MONETARY BULLETIN

2016•2

Contents

3 Statement of the Monetary Policy Committee

4 Clearer signs of growing tension in the economy, but inflation remains below target

5 Chapter I Economic outlook and key uncertainties
15 Chapter II The global economy and terms of trade
21 Chapter III Monetary policy and domestic financial markets
29 Chapter IV The domestic real economy
41 Chapter V Inflation

45 Box 1 Improved terms of trade and rising economic prosperity
49 Box 2 First Statistics Iceland figures on 2015 wage costs and revision of previous figures
51 Box 3 Has the equilibrium real exchange rate risen?
54 Box 4 Iceland's external position in historical and international context
57 Box 5 Why has inflation been so low in the past two years?

61 Appendix 1 Forecast tables

The objective of the Central Bank of Iceland's monetary policy is to contribute to general economic well-being in Iceland. The Central Bank does so by promoting price stability, which is its main objective. In the joint declaration made by the Government of Iceland and Central Bank of Iceland on 27 March 2001, this is defined as aiming at an average rate of inflation, measured as the 12-month increase in the CPI, of as close to 2½% as possible.

Professional analysis and transparency are prerequisites for credible monetary policy. In publishing *Monetary Bulletin* four times a year, the Central Bank aims to fulfil these principles.

Monetary Bulletin includes a detailed analysis of economic developments and prospects, on which the Monetary Policy Committee's interest rate decisions are based. It also represents a vehicle for the Bank's accountability towards Government authorities and the public.

Published by:
The Central Bank of Iceland, Kalkofnsvegur 1, 150 Reykjavík, Iceland
Tel: (+354) 569 9600, fax: (+354) 569 9605
E-mail: sedlabanki@sedlabanki.is
Website: www.sedlabanki.is

Vol. 18 no. 6 11 May 2016

Printing: Oddi ehf.

This is a translation of a document originally written in Icelandic. In case of discrepancy or difference in interpretation, the Icelandic original prevails. Both versions are available at www.cb.is.

ISSN 1607-6680, print

ISSN 1670-438X, online

Icelandic letters:

ð/Ð (pronounced like th in English this)
þ/Þ (pronounced like th in English think)
In *Monetary Bulletin*, ð is transliterated as d and þ as th in personal names, for consistency with international references, but otherwise the Icelandic letters are retained.

Statement of the Monetary Policy Committee 11 May 2016

The Monetary Policy Committee (MPC) of the Central Bank of Iceland has decided to keep the Bank's interest rates unchanged. The Bank's key interest rate – the rate on seven-day term deposits – will therefore remain 5.75%.

According to Statistics Iceland estimates, GDP growth measured 4% in 2015, well in line with the Central Bank's February forecast. The outlook is for even stronger GDP growth this year, or 4.5%, according to the forecast published in *Monetary Bulletin* today. This is slightly more than was forecast in February. The outlook for 2017 has also been revised upwards, with GDP growth now projected at 4% instead of the 3.4% forecast in February. In the domestic labour market, growth can be seen in rapid job creation, a rising participation rate, and declining unemployment. Long-term unemployment has nearly disappeared, and firms are having more difficulty filling available positions than they have for quite a long time.

In spite of large pay increases and a widening positive output gap, inflation has remained below target for over two years. In April, inflation measured 1.6%, about the same as a year ago. As before, this reflects the offsetting effects of domestic inflationary pressures versus the appreciation of the króna and unusually low global inflation. Other things being equal, the outlook is for inflation to remain below target well into this year but then rise when import prices stop falling. According to the Central Bank forecast, inflation will measure 3% in Q4/2016 and 4½% in the second half of 2017, but then begin to ease back to target in response to monetary tightening. This is somewhat higher inflation than was forecast in February, as the outlook is now for stronger growth in economic activity than was assumed then.

Global price developments and a stronger króna have provided the scope to raise interest rates more slowly than was previously considered necessary. By the same token, there are signs that monetary policy has anchored inflation expectations more securely than before and contributed to a more moderate rise in inflation than could have been expected in the wake of large pay increases. However, this does not change the fact that, according to the Bank's forecast, a tighter monetary stance will probably be needed in the coming term, in view of growing domestic inflationary pressures. How much and how quickly the monetary stance must be tightened will depend on future developments.

Clearer signs of growing tension in the economy, but inflation remains below target

Global output growth measured 3.1% in 2015, the lowest post-crisis growth rate since 2009. Furthermore, the global GDP growth outlook has continued to deteriorate, and financial markets have been volatile. At the same time, Iceland's terms of trade have improved markedly – more than in other developed countries, and particularly in comparison with other commodity exporters. Exports have grown strongly, outpacing demand growth in major trading partner countries, owing to the surge in services exports.

Domestic demand grew by over 6% in 2015, and the outlook is for similar growth this year. Growth is driven by the improvement in terms of trade, large pay increases in the recent wage settlements, fiscal easing, and the effects of the Government's debt relief measures. It is offset by monetary tightening, which has contained demand growth with higher real interest rates. The achievements of monetary policy over the past few years may also have provided inflation expectations with a stronger anchor and thus ensured that inflation has not risen as much as expected following the large wage increases in the recent wage settlements.

GDP growth is estimated at 4% in 2015, in line with the projection in the February *Monetary Bulletin*. It is expected to strengthen still further this year, measuring 4.5%, slightly more than was forecast in February. The outlook for 2017 has also been revised upwards, with GDP growth now projected at 4% instead of the 3.4% forecast in February. If the forecast materialises, 2017 will be the third year in a row with GDP growth at or above 4%. As in February, growth is assumed to ease somewhat in 2018, measuring about 3%. It will therefore be above its long-term average throughout the forecast horizon.

The domestic labour market is strong as well, as can be seen in increased job creation and a surge in the labour participation rate, which is now back to the pre-crisis peak. Unemployment has also declined markedly, and firms are having increasing difficulty filling available positions.

In spite of ever-clearer signs of increased tension in the domestic economy, inflation has remained below target for over two years. This is due primarily to deflation on imported goods and services, which has offset domestic inflationary pressures. Inflation is likely to rise when the effects of these imported factors taper off. How quickly it does so will depend on the timing and scope of the turnaround in imported inflation. According to the forecast, inflation will measure about 3% at the end of 2016 and then rise even further, to around 4½% in H2/2017, before easing back towards the target in response to monetary tightening. This is somewhat higher inflation than was forecast in February, as the outlook is now for stronger growth in economic activity than was assumed then.

