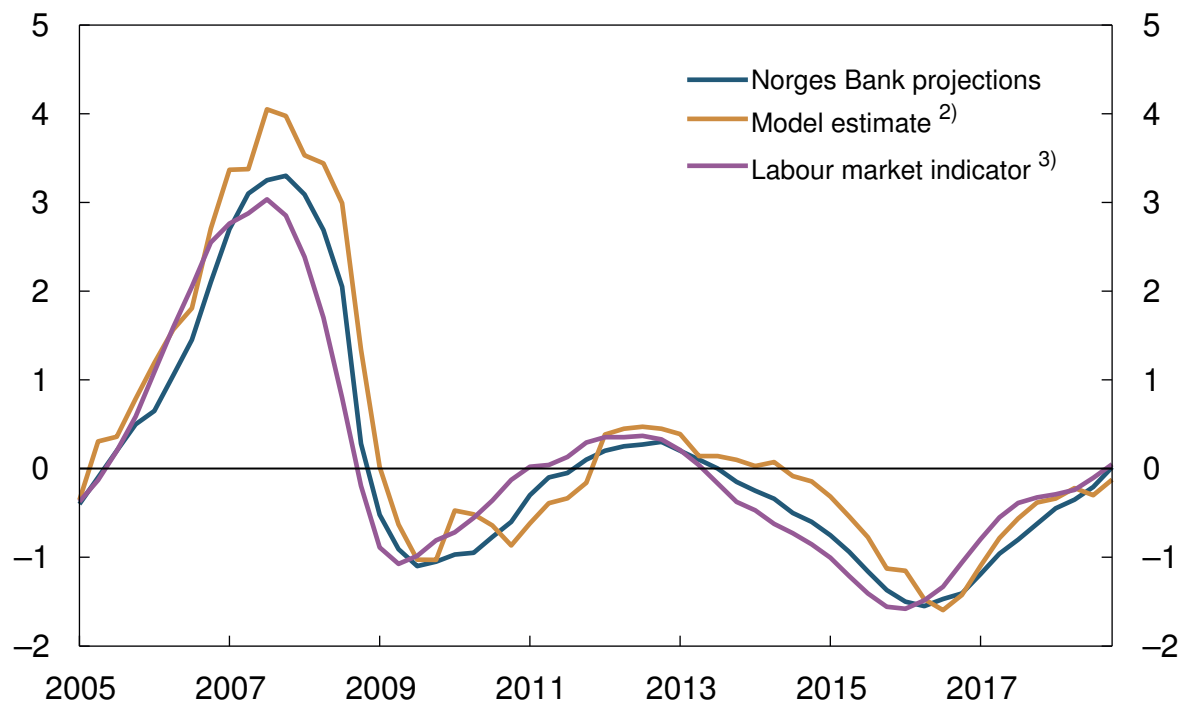
1) Share of contacts that will have some or considerable problems accommodating an increase in demand.

2) Share of contacts reporting that output is being constrained by labour supply.

Source: Norges Bank



Chart 3.20 Estimated output gap<sup>1)</sup>. Percent. 2005 Q1 – 2018 Q4



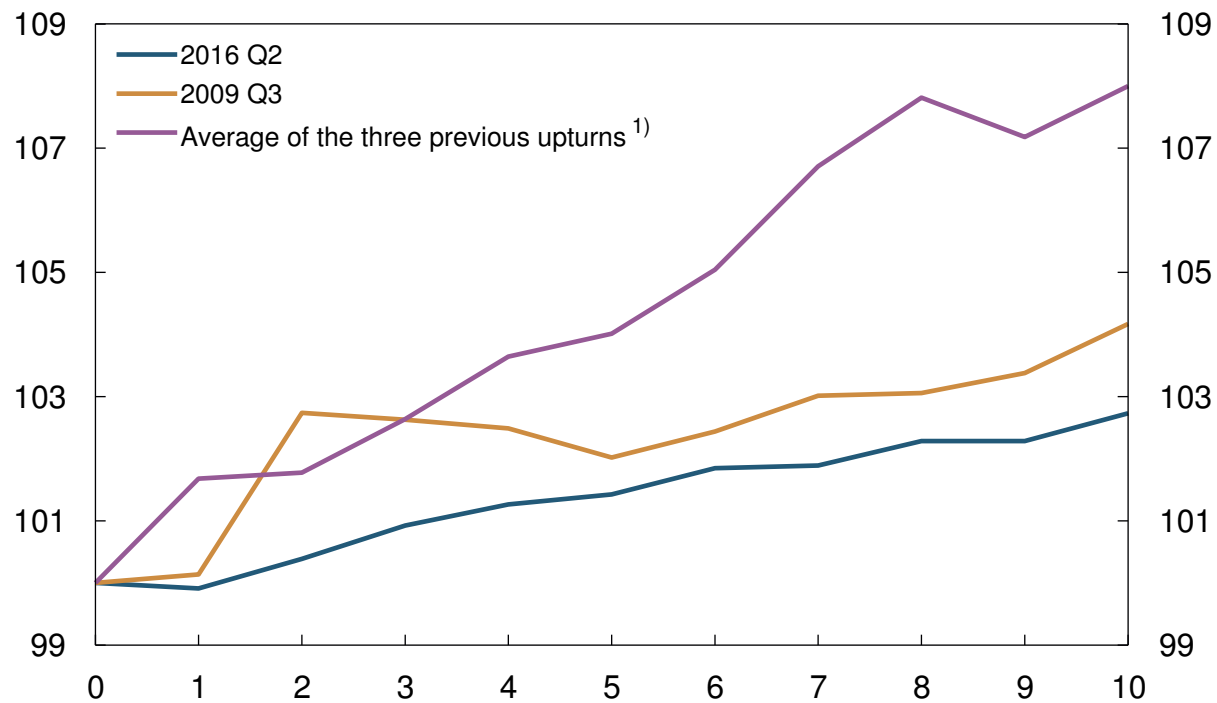
1) The output gap measures the percentage difference between mainland GDP and estimated potential mainland GDP.

2) See box on page 34 in *Monetary Policy Report 4/17* for a review of the model estimate.

3) Indicator of the output gap based on the labour market. See Hagelund, K., F. Hansen and Ø. Robstad (2018) "Model estimates of the output gap". *Staff Memo 4/2018*. Norges Bank, for a further discussion.

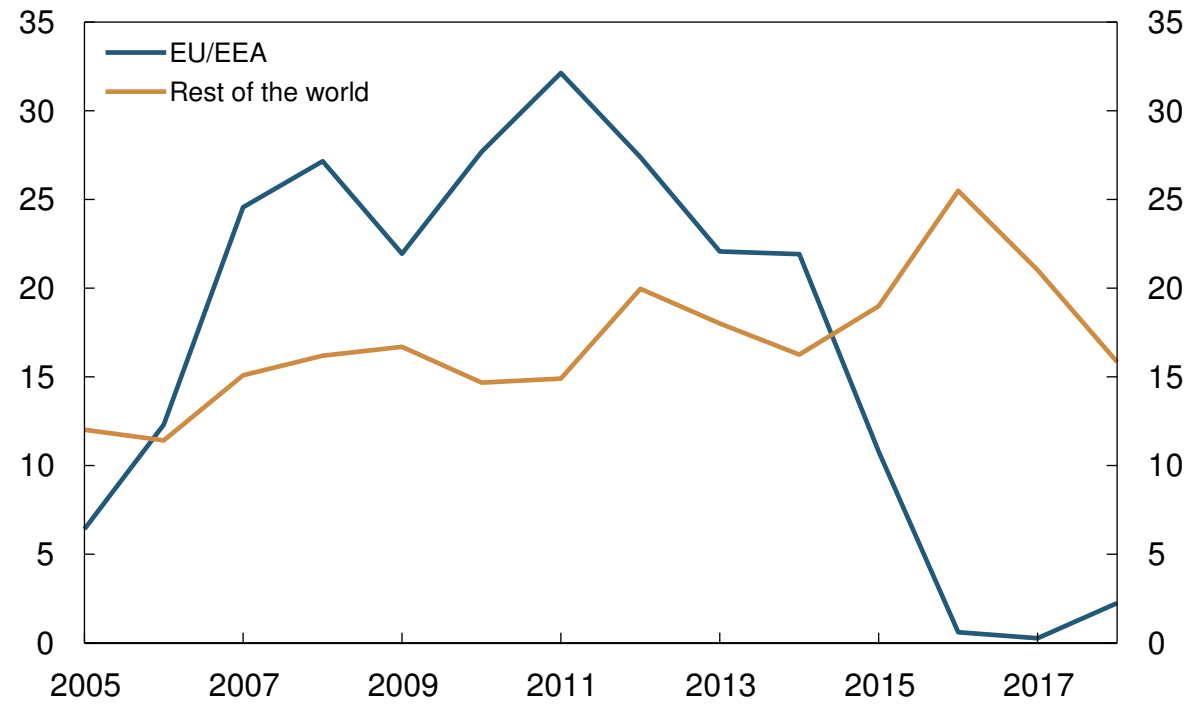
Source: Norges Bank

Chart 3.21 Productivity growth in upturns.  
Quarters since cyclical trough. Index = 100 in business cycle trough.



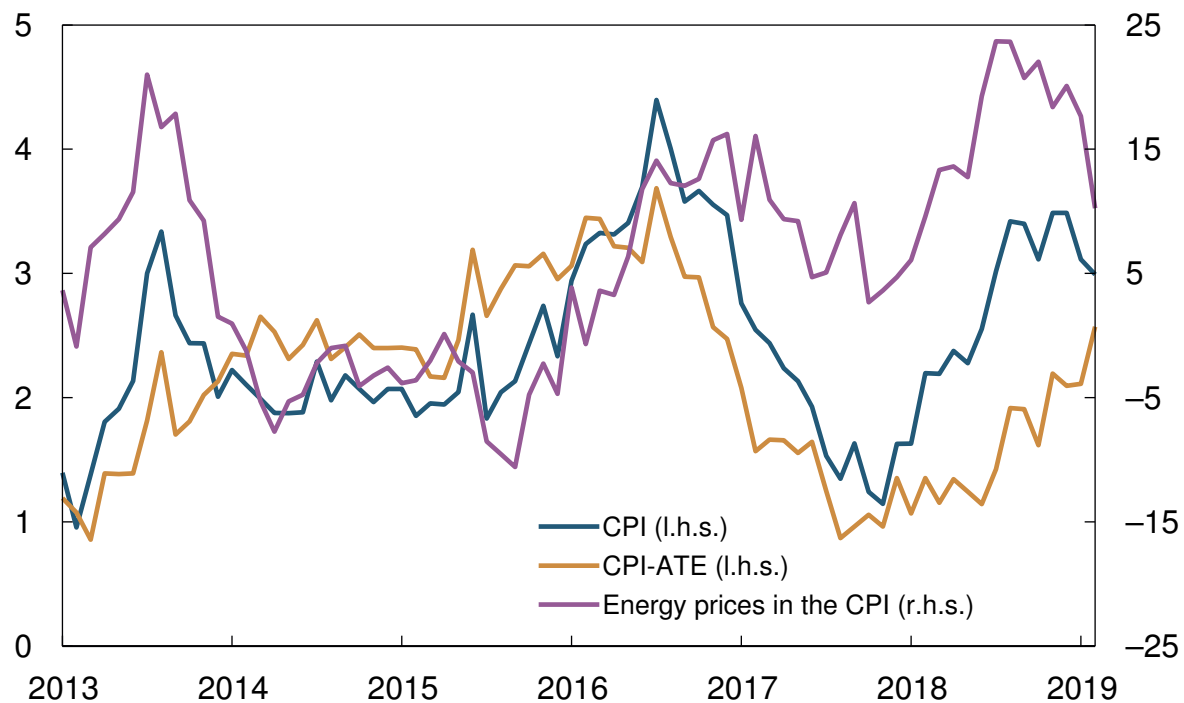
1) The three previous upturns with troughs in 1983 Q1, 1991 Q4 and 2003 Q2.  
Sources: Statistics Norway and Norges Bank

Chart 3.22 Net immigration by country of origin. In thousands. 2005 – 2018



Source: Statistics Norway

Chart 3.23 CPI, CPI-ATE<sup>1)</sup> and energy prices in the CPI<sup>2)</sup>.  
 Twelve-month change. Percent. January 2013 – February 2019

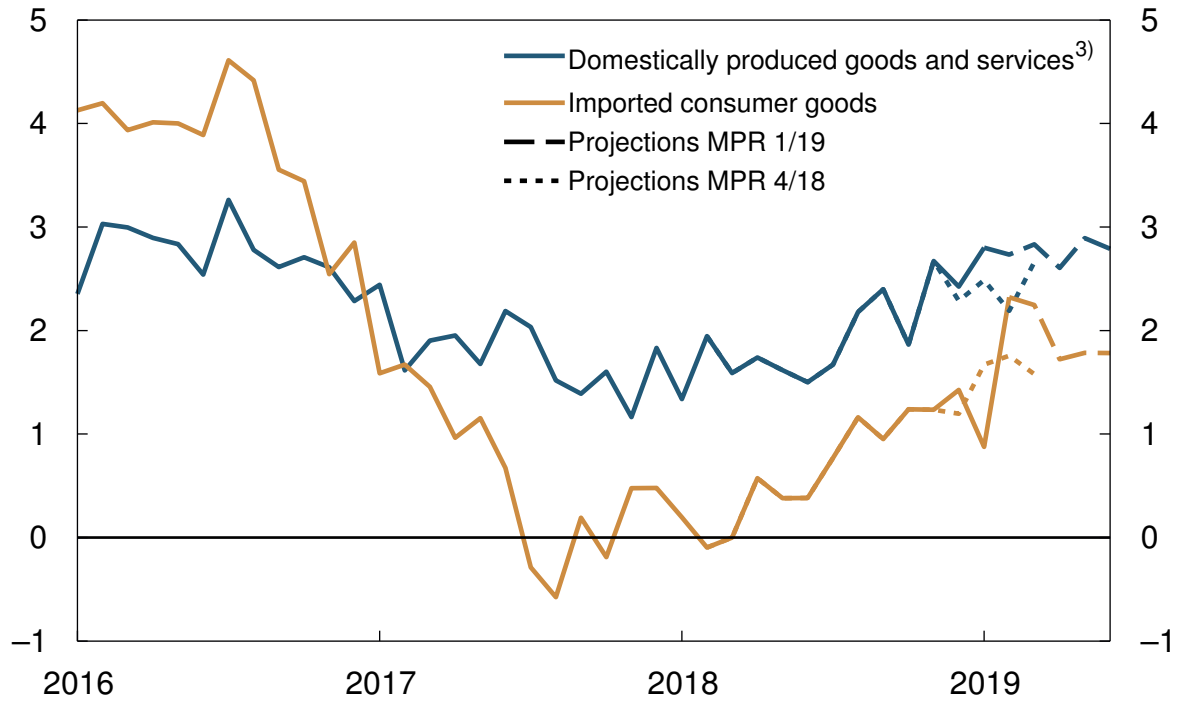


1) CPI adjusted for tax changes and excluding energy products.

2) Estimated by the groups *transport fuels and lubricants* and *electricity and other fuels*.

Sources: Statistics Norway and Norges Bank

Chart 3.24 CPI-ATE<sup>1)</sup> by supplier sector.  
 Twelve-month change. Percent. January 2016 – June 2019<sup>2)</sup>



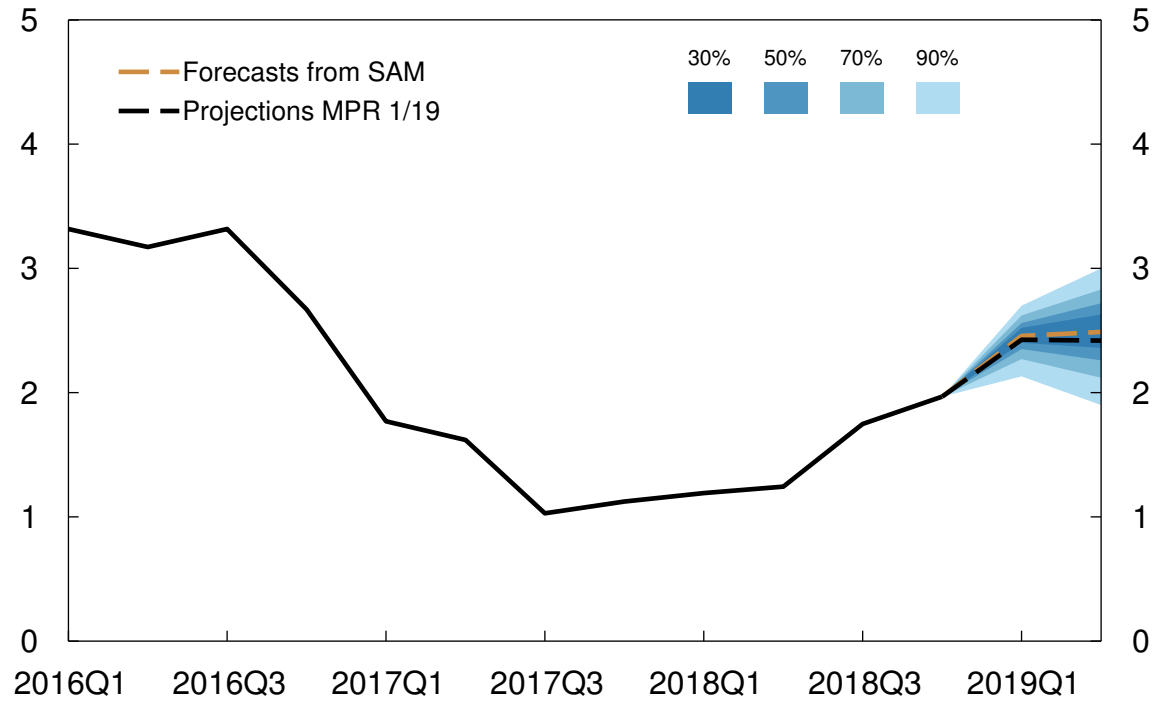
1) CPI adjusted for tax changes and excluding energy products.

2) Projections for March 2019 – June 2019.

3) Norges Bank's estimates.

Sources: Statistics Norway and Norges Bank

Chart 3.25 CPI-ATE<sup>1)</sup> with fan chart from SAM<sup>2)</sup>.  
 Four-quarter change. Percent. 2016 Q1 – 2019 Q2<sup>3)</sup>



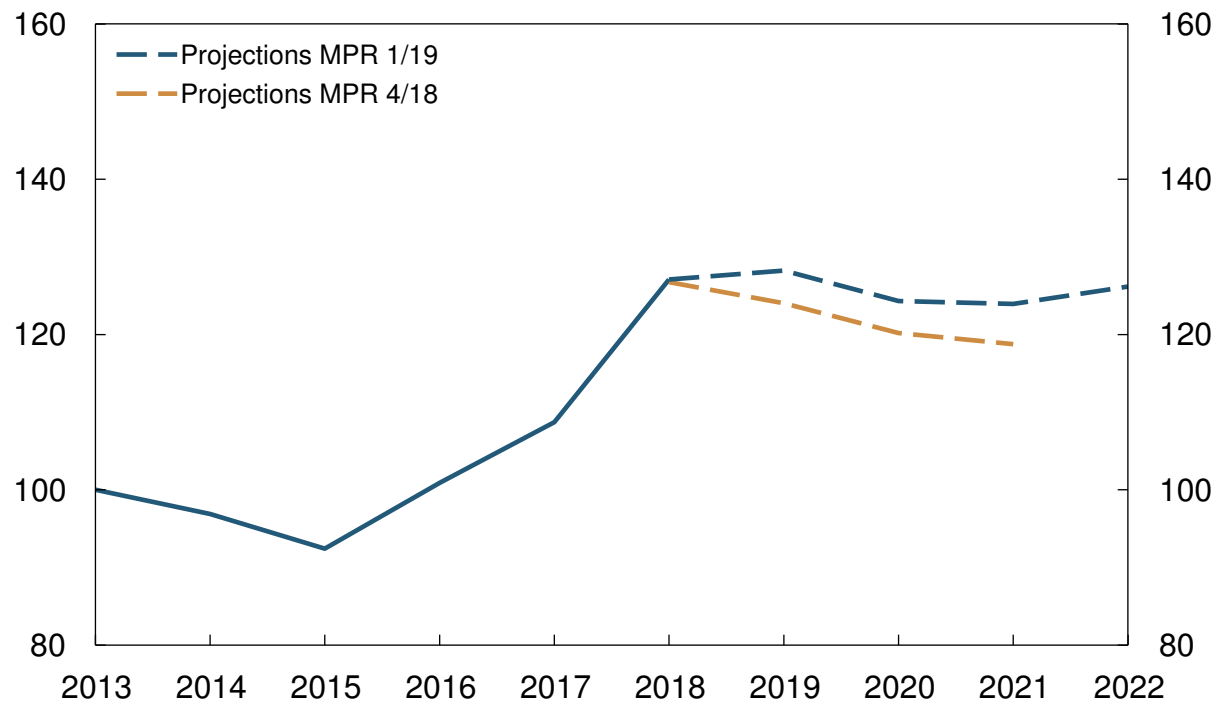
1) CPI adjusted for tax changes and excluding energy products.

2) System for Averaging short-term Models.

3) Projections for 2019 Q1 – 2019 Q2.

Sources: Statistics Norway and Norges Bank

Chart 3.26 Energy prices in the CPI.<sup>1)</sup> Index. 2013 = 100. 2013 – 2022<sup>2)</sup>

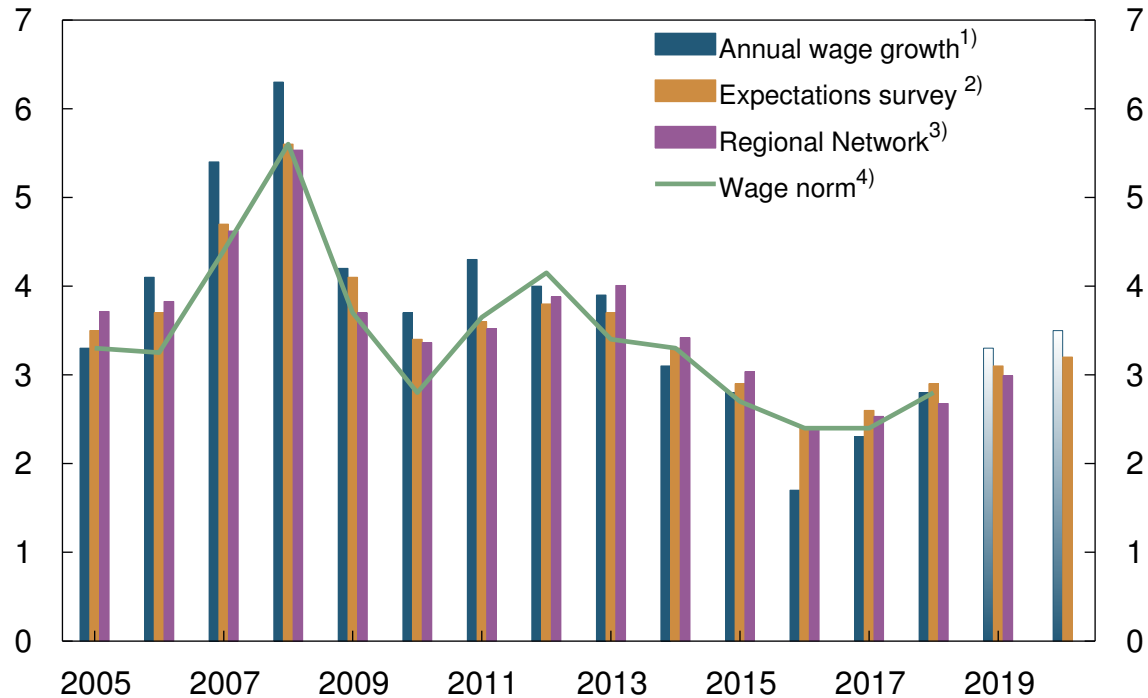


1) Weighted average of prices for *transport fuels and lubricants* and of *electricity and other fuels* in CPI. The projections are based on futures prices for electricity, petrol and fuel.

2) Projections for 2019 – 2022 (broken lines).

Sources: Nord Pool, Norwegian Water Resources and Energy Directorate, Statistics Norway, Thomson Reuters and Norges Bank

Chart 3.27 Wage, wage norm and wage expectations.  
Annual change. Percent. 2005 – 2020



1) Actual annual wage growth from Statistics Norway. Norges Bank's projections for 2019 and 2020 (shaded bars).

2) Social partners' wage growth expectations for the current year as measured by Norges Bank's expectations survey in Q1 each year and expected annual wage growth for 2020 measured in 2019 Q1.

