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for 2014 and 2015

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EVALUATION OF NORGES
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Evaluation of Norges Bank's projections for 2014 and 2015

Norges Bank's projections for inflation and economic developments are an important basis for the formulation of monetary policy. Analyses of forecast errors can help Norges Bank to make better projections and improve its understanding of the disturbances to which the economy is exposed. This Paper provides an evaluation of Norges Bank's projections for 2014 and 2015. Overall, the projections performed fairly well.

This article starts with a brief overview of economic developments through 2014 and 2015 and is followed by a comparison with Norges Bank's projections for the same period. Finally, the most important forecast errors are briefly discussed and the Bank's projections are compared with the projections of other forecasters.

1. Economic developments in 2014 and 2015

Growth in the global economy remained moderate in 2014 and 2015, but varied widely across countries. Advanced economies showed a gradual improvement, while growth slowed in emerging economies. Overall, growth in the global economy declined somewhat between 2014 and 2015.

Inflation also fell among Norway's main trading partners through the period, and consumer price inflation (CPI) was close to zero in 2015. Low inflation was partly attributable to falling energy prices towards the end of 2014 and through 2015. In addition, cost pressures were weak following several years of low wage growth.

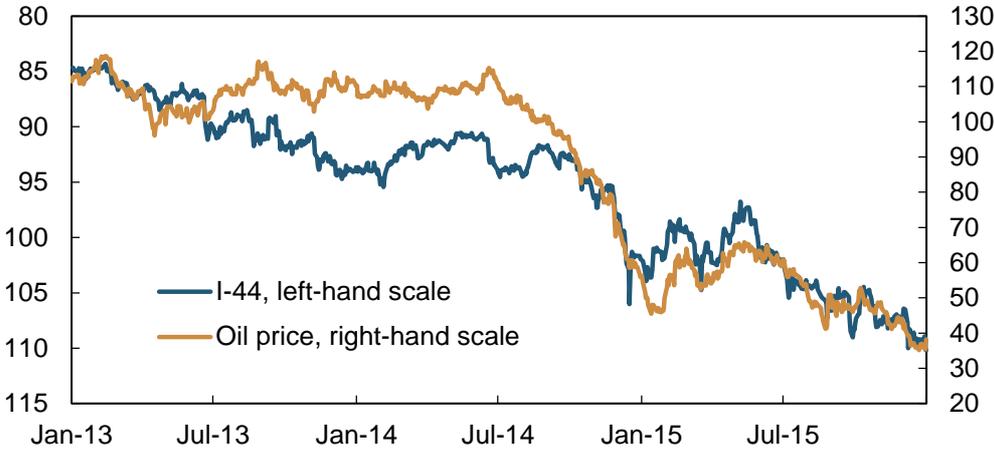
Low inflation, low capacity utilisation and moderate growth in activity led many central banks to increase monetary policy accommodation through 2014 and 2015. Policy rates fell among trading partners as a whole, and several central banks reduced their policy rates to below zero. In addition, a number of central banks used additional instruments to mitigate the risk of deflation and stimulate activity.

Global long-term interest rates fell to a historically low level through 2014. The fall continued in the first half of 2015, but by year-end long-term interest rates had moved up back to approximately the same level as at the beginning of the year.

Oil prices fell considerably in the final months of 2014 to below USD 60 per barrel by the end of December (Chart 1) and continued to fall through 2015. Towards the end of 2015, prices dropped to below USD 40 per barrel, around a third of the summer 2014 level. Futures prices also decreased through 2014 and 2015. The decline in oil prices reflected large oil supply surpluses.

The fall in oil prices contributed to a sharp depreciation of the krone. As measured by the import-weighted krone exchange rate (I-44), the krone was 30 percent weaker at the end of 2015 than at the same time two years earlier.

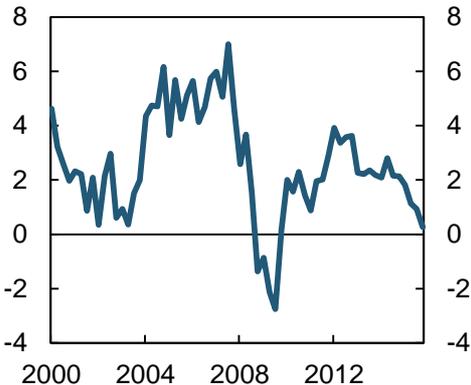
Chart 1 Oil price¹⁾ and import-weighted krone exchange rate index (I-44)²⁾. 1 January 2013 – 31 December 2015



1) USD per barrel
2) A positive slope denotes a stronger krone exchange rate
Sources: Thomson Reuters and Norges Bank

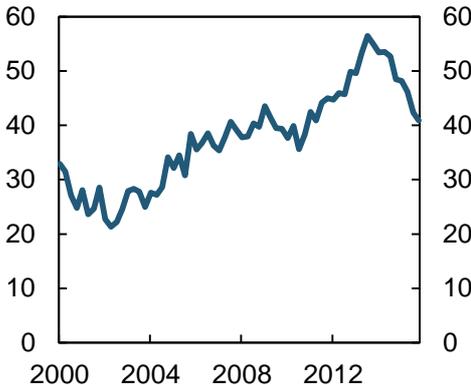
Despite the fall in oil prices, growth in Norway’s mainland economy in 2014 remained at the same moderate level as in 2013 (Chart 2). Activity rose in most industries but declined in the oil service industry. Petroleum investment fell in 2014, following several years of strong growth (Chart 3).

Chart 2 Mainland GDP. Constant prices. Four-quarter change. Percent. 2000 Q1 – 2015 Q4



Source: Statistics Norway

Chart 3 Petroleum investment. In millions of 2013 NOK. 2000 Q1 – 2015 Q4



Source: Statistics Norway

Growth in exports of traditional goods and services picked up through the year, partly reflecting improved competitiveness owing to a weaker krone. In the construction industry, growth picked up from low levels in 2013. Public sector

investment rose markedly from 2013 to 2014, while mainland business investment remained approximately unchanged and housing investment declined. Household consumption growth was moderate and saving rose further from already high levels,

The effects of the fall in oil prices on the Norwegian economy gradually became evident through 2015. Mainland GDP growth declined markedly from the previous year. The effects were particularly pronounced in oil regions and oil-related industries. Confidence indicators suggested that Norwegian households had become more concerned about developments in the Norwegian economy. Growth in household consumption nonetheless remained fairly buoyant.

