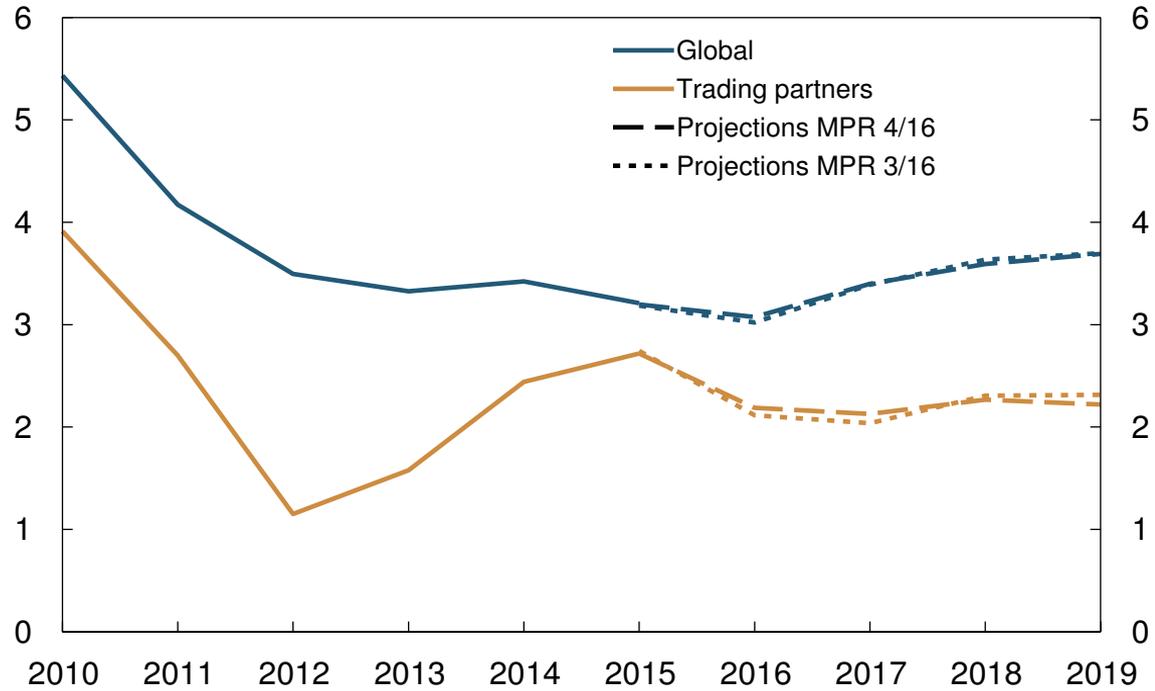Chart 1.1 Global GDP[1] and GDP for trading partners[2].
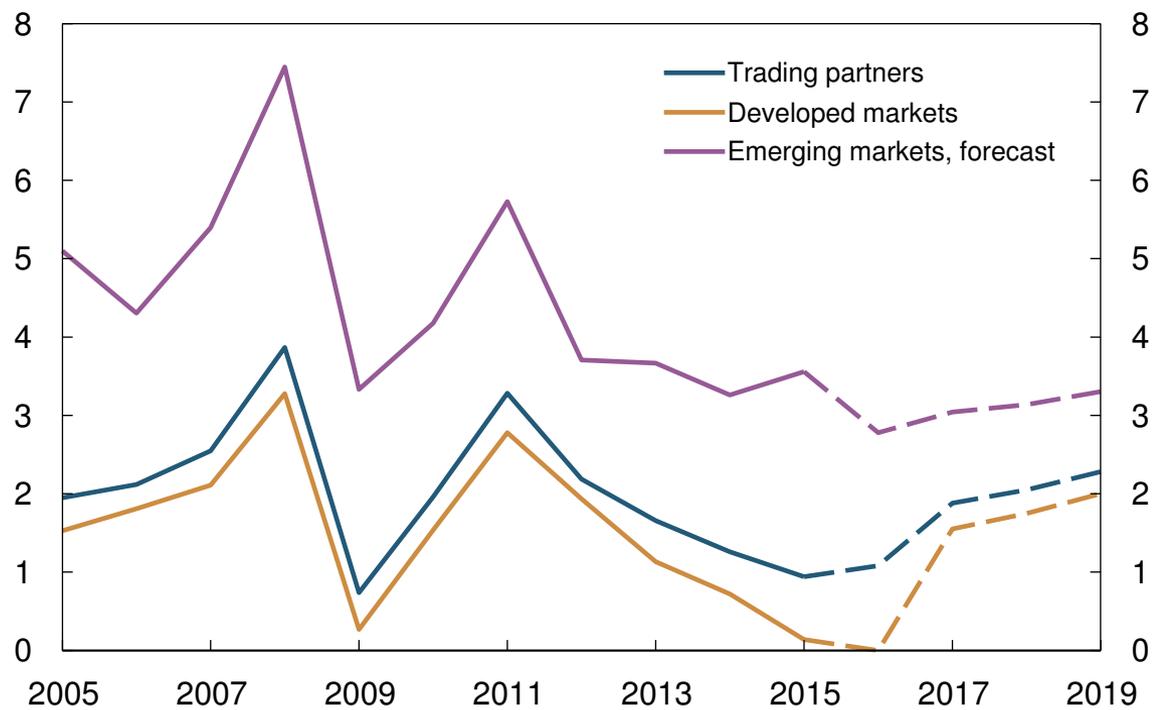Volume. Annual change. Percent. 2010 – 2019[3]

1) Purchasing power parity weights.
2) Export weights.
3) Projections for 2016 – 2019 (broken lines).
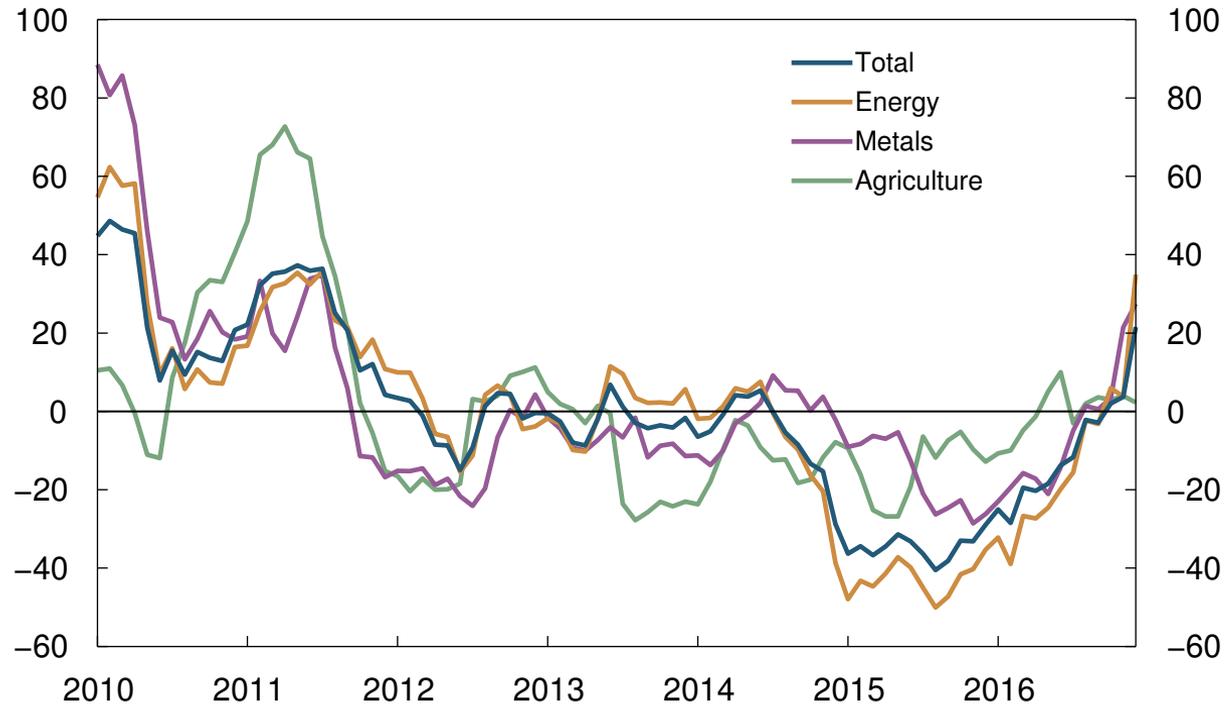Sources: IMF, Thomson Reuters and Norges Bank

Chart 1.2 CPI for trading partners. Import weights.
Annual change. Percent. 2005 – 2019[1]

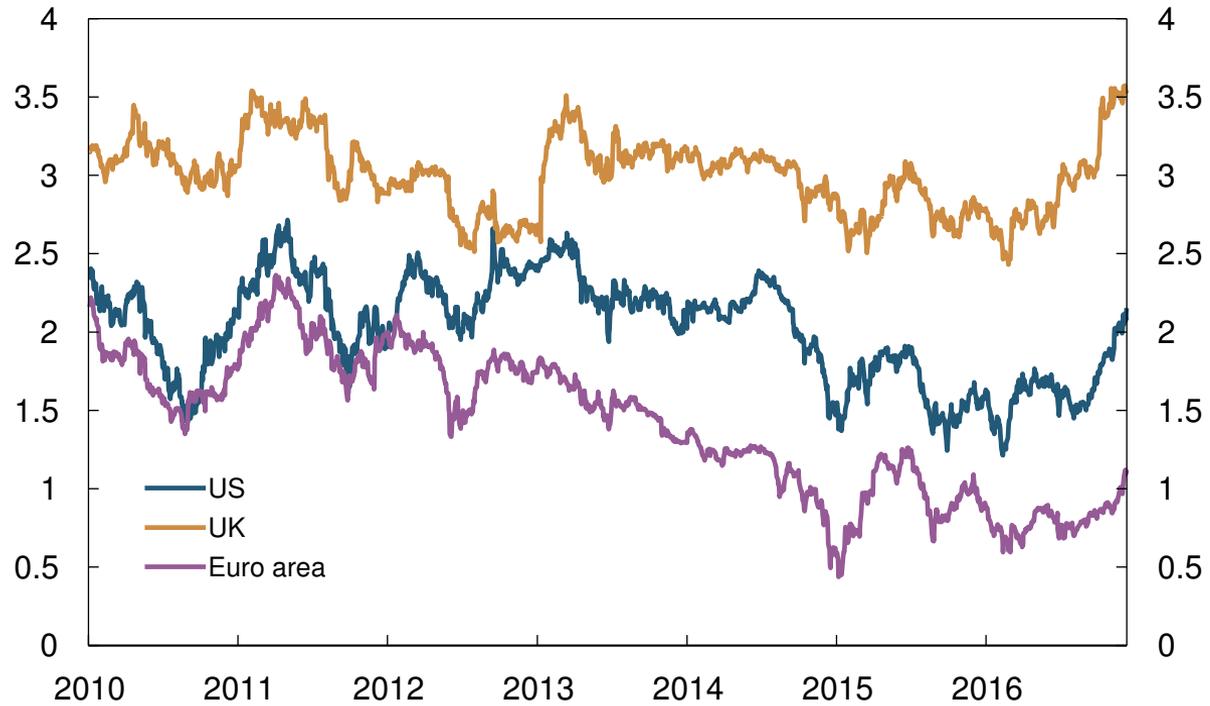1) Projections for 2016 – 2016 (broken lines).
Sources: Statistics Norway, Thomson Reuters and Norges Bank

Chart 1.3 Commodity prices. USD. Twelve-month change. Percent.
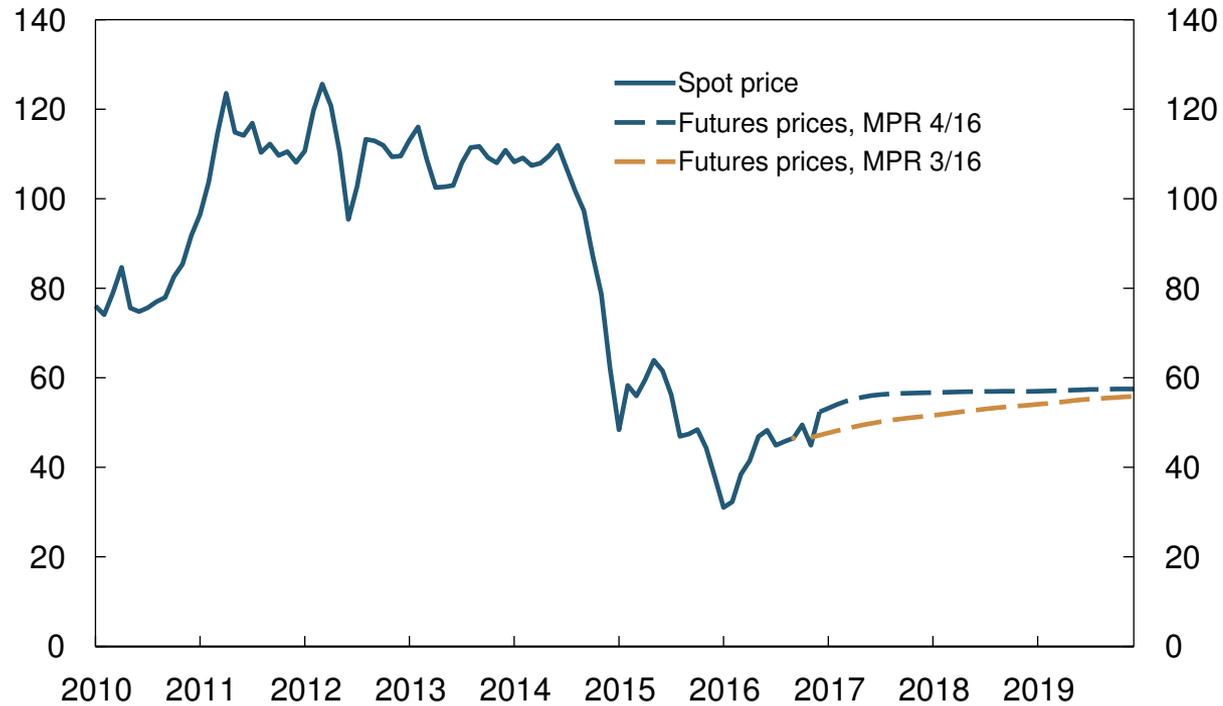January 2010 – December 2016 [1]

Chart 1.4 Market-based inflation expectations five years ahead.[1]
Percent. 4 January 2010 – 9 December 2016

1) Five-year inflation swaps.
Sources: Bloomberg and Thomson Reuters

Chart 1.5 Crude oil spot and futures prices. USD/barrel.
January 2010 – December 2019 [1]

1) Futures prices (broken lines) are the averages of futures prices for the period 12 – 16 September 2016
for MPR 3/16 and 5 – 9 December 2016 for MPR 4/16.
Source: Thomson Reuters

Chart 1.6 Oil inventories in the OECD. Total oil inventories in number of days of consumption.[1] January 2011 – September 2016
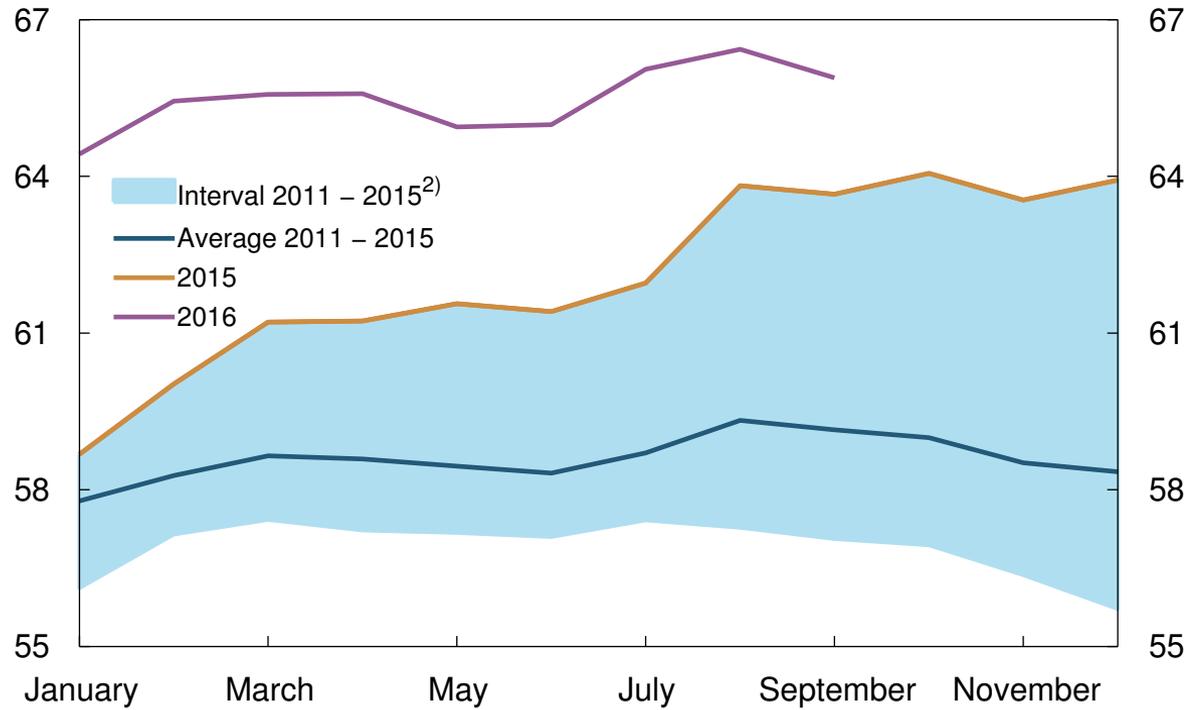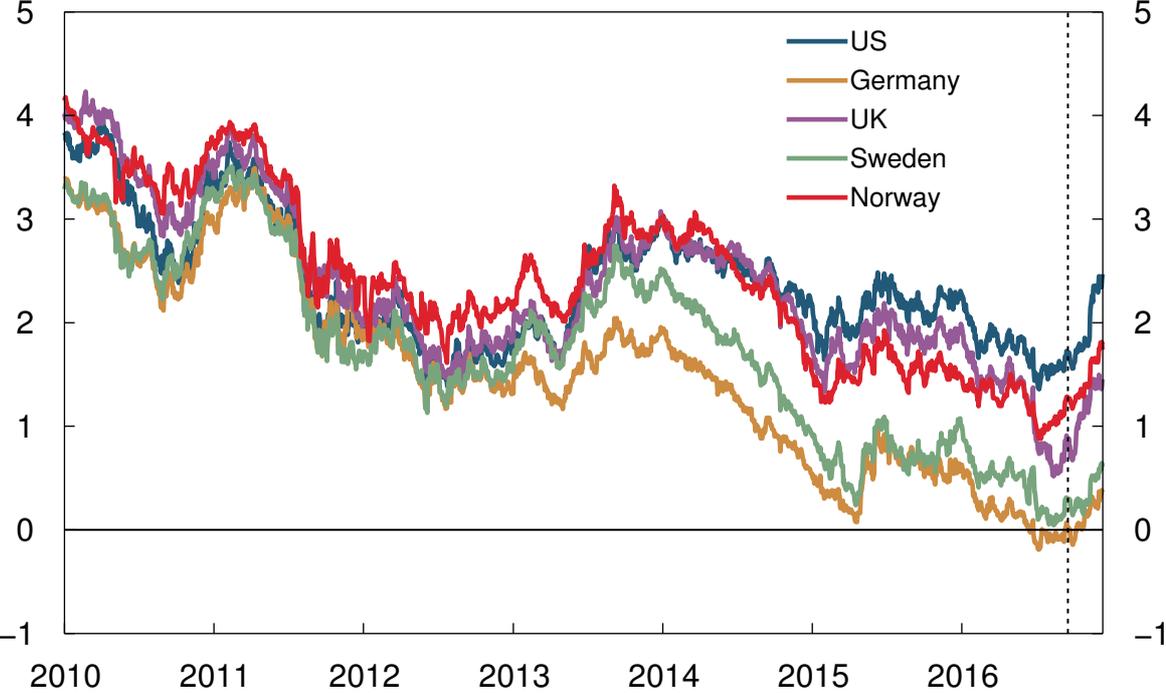

1) The number of days of consumption is calculated using average expected demand for the next three months.
2) The blue band shows the interval between the highest and lowest levels in the period 2011 – 2015.
Sources: IEA and Norges Bank

Chart 1.7 Yields on ten–year government bonds.
Percent. 1 January 2010 – 9 December 2016 [1]

US
Germany
UK
Sweden
Norway

1) MPR 3/16 was based on information in the period to 16 September 2016, marked by the vertical line.
Source: Bloomberg

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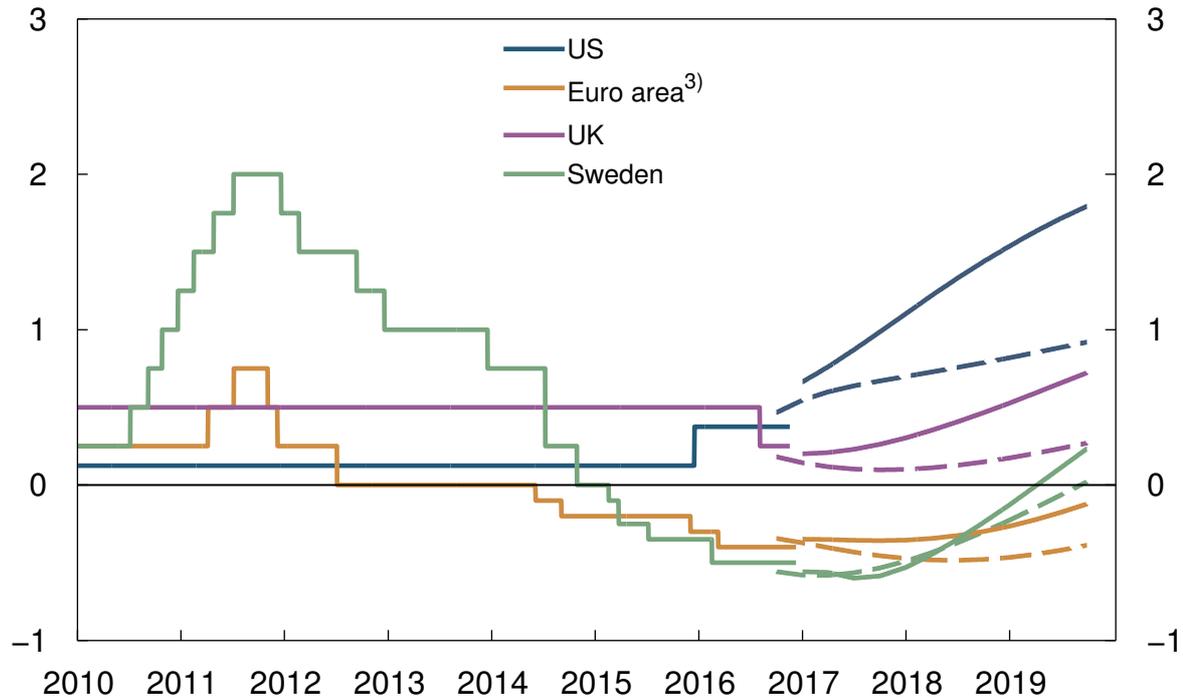January 2016 = 100. 1 January 2010 – 9 December 2016 [1]
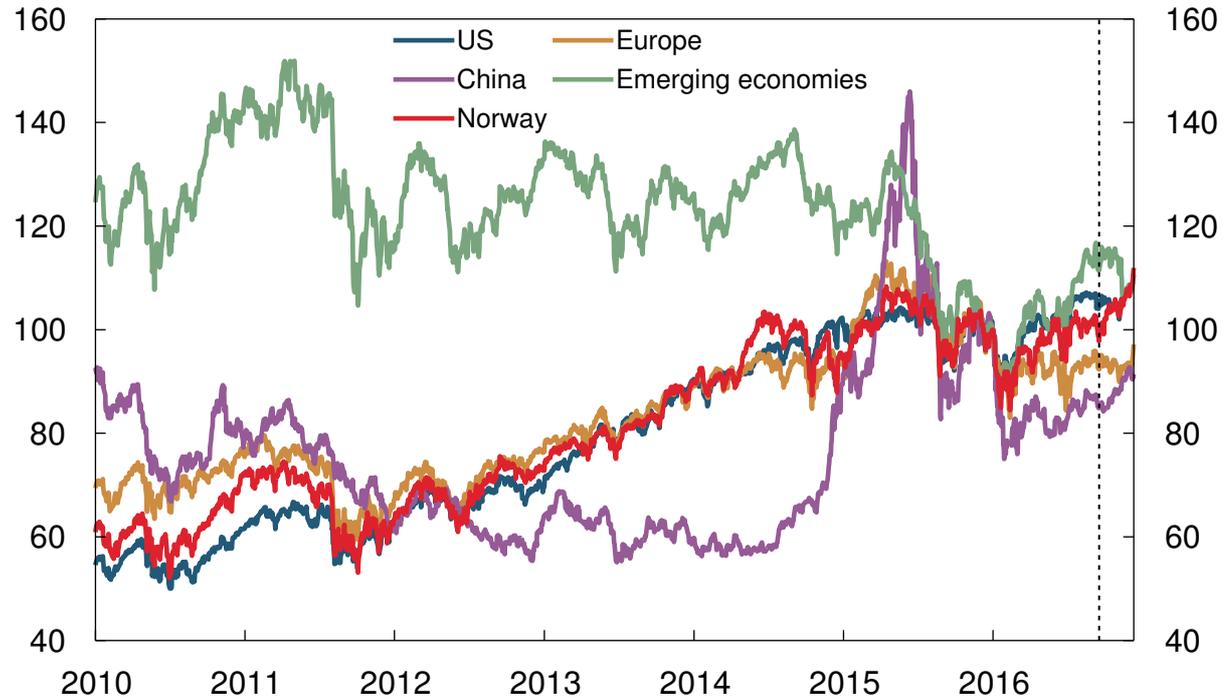
1) MPR 3/16 was based on information in the period to 16 September 2016, marked by the vertical line.
Source: Bloomberg

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

1) Estimated forward rates at 16 September 2016 (broken lines). Forward rates at 9 December 2016 (solid lines).
Forward rates are based on Overnight Index Swap (OIS) rates.
2) Daily data from 1 January 2010 and quarterly data from 1 January 2017.
3) ECB's deposit rate. Eonia from 2016 Q4.
Sources: Bloomberg, Thomson Reuters and Norges Bank

Chart 1.10 Three-month money market rates for trading partners.[1]
Percent. 2010 Q1 – 2019 Q4 [2]
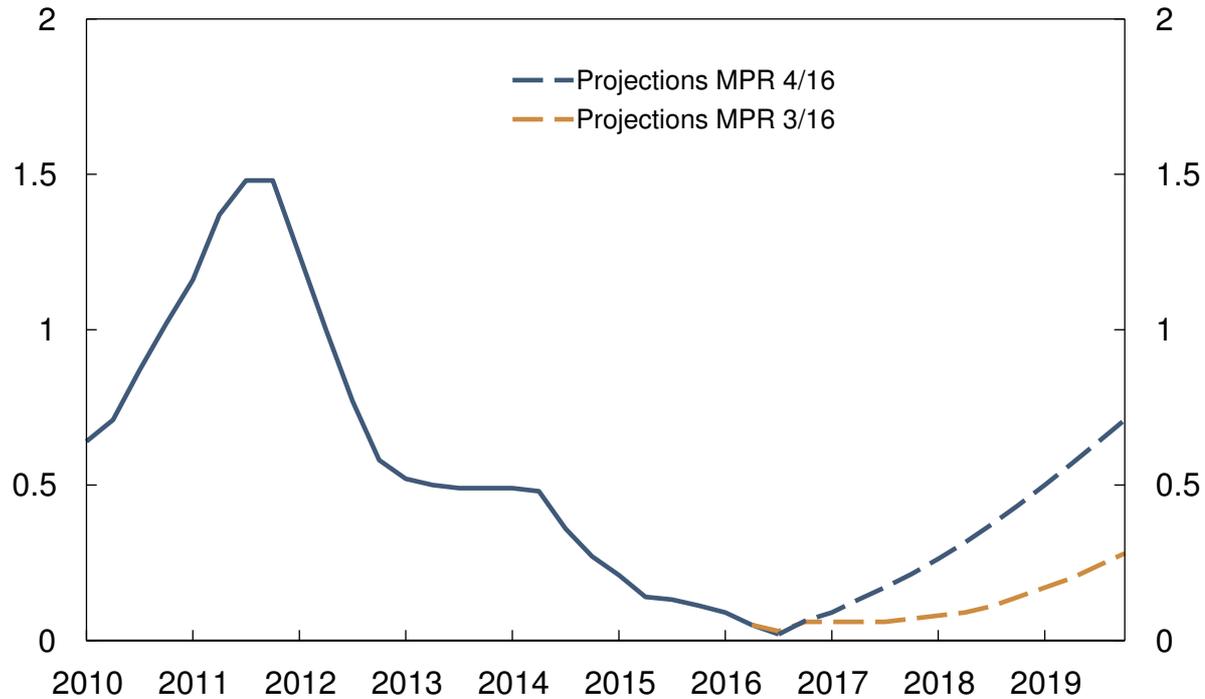
1) For information about the aggregate for trading partner interest rates, see *Norges Bank Papers* 2/2015.
2) Blue and orange broken lines show forward rates at 9 December 2016 and 16 September 2016 respectively.
Sources: Thomson Reuters and Norges Bank

Chart 1.11 Oil price[1] and import-weighted exchange rate index (I-44)[2].
1 January 2014 – 9 December 2016 [3]
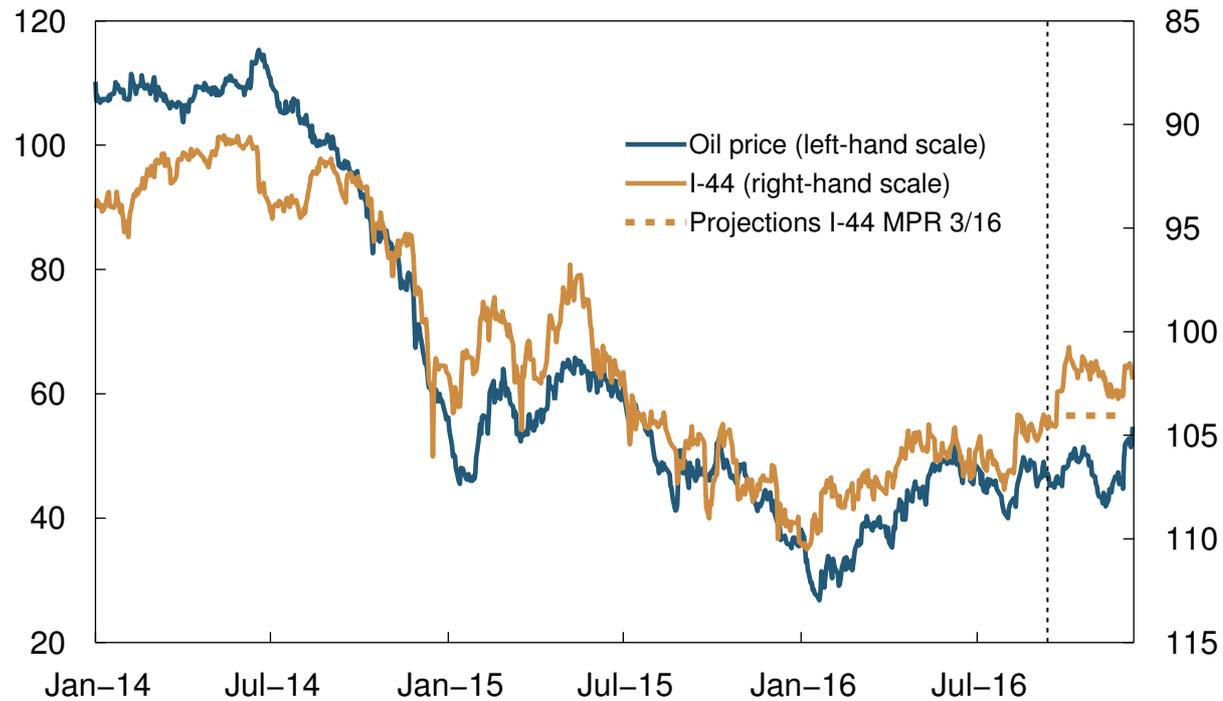
1) Brent blend. USD/barrel.
2) A positive slope denotes a stronger krone exchange rate.
3) MPR 3/16 was based on information in the period to 16 September 2016, marked by the vertical line.
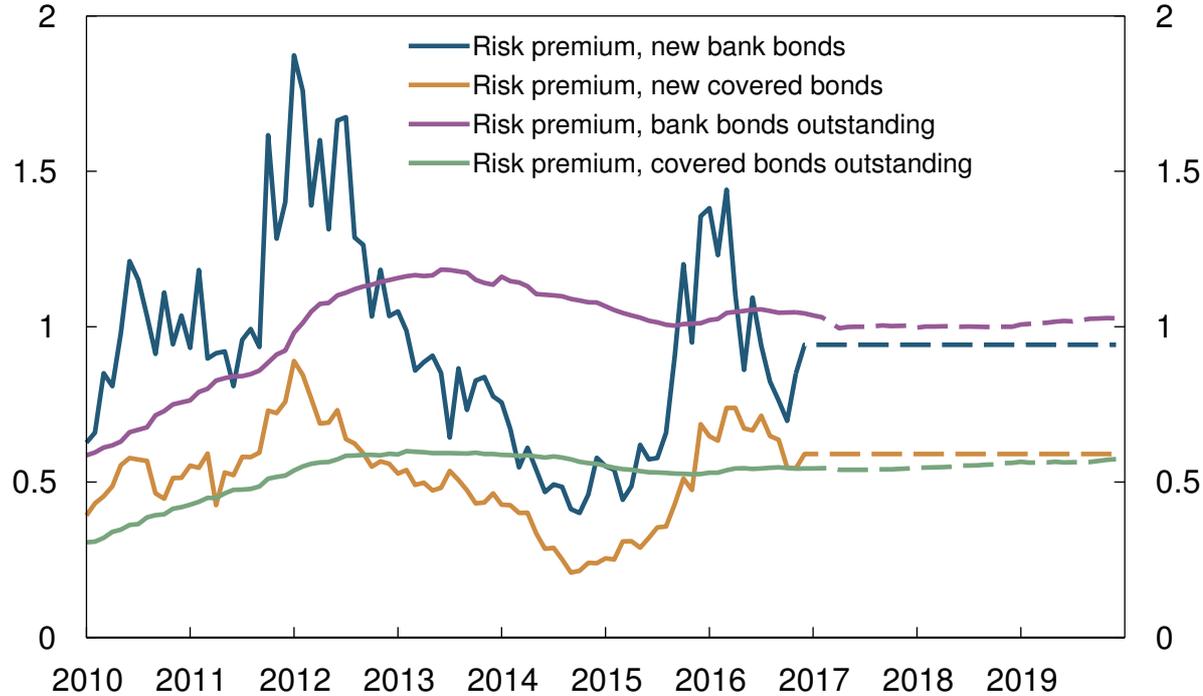Sources: Thomson Reuters and Norges Bank

Chart 1.12 Spread to three-month money market rate.[1] Five-day moving average.
Percentage points. 1 January 2010 – 31 December 2019 [2]
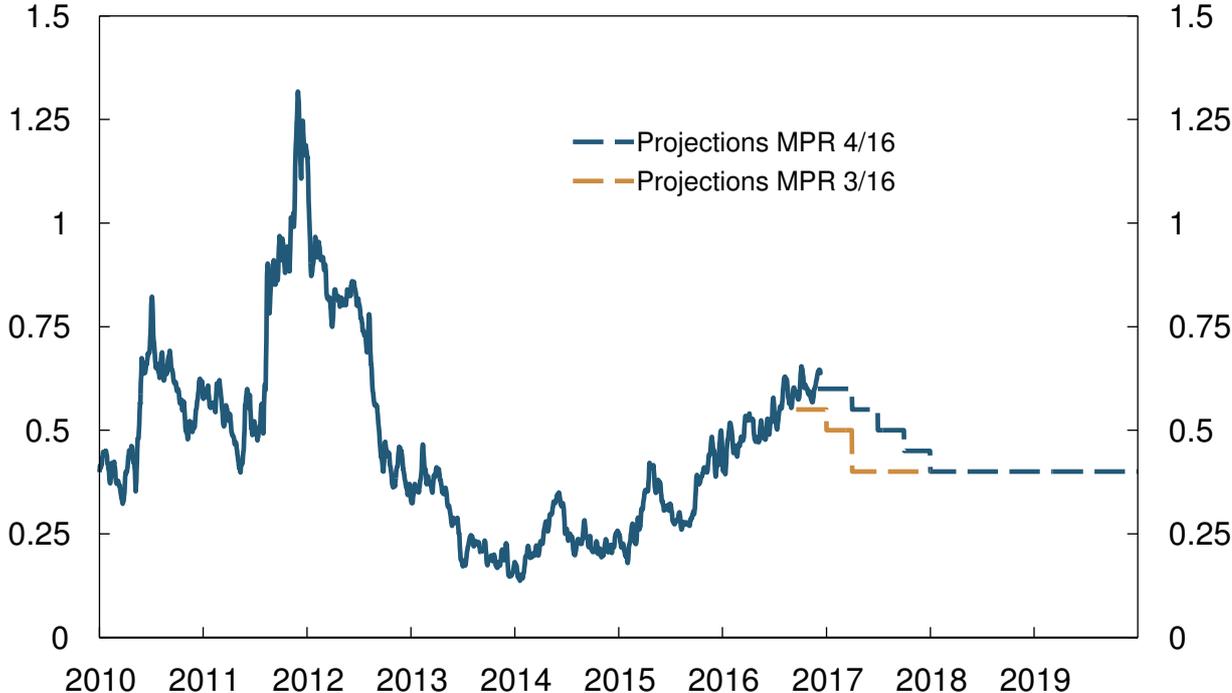
1) Norges Bank estimates of the difference between three-month money market rate and expected key policy rate.
2) Projections for 2016 Q4 – 2019 Q4 (broken lines).
Sources: Thomson Reuters and Norges Bank

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

- Risk premium, new bank bonds
- Risk premium, new covered bonds
- Risk premium, bank bonds outstanding
- Risk premium, covered bonds outstanding