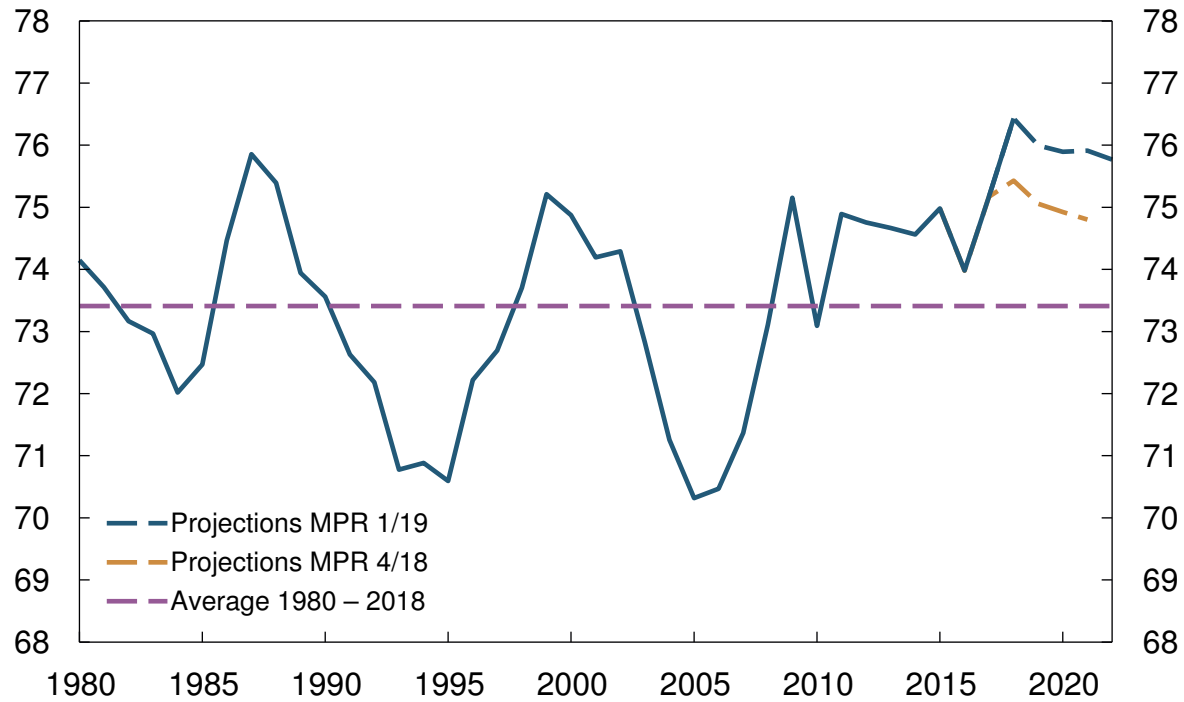
3) Expected wage growth for the current year as reported by the Regional Network in Q1 each year.

4) Before 2014: for manufacturing as projected by the National Mediator or NHO. From 2014: for the overall industry, based on an analysis by NHO and LO.

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



Chart 3.28 Labour cost share for mainland Norway.<sup>1)</sup> Percent. 1980 – 2022<sup>2)</sup>

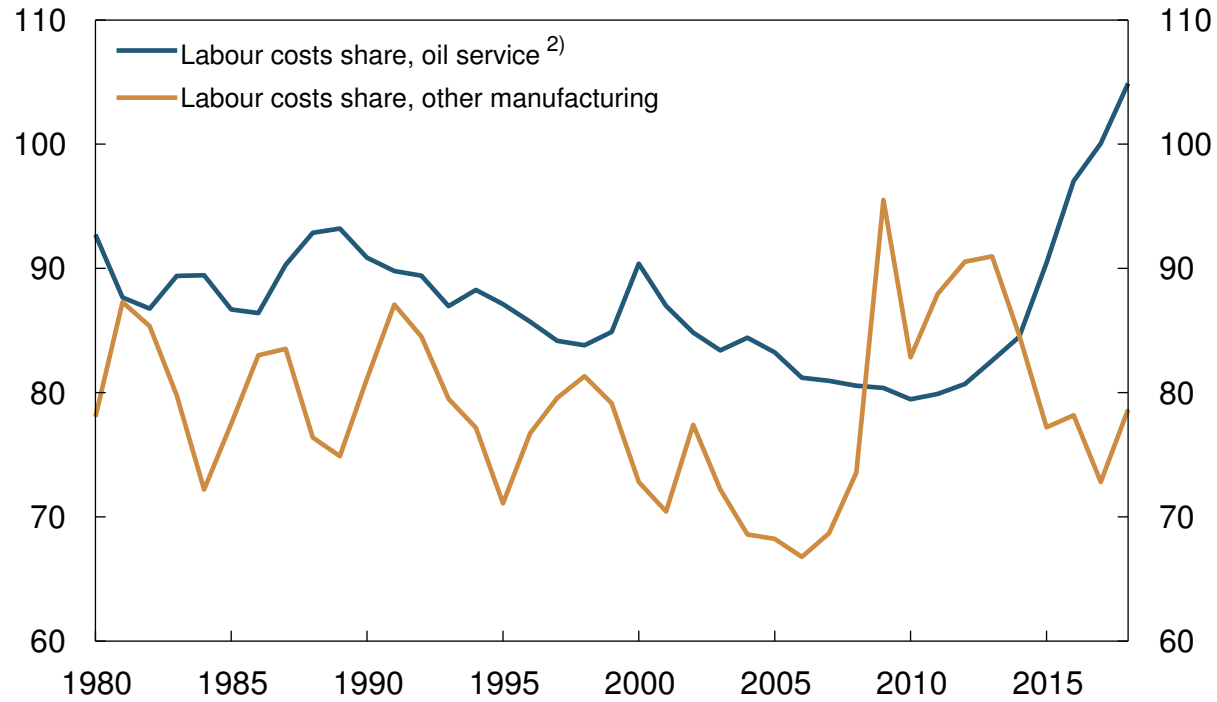


1) Labour costs as a proportion of the factor income.

2) Projections for 2019 – 2022.

Sources: Statistics Norway and Norges Bank

Chart 3.29 Labour cost share in manufacturing. Percent. 1980 – 2018

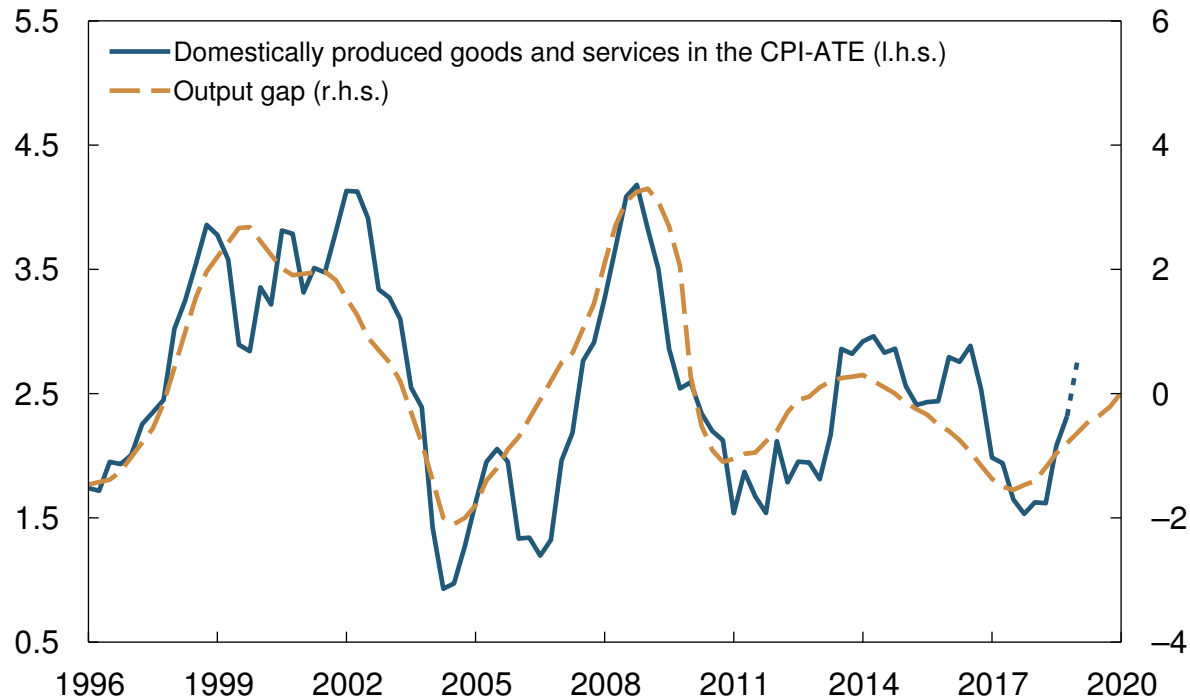


1) Labour costs as a proportion of the factor income.

2) Shipyards and engineering industry.

Sources: Statistics Norway and Norges Bank

Chart 3.30 Domestically produced goods and services in the CPI-ATE <sup>1)</sup>.  
 Four-quarter change. Percent. Lagged output gap <sup>2)</sup>. Percent. 1996 Q1 – 2020 Q1

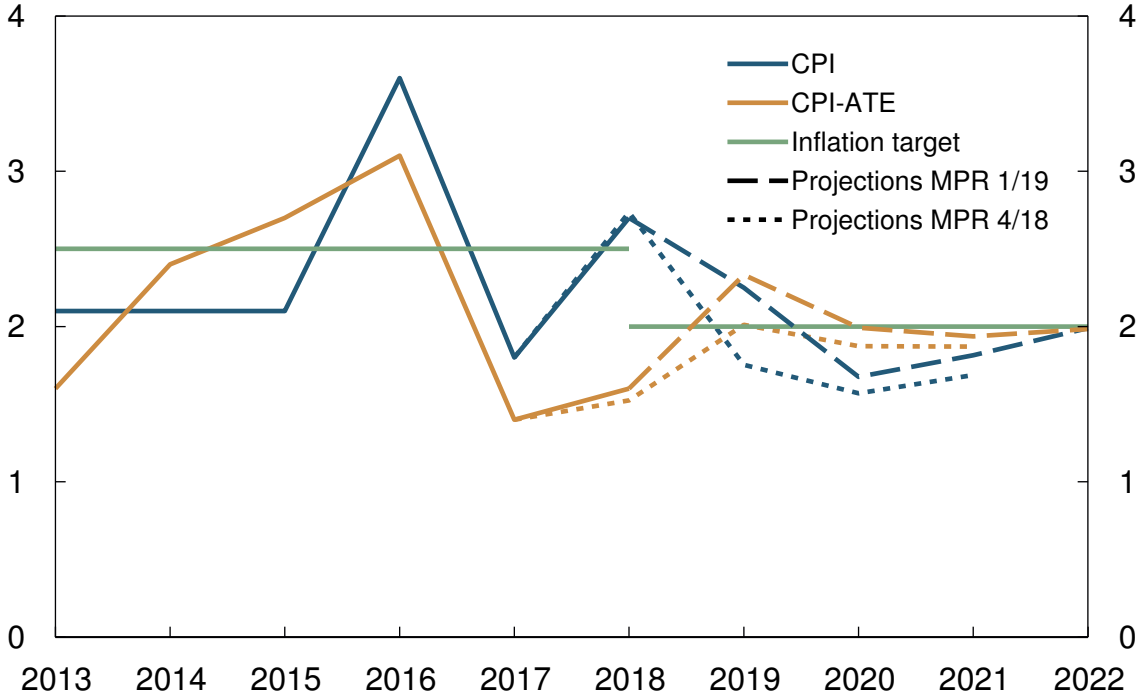


1) CPI adjusted for tax changes and excluding energy products. Norges Bank's estimates. 1996 Q1 – 2018 Q4. Projections for 2019 Q1.

2) The output gap is measured as the percentage difference between mainland GDP and estimated potential mainland GDP. The gap is lagged by five quarters and shows data for 1994 Q3 – 2018 Q4.

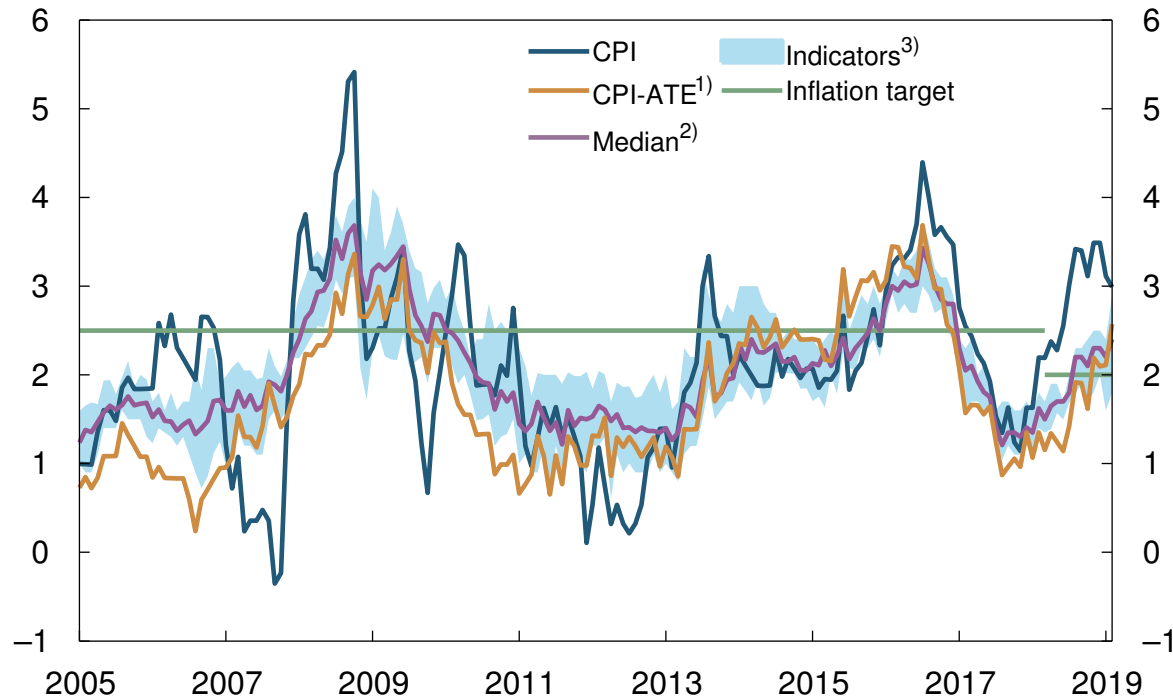
Sources: Statistics Norway and Norges Bank

Chart 3.31 CPI and CPI-ATE<sup>1)</sup>. Annual change. Percent. 2013 – 2022



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

Chart 3.32 CPI and indicators of underlying inflation.  
 Twelve-month change. Percent. January 2005 – February 2019



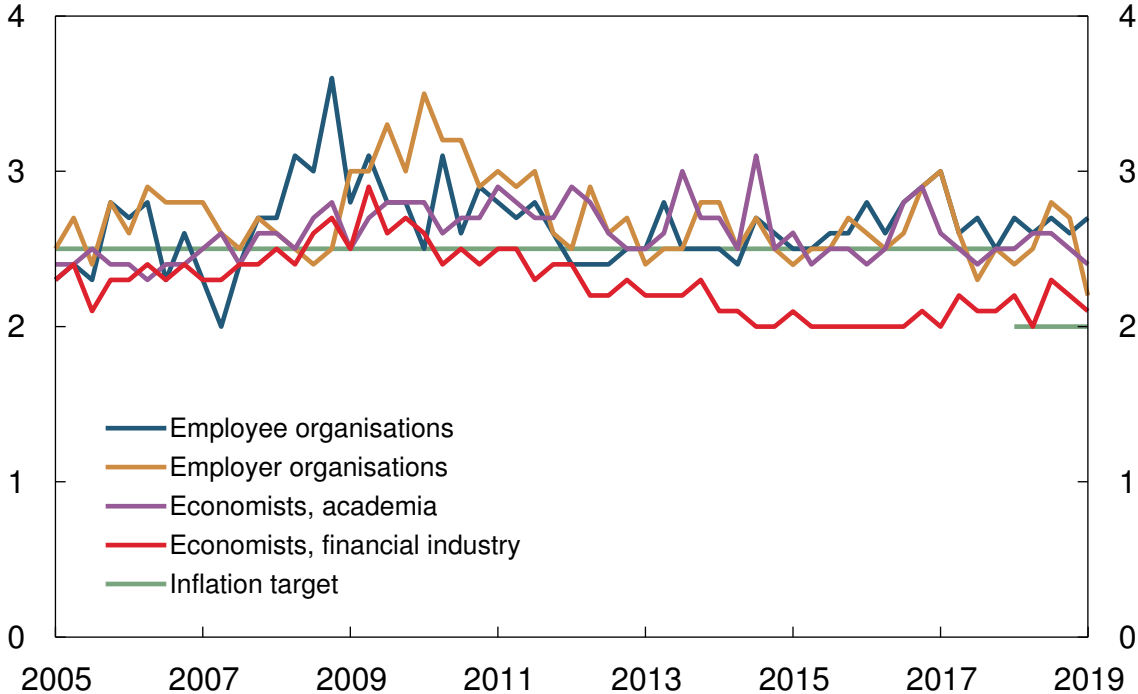
1) CPI adjusted for tax changes and excluding energy products.

2) Median of CPIM, CPIXE, 20% trimmed mean, weighted median, CPI-XV and CPI common.

3) The band shows the highest and lowest values for CPIM, CPIXE, 20% trimmed mean, weighted median, CPI-XV and CPI common.

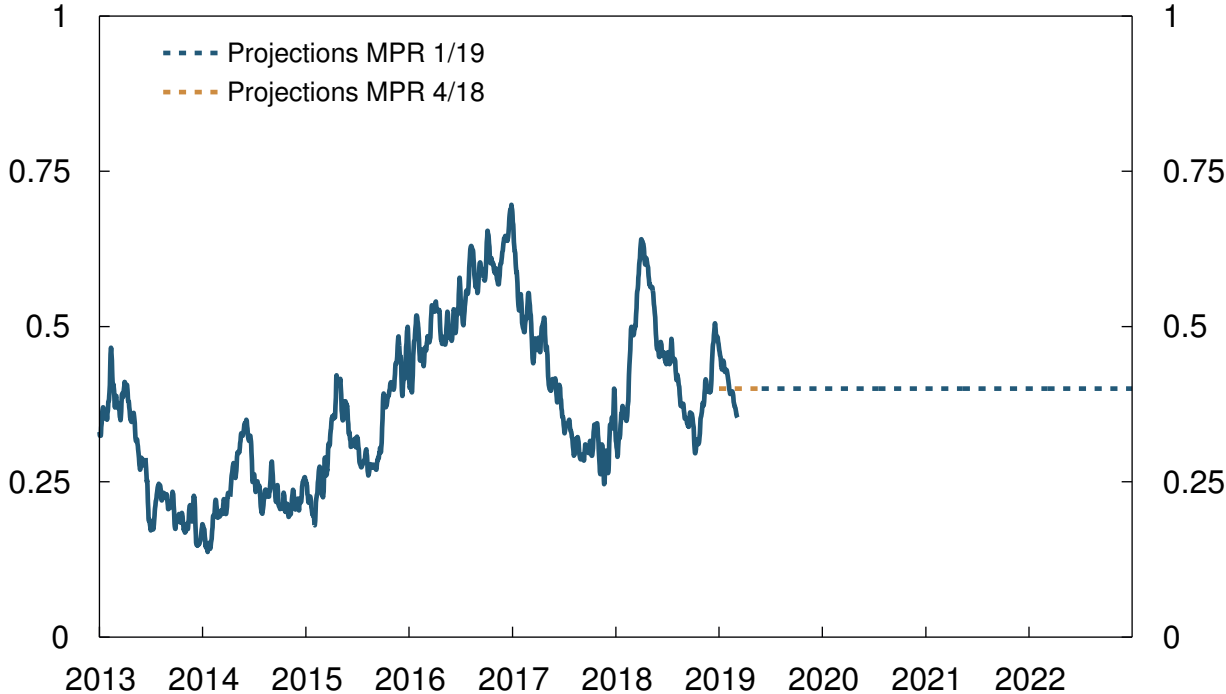
Sources: Statistics Norway and Norges Bank

Chart 3.33 Expected twelve-month change in consumer prices five years ahead. Percent. 2005 Q1 – 2019 Q1



Sources: Epinion, Kantar TNS and Opinion

Chart 3.34 Norwegian three-month money market premium.<sup>1)</sup> Five-day moving average. Percentage points. 1 January 2013 – 31 December 2022<sup>2)</sup>

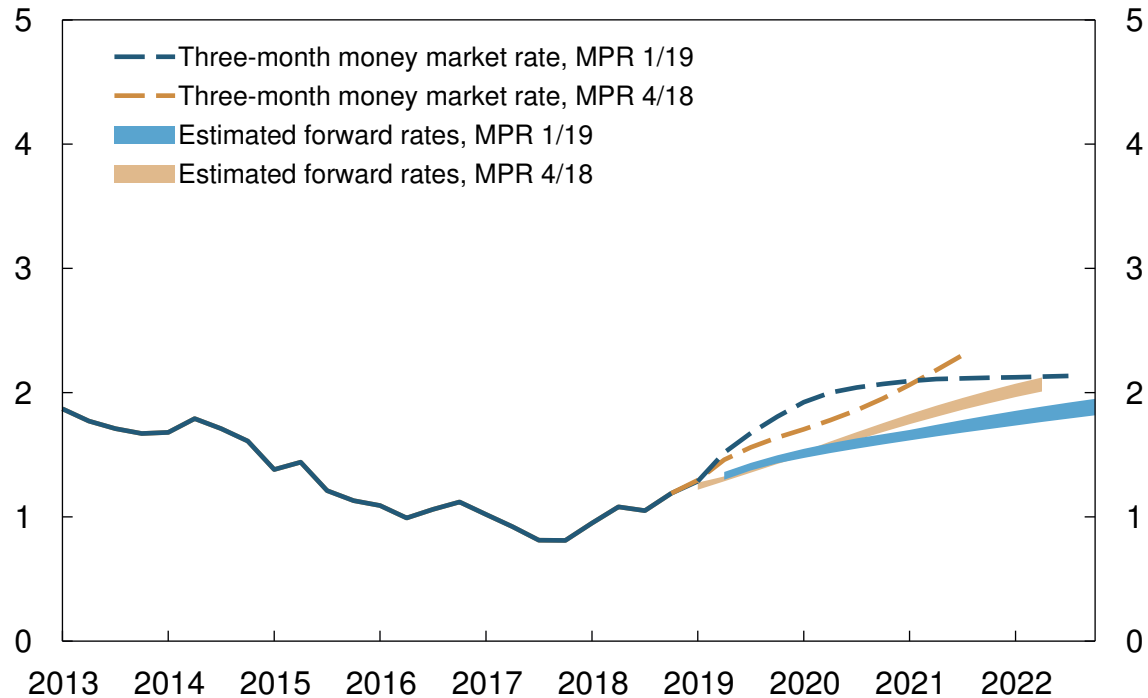


1) Norges Bank estimates of the difference between the three-month money market rate and the expected policy rate.

2) Projections for 2019 Q2 – 2022 Q4.

Sources: Thomson Reuters and Norges Bank

Chart 3.35 Three-month money market rate <sup>1)</sup> and estimated forward rates <sup>2)</sup>.  
 Percent. 2013 Q1 – 2022 Q4 <sup>3)</sup>



1) Projections for the money market rate are calculated as an average of the policy rate in the current and subsequent quarter plus an estimate of the money market premium.