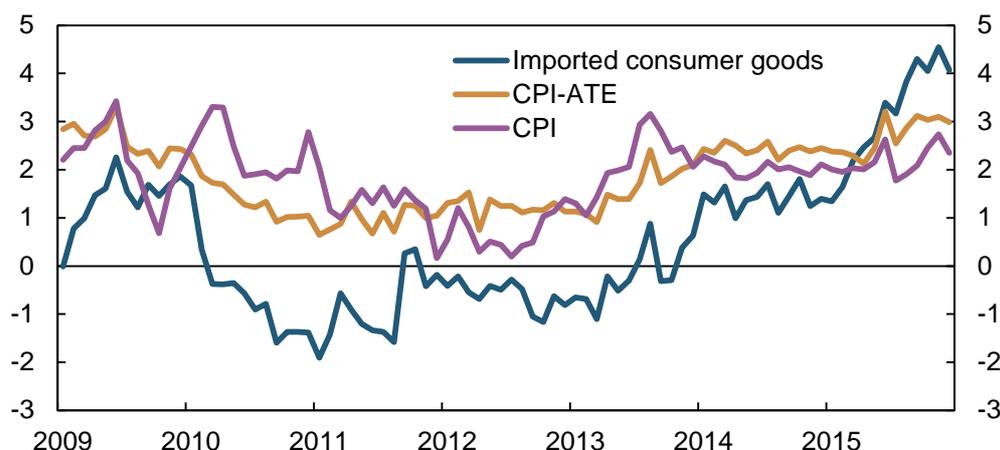
Business investment fell between 2014 and 2015, driven by weak growth prospects and uncertainty regarding economic developments. Housing investment rose again following the decline the previous year, even though the fall in oil prices curbed demand for new housing in some parts of the country. The fall in oil investment accelerated, and Norwegian oil service exports were also dampened by the decline in the global petroleum industry. At the same time, business competitiveness continued to improve, lifting total growth in exports of traditional goods and services. Economic growth was also underpinned by growth in public sector consumption and investment.

Following weak developments in the housing market in autumn 2013, house prices and housing market turnover picked up again through 2014. House prices continued to rise in 2015, but at a weakening pace through autumn. There were wide regional differences. House price inflation was strongest in the Oslo area and lowest in western and southern Norway. Household debt continued to grow somewhat more rapidly than income in both 2014 and 2015.

Unemployment edged up from low levels through 2014 and 2015, primarily in western and southern Norway. At the beginning of 2014, capacity utilisation was estimated to be below a normal level and fell further through the period. Annual wage growth, which had been decreasing since 2011, also showed a further decrease.

In 2014, annual consumer price inflation (CPI) was 2.0 percent, while annual consumer price inflation adjusted for tax changes and excluding energy products (CPI-ATE) was 2.4 percent (Chart 4). The depreciation of the krone over a long period lifted inflation through 2015. At end-2015, the year-on-year rise in the CPI was 2.4 percent and 3.0 percent for the CPI-ATE.

Chart 4 Inflation. Twelve-month change in consumer price indices. Percent. January 2009 – December 2015



Source: Statistics Norway

2. Projections for 2014

The annual projections for mainland GDP, employment, labour force, unemployment, wage growth and inflation in 2014 in the last *Monetary Policy Report* of 2013 (*MPR 4/13*) proved to be accurate.

Table 1 Projections for key macroeconomic variables for 2014. Percentage change from 2013, unless otherwise indicated.

	MPR 4/13	MPR 1/14	MPR 2/14	MPR 3/14	MPR 4/14	Actual
Mainland GDP	2	1¾	2	2¼	2½	2.3
Employment	1	1	1	1	1¼	1.1
Labour force, LFS	1¼	1¼	1	1	1	1.1
Registered unemployment¹⁾	3	3	2¾	2¾	2¾	2.8
CPI-ATE	2	2¼	2¼	2¼	2½	2.4
Annual wage growth	3½	3½	3½	3½	3½	3.1

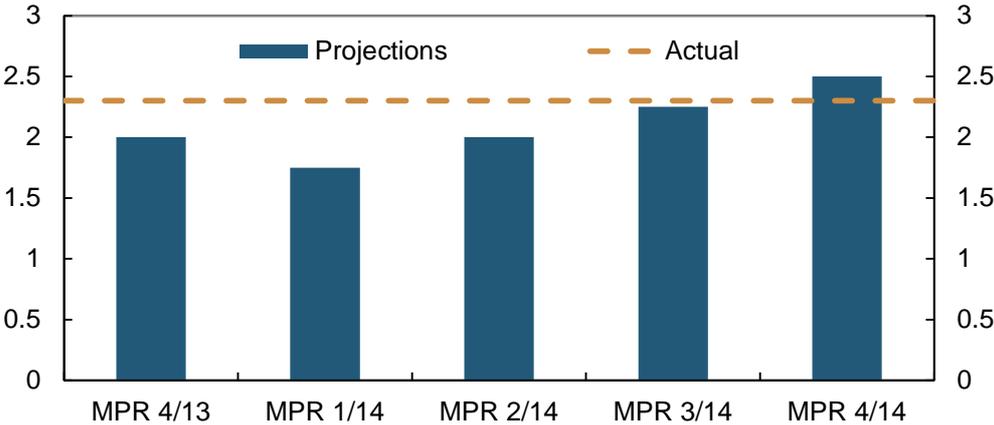
1) As a percentage of the labour force

Output and demand

In *MPR 4/13*, mainland GDP growth was assumed to rise from 1¾ percent in 2013 to 2 percent in 2014. Stronger growth abroad and a weaker krone were expected to make a positive contribution to economic growth by boosting export growth. On the other hand, plans for cost cutting in the petroleum industry, weaker developments in housing construction and prospects for lower growth in consumption weighed on the growth outlook. In the period to *MPR 1/14*, developments in the petroleum industry and housing construction seemed to have weakened further, and the GDP projection was revised down by ¼

percentage point. The projection was thereafter revised up in each of the three following *Monetary Policy Reports*, partly reflecting stronger-than-expected growth in private consumption and partly reflecting temporarily strong output growth in the power and fisheries industries. The latest national accounts figures show that mainland GDP rose by 2.3 percent in 2014 (Chart 5).

Chart 5 Mainland GDP. Constant prices. Percentage change between 2013 and 2014



Sources: Statistics Norway and Norges Bank

In *MPR 4/13*, growth in private consumption was assumed to decline from 2¼ percent in 2013 to 1¾ percent in 2014. Low consumer confidence and weak housing market developments suggested that household demand would remain moderate at the beginning of 2014. Growth in real disposable income was approximately as projected, and the consumption projection in *MPR 4/13* proved to be closely in line with final national accounts figures, which showed a growth rate of 1.7 percent in 2014. The growth profile for the year, however, deviated from projections. Consumption growth during the first six months was higher than expected, while growth in the latter half of the year contracted more than expected.