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

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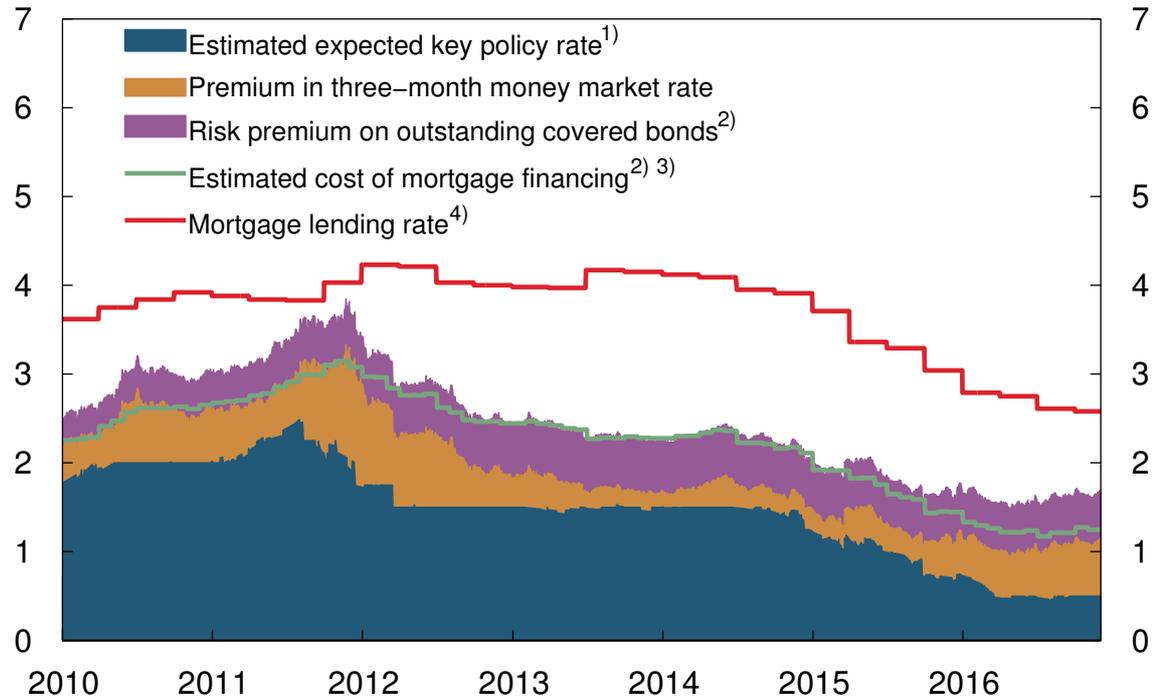Percent. January 2014 – October 2016
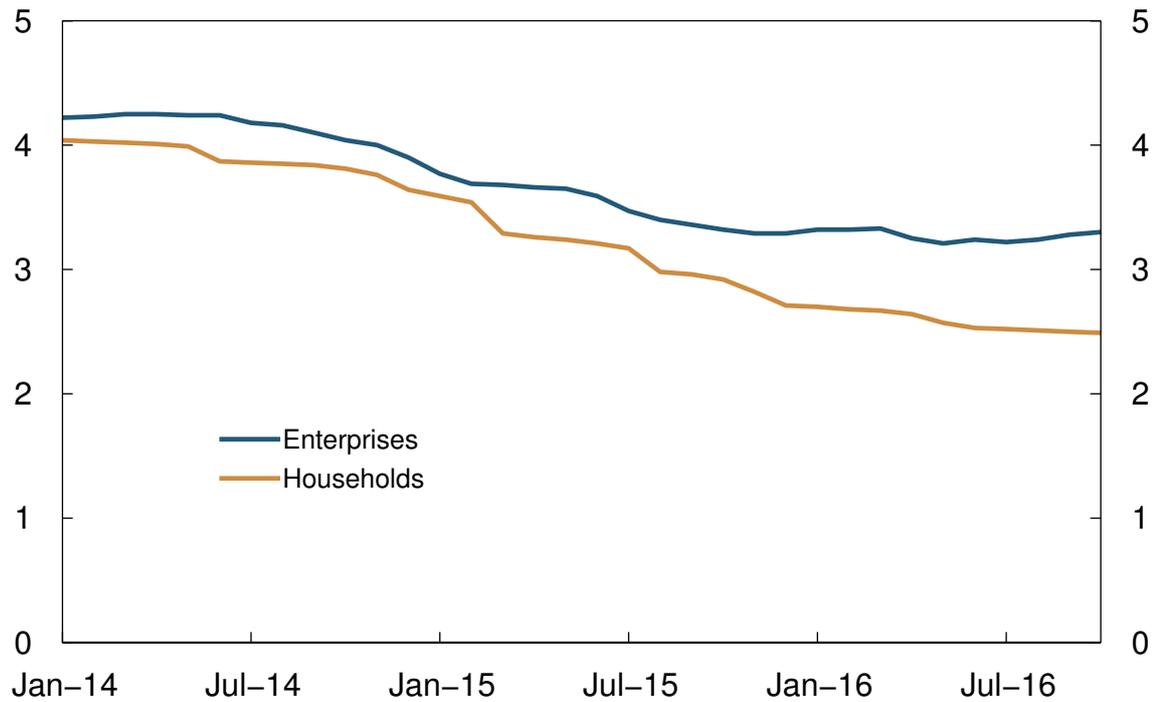
1) Outstanding loans.
2) Lending rate for households applies to total outstanding residential mortgage loans.
Source: Statistics Norway

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

Estimated expected key policy rate[1]

Premium in three−month money market rate

Risk premium on outstanding covered bonds[2]

Estimated cost of mortgage financing[2] [3]

Mortgage lending rate[4]

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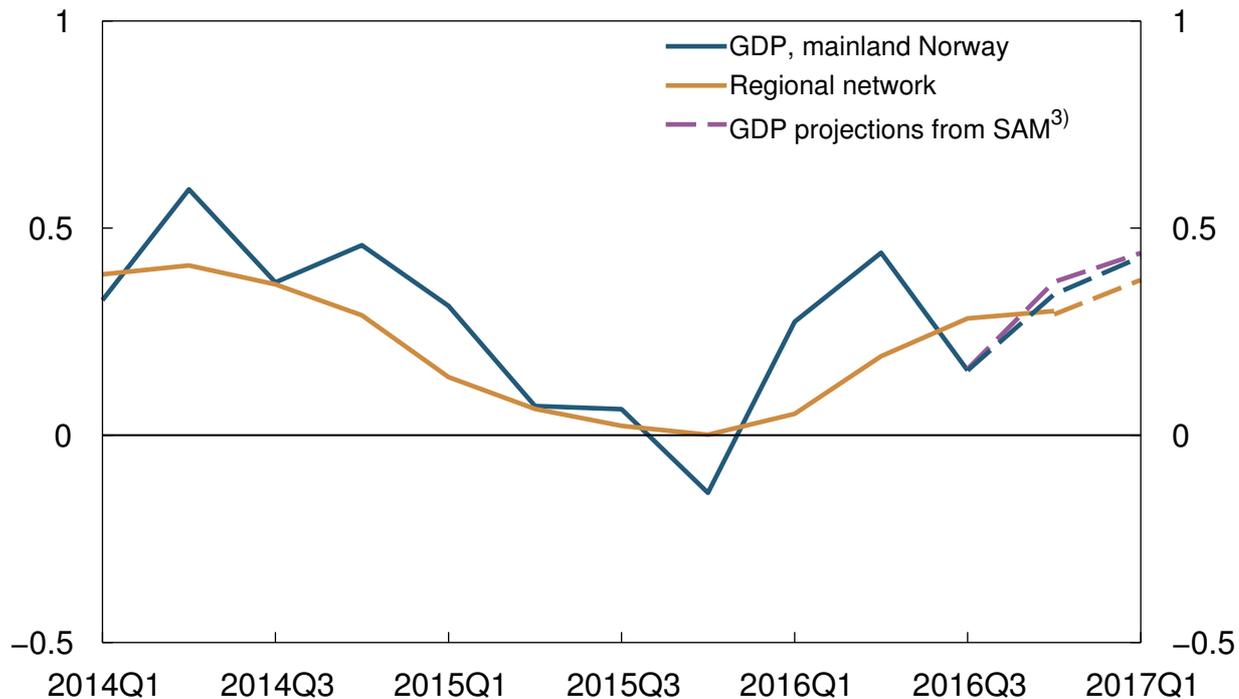2) Monthly data.
3) Estimated using weighted interest rates on covered bonds outstanding and weighted deposit rates.
4) Quarterly data.
Sources: Bloomberg, DNB Markets, Stamdata, Statistics Norway and Norges Bank

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

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

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

Legend:
— Recession probability
▨ Recession periods[2]
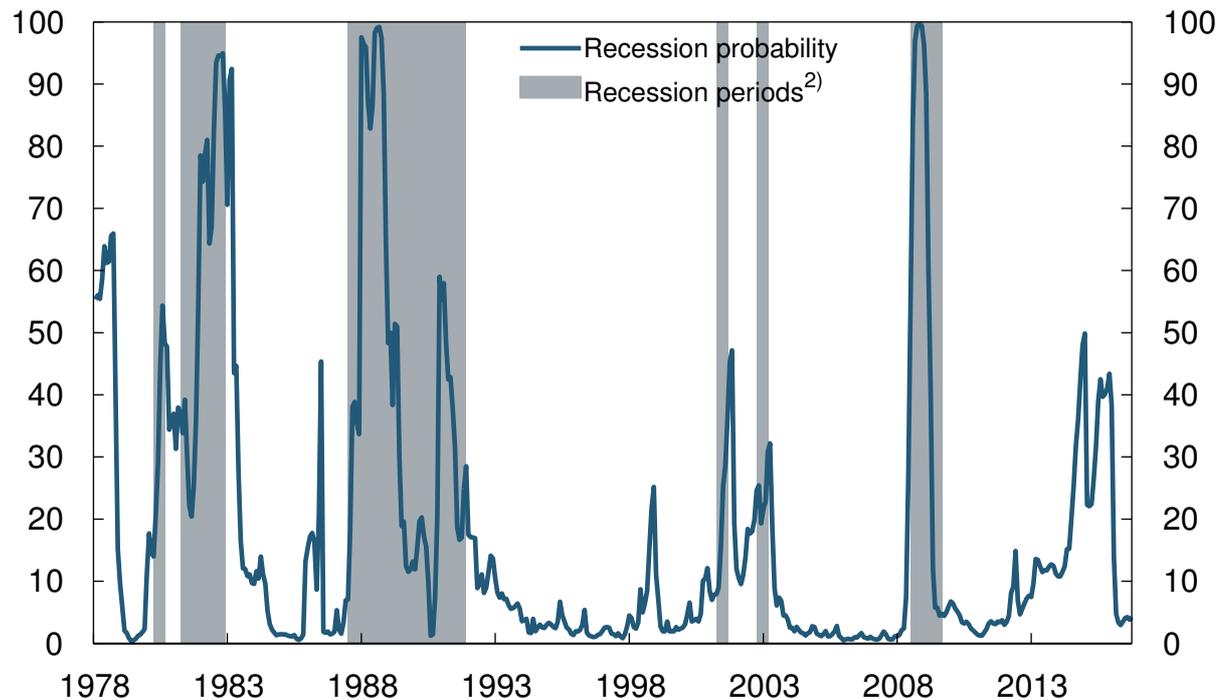
1) Smoothed recession probabilities estimated using a monthly indicator model based on the number of unemployed persons, the oil price, manufacturing output and retail sales. In a Special Feature in MPR 1/16, recession probabilities estimated in real time were presented.
2) Dated in Aastveit, K.A., A.S Jore and F. Ravazzolo (2016) "Identification and real-time forecasting of Norwegian business cycles". *International Journal of Forecasting* 32, pp. 283-292.
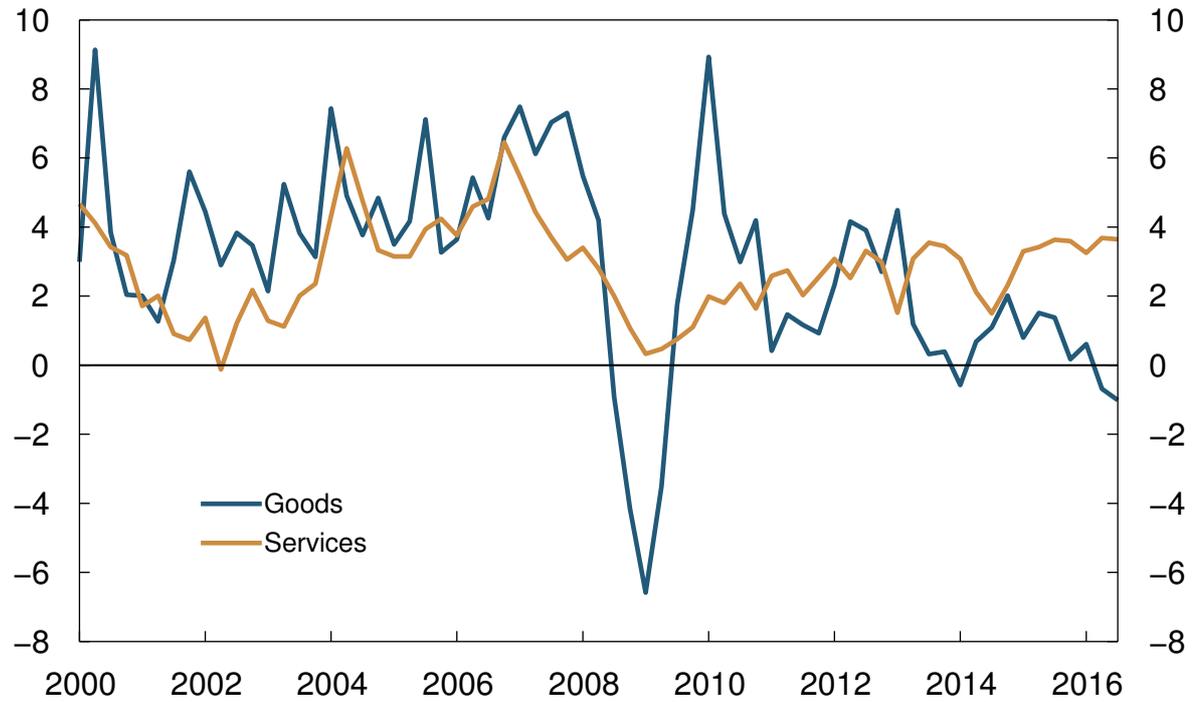Source: Norges Bank

Chart 1.18 Output growth as reported by regional network.
Annualised. Percent
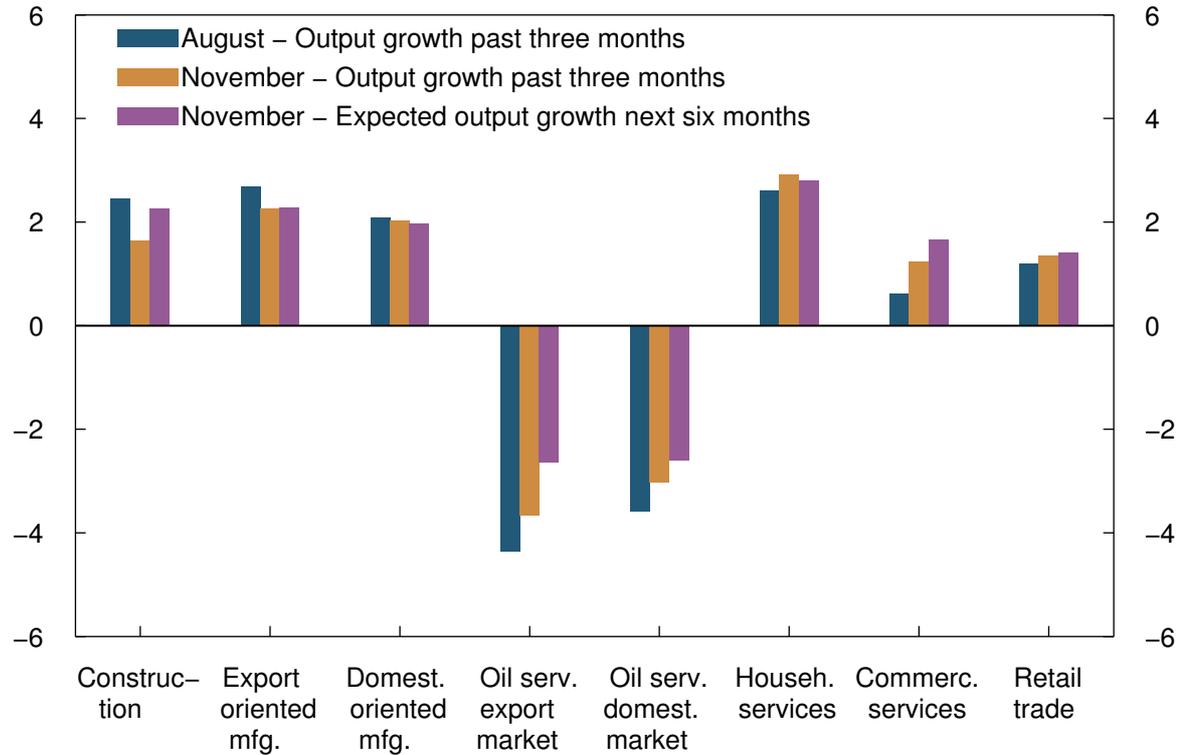
Source: Norges Bank

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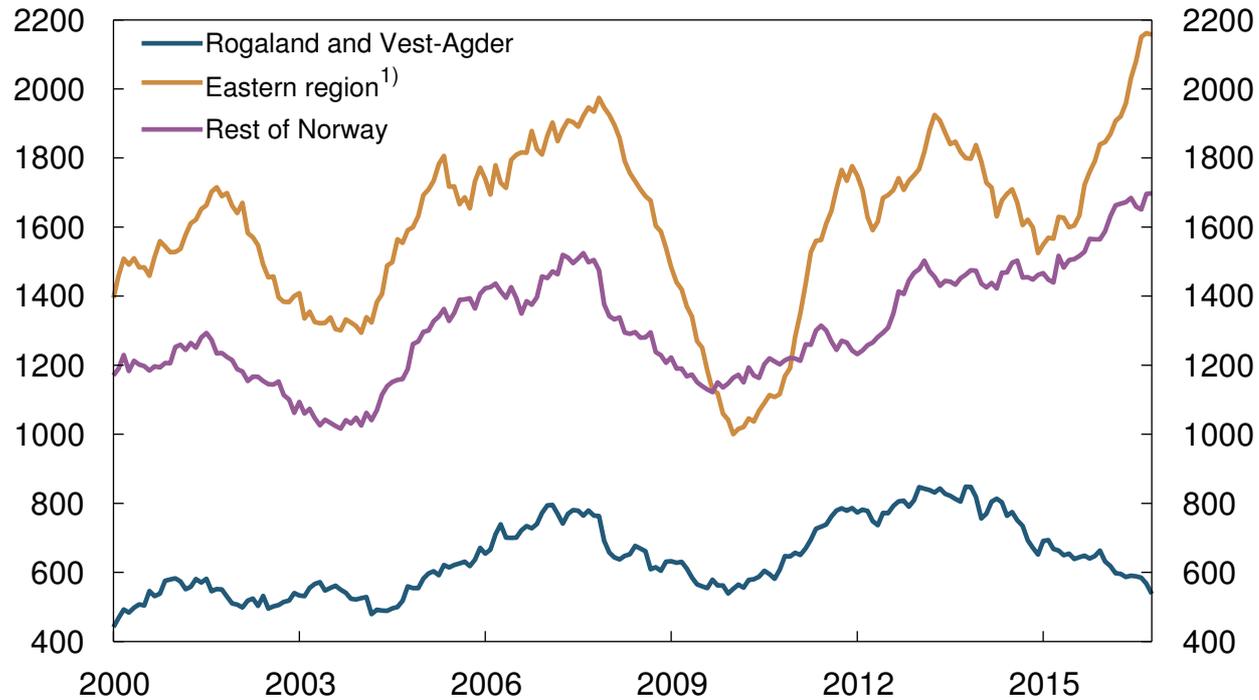

Source: Statistics Norway

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

Kantar TNS trend indicator (left–hand scale)
Consumer confidence index (right–hand scale)
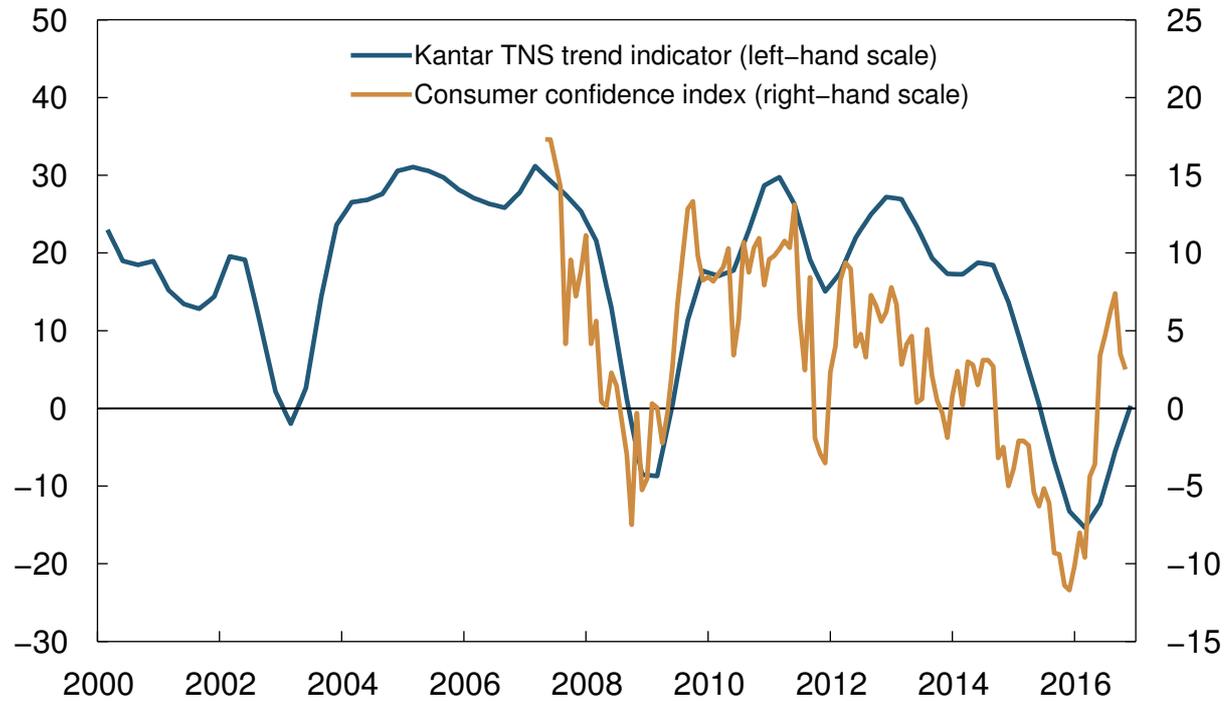
Sources: Kantar TNS and Opinion

Chart 1.21 Housing starts by county.
Utility floor space ($1000m^2$). Cumulative past twelve months. January 2000 – October 2016

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

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

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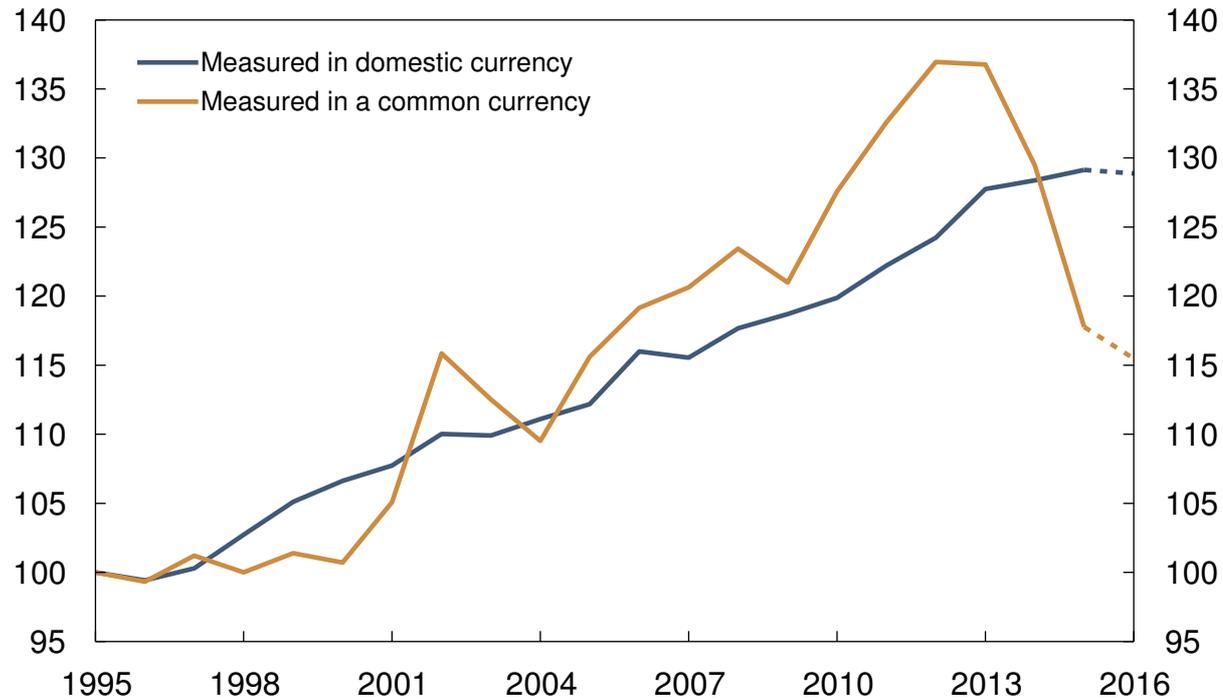
1) Hourly labour costs in manufacturing.
2) Projections for 2016 (broken lines).
Sources: Norwegian Technical Calculation Committee for Wage Settlements (TBU), Statistics Norway
and Norges Bank

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

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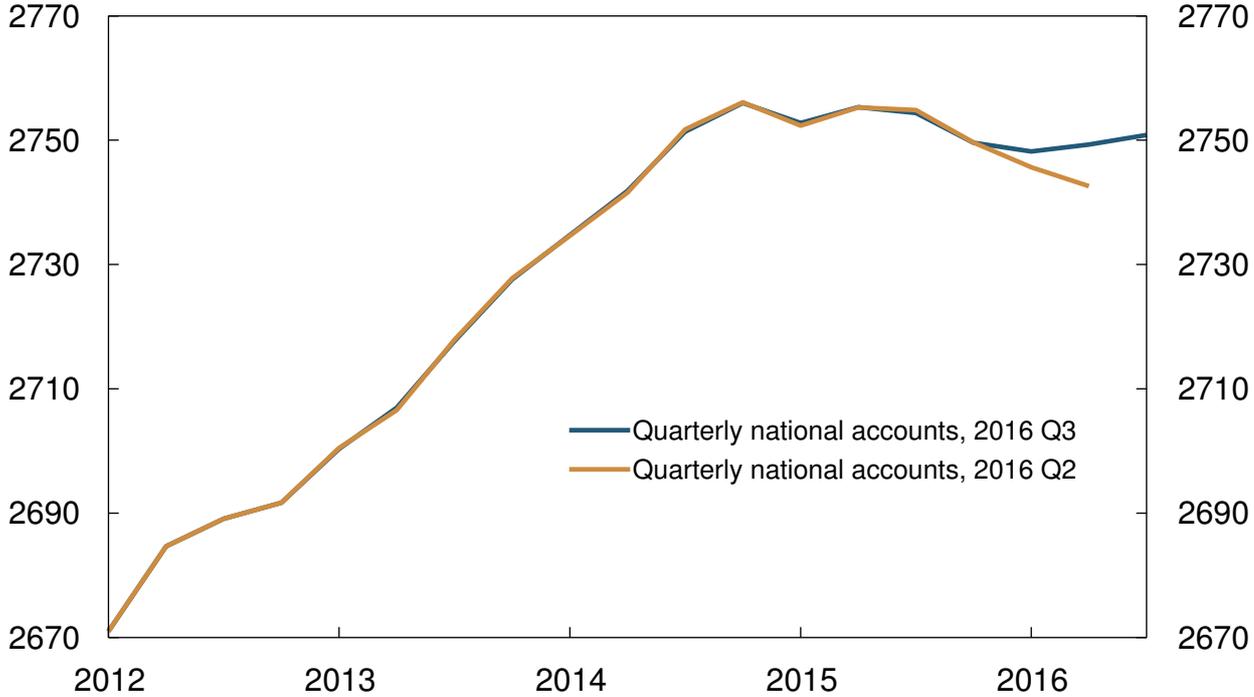
Source: Statistics Norway

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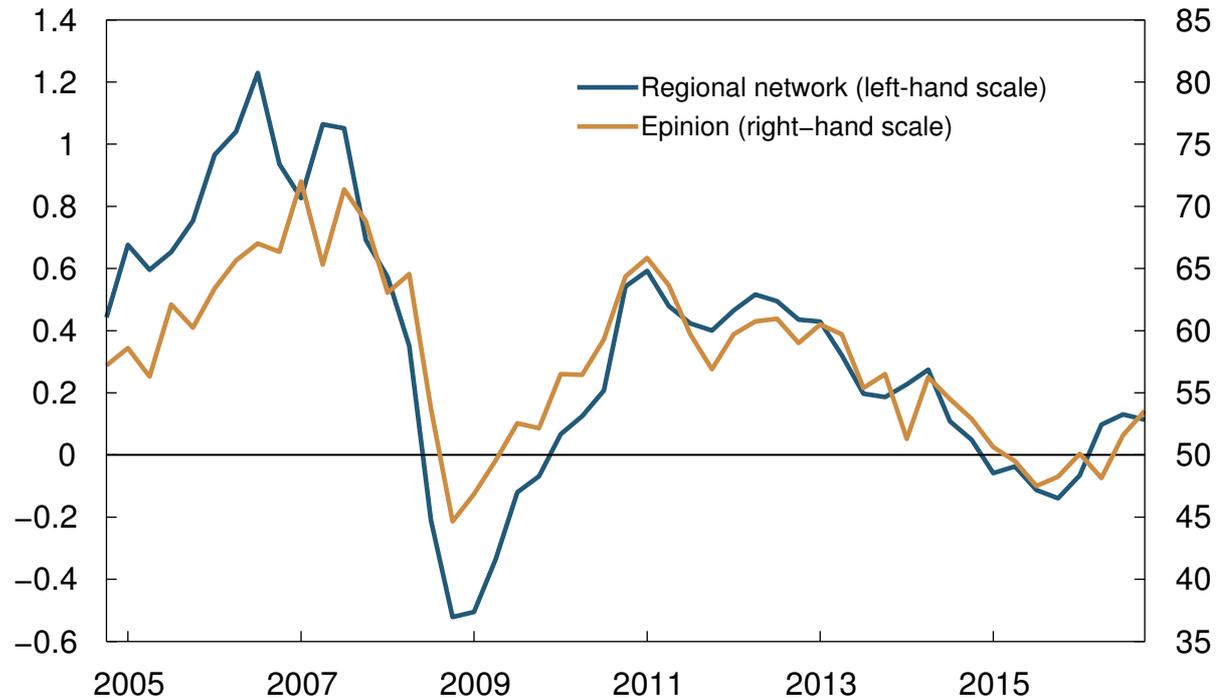

1) Expected change in employment next three months.
2) Expected change in hirings next 12 months.
3) Share of business leaders who expect "more employees" in their own company the following 12 months
+ (1/2 * share who expect "unchanged number of employees").
Sources: Epinion and Norges Bank

Chart 1.25 Unemployment as a share of the labour force. LFS[1] and NAV [2].
Seasonally adjusted. Percent. January 2010 – March 2017[3]
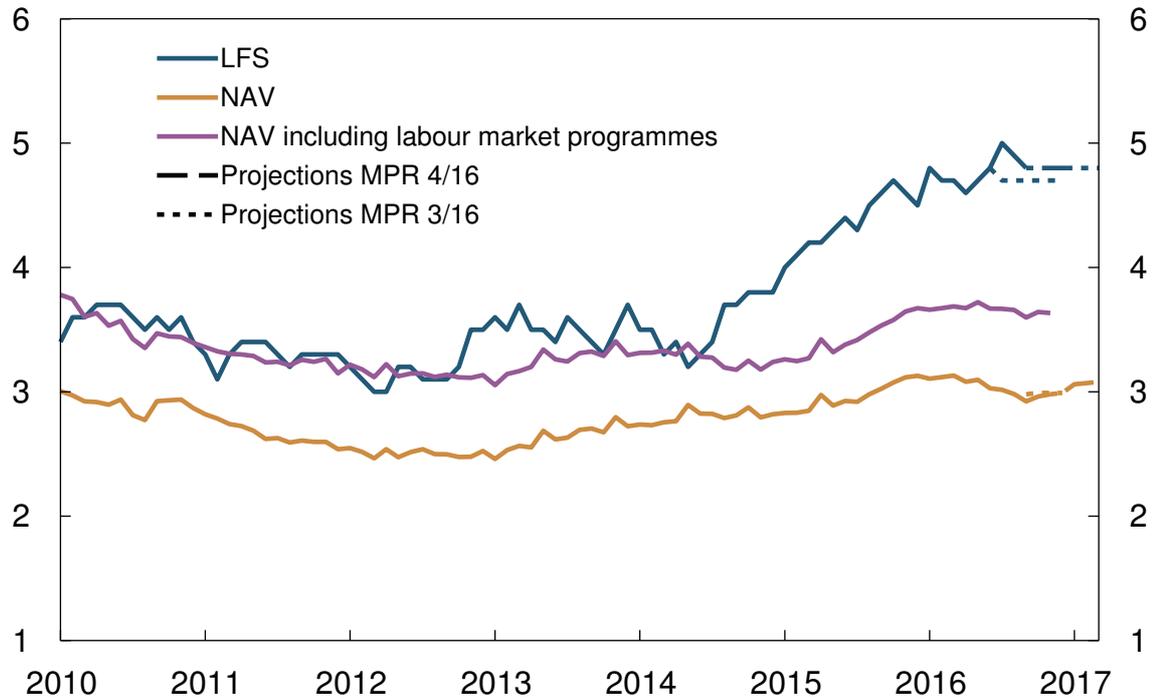
1) Labour Force Survey.
2) Registred unemployment.
3) Projections for LFS October 2016 – March 2017 and projections for NAV for December 2016 – March 2017 (broken lines).
Sources: Norwegian Labour and Welfare Administration (NAV), Statistics Norway and Norges Bank

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

Hordaland, Møre og Romsdal, Rogaland and Vest-Agder
Rest of Norway
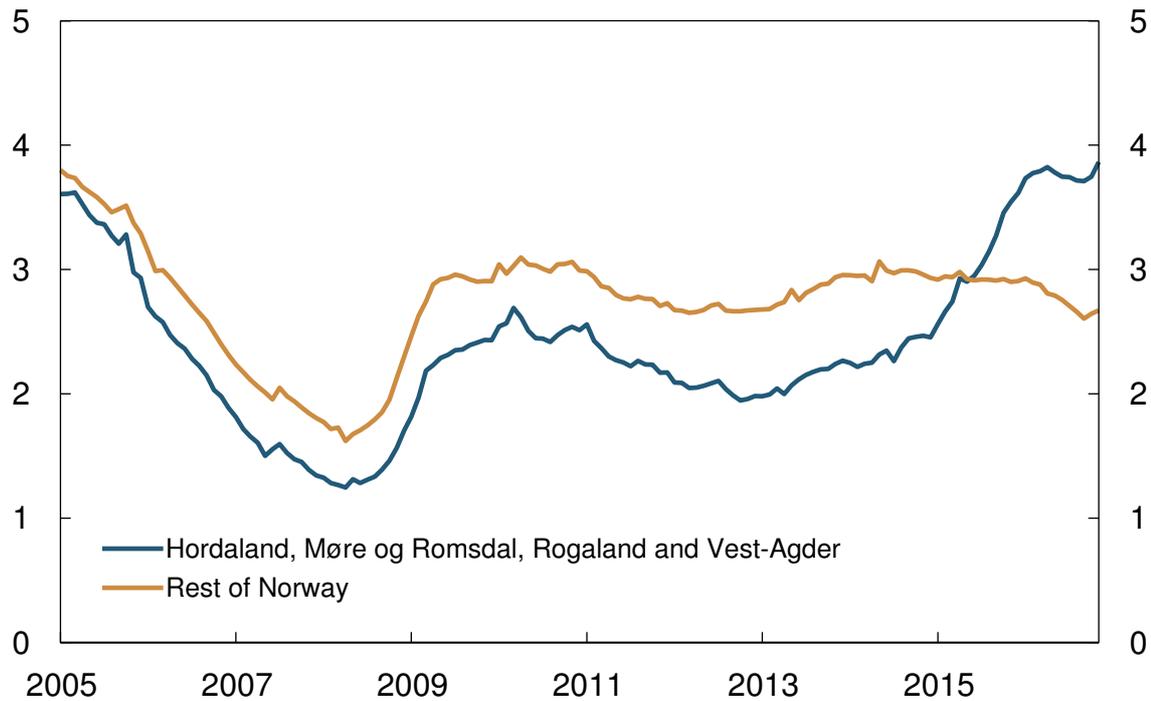
Sources: Norwegian Labour and Welfare Administration (NAV) and Norges Bank

Chart 1.27 Productivity.[1]
Four-quarter change. Percent. 2011 Q4 – 2016 Q3


— Average 2011–2015
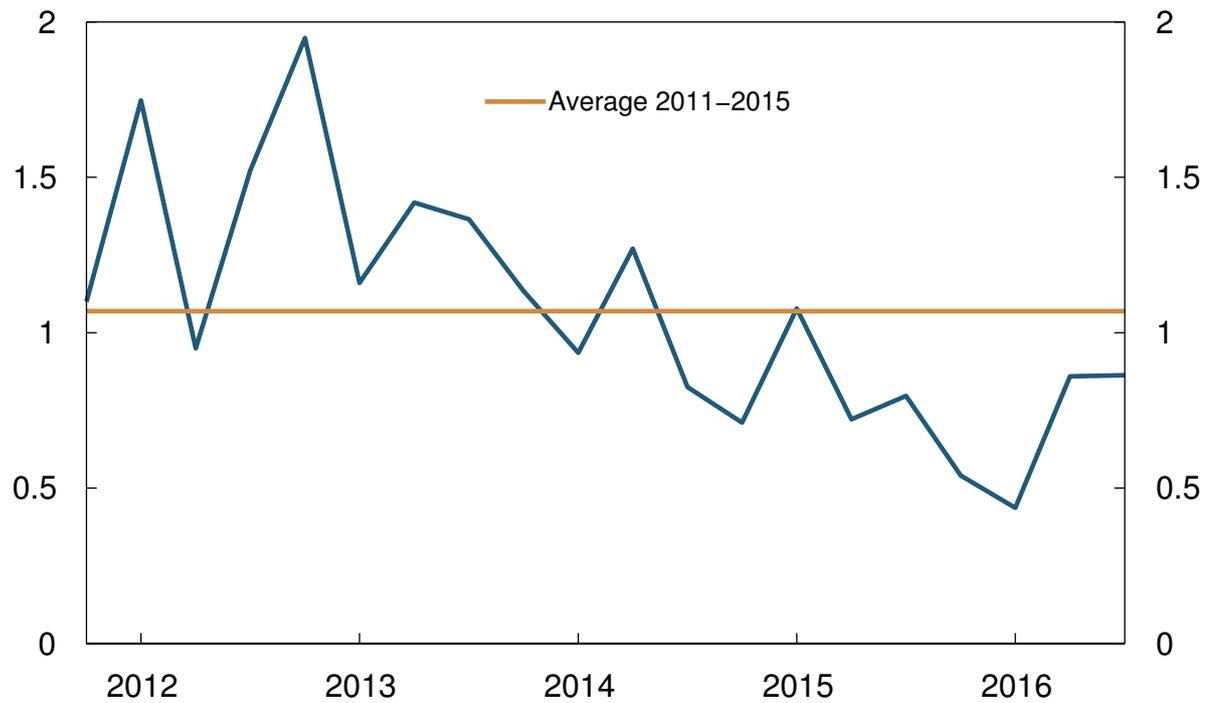
1) GDP for mainland Norway per employed.
Sources: Statistics Norway and Norges Bank

Chart 1.28 Capacity constraints and labour supply as reported by the regional network.[1]
Percent. January 2005 – November 2016
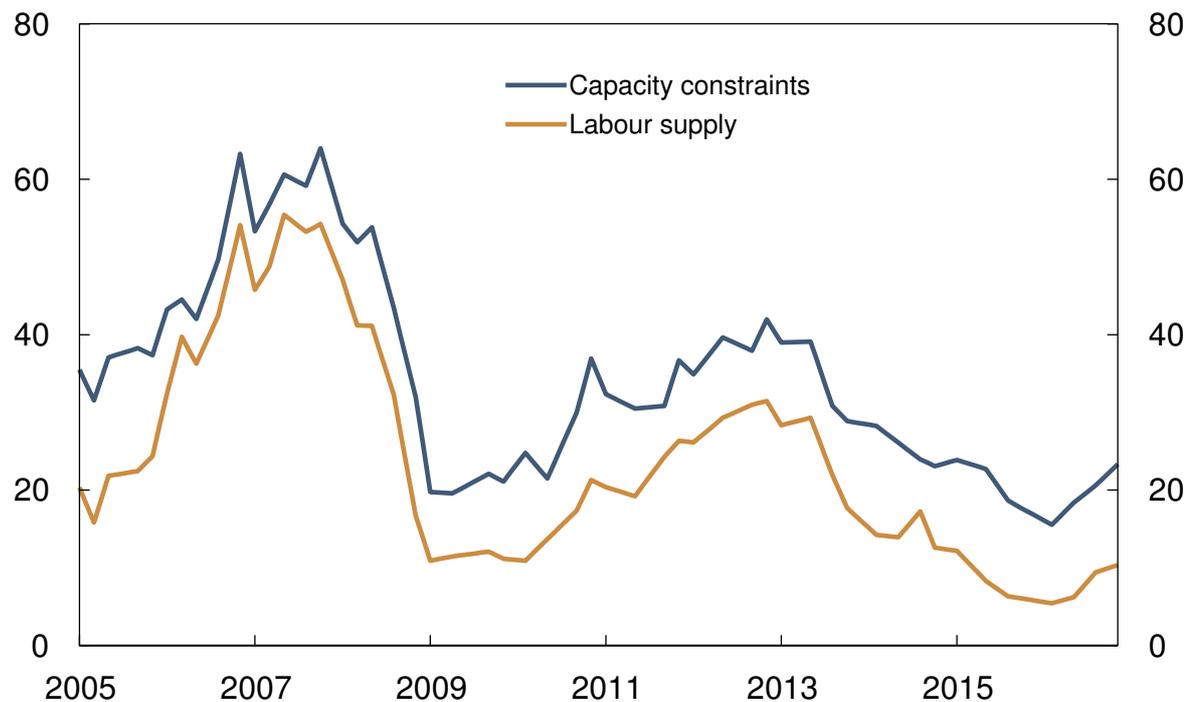
1) Share of contacts that will have some or considerable problems accommodating an increase
in demand and the share of contacts reporting that production is constrained by labour supply.
Source: Norges Bank

