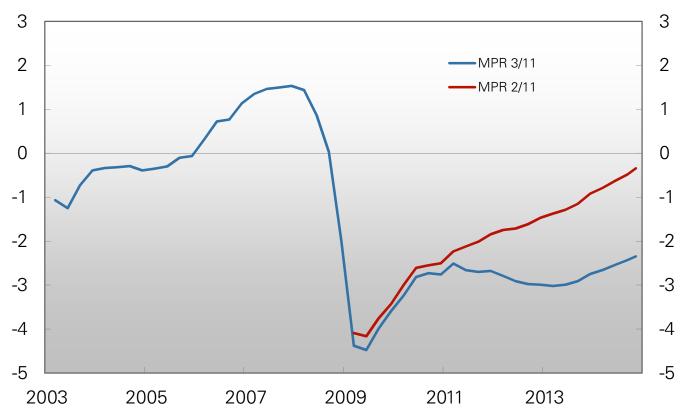
## Monetary Policy Report 3/11

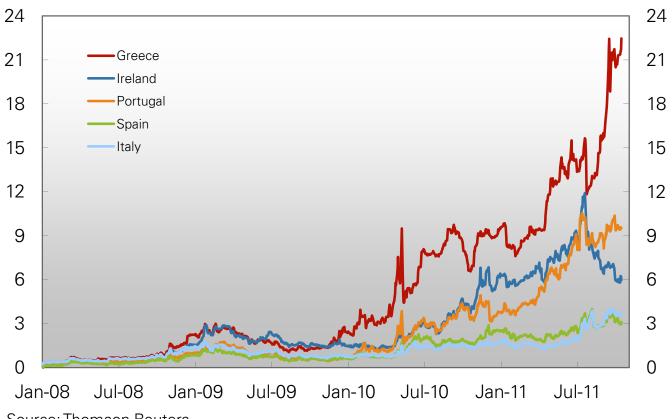
Charts

Chart 1.1 Projected output gap<sup>1)</sup> for Norway's trading partners. Per cent.  $2003 \ \Omega1 - 2014 \ \Omega4$ 



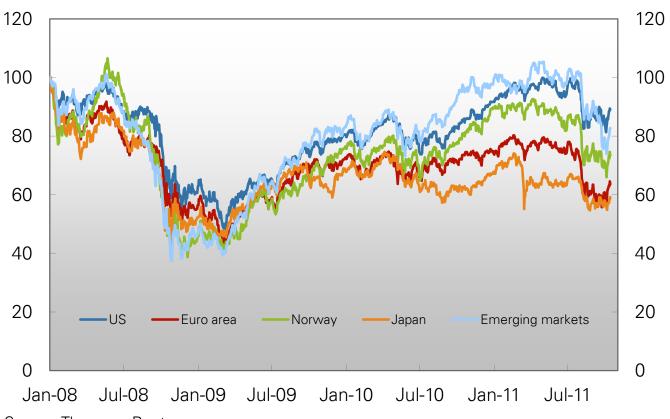
1) The output gap measures the percentage deviation between GDP and projected potential GDP for Norway's trading partners Sources: IMF, Thomson Reuters and Norges Bank

Chart 1.2 Yield spreads against German 10-year government bonds. Percentage points. 1 January 2008 – 13 October 2011



Source: Thomson Reuters

Chart 1.3 Developments in equity markets. Index. 1 January 2008 = 100. 1 January 2008 – 13 October 2011



Source: Thomson Reuters

Chart 1.4 Yields on 10-year government bonds. Per cent. 1 January 2003 – 13 October 2011

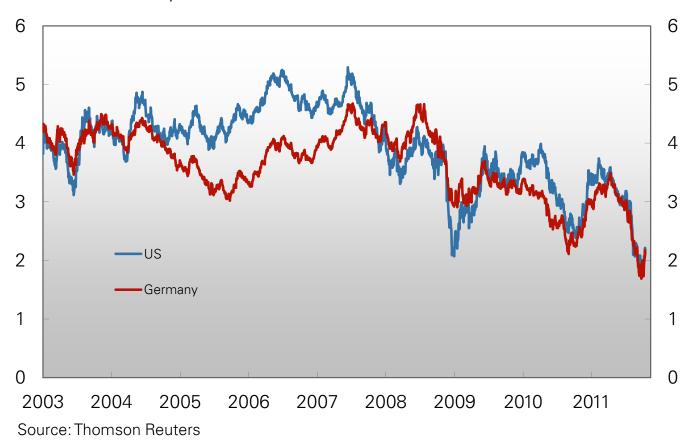
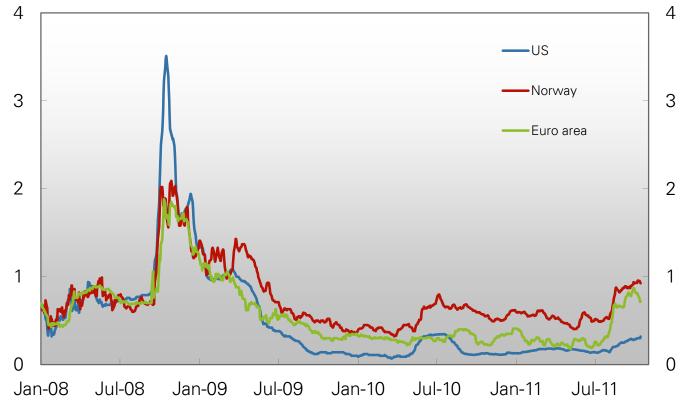


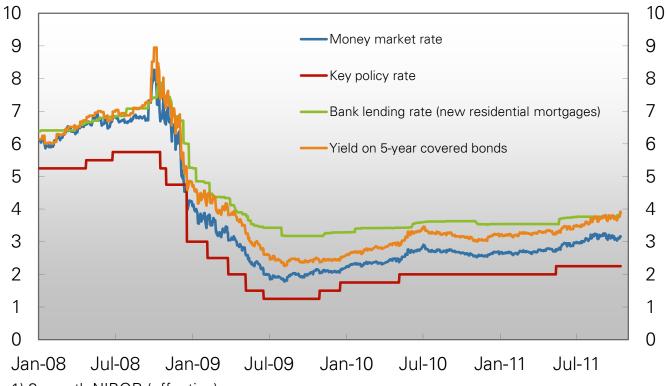
Chart 1.5 Difference between 3-month money market rate and expected key rates<sup>1)</sup>. Percentage points. 5-day moving average.

1 January 2008 – 13 October 2011



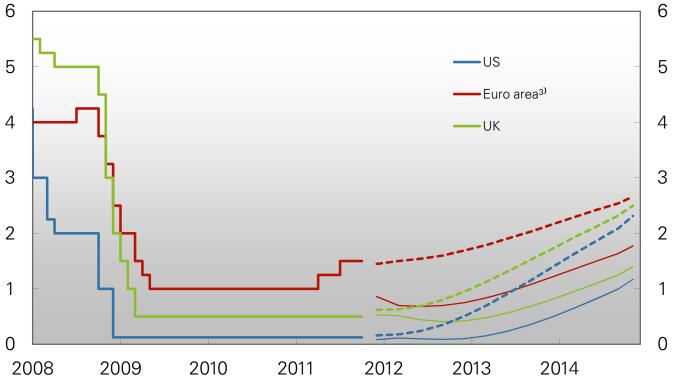
1) Expected key rates are derived from Overnight Indexed Swap (OIS) rates. Norges Bank's projections for market key rate expectations are used for Norway Sources: Bloomberg L.P., Thomson Reuters and Norges Bank

Chart 1.6 Key policy rate, money market rate<sup>1)</sup>, yield on 5-year covered bonds<sup>2)</sup> and weighted average lending rate on new residential mortgages<sup>3)</sup>. Per cent. 1 January 2008 – 13 October 2011



- 1) 3-month NIBOR (effective)
- 2) Sum of 3-month NIBOR and indicative credit spreads on 5-year covered bonds
- 3) Interest rate on new residential mortgages of NOK 1m within 60% of purchase price with variable interest rate. Figures for the 20 largest banks, weighted according to market share Sources: Norsk familieøkonomi AS, DnB Nor Markets, Statistics Norway and Norges Bank

Chart 1.7 Key rates and estimated forward rates as at 16 June 2011 and 13 October 2011.<sup>1)</sup> Per cent. 1 January 2008 – 31 December 2014<sup>2)</sup>



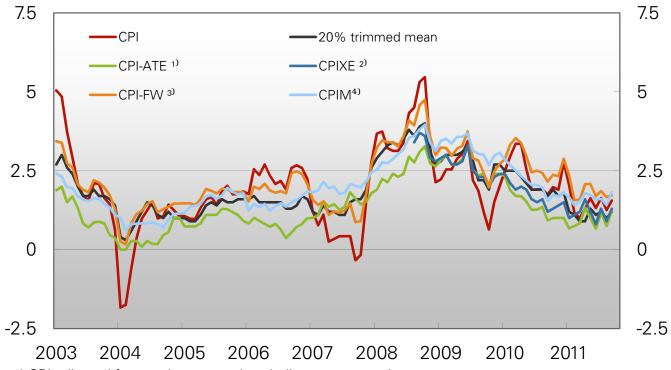
1) Broken lines show estimated forward rates as at 16 June 2011. Thin lines show forward rates as at 13 October 2011. Forward rates are based on Overnight Indexed Swap (OIS) rates

2) Daily figures from 1 July 2008 and quarterly figures from 2011 Q4

3) EONIA in euro area from 2011 Q4

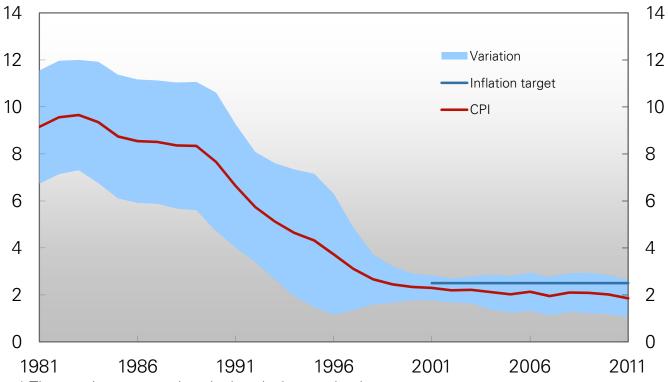
Sources: Bloomberg L.P. and Norges Bank

Chart 1.8 Consumer prices. 12-month change. Per cent. January 2003 – September 2011