In *MPR 4/13*, private investment was expected to rise by ¾ percent in 2014, after growth of 3¼ percent in 2013. Growth in business investment was expected to pick up, although to a relatively low level as a result of moderate growth both at home and abroad and a high cost level in the business sector. Prospects for housing investment reflected lower household optimism, an already high investment level and a slower rise in prices for new dwellings, and housing investment was projected to fall somewhat between 2013 and 2014. Private investment proved to be weaker than expected and declined by ¾ percent between 2013 and 2014. Compared with the projections in *MPR 4/13*, business investment developments in particular were weaker than expected. Private investment fluctuates considerably from quarter to quarter, giving rise to variations in the projections. While projections for private investment were too high in *MPR 4/13* and *1/14*, they were too low in *MPR 2/14* and *MPR 3/14*.

In *MPR 4/13*, petroleum investment was expected to decrease markedly as a result of the high cost level on the Norwegian shelf and because investment had already reached a high level. Investment growth was expected to fall from 15 percent in 2013 to 4 percent in 2014. In early summer 2014, the investment intentions survey showed that oil companies' planned investments were lower than assumed in the *MPR 4/13* and *MPR 1/14* projections. The projection was revised down through the year, but was still slightly too high in *MPR 4/14*. According to the latest national accounts figures, petroleum investment declined by 2.9 percent in 2014. The abrupt fall in oil prices in the latter half of 2014 probably also contributed to weaker-than-expected developments.

In *MPR 4/13*, it was assumed that higher demand abroad and a weaker krone would result in an upswing in exports from mainland Norway. Mainland exports were expected to rise by 1¾ percent in 2014, following growth of 1 percent in 2013. Growth among Norway's trading partners was approximately in line with assumptions, while mainland exports grew slightly more than expected, by 2.1 percent. Export growth was stronger than expected through the year, primarily as a result of temporarily high power and fish exports. The export projection was therefore gradually revised up in the period to *MPR 4/14*. Export growth in the national accounts was later revised down again.

Of the demand components, the largest forecast error in 2014 was related to import growth. In *MPR 4/13*, imports were expected to rise by 3½ percent, in pace with growth in domestic demand. It became clear over the course of the year that import growth would be weaker than this. In both *MPR 3/14* and *MPR 4/14*, import growth was projected at 1¼ percent, very close to the actual growth rate of 1.5 percent.

The krone depreciation in 2014 was more pronounced than assumed at the beginning of the year, contributing to the stronger-than-expected upswing in mainland exports and weaker-than-expected import growth.

Labour market, productivity and capacity utilisation

In *MPR 4/13*, it was assumed that the labour force would grow by 1¼ percent in 2014, following growth of 1 percent in 2013. Employment growth was, on the other hand, expected to decline somewhat, from 1¼ percent in 2013 to 1 percent in 2014. The projections were in line with signals from Norges Bank's regional network, where respondents expected lower employment growth in the near term. Prospects for the labour force and employment implied a ¼ percentage point rise in the 2013 unemployment rate to 3¾ percent as measured by the Labour Force Survey (LFS) conducted by Statistics Norway, and to a registered unemployment rate of 3 percent. Final data show that both the labour force and employment increased by 1.1 percent in 2014. Because of the somewhat lower growth in the labour force combined with the somewhat

higher-than-expected growth in employment, the expected rise in the unemployment rate did not materialise.

It was assumed in *MPR 4/13* that labour force productivity would pick up somewhat in 2014 but remain at a historically low level. In 2013, labour hoarding despite declining output growth had acted as a drag on productivity growth. Employment growth in 2014 was therefore expected to slow despite higher output growth. Developments in productivity growth were approximately in line with assumptions in *MPR 4/13*.

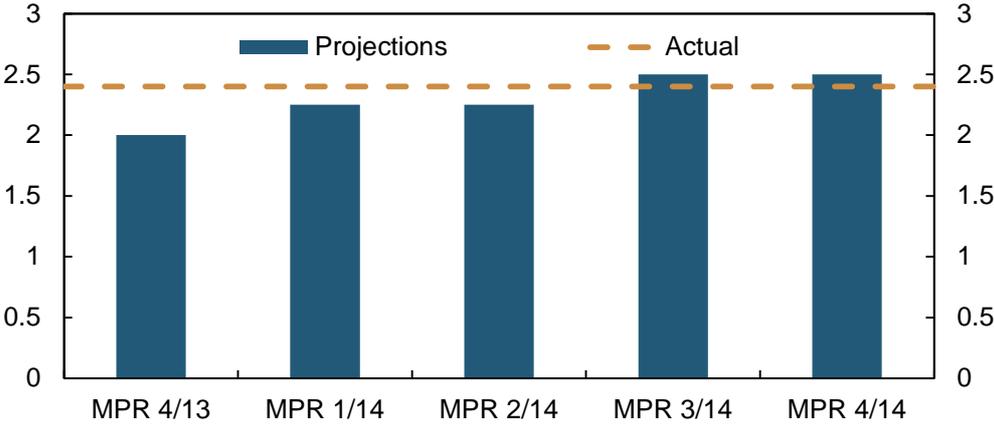
Wages and prices

Annual wage growth in 2014 was projected at 3½ percent in *MPR 4/13*, the same rate of growth as in 2013. High labour immigration, weak cyclical developments in Norway and low cost inflation among Norway's trading partners were expected to curb wage growth. The projection was in line with the expectations of respondents in Norges Bank's regional network. In spring 2014, negotiations between the Norwegian United Federation of Trade Unions and the Federation of Norwegian Industries resulted in agreement on a norm for annual wage growth of 3.3 percent, and the projection for wage growth was kept unchanged to end-2014. Final figures show that actual annual wage growth was somewhat lower than expected, at 3.1 percent.

In *MPR 4/13*, projections were based on the assumption of 2 percent growth in both the CPI and the CPI-ATE in 2014, down from 2½ percent and 1½ percent respectively in 2013. The projections were based on the expectation that falling capacity utilisation would restrain the rise in prices for domestically produced goods and services, while at the same time a weaker krone would push up prices for imported consumer goods somewhat. The projection for overall inflation was in line with actual developments and was kept unchanged through 2014. However, an unexpectedly high rise in prices for imported consumer goods at the beginning of the year led to an upward revision of the CPI-ATE projection to 2¼ percent in *MPR 1/14* (Chart 6). The rapid rise in prices for imported consumer goods reflected the marked depreciation of the krone; in addition, the pass-through from the exchange rate to prices occurred earlier than expected. Capacity utilisation developments in 2014 were in line with the projections in *MPR 4/13*, but in *MPR 3/14* the projection for the rise in prices for domestically produced goods and services was revised up, resulting in a projected annual rise in the CPI-ATE of 2½ percent. The reason was an unexpectedly high rise in prices for domestically produced food and beverages. Changes in Statistics Norway's method for calculating these prices implemented in January 2013 likely contributed to the higher rise in prices.¹

¹ See Norges Bank *Staff Memo* 10/2016.