Chart 1.29 Terms of trade.
Index. 1995 Q1 = 100. Seasonally adjusted. 1995 Q1 − 2016 Q3

— Total
— Mainland Norway
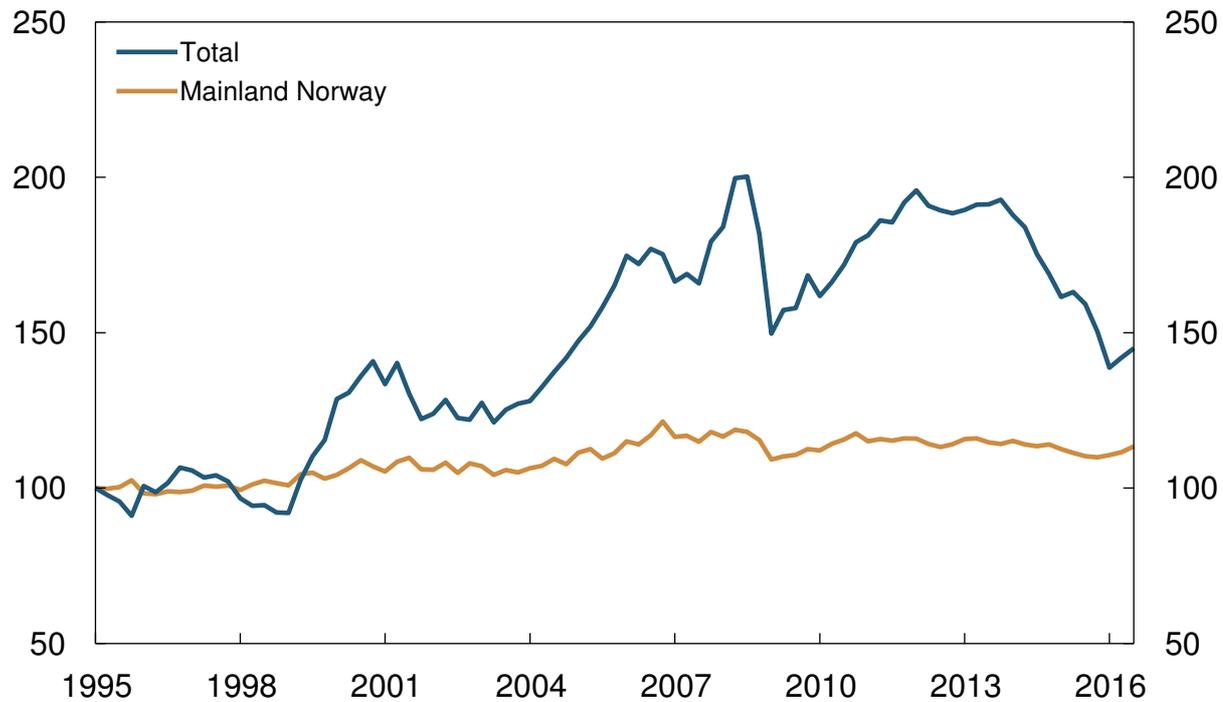
Chart 1.30 CPI and CPI-ATE[1].
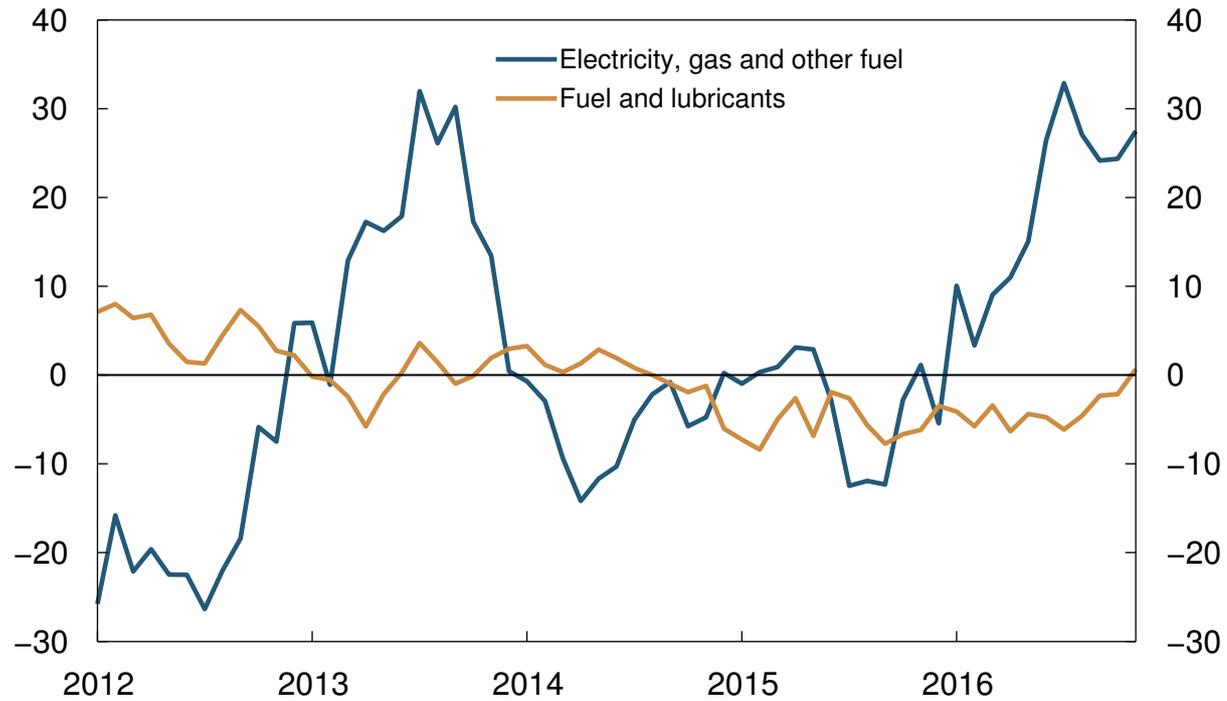Twelve-month change. Percent. January 2010 – March 2017 [2]
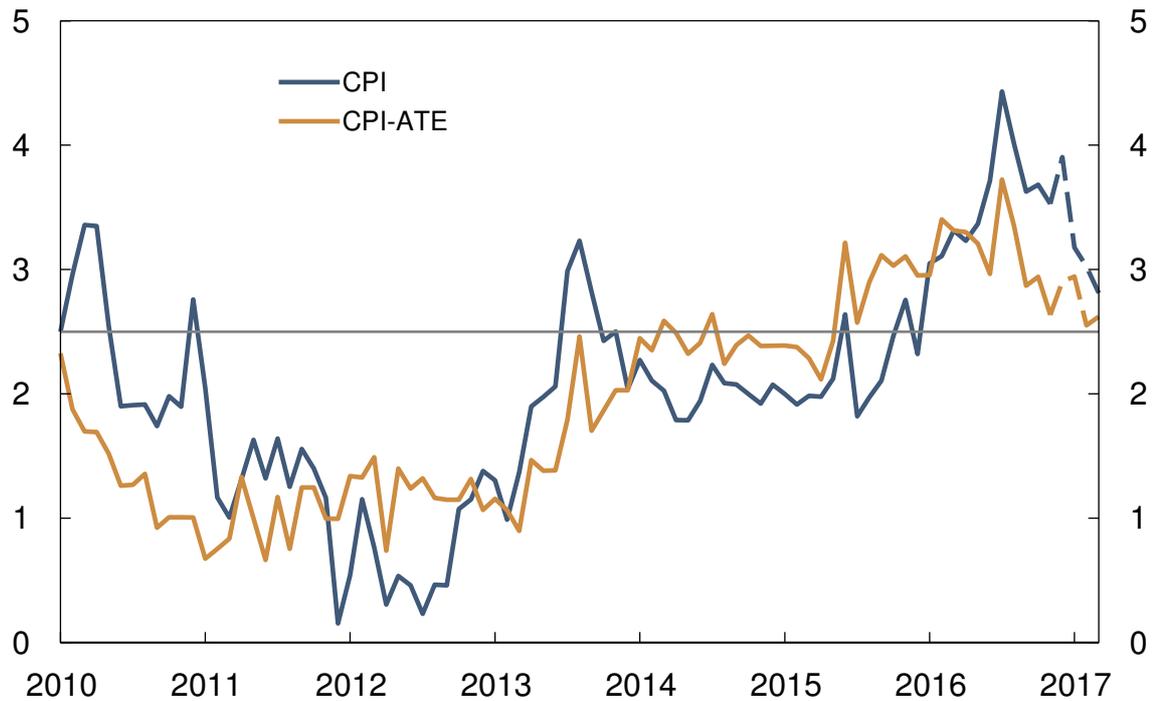
1) CPI adjusted for tax changes and excluding energy products.
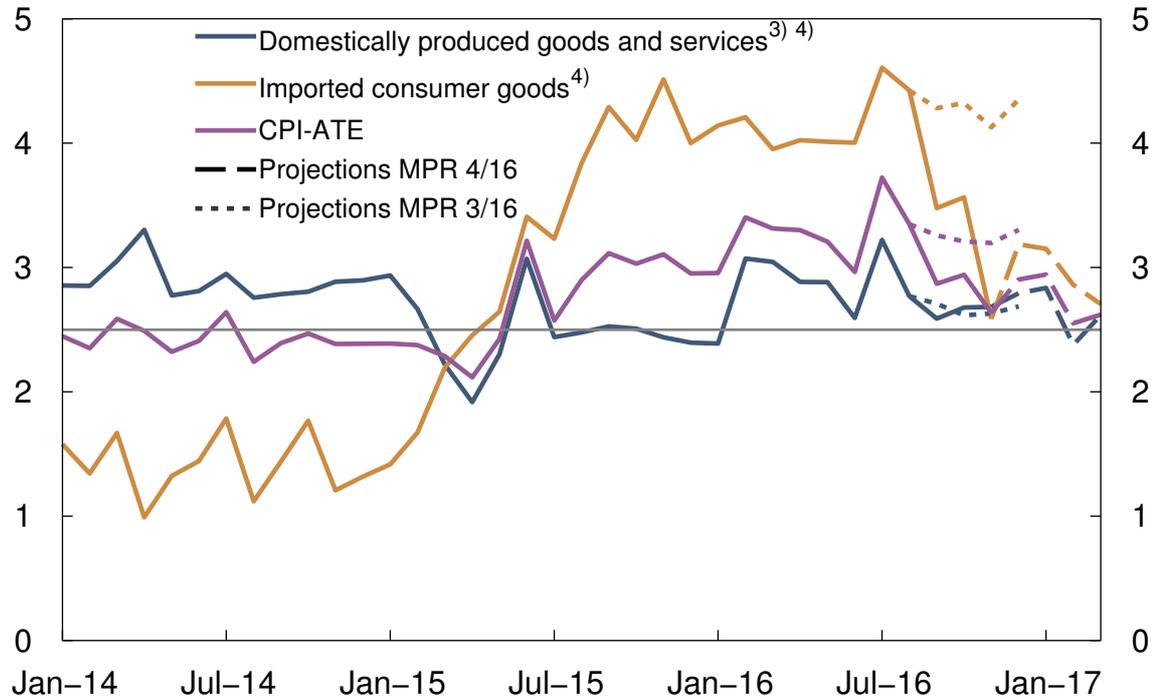2) Projections for December 2016 – March 2017 (broken lines).
Sources: Statistics Norway and Norges Bank

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

Electricity, gas and other fuel
Fuel and lubricants

Source: Statistics Norway

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

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

Chart 1.33 Indicator of external price impulses to imported consumer goods measured in a foreign currency. Annual change. Percent. 2005 – 2016[1]
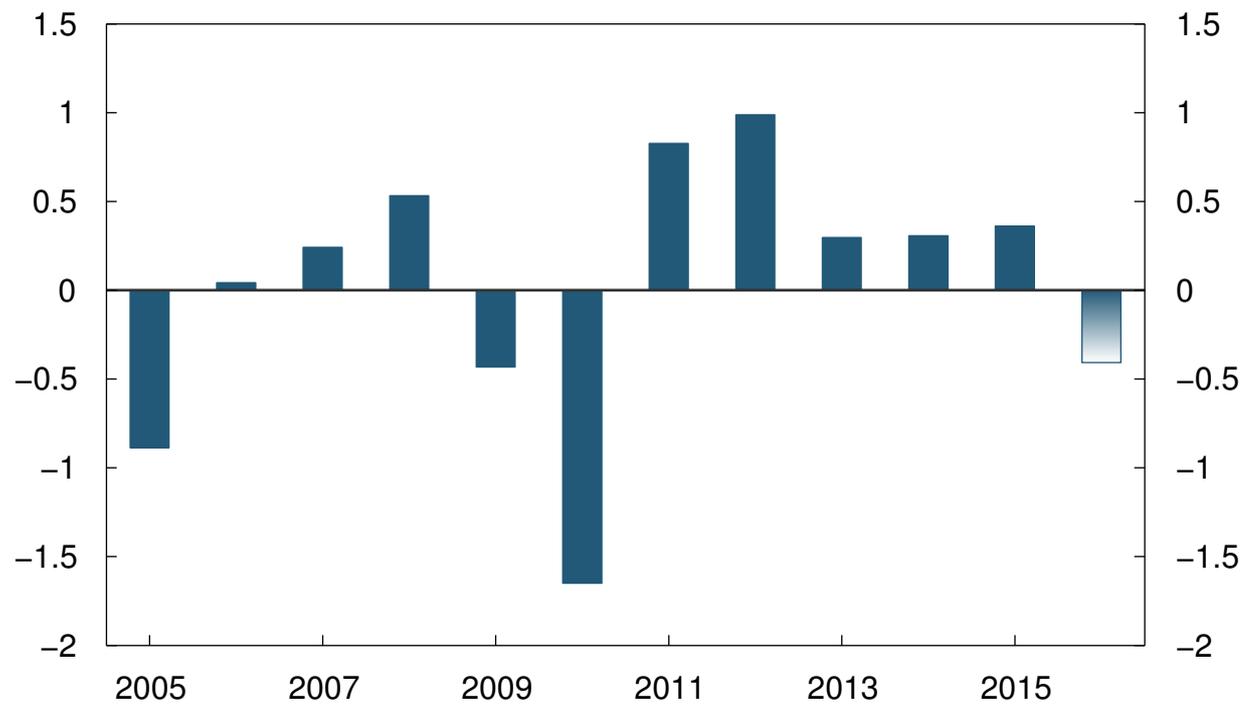
Chart 1.34 CPI-ATE[1]. Actual path, baseline scenario and projections from SAM[2] with fan chart. Four-quarter change. Percent. 2015 Q1 – 2017 Q1 [3]
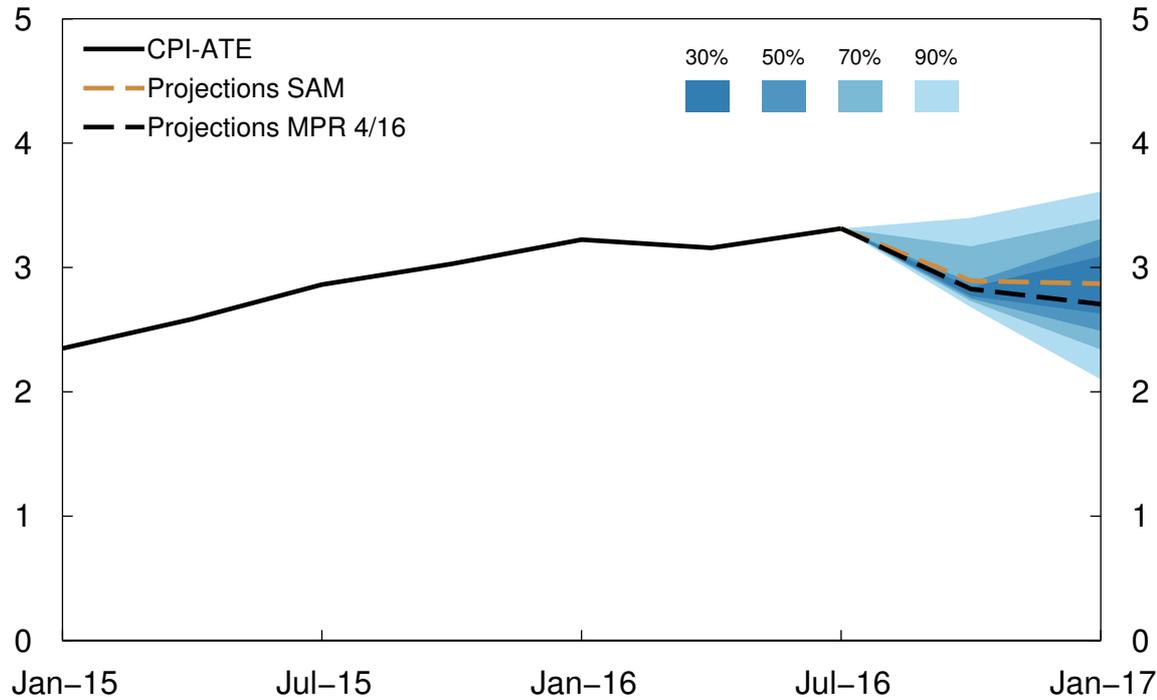
1) CPI adjusted for tax changes and excluding energy products.
2) System for Averaging short-term Models.
3) Projections for 2016 Q4 – 2017 Q1 (broken lines).
Sources: Statistics Norway and Norges Bank

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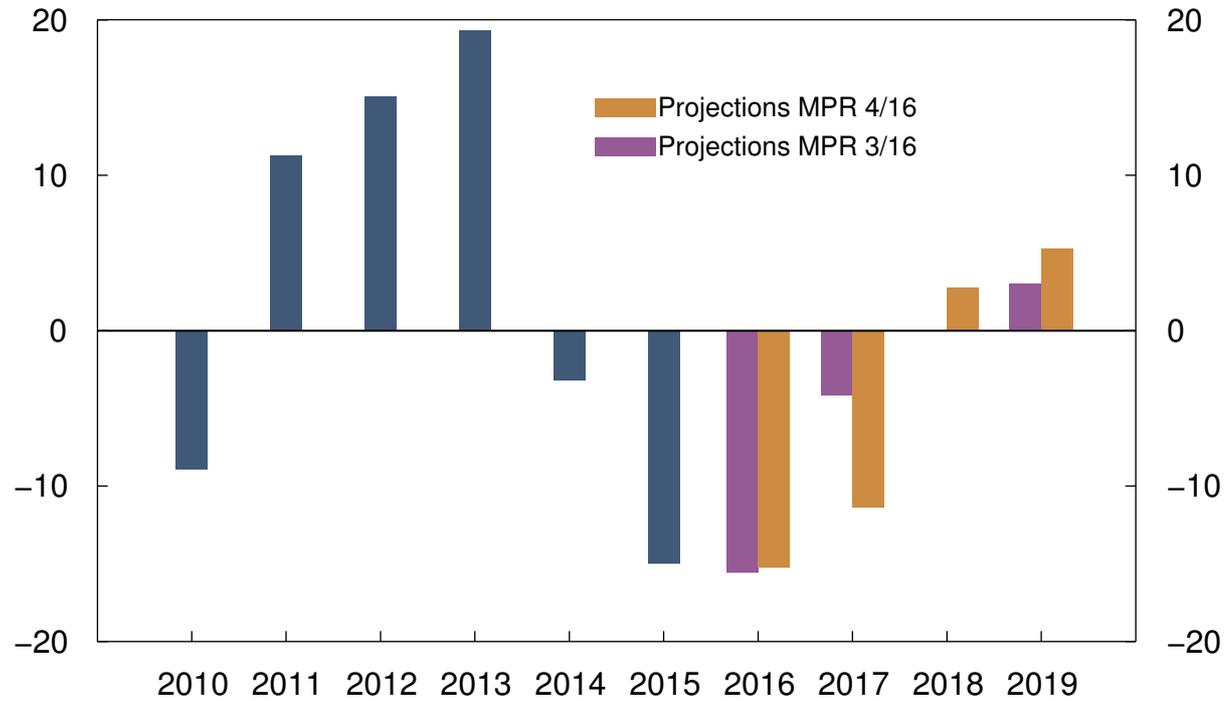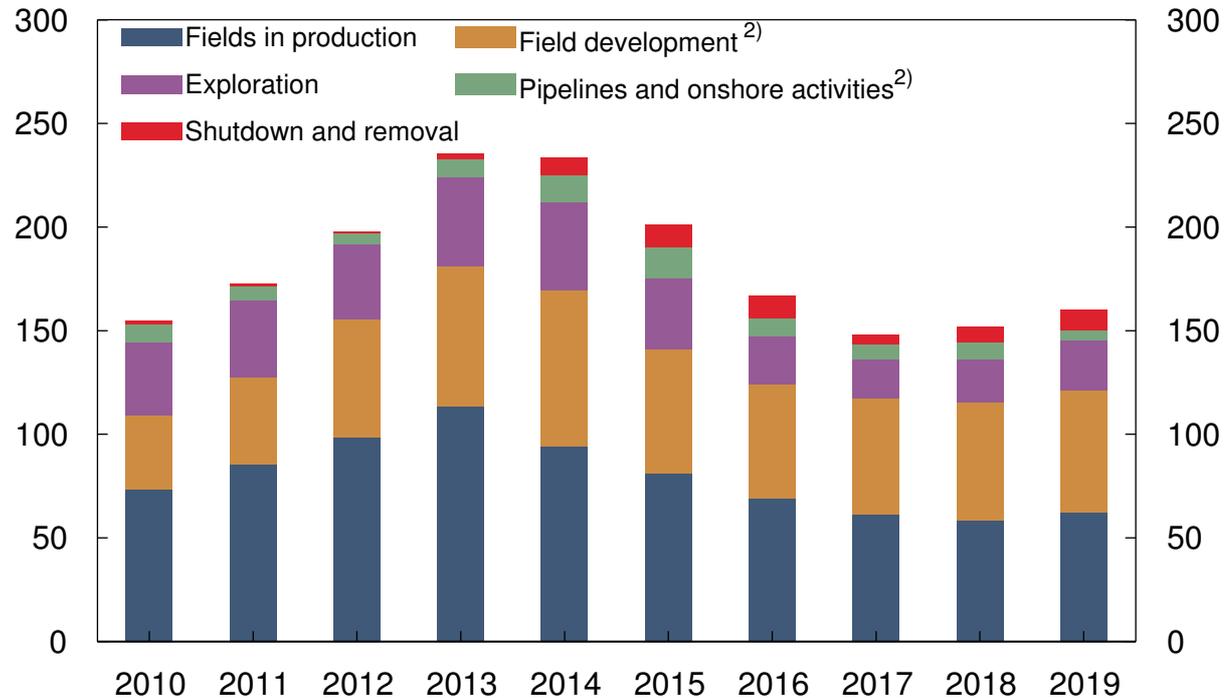Volume. Annual change. Percent. 2010 – 2019[1]

Legend:
- Projections MPR 4/16
- Projections MPR 3/16

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

Chart 1.36 Petroleum investment.
Constant 2016 prices. In billions of NOK. 2010 – 2019 [1]

- Fields in production
- Field development [2]
- Exploration
- Pipelines and onshore activities [2]
- Shutdown and removal

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

Chart 1.37 Field development.
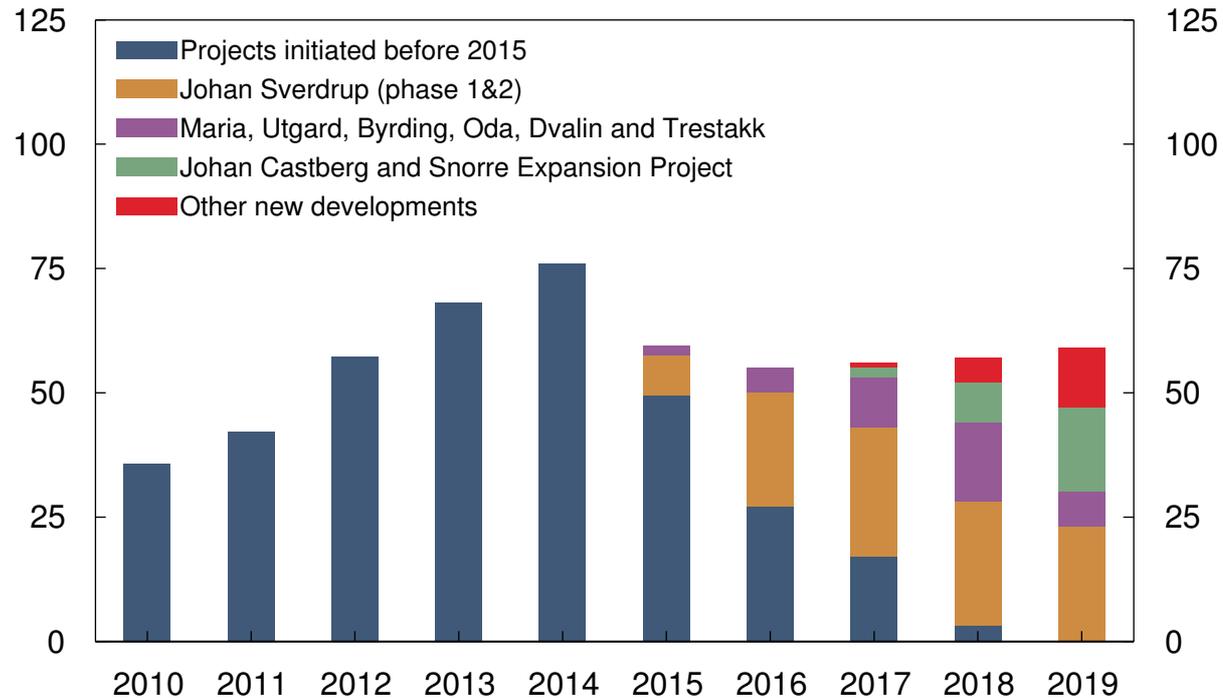Constant 2016 prices. In billions of NOK. 2010 – 2019 [1]

- Projects initiated before 2015
- Johan Sverdrup (phase 1&2)
- Maria, Utgard, Byrding, Oda, Dvalin and Trestakk
- Johan Castberg and Snorre Expansion Project
- Other new developments

1) Projections for 2016 – 2019 and for the breakdown of investment in 2015. Figures for total development investment for 2010 – 2015 are from the investment intentions survey by Statistics Norway and deflated by the price index for petroleum investment in the national accounts. The projections are based on reports to the Storting, impact analyses, forecasts from the Norwegian Petroleum Directorate, the investment intentions survey by Statistics Norway and current information about development investments. Expenses for pipelines for the Johan Sverdrup development are included in the estimates for pipeline transport and onshore activities.
Sources: Statistics Norway and Norges Bank

Chart 1.38 Structural non-oil deficit and 4% of the Government Pension Fund Global (GPFG). Constant 2017 prices. In billions of NOK. 2002 – 2019[1]


- Structural non-oil deficit
- 4% of GPFG
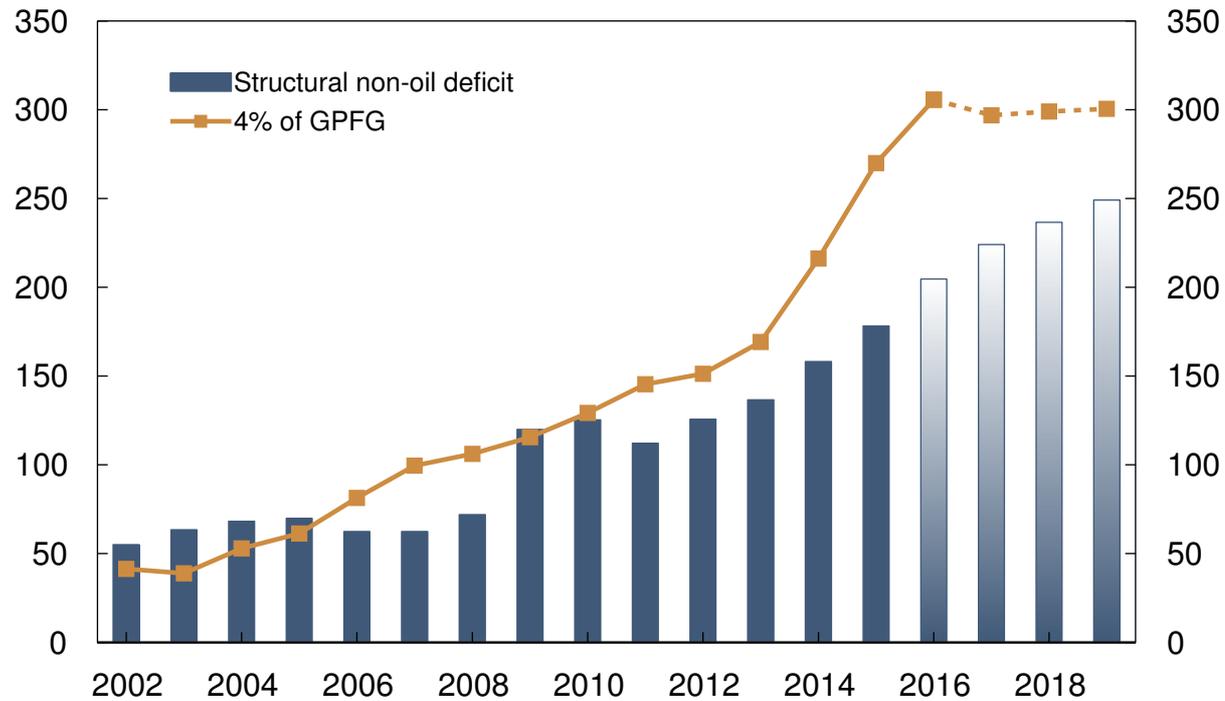
1) Projections for 2016 – 2019 (broken line and shaded).
Sources: Ministry of Finance and Norges Bank

Chart 1.39 Fiscal impulse. Change in the structural non-oil deficit as a percentage of trend GDP for mainland Norway. 2002 – 2017[1]
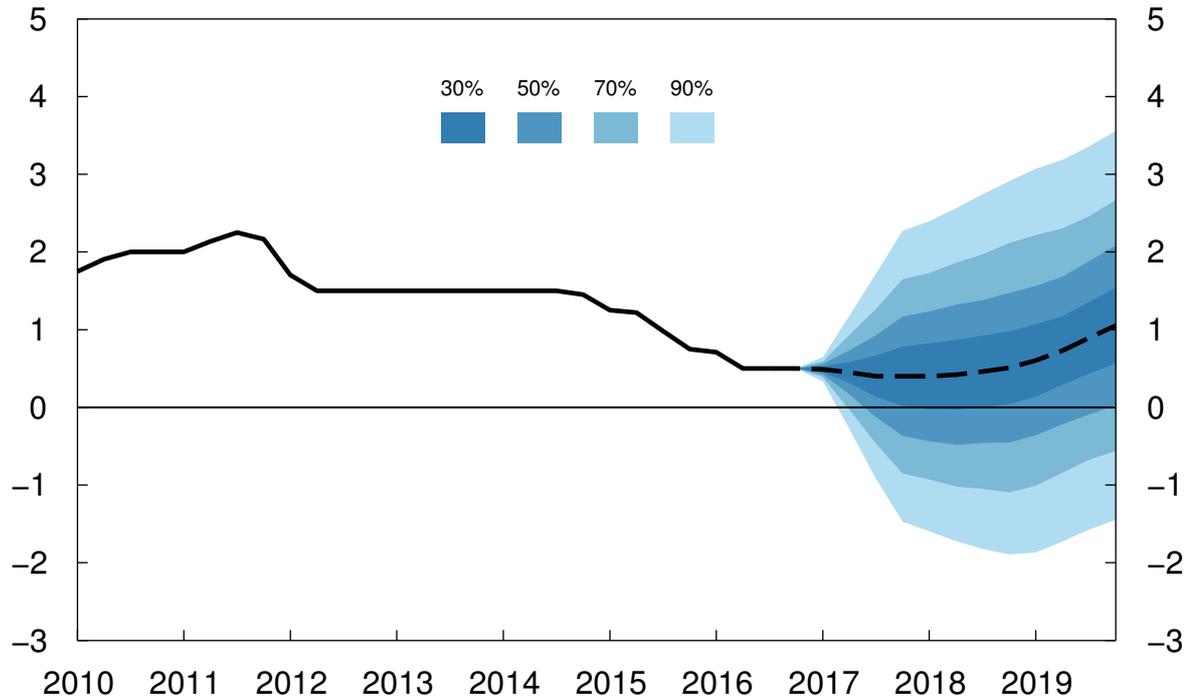

Average 2002–2016
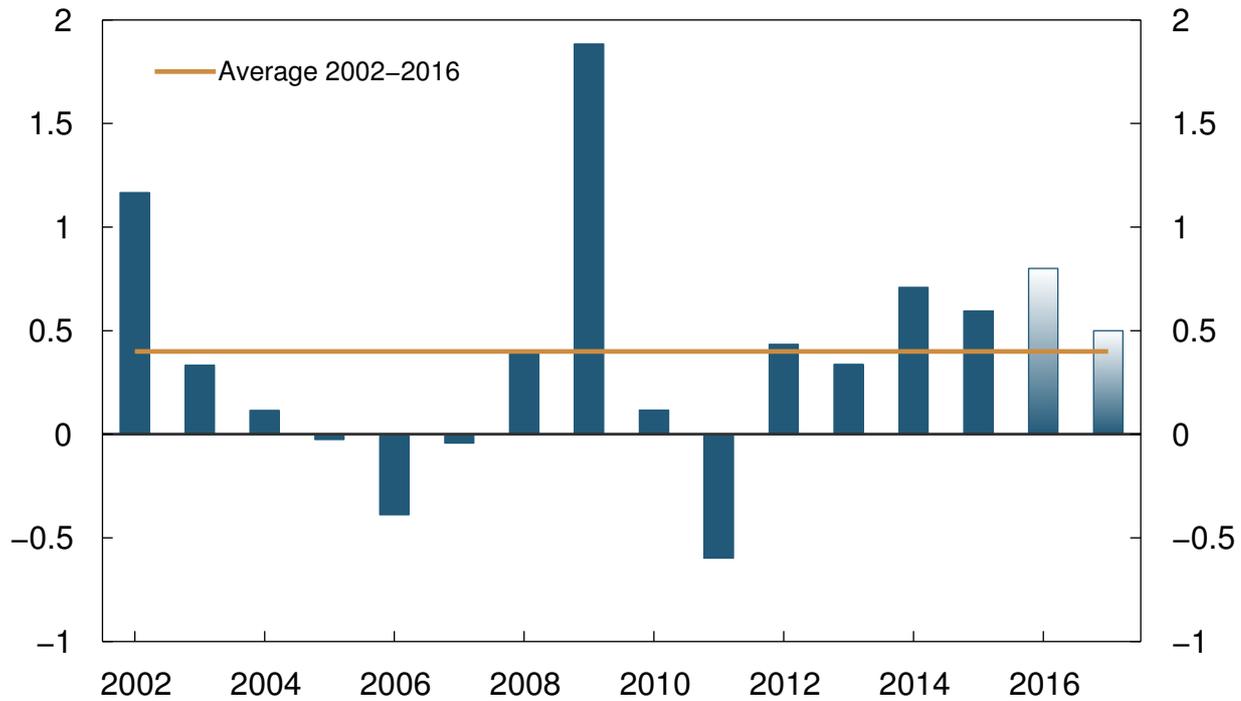
1) Projections for 2016 and 2017 (shaded).
Sources: Ministry of Finance and Norges Bank

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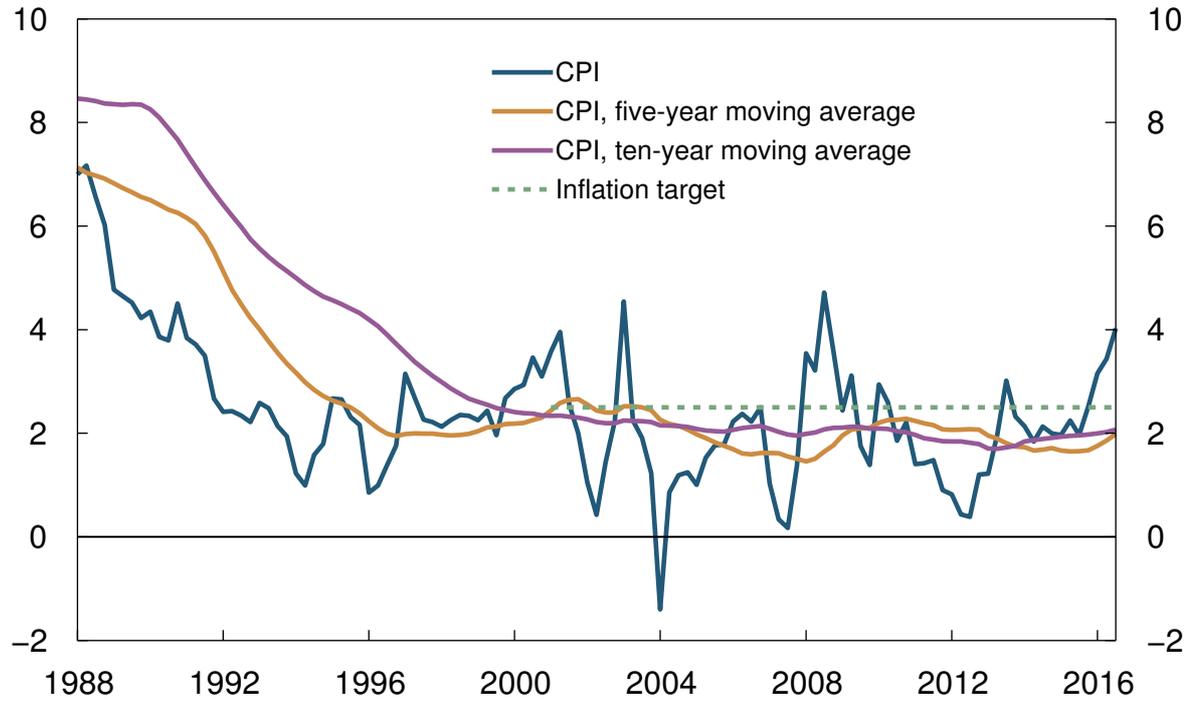
Sources: Statistics Norway and Norges Bank