I Economic outlook and key uncertainties

Central Bank baseline forecast[1]

Global output growth outlook continues to deteriorate

The global economic recovery began to weaken in the latter half of 2015, and global output growth forecasts have once again been revised downwards. In its most recent forecast, the International Monetary Fund (IMF) projects global output growth at 3.2% this year, about the same as in 2015 and the slowest growth rate since 2009. The outlook for 2016 and 2017 has worsened since the last forecast, for both developed and emerging countries. If the forecast materialises, global GDP growth will pick up slightly in coming years but remain somewhat below its long-term average.

GDP growth among Iceland's main trading partners measured 1.8% in 2015, about the same as 2014. It is expected to ease this year, measuring 1.6% instead of the 1.9% provided for in the Bank's February forecast (Chart I-1). The weaker outlook for the US and the eurozone is a major factor in this development. Trading partners' GDP growth is expected to pick up in the next two years, however, and measure about 2%. The GDP growth outlook for the forecast horizon as a whole has therefore deteriorated since February, and uncertainty about the global economy has increased again. The legacy of the financial crisis therefore appears likely to be a greater drag on the global economic recovery than previously assumed, and the plunge in oil and commodity prices poses difficulties for many emerging countries. Further discussion of the global economy can be found in Chapter II, and uncertainties in the global outlook are discussed later in this chapter.

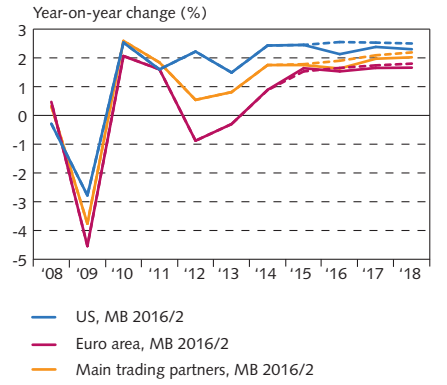
Terms of trade have improved markedly and the real exchange rate has risen

Terms of trade improved by nearly 7% in 2015 and have improved by over 10% in the past two years, more than in other developed countries (see Box 1). The improvement is due to a steep drop in import prices and a significant rise in export prices relative to those in trading partner countries (Chart I-2). As in February, it is assumed that terms of trade will improve still further this year but then deteriorate marginally in the following two years, as oil prices begin to rise and marine product prices start to taper off after the strong increase in recent years.

The real exchange rate has risen significantly, in tandem with improvements in terms of trade (Chart I-3). In the past two years, it has risen by over 10% in terms of relative consumer prices and almost twice that amount in terms of relative unit labour costs. The increase is smaller than was forecast in February, however, because the rise in domestic labour costs in 2015 has been revised downwards (see Box 2). The nominal exchange rate of the króna is slightly higher than was assumed in the February forecast and, as in previous Central Bank forecasts, is assumed to remain broadly unchanged throughout the forecast horizon. The real exchange rate has continued to rise, howev-

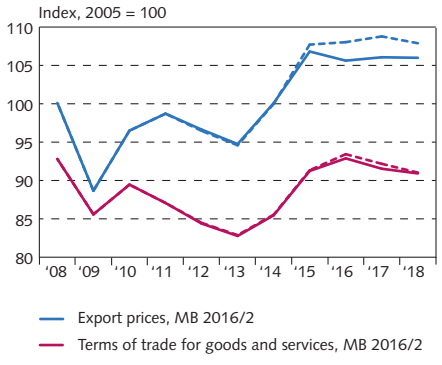
1. The analysis presented in this *Monetary Bulletin* is based on data available in mid-May.

Chart I-1
Global output growth 2008-2018[1]



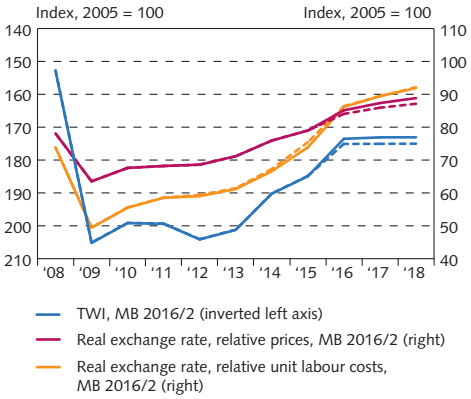
1. Central Bank baseline forecast 2016-2018. Broken lines show forecast from MB 2016/1.
Sources: Macrobond, OECD, Central Bank of Iceland.

Chart I-2
Export prices and terms of trade 2008-2018[1]



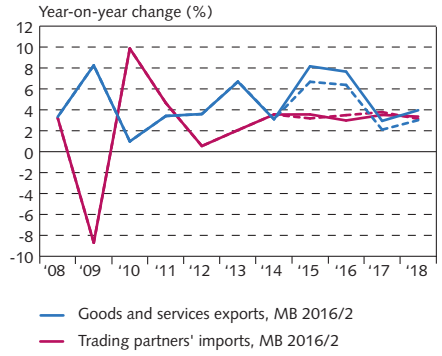
1. Price of Icelandic exports relative to trading partners' export prices (converted to the same currency using the trade-weighted exchange rate index). Central Bank baseline forecast 2016-2018. The broken lines show the forecast from MB 2016/1.
Sources: Macrobond, Statistics Iceland, Central Bank of Iceland.

Chart I-3
Exchange rate 2008-2018[1]



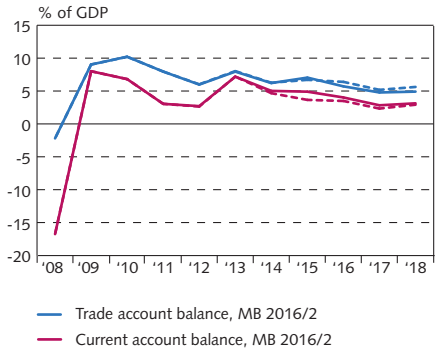
1. Central Bank baseline forecast 2016-2018. Broken lines show forecast from MB 2016/1.
Source: Central Bank of Iceland.

Chart I-4
Exports and global demand 2008-2018[1]



1. Central Bank baseline forecast 2016-2018. Broken lines show forecast from MB 2016/1.
Sources: Macrobond, Statistics Iceland, Central Bank of Iceland.

Chart I-5
Current account balance 2008-2018[1]



1. Central Bank baseline forecast 2016-2018. Broken lines show forecast from MB 2016/1. Current account balance based on estimated underlying balance 2008-2015.
Sources: Statistics Iceland, Central Bank of Iceland.

er, as domestic costs have risen more rapidly than foreign costs. If the forecast materialises, by 2018 the real exchange rate will be above its thirty-year average by about 6% in terms of relative consumer prices and 7% in terms of relative unit labour costs. As is discussed in Box 3, the recent rise in the real exchange rate probably reflects to a large extent an adjustment to a higher equilibrium real exchange rate. Further discussion of the real exchange rate and terms of trade can be found in Chapter II.