Chart 6 CPI-ATE. Percentage change between 2013 and 2014

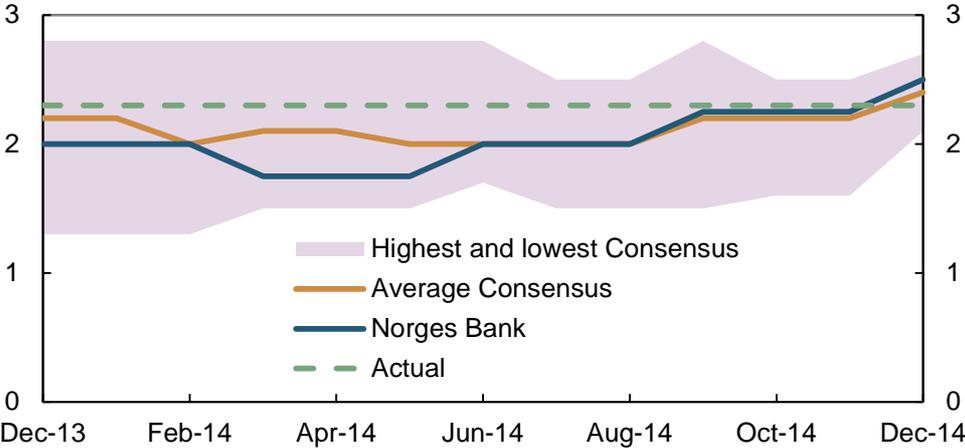


Sources: Statistics Norway and Norges Bank

Comparison with other forecasters

Other forecasters’ projections for mainland GDP and Norges Bank’s projections followed a similar path through the year (Chart 7). In late 2013, projections were close to actual developments but were revised down in the first half of 2014. Projections were revised up again towards the end of 2014, moving closer to actual growth. On average, the forecast error for other forecasters was generally smaller than that of Norges Bank.

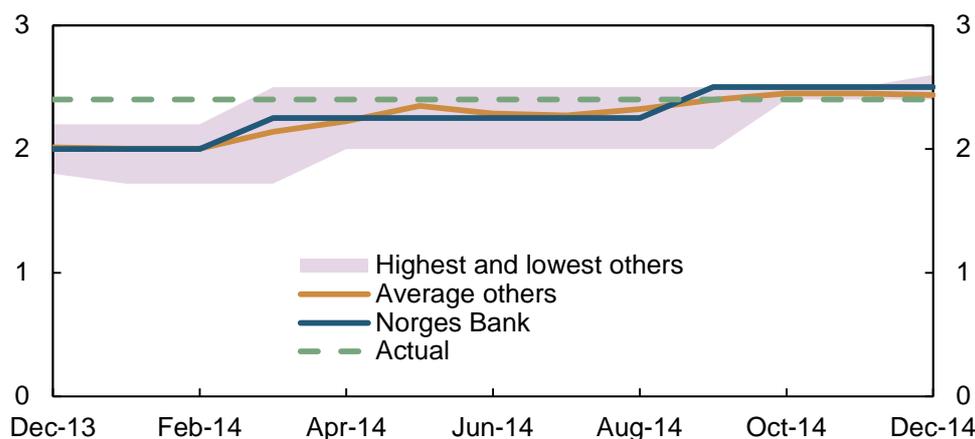
Chart 7 Mainland GDP. Constant prices. Projections of Norges Bank and other forecasters. Percentage change between 2013 and 2014.



Sources: Consensus Economics and Norges Bank

Other forecasters’ projections for the CPI-ATE and Norges Bank’s projections followed a similar path through the year (Chart 8). The projections of Norges Bank and of other forecasters at the end of 2013 were slightly lower than actual inflation, but were adjusted accordingly through the year.

Chart 8 Consumer prices (CPI-ATE). Projections of Norges Bank and other forecasters¹. Percentage change between 2013 and 2014



1) Danske Bank, DNB, Ministry of Finance, Handelsbanken, Nordea, SEB and Statistics Norway

Sources: Other forecasters and Norges Bank

3. Projections for 2015

While developments in key macroeconomic variables in 2014 were broadly in line with projections at end-2013, some of the projections for 2015 made at that time were less accurate. The fall in oil prices in 2014 and the subsequent krone depreciation were the main factors contributing to growth projections that were too high and inflation projections that were too low. In *MPR 4/13*, mainland GDP growth was expected to rise from 2¼ percent in 2014 to 2½ percent in 2015. In both years, employment growth was expected to remain at 1 percent and labour force growth at 1¼ percent. This would result in a slight rise in LFS unemployment, while registered unemployment was expected to remain at 3 percent for both years. Capacity utilisation was expected to remain close to a normal level and consumer price inflation, as measured by the CPI-ATE, was projected to be 2 percent in both 2014 and 2015. While growth in GDP, employment and wages was lower than expected in 2015 and inflation was higher than expected, the projections for the labour force and registered unemployment proved accurate. The accuracy of the labour force projection reflects a rise in the labour supply that was higher than normal in a period of weak economic growth.

The next section of this *Paper* addresses projections for 2015 published towards the end of 2014, which took into account the expected effects of the fall in oil prices on the Norwegian economy. Mainland GDP growth and wage growth were nevertheless lower than assumed in the final *Monetary Policy Report* in 2014 (*MPR 4/14*), while labour supply growth was somewhat higher. Projections for employment, unemployment and inflation in 2015 were accurate.

Table 2 Projections for key macroeconomic variables for 2015. Percentage change from 2014, unless otherwise indicated.

	MPR 4/13	MPR 4/14	MPR 1/15	MPR 2/15	MPR 3/15	MPR 4/15 ²⁾	Actual
Mainland GDP	2½	1½	1½	1¼	1¼	1.4	1.0
Employment	1	½	½	¼	½	0.7	0.6
Labour force, LFS	1¼	¾	1	1	1¼	1.4	1.4
Registered unemployment¹⁾	3	3	3	3	3	3.0	3.0
CPI-ATE	2	2½	2½	2¼	2¾	2.7	2.7
Annual wage growth	3¾	3¼	3	2¾	2¾	2.7	2.8

1) As a percentage of the labour force

2) As from *MPR* 4/15, published projection figures are noted to one decimal place.