Chart 2.2a Projected key policy rate in the baseline scenario with fan chart.[1]
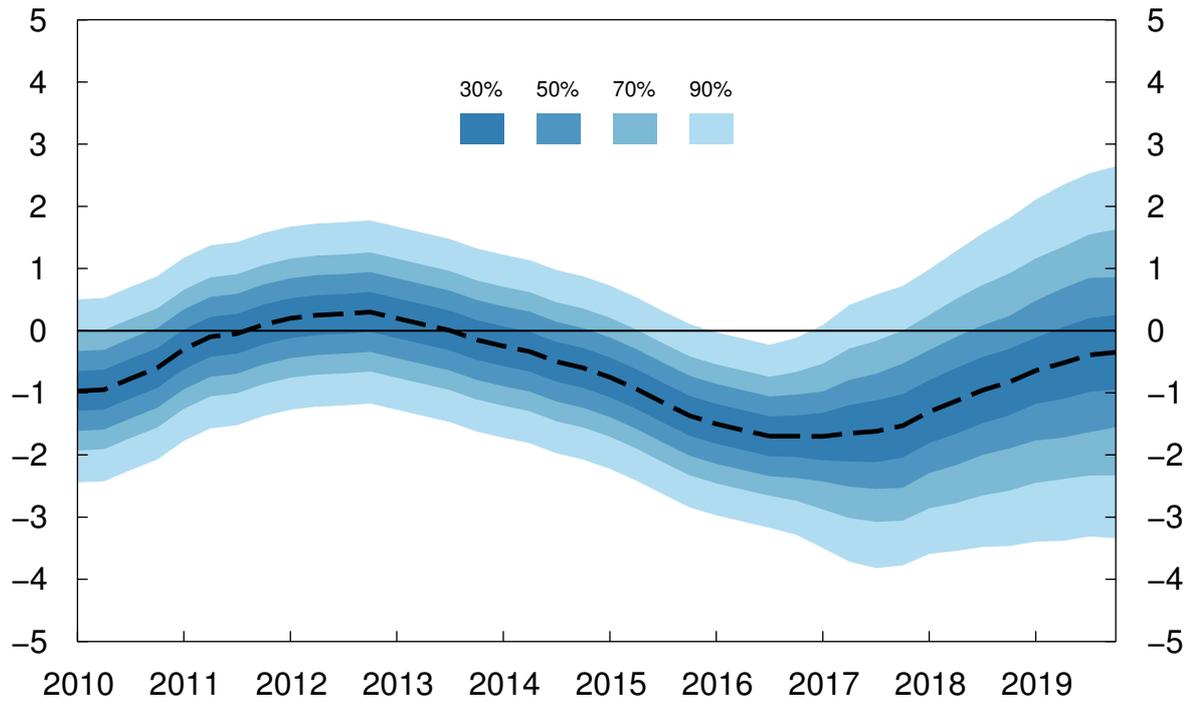Percent. 2010 Q1 – 2019 Q4[2]

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

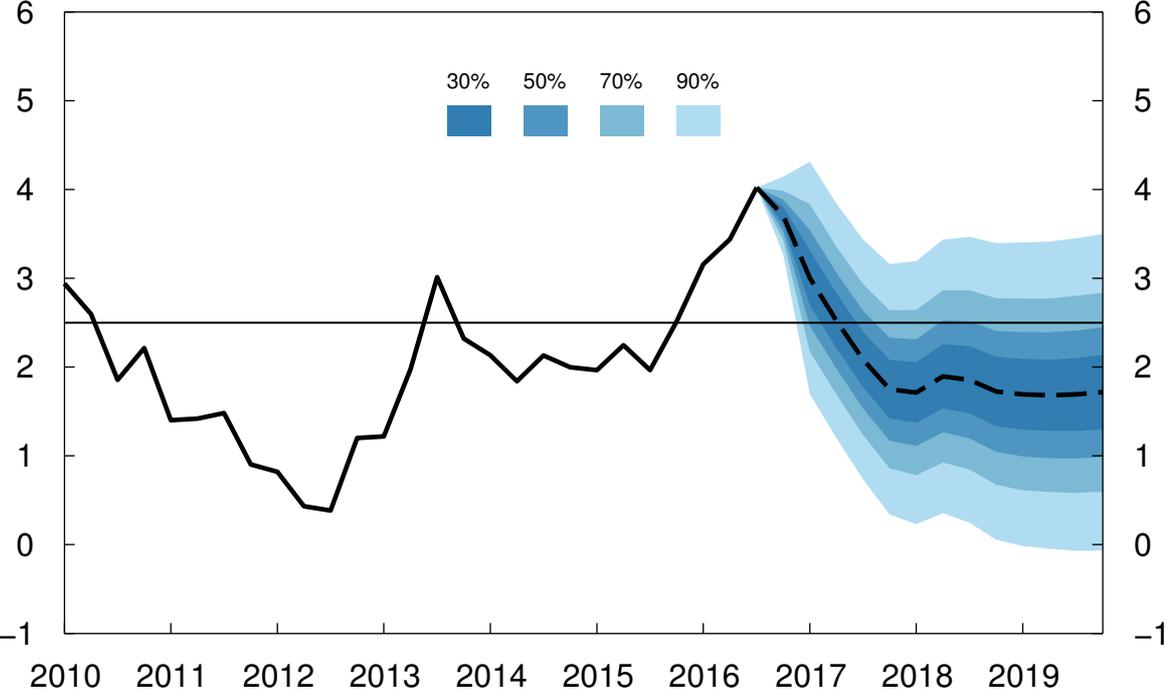Chart 2.2b Projected output gap[1] in the baseline scenario with fan chart.
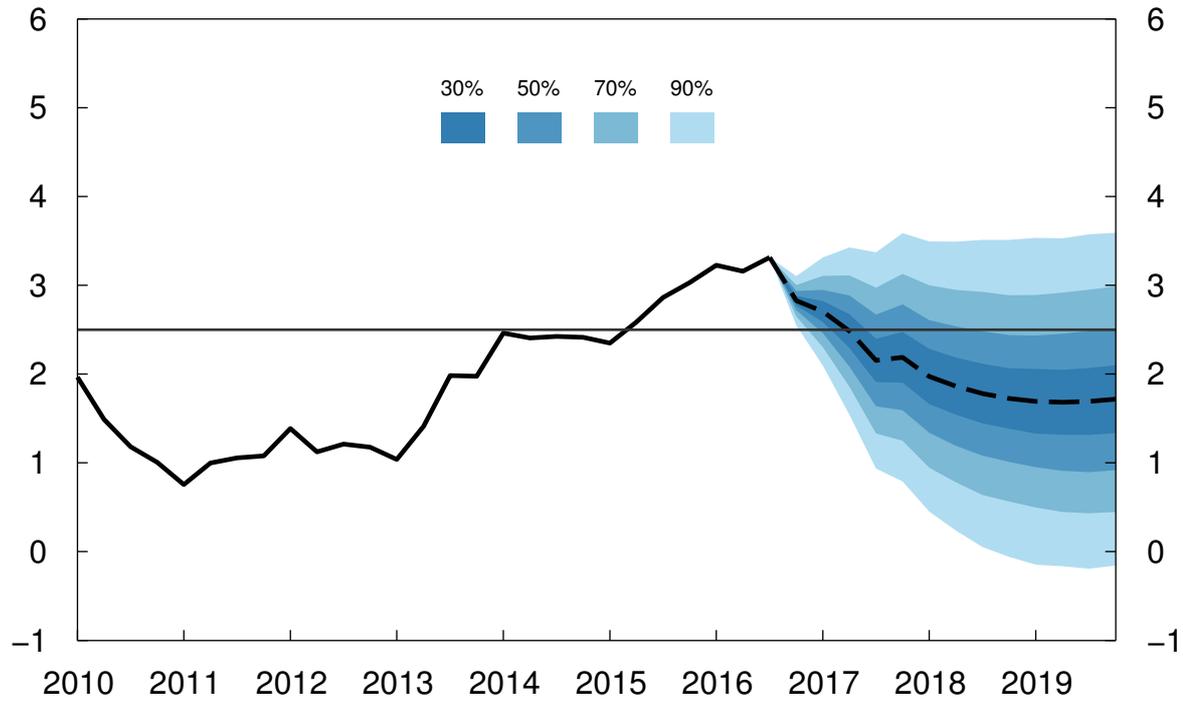Percent. 2010 Q1 – 2019 Q4

30%   50%   70%   90%

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

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

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

Chart 2.2d Projected CPI-ATE[1] in the baseline scenario with fan chart.
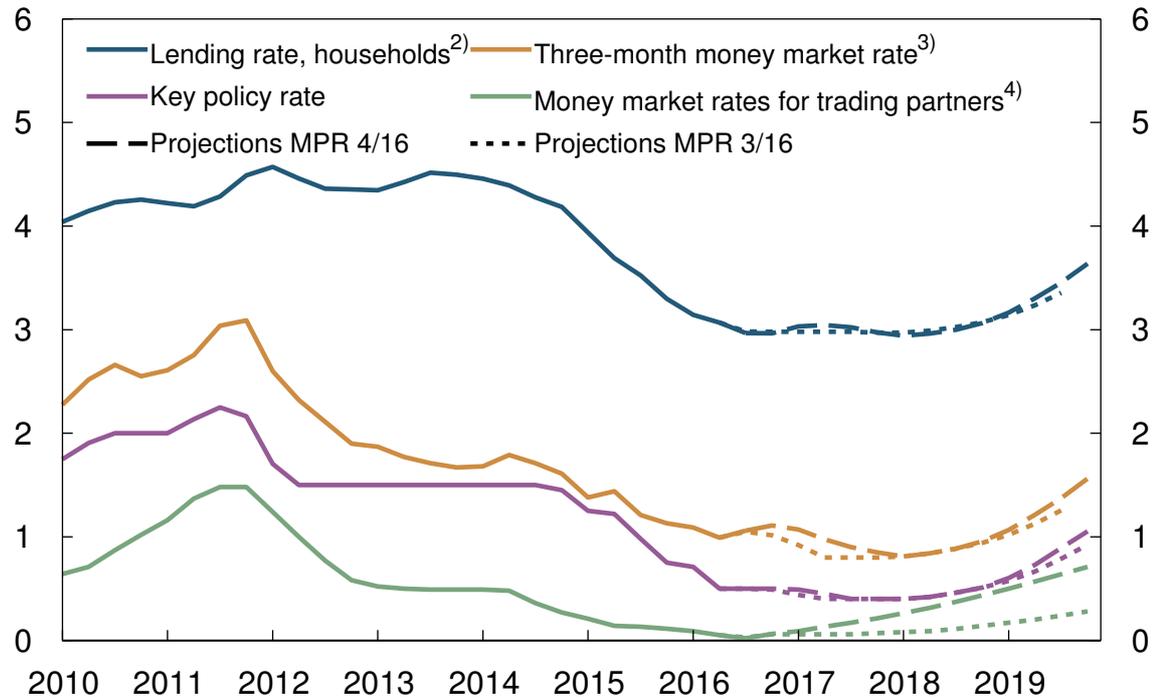Four-quarter change. Percent. 2010 Q1 – 2019 Q4[2]

1) CPI adjusted for tax changes and excluding energy products.
2) Projections for 2016 Q4 – 2019 Q4 (broken line).
Sources: Statistics Norway and Norges Bank

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

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

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

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

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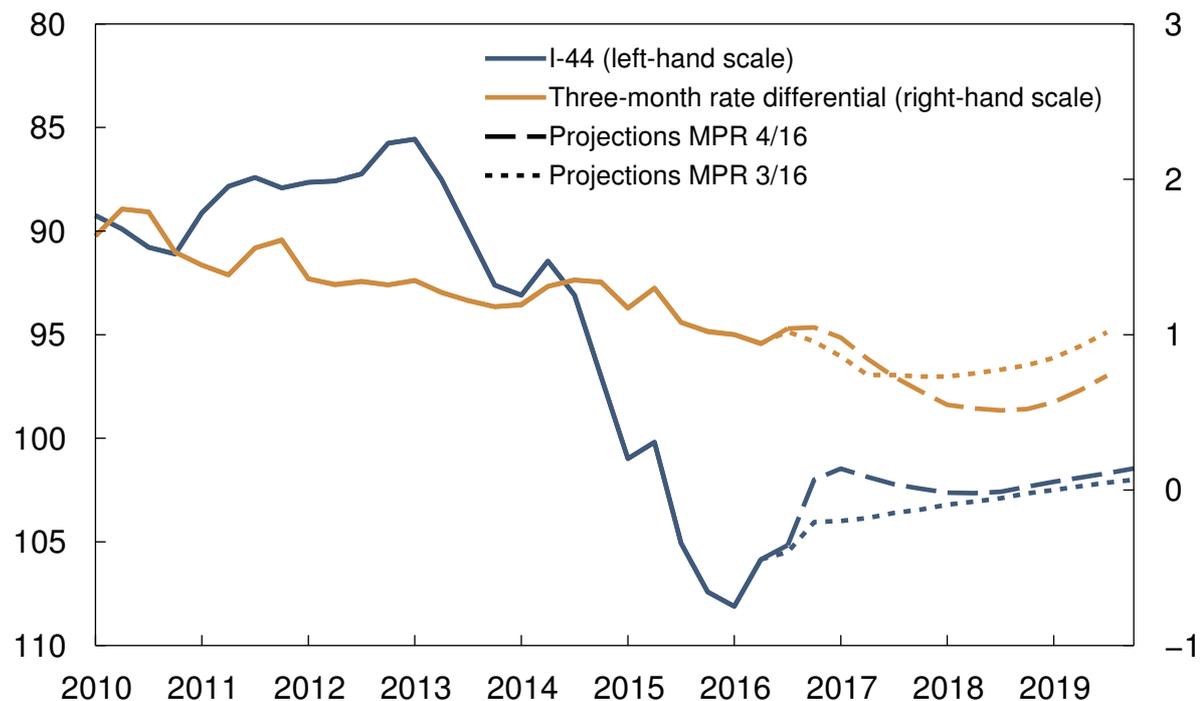- - - Projections MPR 3/16
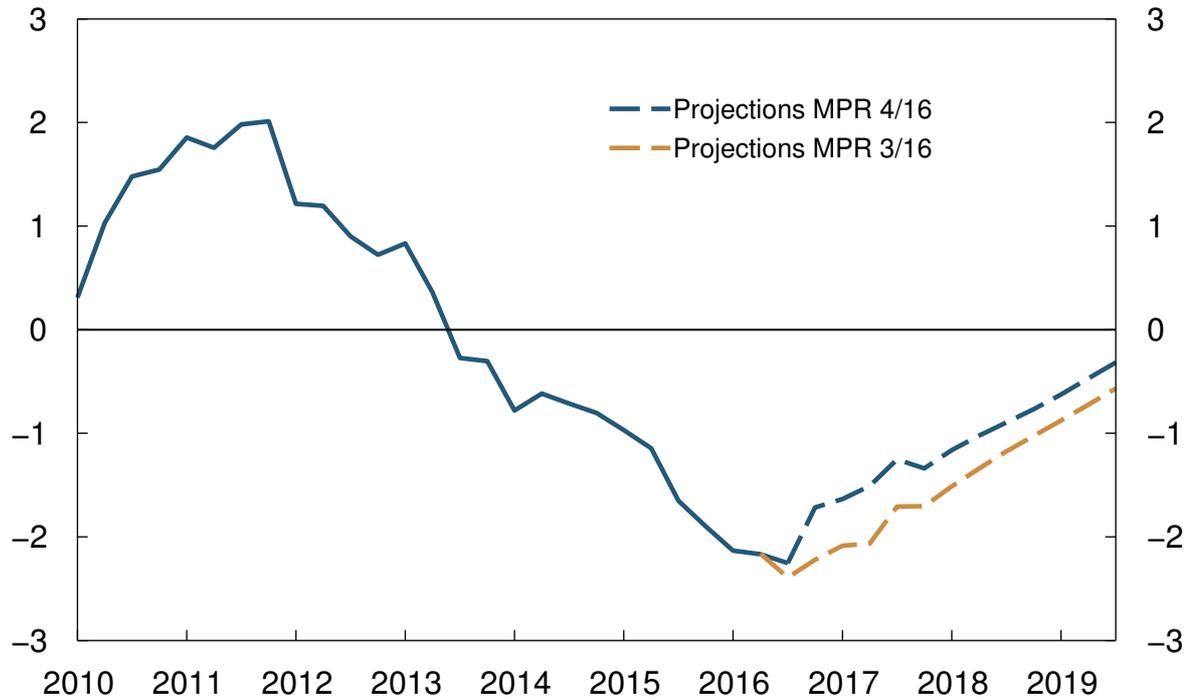
1) Key policy rate in the baseline scenario plus premiums in the Norwegian money market, deflated by four-quarter change in the CPI-ATE. The calculations are based on the assumption that the key policy rate forecast is priced into the money market.
2) Projections for 2016 Q4 – 2019 Q3 (broken lines).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

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

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

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

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

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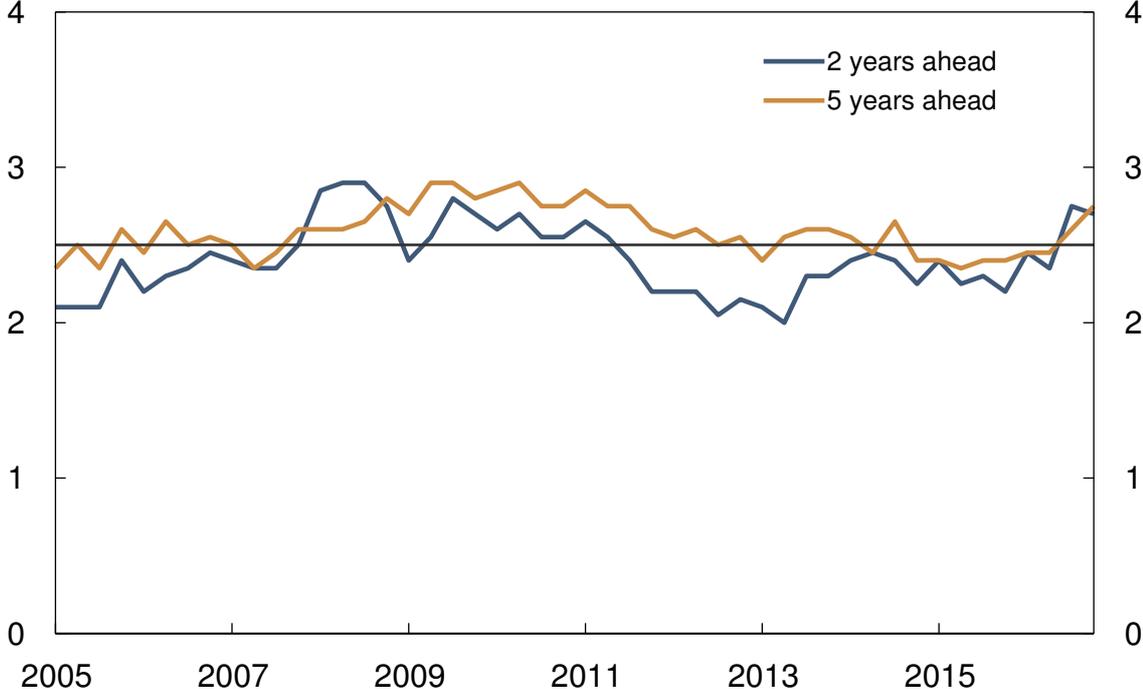—— Inflation (right-hand scale)
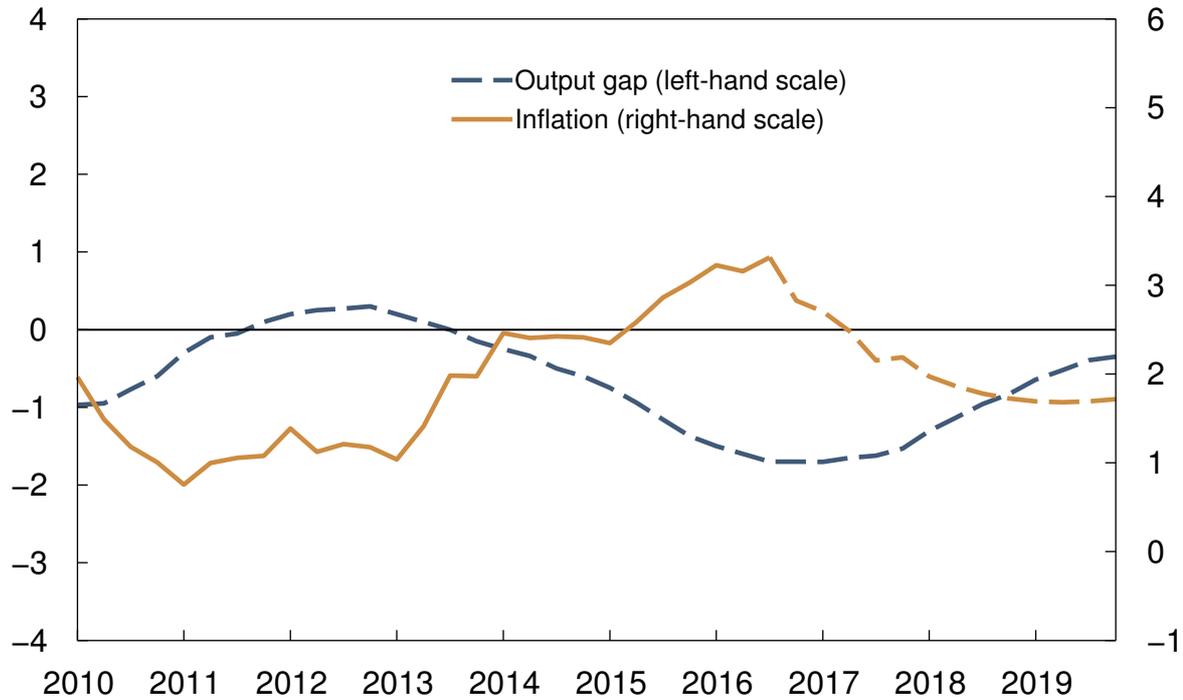
1) CPI adjusted for tax changes and excluding energy products (CPI-ATE). Four-quarter change.
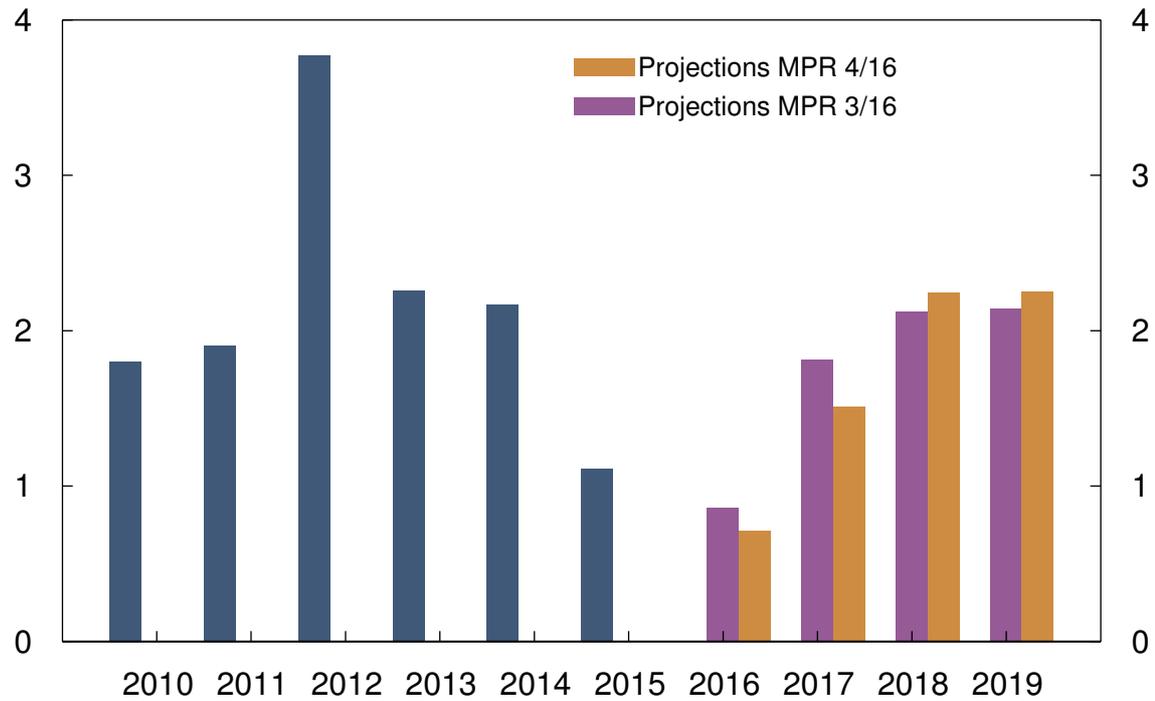2) Projections for 2016 Q4 – 2019 Q4 (broken lines).
Sources: Statistics Norway and Norges Bank

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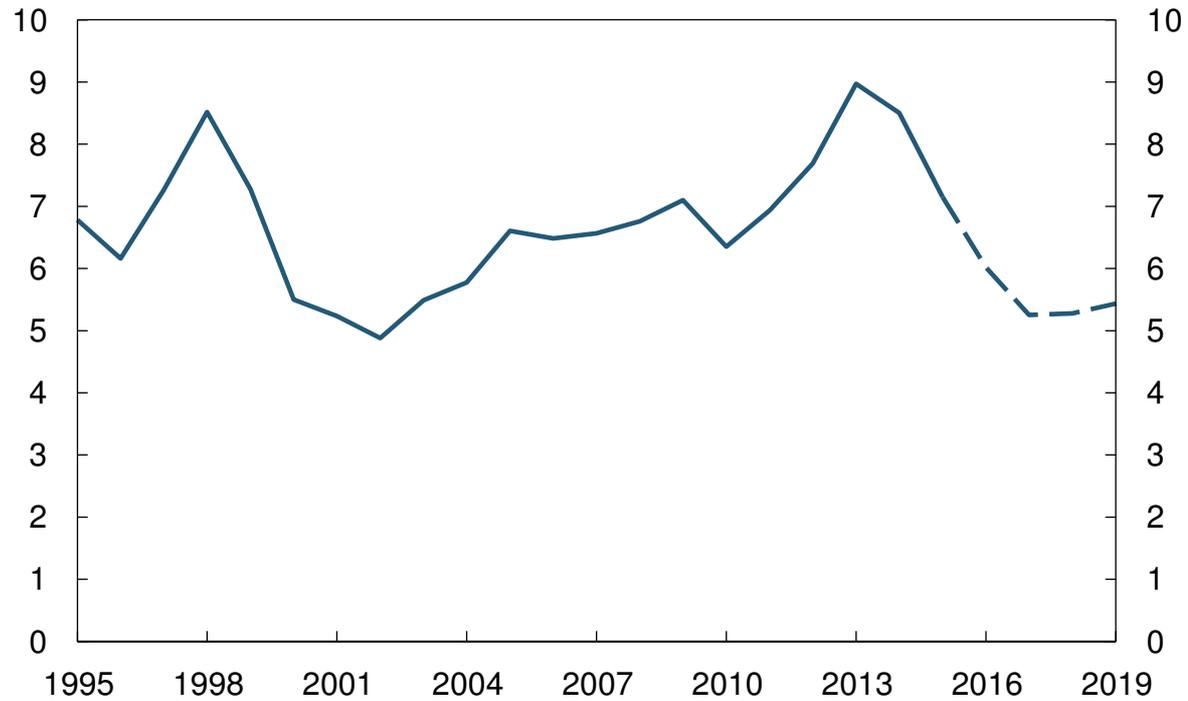Percent. 2005 Q1 – 2016 Q4

Chart 2.8 GDP for mainland Norway.
Annual change. Percent. 2010 – 2019[1]


Projections MPR 4/16
Projections MPR 3/16

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

Chart 2.9 Petroleum investment as a share of GDP for mainland Norway.
Percent. 1995 – 2019 [1]

Chart 2.10 Unemployment as a share of the labour force. LFS[1] and NAV[2].
Seasonally adjusted. Percent. 2010 Q1 – 2019 Q4 [3]

Legend:
- LFS
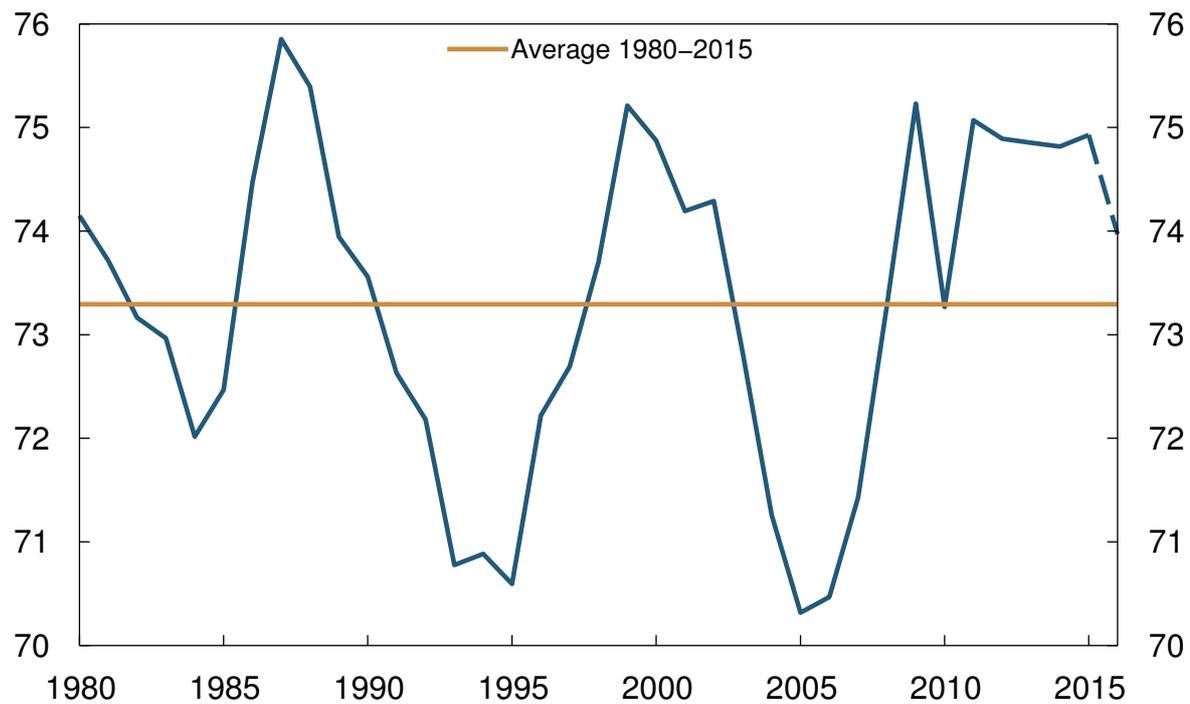- NAV
- Projections MPR 4/16
- Projections MPR 3/16
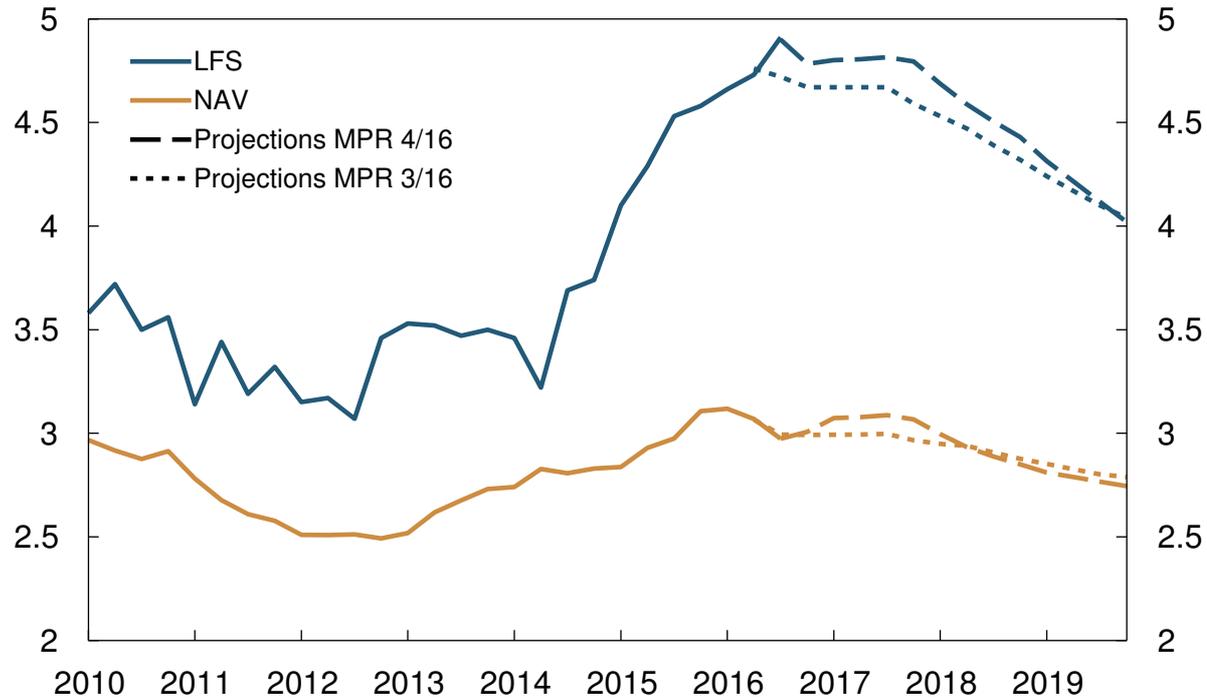
1) Labour Force Survey.
3) Registered unemployment.
2) Projections for 2016 Q4 – 2019 Q4 (broken lines).
Sources: Norwegian Labour and Welfare Administration (NAV), Statistics Norway and Norges Bank

Chart 2.11 Labour cost share for mainland Norway.[1] Percent. 1980 – 2016 [2]
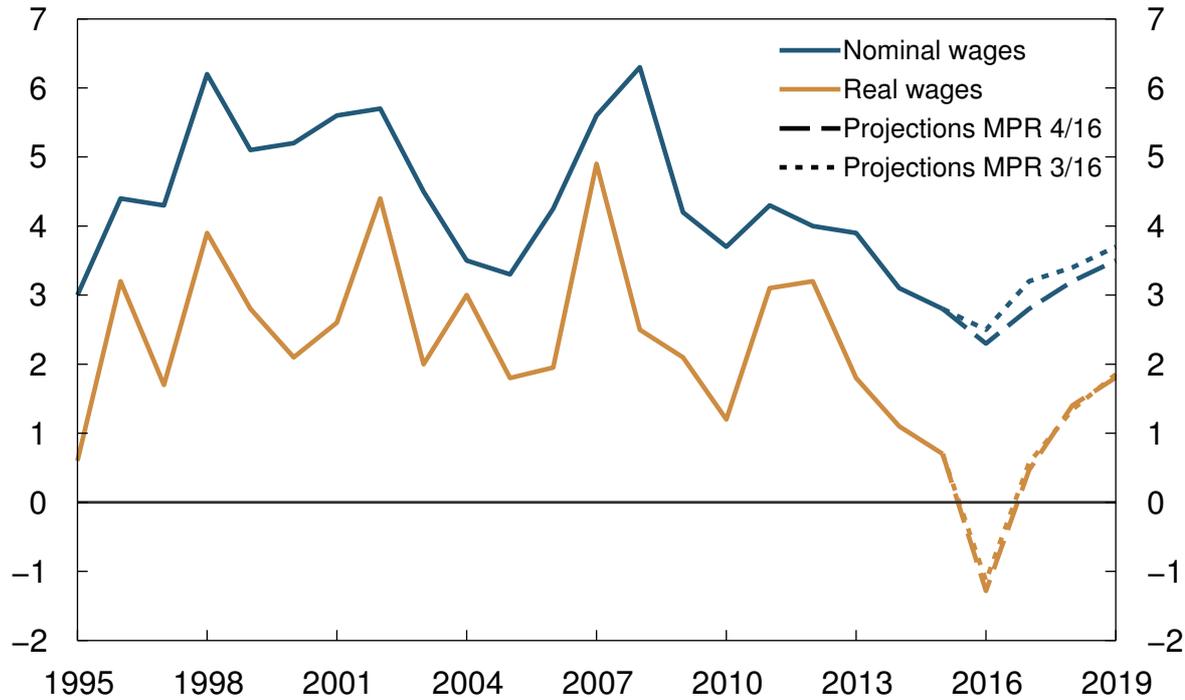

Average 1980–2015

1) Compensation of employees as a percentage of factor income.
2) Projections for 2016 (broken line).
Sources: Statistics Norway and Norges Bank

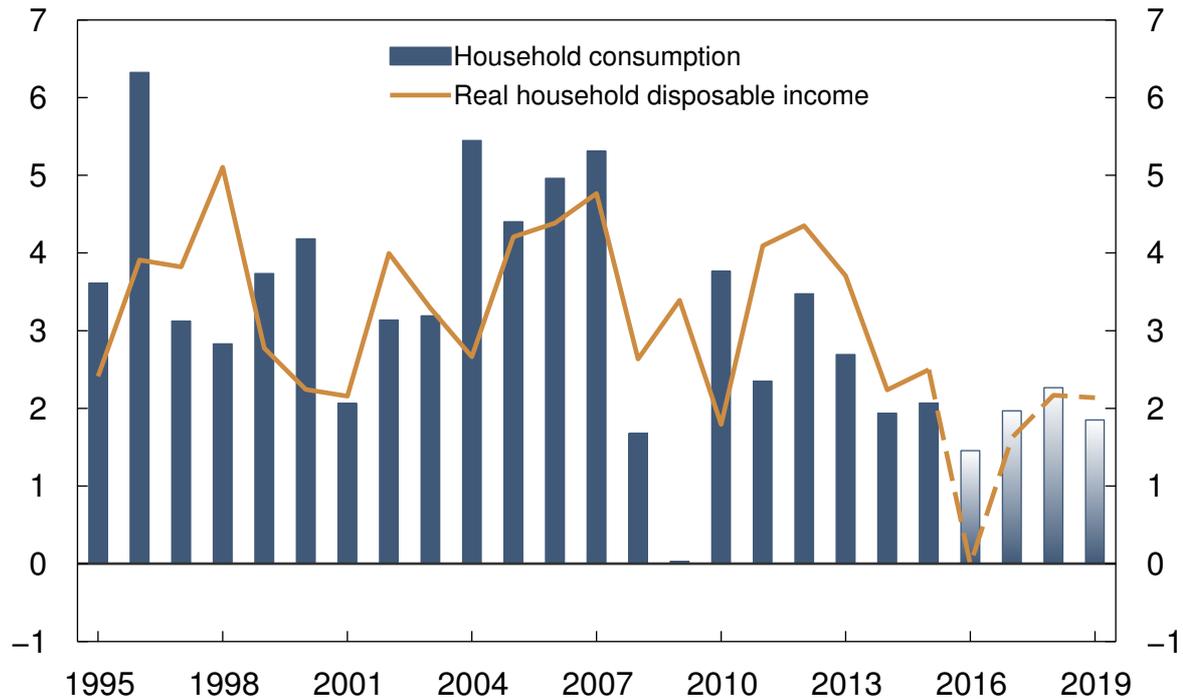Chart 2.12 Wages.
Annual change. Percent. 1995 – 2019[1]

1) Projections for 2016 – 2019 (broken lines).
Sources: Norwegian Technical Calculation Committee for Wage Settlements (TBU), Statistics Norway, and Norges Bank