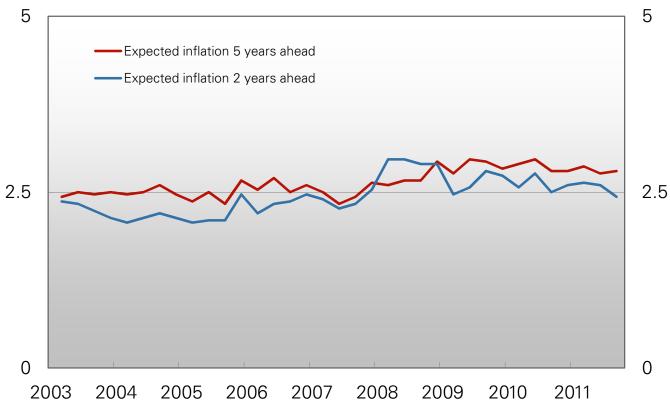
- 1) CPI adjusted for tax changes and excluding energy products
- 2) CPI adjusted for tax changes and excluding temporary changes in energy prices. Real time figures. See Norges Bank *Staff Memo* 7/2008 and 3/2009
- 3) CPI adjusted for frequency of price changes. See Norges Bank Economic commentaries 7/2009
- 4) Model-based indicator of underlying inflation. See Norges Bank *Economic commentaries* 5/2010 Sources: Statistics Norway and Norges Bank

Chart 1.9 Inflation. Moving 10-year average<sup>1)</sup> and variation<sup>2)</sup> in CPI<sup>3)</sup>. Per cent. 1981 – 2011



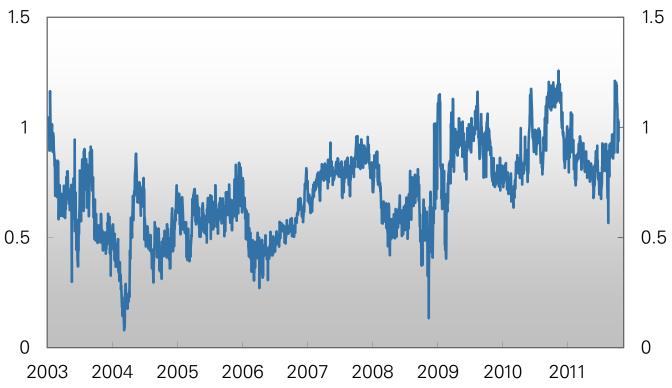
- 1) The moving average is calculated 10 years back
- 2) The band around the CPI is the variation in the CPI adjusted for tax changes and excluding energy products in the average period, measured by +/- one standard deviation
- 3) CPI projections in this *Report* form the basis for this estimate Sources: Statistics Norway and Norges Bank

Chart 1.10 Expected consumer price inflation 2 and 5 years ahead.  $^{10}$  Per cent. 2003 Q1 – 2011 Q3



1) Average of expectations of employer/employee organisations and economists (financial industry experts, macro analysts and academia)
Sources: TNS Gallup and Perduco

Chart 1.11 Five-year forward rate<sup>1)</sup> differential 5 years ahead between Norway and the euro area.<sup>2)</sup> Percentage points. 1 January 2003 – 13 October 2011

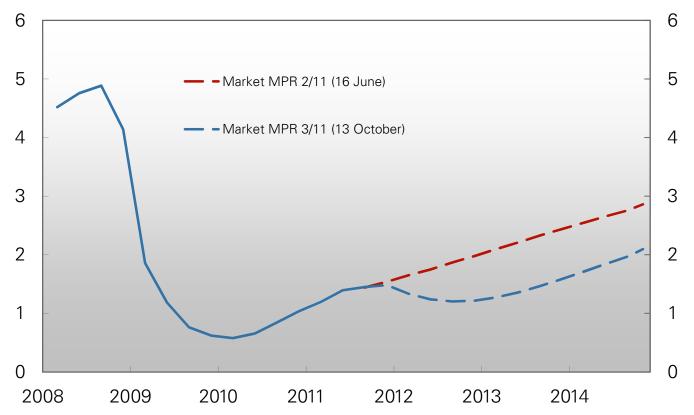


<sup>1)</sup> Based on swap rates

Sources: Thomson Reuters and Norges Bank

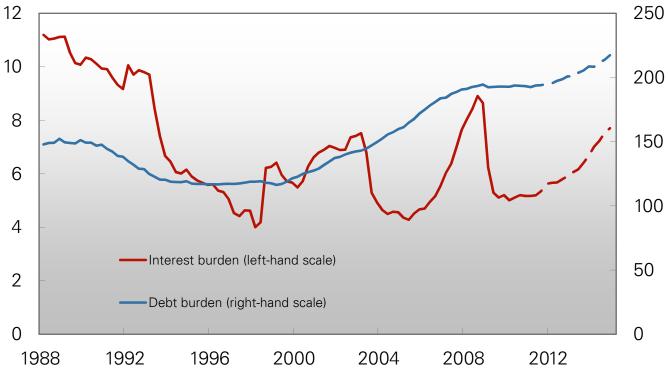
<sup>2)</sup> Expected inflation can be derived from the long-term interest rate differential. Due to a higher inflation target in Norway, the long-term interest rate differential will normally be 0.5-1 percentage point, depending on risk premium.

Chart 1.12 Three-month money market rates.<sup>13</sup> Trading partners. Per cent. 2008 Q1 - 2014 Q4



1) Forward rates are based on money market rates and interest rate swaps Sources: Thomson Reuters and Norges Bank

Chart 1.13 Household debt burden<sup>1)</sup> and interest burden<sup>2)</sup>. Per cent. Quarterly figures. 1988 Q1 – 2014 Q4<sup>1)</sup>



1) Loan debt as a percentage of disposable income adjusted for estimated reinvested dividends for 2000 – 2005 and redemption/reduction of equity capital for 2006 – 2014
2) Interest expenses after tax as a percentage of disposable income adjusted for estimated reinvested dividends for 2000 – 2005 and redemption/reduction of equity capital for 2006 – 2014 plus interest expenses

Sources: Statistics Norway and Norges Bank

Chart 1.14a Projected key policy rate in the baseline scenario with fan chart. Per cent. 2008 Q1– 2014 Q4

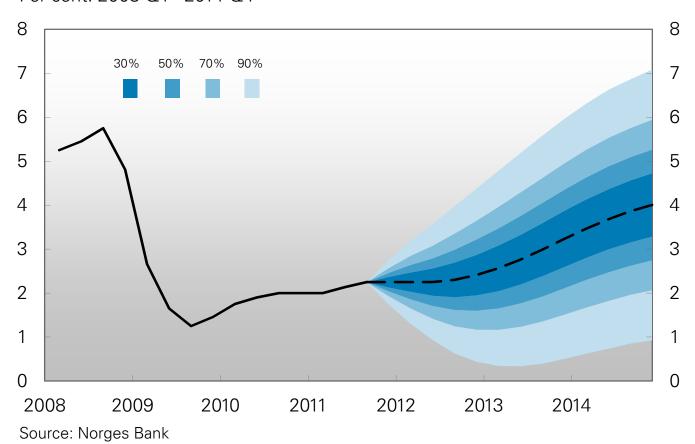
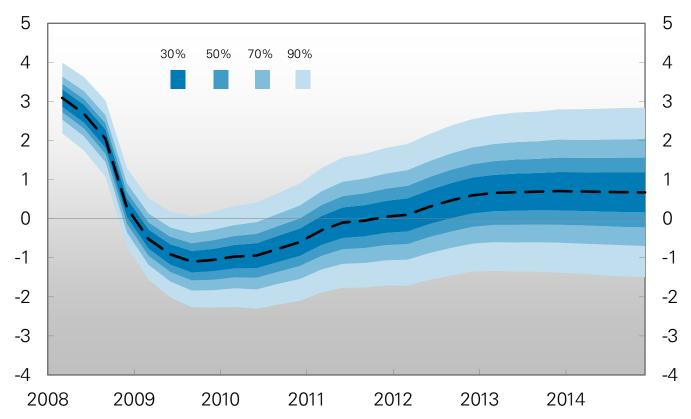


Chart 1.14b Projected output gap $^{1)}$  in the baseline scenario with fan chart. Per cent. 2008 Q1 – 2014 Q4



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

Chart 1.14c Projected CPI in the baseline scenario with fan chart. Four-quarter change. Per cent. 2008 Q1 – 2014 Q4

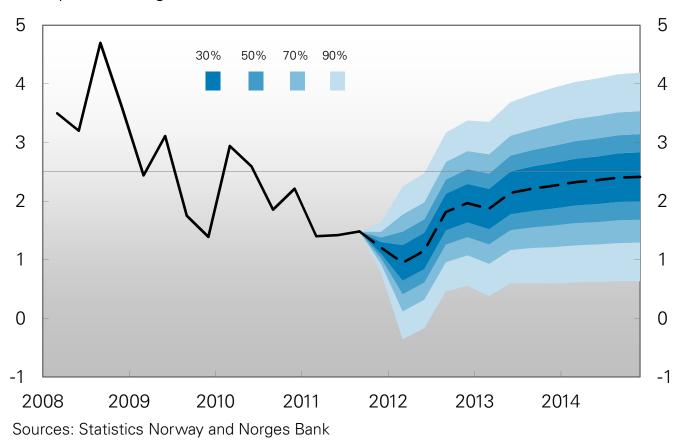
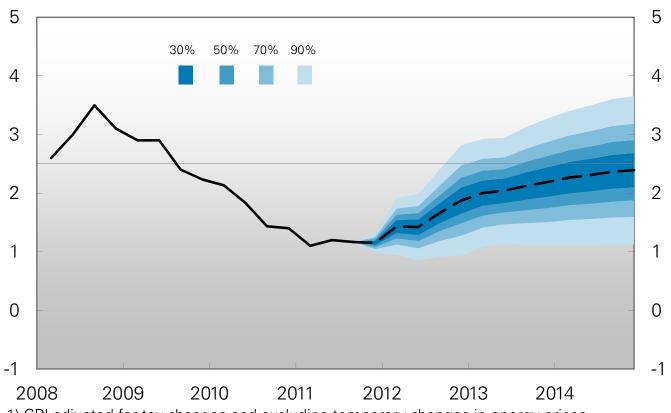