Surge in tourism the mainstay of export growth

Goods and services exports grew by over 8% in 2015, somewhat more than was assumed in the February forecast. The deviation is due primarily to stronger-than-expected exports of aluminium and services (Chart I-4). In spite of the rise in the real exchange rate and forecasts of weaker global GDP growth, the outlook is also for stronger export growth this year, or nearly 7½% instead of the 6½% in the February forecast. The improved outlook is due primarily to even stronger growth in services exports; furthermore, information from exporters indicates that miscellaneous manufacturing exports will grow more than was envisioned in February. If the forecast materialises, 2016 will be the second year in a row with service export growth in excess of 12% year-on-year. Over the past four years it has averaged more than 10% per year. As in February, it is assumed that export growth will ease slightly in the next two years, partly because of the aforementioned rise in the real exchange rate.

As in the Bank's previous forecasts, it is assumed that the surplus on external goods and services trade will continue to decline from its 2010 peak. In 2015, it measured 7% of GDP, which is well in line with the February forecast, but by 2018 it is projected to have narrowed to 5% (Chart I-5). With the settlement of the failed banks' estates, there is no longer any need to distinguish between the headline and underlying current account numbers. The current account surplus is projected to narrow in line with the declining trade surplus and fall from about 5% of GDP in 2016 to 3% of GDP in 2018. The settlement of the estates also entails that Iceland's net international investment position (NIIP) as measured according to international standards has improved significantly. At the end of 2015, it was negative by 14½% of GDP, the most favourable position Iceland has seen in about half a century (see Box 4). Further discussion of the external balance can be found in Chapter IV.

6% growth in domestic demand in 2015 and outlook for similar growth in 2016

Private consumption grew by nearly 5% in 2015, and indicators imply that it grew more than 7% in the first quarter of this year. This need not come as a surprise, as real disposable income has risen significantly, supported by strong wage increases and rapid job creation at a time of modest inflation. Furthermore, net household wealth has grown considerably as asset prices have risen and debt levels have fallen. The outlook is for private consumption to grow by 6% this year, somewhat more than was forecast in February, as real income increased more

rapidly in 2015 than previously expected (Chart I-6). The effects of improved economic conditions will also be felt next year, as private consumption is projected to grow by 5% instead of the 4.2% provided for in the February forecast. Although private consumption has grown strongly this year, it is still outpaced by growth in real disposable income; therefore, household saving has increased for the third year in a row. According to the forecast, households will tap their savings to a small degree over the next two years.

Investment also grew strongly in 2015. Business investment grew almost 30% year-on-year and total investment by 19%. According to the forecast, the outlook is for a sizeable increase this year as well. Indications from the recent Central Bank survey suggest that investment will remain strong in most sectors and that investment in hotel construction and ships and aircraft will increase. Business investment is projected to grow by nearly a fifth year-on-year in 2016, and total investment by about 14%. Therefore, in comparison with the February forecast, the outlook is for somewhat stronger business investment and broadly unchanged total investment. If the forecast materialises, investment will grow rapidly in 2016, for the third year in a row. The ratio of investment to GDP will therefore rise from just over 19% last year to 20% this year. According to the forecast, it will then taper off towards the end of the forecast horizon but will be higher than previously projected (Chart I-7).

Domestic demand grew by 6.3% in 2015 and is expected to maintain that pace this year (Chart I-6). As in the Bank's previous forecasts, the rate of growth is projected to ease in the next two years but to remain relatively strong. If the forecast is borne out, domestic demand growth will average 4.4% over the forecast horizon, well above the thirty-year average of 2.7%. Further discussion of private and public sector demand can be found in Chapter IV.

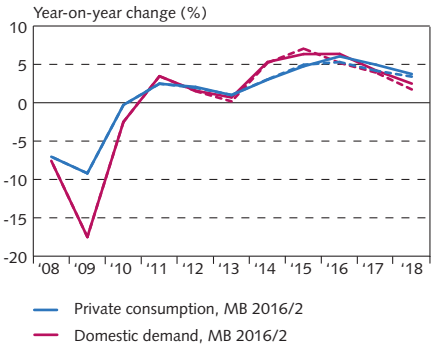
GDP growth projected at 4% or more this year and in 2017

According to preliminary figures from Statistics Iceland, year-2015 GDP growth measured 4%, well in line with the 4.1% provided for in the February forecast. Previous years' GDP growth figures were also revised upwards, and Statistics Iceland now estimates GDP growth in 2013 and 2014 at 4.4% and 2%, respectively, instead of 3.9% and 1.8%. According to these figures, seasonally adjusted GDP in Q4/2015 was more than 16% above the Q1/2010 trough and more than 3% above the pre-crisis peak.

GDP growth appears set to gain further momentum, rising to 4.5% this year. It is driven by strong growth in domestic demand and exports, although the contribution of net trade to output growth is negative for the third year in a row, with indicators implying strong import growth, partly due to sizeable imports of ships and aircraft. This is 0.3 percentage points more output growth than was forecast in February, reflecting the outlook for stronger growth in domestic demand than was projected at that time.

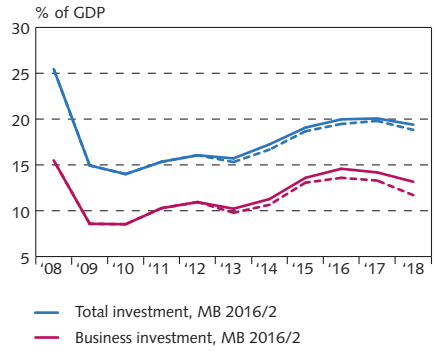
The GDP growth outlook for 2017 has also changed somewhat. Growth is now projected to measure 4% and, as before, to be driven by strong growth in domestic demand, particularly private consump-

Chart I-6
Private consumption and domestic demand 2008-2018[1]



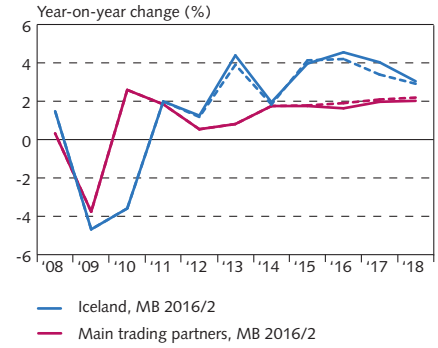
1. Central Bank baseline forecast 2016-2018. Broken lines show forecast from MB 2016/1.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart I-7
Investment 2008-2018[1]



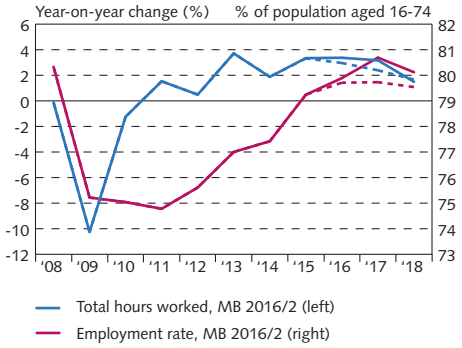
1. Central Bank baseline forecast 2016-2018. Broken lines show forecast from MB 2016/1.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart I-8
GDP growth in Iceland and trading partners 2008-2018[1]



1. Central Bank baseline forecast 2016-2018. Broken lines show forecast from MB 2016/1.
Sources: Macrobond, Statistics Iceland, Central Bank of Iceland.