Chart 2.13 Household consumption[1] and real disposable income[2].
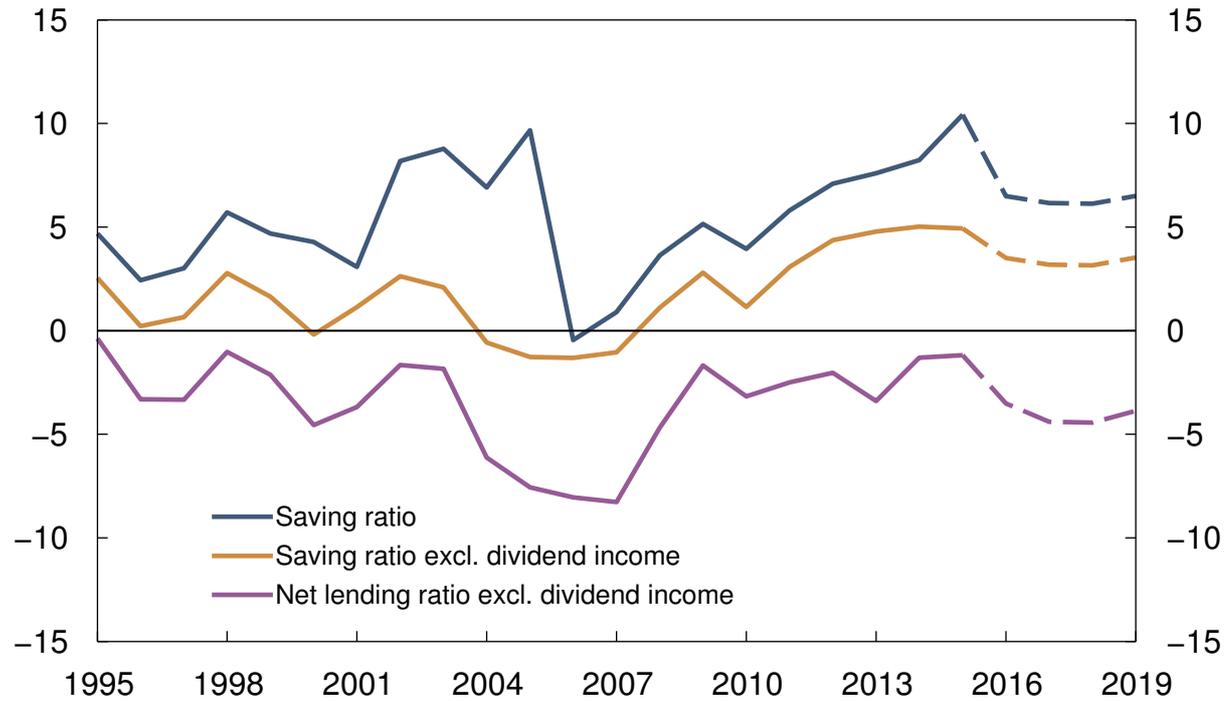Annual change. Percent. 1995 – 2019[3]

1) Includes consumption for non-profit organisations. Volume.
2) Excluding dividend income. Including income for non-profit organisations. Deflated by CPI.
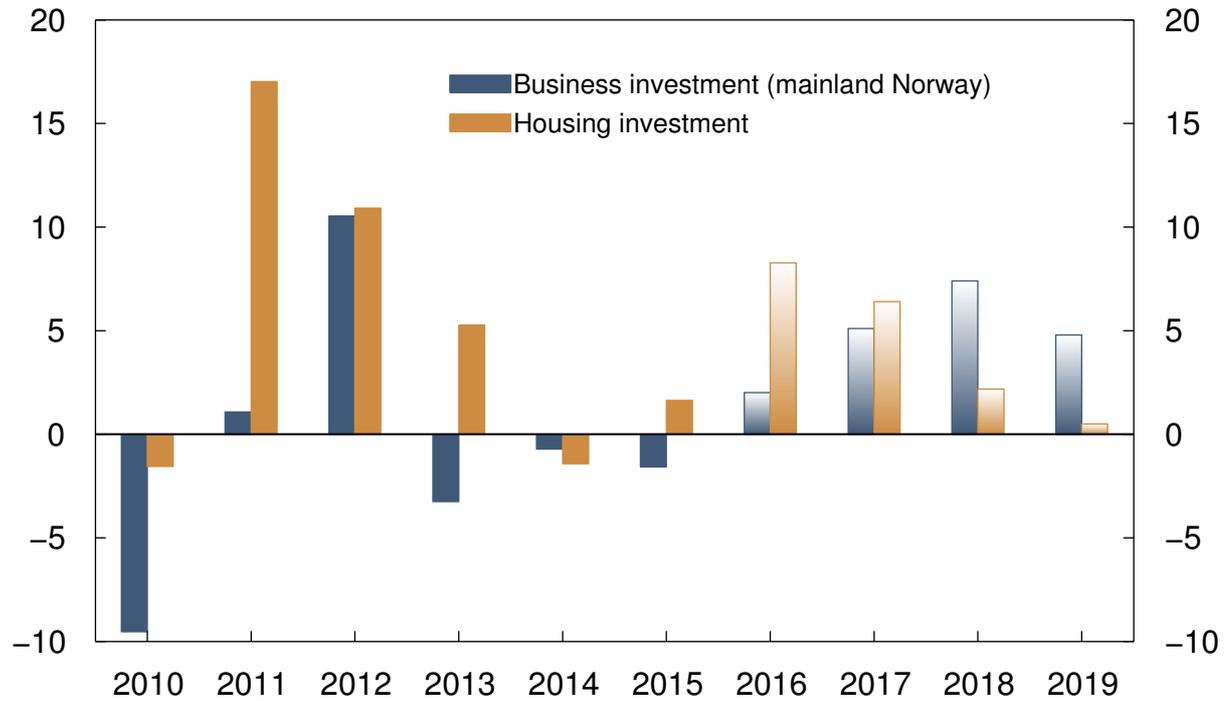3) Projections for 2016 – 2019 (broken line and shaded bars).
Sources: Statistics Norway and Norges Bank

Chart 2.14 Household saving and net lending as a share of disposable income.
Percent. 1995 – 2019 [1]

Chart 2.15 Private investment.
Annual change. Percent. 2010 – 2019[1]

Chart 2.16 Business investment as a share of GDP for mainland Norway.
Percent. 1995 – 2019[1]
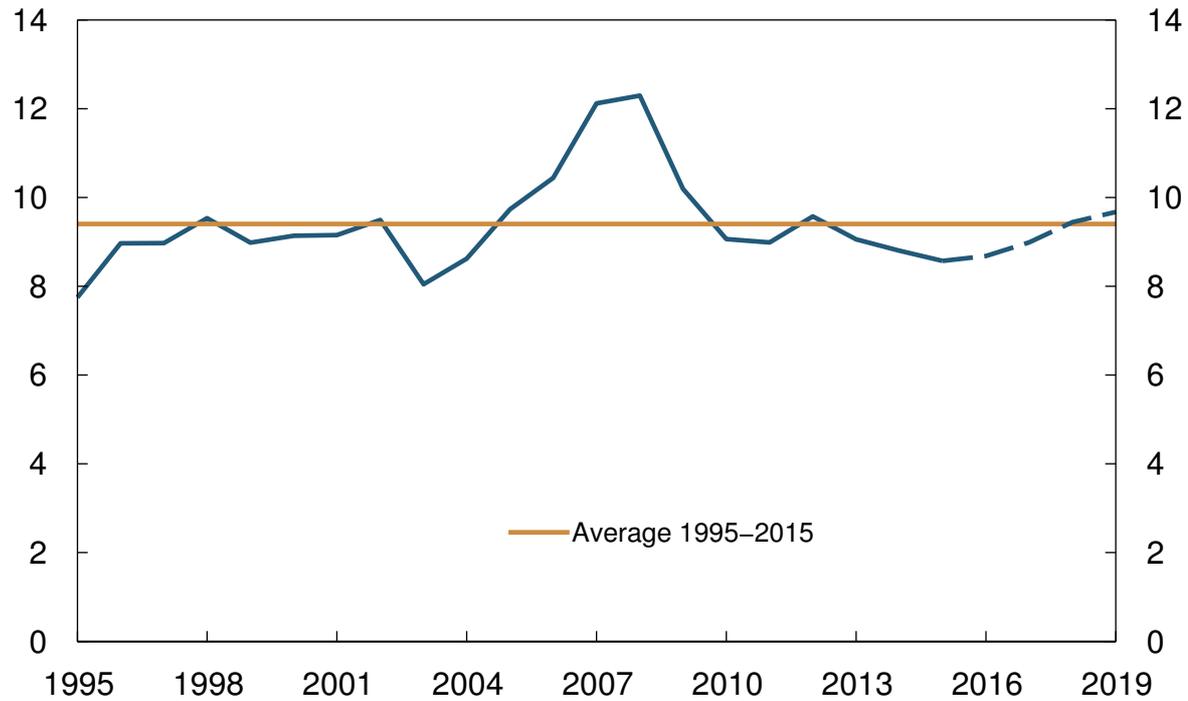
Average 1995–2015

Chart 2.17 Housing investment as a share of GDP for mainland Norway.
Pecent. 1995 – 2019 [1]

―――― Average 1995–2015
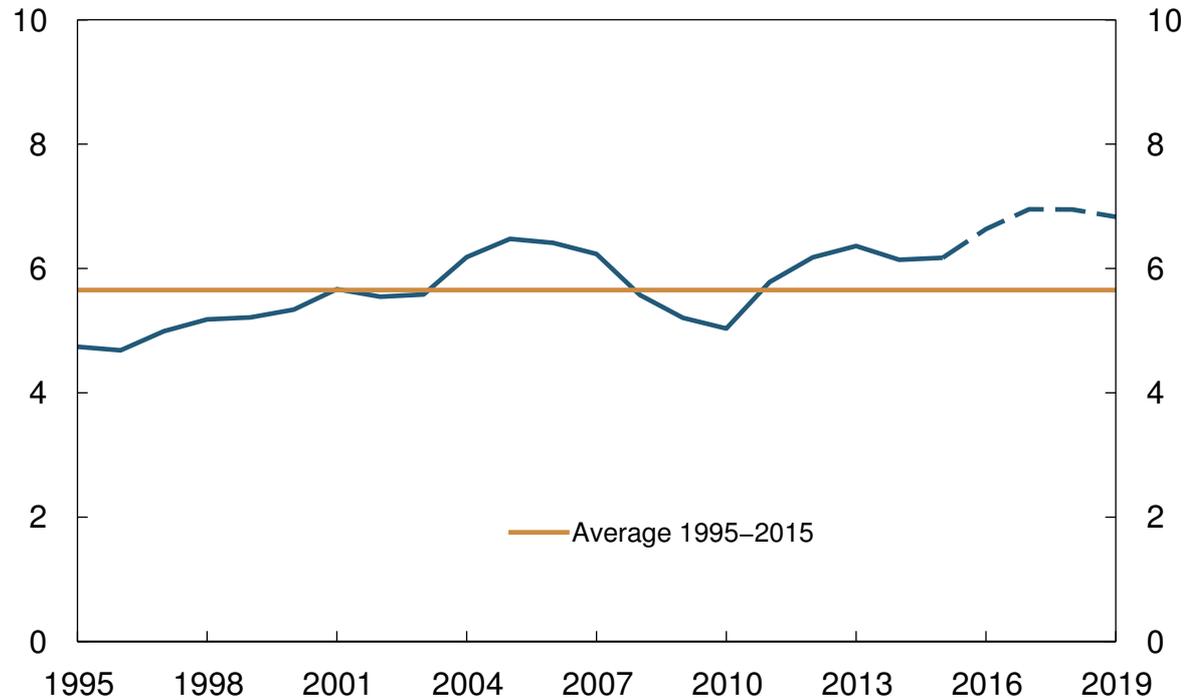
1) Projections for 2016 – 2019 (broken line).
Sources: Statistics Norway and Norges Bank

Chart 2.18 Exports from mainland Norway and imports to Norway's trading partners. Annual change. Percent. 2010 – 2019[1]

— Imports to Norway's trading partners
▨ Exports from mainland Norway
-◆- Exports from oil service industry etc.[2]
-◆- Other exports from mainland Norway
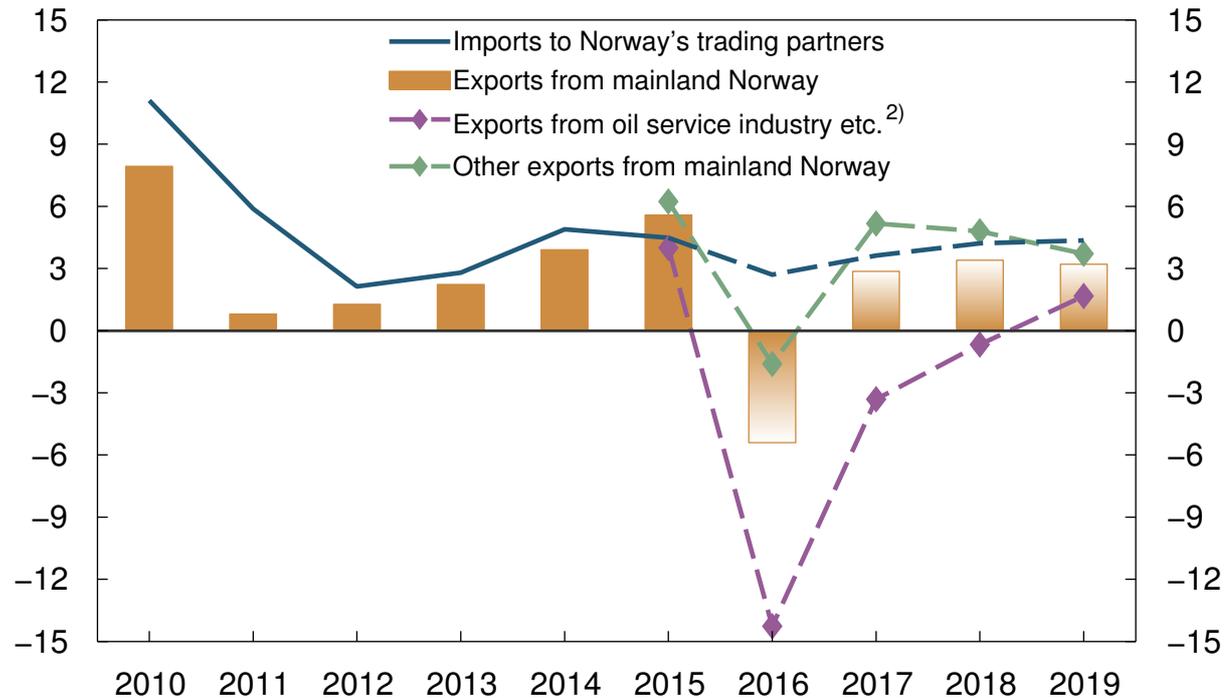
1) Projections for 2016 – 2019 (broken lines and shaded bars).
2) Groups of goods and services in the national accounts where the oil service industry accounts for a considerable share of exports.
Sources: Statistics Norway, Thomson Reuters and Norges Bank

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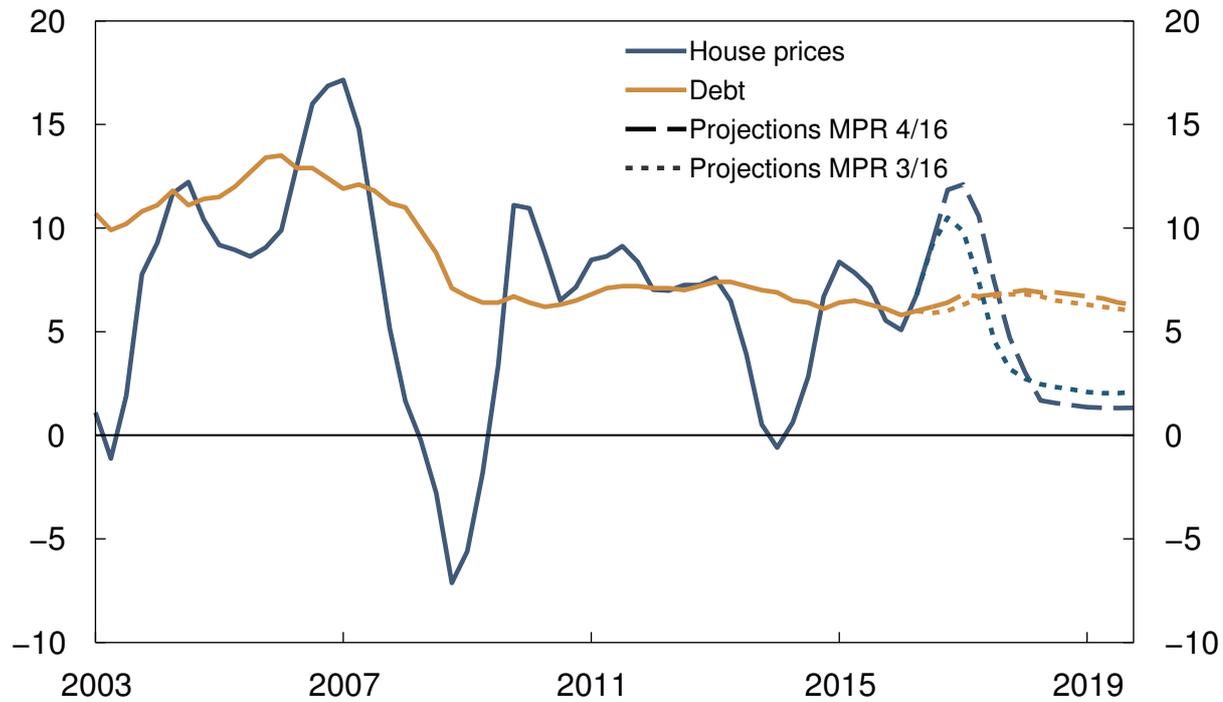
1) Domestic credit to households (C2).
2) Projections for 2016 Q4 – 2019 Q4 (broken lines).
Sources: Eiendom Norge, Eiendomsverdi, Finn.no, Statistics Norway and Norges Bank

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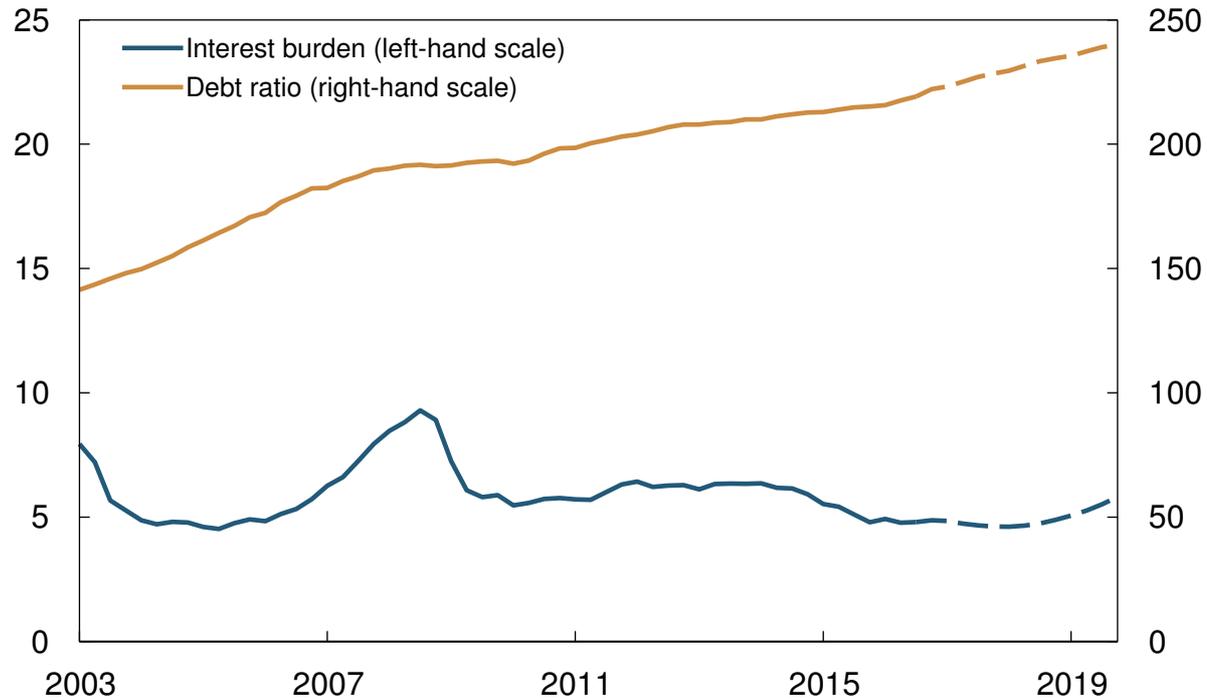
1) Interest expenses and loan debt, respectively, as a percentage of disposable income plus interest expenses. Disposable income is adjusted for estimated reinvested dividend income for 2003 – 2005 and redemption/reduction of equity capital for 2006 Q1 – 2012 Q3.
2) Projections for 2016 Q3 – 2019 Q4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

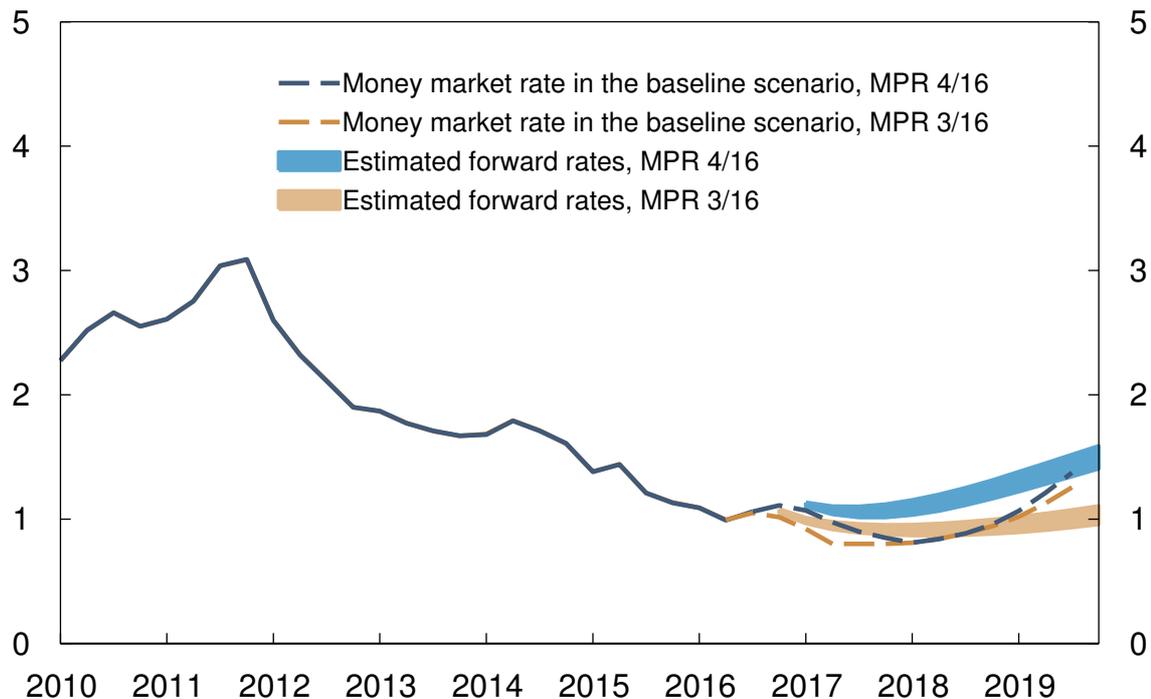Chart 2.21 Three-month money market rate in the baseline scenario[1] and estimated forward rates[2]. Percent. 2010 Q1 – 2019 Q4

- – – Money market rate in the baseline scenario, MPR 4/16
- – – Money market rate in the baseline scenario, MPR 3/16
- Estimated forward rates, MPR 4/16
- Estimated forward rates, MPR 3/16

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

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

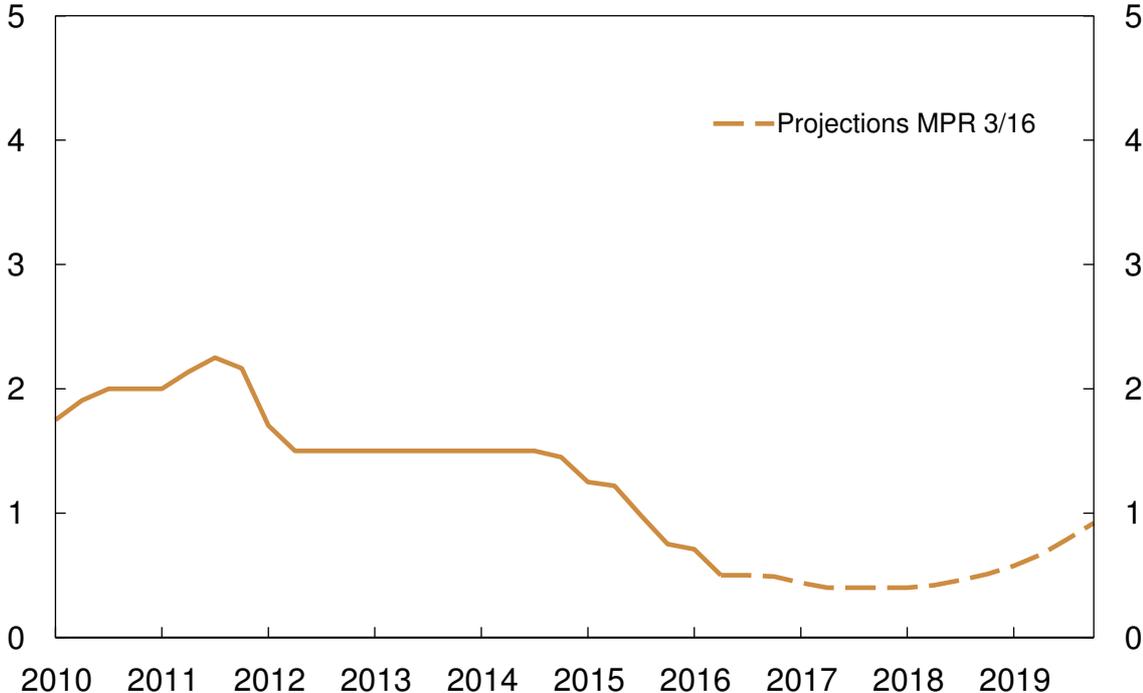- Key policy rate in baseline
- 90% confidence interval
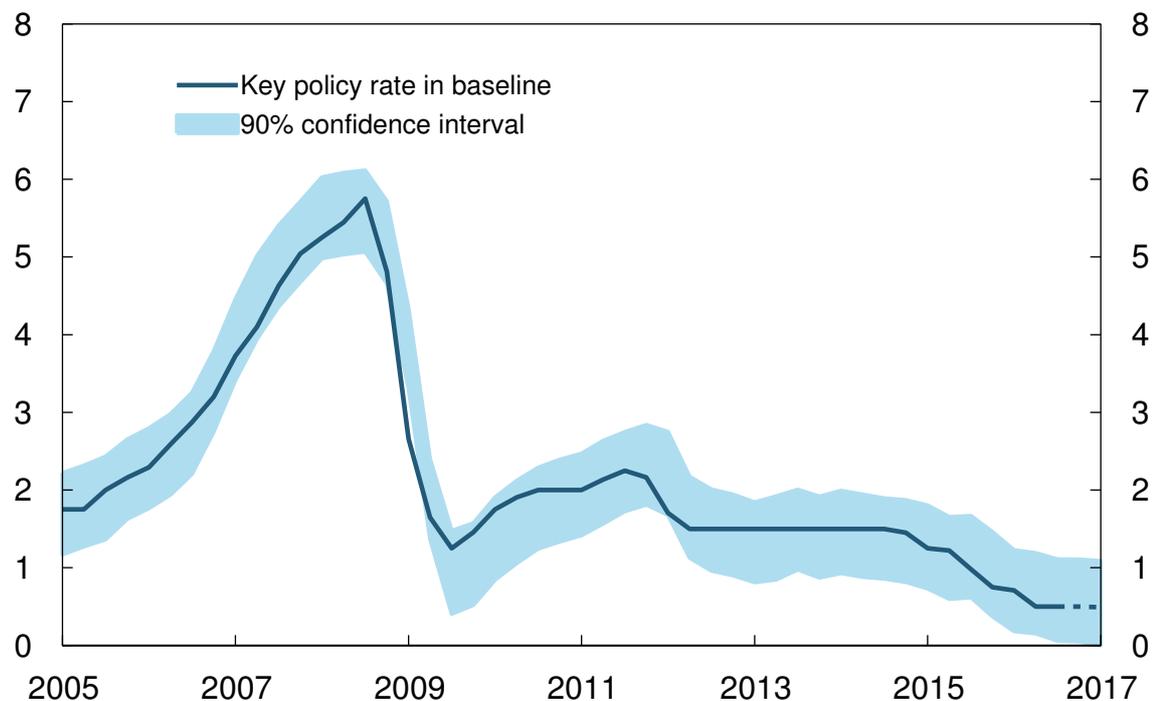
1) Interest rate movements are explained by developments in inflation, mainland GDP growth,
wage growth and three-month money market rates among trading partners, as well as the interest rate
in the preceding period. The equation is estimated over the period 1999 Q1 – 2016 Q3. See Norges
Bank *Staff Memo* 3/2008 for further discussion.
2) Projections for 2016 Q4 – 2017 Q1 (broken line).
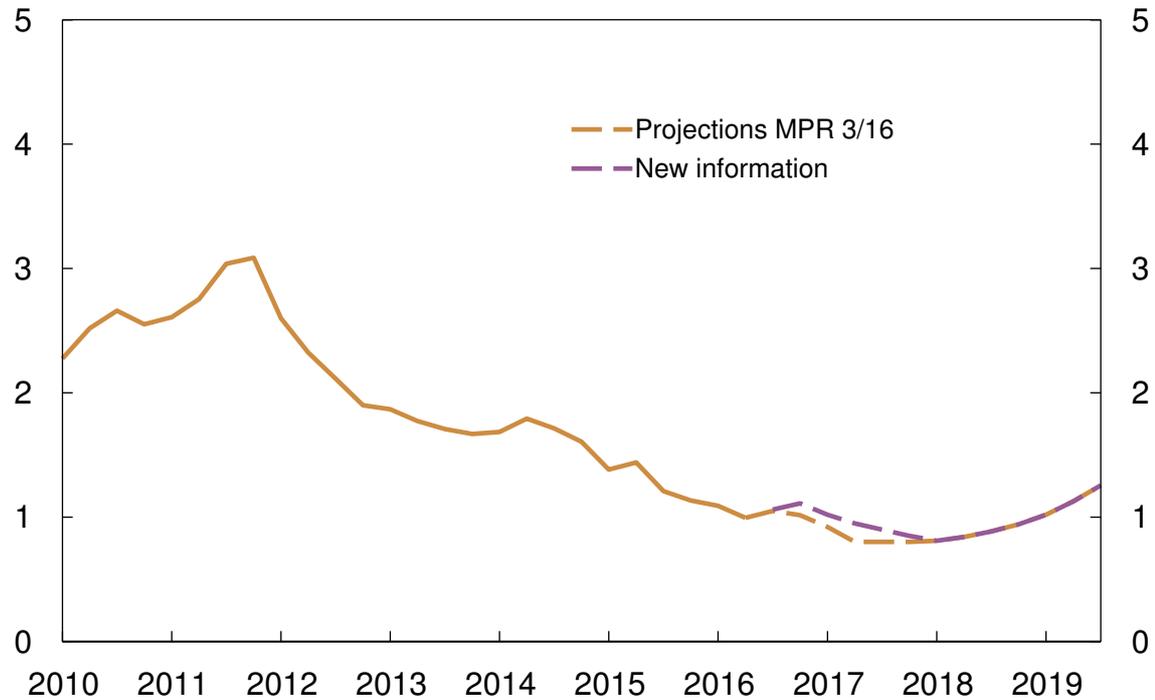Source: Norges Bank

Chart 2.23a Key policy rate in the baseline scenario from MPR 3/16.
Percent. 2010 Q1 – 2019 Q4 [1]

– – Projections MPR 3/16

1) Projections from 2016 Q3 – 2019 Q4 (broken lines).
Source: Norges Bank

Chart 2.23b Three-month money market rate.[1] MPR 3/16 and with new information, but conditional on the key policy rate in the baseline scenario from MPR 3/16. Percent. 2010 Q1 – 2019 Q3 [2]


1) The calculations are based on the assumption that the key policy rate forecast from MPR 3/16 is priced into the money market.
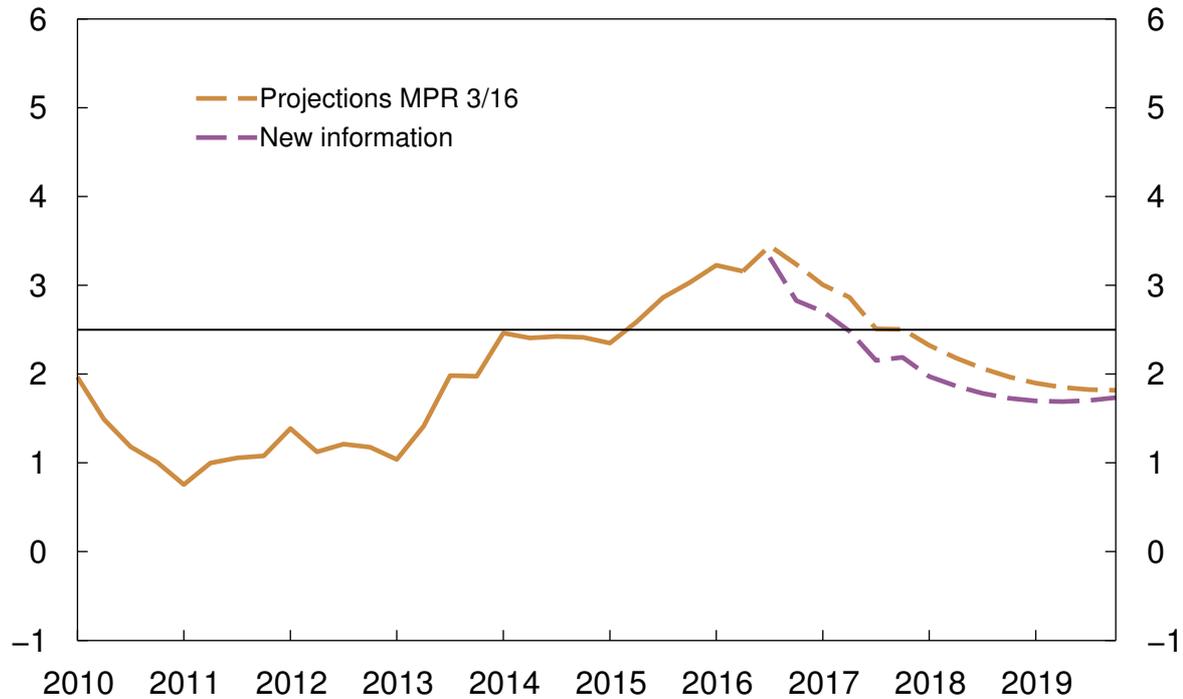2) Projections from 2016 Q4 – 2019 Q3 (broken lines).
Source: Norges Bank

Chart 2.23c Projected output gap. MPR 3/16 and with new information,
but conditional on the key policy rate in the baseline scenario from MPR 3/16.
Percent. 2010 Q1 – 2019 Q4

Projections MPR 3/16
New information
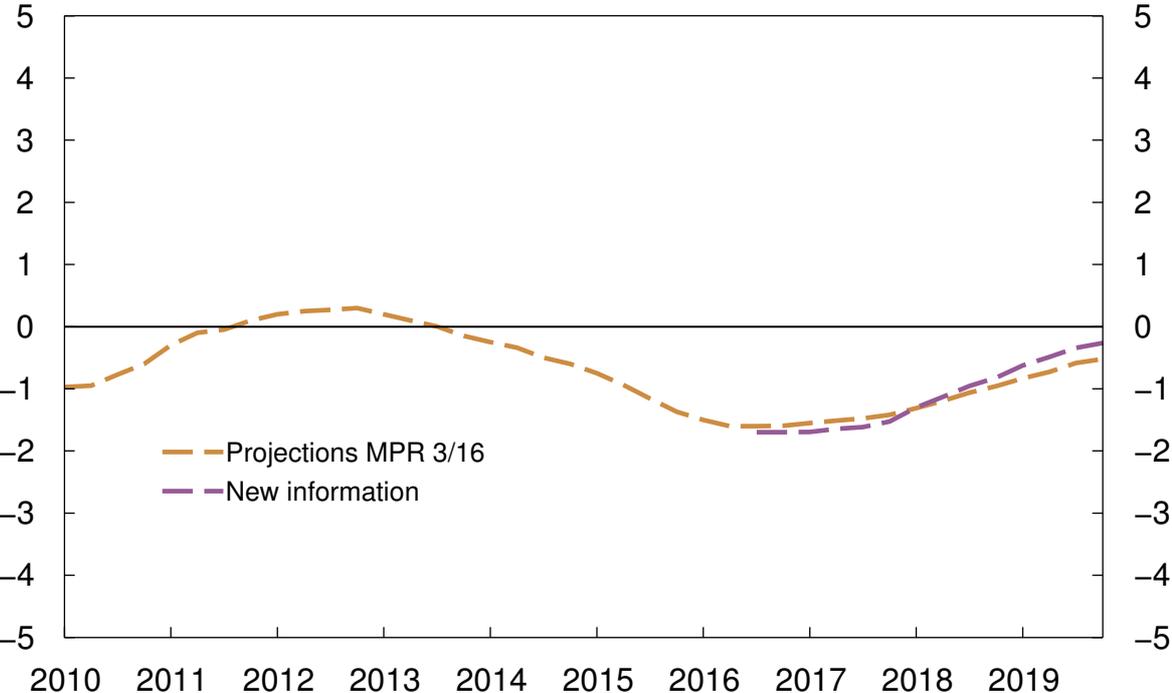
Source: Norges Bank

Chart 2.23d CPI-ATE[1]. MPR 3/16 and with new information,
but conditional on the key policy rate in the baseline scenario from MPR 3/16.
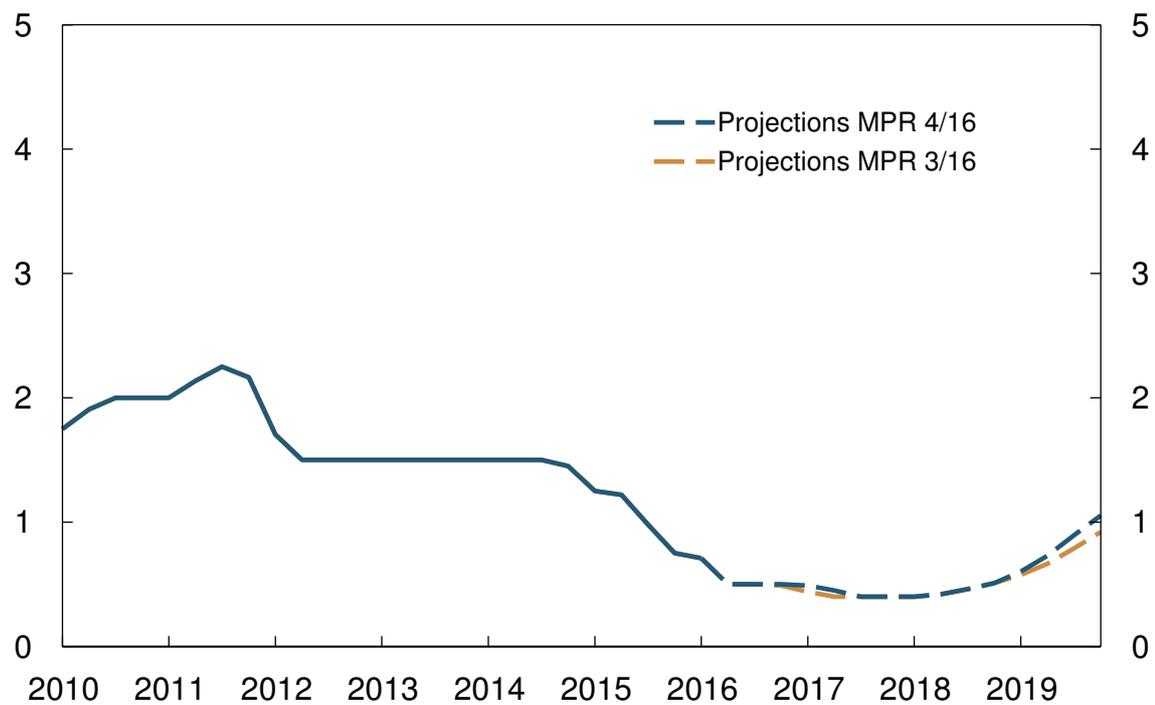Four-quarter change. Percent. 2010 Q1 – 2019 Q4[2]