Chart 1.14d Projected CPIXE<sup>1)</sup> in the baseline scenario with fan chart. Four-quarter change. Per cent. 2008 Q1 – 2014 Q4



1) CPI adjusted for tax changes and excluding temporary changes in energy prices. As from August 2008, the CPIXE is a real time series. See Norges Bank *Staff Memo* 7/2008 and 3/2009

Chart 1.15 Interval for the key policy rate at the end of each strategy period, actual developments and projected key policy rate in the baseline scenario. Per cent. January 2008 – December 2014

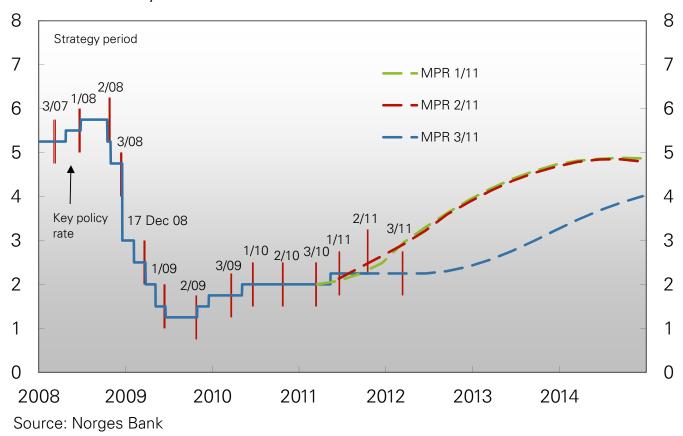
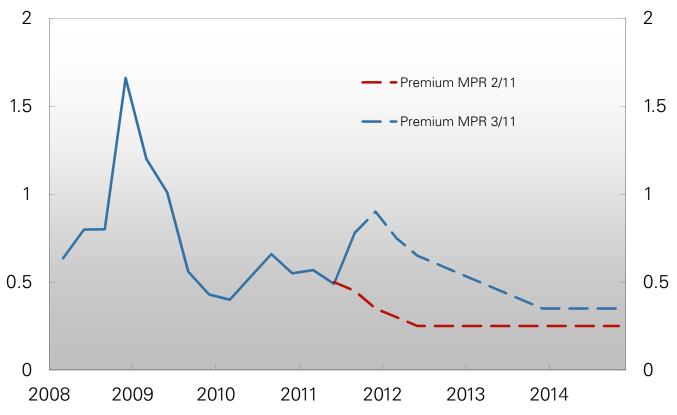
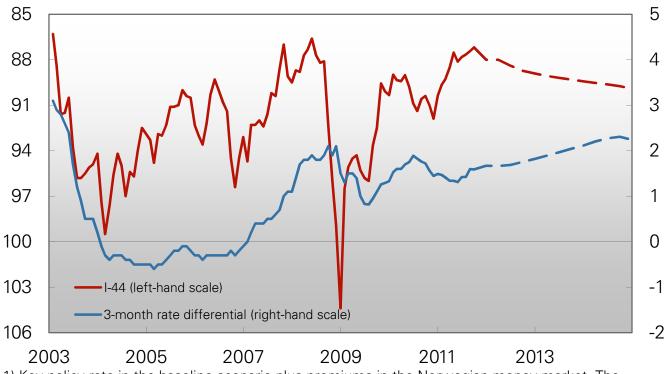


Chart 1.16 Difference between 3-month money market rate and expected key rates.<sup>1)</sup> Percentage points. 2008 Q1 – 2014 Q4



1) Norges Bank's projections from 2011 Q4 Source: Norges Bank

Chart 1.17 Three-month money market rate differential between Norway<sup>1)</sup> and trading partners and the import-weighted exchange rate index (I-44)<sup>2)</sup>. January 2003 – December 2014<sup>3)</sup>

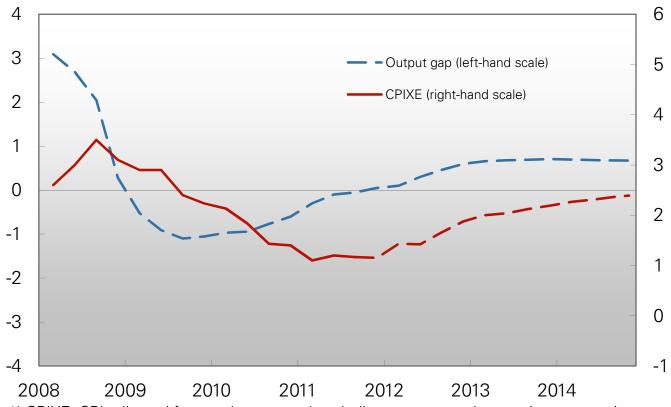


<sup>1)</sup> Key policy rate in the baseline scenario plus premiums in the Norwegian money market. The calculations are based on the assumption that announced interest rate changes are priced into the money market

<sup>2)</sup> A positive slope denotes a stronger krone exchange rate

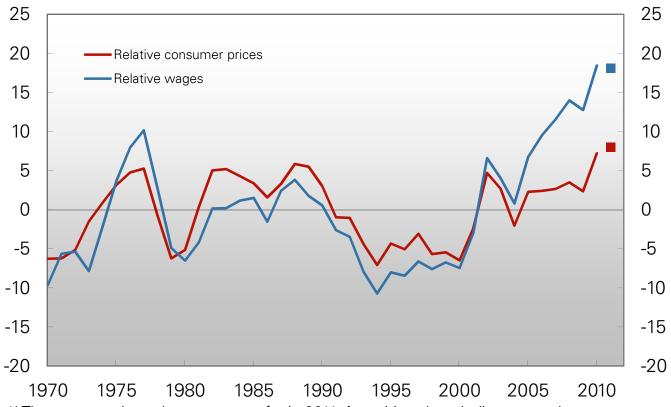
<sup>3)</sup> Monthly figures from January 2003 and Norges Bank projections from 2011 Q4 Sources: Thomson Reuters and Norges Bank

Chart 1.18 Projected inflation<sup>1)</sup> and output gap in the baseline scenario. Per cent.  $2008 \ \Omega1 - 2014 \ \Omega4$ 



1) CPIXE: CPI adjusted for tax changes and excluding temporary changes in energy prices. As from August 2008, the CPIXE is a real time series. See Norges Bank *Staff Memo* 7/2008 and 3/2009

Chart 1.19 Real exchange rate. Deviation from mean over the period 1970 – 2010. Per cent. 1970 – 2011<sup>1)</sup>



1) The squares show the average so far in 2011. A positive slope indicates weaker competitiveness

Sources: Statistics Norway, Norwegian Technical Calculation Committee for Wage Settlements, Ministry of Finance and Norges Bank

Chart 1.20a Key policy rate. Per cent. 2008 Q1 – 2014 Q4

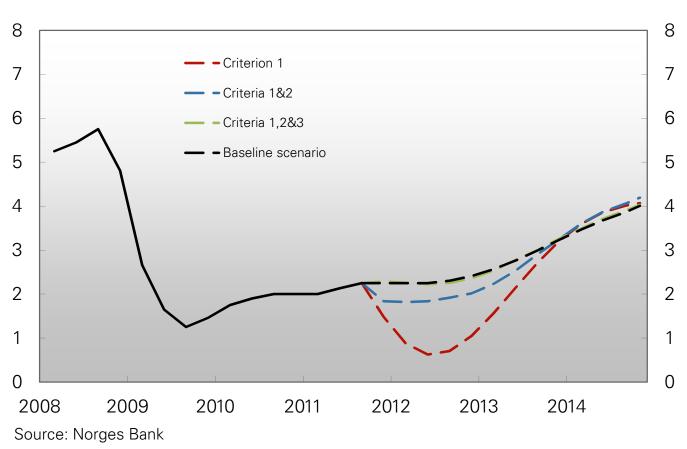


Chart 1.20b Output gap. Per cent. 2008 Q1 – 2014 Q4

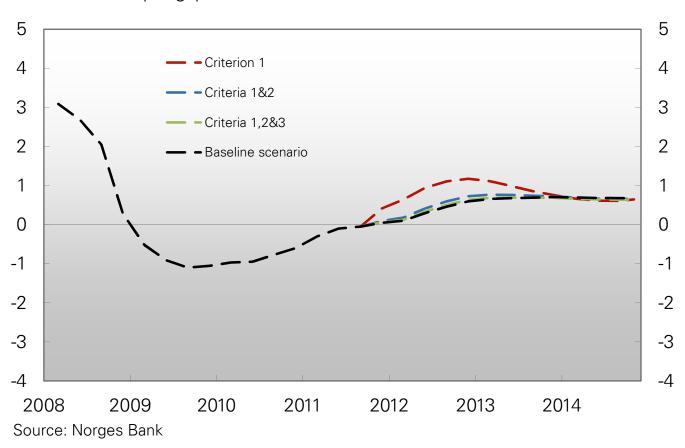
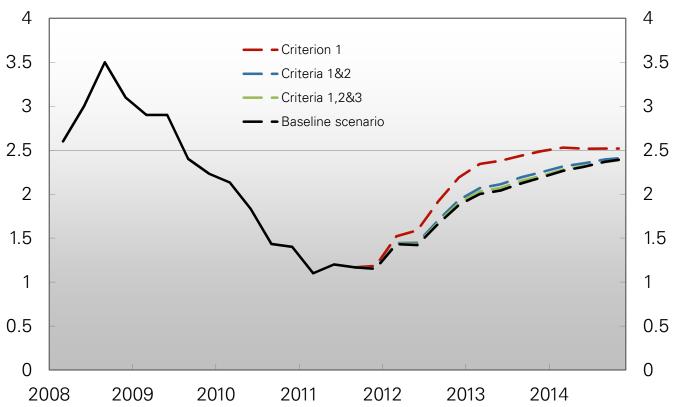
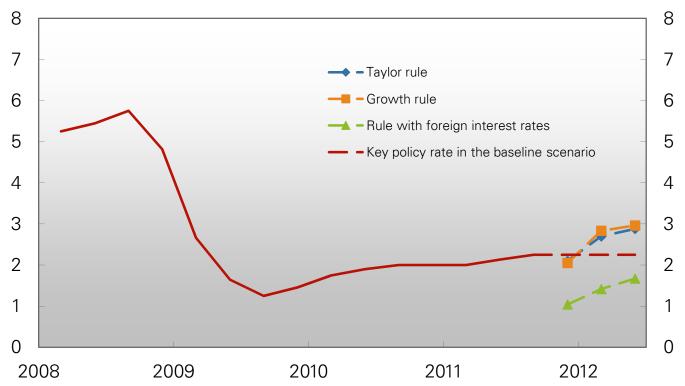