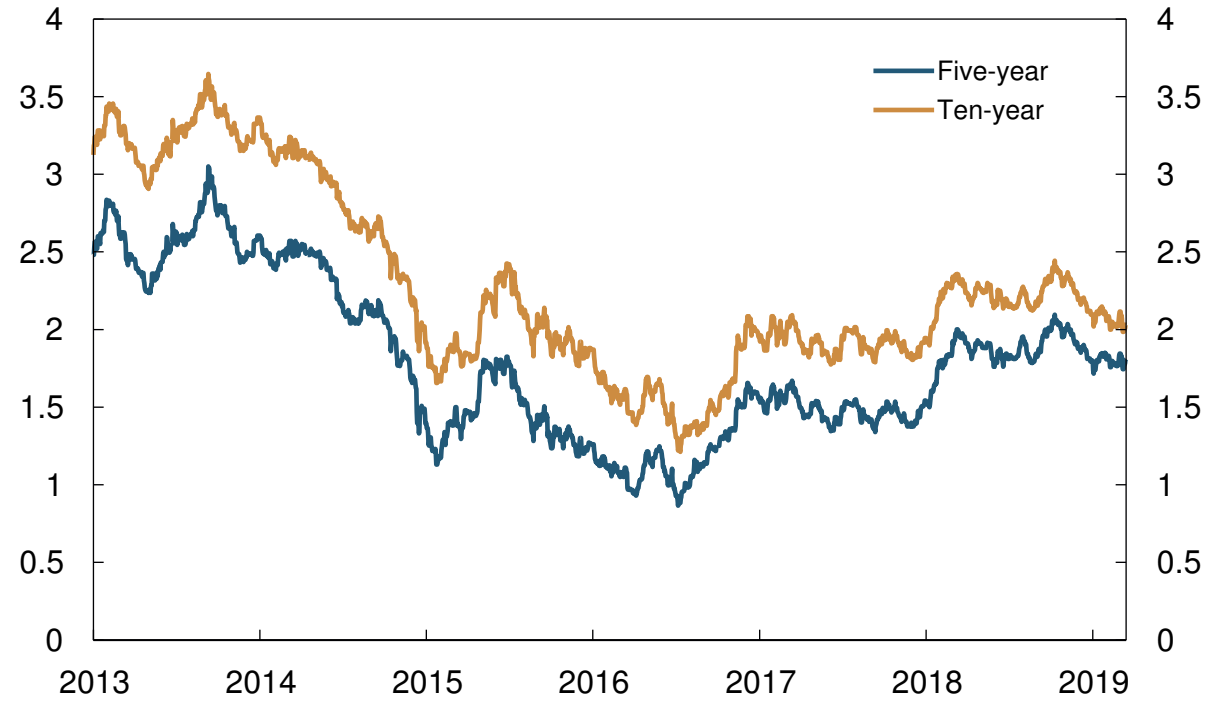
2) Forward rates are based on money market rates and interest rate swaps. The orange and blue bands show the highest and lowest rates in the period 26 November – 7 December in 2018 for MPR 4/18 and in the period 4 March – 15 March in 2019 for MPR 1/19, respectively.

3) Money market projections for 2019 Q1 – 2022 Q3. Forward rate projections for 2019 Q2 – 2022 Q4.

Sources: Thomson Reuters and Norges Bank

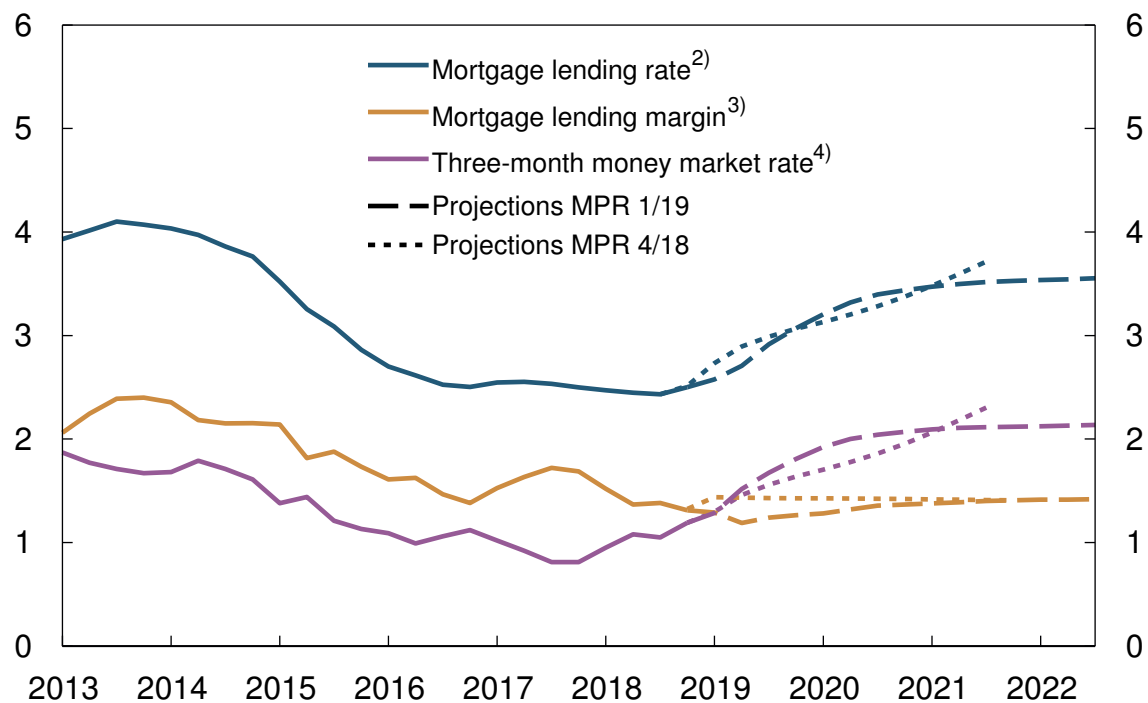


Chart 3.36 Five- and ten-year swap rates. Percent. 2 January 2013 – 15 March 2019



Source: Bloomberg

Chart 3.37 Interest rates. Percent. 2013 Q1 – 2022 Q3<sup>1)</sup>



1) Projections for 2019 Q1 – 2022 Q3.

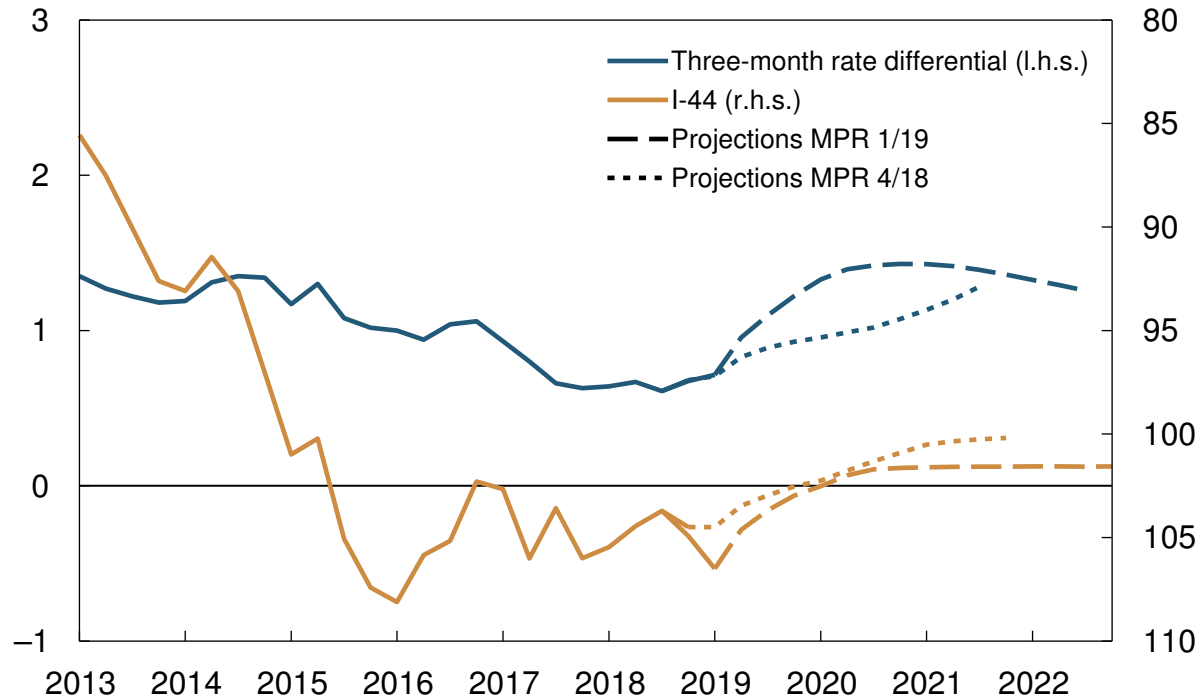
2) Average interest rate on outstanding mortgage loans to households from the sample of banks included in Statistics Norway's monthly interest rate statistics.

3) Difference between the mortgage lending rate and the three-month money market rate.

4) Projections are calculated as an average of the policy rate in the current and subsequent quarter plus an estimate of the money market premium.

Source: Statistics Norway, Thomson Reuters and Norges Bank

Chart 3.38 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>. 2013 Q1 – 2022 Q4<sup>4)</sup>



1) Projections for the money market rate are calculated as an average of the policy rate in the current and subsequent quarter plus an estimate of the money market premium.

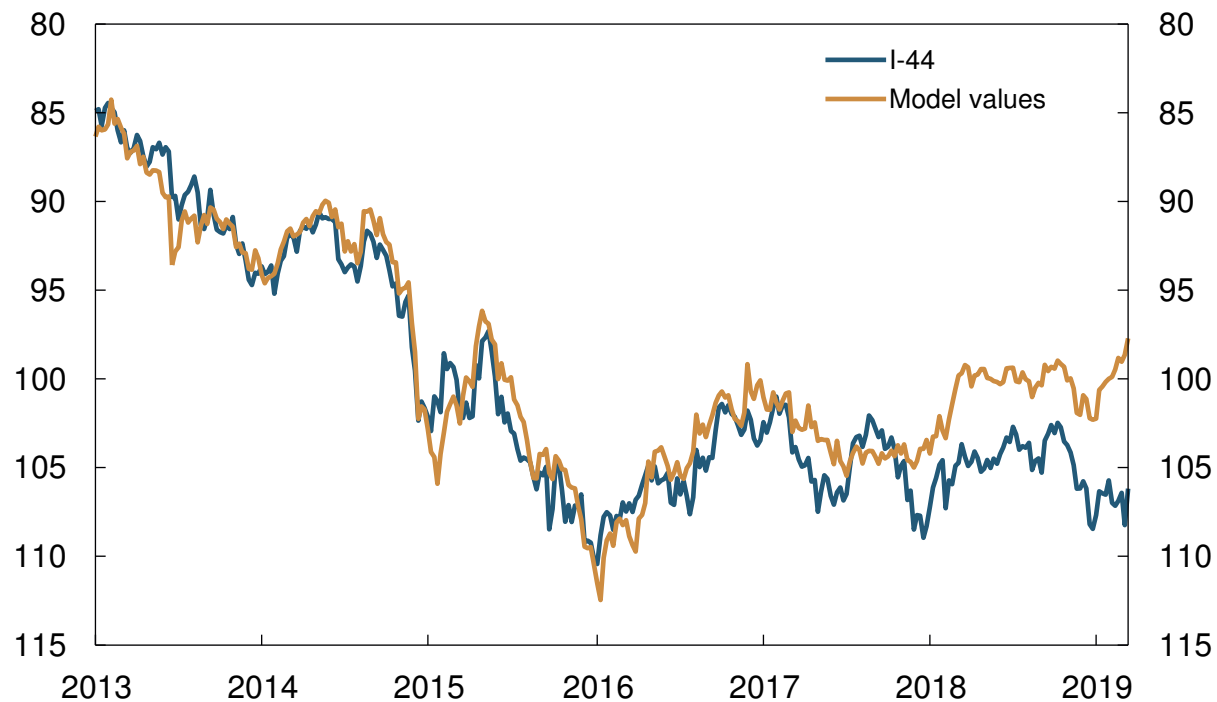
2) Forward rates for trading partners at 7 December for MPR 4/18 and 15 March 2019 for MPR 1/19. See Norges Bank (2015) "Calculation of the aggregate for trading partner interest rates". *Norges Bank Papers* 2/2015.

3) A positive slope denotes a stronger krone exchange rate.

4) Projections for money market rate 2019 Q1 – 2022 Q3. Projections for I-44 2019 Q1 – 2022 Q4.

Sources: Thomson Reuters and Norges Bank

Chart 3.39 Empirical model for import-weighted krone exchange rate (I-44).<sup>1) 2)</sup>  
Week 1 2013 – week 11 2019

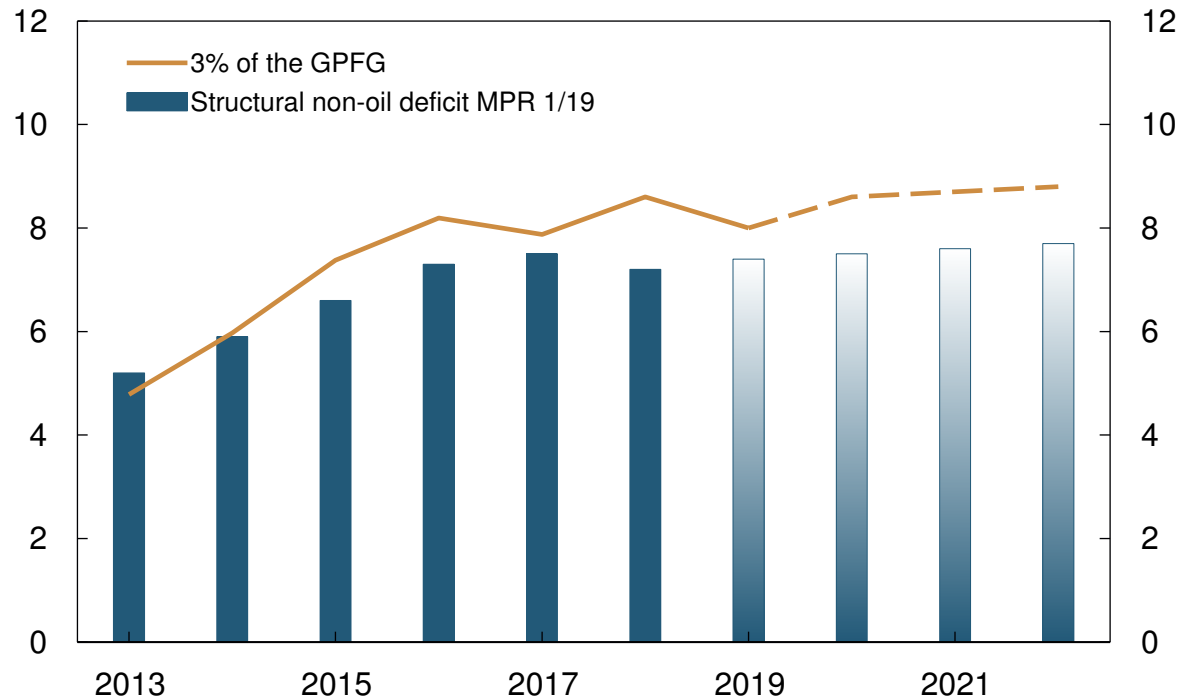


1) Oil price and one-year and 10-year interest swap rate differential against trading partners are incorporated as explanatory variables. The model is estimated using data from the first week of January 2009 to the last week of December 2016. The chart shows the fitted values for the last week of 2016 and the model-predicted values from the first week of January 2017 to week 11 of 2019.

2) A rising value in the chart denotes a stronger krone.

Sources: Bloomberg, Thomson Reuters and Norges Bank

Chart 3.40 Structural non-oil deficit and 3% of the GPFG<sup>1)</sup>.  
 Share of trend GDP for mainland Norway. Percent. 2013 – 2022<sup>2)</sup>

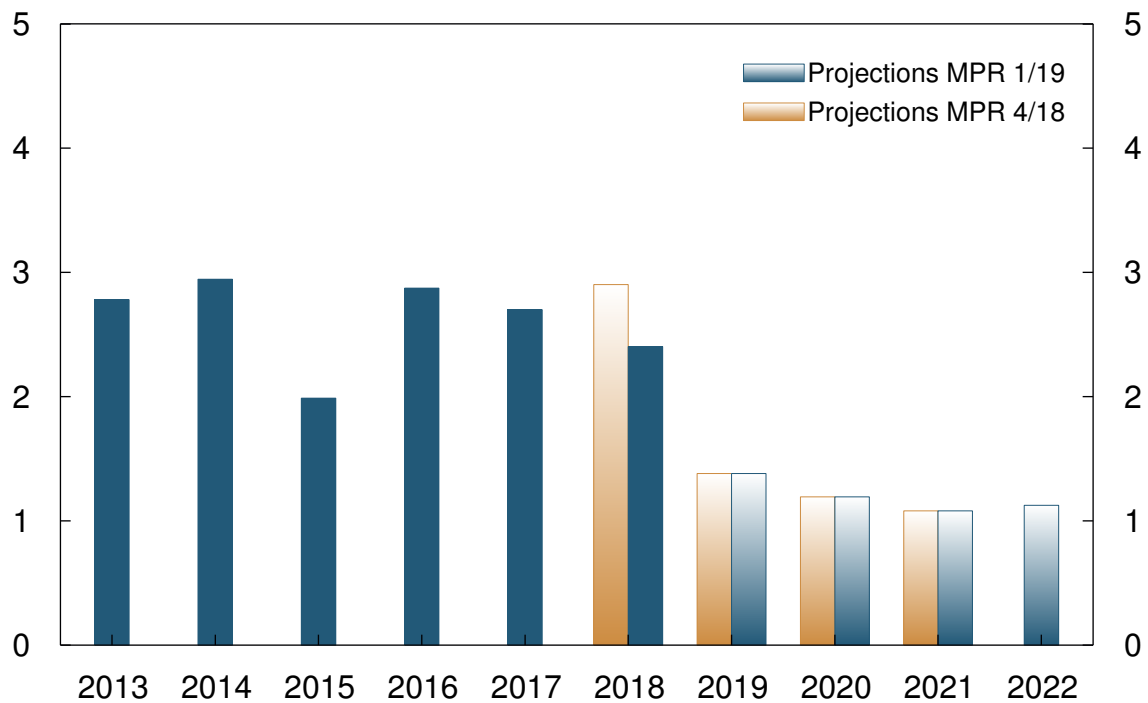


1) Government Pension Fund Global.

2) Projections for 2019 – 2022 (broken line and shaded bars).

Sources: Ministry of Finance and Norges Bank

Chart 3.41 Public sector demand <sup>1)</sup>. Annual change. Percent. 2013 – 2022<sup>2)</sup>



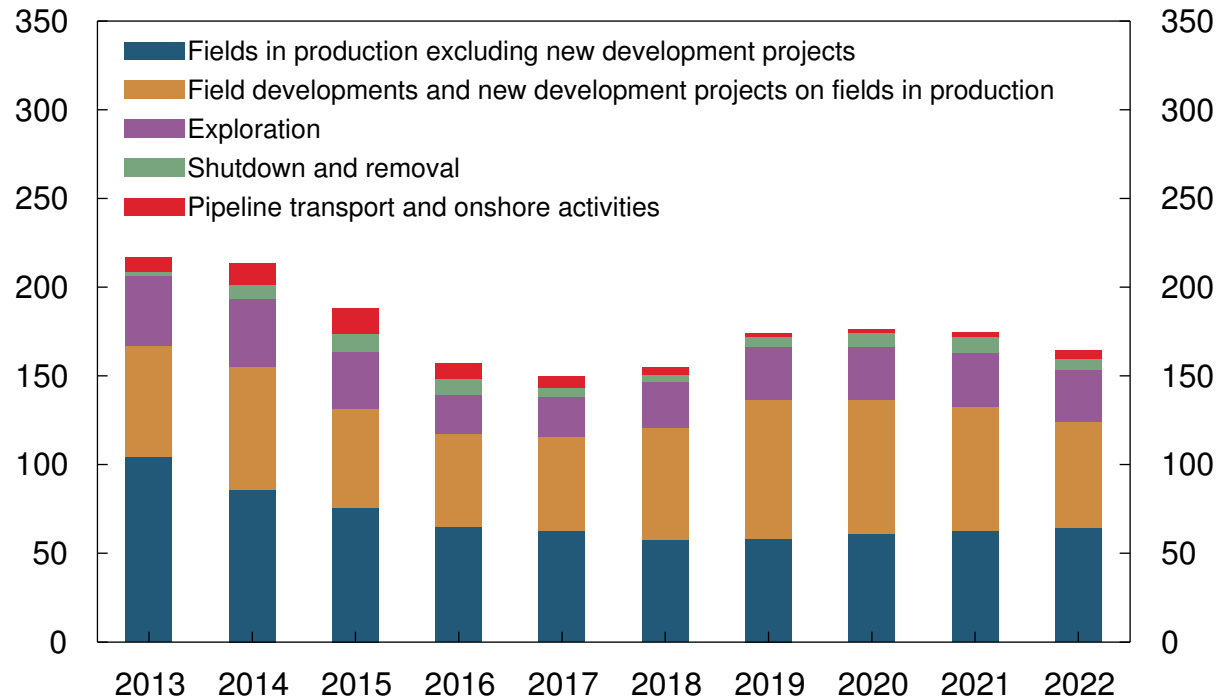
1) Working-day adjusted.

2) Projections for 2019 – 2022.

Sources: Statistics Norway and Norges Bank

Chart 3.42 Petroleum investment.

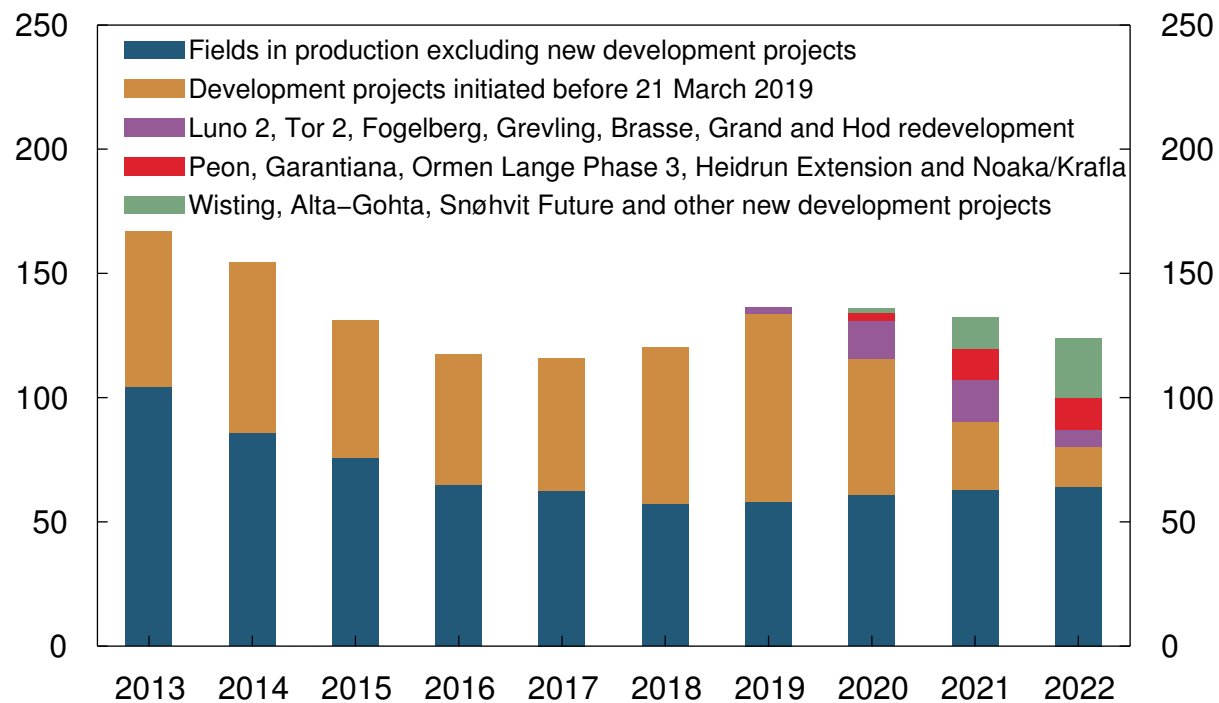
Constant 2019 prices. In billions of NOK. 2013 – 2022 <sup>1)</sup>



1) Projections for 2019 – 2022. Figures for 2013 – 2018 are from Statistics Norway's investment intentions survey and deflated by the price index for petroleum investment in the national accounts. The index is projected to rise by 2% per year in 2019 and 2020.