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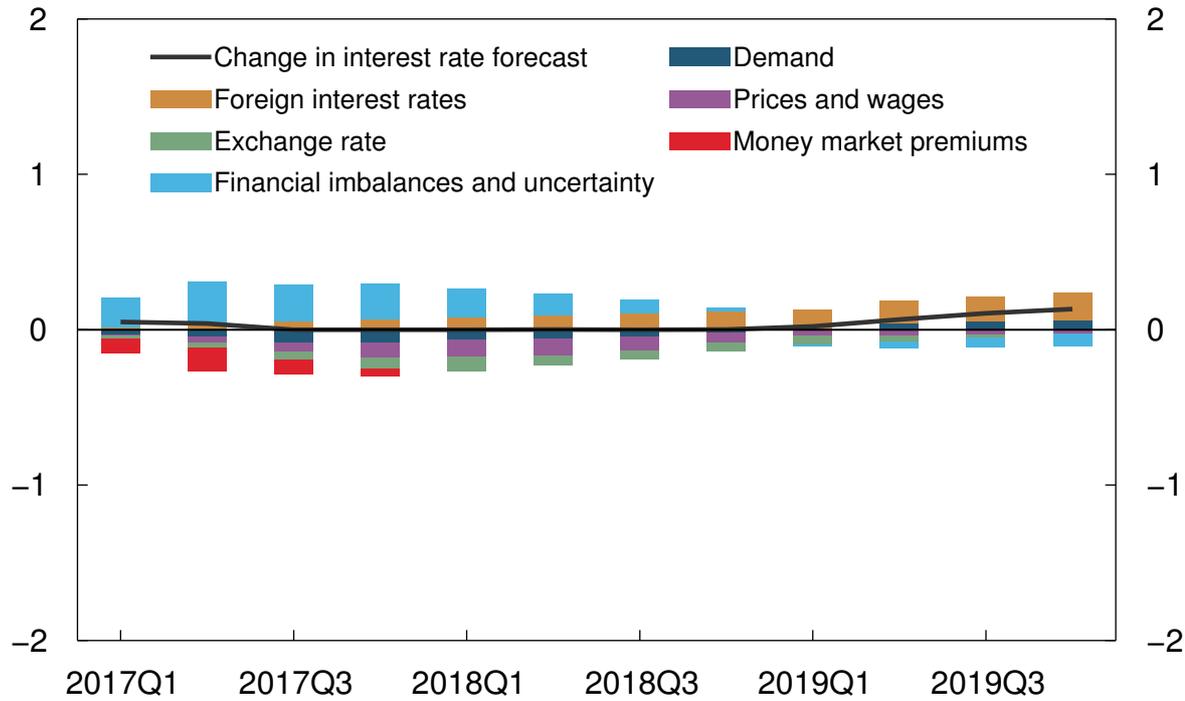2) Projections for 2016 Q4 – 2019 Q4 (broken lines).
Sources: Statistics Norway and Norges Bank

Chart 2.24 Key policy rate.
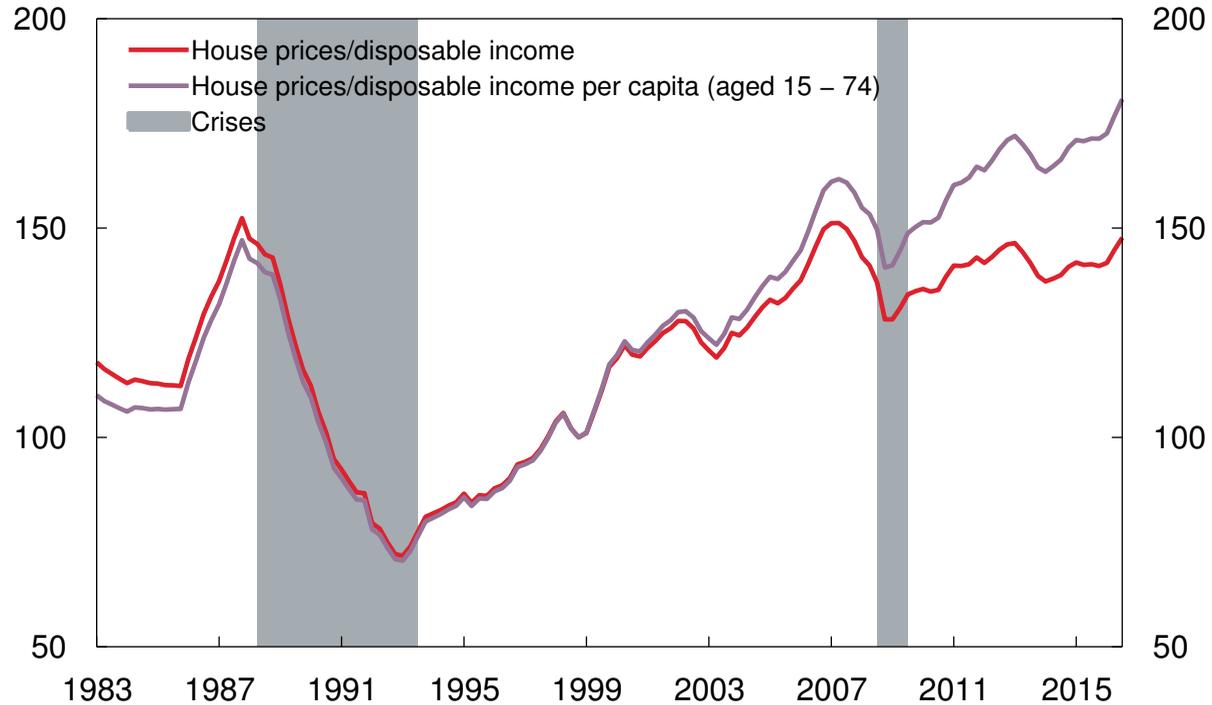Percent. 2010 Q1 – 2019 Q4 [1]

1) Projections for 2016 Q4 – 2019 Q4 (broken lines).
Source: Norges Bank

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


Source: Norges Bank

Chart 3.1 House prices relative to disposable income[1].
Index. 1998 Q4 = 100. 1983 Q1 – 2016 Q3

Legend:
- House prices/disposable income
- House prices/disposable income per capita (aged 15 – 74)
- Crises

1) Disposable income adjusted for estimated reinvested dividend income for 2003 – 2005 and redemption/ reduction of equity capital for 2006 Q1 – 2012 Q3. Growth in disposable income excluding dividend income is used for 2015 Q1 – 2016 Q3
Sources: Eiendomsverdi, Finn.no, Norwegian Association of Real Estate Agents (NEF), Real Estate Norway, Statistics Norway and Norges Bank

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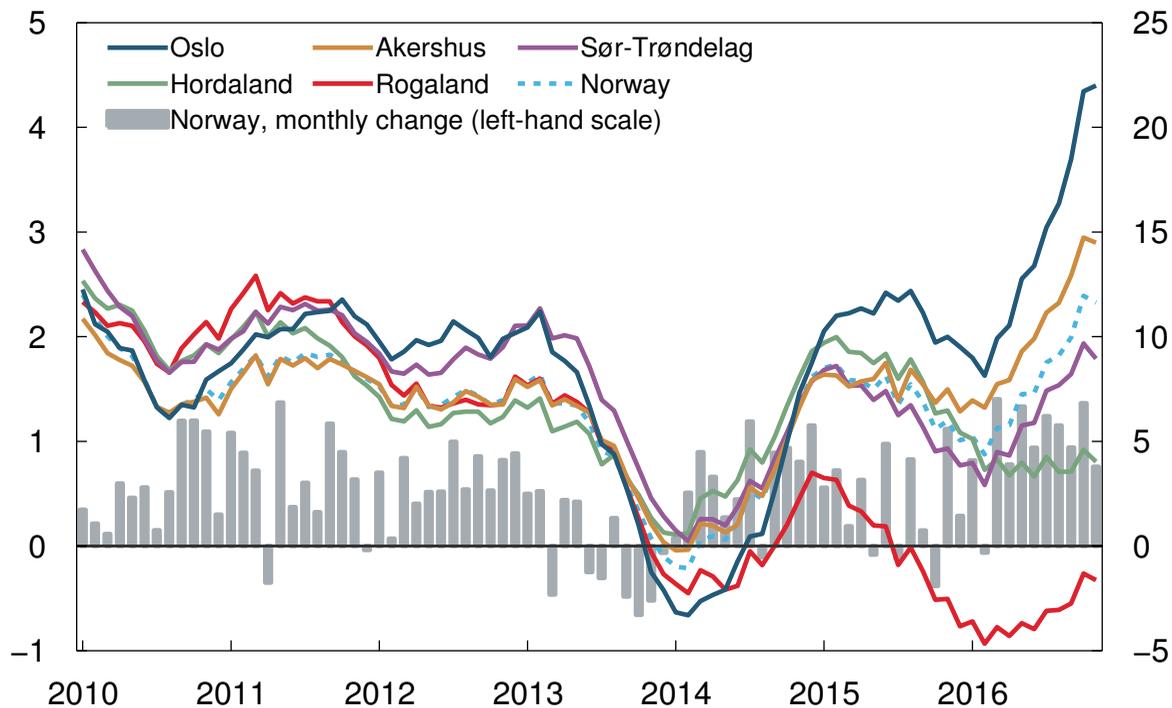
1) Twelve-month change for counties. Twelve-month change and seasonally adjusted monthly change for Norway.
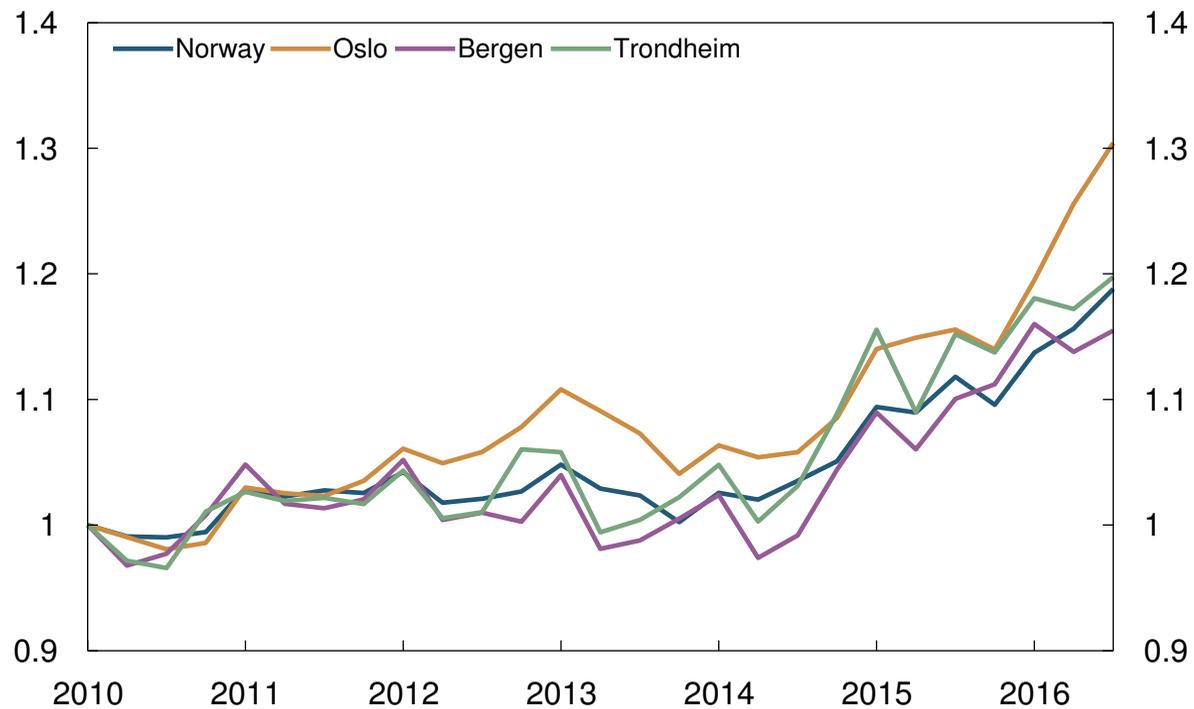Sources: Eiendomsverdi, Finn.no and Real Estate Norway

Chart 3.3 Share of population living in regions with house price inflation above a certain level. Percent
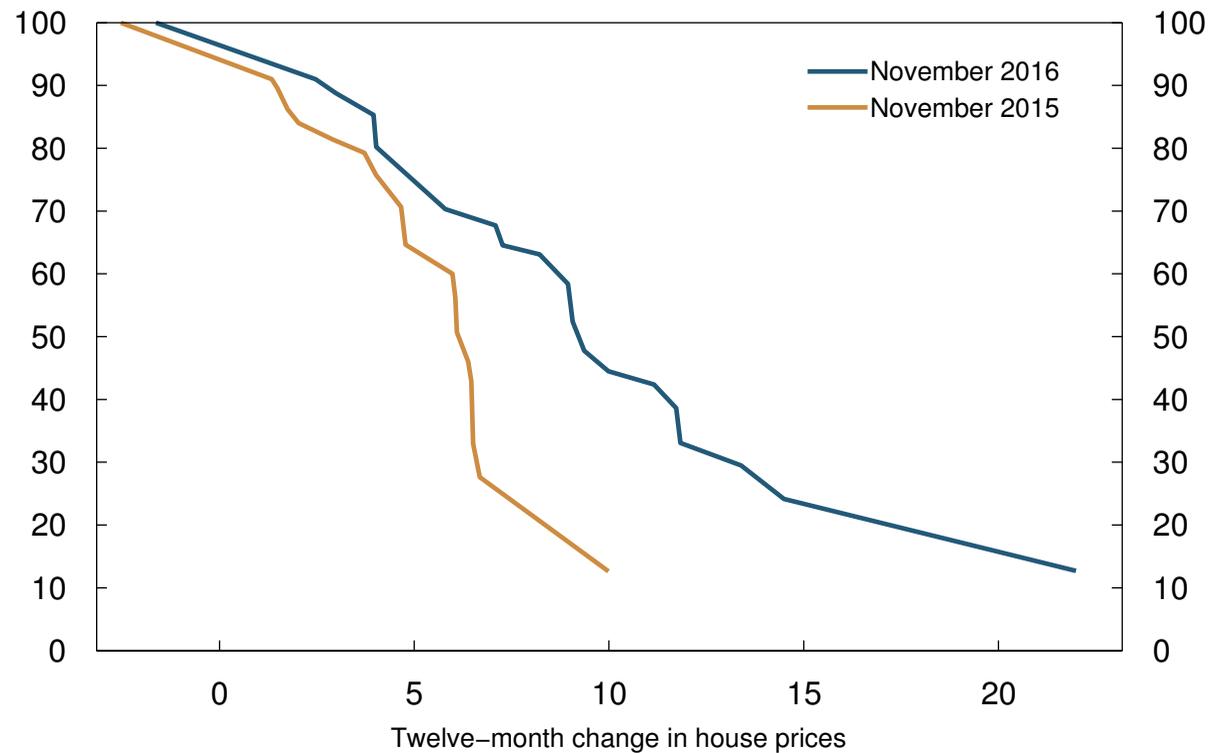
Sources: Eiendomsverdi, Finn.no, Real Estate Norway, Statistics Norway and Norges Bank

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

Chart 3.5 Increase in the number of households and number of housing starts per year. In thousands. 2006 – 2016[1]
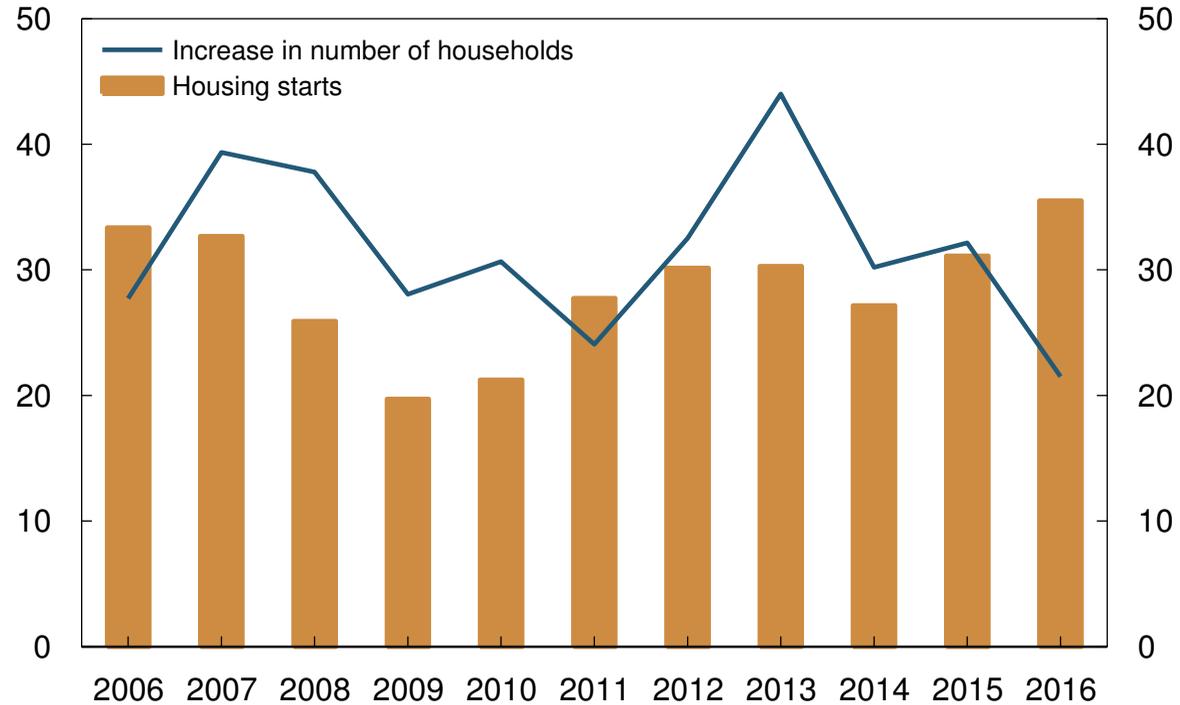
1) For 2016, the increase in the number of households is based on population growth. Projections of population growth and housing starts for 2016 Q4.
Sources: Statistics Norway and Norges Bank

Chart 3.6 Total credit mainland Norway as a share of mainland GDP.
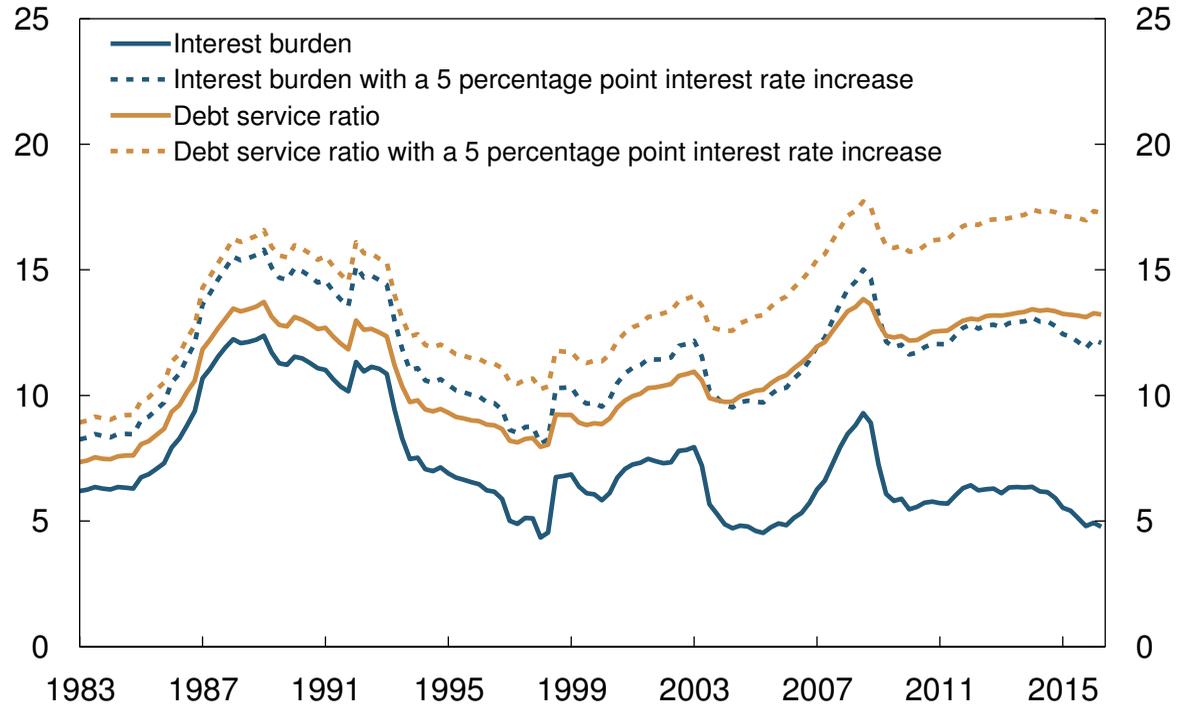Percent. 1983 Q1 – 2016 Q3
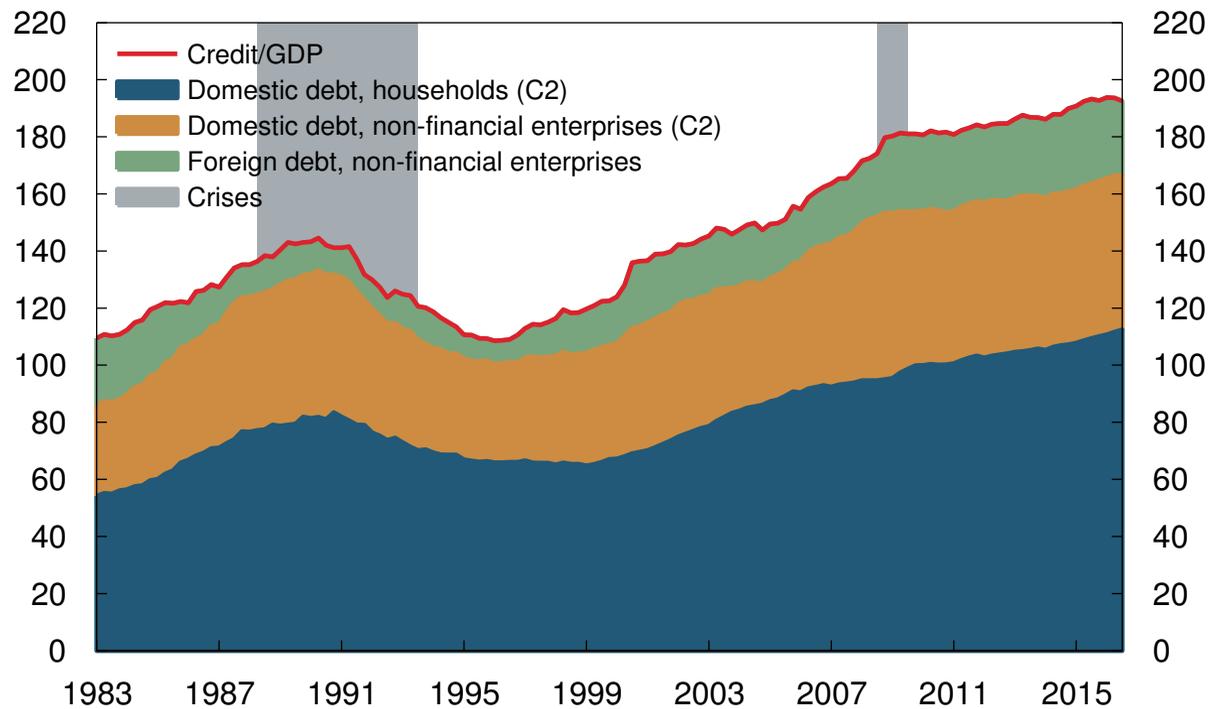
Sources: IMF, Statistics Norway and Norges Bank

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

— Interest burden
···· Interest burden with a 5 percentage point interest rate increase
— Debt service ratio
···· Debt service ratio with a 5 percentage point interest rate increase

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

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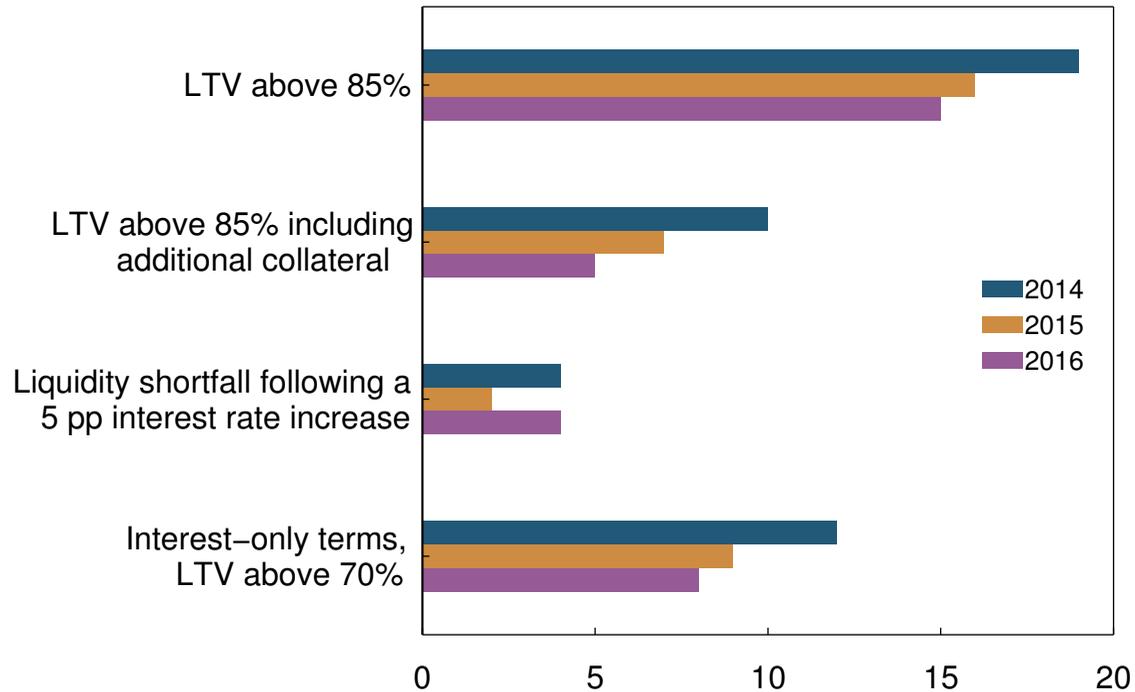

1) Loans where the borrower's income is not sufficient to service debt and cover normal living expenses following a 5 percentage point interest rate increase.
2) Share of mortages with a LTV above 70%.
Source: The Financial Supervisory Authority of Norway

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

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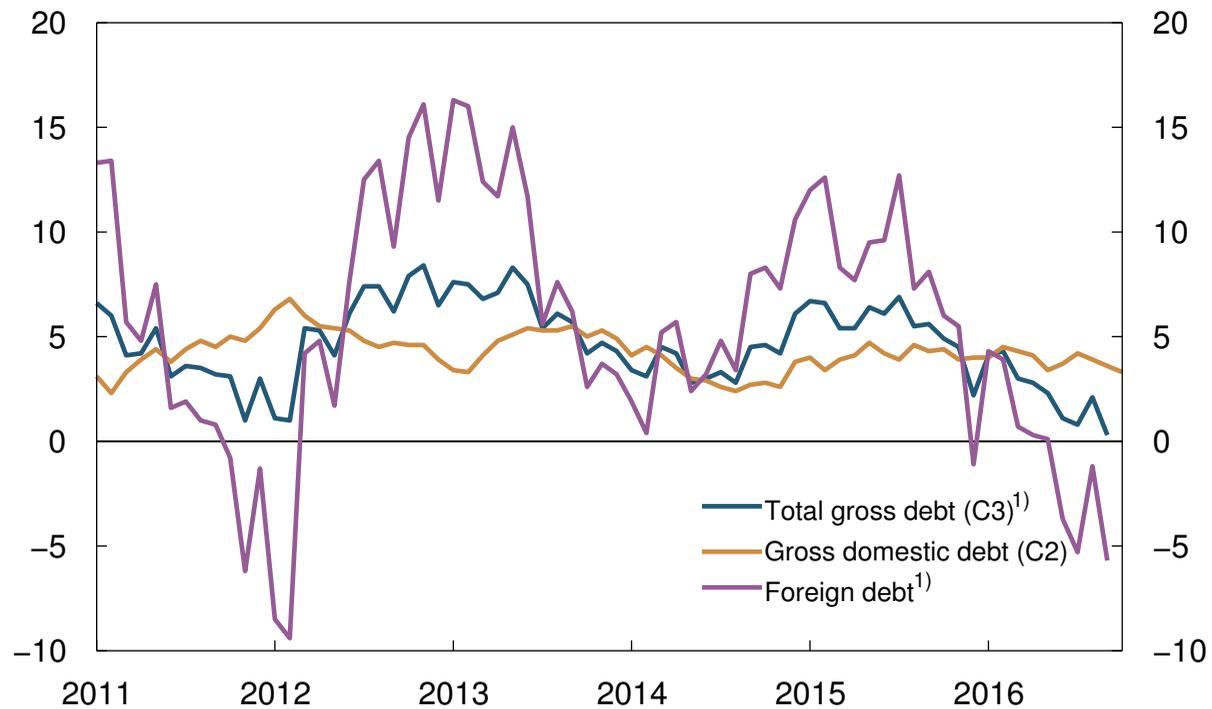
1) To end-September 2016.
Source: Statistics Norway

Chart 3.10 Equity ratio for listed companies.[1]
Percent. 2005 Q1 – 2016 Q3

- All sectors
- Oil service sector
- Non-oil service sectors
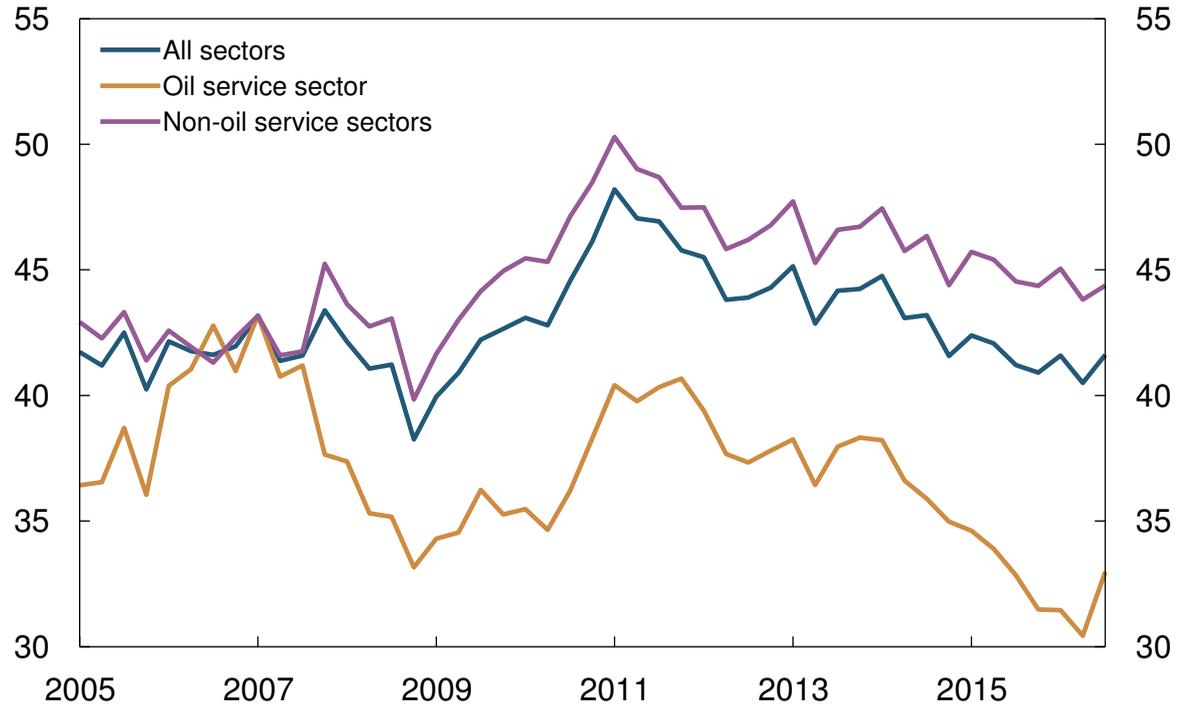
1) Norwegian non-financial companies listed on Oslo Børs excluding extraction. Norsk Hydro is excluded to end-2007 Q3.
Sources: Bloomberg and Norges Bank

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

Legend:
- All sectors
- Oil service sector
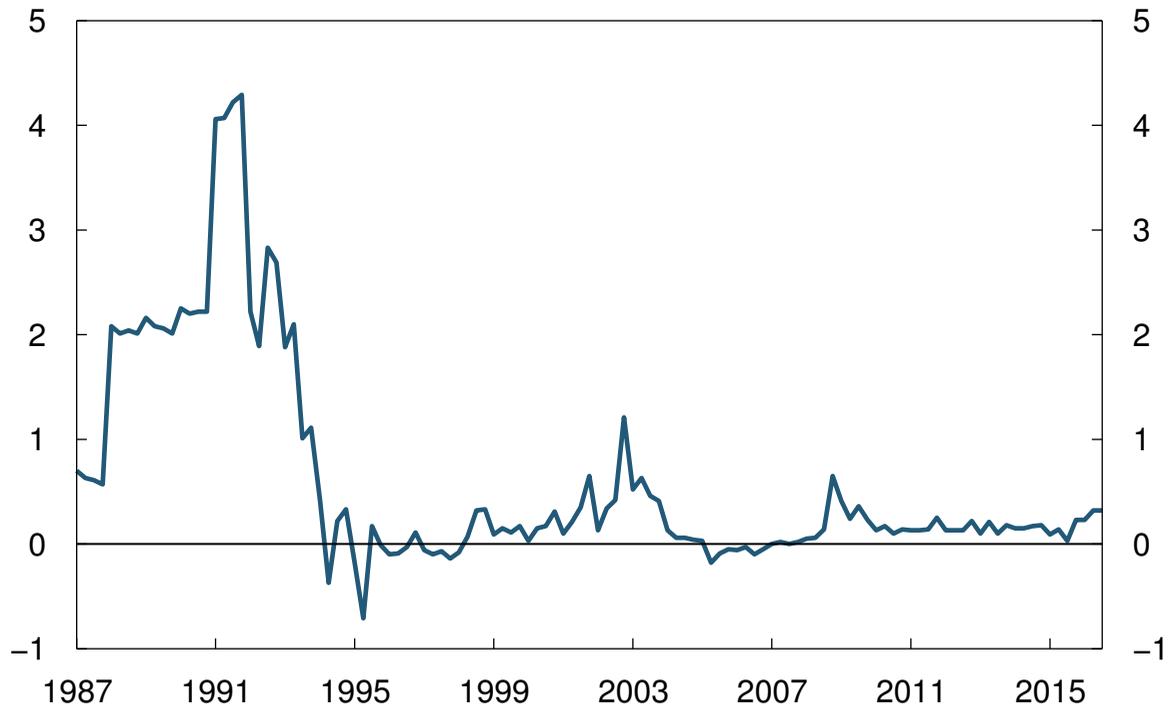- Non-oil service sectors
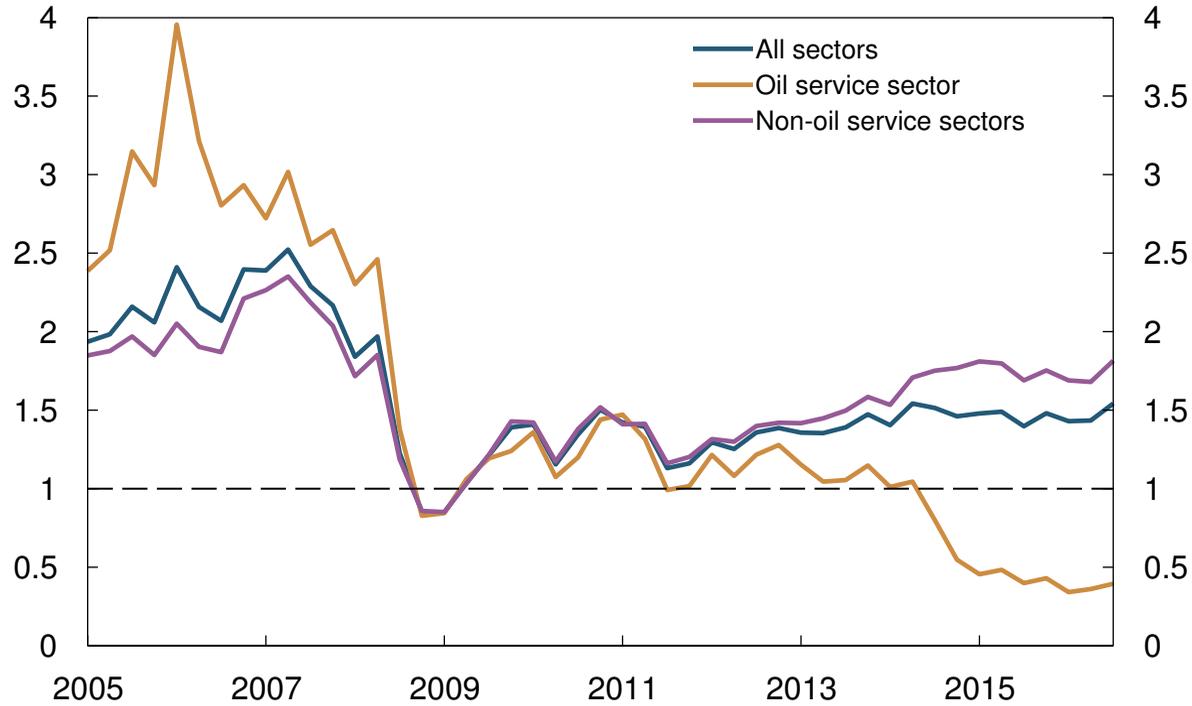
1) Market value as a percentage of book value per share.
2) Norwegian non-financial companies listed on Oslo Børs excluding extraction. Norsk Hydro is excluded to end-2007 Q3.
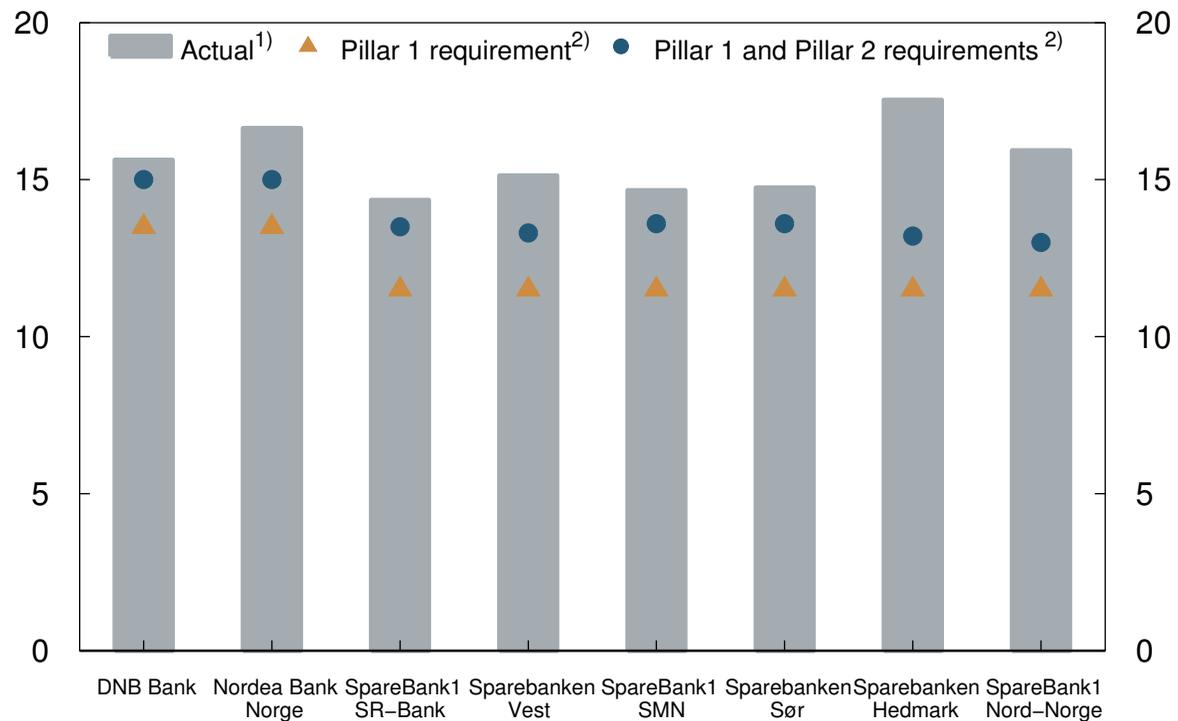Sources: Bloomberg and Norges Bank