Chart 1.20c CPIXE<sup>1)</sup>. Four-quarter change. Per cent. 2008 Q1 – 2014 Q4



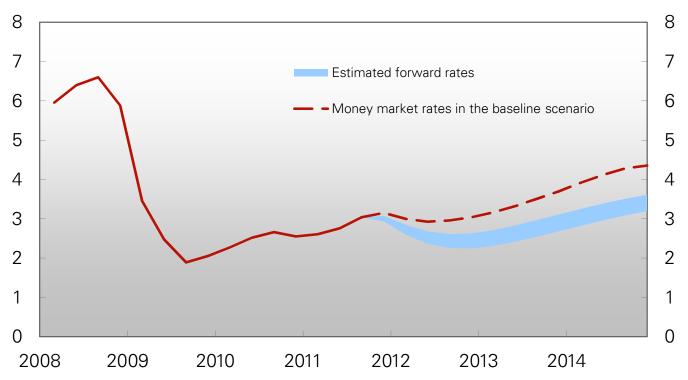
1) CPI adjusted for tax changes and excluding temporary changes in energy prices. As from August 2008, the CPIXE is a real time series. See Norges Bank *Staff Memo* 7/2008 and 3/2009

Chart 1.21 Key policy rate and calculations based on simple monetary policy rules.<sup>1)</sup> Per cent. 2008 Q1 – 2012 Q1



1) The calculations are based on Norges Bank's projections for the output gap, growth gap, consumer prices and 3-month money market rates among trading partners. To ensure comparability with the key policy rate, the simple rules are adjusted for risk premiums in 3-month money market rates

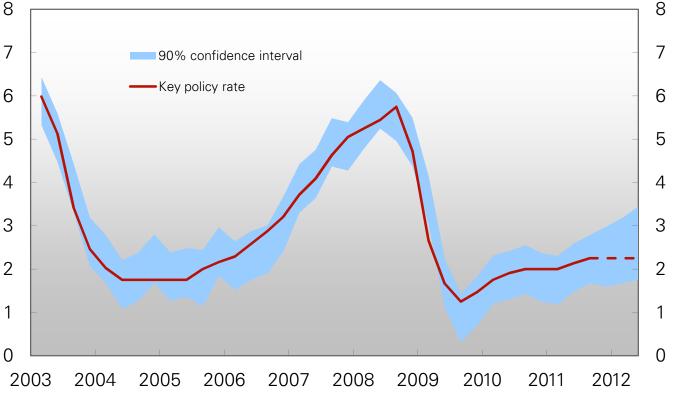
Chart 1.22 Three-month money market rates in the baseline scenario<sup>1)</sup> and estimated forward rates<sup>2)</sup>. Per cent. 2008  $\Omega$ 1 – 2014  $\Omega$ 4



<sup>1)</sup> Key policy rate in the baseline scenario plus premiums in the Norwegian money market. The calculations are based on the assumption that announced interest rate changes are priced into the money market.

<sup>2)</sup> Forward rates are based on money market rates and interest rate swaps. The blue band shows the highest and lowest forward rates in the period 30 September – 13 October 2011 Sources: Thomson Reuters and Norges Bank

Chart 1.23 Key policy rate and interest rate developments that follow from Norges Bank's average pattern of interest rate setting.  $^{1)}$  Per cent. 2003 Q1 – 2012 Q2



1) Interest rate movements are explained by developments in inflation, mainland GDP growth, wage growth and 3-month money market rates among trading partners. The equation is estimated over the period 1999 Q1 – 2011 Q2. See *Staff Memo* 3/2008 for further discussion Source: Norges Bank

Chart 1.24a Key policy rate in the baseline scenario and in the alternative scenarios. Per cent. 2008  $\Omega$ 1 – 2014  $\Omega$ 4

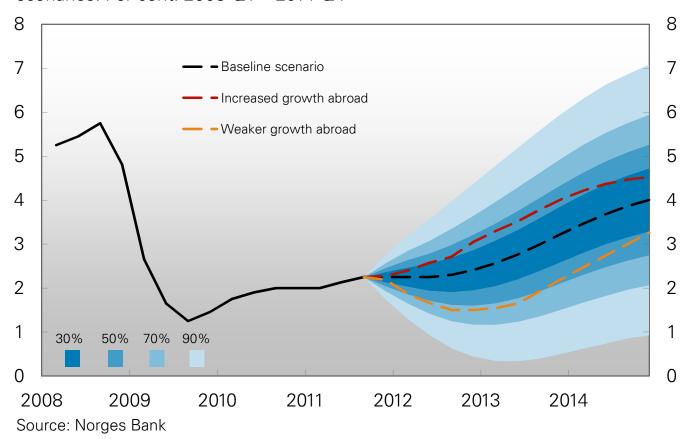


Chart 1.24b Output gap in the baseline scenario and in the alternative scenarios. Per cent.  $2008 \ \Omega1 - 2014 \ \Omega4$ 

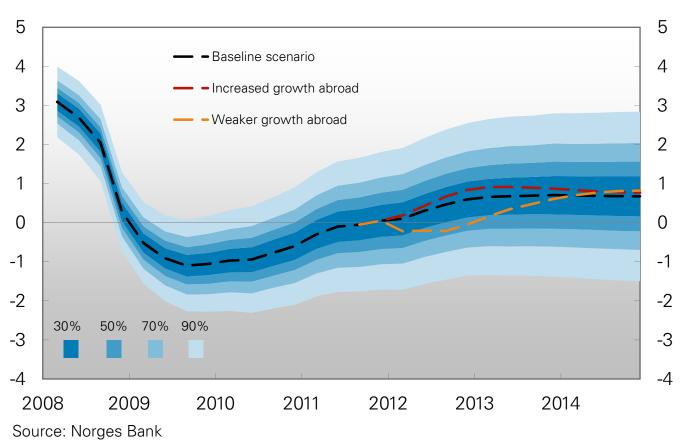
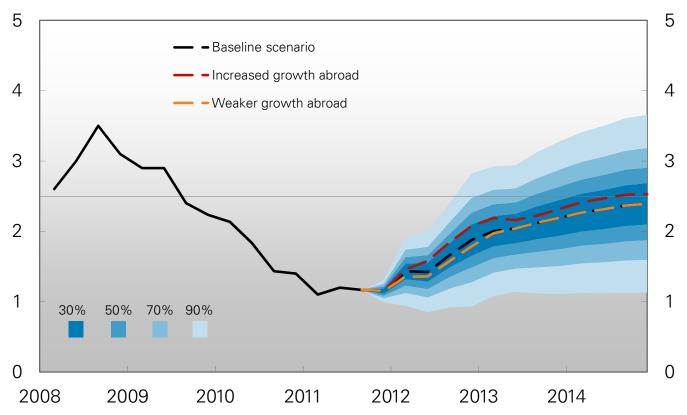


Chart 1.24c CPIXE $^{1)}$  in the baseline scenario and in the alternative scenarios. Four-quarter change. Per cent. 2008 Q1 – 2014 Q4



1) CPI adjusted for tax changes and excluding temporary changes in energy prices. As from August 2008, CPIXE is a real time series. See Norges Bank *Staff Memo* 7/2008 and 3/2009 Source: Norges Bank

Chart 1 Key policy rate in the baseline scenario in MPR 2/11 with fan chart and key policy rate in the baseline scenario in MPR 3/11 (red line). Per cent.  $2008 \ \Omega1 - 2014 \ \Omega4$ 

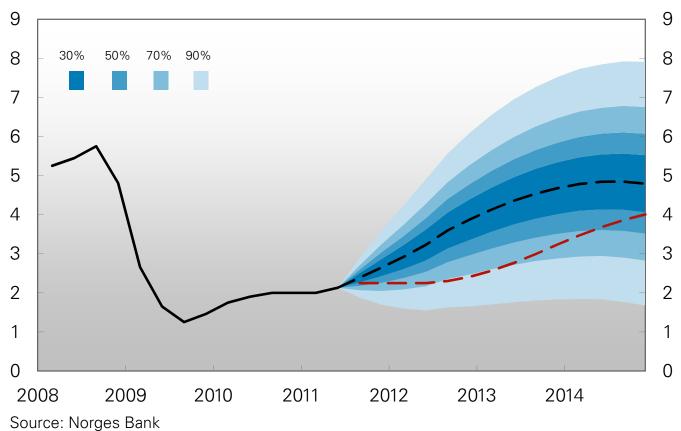


Chart 2 Factors behind changes in the interest rate forecast since MPR 2/11. Accumulated contribution. Percentage points. 2011 Q4 – 2014 Q4