Output and demand

In *MPR* 4/14, projections were based on the assumption that mainland GDP growth would shrink from 2½ percent in 2014² to 1½ percent in 2015. It appeared that activity in the petroleum industry would be weak. In Norges Bank's regional network, output growth expectations had fallen in most industries. The effects of the fall in oil prices were expected to spread to the mainland economy, but there was considerable uncertainty regarding their severity. The marked krone depreciation over the preceding 18 months was expected to make a positive contribution to growth by increasing the profitability of Norwegian exporters and import-competing enterprises.

In the period to *MPR* 2/15, new information indicated that economic growth in Norway had been weaker than expected. Business investment had fallen and growth in housing investment had been lower than expected. Projected GDP growth was therefore revised down by ¼ percentage point to 1¼ percent. In November, updated national accounts figures showed that growth in the first three quarters of 2015 had been higher than previously assumed, primarily driven by public demand, private investment and net exports. The projection for GDP growth was therefore revised up by one tenth in *MPR* 4/15, from 1¼ percent to 1.4 percent.³

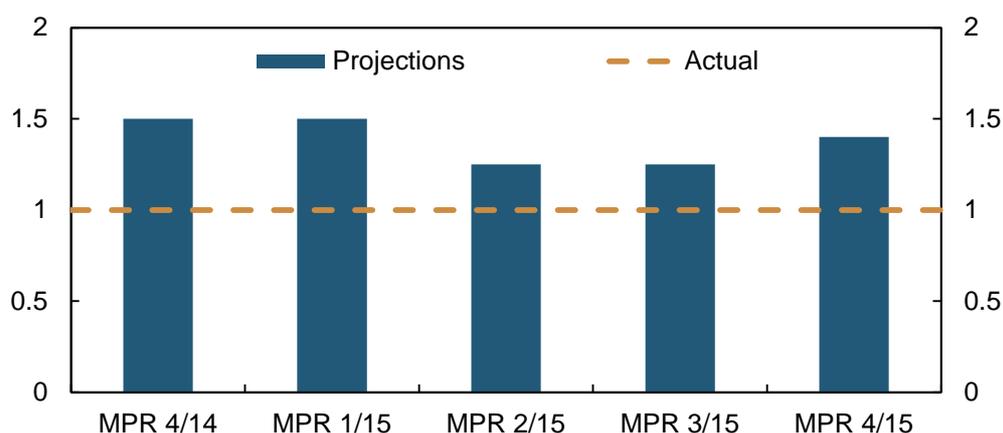
In the latest national accounts figures published in May 2016, growth in the first three quarters of 2015 was revised down again. Developments were more in line with projections in *MPR* 2/15 and *MPR* 3/15, but were nonetheless weaker than Norges Bank had assumed. The figures also showed a slight fall in

² In the section "Projections for 2015", figures for 2014 refer to projections given in *MPR* 4/14. The projections may deviate from final data discussed in the section "Projections for 2014".

³ Since *MPR* 4/15, published projection figures are noted to one decimal place.

mainland GDP in 2015 Q4. Although Norges Bank's projection for Q4 had been revised down considerably through 2015, GDP was not expected to fall. According to the latest national accounts figures, mainland GDP rose by 1 percent in 2015 (Chart 9). Norges Bank's projection was thus slightly above the mark throughout the year.

Chart 9 Mainland GDP. Constant prices. Percentage growth between 2014 and 2015



Sources: Statistics Norway and Norges Bank

In *MPR 4/14*, it was assumed that growth in private consumption would rise from 1¾ percent in 2014 to 2 percent in 2015. Falling real wage growth, rising unemployment and heightened uncertainty were expected to continue to weigh on consumption, while low interest rates were expected to have the opposite effect. The projection was revised several times over the course of the year, but remained at or close to 2 percent in all the monetary policy reports except *MPR 3/15*. In *MPR 3/15*, revised national accounts figures suggested that consumption growth would be higher than previously assumed and the projection was therefore revised up to 2½ percent. According to preliminary national accounts figures, private consumption rose by 2.0 percent in 2015. Growth in real household disposable income was also approximately in line with the assumptions in *MPR 4/14*.

In *MPR 4/14*, private investment was expected to rise by 4 percent in 2015 following a ½ percent fall in 2014. Housing investment, projected to rise by more than 7 percent, was expected to make the largest contribution. New home sales were on their way up and construction enterprises in Norges Bank's regional network reported rising growth. Business investment was expected to show moderate growth of 2 percent. According to preliminary national accounts figures, projections in *MPR 4/14* were too high. Housing investment rose by a scant 1.5 percent in 2015, while business investment fell by 3.0 percent. As a result, total private investment fell by 1.2 percent. Low output growth, weak growth prospects and economic uncertainty dampened business investment more than expected. In oil regions in particular, growth in housing investment was lower than expected.

In *MPR 4/14*, petroleum investment was expected to fall by 15 percent in 2015, following approximately zero growth in 2014. The oil industry trend of workforce cutbacks and cost-cutting appeared to be amplified by the sharp fall in oil prices. The projection held firm through the year and was in line with preliminary national accounts figures, which indicate a 15.0 percent fall in petroleum investment in 2015.

In *MPR 4/14*, mainland exports were expected to rise by 4½ percent following 3¾ percent growth in 2014. The projection was based on improved competitiveness among enterprises as a result of a weaker krone and an expectation that demand would pick up somewhat in Norwegian export markets. Growth for Norway's trading partners was approximately in line with expectations, while it became clear through 2015 that the depreciation of the krone would be more pronounced than assumed. The projection for export growth remained at around 5 percent through the year, fairly close to actual export growth of 4.4 percent. The exception was the projection in *MPR 2/15*, which was revised down somewhat as a result of unexpectedly weak Q1 export figures. Export growth in Q1 was revised up in the latest national accounts figures.

In *MPR 4/14*, import growth was expected to pick up to 2 percent in 2015 after growth of 1¼ percent in 2014. The projection varied considerably over the course of the year, largely as a result of subsequent revisions of national accounts figures. In *MPR 1/15*, these revisions led to a downward revision of the annual growth projection. In *MPR 2/15* and *MPR 3/15*, the revisions pulled up the annual growth projection despite a lower projection for import growth due to a weaker-than-expected exchange rate and prospects for weaker developments among trading partners. In *MPR 4/15*, the annual growth projection was again revised down, both because of revisions of national accounts figures and weaker-than-projected growth in Q3. The projection in the *Report* was nonetheless close to the actual rate of import growth in 2015 of 1.1 percent.