Chart 3.12 Banks'[1] loan losses as a share of gross lending.
Annualised. Percent. 1987 Q1 – 2016 Q3

1) All banks and mortgage companies in Norway.
Source: Norges Bank

Chart 3.13 Common Equity Tier 1 (CET1) capital ratios.
Eight large banking groups. Percent

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

Chart 3.14 House prices in selected countries. All dwellings.
Index. 2007 Q1 = 100. 2007 Q1 – 2016 Q3[1]

Legend:
- Sweden
- Australia[2]
- Canada[2]
- Norway
- UK
- Finland[3]
- Denmark
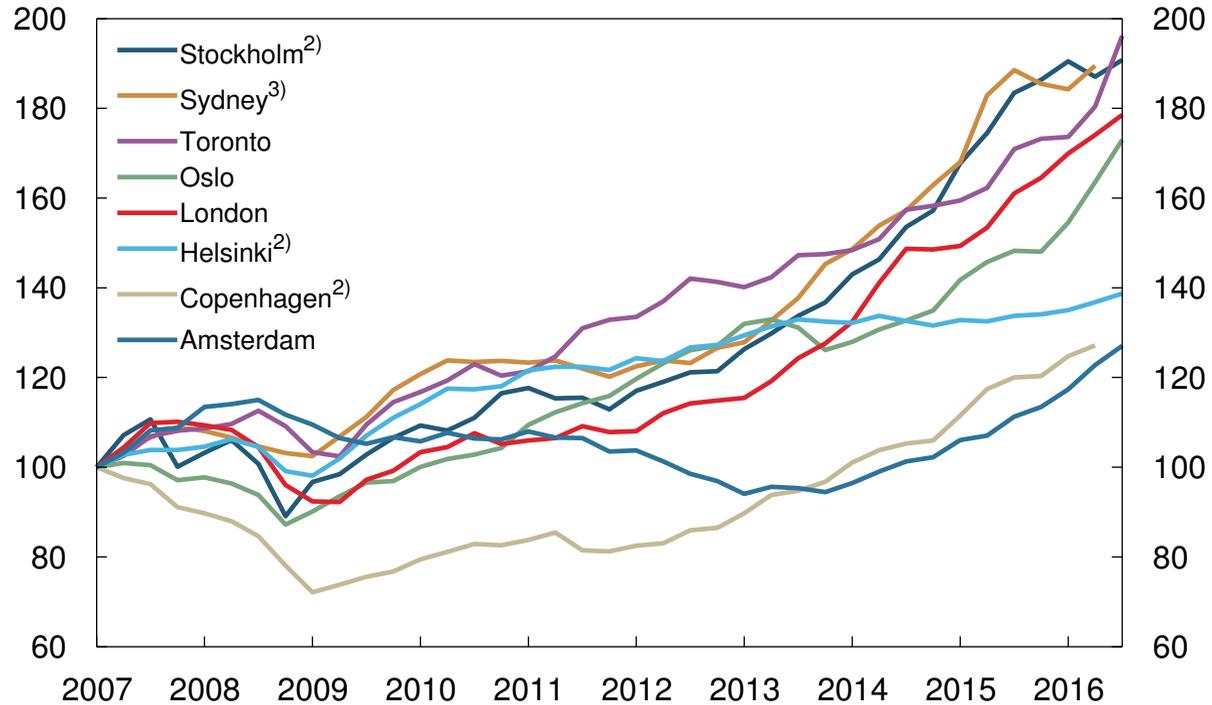- Netherlands
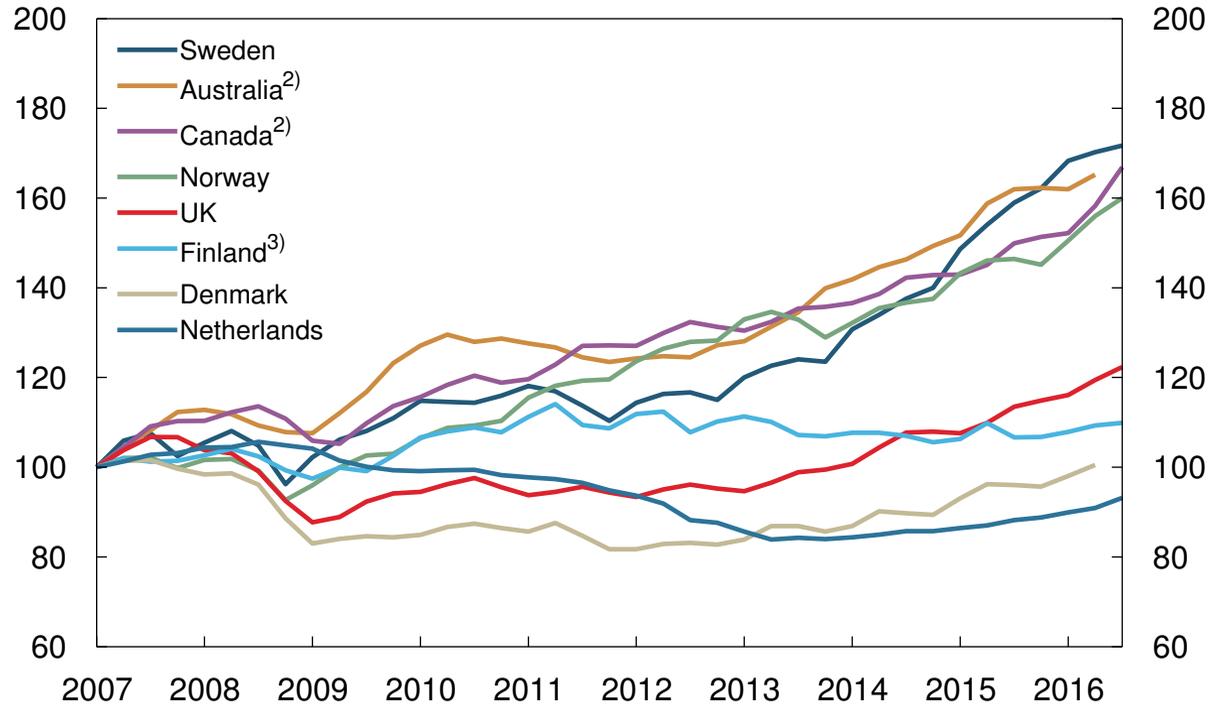
1) To end-June 2016 for Australia and Denmark.
2) The indicies are weighted averages of 11 metropolitan areas in Canada and eight in Australia.
3) Single-family houses only.
Sources: Australian Bureau of Statistics, Eiendomsverdi, Finn.no, Land Registry, Real Estate Norway, Statistics Denmark, Statistics Finland, Statistics Netherlands, Teranet, National Bank of Canada and Valuegard

Chart 3.15 House prices in selected cities. All dwellings.
Index. 2007 Q1 = 100. 2007 Q1 – 2016 Q3[1]

1) To end-June 2016 for Copenhagen and Sydney.
2) Flats only.
3) Greater Sydney.
Sources: Australian Bureau of Statistics, Eiendomsverdi, Finn.no, Land Registry, Real Estate Norway,
Statistics Denmark,Statistics Finland, Statistics Netherlands, Teranet, National Bank of Canada and Valuegard

Chart 3.16 Credit gap. Total credit[1] mainland Norway as a share of mainland GDP. Deviation from estimated trends.[2] Percentage points. 1983 Q1 – 2016 Q3
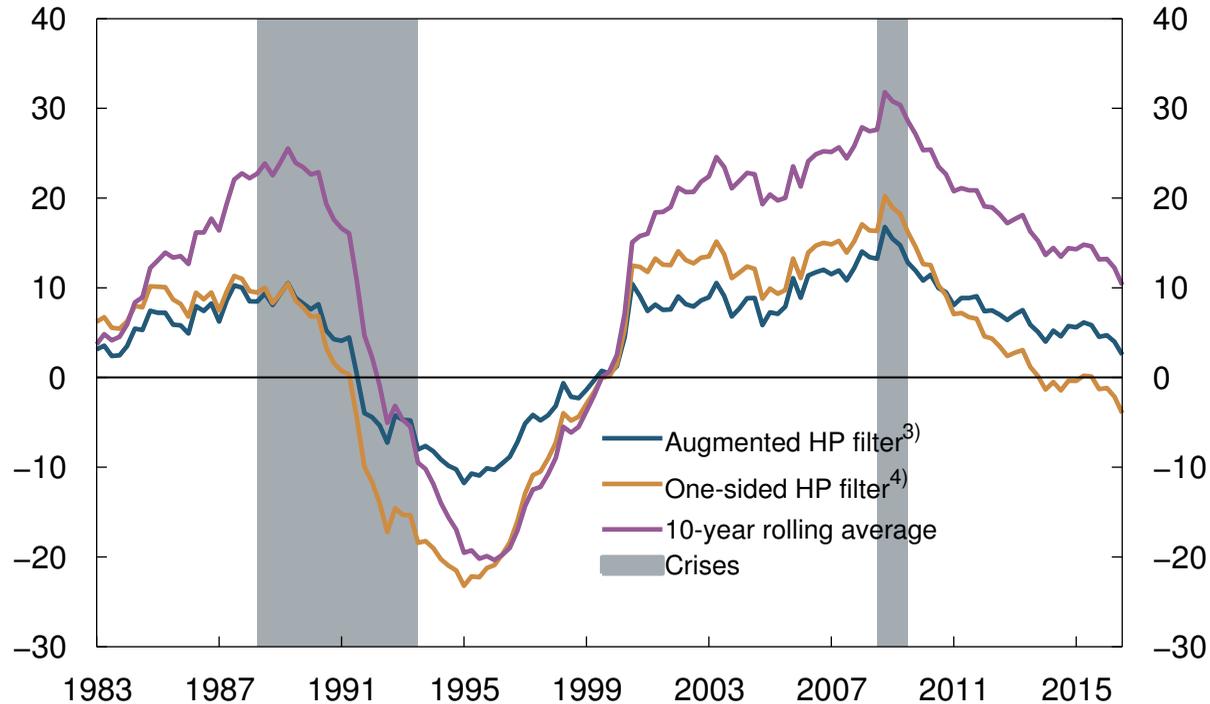
Legend:
- Augmented HP filter[3]
- One-sided HP filter[4]
- 10-year rolling average
- Crises

1) The sum of C2 households and C3 non-financial enterprises for mainland Norway (all non-financial enterprises pre-1995). C3 non-financial enterprises comprises C2 non-financial enterprises and foreign debt for mainland Norway.
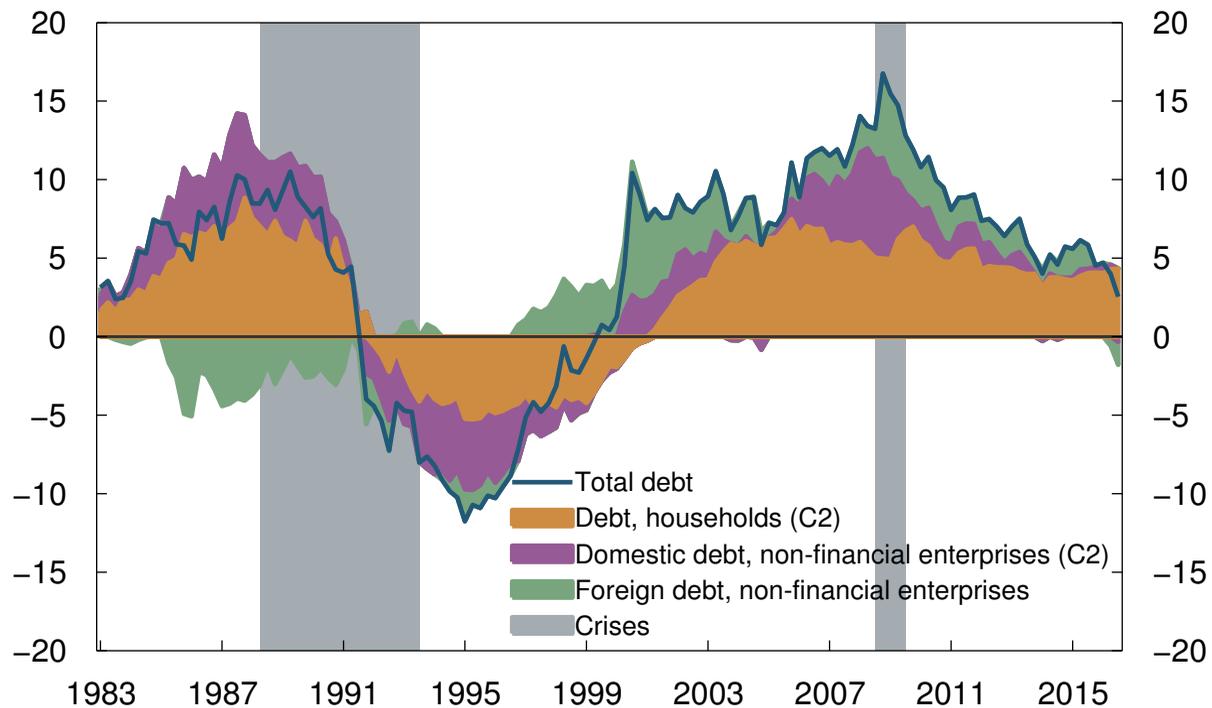2) The trends are estimated based on data from 1975 Q4 onwards.
3) One-sided Hodrick-Prescott filter estimated on data augmented with a simple projection. Lambda = 400 000.
4) One-sided Hodrick-Prescott filter. Lambda = 400 000.
Sources: IMF, Statistics Norway and Norges Bank

Chart 3.17 Decomposed credit cap. Total credit[1] mainland Norway as a share of mainland GDP. Deviation from trend with augmented HP-filter.[2] Percentage points. 1983 Q1 – 2016 Q3

Total debt
Debt, households (C2)
Domestic debt, non-financial enterprises (C2)
Foreign debt, non-financial enterprises
Crises

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

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

Buffer based on deviation from trend using augmented HP filter[1]

Buffer based on deviation from trend using one-sided HP filter[2]
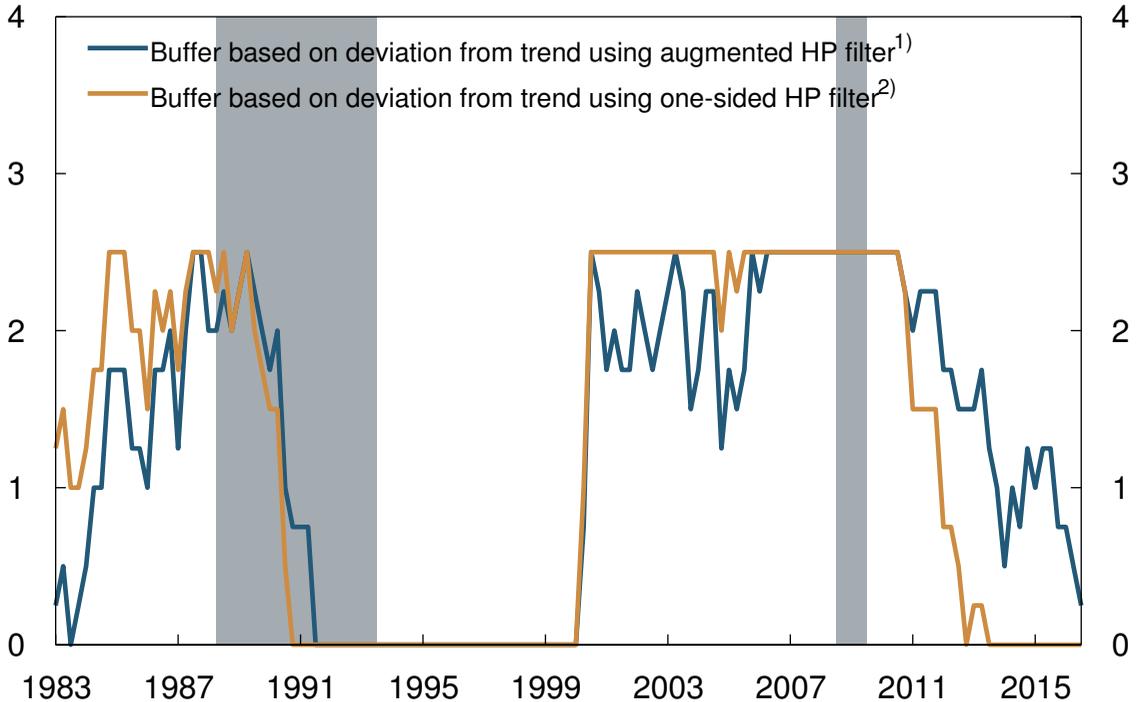
1) One-sided Hodrick-Prescott filter estimated on data augmented with a simple projection. Lambda = 400 000.
2) One-sided Hodrick-Prescott filter. Lambda = 400 000.
Sources: IMF, Statistics Norway and Norges Bank

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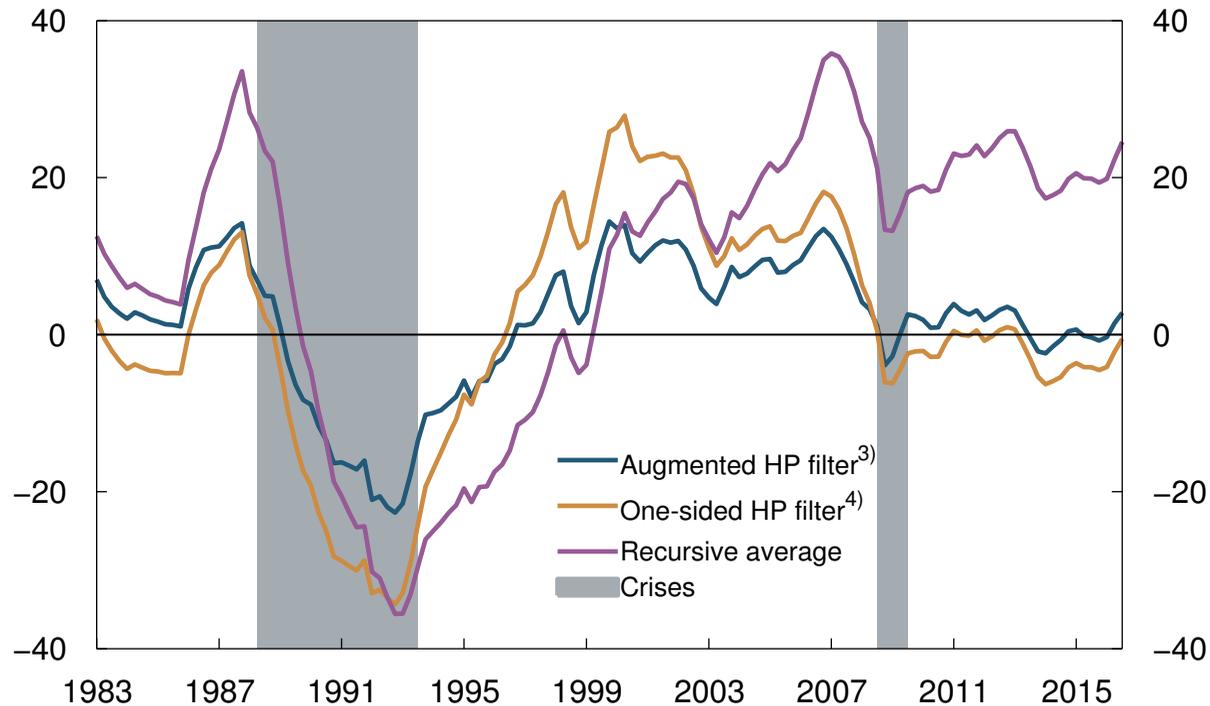
Augmented HP filter[3]
One-sided HP filter[4]
Recursive average
Crises

1) Disposable income adjusted for estimated reinvested dividend income for 2003 – 2005 and redemption/ reduction of equity capital for 2006 Q1 – 2012 Q3. Growth in disposable income excluding dividend income is used for 2015 Q1 – 2016 Q3.
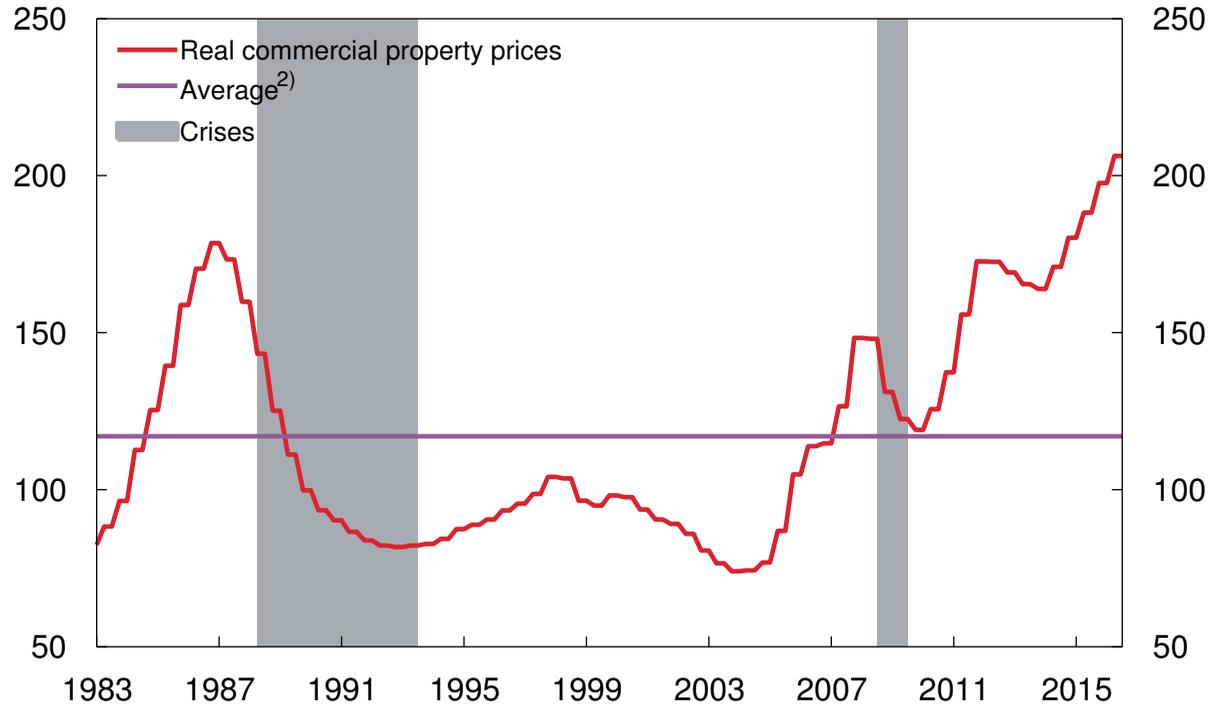2) The trends are estimated based on data from 1978 Q4 onwards.
3) One-sided Hodrick-Prescott filter estimated on data augmented with a simple projection. Lambda = 400 000.
4) One-sided Hodrick Prescott filter. Lambda = 400 000.
Sources: Eiendomsverdi, Finn.no, Norwegian Association of Real Estate Agents (NEF),
Real Estate Norway, Statistics Norway and Norges Bank

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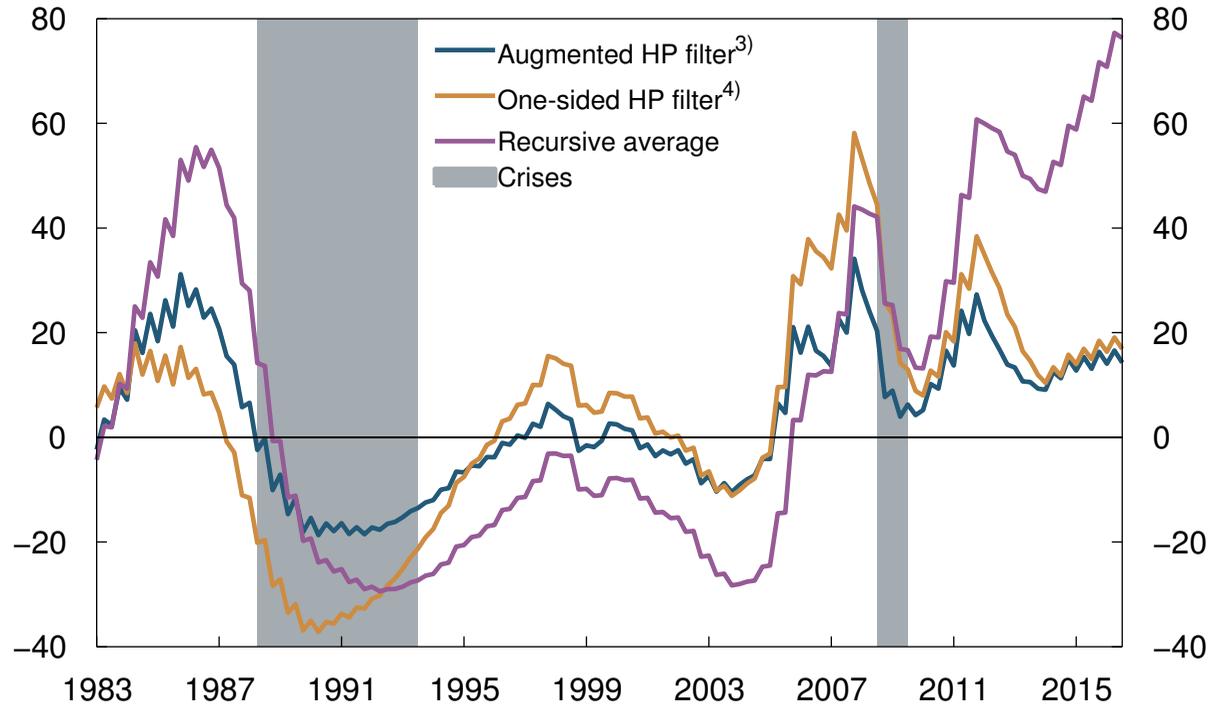Index. 1998 = 100. 1983 Q1 – 2016 Q3

1) Estimated selling prices for centrally located high-standard office space in Oslo deflated by the GDP deflator for mainland Norway.
2) Based on data from 1981 Q1 onwards.
Sources: Dagens Næringsliv, OPAK, Statistics Norway and Norges Bank

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

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

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

Chart 3.22 Banks'[1] wholesale funding ratio.
Percent. 1983 Q1 – 2016 Q3
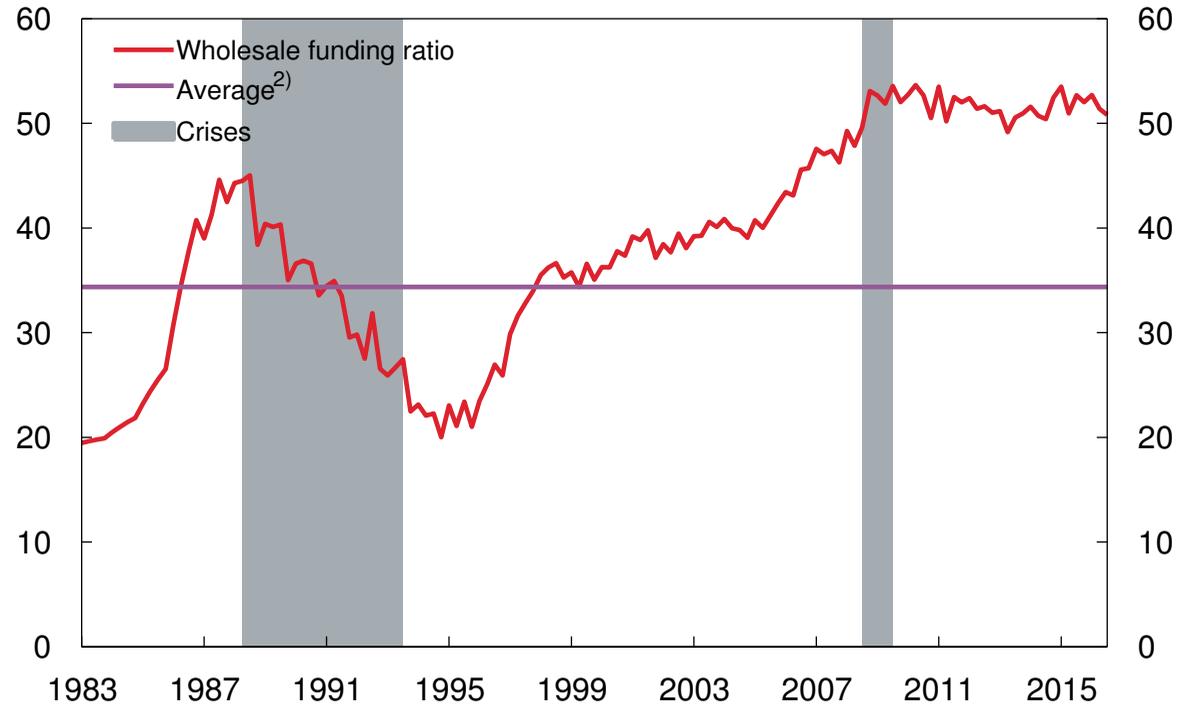
Legend:
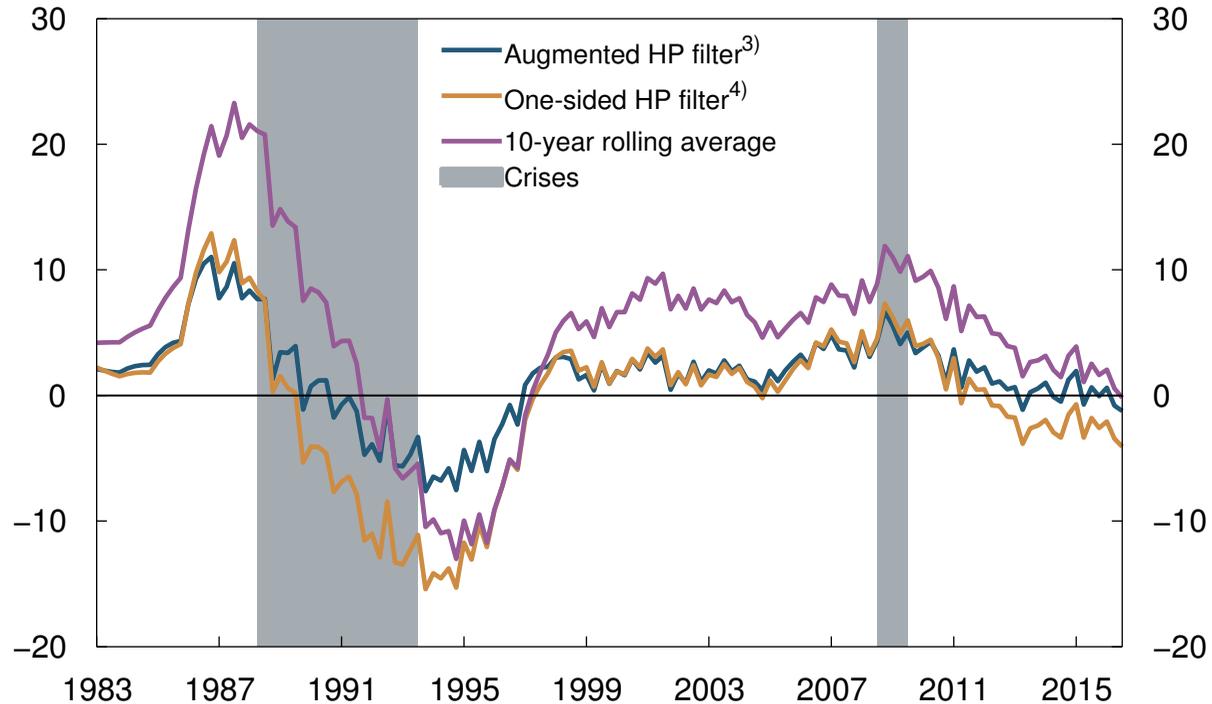— Wholesale funding ratio
— Average[2]
▨ Crises

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

Chart 3.23 Wholesale funding gap. Banks[,1)] wholesale funding ratio
as deviation from estimated trends.[2)] Percentage points. 1983 Q1 – 2016 Q3

Legend:
- Augmented HP filter[3)]
- One-sided HP filter[4)]
- 10-year rolling average
- Crises

1) All banks and covered bond mortgage companies in Norway excluding branches and subsidiaries
of foreign banks.
2) The trends are estimated based on data from 1975 Q4 onwards.
3) One-sided Hodrick-Prescott filter estimated on data augmented with a simple projection. Lambda = 400 000.
4) One-sided Hodrick-Prescott filter. Lambda = 400 000.
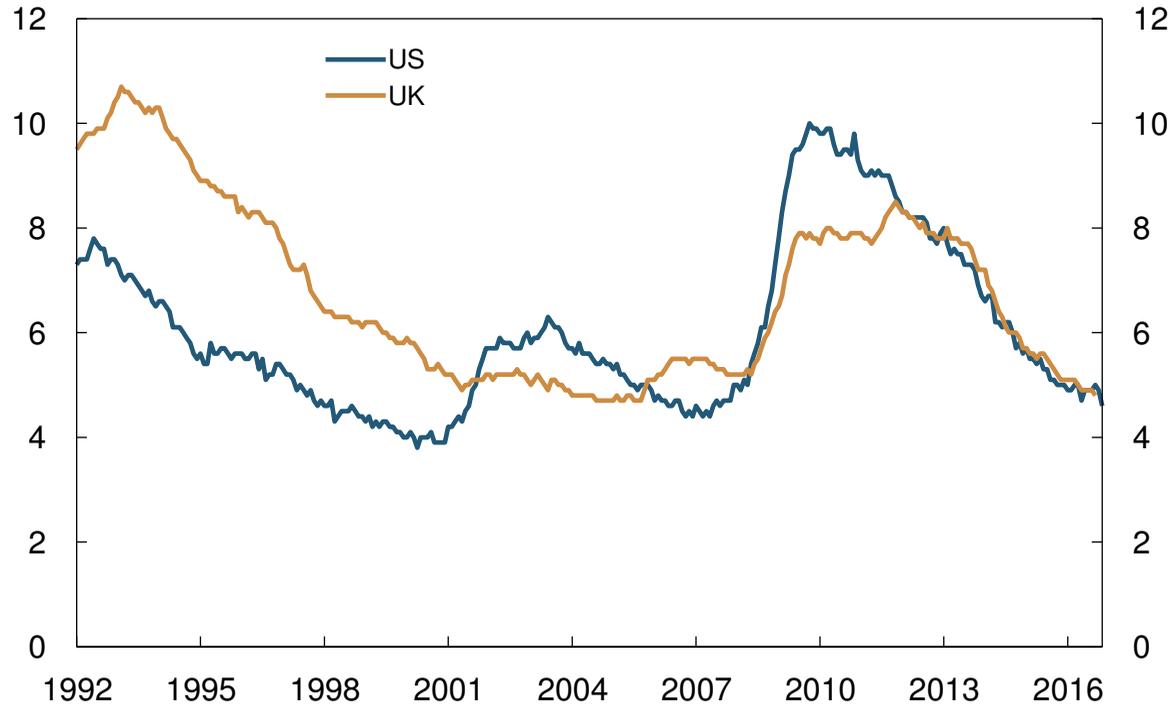Source: Norges Bank

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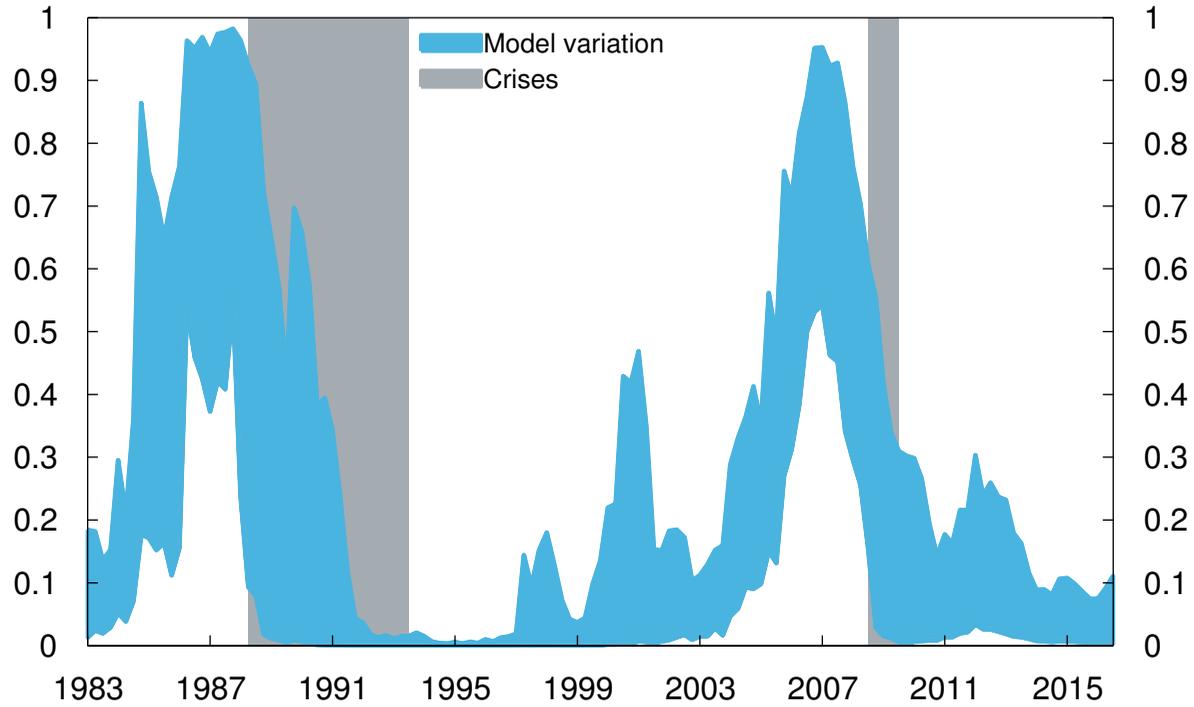
Source: Norges Bank

Chart 1 UK and US. Unemployment as a share of the labour force. Seasonally adjusted. Percent. January 1992 – November 2016[1]


1) The latest observation for the UK is September 2016.
Source: Thomson Reuters

Chart 2 UK and US. Employment and participation rate as a share of the working–age population. Percent. January 1992 – November 2016[1]

Participation rate, US
Participation rate, UK
Employment rate, US
Employment rate, UK
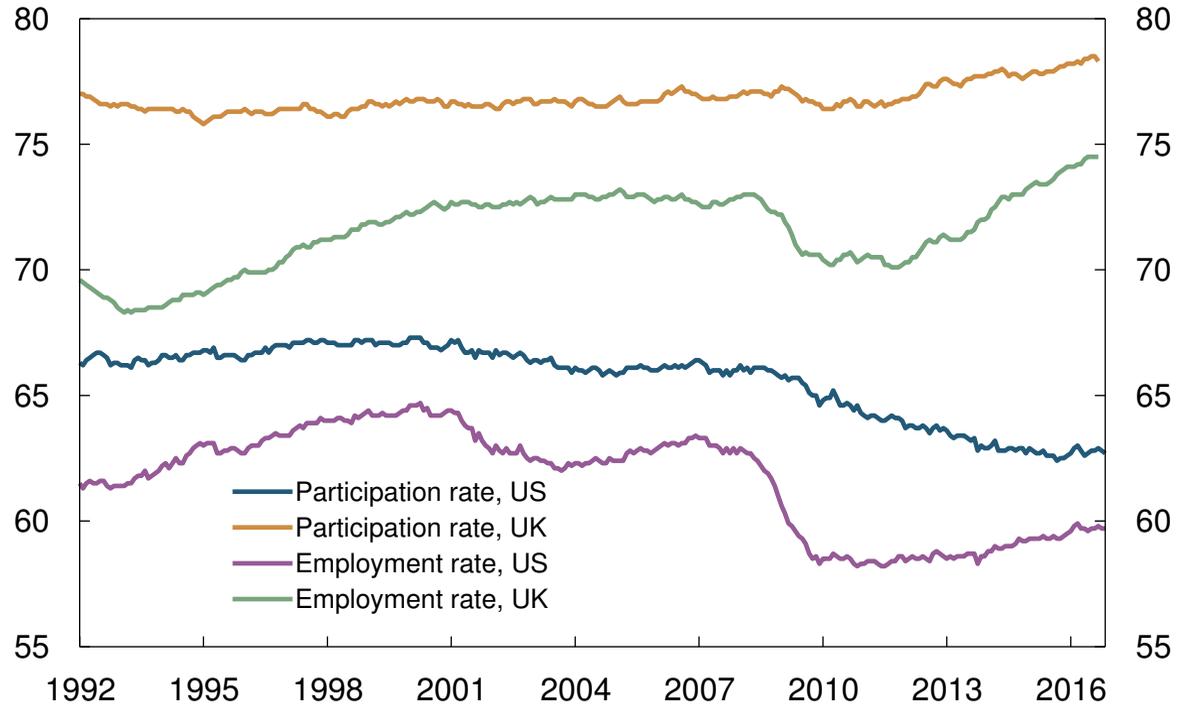
1) The latest observation for the UK is September 2016.
Source: Thomson Reuters