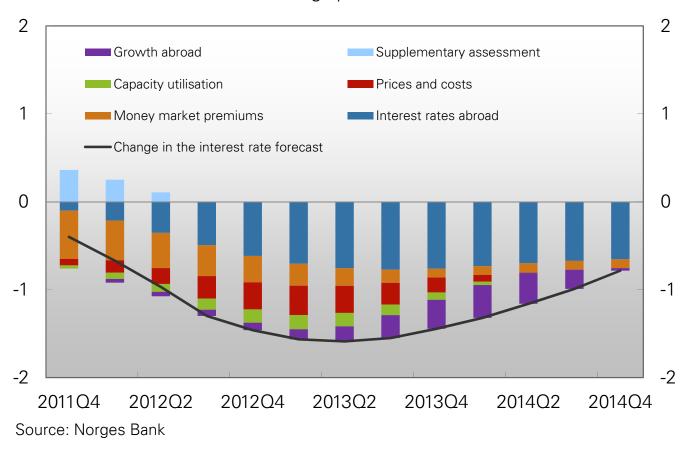
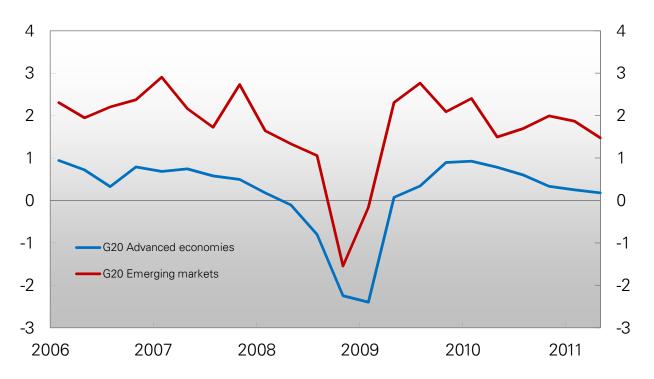


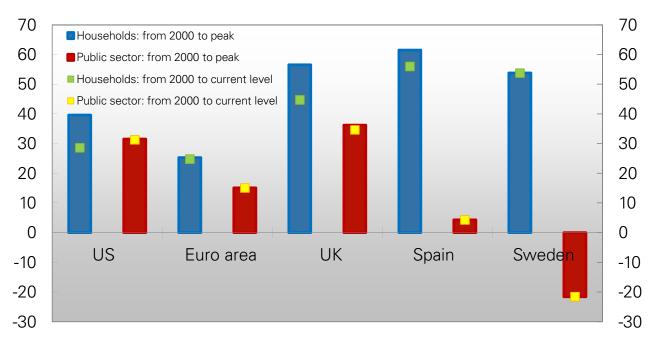
Chart 2.1 GDP growth in G20 advanced economies and G20 emerging markets.  $^{1)}$  Quarterly growth. Per cent. 2006 Q1 - 2011 Q2



1) GDP-weighted (PPP)

Sources: IMF, Thomson Reuters and Norges Bank

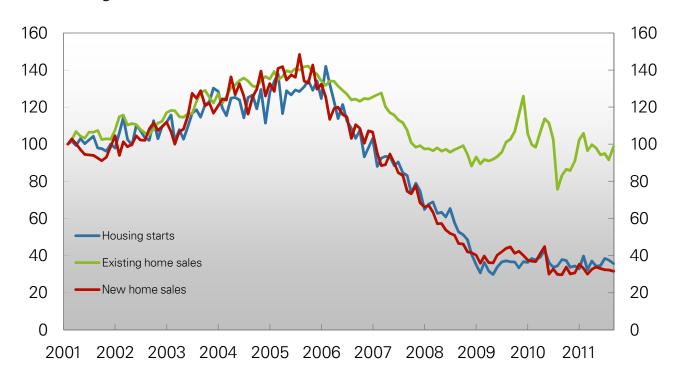
Chart 2.2 Change in debt for households<sup>1)</sup> and public sector<sup>2)</sup>. Percentage points. Change from 2000 Q1 to peak and from 2000 Q1 to current level



- 1) Gross debt as a percentage of disposable income
- 2) Gross debt as a percentage of GDP

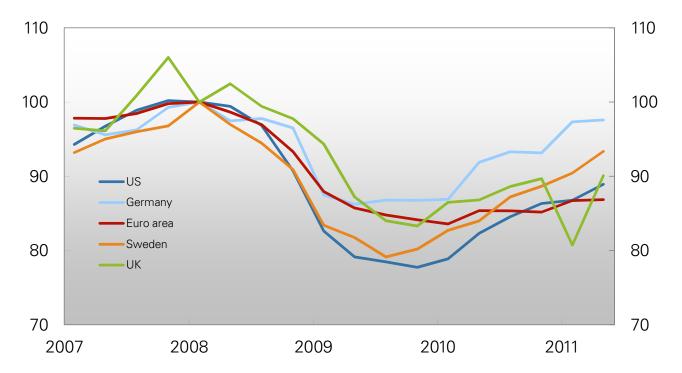
Sources: Thomson Reuters, ECB and Norges Bank

Chart 2.3 Housing indicators for the US. Index, January 2001 = 100. January 2001 – August 2011



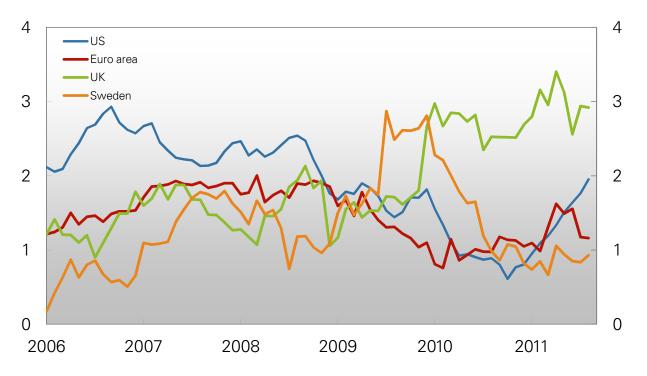
Source: Thomson Reuters

Chart 2.4 Private investment.<sup>1)</sup> Index, Q1 2008 = 100. 2007 Q1 - 2011 Q2



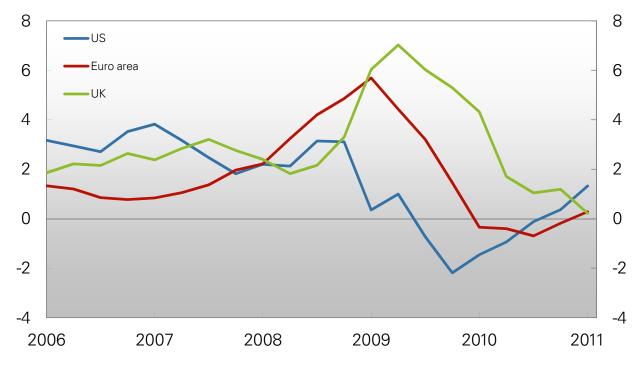
1) Gross fixed capital investment for the euro area, Germany and Sweden. Private non-residential investment for the US. Business investment for the UK Source: Thomson Reuters

Chart 2.5 Consumer prices excluding food and energy.<sup>1)</sup> 12-month change. Per cent. January 2006 – August 2011



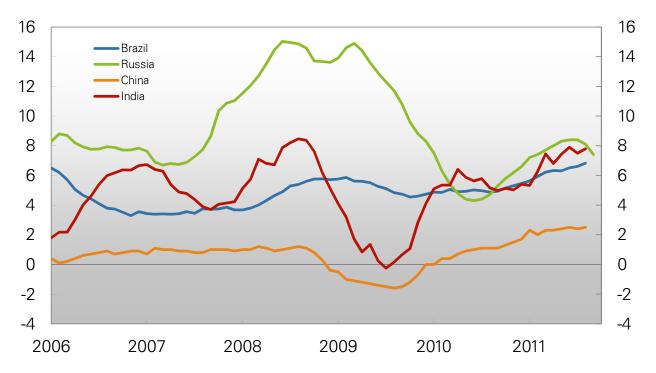
1) HICP excluding energy, food, alcohol and tobacco for the euro area, UK and Sweden Source: Thomson Reuters

Chart 2.6 Unit labour costs. Total economy. Four-quarter change. Per cent.  $2006 \ \Omega1 - 2011 \ \Omega1$ 



Source: OECD

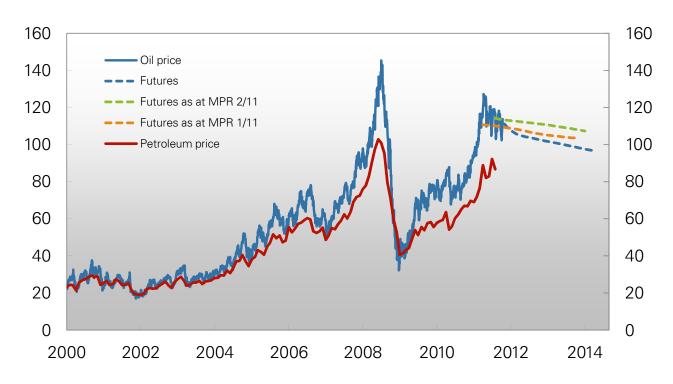
Chart 2.7 Core inflation in emerging markets<sup>1)</sup>. 12-month change. Per cent. January 2006 – August 2011



1) India: wholesale prices for manufactured goods

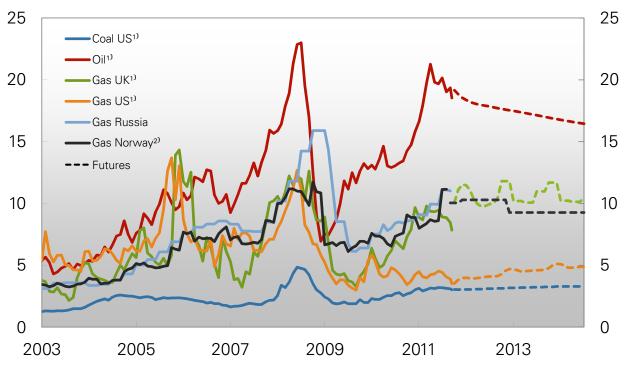
Source: Thomson Reuters

Chart 2.8 Oil price (Brent Blend) and prices for Norwegian petroleum exports<sup>1)</sup>. USD/barrel. January 2003 – April 2014



1) Weighted average of Norwegian crude oil and gas exports Sources: Statistics Norway, Thomson Reuters and Norges Bank