Sources: Statistics Norway and Norges Bank

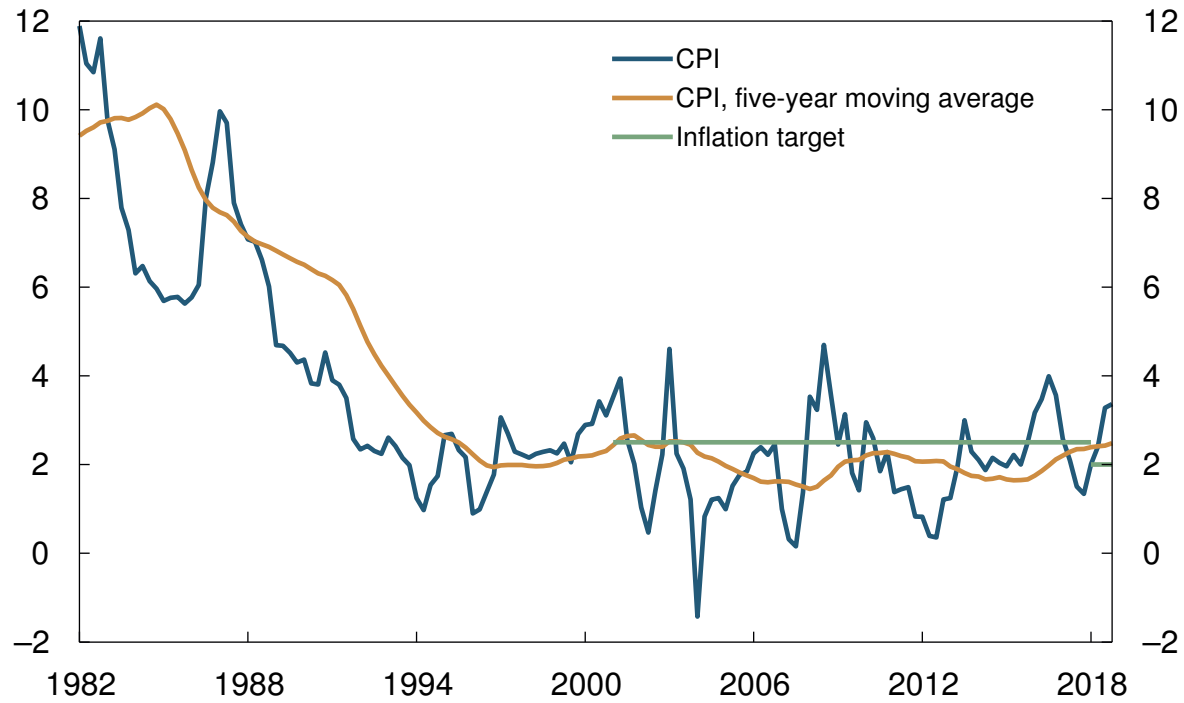
Chart 3.43 Investment in field development and fields in production.  
Constant 2019 prices. In billions of NOK. 2013 – 2022 <sup>1)</sup>



1) Projections for 2019 – 2022. Figures for 2013 – 2018 are from Statistics Norway's investment intentions survey and deflated by the price index for petroleum investment in the national accounts. The projections are based on reports to the Storting, impact analyses, forecasts from the Norwegian Petroleum Directorate, Statistics Norway's investment intentions survey and current information about development projects.  
Sources: Statistics Norway and Norges Bank

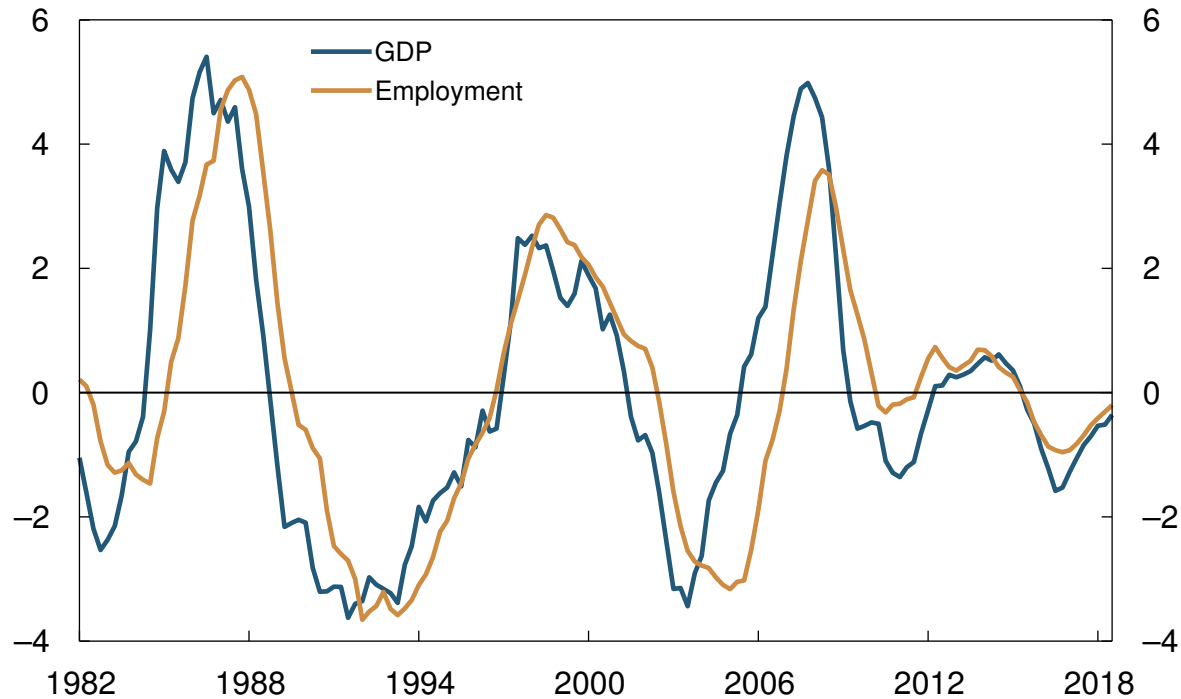


Chart 4.1 Consumer price index (CPI).  
Four-quarter change. Percent. 1982 Q1 – 2018 Q4



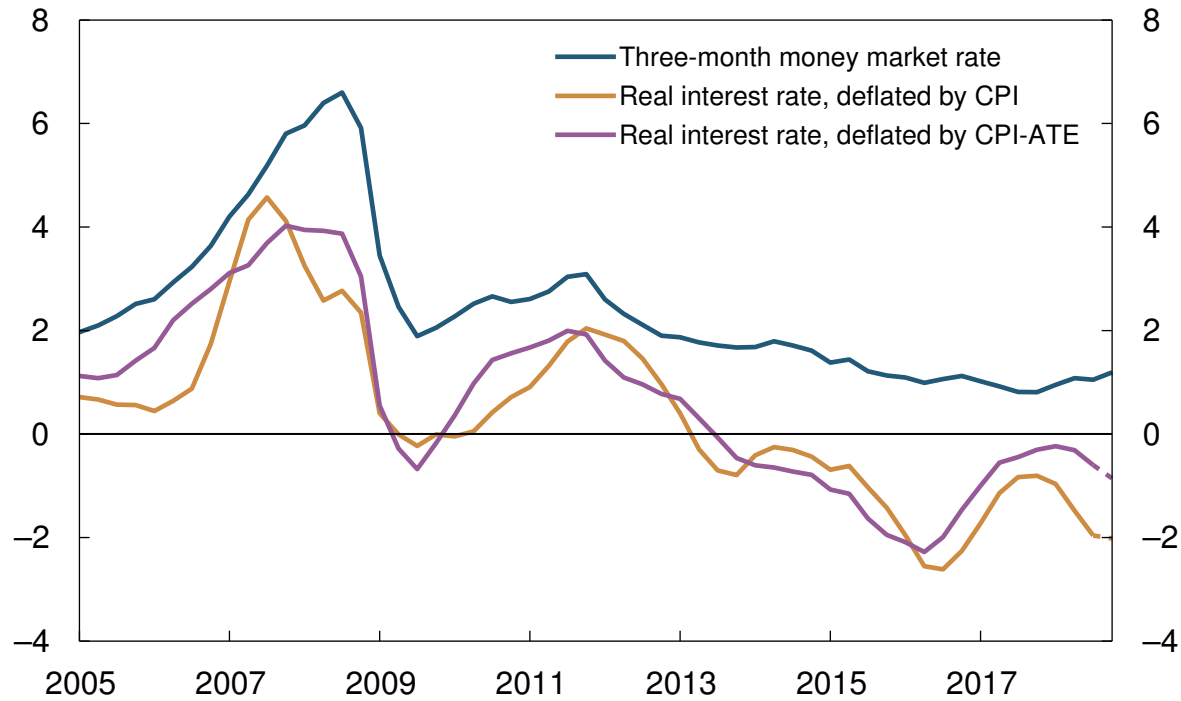
Sources: Statistics Norway and Norges Bank

Chart 4.2 GDP for mainland Norway and employment.  
Deviation from trend.<sup>1)</sup> Percent. 1982 Q1 – 2018 Q3



1) The trend for both series is calculated using an HP filter with  $\lambda = 40\,000$ . Calculations are based on data from 1978 Q1 – 2018 Q4. The deviation from trend is a three-quarter centered moving average.  
Sources: Statistics Norway and Norges Bank

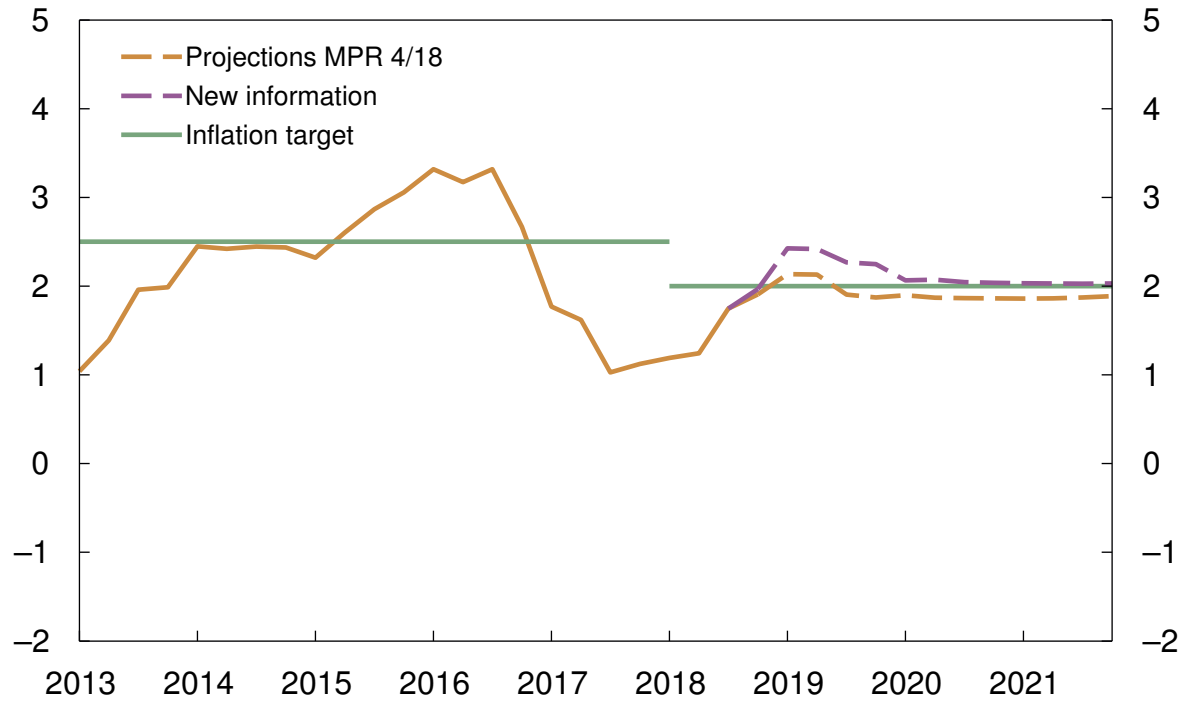
Chart 4.3 Three-month money market rate and real interest rates <sup>1)</sup>.  
 Percent. 2005 Q1 – 2018 Q4 <sup>2)</sup>



1) Three-month money market rate deflated by a three-quarter centered moving average of inflation, measured by four-quarter CPI inflation and CPI inflation adjusted for tax changes and excluding energy prices (CPI-ATE).  
 2) Projections for 2018 Q4 (broken lines).

Sources: Statistics Norway and Norges Bank

Chart 4.4a CPI-ATE.<sup>1)</sup> Projection conditional on new information and policy rate forecast in MPR 4/18. Four-quarter change. Percent. 2013 Q1 – 2021 Q4<sup>2)</sup>

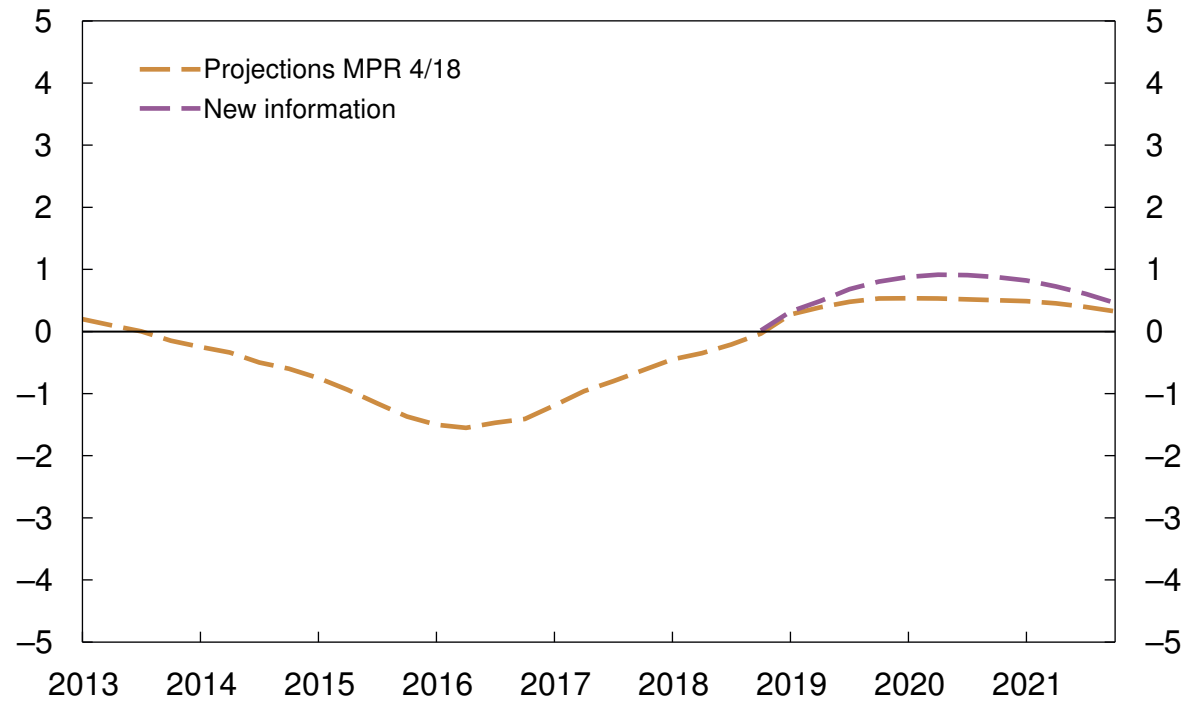


1) CPI adjusted for tax changes and excluding energy products.

2) Projections for 2019 Q1 – 2021 Q4.

Sources: Statistics Norway and Norges Bank

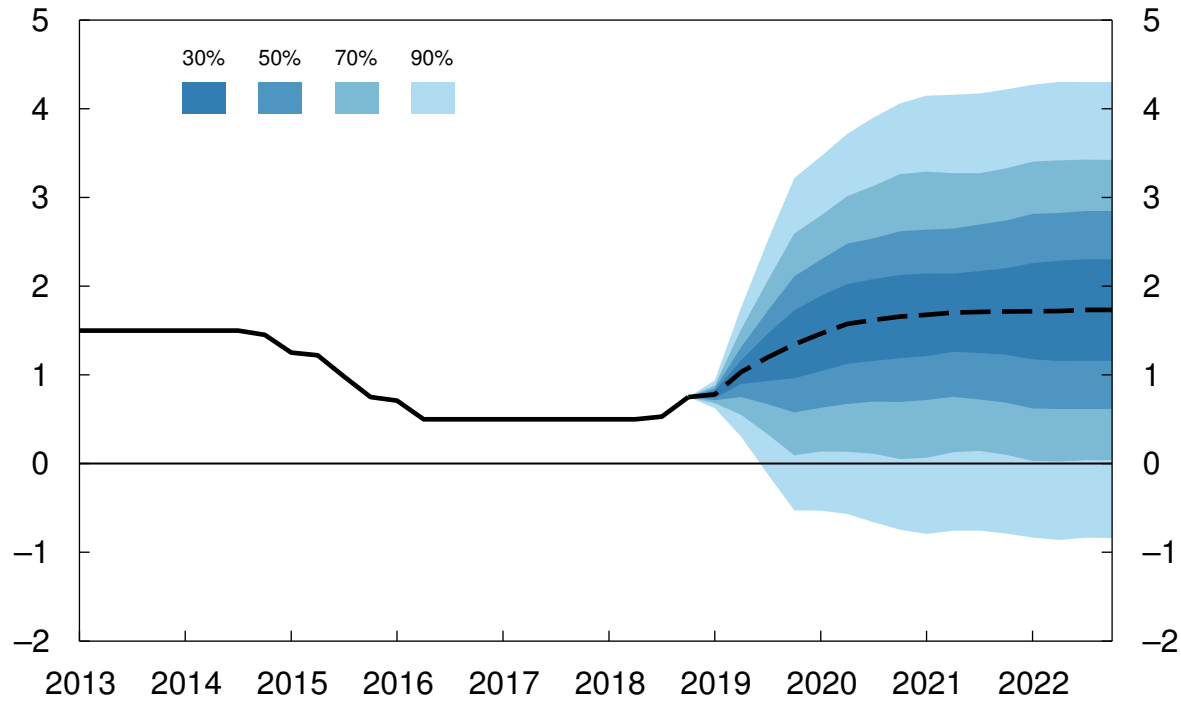
Chart 4.4b Estimated output gap<sup>1)</sup>. Projection conditional on new information and policy rate forecast in MPR 4/18. Percent. 2013 Q1 – 2021 Q4



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

Source: Norges Bank

Chart 4.5a Policy rate with fan chart<sup>1)</sup>.  
Percent. 2013 Q1 – 2022 Q4<sup>2)</sup>

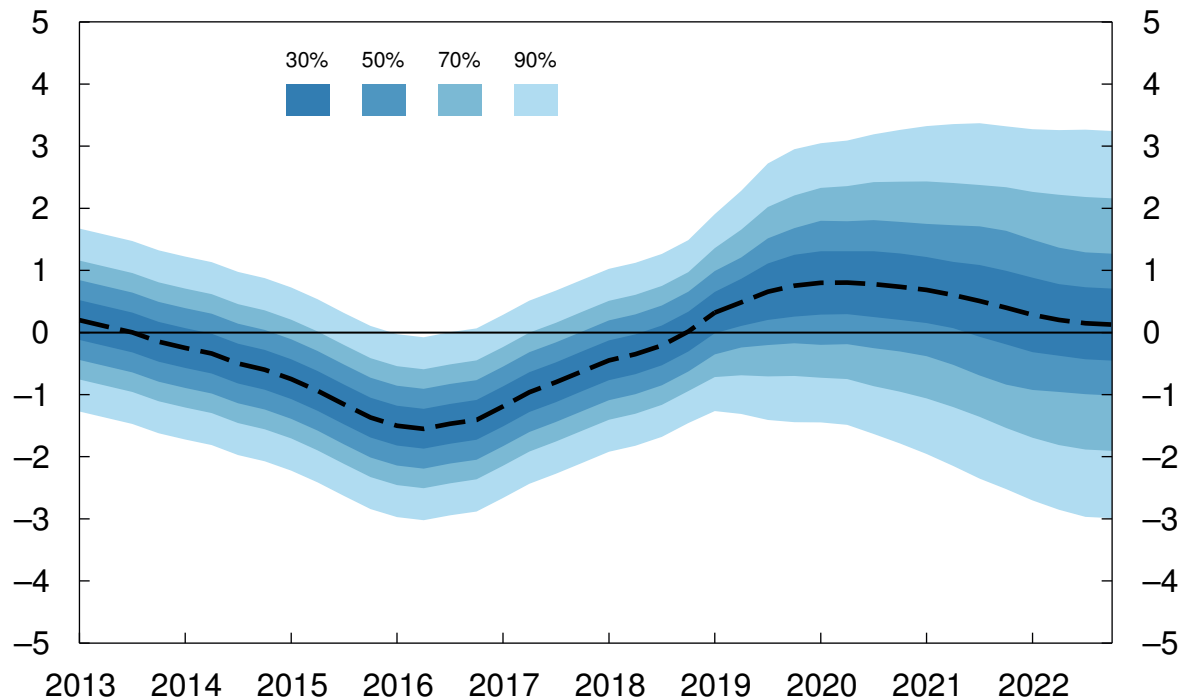


1) The fan chart is based on historical experience and stochastic simulations in Norges Bank's main macroeconomic model, NEMO. It does not take into account that a lower bound for the interest rate exists.

2) Projections for 2019 Q1 – 2022 Q4 (broken line).

Source: Norges Bank

Chart 4.5b Estimated output gap<sup>1)</sup> with fan chart<sup>2)</sup>.  
Percent. 2013 Q1 – 2022 Q4

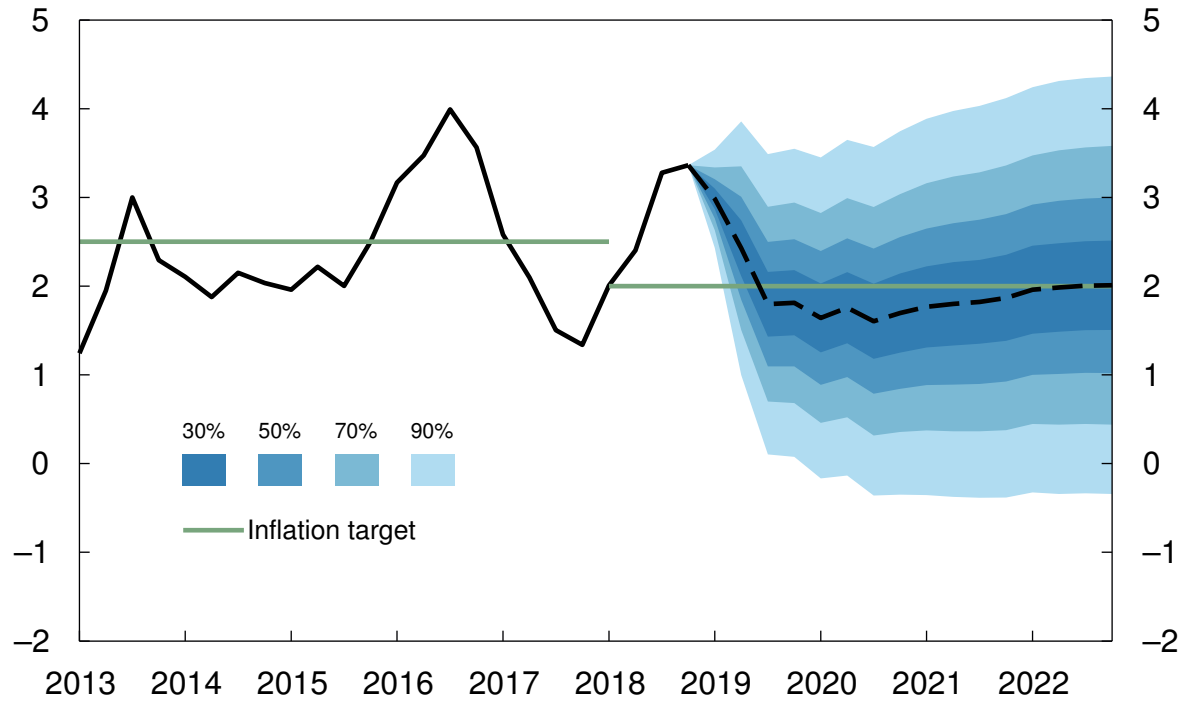


1) The output gap measures the percentage deviation between mainland GDP and estimated potential mainland GDP.

2) The fan chart is based on historical experience and stochastic simulations in Norges Bank's main macroeconomic model, NEMO.