Chart I-9
Total hours worked and employment rate 2008-2018[1]



1. Central Bank baseline forecast 2016-2018. Broken lines show forecast from MB 2016/1.
Sources: Statistics Iceland, Central Bank of Iceland.

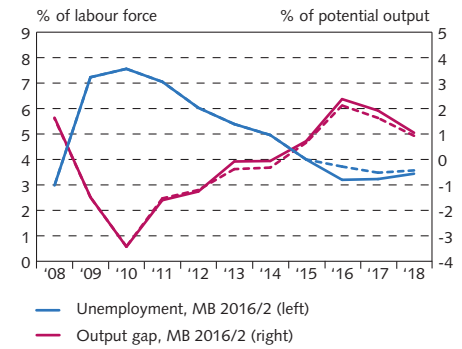
tion. This is 0.6 percentage points more than was forecast in February, owing mainly to the outlook for increased domestic demand growth and a more positive contribution from net trade. If these projections materialise, 2017 will be the third consecutive year with GDP growth of 4% or more. This is significantly above of long-term trend growth and, other things being equal, it is inevitable that the rate of growth will slow down somewhat in coming years. According to the forecast, it will ease in 2018 but remain slightly above trend growth, which is estimated at 2.7%. Further discussion of developments in GDP growth can be found in Chapter IV.

Strong job creation and a rapidly rising participation rate

Total hours worked rose by 2.3% year-on-year in Q1/2016, compared with the February forecast of 2.1%. The employment rate rose by 1½ percentage point and the participation rate by almost 1 percentage point. The participation rate measured just under 83% after adjusting for seasonality and is close to its early-2007 peak. The rising labour participation rate partially offsets the impact of the increasing number of jobs on the unemployment rate. As was forecast in February, the year-on-year decline in the unemployment rate is 1 percentage point and seasonally adjusted now measures 3.1%, down from 3.5% in Q4/2015. The unemployment rate is now below the level that is estimated to be consistent with price stability. Other labour market indicators point in the same direction.

As in February, it is assumed that total hours worked will increase by 3% this year. A greater increase is expected next year, reflecting a stronger output growth outlook (Chart I-9). The employment rate is expected to continue to rise, peaking next year at nearly 81%, close to the 2007 peak of 81.5%. The revision of the February forecast of the increase in total hours worked is in line with the changed GDP growth outlook. The outlook for productivity growth is therefore broadly unchanged, at an average of 1% per year over the forecast horizon. This is somewhat below the historical average but in line with the ten-year average (see Chart I-11 below). Further discussion of the labour market can be found in Chapter IV.

Chart I-10
Unemployment and output gap 2008-2018[1]



1. Central Bank baseline forecast 2016-2018. Broken lines show forecast from MB 2016/1.
Sources: Statistics Iceland, Central Bank of Iceland.

Outlook for lower unemployment and a wider output gap than was forecast in February

According to the forecast, unemployment will continue to fall, averaging 3.3% this year. This is about ½ a percentage point less than was forecast in February, reflecting stronger economic activity than was assumed then. For the same reason, the output gap is expected to be somewhat larger this year than was projected in February. It is expected to rise to a maximum of 2½% of potential output this year, or about ½ a percentage point more than in the February forecast. According to the current forecast, it will begin to narrow again in 2017, and the unemployment rate will rise at the same time to a level consistent with low and stable inflation (Chart I-10). As always, estimating the output gap is highly uncertain. Several uncertainties in the forecast are discussed below, and further discussion of factor utilisation can be found in Chapter IV.

Inflation outlook for H2/2017 has deteriorated in line with growing economic activity

Inflation measured 1.6% in April, down from 2.1% at the beginning of the year and up slightly since April 2015. It has therefore been below the target for more than two years, owing primarily to strong imported deflation and a stronger króna (see Box 5). In terms of the CPI excluding the housing component, inflation measured only 0.2% in April, an increase of 0.3 percentage points since April 2015. Long-term inflation expectations have been broadly unchanged in the past year. The inflation target seems to provide a firmer anchor for inflation expectations than before, which could to some extent explain why inflation has not risen as much as expected, given that a positive output gap has emerged and wages have risen sharply.

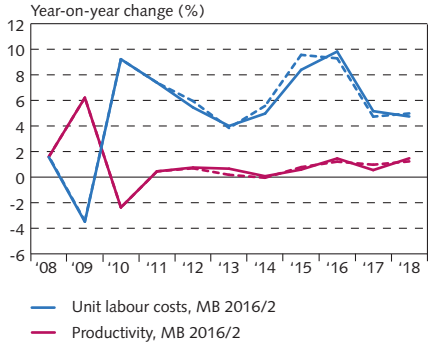
Inflation averaged 1.9% in the first quarter of 2016, in line with the February forecast. As is discussed in Box 5, import price deflation has offset domestic inflationary pressures, which can be seen in an increased output gap and large pay increases. Consequently, there is the risk that inflation will rise when these effects dissipate. As in the Bank's February forecast, inflation is projected to rise as the year progresses, reaching 3% in Q4/2016. On the other hand, the outlook is for higher inflation in H2/2017 and early 2018 than was forecast in February, mainly because economic activity is now expected to grow faster and the output gap to be larger, as is discussed above. On the other hand, the marked improvement in terms of trade in recent years is considered to increase companies' scope to absorb the cost increases stemming from pay rises (see Box 1). As before, the pay rises are the main cause of growing inflationary pressures, both directly – through firms' cost increases – and indirectly – through growing demand and a widening output gap. Unit labour costs are estimated to have grown somewhat less than previously thought in 2015; however, they are expected to rise by over 10% this year and by an average of 6½% over the forecast horizon, which is far more than is consistent with medium-term price stability (Chart I-11).

According to the forecast, inflation is expected to peak at 4½% in the latter half of 2017 (Chart I-12). It is assumed that a tighter monetary stance will ensure that it gradually subsides as the forecast horizon progresses, to below 3% by mid-2019. As before, the outlook is subject to a number of uncertainties, which are discussed below. Further discussion of global price level developments can be found in Chapter II, and developments in domestic inflation and inflation expectations are discussed in Chapter V.