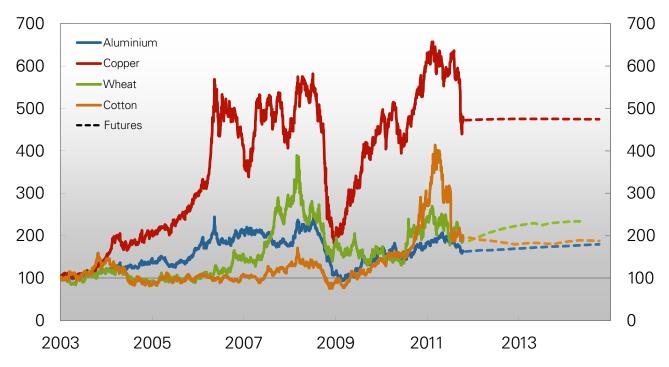
Chart 2.9 Prices for coal, crude oil and natural gas. USD per MMBTU. January 2003 – August 2014



1) For October 2011 calculated as daily average

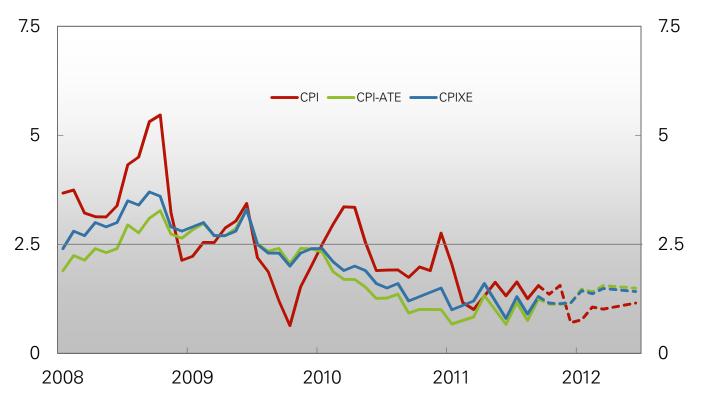
2) Calculation of future gas prices for Norway based on assumptions in 2012 National Budget Sources: IMF, Thomson Reuters, Statistics Norway, Ministry of Finance and Norges Bank

Chart 2.10 Commodity prices. USD. Spot and futures prices. Index, January 2003 = 100. January 2003 – October 2014



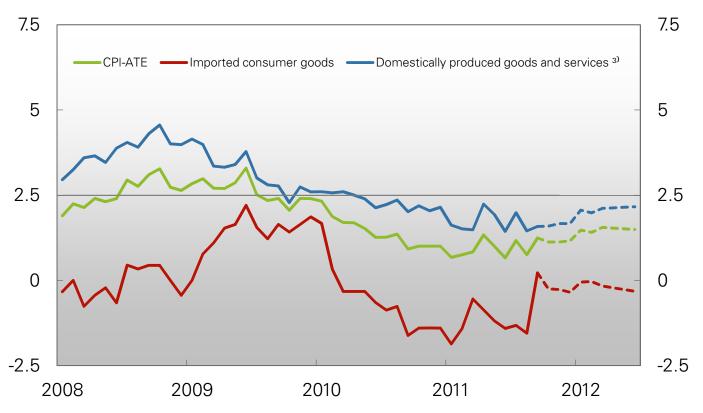
Sources: CME Group and Thomson Reuters

Chart 2.11 CPI, CPI-ATE<sup>1)</sup> and CPIXE<sup>2)</sup>. 12-month change. Per cent. January 2008 – June 2012<sup>3)</sup>



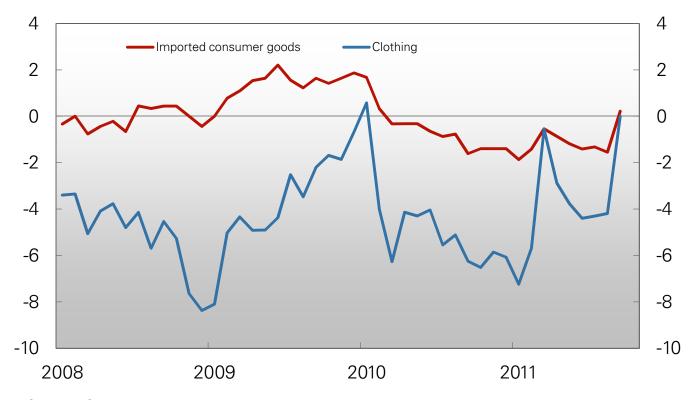
- 1) CPI adjusted for tax changes and excluding energy products
- 2) CPI adjusted for tax changes and excluding temporary changes in energy prices. Real-time figures. See Norges Bank *Staff Memo* 7/2008 and 3/2009
- 3) Projections for October 2011 June 2012 (broken lines). Monthly figures to March 2012, then quarterly figures

Chart 2.12 CPI-ATE<sup>1)</sup>. Total and by supplier sector. 12-month change. Per cent. January 2008 – June 2012<sup>2)</sup>



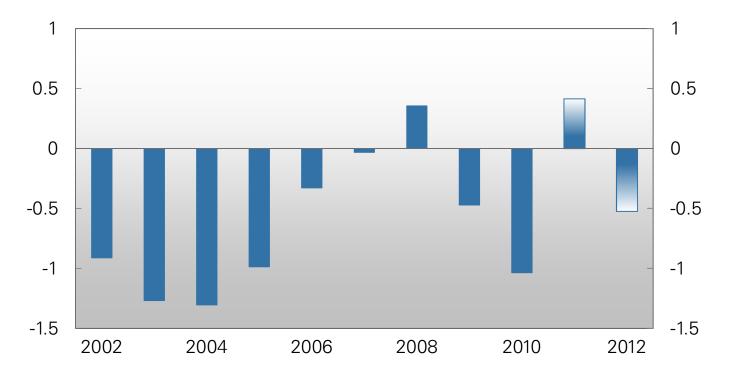
- 1) CPI adjusted for tax changes and excluding energy products
- 2) Projections for October 2011 June 2012 (broken lines). Monthly figures to March 2012, then quarterly figures
- 3) Norges Bank's estimates

Chart 2.13 Prices for imported consumer goods in the CPI-ATE and prices for clothing in the CPI. 12-month change. Per cent. January 2008 – September 2011



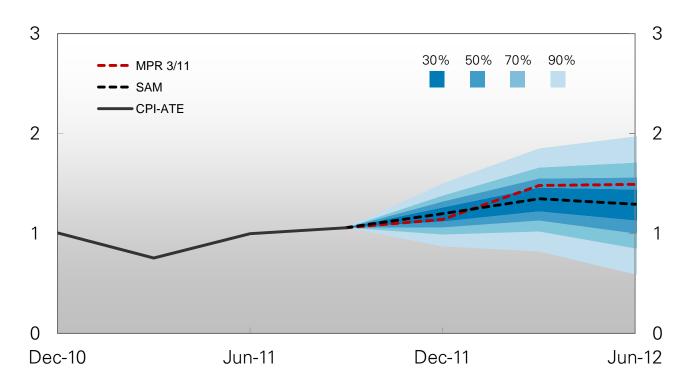
Source: Statistics Norway

Chart 2.14 Indicator of external price impulses to imported consumer goods measured in foreign currency. Annual change. Per cent. 2002 – 2012<sup>1)</sup>



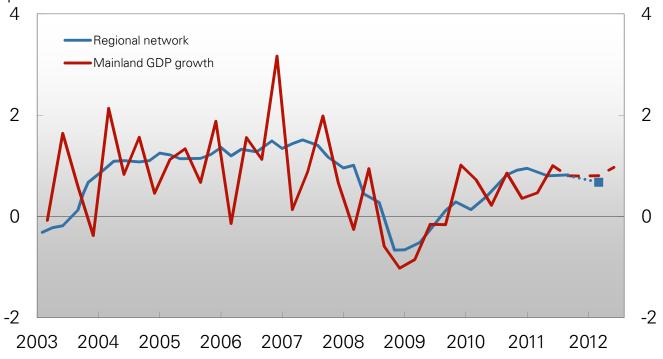
1) Projections for 2011 and 2012 Source: Norges Bank

Chart 2.15 CPI-ATE<sup>1)</sup>. Actual figures, baseline scenario and projections from SAM<sup>2)</sup> with fan chart. Four-quarter change. Per cent. 2010 Q4 – 2012 Q2<sup>3)</sup>



- 1) CPI adjusted for tax changes and excluding energy products
- 2) System for averaging models
- 3) Projections for 2011 Q4 2012 Q2 (broken lines)

Chart 2.16 GDP mainland Norway<sup>1,2)</sup> and Norges Bank's regional network's indicator of change in production past three months and expected change in production next six months. Per cent. 2003 Q1 – 2012 Q2<sup>3)</sup>



- 1) Seasonally adjusted quarterly change. Volume
- 2) High electricity production may contribute by about ¼ percentage point higher quarterly growth in GDP mainland Norway in 2011 Q3 than shown in the chart
- 3) Latest observation in the Regional network is September 2011. Latest GDP observation is 2011 Q2, projections for 2011 Q3 2012 Q2 (broken line)