Source: Norges Bank

Chart 4.5c CPI with fan chart<sup>1)</sup>.  
 Four-quarter change. Percent. 2013 Q1 – 2022 Q4<sup>2)</sup>



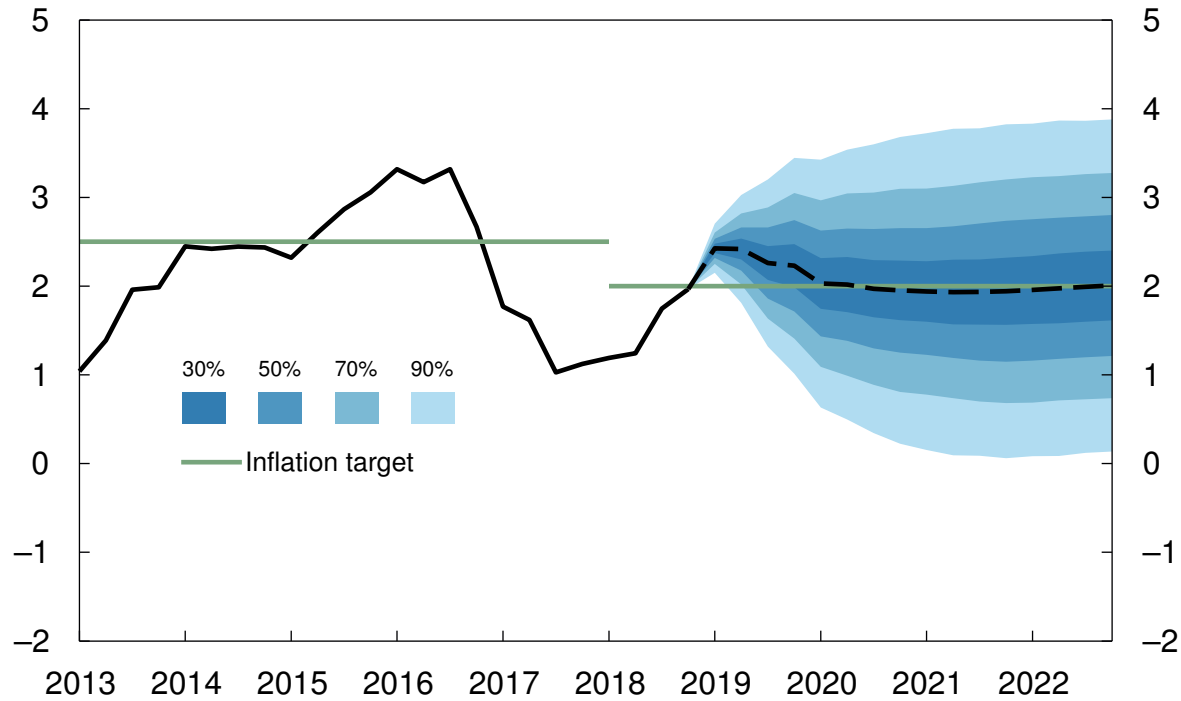
1) The fan chart is based on historical experience and stochastic simulations in Norges Bank's main macroeconomic model, NEMO.

2) Projections for 2019 Q1 – 2022 Q4 (broken line).

Sources: Statistics Norway and Norges Bank



Chart 4.5d CPI-ATE<sup>1)</sup> with fan chart<sup>2)</sup>.  
 Four-quarter change. Percent. 2013 Q1 – 2022 Q4<sup>3)</sup>



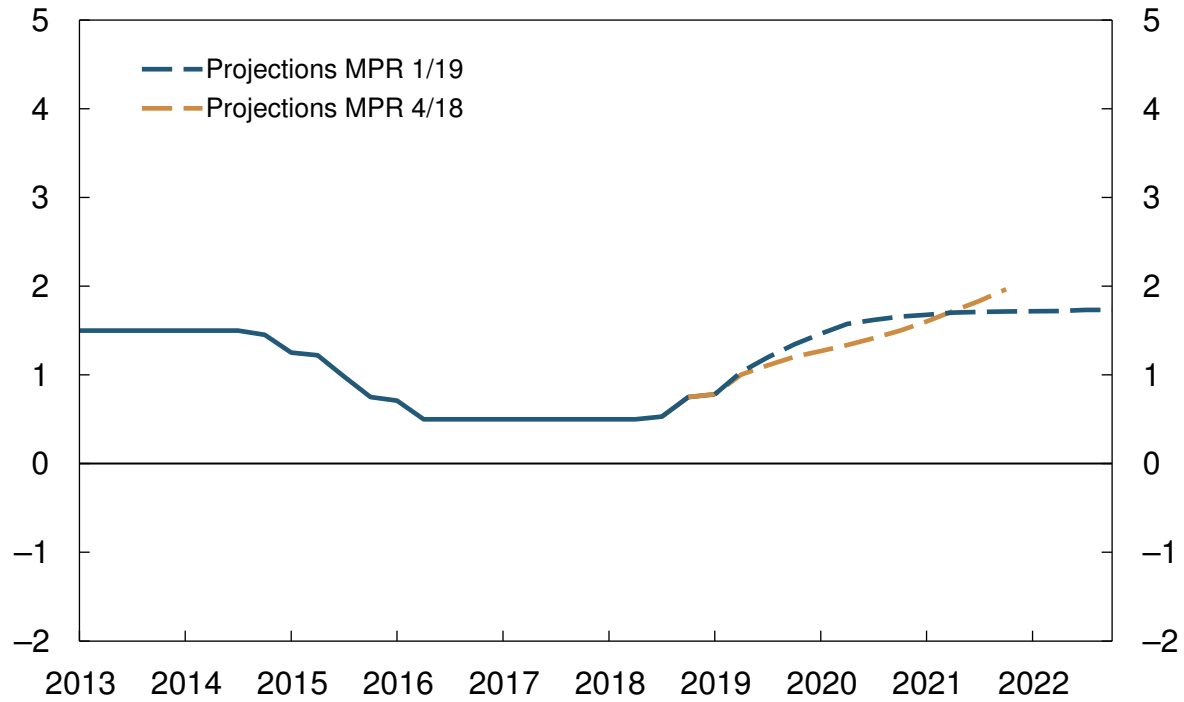
1) CPI adjusted for tax changes and excluding energy products.

2) The fan chart is based on historical experience and stochastic simulations in Norges Bank's main macroeconomic model, NEMO.

3) Projections for 2019 Q1 – 2022 Q4 (broken line).

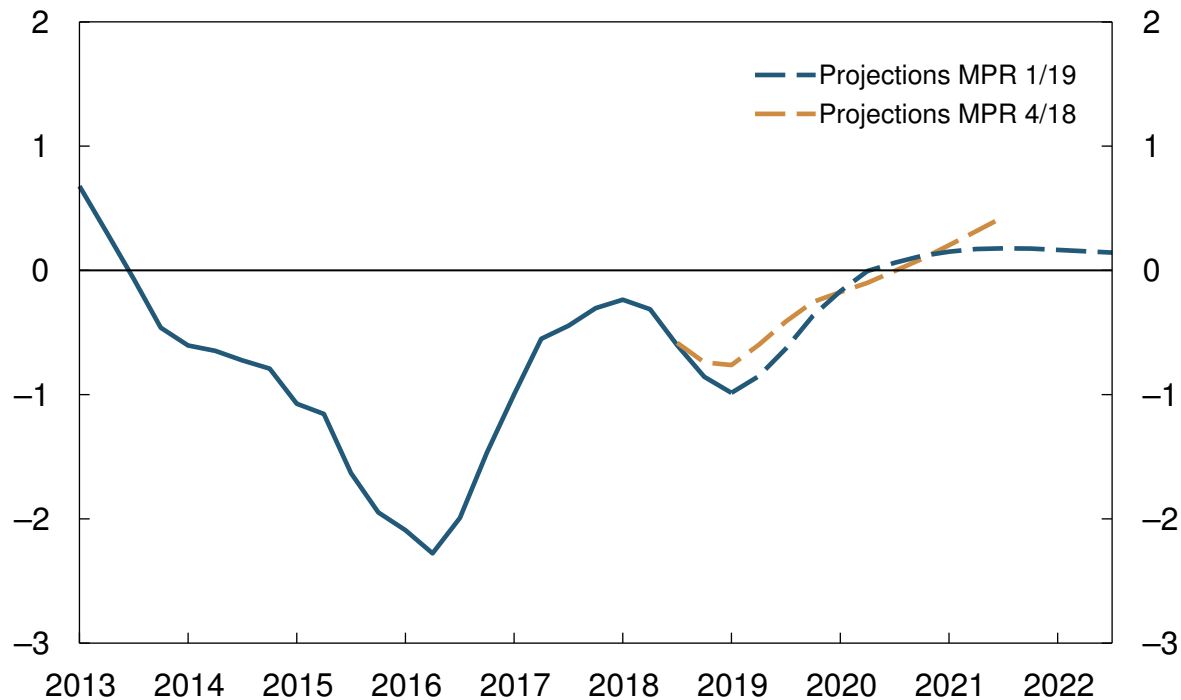
Sources: Statistics Norway and Norges Bank

Chart 4.6 Policy rate. Percent. 2013 Q1 – 2022 Q4<sup>1)</sup>



1) Projections for 2019 Q1 – 2022 Q4.  
Source: Norges Bank

Chart 4.7 Real interest rate.<sup>1)</sup> Percent. 2013 Q1 – 2022 Q3<sup>2)</sup>

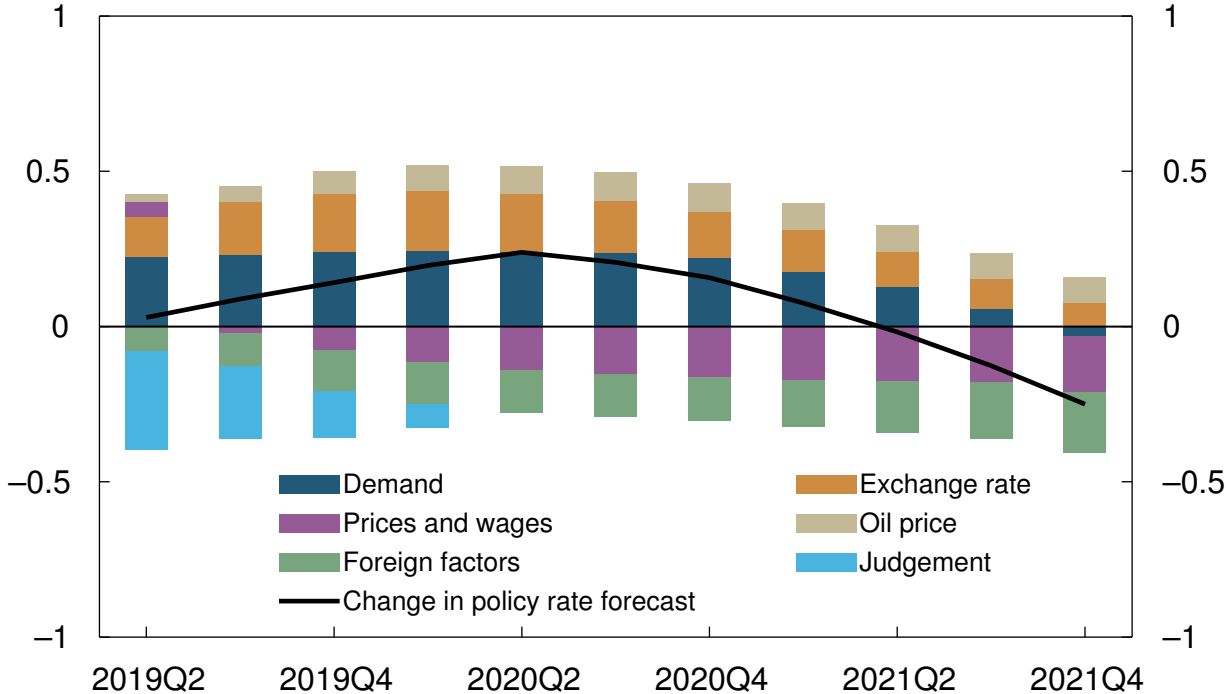


1) Three-month money market rate deflated by a three-quarter centered moving average of inflation, measured by four-quarter CPI inflation adjusted for tax changes and excluding energy prices (CPI-ATE).

2) Projections for 2018 Q4 – 2022 Q3.

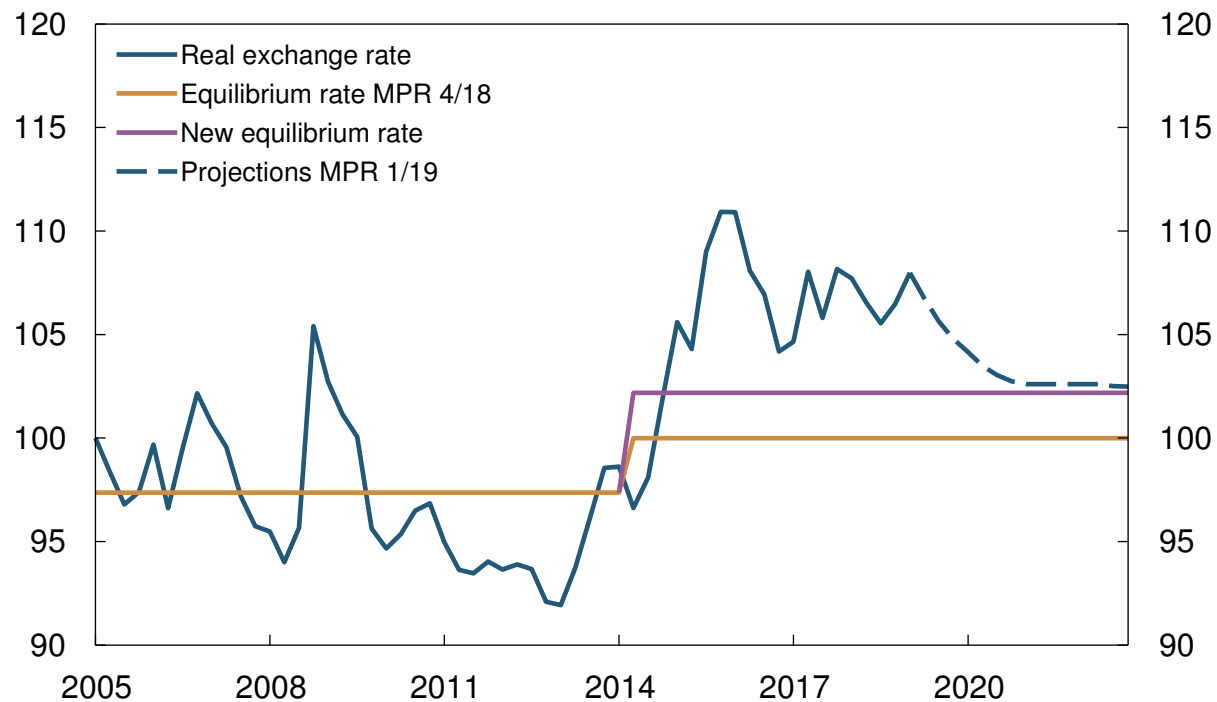
Sources: Statistics Norway and Norges Bank

Chart 4.8 Factors behind changes in policy rate forecast since MPR 4/18.  
 Cumulative contribution. Percentage points. 2019 Q2 – 2021 Q4



Source: Norges Bank

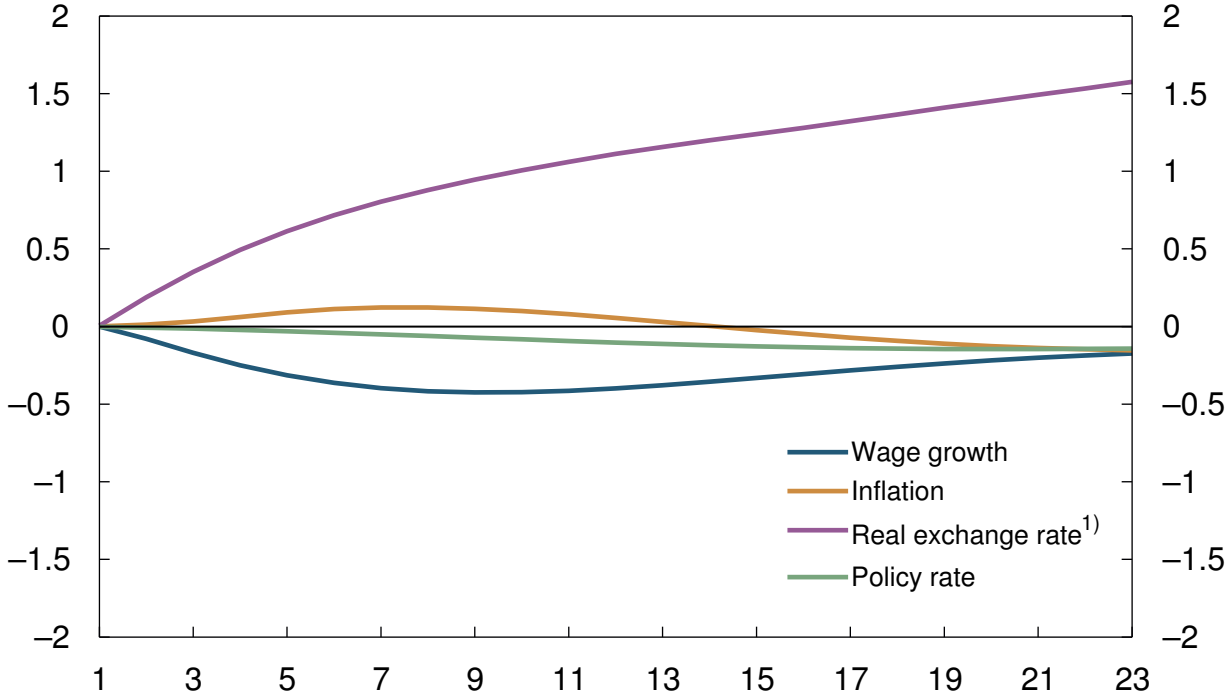
Chart 4.9 Real exchange rate.<sup>1)</sup> Index. 2005 Q1 = 100. 2005 Q1 – 2022 Q4



1) Import-weighted krone exchange rate (I-44) adjusted for relative consumer prices between Norway and trading partners. CPI-ATE for Norway. For trading partners, core CPI with import weights for the euro area, Sweden, UK and US is used (see chart 2.6).

Source: Norges Bank

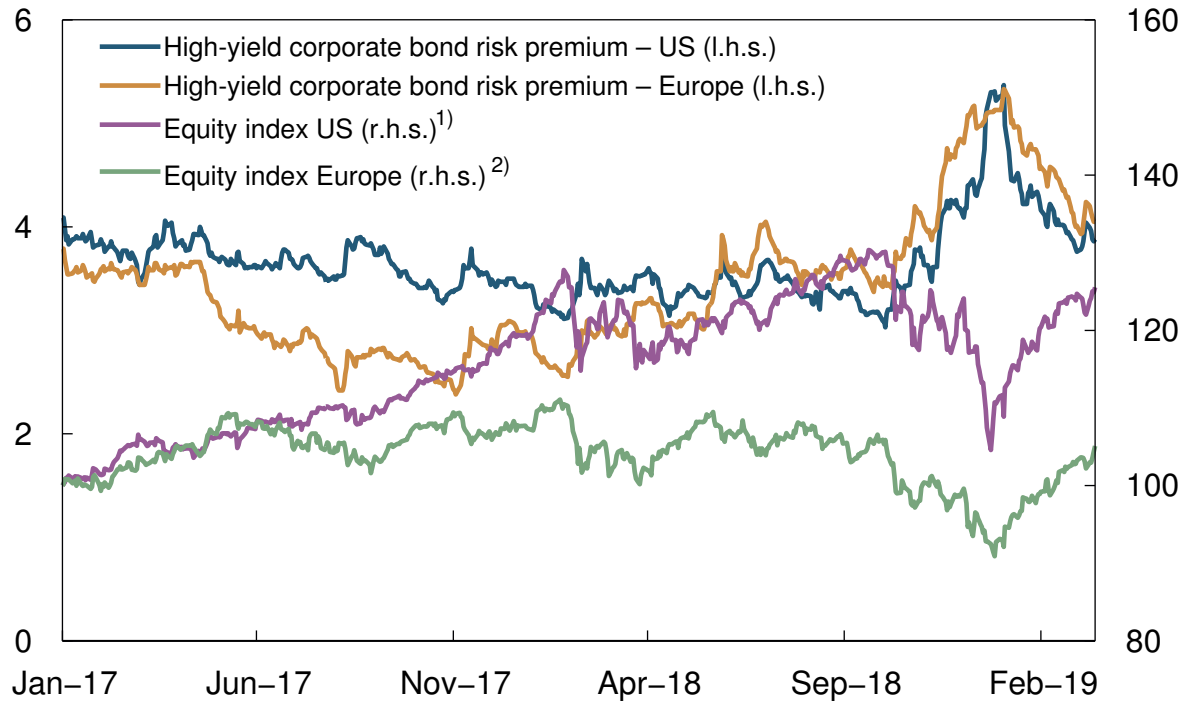
Chart 4.10 Changes in variables in NEMO following a 2 percent lower equilibrium exchange rate four years back. Percentage points. Quarters from today



1) Percent.  
Source: Norges Bank

Chart 5.1 Global equity and bond indexes.

Percent. Index. 1 January 2017 = 100. 1 January 2017 – 15 March 2019



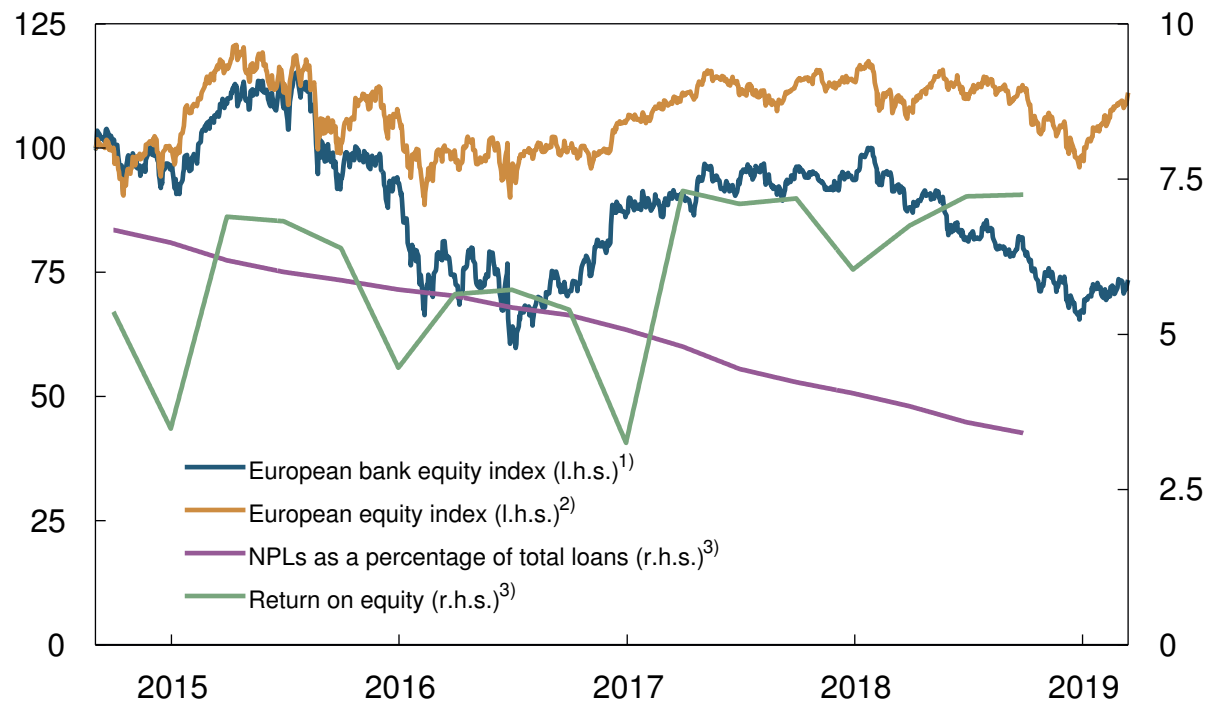
1) Standard and Poor's 500 Index (US).

2) Stoxx Europe 600 Index (Europe).

Source: Bloomberg

Chart 5.2 European equity indexes, non-performing loans (NPLs) and European bank profitability. Percent. Index. 1 September 2014 = 100.

1 September 2014 – 15 March 2019



1) Stoxx Europe 600 Banks Index.