Key uncertainties

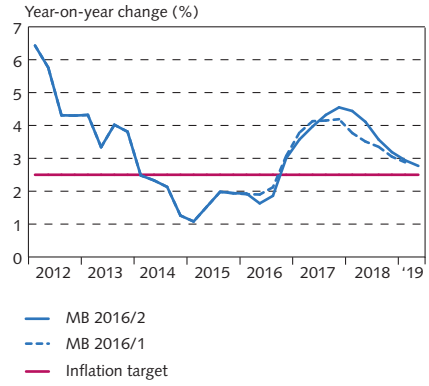
The baseline forecast reflects the assessment of the most likely economic developments during the forecast horizon. It is based on forecasts and assumptions concerning developments in the external environment of the Icelandic economy, as well as assessments of the effectiveness of markets and the transmission of monetary policy to the real economy. All of these factors are subject to uncertainty. The following is a discussion of several important uncertainties in the forecast.

Chart I-11
Unit labour costs and productivity 2008-2018[1]



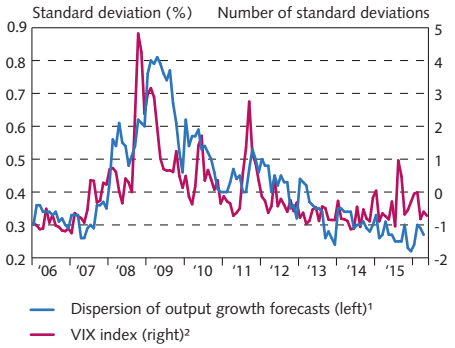
1. Productivity measured as the ratio of GDP to total hours worked. Central Bank baseline forecast 2015-2018. Broken lines show forecast from MB 2016/1.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart I-12
Inflation[1]
Q1/2012 - Q2/2019



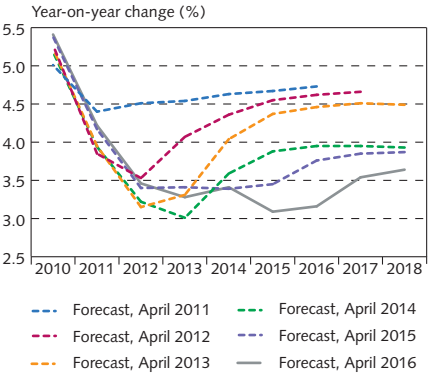
1. Central Bank baseline forecast Q2/2016-Q2/2019.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart I-13
Dispersion of output growth forecasts and implied stock price volatility
January 2006 -May 2016



1. Weighted average of standard deviation in output growth forecasts compiled by Consensus Forecasts for the G7 (weighted with PPP-adjusted GDP). 2. Chicago Board Options Exchange S&P 500 Implied Volatility Index (VIX). Deviation from January 2000-April 2016 average measured in standard deviations.
Sources: Consensus Forecasts, Macrobond.

Chart I-14
IMF global output growth forecast[1]



1. IMF April forecasts (*World Economic Outlook*, April 2011-2016).
Source: International Monetary Fund.

The global outlook could prove overly optimistic

Volatility in the global financial markets increased somewhat at the beginning of the year, and risk premia rose across the board. There seemed to be increased uncertainty about the economic outlook in emerging countries, particularly those that rely on oil and commodity exports, and the possible spillovers to GDP growth in developed economies. This development appears to have reversed to some extent, at least in terms of the measures of financial market uncertainty (Chart I-13), although there is still some pessimism about the global GDP growth outlook, which has repeatedly been revised downwards (Chart I-14). Persistently low commodity and oil prices are considered likely to have adverse effects on a number of emerging economies, owing to tighter financial conditions in those countries and, in major industrialised countries, a lack of the economic policy tools needed to support the economic recovery and cushion against possible shocks in the near future. China's adjustment to a sustainable growth path still represents a further challenge for the global economy. Furthermore, there is still considerable geopolitical uncertainty, in addition to the effects of possible terrorist attacks in the West, a widespread decline in support for free global trade, and adverse effects of the UK's possible exit from the European Union.

In all of this international turmoil, exports from Iceland have been strong, and the export outlook has repeatedly been revised upwards – not least due to the surge in services exports. As is discussed in Box 1, terms of trade have improved more in Iceland than in other OECD countries, a development quite at odds with the experience of other commodity exporters. As a result, it is not impossible that the weak global outlook and tepid demand among trading partners will ultimately cut into export growth or undermine export prices. The outlook for exports and terms of trade as presented in the baseline forecast could therefore be too optimistic and the domestic GDP growth outlook overestimated as well.

Exchange rate developments uncertain

The baseline forecast assumes that the exchange rate of the króna will remain stable throughout the forecast horizon, but as before, it could develop very differently. It can be assumed that the risk of a severe depreciation in connection with the liberalisation of the capital controls has been reduced, although the possibility cannot be excluded that the króna will give way if residents decide to change the foreign-domestic composition of their asset portfolios. The króna could also weaken if terms of trade deteriorate again or if uncertainty in the global markets escalates still further.

To the extent that the recent rise in the real exchange rate is in excess of what can be explained by economic fundamentals, the króna could depreciate during the forecast horizon. On the other hand, the rise in the exchange rate could in large part reflect the strong domestic economic recovery and the rise in the equilibrium exchange rate (see Box 3). It could indicate that the exchange rate will remain stable or even rise still further if developments in the domestic economy continue to be more favourable than those in trading partner countries.

Capital inflows following capital account liberalisation and improvements in Iceland's sovereign credit ratings could also contribute to further appreciation of the króna.