Labour market, productivity and capacity utilisation

In *MPR 4/15*, employment growth was expected to decline from 1¼ percent in 2014 to ½ percent in 2015 as a result of weaker growth in the Norwegian economy. Because of historical experiences of the cyclical sensitivity of labour supply, labour force growth was expected to slow from 1 percent in 2014 to ¾ percent in 2015. In sum, this would result in a ¼ percentage point rise in unemployment, resulting in LFS unemployment of 3¾ percent and registered unemployment of 3 percent.

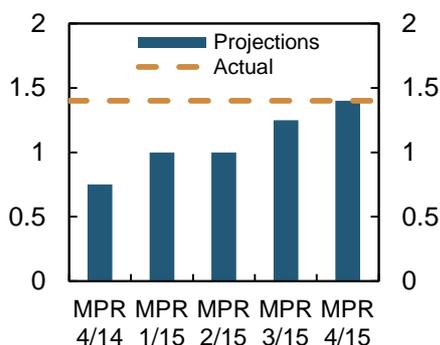
Preliminary figures for 2015 indicate that employment growth was approximately in line with the projections in *MPR 4/14*, while the labour force grew more than expected (Chart 10). As a result, LFS unemployment was

higher than previously projected. Registered unemployment did not exhibit the same rise and the projection remained unchanged at 3 percent for the remainder of the year.

LFS unemployment is usually higher than registered unemployment as measured by the Norwegian Labour and Welfare Administration (NAV). The former captures groups that are not eligible for unemployment benefits and therefore less inclined to register as unemployed. Students and newly qualified job-seekers are examples of such groups. Differences between the two unemployment measures may also be the result of random variations in the LFS, which is a sample-based survey. The difference between the two measures was, however, unusually high and persistent in 2015 (Chart 11).

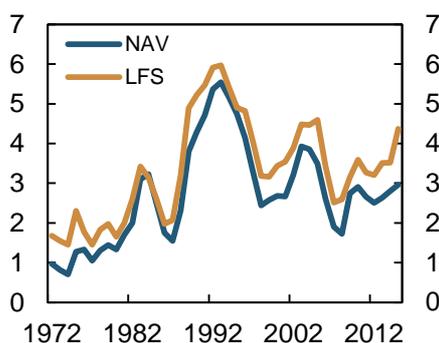
Employment continued to rise in 2015 in line with the projections in *MPR 4/14* and, combined with somewhat lower-than-expected GDP growth, resulted in weaker growth in labour productivity in 2015 than had been expected.

Chart 10 Labour force growth in 2015. Labour force as measured by the LFS. Percentage growth between 2014 and 2015



Sources: NAV and Statistics Norway

Chart 11 Unemployment as percentage of labour force. 1972-2015



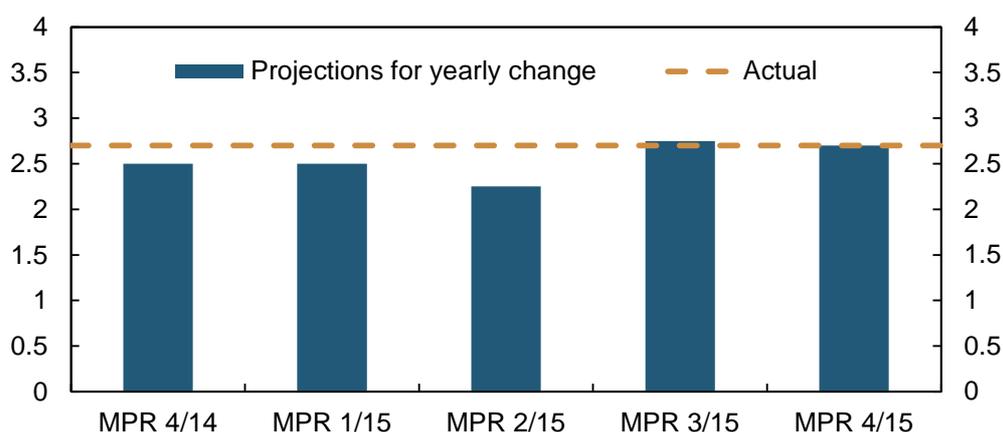
Sources: NAV and Statistics Norway

Wages and prices

In *MPR 4/14*, annual wage growth was expected to fall from 3½ percent in 2014 to 3¼ percent in 2015. Higher unemployment and lower profitability in the oil service industry were expected to dampen overall wage growth. The wage growth projection was in line with the expectations of enterprises in Norges Bank's regional network. Prospects for the Norwegian economy weakened further in late spring 2015 and the projection was revised down in *MPR 1/15* and *MPR 2/15* by a total of ½ percentage point. The projection in *MPR 2/15* took account of the norm for wage growth agreed on in the negotiations between the Norwegian Confederation of Trade Unions/Confederation of Vocational Unions (LO/YS) and the Confederation of Norwegian Enterprise (NHO) and was in line with regional network expectations. According to preliminary figures, actual annual wage growth in 2015 was 2.8 percent.

In *MPR 4/14*, it was assumed that both the CPI and the CPI-ATE would rise by 2½ percent in 2015, after a rise of 2 percent and 2½ percent respectively in 2014. The krone depreciation through autumn 2014 was expected to sustain the rise in prices for imported consumer goods. The rise in prices for domestically produced goods and services, on the other hand, was expected to slow as a result of lower wage growth. The CPI-ATE projection was closely in line with actual developments and was kept largely unchanged through the year (Chart 12). The driving forces behind inflation, however, were slightly stronger than envisaged. Wage growth decreased somewhat more rapidly than expected and contributed to lower-than-projected domestic inflation. Conversely, a weaker-than-expected krone contributed to a higher rise in prices for imported consumer goods than anticipated. Despite the accuracy of the projection for core inflation in 2015, the projection for overall inflation was revised down through the year, owing to weaker energy price developments than indicated by futures prices at the beginning of the year.