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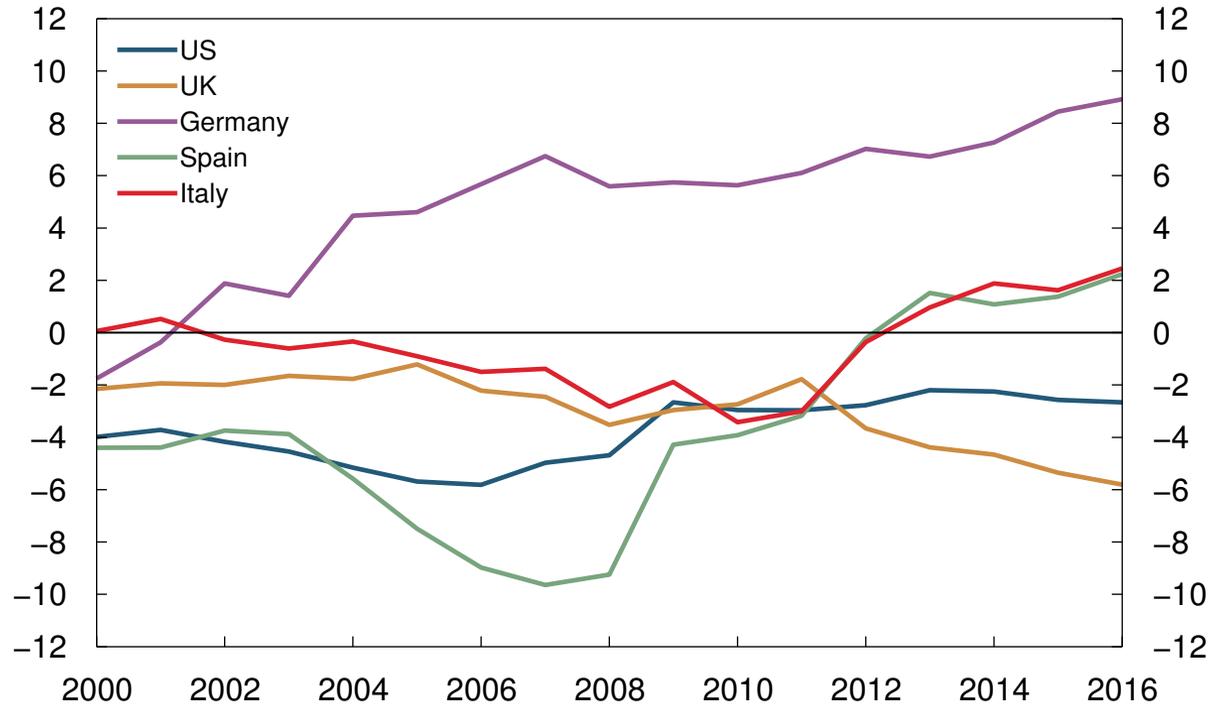
1) Observations for 2016 are averages of available data.
Source: Thomson Reuters

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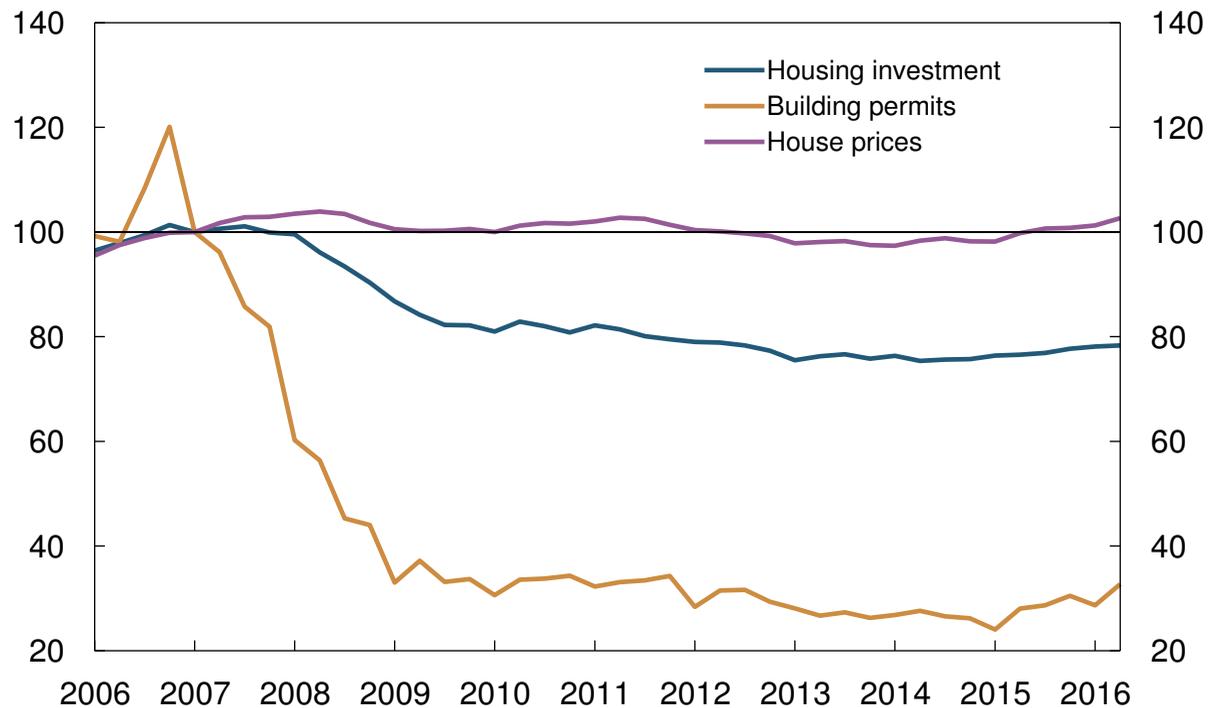
Source: Thomson Reuters

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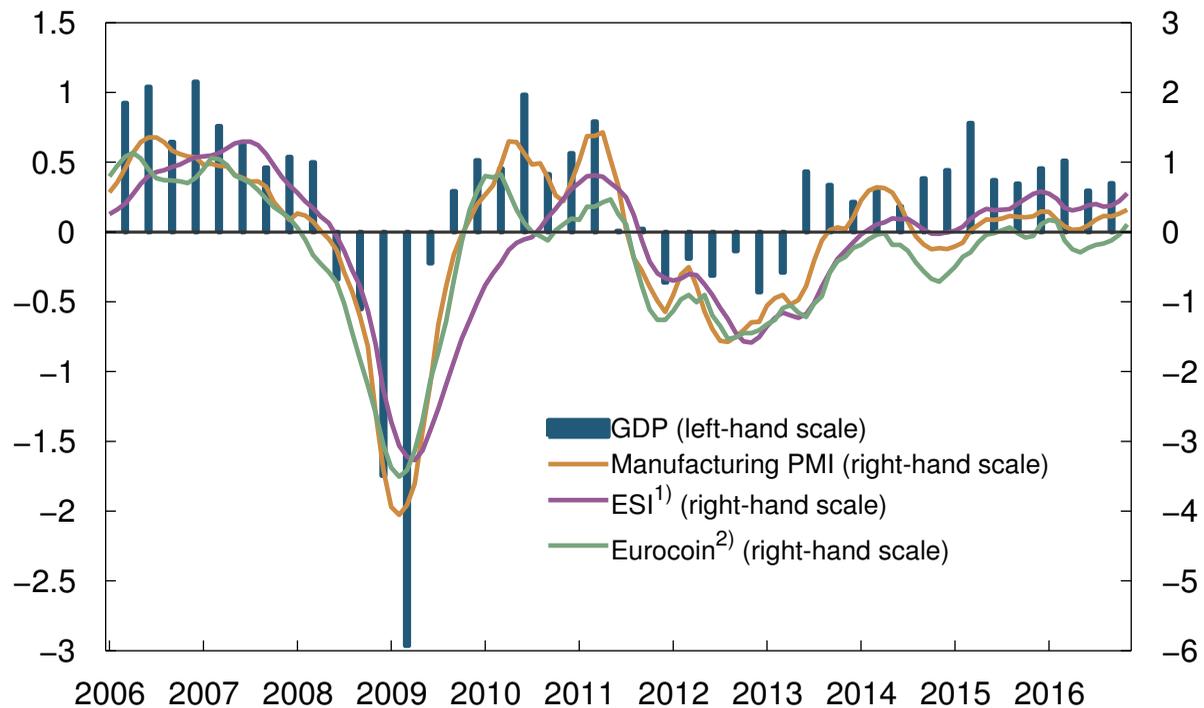
1) Economic Sentiment Indicator (ESI) is a euro area confidence indicator.
2) Eurocoin is a composite index of the current economic situation in the euro area.
Sources: Thomson Reuters and Norges Bank

Chart 6 Sweden. Confidence indicators. Deviations from historical average.
January 2006 – November 2016

Economic Tendency Indicator[1]

Consumer Micro Index [2]
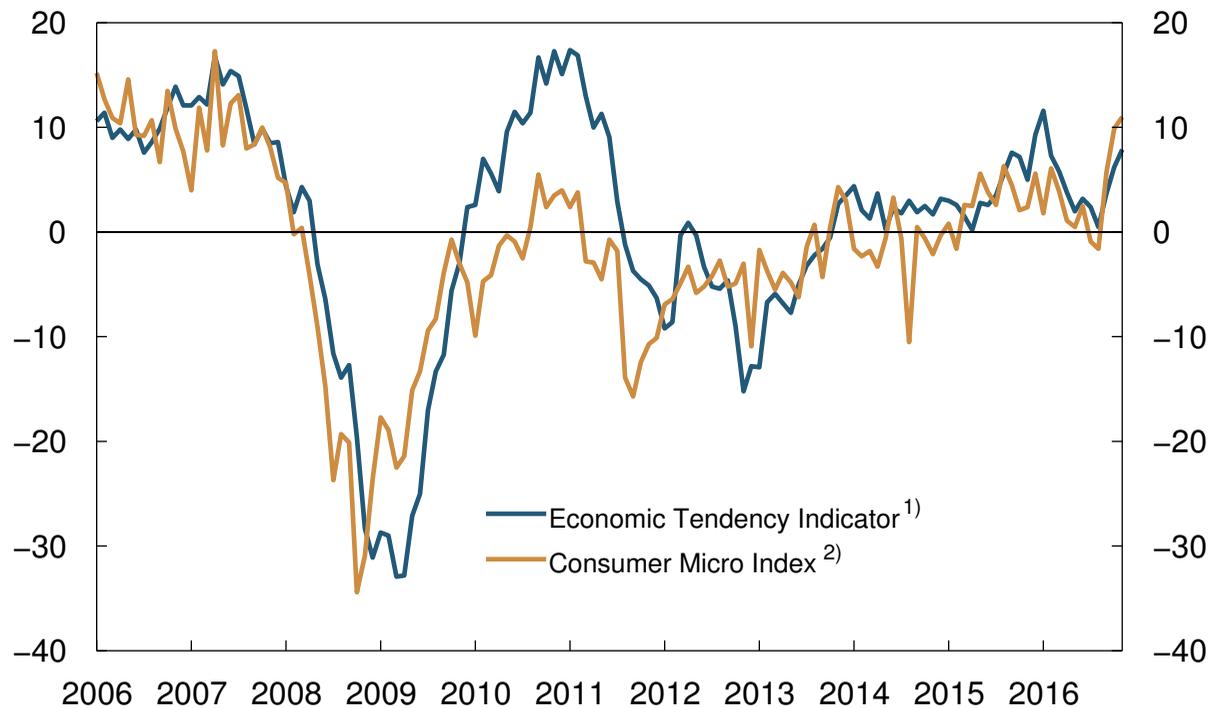
1) Composite indicator for households and businesses.
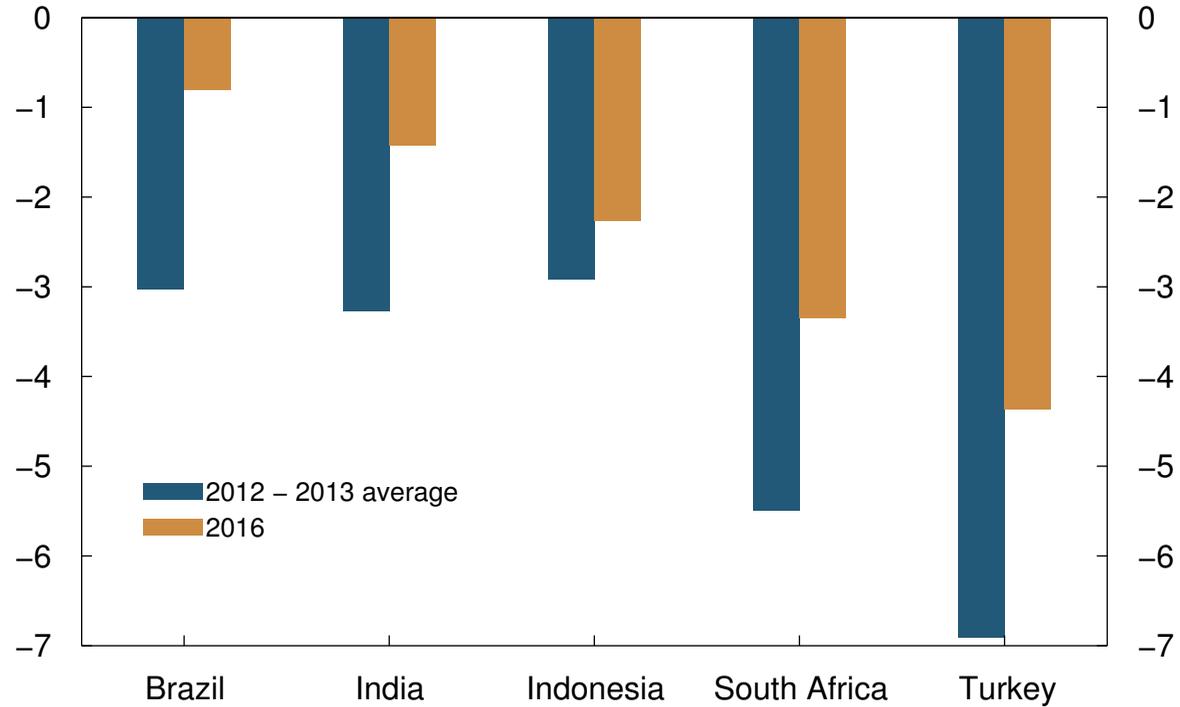2) Households' perception of their financial situation.
Source: The National Institute of Economic Research

Chart 7 China. Investment in selected sectors. Volume. Twelve-month change.
Three-month moving average. Percent. January 2010 – October 2016

Manufacturing
Infrastructure
Real estate
Total investment
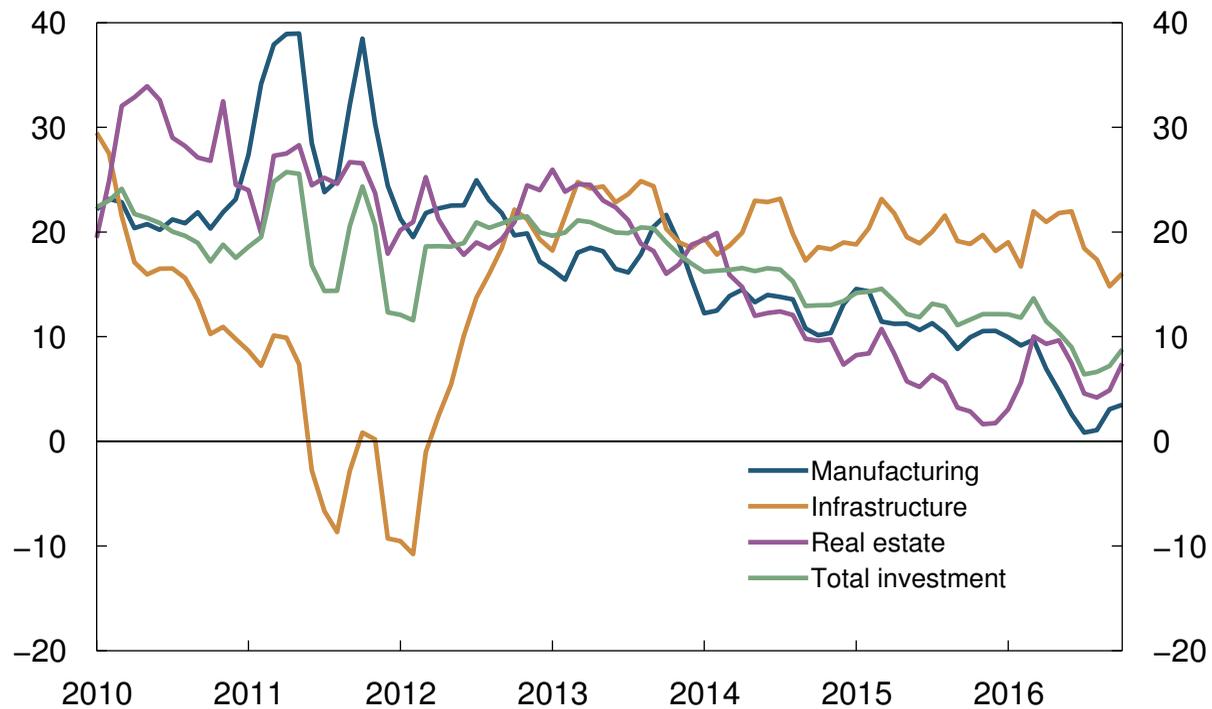
Chart 8 Current account balance as a share of GDP in selected emerging market economies. Percent. Averages of 2012 and 2013 compared with data for 2016.[1]

Legend:
- 2012 – 2013 average
- 2016

X-axis categories: Brazil, India, Indonesia, South Africa, Turkey

1) Current account balances for 2016 given by published data for India and projections for the remaining countries.
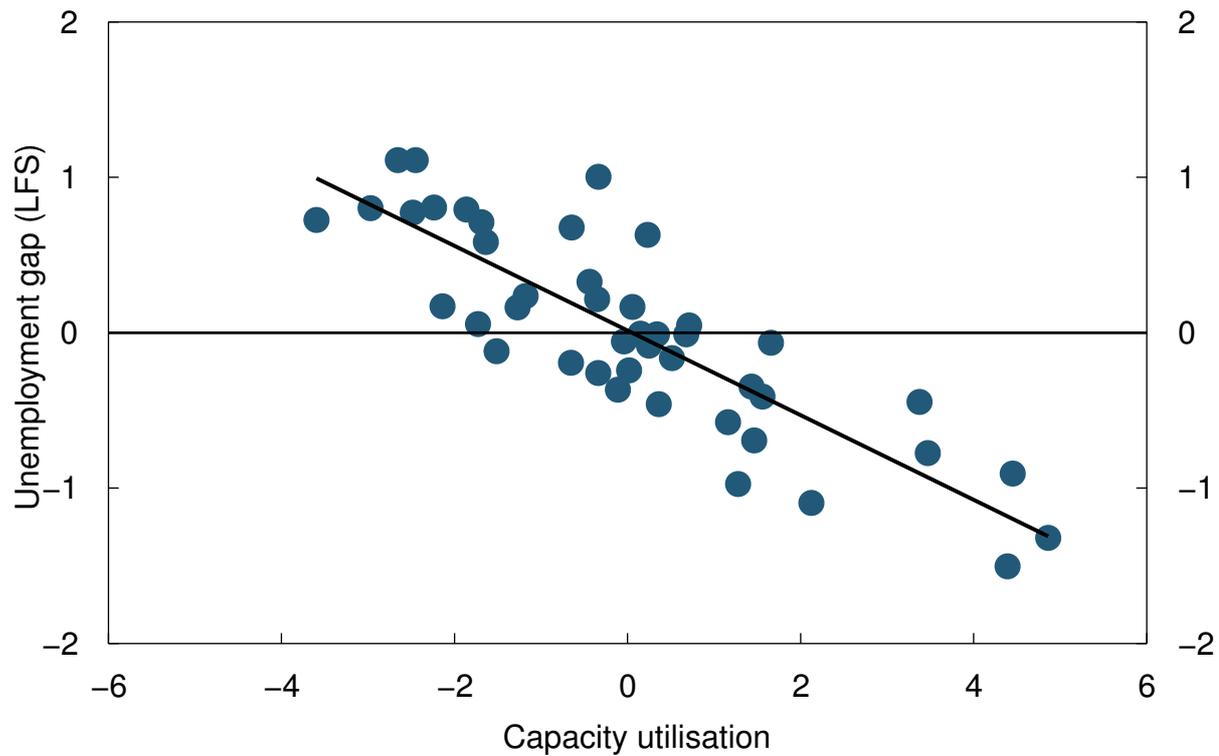Source: IMF

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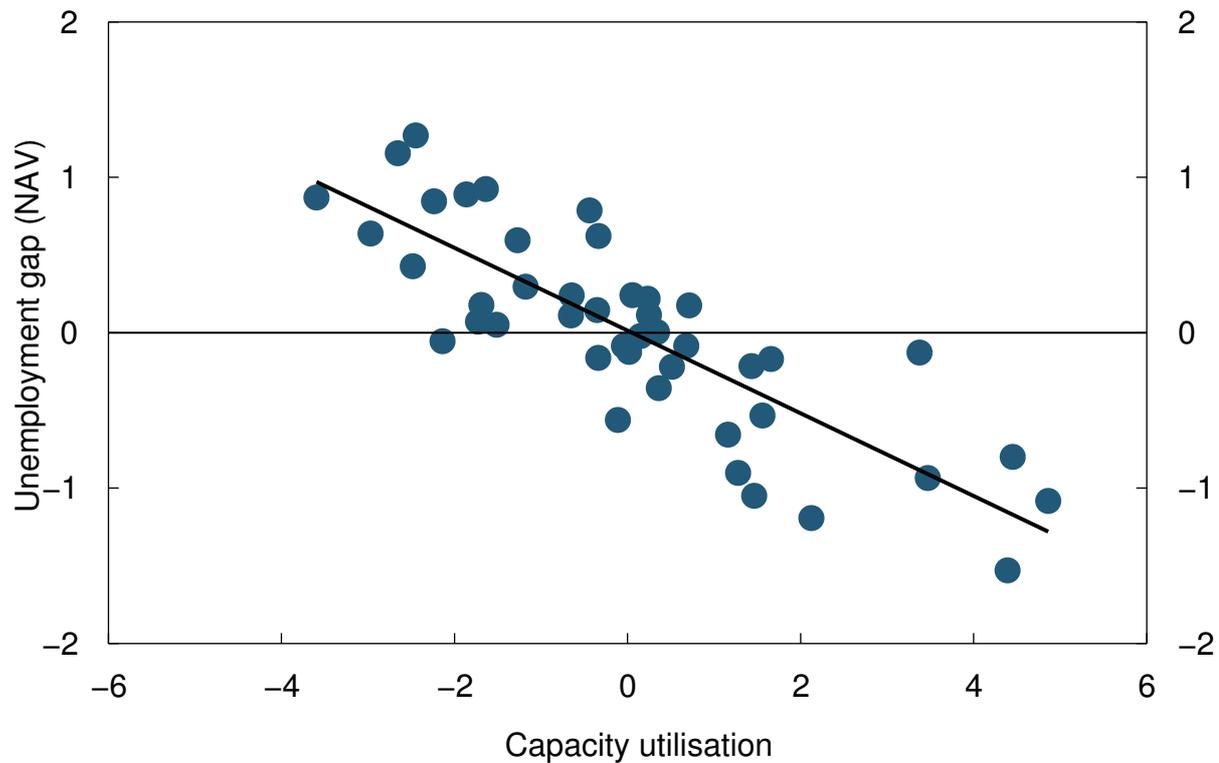
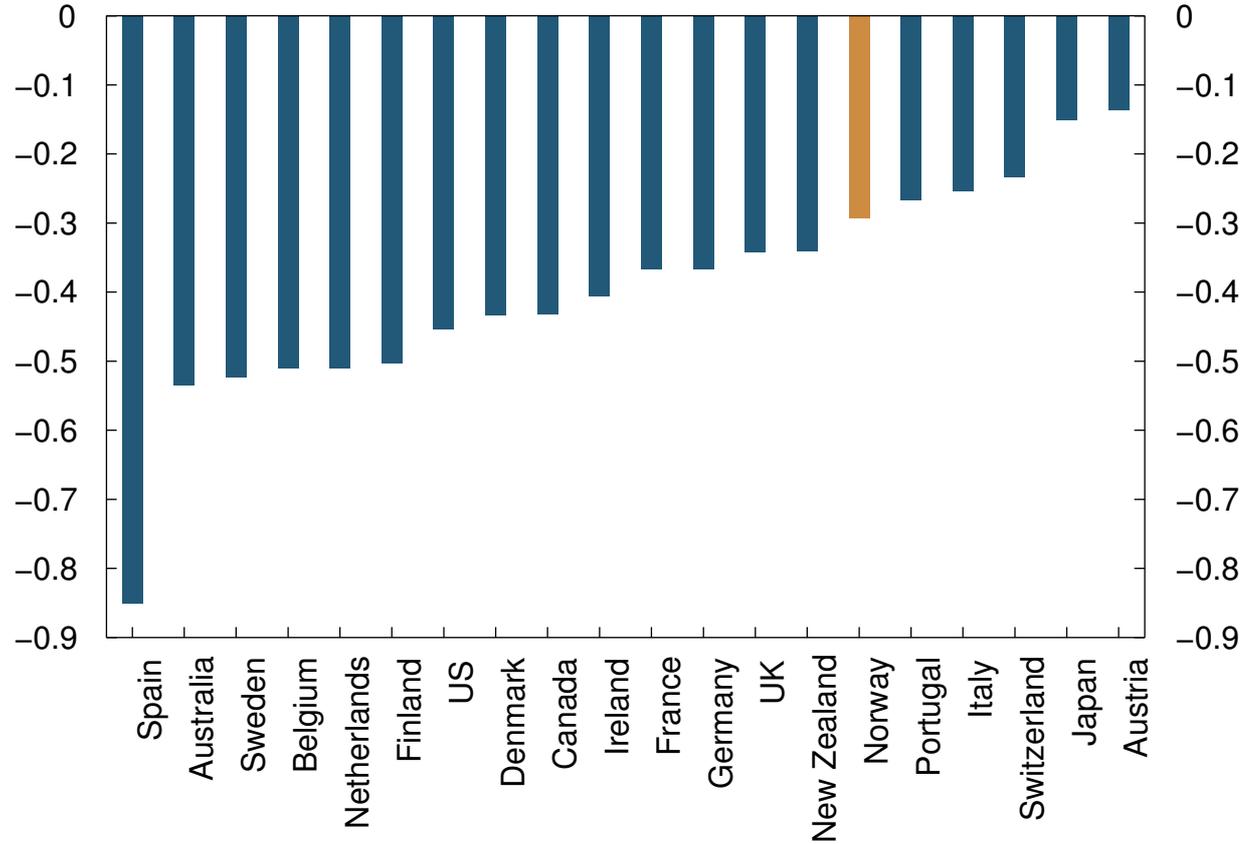1) Registered unemployment.
Sources: Norwegian Labour and Welfare Administration (NAV) and Norges Bank

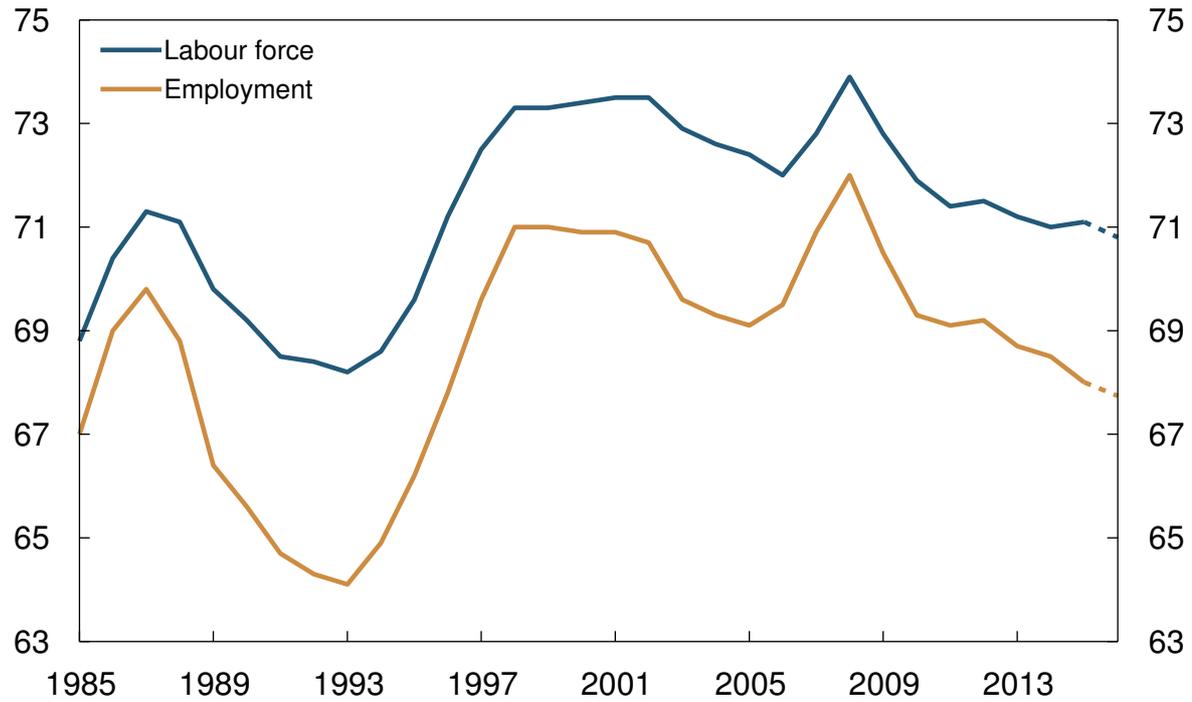Chart 1b Estimated Okun's law based on LFS unemployment[1].
1972 – 2014

1) Labour Force Survey.
Sources: Statistics Norway and Norges Bank

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

Chart 3 Labour force and LFS employment.
Percentage of the population aged 15 – 74. 1985 – 2016 [1]

1) Projections for 2016 (broken lines).
Sources: Statistics Norway and Norges Bank

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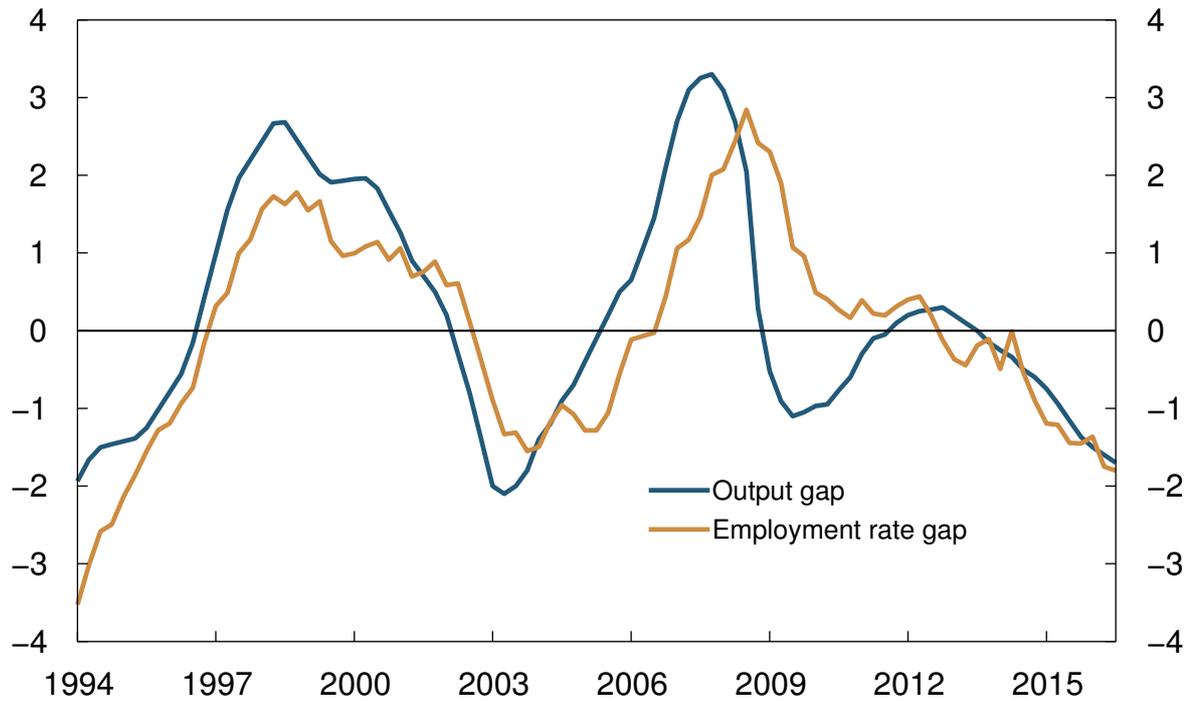Percent. 2005 Q1 – 2016 Q4
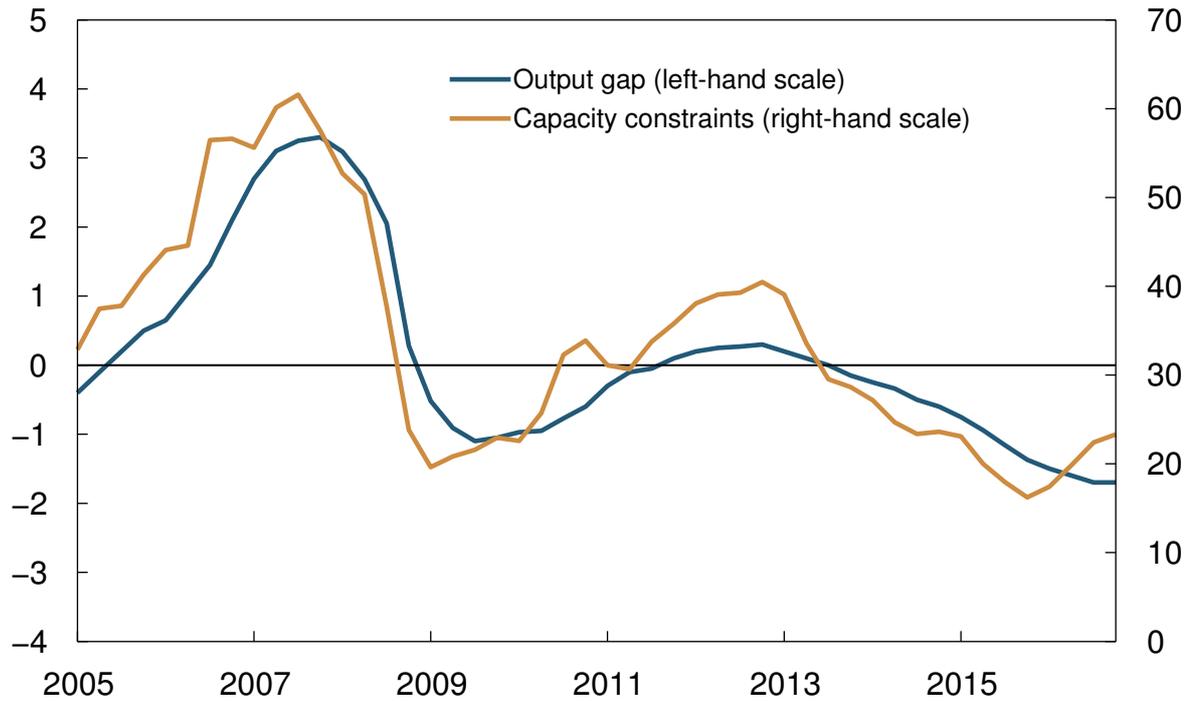
1) The output gap measures the percentage deviation between mainland GDP and projected
potential mainland GDP. One–year lag.
2) Share of contacts that will have some or considerable problems accommodating an increase in demand.
Source: Norges Bank

Chart 5 Norges Bank's output gap[1] and employment rate gap[2].
Employed as a share of the population aged 25–54. Percent. 1994 Q1 – 2016 Q3
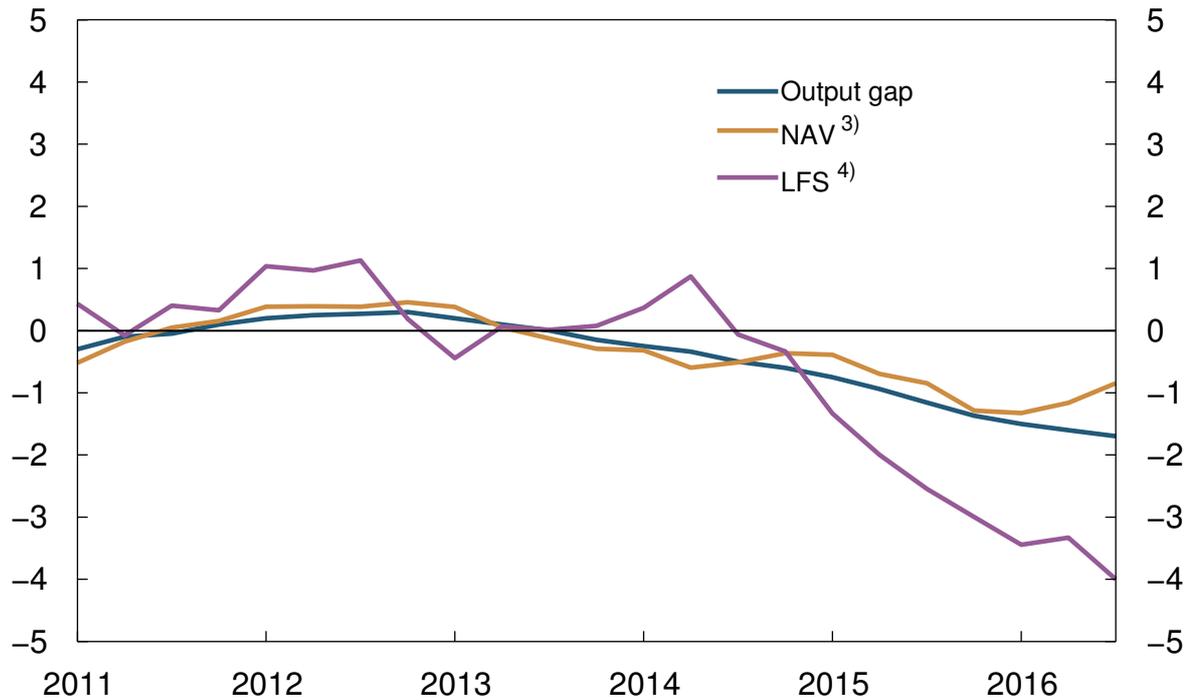

1) The output gap measures the percentage deviation between mainland GDP and projected potential mainland GDP.
2) Deviation from the mean 1994–2016.
Sources: Statistics Norway and Norges Bank

Chart 6 Norges Bank's output gap[1] and measure of capacity utilisation derived unemployment data[2].
Percent. 2011 Q1 – 2016 Q3

1) The output gap measures the percentage deviation between mainland GDP and projected potential mainland GDP.
2) Based on estimated Okun relations and unchanged estimated trend levels of unemployment from 2015.
3) Registered unemployment.
4) Labour Force Survey.
Sources: NAV, Statistics Norway and Norges Bank