Variations in the effectiveness of the interest rate channel of monetary policy

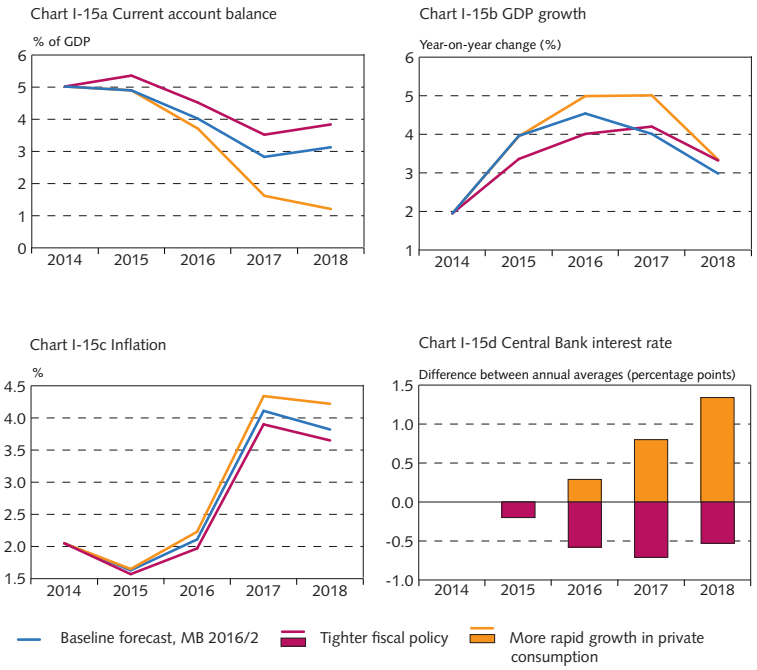
Last autumn, it appeared that flaws had developed in the transmission of monetary policy along the interest rate channel, when long-term interest rates fell steeply at the same time that the Central Bank raised short-term rates and the slope of the short- and long-term yield curve turned negative for a while. As is discussed in Box 1 of *Monetary Bulletin* 2015/4, this was due to increased capital inflows into the bond market. This development has reversed to an extent, although the yield curve is still virtually flat, and as yet, it has not spread to private sector borrowing terms to any marked degree (see Chapter III). On the other hand, it is not impossible that it will be more difficult for monetary policy to achieve the intended stance through interest rates, especially if it continues to be necessary to tighten monetary policy as has been stated. The monetary policy transmission mechanism would then shift increasingly from domestic interest rates to the exchange rate of the króna, which is to some degree unfortunate, as the exchange rate channel can be volatile, with the associated adverse effects on the tradable sector and even on financial stability, if the financial system is not even better protected.

Monetary policy could become overly strained

As is discussed in Chapter IV, the fiscal stance eased somewhat in 2015 and appears likely to continue in that vein this year. Current estimates indicate that the easing will amount to a total of nearly 2½% of GDP, or just over 50 b.kr., in terms of the cyclically adjusted change in the primary balance. As has been discussed in previous issues of *Monetary Bulletin*, it is unfortunate that fiscal easing should take place when tension has developed in the domestic economy. Other things being equal, it will put more pressure on monetary policy, thereby increasing the risk of negative side effects from an unfavourable fiscal-monetary policy mix, which would be reflected in a need for higher domestic interest rates and heightened risk of unstable short-term capital inflows.

Chart I-15 shows this more clearly. It illustrates an alternative scenario in which the cyclically adjusted primary balance remains unchanged for the entire period from 2015 through 2018. Although previous analyses indicate that the easing takes place primarily on the revenues side of fiscal policy (see Chapter IV and Box 3 of *Monetary Bulletin* 2015/4), it is assumed here that the fiscal tightening takes place on the revenues and expenditures sides in equal measure. In the alternative scenario, public consumption expenditure is assumed to have been 11 b.kr. less in 2015 than it actually was and about 26 b.kr. less in 2016, for a combined total equivalent to about 1.2% of year-2015 GDP. This difference holds throughout the forecast horizon. Individuals' income tax then rises by the same amount. The fiscal tightening therefore corresponds to approximately 1% of year-2015 GDP, which rises to 2½% of year-2016 GDP and then remains close to

Chart I-15
Alternative scenarios



Source: Central Bank of Iceland.

that level for the remainder of the forecast horizon. This ensures that fiscal policy remains neutral for the entire period.

With tighter fiscal policy, domestic demand grows by approximately 1 percentage point less per year in 2015 and 2016. The effects of the measures are both direct – through reduced public expenditure – and indirect – through weaker private consumption growth. The effects on GDP growth are smaller, however, because the reduction in demand affects goods and services imports. Tighter fiscal policy also reduces inflationary pressures, thereby enabling the Central Bank to keep interest rates lower than it would otherwise, which stimulates investment. GDP growth is therefore about ½ a percentage point less in both years, but from 2017 onwards it is slightly stronger, as the Central Bank's key rate will be 0.5 percentage points lower this year and 0.75 points lower next year. Tighter fiscal policy also means that gross national saving is greater than in the baseline forecast and the current account surplus is larger by just over ½% of GDP per year.[2]

Private consumption could grow more rapidly than is assumed in the baseline forecast

Private consumption has increased by almost 3% per year, on average, over the past five years, and it has gained momentum as time passes since the financial crisis. For example, it grew by 3% in 2014 and nearly 5% in 2015. The outlook for 2016 indicates even stronger growth, or about 6%, as is discussed above. Although private con-

2. A more detailed description of fiscal multipliers in the Bank's macroeconomic model can be found in the QMM handbook: Ásgeir Daníelsson, Bjarni G. Einarsson, Magnús F. Gudmundsson, Svava J. Haraldsdóttir, Thórarinn G. Pétursson, Signý Sigmundardóttir, Jósef Sigurdsson, and Rósa Sveinsdóttir (2015). "QMM: A quarterly macroeconomic model of the Icelandic economy. Version 3.0." Central Bank of Iceland, *Working Paper*, no. 71, pp. 110-113.

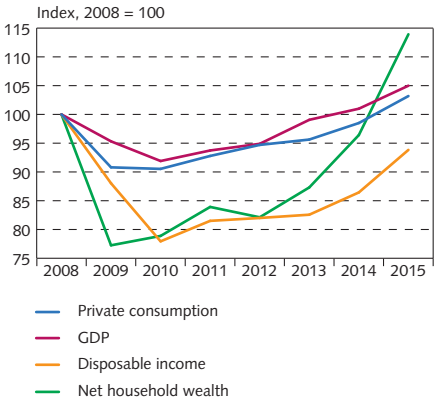
sumption growth has been significant in the recent past, it is outpaced by disposable income, which is estimated to have grown by nearly 9% in real terms in 2015 and by an average of nearly 4% per year over the past five years. Net household wealth has increased even further, with rising asset prices and declining debt. In real terms, it has grown by more than 10% per year in the past two years and by an average of nearly 8% per year in the past five years. Household income and wealth have therefore grown well in excess of private consumption growth, and household saving has therefore increased. This comes after income and wealth contracted more than private consumption in the wake of the financial crisis, showing clearly how households use income and equity to smooth out fluctuations in private consumption over time (Chart I-16).

Chart I-16 also shows that private consumption growth has been broadly in line with GDP growth in the recent term. The ratio of private consumption to GDP has therefore remained relatively stable and has been somewhat below the historical average (Chart I-17). On average, private consumption at current price levels has been slightly more than 56% of nominal GDP over the past thirty years, but in the last five years the ratio has been just under 52%, more than 4 percentage points below the long-term average (the deviation in the ratio of private consumption to disposable income from the historical average is very similar).[3] According to the baseline forecast, this ratio is assumed to rise in coming years but to remain somewhat below the historical average throughout the forecast horizon.