Chart 2.17 Terms of trade. Index. 2003 Q1 = 100. 2003 Q1 - 2011 Q2

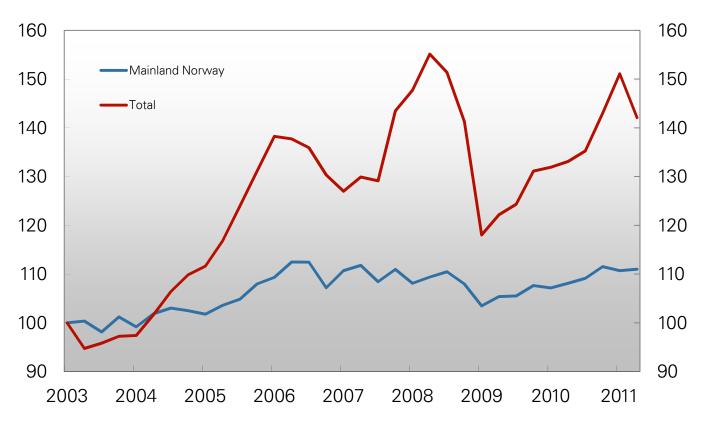
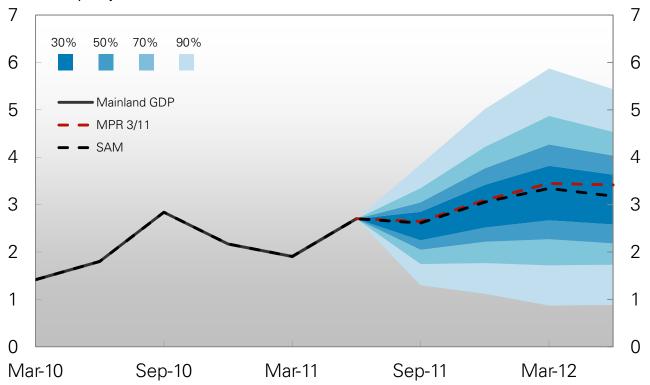
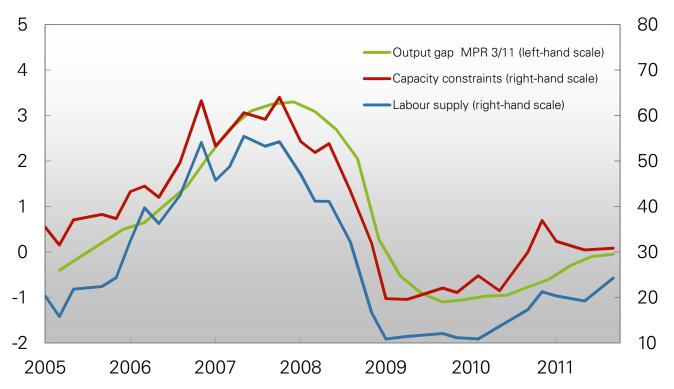


Chart 2.18 GDP mainland Norway. Actual figures, baseline scenario<sup>1)</sup> and projections from SAM<sup>2)</sup> with fan chart. Four-quarter change. Volume. Seasonally adjusted. Per cent. 2010 Q1 – 2012 Q2<sup>3)</sup>



- 1) High electricity production may contribute by about ¼ percentage point higher quarterly growth in GDP mainland Norway in 2011 Q3 than shown in the chart
- 2) System for averaging models
- 3) Projections for 2011 Q3 2012 Q2 (broken lines)

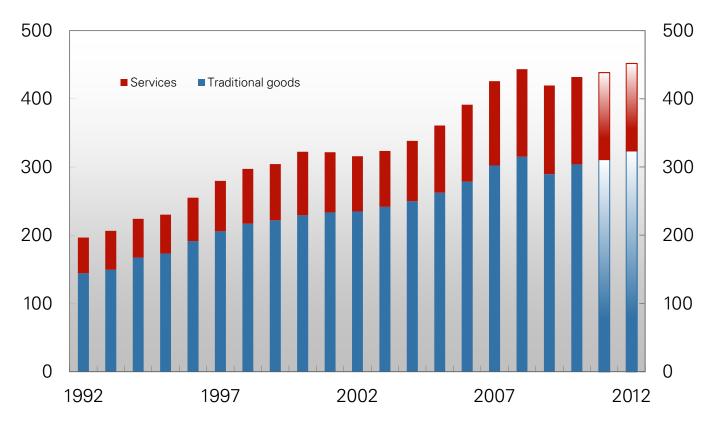
Chart 2.19 Capacity constraints and labour supply<sup>1)</sup> in Regional network and estimated output gap. Per cent. January 2005 – September 2011



1) Share of contacts that will have some or considerable problems accommodating an increase in demand and the share of contacts where production is constrained by labour supply

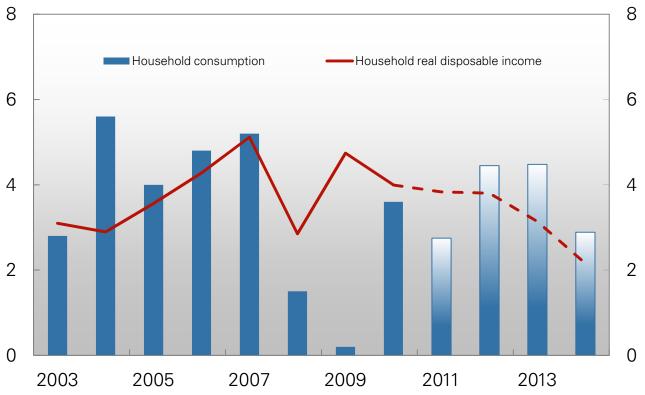
Source: Norges Bank

Chart 2.20 Exports from mainland Norway. Constant 2007 prices. In billions of NOK. 1992 – 2012<sup>1)</sup>



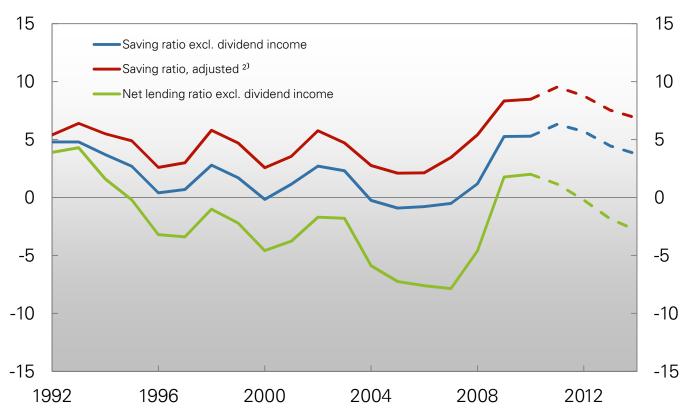
1) Projections for 2011 and 2012 Sources: Statistics Norway and Norges Bank

Chart 2.21 Household consumption<sup>1)</sup> and real disposable income<sup>2)</sup>. Annual change. Per cent. 2003 – 2014<sup>3)</sup>



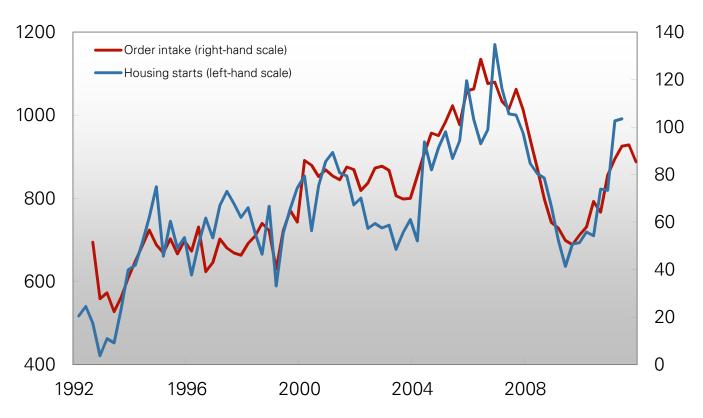
- 1) Includes consumption among non-profit organisations. Volume
- 2) Excluding dividend income. Including income in non-profit organisations
- 3) Projections for 2011 2014 (broken line)

Chart 2.22 Household saving and net lending as a share of disposable income. Per cent.  $1992 - 2014^{1}$ 



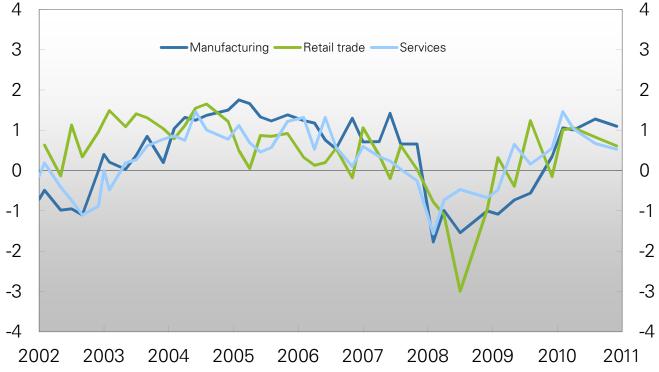
- 1) Projections for 2011 2014 (broken lines)
- 2) Adjusted for estimated reinvested dividends for 2000 2005 and redemption/reduction of equity capital for 2006 2014 Sources: Statistics Norway and Norges Bank

Chart 2.23 Housing starts<sup>1)</sup> and order intake for residential construction<sup>2)</sup>.  $1992 \text{ } \Omega1-2011 \text{ } \Omega2$ 



- 1) In 1000s of square meters. Seasonally adjusted
- 2) Seasonally adjusted value index deflated by the price index for housing investment in the national accounts. Deferred two quarters forward. 2007 = 100 Sources: Statistics Norway and Norges Bank

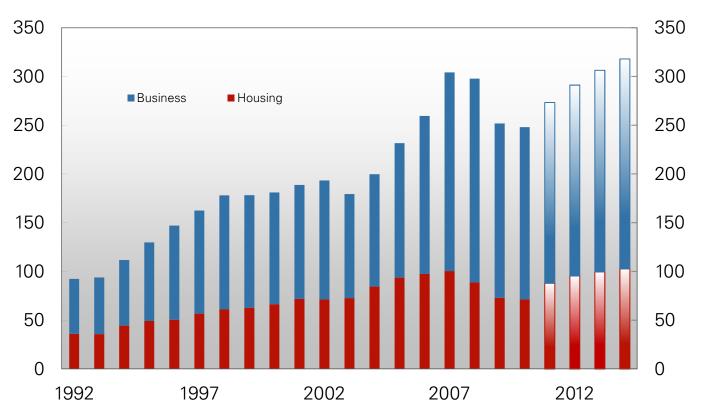
Chart 2.24 Planned growth in investment for next 12 months compared with past 12 months. Index.<sup>1)</sup> October 2002 – September 2011



1) The scale runs from -5 to +5, where -5 denotes a sharp fall and +5 denotes strong growth. See article "Norges Bank's regional network: fresh and useful information" in *Economic Bulletin* 2/2009 for further information