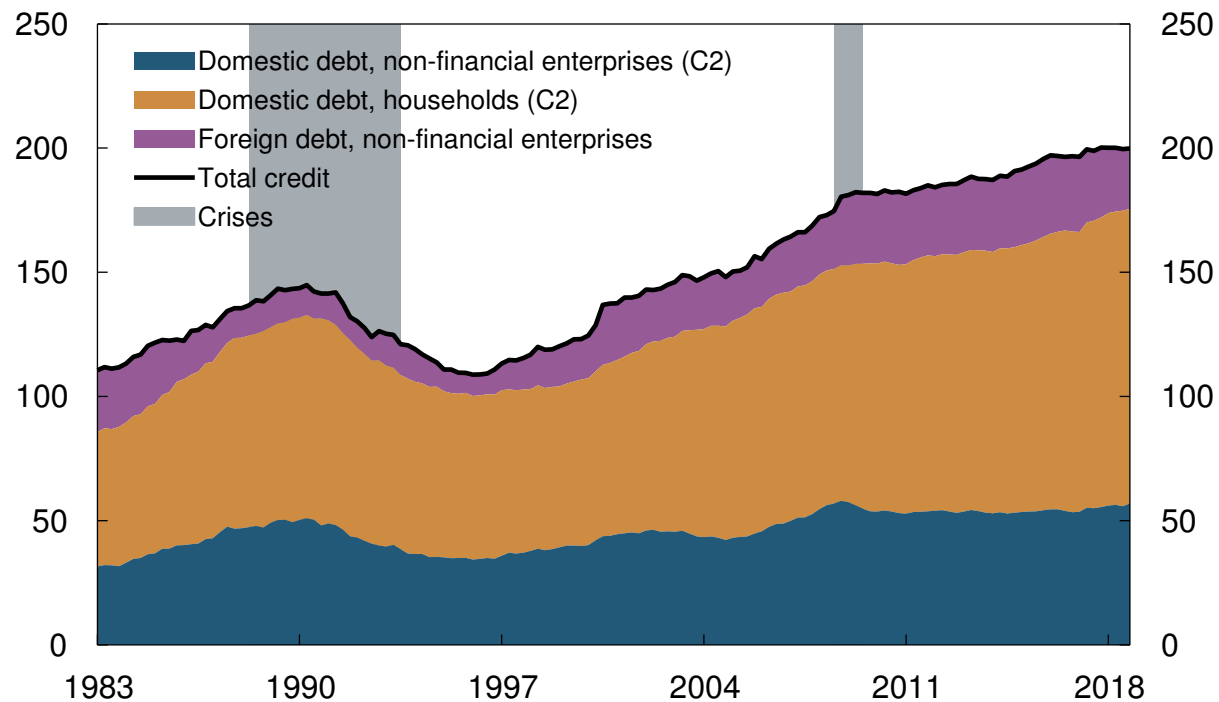
2) Stoxx Europe 600 Index.

3) Weighted average of large European banks, using quarterly data from 2014 Q3 to 2018 Q3.

Sources: Bloomberg, European Banking Authority (EBA) and Thomson Reuters Datastream

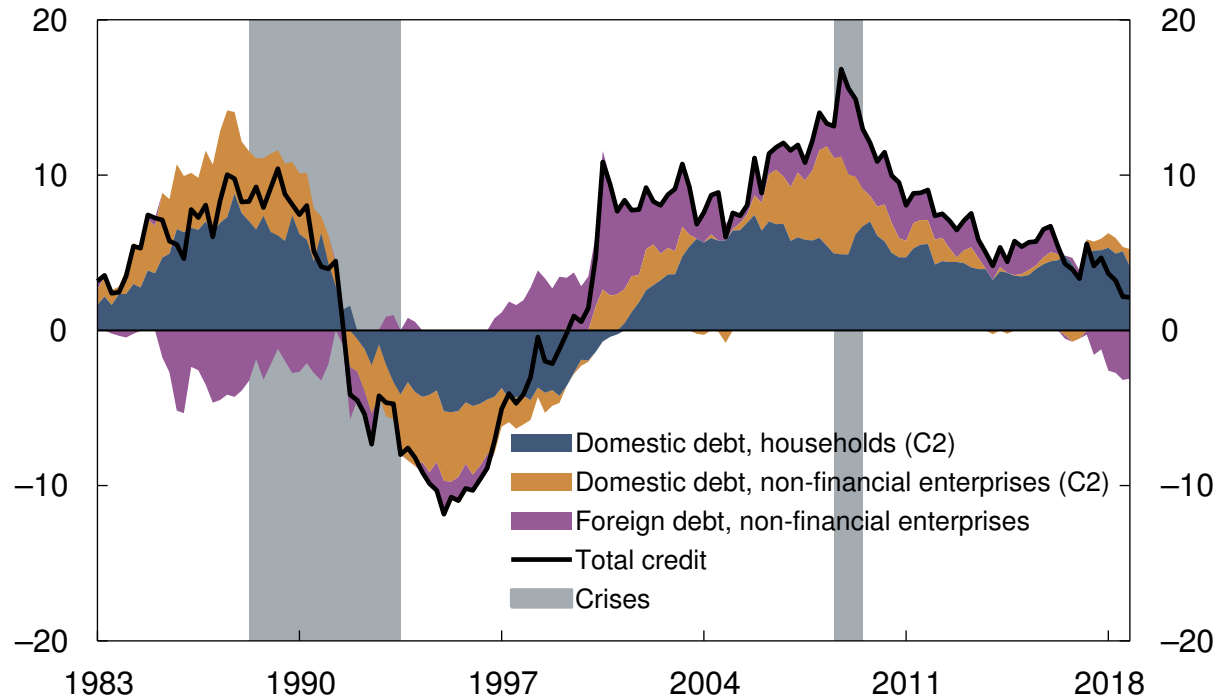


Chart 5.3 Credit mainland Norway as a share of mainland GDP.  
Percent. 1983 Q1 – 2018 Q4



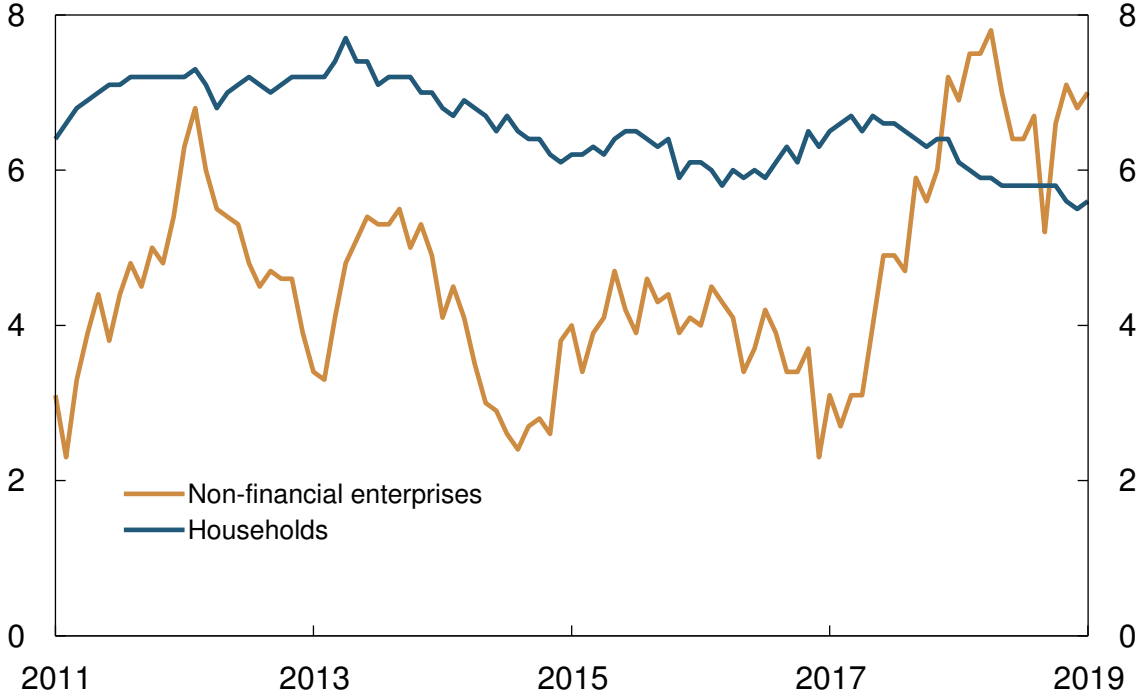
Sources: IMF, Statistics Norway and Norges Bank

Chart 5.4 Decomposed credit gap.<sup>1)</sup> Credit mainland Norway as a share of mainland GDP. Percentage points. 1983 Q1 – 2018 Q4



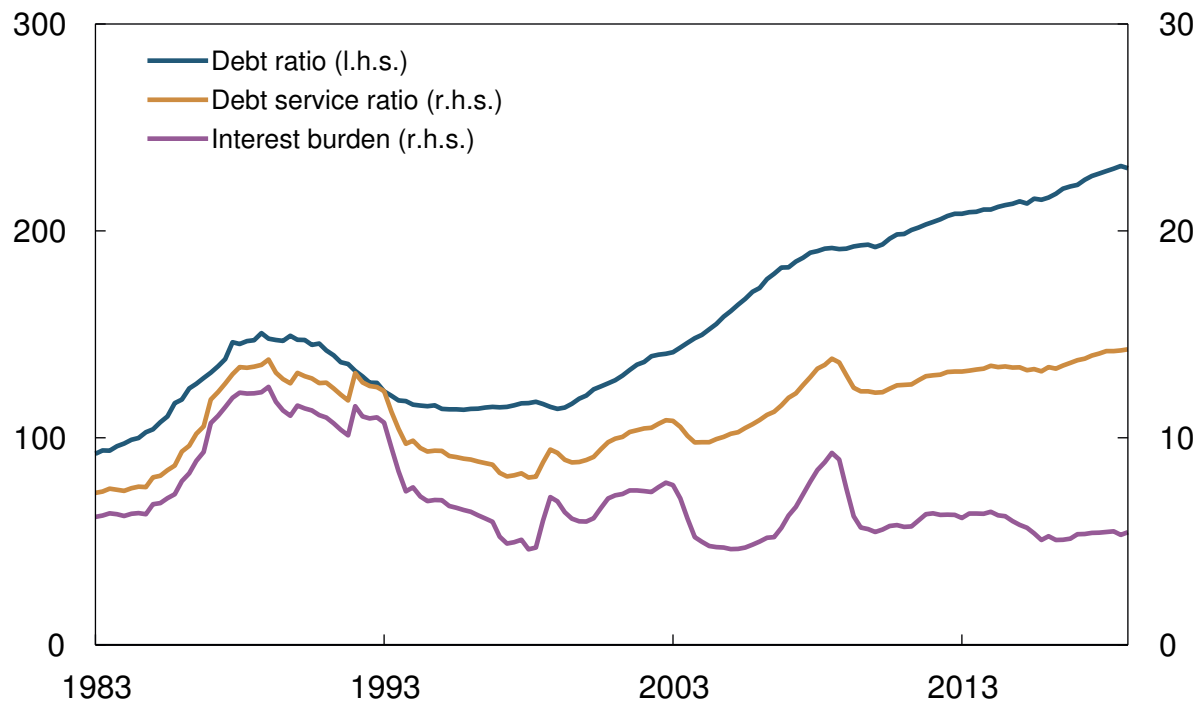
1) Calculated as deviation from trend. The trend is estimated using a one-sided HP filter with  $\lambda = 400\,000$ . The HP filter is estimated on data augmented with a simple projection.  
Sources: IMF, Statistics Norway and Norges Bank

Chart 5.5 Domestic credit to households and non-financial enterprises in mainland Norway. Twelve-month change. Percent. January 2011 – January 2019



Sources: Statistics Norway and Norges Bank

Chart 5.6 Household debt ratio<sup>1)</sup>, debt service ratio<sup>2)</sup> and interest burden<sup>3)</sup>.  
Percent. 1983 Q1 – 2018 Q4



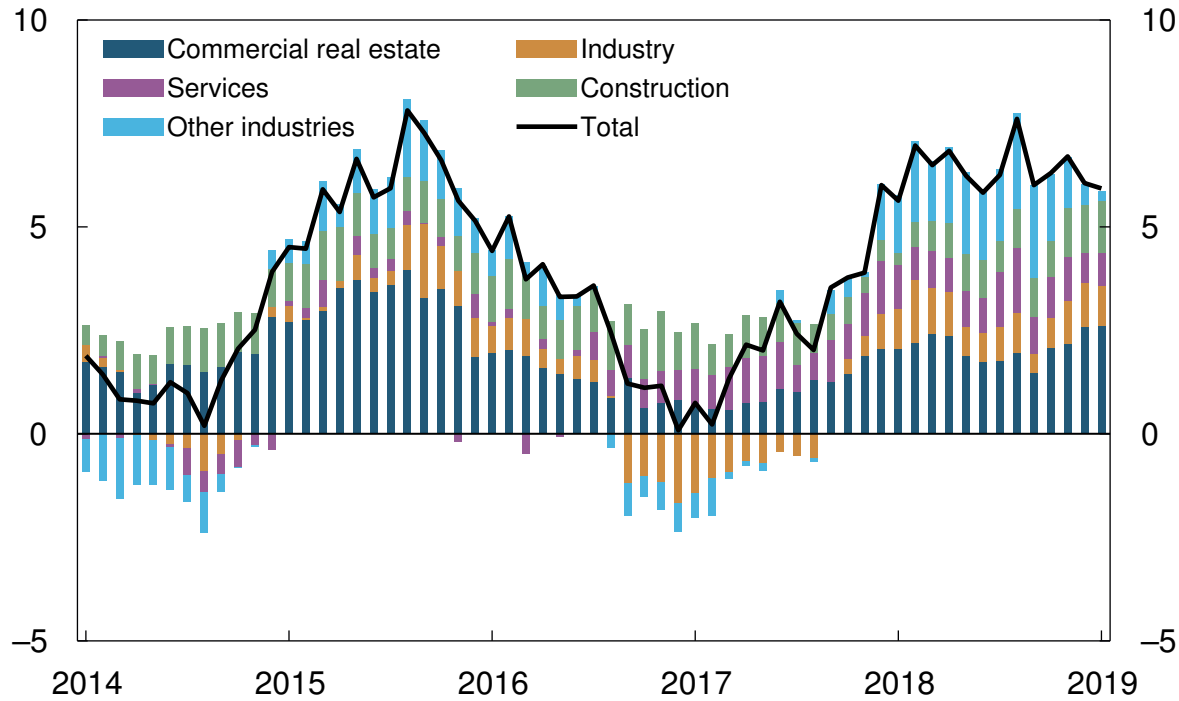
1) Debt ratio is loan debt as a percentage of disposable income. Disposable income is adjusted for estimated reinvested dividend income for 2000 Q1 – 2005 Q4 and reduction of equity capital for 2006 Q1 – 2012 Q3. From 2015 Q1, growth in disposable income excluding dividends is used.

2) Debt service ratio is the ratio of interest payments and estimated principal payments on an 18-year mortgage to the sum of disposable income and interest payments.

3) Interest burden is interest expenses as a percentage of disposable income plus interest expenses.

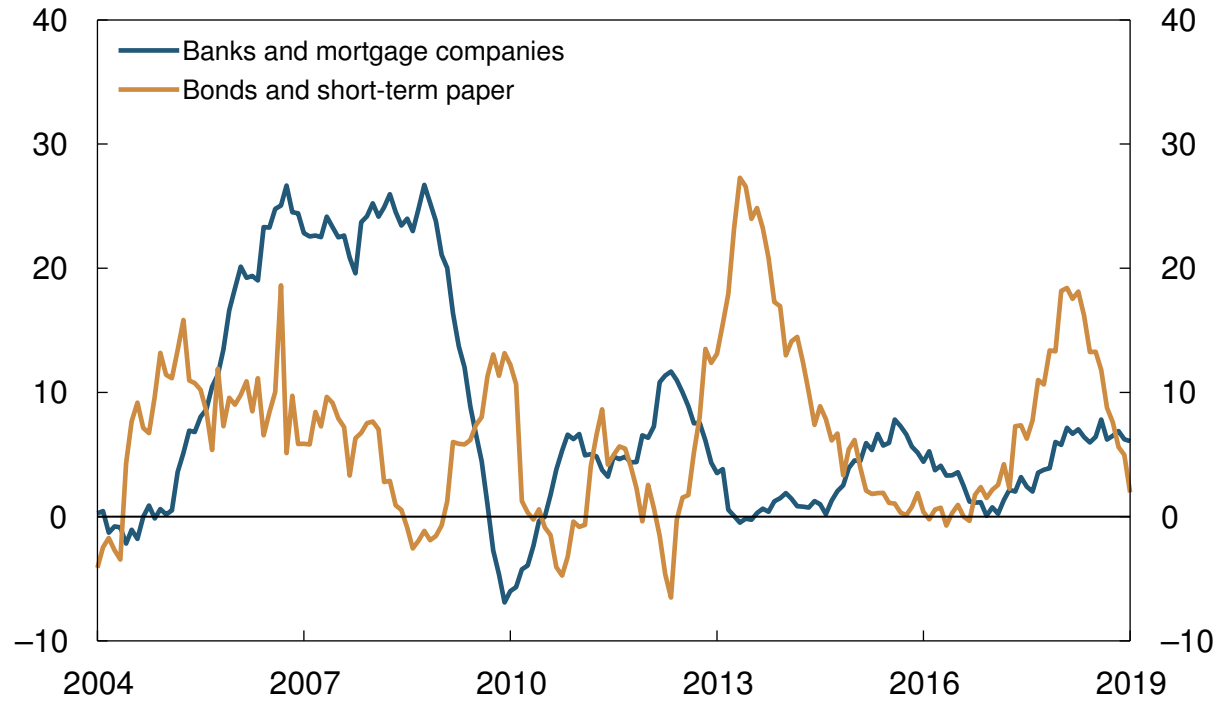
Sources: Statistics Norway and Norges Bank

Chart 5.7 Bank and mortgage company lending to Norwegian non-financial enterprises by industry. Contribution to twelve-month change in stock. Percent. January 2014 – January 2019



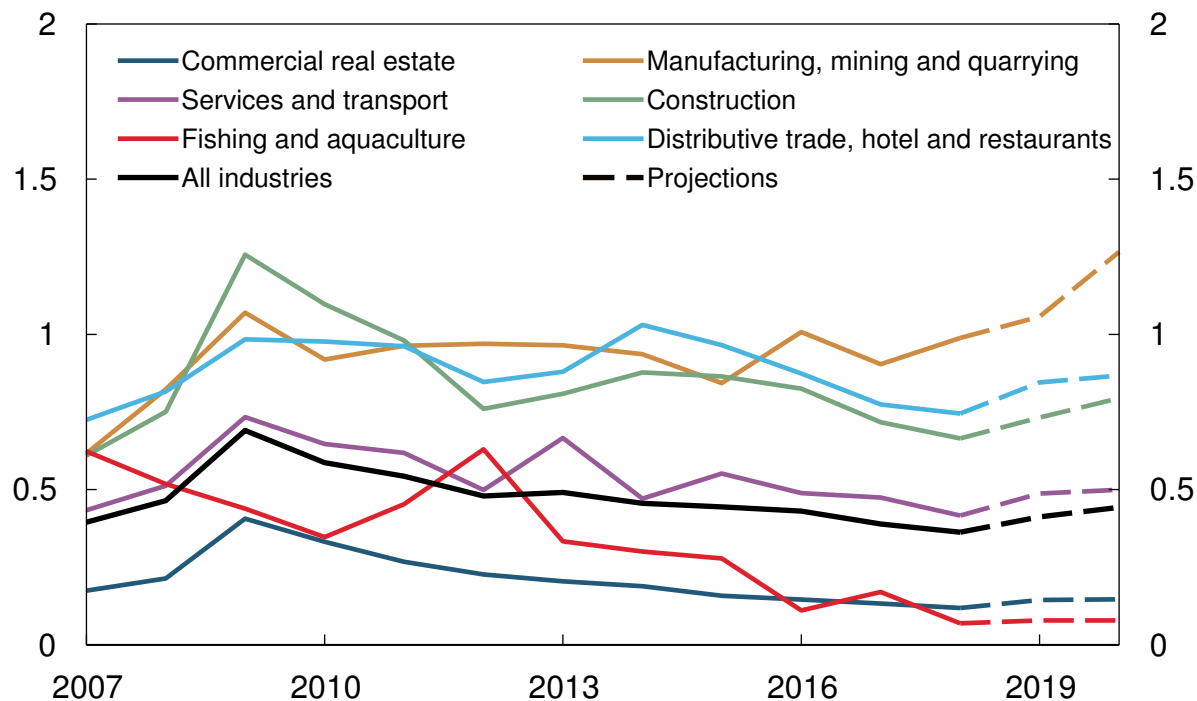
Sources: Statistics Norway and Norges Bank

Chart 5.8 Credit from selected funding sources to non-financial enterprises.  
Twelve-month change in stock.<sup>1)</sup> January 2004 – January 2019



1) The series are break-adjusted.  
Sources: Statistics Norway and Norges Bank

Chart 5.9 Estimated credit risk<sup>1)</sup> by industry. Percent. 2007 – 2020<sup>2)</sup>

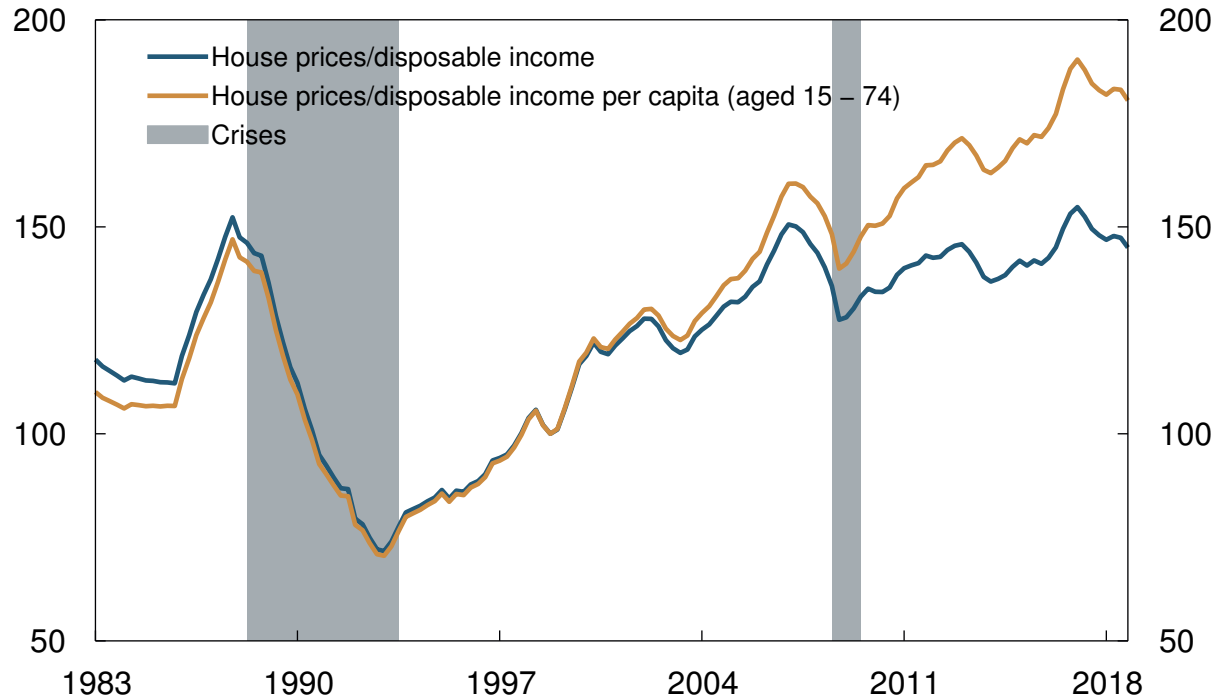


1) Estimated bankruptcy-exposed bank debt as a share of total bank debt in each industry.

2) Projections for 2019 – 2020.

Source: Norges Bank

Chart 5.10 House prices relative to disposable income<sup>1)</sup>.  
 Index. 1998 Q4 = 100. 1983 Q1 – 2018 Q4

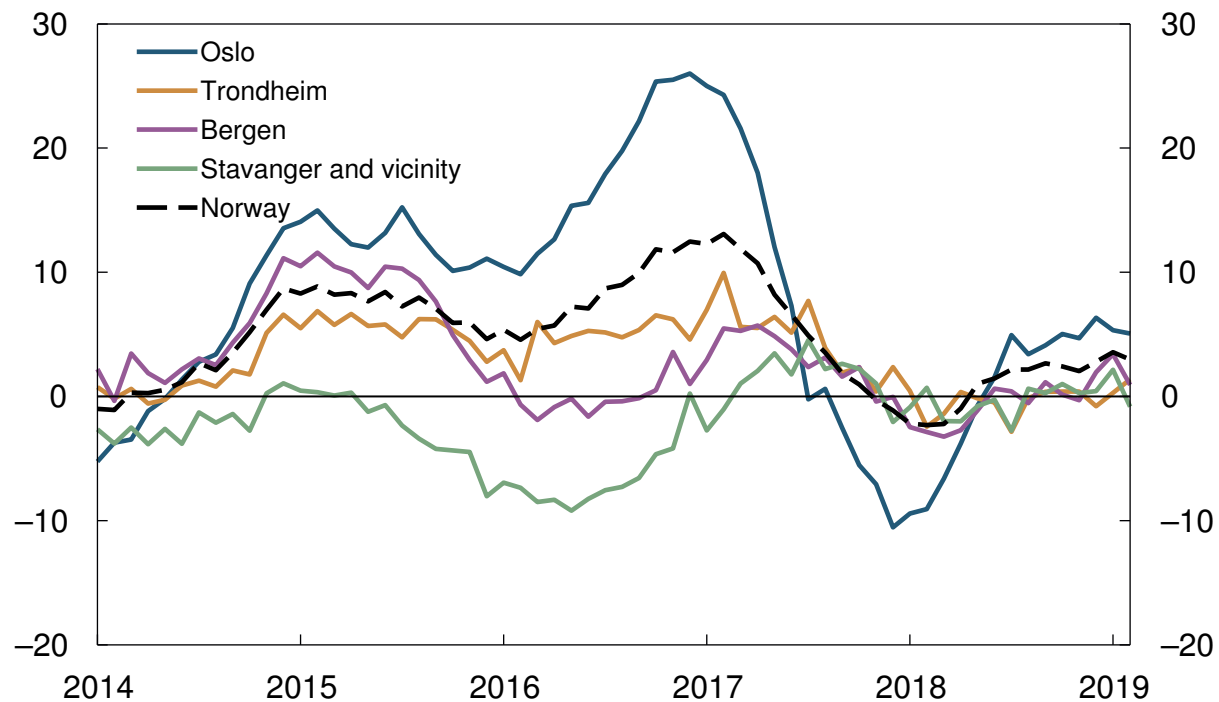


1) Disposable income adjusted for estimated reinvested dividend income for 2000 Q1 – 2005 Q4 and reduction of equity capital for 2006 Q1 – 2012 Q3. Change in disposable income excluding dividend income is used from 2015 Q1.