Chart 12 CPI-ATE. Percentage growth between 2014 and 2015

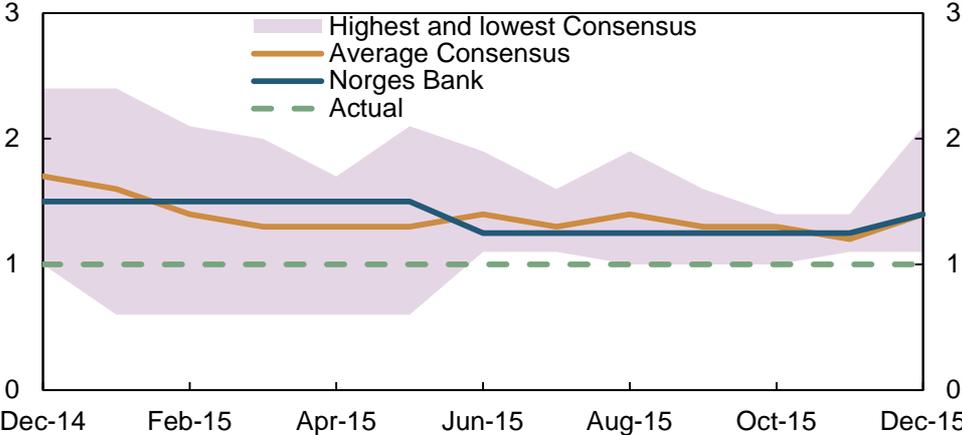


Sources: Statistics Norway and Norges Bank

Comparison with other forecasters

Other forecasters' projections for mainland GDP and Norges Bank's projections followed a similar path through the year (Chart 13). Projections were somewhat high towards the end of 2014, but were revised down towards the end of 2015 Q2. At the time of publication of *MPR 4/14*, Norges Bank's growth projections were the most accurate. During the first half of 2015, on the other hand, other forecasters' growth projections performed slightly better than Norges Bank's projections. In the latter half of 2015, Norges Bank's projections were again the most accurate. The forecast errors generated by Norges Bank's and other forecasters' projections were in sum equal in size.

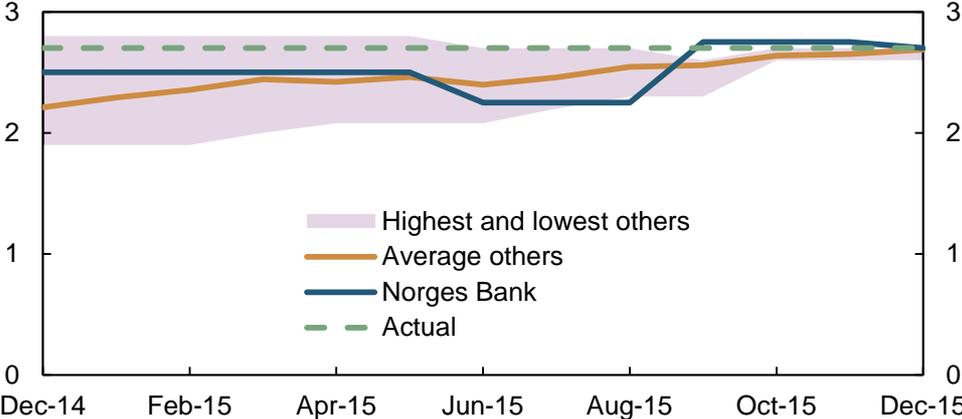
Chart 13 Mainland GDP. Constant prices. Comparison of the projections of Norges Bank and other forecasters. Percentage growth between 2014 and 2015



Sources: Consensus Economics and Norges Bank

Norges Bank’s projections for inflation published in late 2014 were closer to the mark than those of other forecasters (Chart 14). The projections were revised down somewhat in *MPR 2/15* because of lower-than-expected inflation in the months preceding the *Report*. Other forecasters did not make similar revisions. The autumn 2015 projections of Norges Bank and other forecasters were closely in line with actual developments.

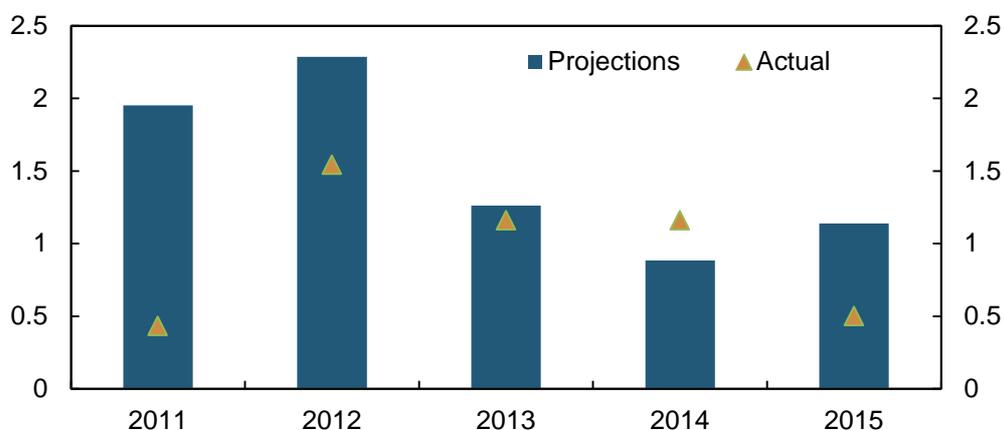
Chart 14 Consumer prices (CPI-ATE). Projections of Norges Bank and other forecasters¹. Percentage growth between 2014 and 2015



1) Danske Bank, DNB, Ministry of Finance, Handelsbanken, Nordea, SEB and Statistics Norway

Sources: Other forecasters and Norges Bank

Chart 15 Productivity growth one year ahead. Projected and actual growth. Projections in the period 2010 - 2014



Sources: Statistics Norway and Norges Bank

4. Conclusion

This *Paper* provides an evaluation of Norges Bank's short-term projections for the Norwegian economy in 2014 and 2015 as presented in Norges Bank's *Monetary Policy Reports* from *MPR 4/13* to *MPR 4/15*. The Norwegian economy underwent a marked turnaround in these two years. By end-2015, oil prices had fallen to almost a third of the level prevailing in summer 2014. Combined with an expansionary monetary policy, the fall in oil prices led to a pronounced depreciation of the krone. There was a marked fall in oil industry activity.

On the whole, Norges Bank's projections performed well during this period. Annual projections for growth in mainland GDP, employment, the labour force, and unemployment and wage and price inflation in 2014, as presented in the last *MPR* in 2013, were closely in line with actual developments. Employment and inflation projections for 2015 in the last *MPR* of 2014 were also accurate. The projections for mainland GDP and wage growth in 2015, on the other hand, were slightly higher than the outcome.

In 2015, developments in the labour market deviated to some extent from expectations. Growth in the labour force in particular was somewhat higher than previously envisaged. Labour supply in Norway has traditionally been cyclically sensitive. In downturns, the rise in unemployment has been limited by a high labour force exit rate. So far in the current downturn, however, a growing labour force has contributed to a rise in LFS unemployment.

In periods of weak economic growth, many young people have traditionally tended to opt for studies rather than employment. A higher average level of education may, in part, explain why the number of young people applying for study programs is lower now than in the past. Changes in the pension system may have led to a higher labour force participation rate among older workers.

A larger share of labour immigrants may also have changed labour market dynamics. In addition, the labour supply may be reacting more slowly to economic developments than previously.