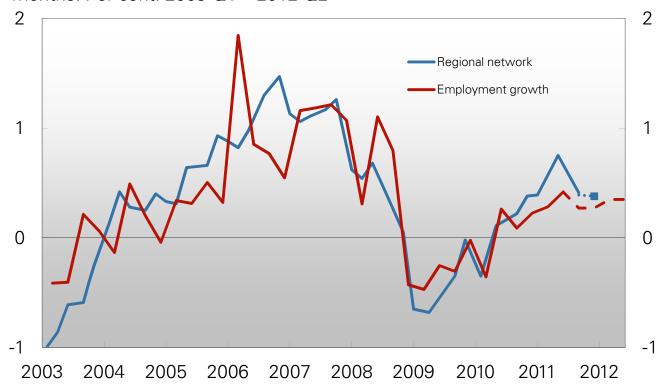
Source: Norges Bank

Chart 2.25 Investment in mainland Norway excluding public sector. Constant 2007 prices. In billions of NOK. 1992 – 2014<sup>1)</sup>



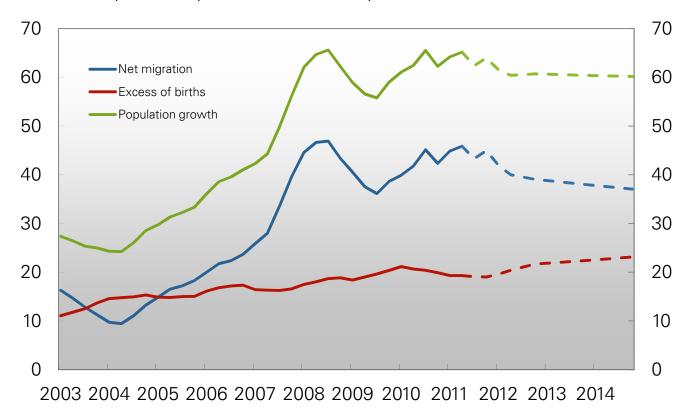
1) Projections for 2011 – 2014 Sources: Statistics Norway and Norges Bank

Chart 2.26 Employment<sup>1)</sup> and Norges Bank's regional network's indicator of change in employment and expected change in employment next three months. Per cent. 2003  $\Omega$ 1 – 2012  $\Omega$ 2<sup>2)</sup>



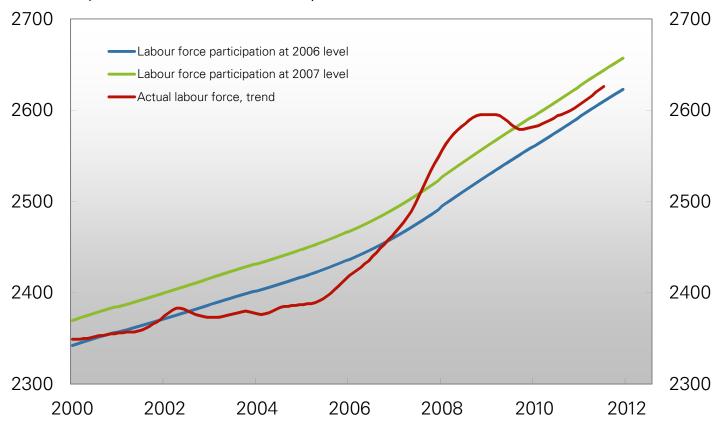
- 1) Seasonally adjusted quarterly change in Quarterly National Accounts
- 2) Latest observation in the Regional network is September 2011. Latest observation in the Quarterly National Accounts is 2011 Q2, projections for 2011 Q3 – 2012 Q2 (broken line) Sources: Statistics Norway and Norges Bank

Chart 2.27 Population growth, net migration and excess of births. Sum of four previous quarters. In 1000s of persons. 2003 Q1 – 2014 Q4 $^{1)}$ 



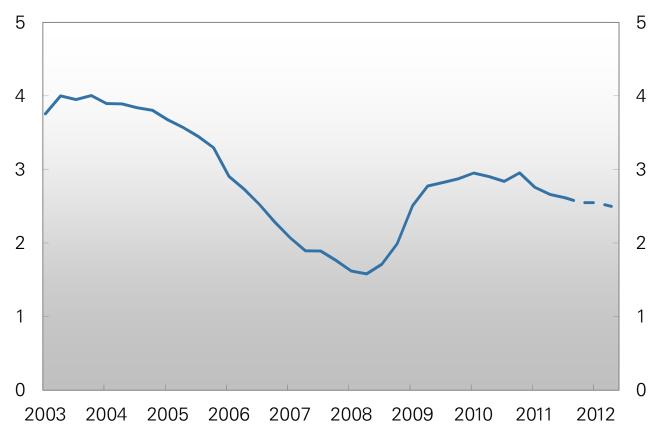
1) Projections for 2011 Q3 - 2014 Q4 Sources: Statistics Norway and Norges Bank

Chart 2.28 Actual trend in labour force and labour force given demografic developments<sup>1)</sup>. In 1000s. January 2000 – December 2011



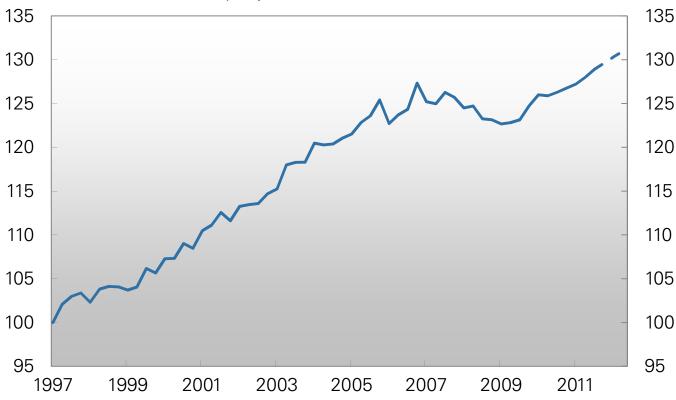
1) Total labour force given unchanged labour force participation in every age group from the 2006/2007 level Sources: Statistics Norway and Norges Bank

Chart 2.29 Registered unemployment. Percentage of labour force. Seasonally adjusted.  $2003 \ \Omega1 - 2012 \ \Omega2^{1)}$ 



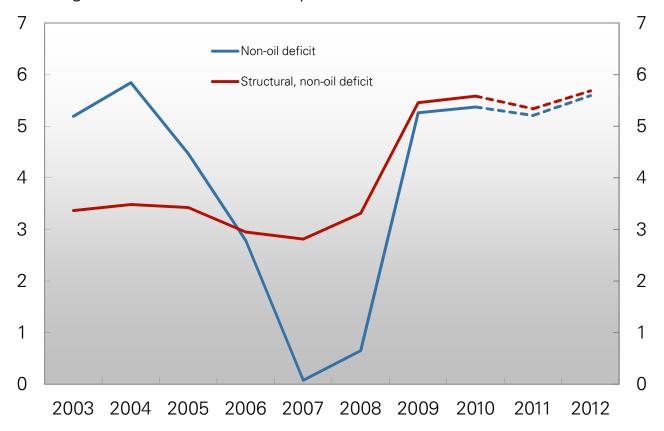
1) Projections for 2011 Q4 – 2012 Q2 (broken line) Sources: Norwegian Labour and Welfare Administration, Statistics Norway and Norges Bank

Chart 2.30 GDP per hour worked for mainland Norway. Index,  $1997 \ \Omega1 = 100$ . Seasonally adjusted. Market value.  $1997 \ \Omega1 - 2012 \ \Omega2^{1)}$ 



1) Projections for 2011 Q3 – 2012 Q2 (broken line) Sources: Statistics Norway and Norges Bank

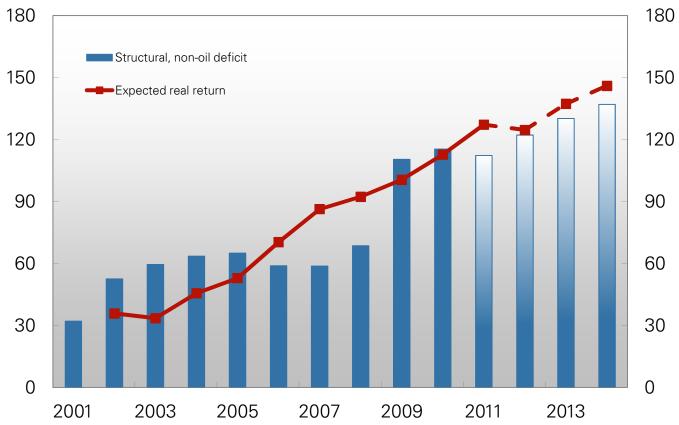
Chart 2.31 Non-oil budget deficit and structural non-oil budget deficit. Percentage of GDP mainland Norway. 2003 – 2012<sup>1)</sup>



1) Projections for 2011 and 2012

Sources: Ministry of Finance and Statistics Norway

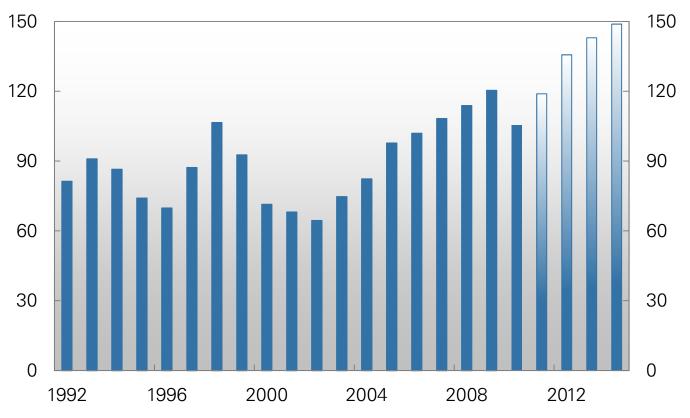
Chart 2.32 Structural, non-oil deficit and expected real return on the Government Pension Fund Global. Constant 2012 prices. In billions of NOK.  $2001 - 2014^{1)}$ 



1) Projections for 2011 – 2014

Sources: Ministry of Finance and Norges Bank

Chart 2.33 Petroleum investment. Constant 2007 prices. In billions of NOK. 1992 – 2014<sup>1)</sup>



1) Projections for 2011 – 2014