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

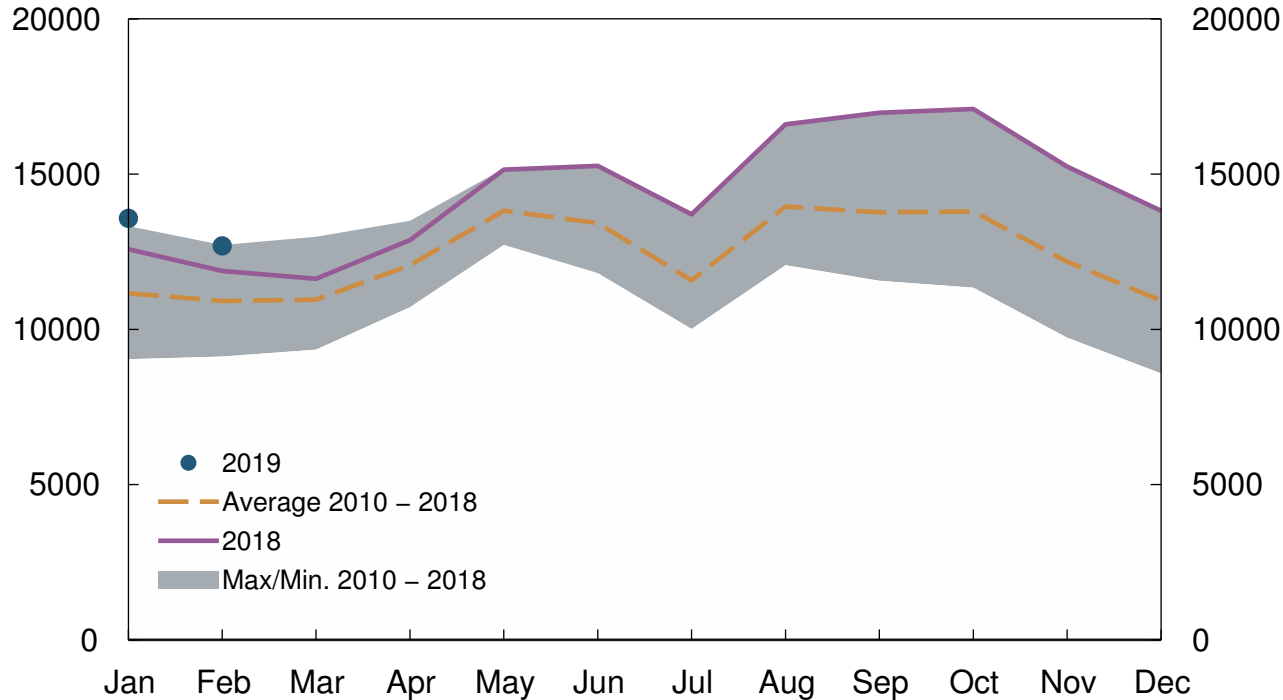


Chart 5.11 House prices.  
Twelve-month change. Percent. January 2014 – February 2019



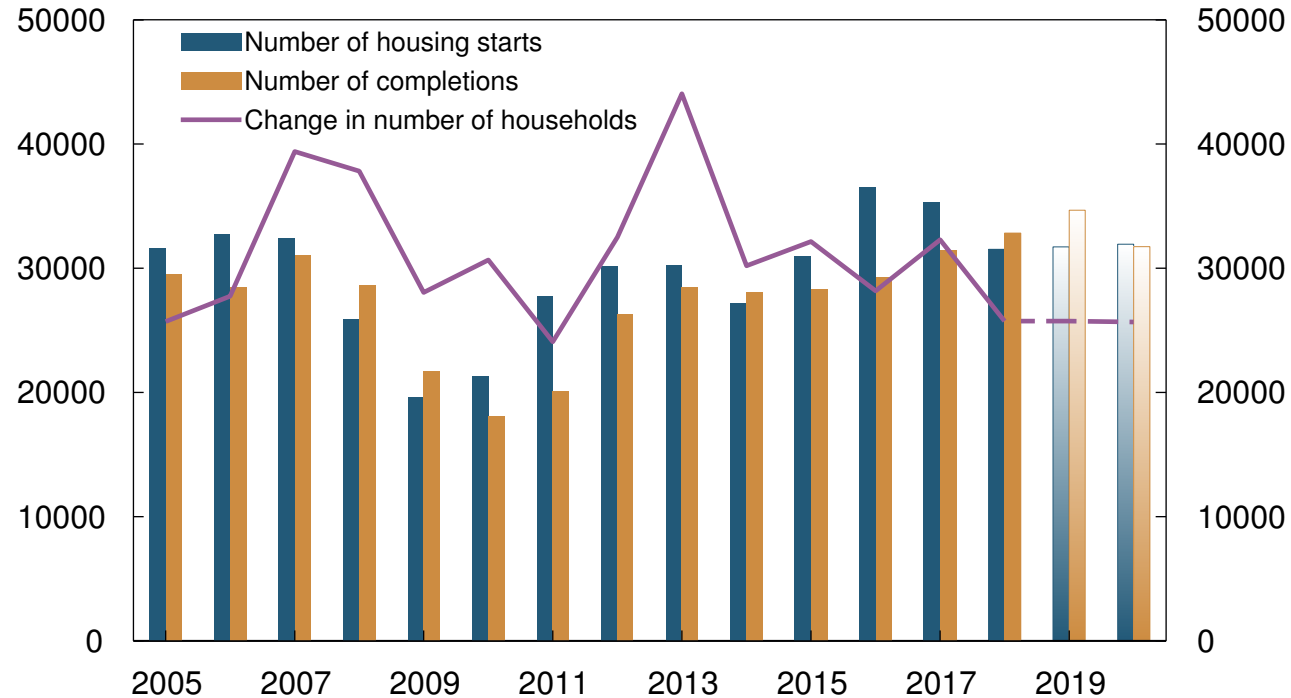
Sources: Eiendomsverdi, Finn.no and Real Estate Norway

Chart 5.12 Number of unsold existing homes. January 2010 – February 2019



Sources: Eiendomsverdi, Finn.no and Real Estate Norway

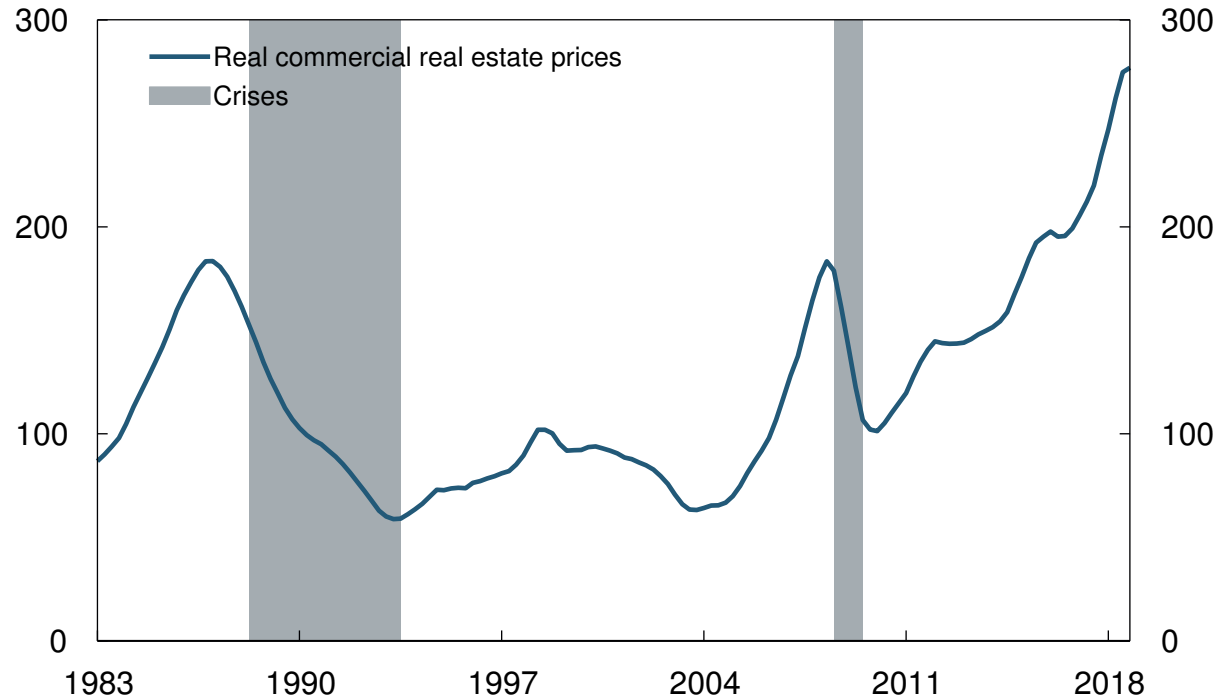
Chart 5.13 Housing starts, completions and annual change in number of households.  
2005 – 2020<sup>1)</sup>



1) Projections for 2019 and 2020 (broken lines and shaded bars). Projections for household formation are based on population projections from Statistics Norway and the change in number of persons per household over the past three years.

Sources: Statistics Norway and Norges Bank

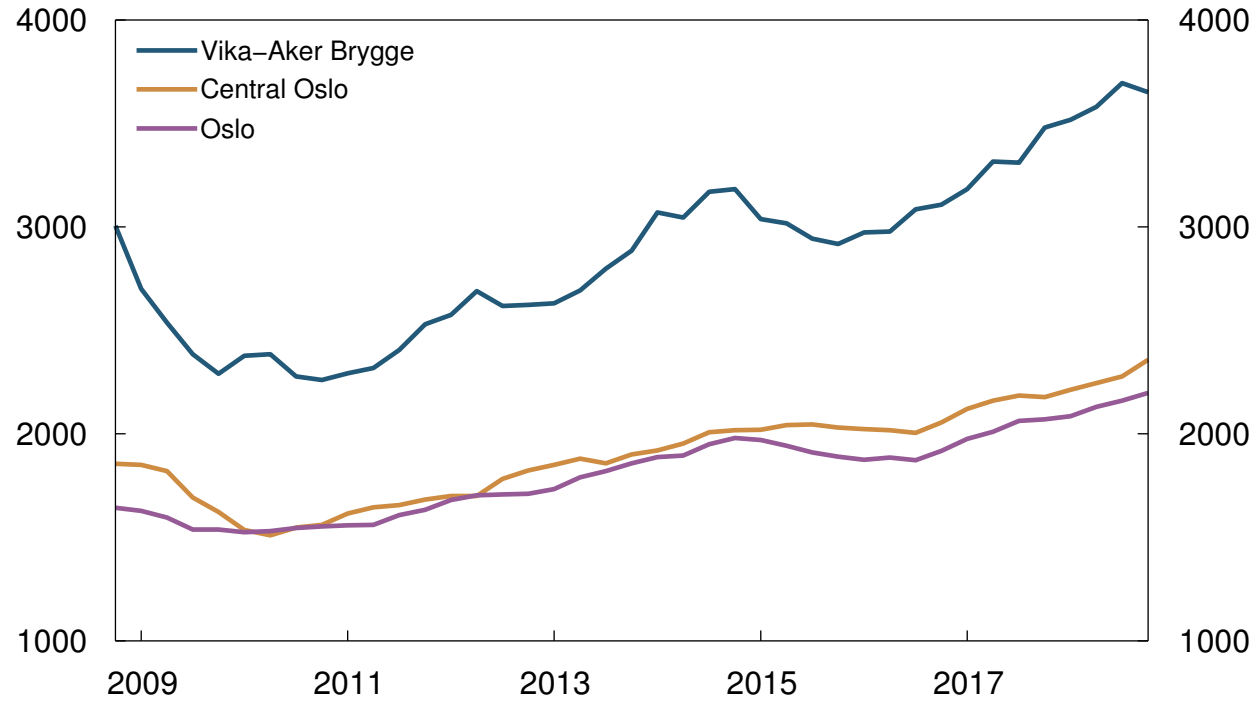
Chart 5.14 Real commercial real estate prices.<sup>1)</sup>  
Index. 1998 = 100. 1983 Q1 – 2018 Q4



1) Estimated real selling prices per square metre for prime office space in Oslo. Deflated by GDP deflator for mainland Norway. Average selling price for the previous four quarters.  
Sources: CBRE, Dagens Næringsliv, OPAK, Statistics Norway and Norges Bank

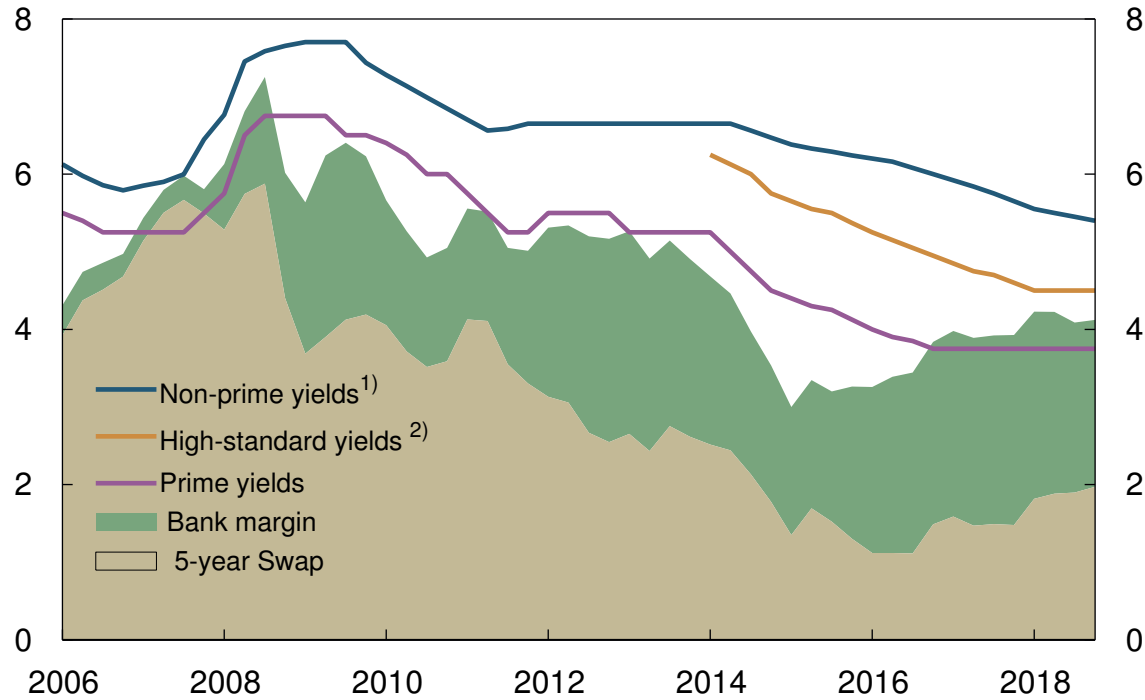
Chart 5.15 Rents in Oslo.<sup>1)</sup>

NOK per square metre. Four-quarter moving average. 2008 Q4 – 2018 Q4



Source: Arealstatistikk

Chart 5.16 Yields on office space in Oslo.  
Percent. 2006 Q1 – 2018 Q4

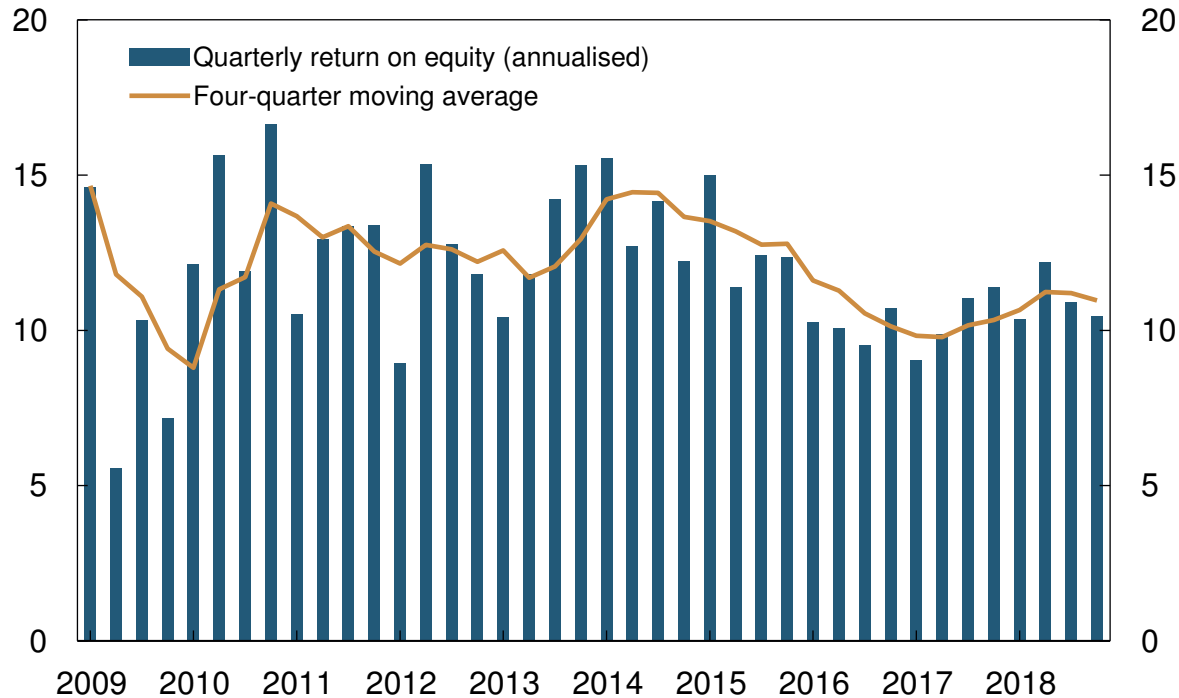


1) Property along Ring 3. Five-year lease.

2) Property with good location, along Ring 3. 10-year lease.

Sources: DNB Næringsmegling, Thomson Reuters Datastream and Union Næringsmegling

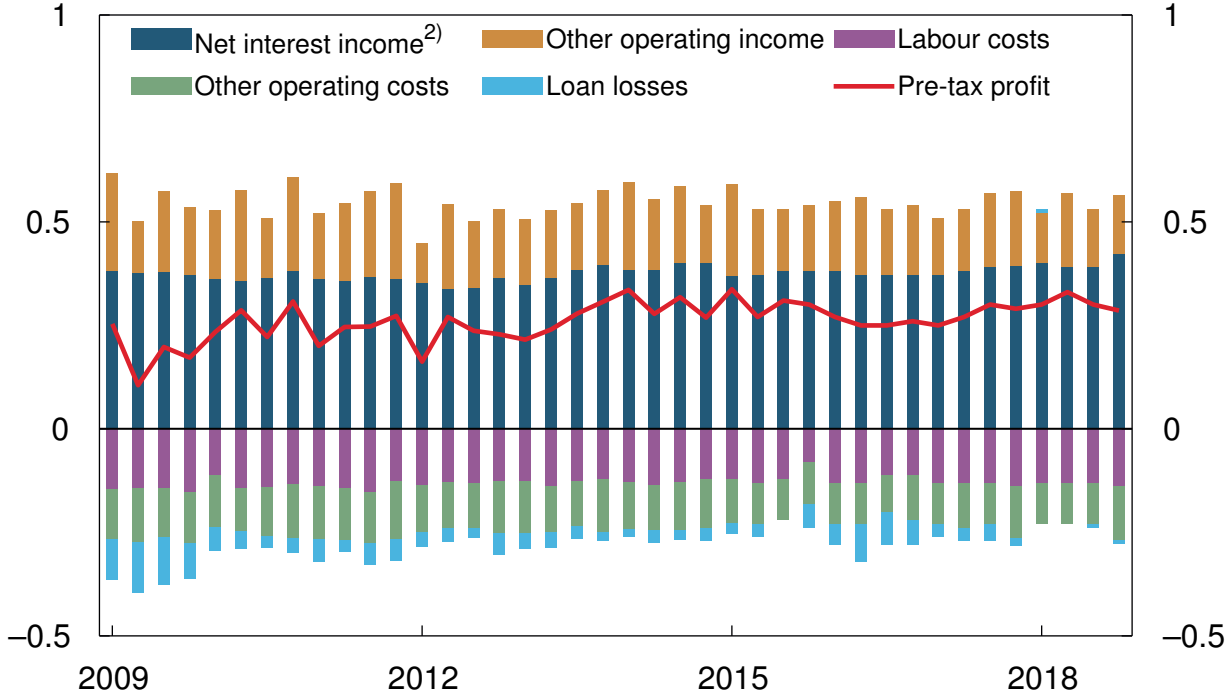
Chart 5.17 Return on equity for large Norwegian banks<sup>1)</sup>.  
 Percent. 2009 Q1 – 2018 Q4



1) DNB Bank, Nordea Bank Norge (up to and including 2016 Q4), Sparebanken Vest, SpareBank 1 Nord-Norge, SpareBank 1 SMN, SpareBank 1 SR-Bank, Sparebanken Sør (from 2014 Q1) and SpareBank 1 Østlandet (from 2016 Q3).

Sources: Banks' quarterly reports and Norges Bank

Chart 5.18 Decomposed change in the profits of large Norwegian banks<sup>1)</sup>.  
 Percentage of average total assets. 2009 Q1 – 2018 Q4



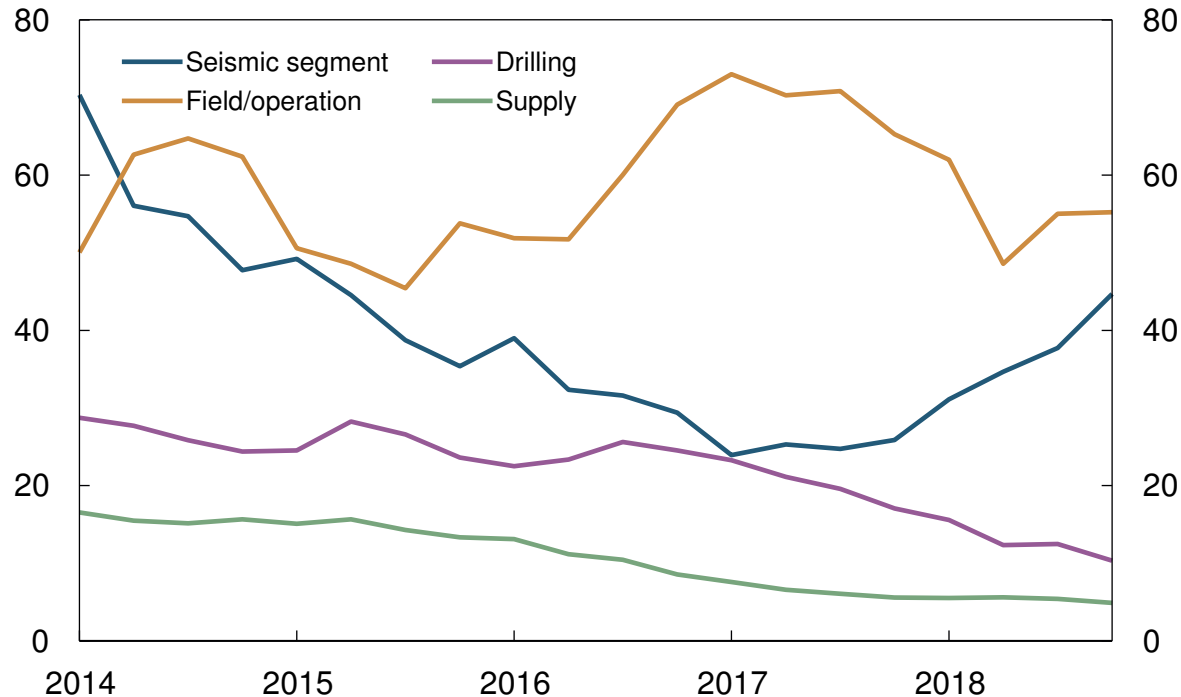
1) DNB Bank, Nordea Bank Norge (up to and including 2016 Q4), Sparebanken Vest, SpareBank 1 Nord-Norge, SpareBank 1 SMN, SpareBank 1 SR-Bank, Sparebanken Sør (from 2014 Q1) and SpareBank 1 Østlandet (from 2016 Q3).