It is not impossible that households will choose to use a larger share of their income and increased wealth for private consumption than is assumed in the baseline forecast and that private consumption will therefore grow more rapidly than is projected. Although it can be expected that a share of this additional consumption spending will be directed at imported goods and services, it is clear that more rapid private consumption growth will also affect domestic production and place greater strain on domestic factors of production than is currently forecast. Demand will therefore be stronger and the output gap wider, which will lead to increased inflationary pressures and call for higher interest rates in order to keep inflation close to target over the medium term.

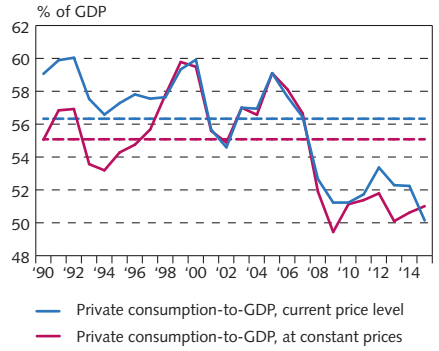
This can be seen more clearly in Chart I-15, which presents an alternative scenario in which the private consumption-to-GDP ratio rises faster than in the baseline forecast and has reached the historical average by the end of the forecast horizon. As a result, private consumption will grow somewhat more rapidly, but this is offset by higher interest rates, which cut into investment. Higher interest rates also cause the exchange rate of the króna to rise, thus reducing exports. On the whole, however, GDP increases significantly; it will be ½ a percentage point more in 2016 and 1 percentage point more in 2017. A portion of the increased demand is directed at imports; therefore,

Chart I-16
Private consumption, income, and wealth 2008-2015[1]



1. Net wealth is the sum of households' housing and financial wealth (excluding pension fund rights), net of household debt (year-end figures). All at constant prices.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart I-17
Private consumption relative to GDP 1990-2015[1]



1. Broken lines show 30-year average (1986-2015).
Source: Statistics Iceland.

3. A similar result is also obtained in comparison with the estimated equilibrium ratio of private consumption to GDP. See Ásgeir Daníelsson (2009), "QMM: A steady state version", Central Bank of Iceland, *Working Paper*, no. 44. According to the updated estimate of the equilibrium values in the model, the steady-state ratio of private consumption to GDP is about 56% (see Box 3).

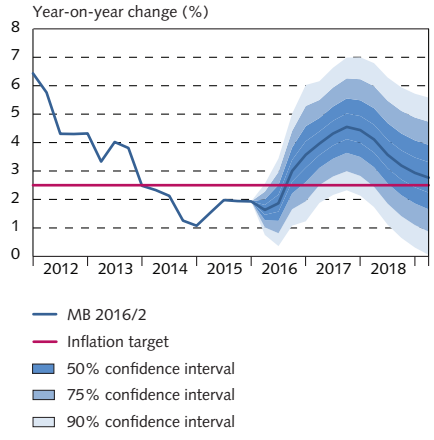
by 2018 the trade surplus will be smaller than in the baseline forecast by about 2 percentage points of GDP. A larger output gap means that inflation will be somewhat higher, but the effects will emerge in higher interest rates as well, and the Central Bank's key rate will be nearly 1½ percentage points higher than in the baseline forecast by 2018.

Inflation risk profile still tilted to the upside

The uncertainties described above show clearly that the inflation outlook for the next three years could easily deviate from the scenario presented in the baseline forecast. Inflationary pressures could be underestimated, which (other things being equal) would call for higher interest rates than in the baseline forecast in order to keep inflation at target.[4] Among possible causes of such a deviation, the demand-side effects of the recent wage settlements and the stimulative Government measures could be underestimated or firms could have greater difficulty absorbing large cost increases following wage settlements than is assumed in the baseline forecast. Furthermore, inflation could be underestimated if house prices rise even further than is assumed or if the króna depreciates. Moreover, if inflation expectations are more poorly anchored than is assumed, inflation could prove more persistent than is forecast. In addition, the fiscal stance could ease still further, particularly in view of the upcoming Parliamentary elections. Although monetary policy transmission via interest rates has normalised somewhat in the recent past, the interest rate channel is still not fully functional; therefore, it could prove more difficult for monetary policy to contain domestic demand than is assumed in the baseline forecast. Inflation could also be overestimated in the forecast. For instance, it could turn out lower than projected if the global economic outlook deteriorates still further or if global oil and commodity prices will be lower than is assumed in the forecast. The króna could also appreciate, and firms' ability to absorb increased costs could be underestimated. Moreover, productivity growth, which is weak in historical context, could be underestimated, which would mitigate the inflationary effects of recent pay rises (see, for instance, the alternative scenario in Chapter I of *Monetary Bulletin* 2015/4).

Chart I-18 illustrates the above-mentioned uncertainties in the inflation forecast by showing the inflation outlook according to the baseline forecast together with the confidence intervals for the forecast; i.e., the range in which there is considered to be a 50-90% probability that inflation will lie over the forecast horizon (the methodology is described in Appendix 3 in *Monetary Bulletin* 2005/1). The uncertainty about the inflation outlook is broadly unchanged since February. As was the case then, the risk profile is tilted to the upside, although the probability distribution of the forecast is considered slightly less skewed than before. There is a roughly 50% probability that inflation will be in the 3-5% range in one year and in the 1¾-4% range by the end of the forecast horizon.

Chart I-18
Inflation forecast and confidence intervals
Q1/2012 - Q2/2019



Sources: Statistics Iceland, Central Bank of Iceland.

4. The baseline forecast is based on the assumption that monetary policy will be applied so as to ensure that inflation remains close to target over the business cycle.

II The global economy and terms of trade

The GDP growth outlook for Iceland's main trading partners has deteriorated since the publication of the Bank's February forecast. It is also more ambiguous. In 2015, global GDP growth fell to a six-year low, and the outlook is for growth in world trade to be below global output for the second year in a row. Global inflation is still low and is expected to rise more slowly than previously assumed. Global financial markets have suffered repeated bouts of turmoil, most recently at the beginning of the year, but have then abated, in part due to broad-based measures taken by central banks. Iceland's terms of trade have improved substantially since mid-2014 and are expected to improve further this year, albeit less than was forecast in February. The real exchange rate has also risen markedly, particularly in terms of relative unit labour costs.

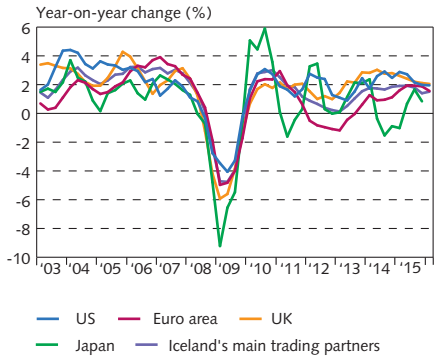
Global economy

Trading partners' economic recovery slowed somewhat in H2/2015 ...