Developments in labour force productivity have also deviated from expectations. Since the financial crisis, productivity growth has been weaker than it was in the previous decade and weaker than projected (Chart 15). The projections have been based on the assumption that productivity growth would gradually pick up, but to a slower pace than in the years prior to the financial crisis. Despite the downward revision of projections, productivity growth in 2015 was lower than assumed at the beginning of the year. This was also the case in 2011, 2012 and 2013.

It is likely that low productivity growth in 2015 was to some extent temporary in nature since enterprises spend some time adapting their workforces to changes in output and demand conditions in the economy. At the same time, the fact that productivity growth has been low for a long period and has also repeatedly been lower than expected indicates that underlying structural conditions are also playing a role. A number of Norway's trading partners are also experiencing a period of persistently low productivity growth, indicating that the same explanation might apply internationally. In the light of experience gained in the post-financial crisis period, together with the downward revision of international productivity projections, the projections for future productivity growth have been revised down somewhat.⁴

⁴ Developments in labour productivity are discussed in further detail in a Special Feature in *MPR* 2/16.

Appendix Table 1 Forecasts for developments in macroeconomic variables in 2014. Percentage change from 2013 unless otherwise indicated.

	MPR 4/13	MPR 1/14	MPR 2/14	MPR 3/14	MPR 4/14	Actual
Prices and wages						
CPI	2	2	2	2	2	2.0
CPI-ATE ¹⁾	2	2¼	2¼	2½	2½	2.4
Annual wage growth ²⁾	3½	3½	3½	3½	3½	3.1
House prices	-1.57	0.39	1.64	1.97	2.33	2.3
Real economy						
GDP	2¼	1½	1½	1¾	2	2.2
Mainland GDP	2	1¾	2	2¼	2½	2.3
Mainland output gap (level) ³⁾	-½	-½	-½	-½	-½	-0.4
Employment, QNA	1	1	1	1	1¼	1.1
Labour force, LFS	1¼	1¼	1	1	1	1.1
LFS unemployment (rate, level)	3¾	3¾	3½	3¼	3½	3.5
Registered unemployment (rate, level)	3	3	2¾	2¾	2¾	2.8
Demand						
Mainland demand ⁴⁾	2	1¾	1¾	2	2¼	2.0
-Private consumption	1¾	1¾	2¼	2¼	1¾	1.7
-Public consumption	2¼	2	2¼	2¼	3¼	2.9
- Mainland gross investment	1¾	1¼	-1	½	2	1.4
-- Business investment	2	2¾	-1¾	-2¼	-¾	-0.2
-- Housing investment	-¾	-2	-4¾	-3	-¼	-1.5
Petroleum investment ⁵⁾	4	1½	2½	0	-¼	-2.9
Mainland exports ⁶⁾	1¾	1½	2	3	3¾	2.1
Imports	3½	2	¼	1¼	1¼	1.5
Interest and exchange rates						
Key policy rate (level) ⁷⁾	1½	1½	1½	1½	1½	1.5
Import-weighted exchange rate (I-44, level) ⁸⁾	91¼	91½	91½	92¼	93½	93.7
Global economy and oil prices						
GDP for trading partners ⁹⁾	2¼	2¼	2¼	2	2	2.1
External price impulses, IPK	-	0.36	0.35	0.35	0.35	0.41
Oil prices, USD per barrel (level)	109	106	109	105	100	99

1) CPI adjusted for tax changes and excluding energy products

2) Annual wage growth is based on the Technical Reporting Committee on Income Settlements' (TBU) definitions and calculations

3) The output gap is measured as the percentage difference between mainland GDP and estimated potential mainland GDP.

4) Private and public consumption and mainland gross fixed investment

5) Production and pipeline transport

6) Traditional goods, travel and other mainland service exports

7) The key policy rate is the interest rate on banks' deposits in Norges Bank

8) Import weights, 44 countries accounting for 97 percent of total imports

9) Export weights, 25 main trading partners

Appendix Table 2 Forecasts for developments in macroeconomic variables in 2015. Percentage change from 2014 unless otherwise indicated.

	MPR 4/14	MPR 1/15	MPR 2/15	MPR 3/15	MPR 4/15	Actual
Prices and wages						
CPI	2½	2¼	2	2¼	2.2	2.1
CPI-ATE ¹⁾	2½	2½	2¼	2¾	2.7	2.7
Annual wage growth ²⁾	3¼	3	2¾	2¾	2.7	2.8
House prices	6.63	7.63	6.89	7.45	7.24	7.2
Real economy						
GDP	1¼	1¼	1¼	1¼	1.8	1.6
Mainland GDP	1½	1½	1¼	1¼	1.4	1.0
Mainland output gap (level) ³⁾	-1	-1	-1	-1	-1.0	-1.1
Employment, QNA	½	½	¼	½	0.7	0.5
Labour force, LFS	¾	1	1	1¼	1.4	1.4
LFS unemployment (rate, level)	3¾	4	4¼	4¼	4.4	4.4
Registered unemployment (rate, level)	3	3	3	3	3.0	3.0
Demand						
Mainland demand ⁴⁾	2¼	1¾	1½	1½	2.1	1.5
- Private consumption	2	1¾	2	2½	2.2	2.0
- Public consumption	2½	2½	2¼	2	2.5	1.9
- Mainland gross investment	3	1	-1	-1¼	1.2	0.0
-- Business investment	2	1	-3½	-4	-1.9	-3
-- Housing investment	7¼	4¼	1¼	1¼	3.0	1.5
Petroleum investment ⁵⁾	-15	-15	-15	-12½	-14.3	-15.0
Mainland exports ⁶⁾	4½	5	3	5¼	5.9	4.4
Imports	2	1½	2¼	3¾	0.4	1.1
Interest and exchange rates						
Key policy rate (level) ⁷⁾	1¼	1	1	1	1.1	1.0
Import-weighted exchange rate (I-44, level) ⁸⁾	96¼	99½	100¾	102¾	103.3	103.5
Global economy and oil prices						
GDP for trading partners ⁹⁾	2½	2¼	2	2¼	2.2	2.3
External price impulses, IPK	0.23	0.23	0.76	0.55	0.45	0.29
Oil prices, USD per barrel (level)	73	59	62	54	52	52

1) CPI adjusted for tax changes and excluding energy products

2) Annual wage growth is based on the Technical Reporting Committee on Income Settlements' (TBU) definitions and calculations

3) The output gap is measured as the percentage difference between mainland GDP and estimated potential mainland GDP.

4) Private and public consumption and mainland gross fixed investment

5) Production and pipeline transport

6) Traditional goods, travel and other mainland service exports

7) The key policy rate is the interest rate on banks' deposits in Norges Bank

8) Import weights, 44 countries accounting for 97 percent of total imports

9) Export weights, 25 main trading partners