2) Commission income from part-owned mortgage companies in the Sparebank 1-alliance has been reclassified from other operating income to net interest income.

Sources: Banks' quarterly reports and Norges Bank



Chart 5.19 Debt-servicing capacity<sup>1)</sup> of oil service companies<sup>2)</sup>.  
Percent. 2014 Q1 – 2018 Q4

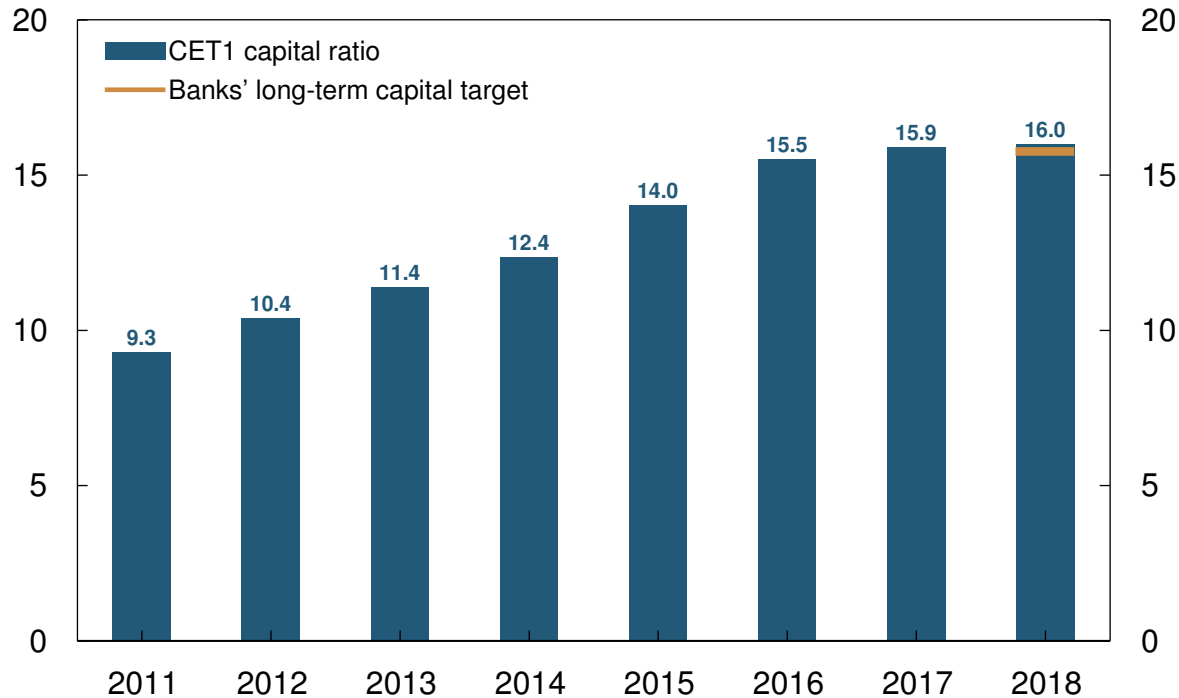


1) Earnings before interest, taxes, depreciation and amortisation (EBITDA) for the previous four quarters as a percentage of net interest-bearing debt.

2) See Economic Commentaries 5/2016 for a further description of the different segments of oil service companies, and the sample of companies included in this analysis.

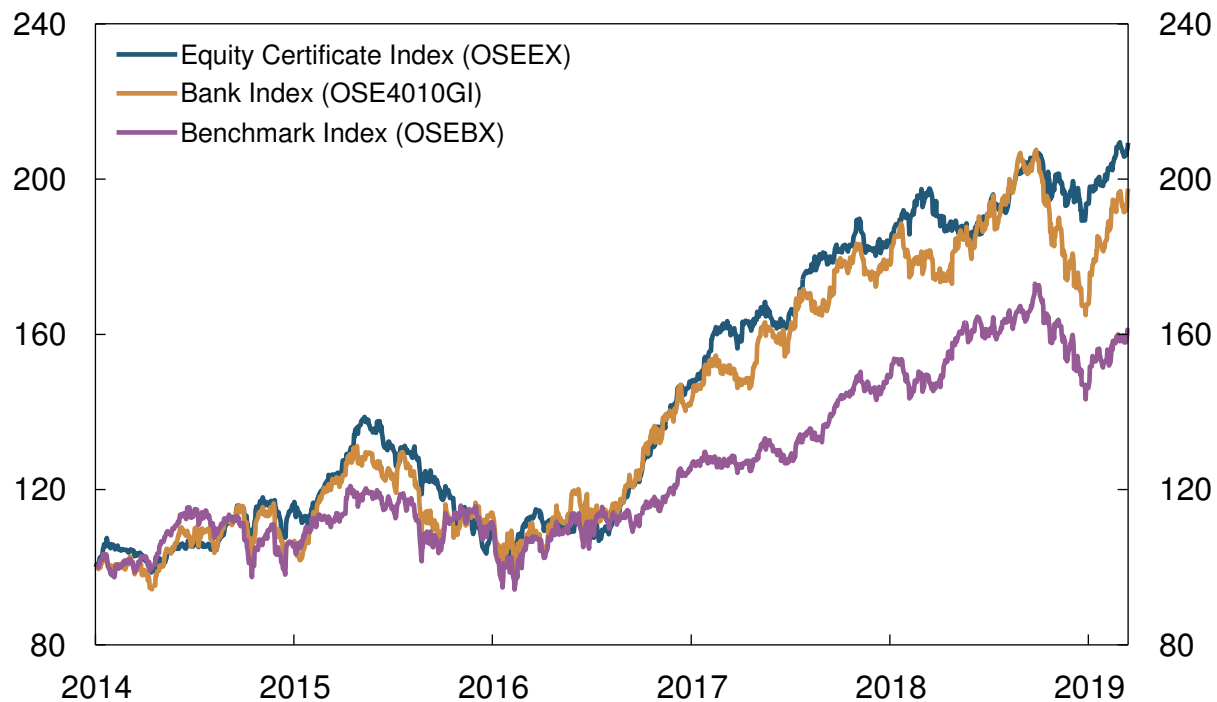
Sources: Bloomberg and Norges Bank

Chart 5.20 Large Norwegian banks' Common Equity Tier 1 capital ratios<sup>1)</sup>.  
Percent. 2011 – 2018



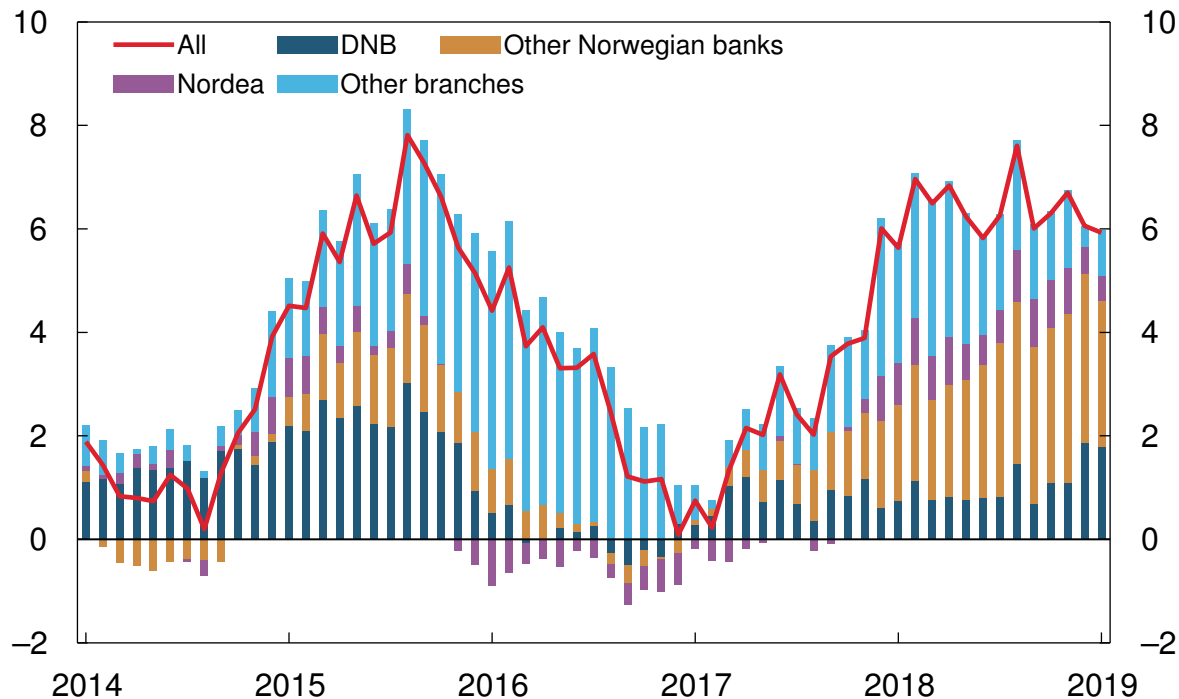
1) DNB Bank, Sparebanken Vest, SpareBank 1 Nord-Norge, SpareBank 1 SMN, SpareBank 1 SR-Bank, Sparebanken Sør (from 2014) and SpareBank 1 Østlandet (from 2016).  
Sources: Banks' quarterly reports and Norges Bank

Chart 5.21 Equity price indexes in the banking sector.  
Index. 2 January 2014 = 100. 2 January 2014 – 15 March 2019

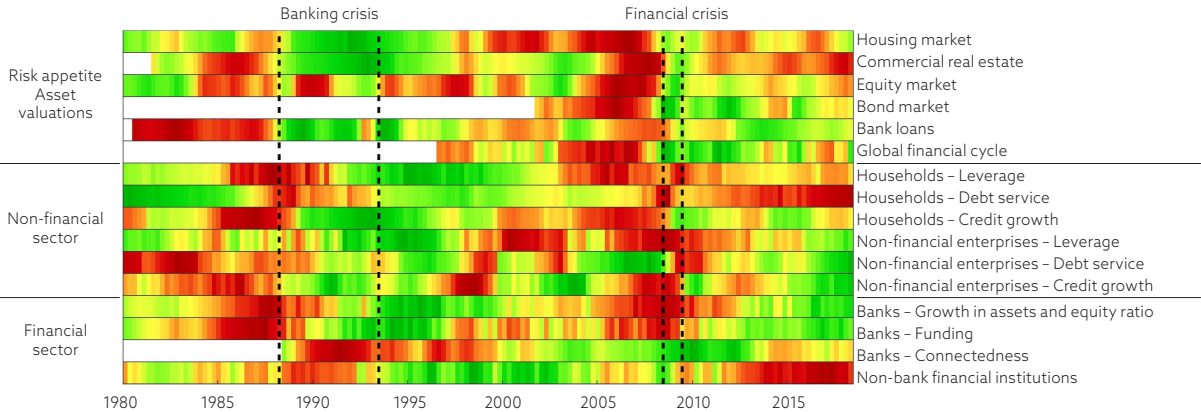


Source: Thomson Reuters Datastream

Chart 5.22 Credit to Norwegian enterprises from different banking groups. Different banking groups' contribution to twelve-month change. Percent. January 2014 – January 2019

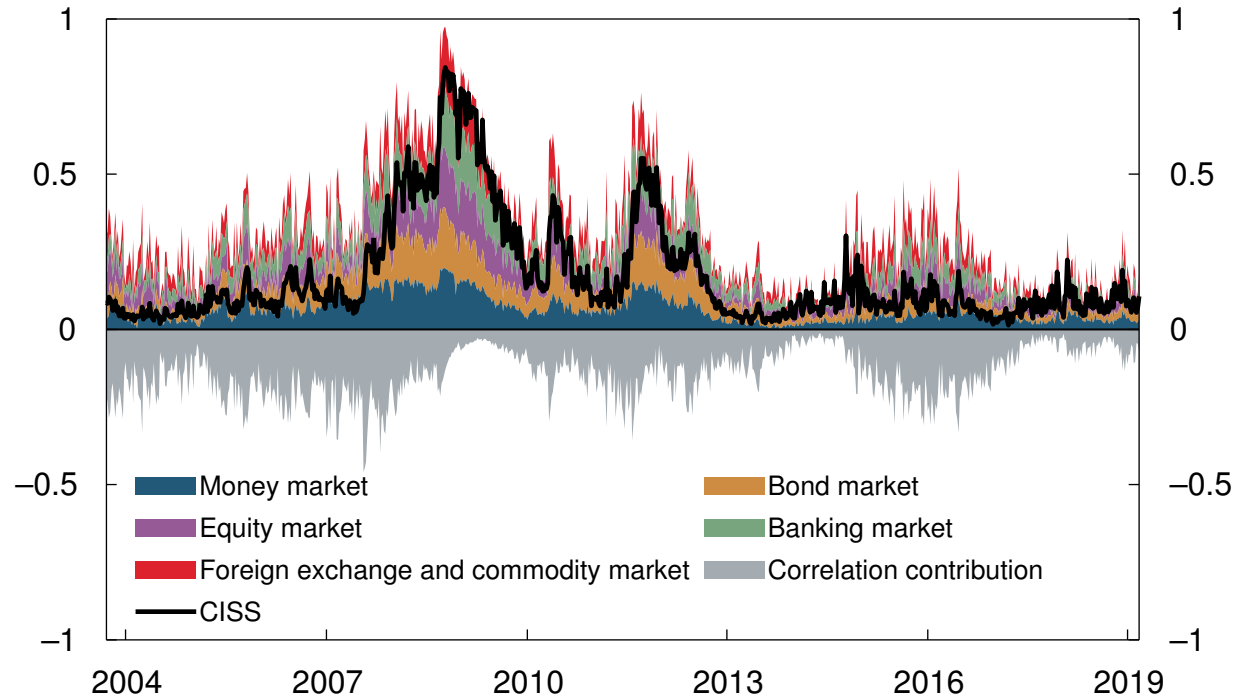


Source: Norges Bank



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

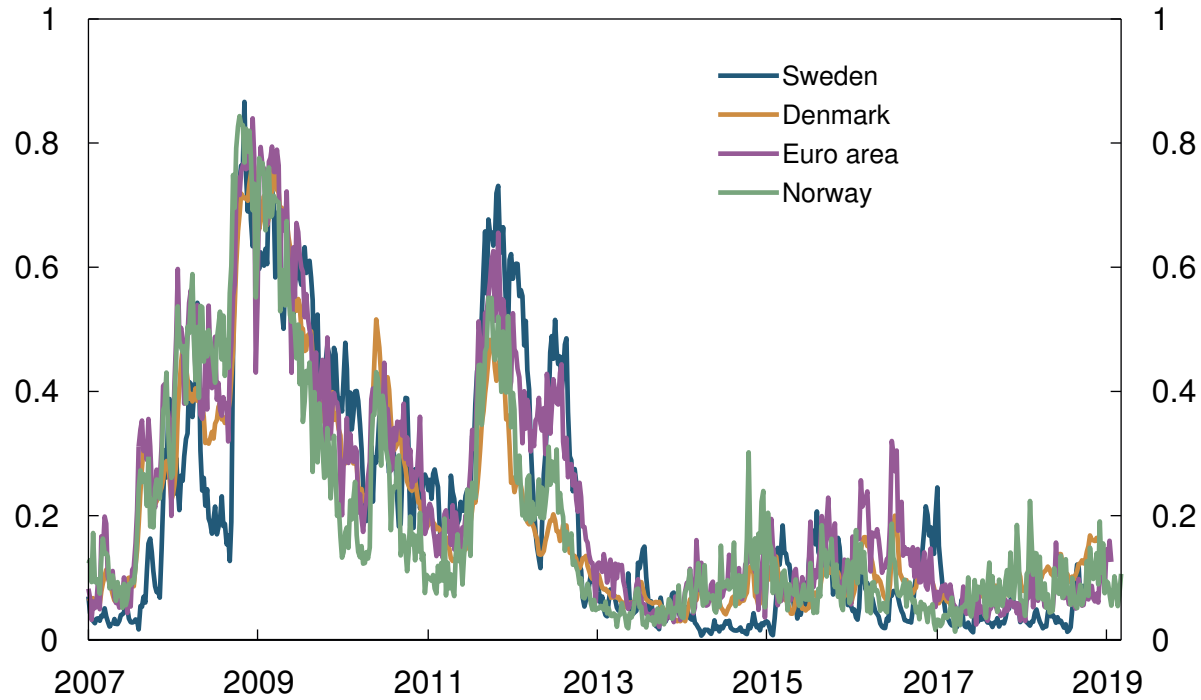
Chart 5.24 CISS for Norway.<sup>1)</sup> Weekly data. Week 38 2003 – week 10 2019



1) CISS, measured by the black line, is higher the more stress there is in the different market segments (the coloured areas above zero increases) and the more correlation there is between segments (the grey area below zero decreases).

Sources: Bloomberg, DNB Markets, Thomson Reuters Datastream and Norges Bank

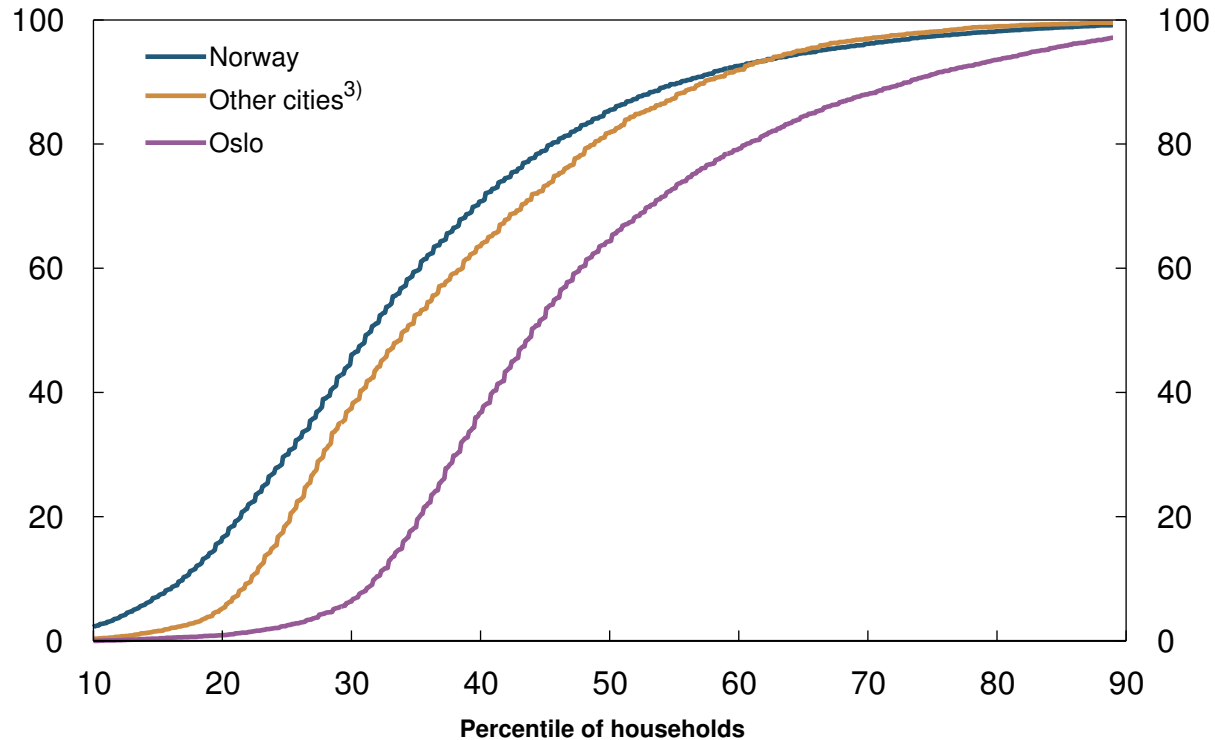
Chart 5.25 CISS for Norway, Sweden, Denmark and the euro area.<sup>1)</sup>  
Weekly data. Week 1 2007 – week 10 2019



1) There are some differences in methodology between indicators. It is therefore not appropriate to examine small deviations between the countries. The end date also varies between the countries.

Sources: Bloomberg, DNB Markets, ECB, European Systemic Risk Board (ESRB), Finansinspektionen, Thomson Reuters Datastream and Norges Bank

Chart 5.26 Housing affordability<sup>1)</sup> by geographic region.  
Percent of dwellings sold. Households aged 30 – 60.<sup>2)</sup> 2016



1) Dwellings are sorted by sale price in ascending order (vertical axis). Households are sorted by increasing ability to debt-finance a dwelling (horizontal axis).

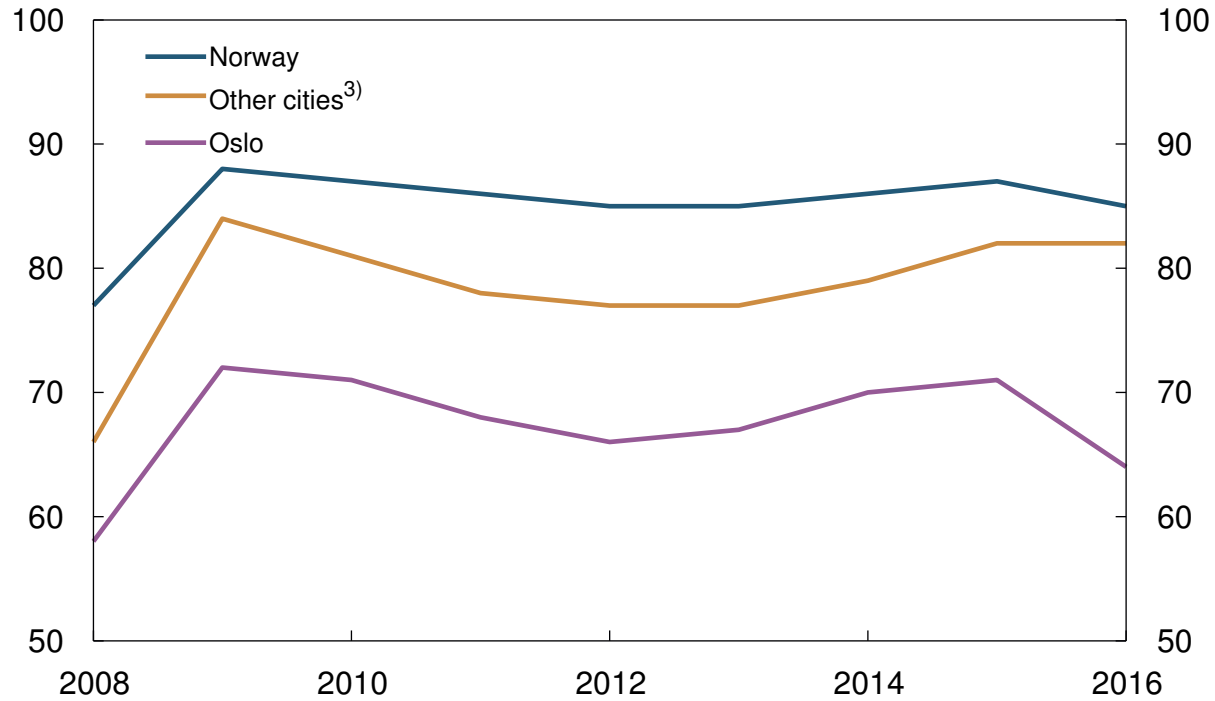
2) Age refers to age of main income earner.

3) Other cities include Bergen, Trondheim and Stavanger with Sandnes.

Sources: Ambita, SIFO, Statistics Norway and Norges Bank



Chart 5.27 Housing affordability<sup>1)</sup> by geographic region. Median household.  
Percent of dwellings sold. Households aged 30 – 60.<sup>2)</sup> 2008 – 2016



1) Dwellings sorted by sale price in ascending order.

2) Age refers to age of main income earner.

3) Other cities include Bergen, Trondheim and Stavanger with Sandnes.

Sources: Ambita, SIFO, Statistics Norway and Norges Bank