GDP growth among Iceland's trading partners measured 1.8% in 2015, about the same as in the prior year and in line with the forecast in the February *Monetary Bulletin*. Growth slowed in most developed countries in the latter half of the year, and trading partners' year-on-year growth rate was only 1.4% in Q4/2015 (Chart II-1). For the two years prior to that, trading partners' GDP growth had gradually gained ground and was approaching its thirty-year average of 2.1%. In the US, year-2015 GDP growth was unchanged from 2014, at 2.4%, and in the euro area growth rose between years, to 1.6%. Private consumption has picked up on both sides of the Atlantic, and the recovery of the labour market in the US has remained rather robust. The effects of the appreciation of the US dollar and the drop in oil prices can be seen in a declining contribution from both net trade and investment in the energy sector. In Japan, GDP growth measured 0.5% in 2015 in spite of a contraction in domestic demand, after having been flat in 2014.

None of the Nordic countries experienced a contraction last year, for the first time since 2011. Sweden recorded strong GDP growth, the long contraction in Finland appears to be at an end, and growth in Denmark measured just over 1% for the second year in a row. However, the plunge in oil prices has had a profound effect in Norway, where GDP growth has slowed markedly.

Chart II-1
Global GDP growth
Q1/2003 - Q1/2016

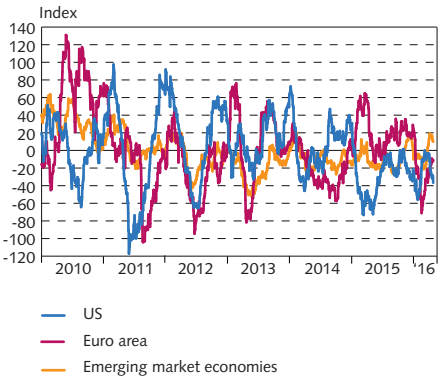


Sources: Macrobond, Central Bank of Iceland.

... and global GDP growth is at its weakest since the financial crisis

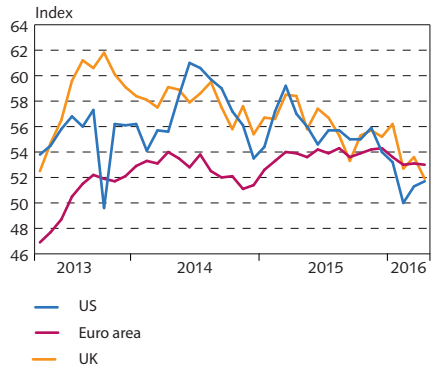
Global GDP growth measured 3.1% in 2015, the slowest rate of growth since 2009. The downturn reflects the continued weakness of the economic recovery in developed countries and declining GDP growth in emerging market economies, where growth averaged only 4%, over 1½ percentage points below the average for the preceding five years. GDP growth in emerging market economies has been declining since 2010, when it measured 7.4%. The lion's share of global

Chart II-2
Economic surprise index[1]
Daily data 4 January 2010 - 6 May 2016



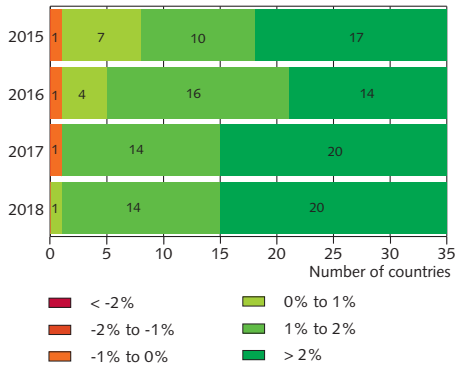
1. When the index is below 0, the indicators are worse than expected; when the index is above 0, the indicators are better than expected. The index does not imply that the indicators are positive or negative.
Source: Macrobond.

Chart II-3
Leading indicators of GDP growth[1]
April 2013 - April 2016



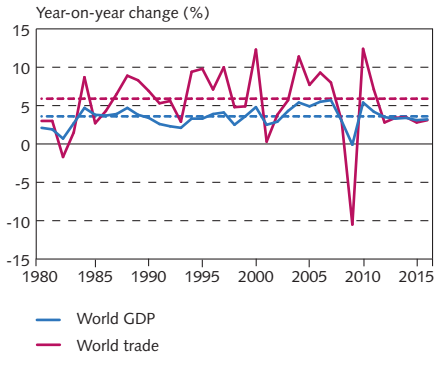
1. Markit composite purchasing managers' index (PMI). The index is published monthly and is seasonally adjusted. An index value above 50 indicates month-on-month growth, and a value below 50 indicates a contraction.
Source: Bloomberg.

Chart II-4
Distribution of GDP growth among 35 industrialised countries



Source: International Monetary Fund.

Chart II-5
World GDP and trade 1980-2016[1]



1. Broken lines show 30-year average (1980-2015).
Sources: International Monetary Fund, Central Bank of Iceland.

output growth still comes from emerging market economies, however. Two major commodity importers, China and India, recorded about 7% growth or more, whereas there was a contraction of nearly 4% in Russia and Brazil, in part because of the drop in oil and commodity prices.

Weaker-than-expected economic indicators fuelled concerns about global GDP growth early in the year

In late 2015 and so far in 2016, economic indicators for the US turned out weaker than was expected by markets (Chart II-2). Indicators for the eurozone turned out similar but with some lag. Concerns about the GDP growth outlook therefore increased, playing a part in the global financial market unrest at the beginning of the year, as is discussed below. On the whole, indicators imply that a weak economic recovery will continue (Chart II-3).

Outlook for reduced global GDP growth during the forecast horizon …

According to the International Monetary Fund's (IMF) most recent GDP growth forecast, global growth is projected at 3.2% this year, nearly ½ a percentage point below the thirty-year average. The worsening outlook has affected the Fund's forecasts since the middle of 2015. About a year ago, the IMF expected GDP growth in 2015 and 2016 to be a total of a percentage point more than is forecast now, and twice as many countries were expected to record year-2016 GDP growth over 2% as are currently expected to do so (Chart II-4). The main difference here is reduced growth in developed countries, many of which are still tackling legacy issues from the financial crisis, weak productivity growth, and slow growth in the working-age population. In the wake of the recent plunge in oil prices, demand has contracted more in oil-exporting countries and increased less in importing countries than historical experience has given cause to expect. The drop in oil prices therefore appears not to have provided the anticipated boost to global GDP growth.

The IMF projects global GDP growth at 3.5% next year, primarily due to increased growth in emerging market economies. However, this is predicated on a gradual improvement in the countries that have experienced sharp contractions, particularly to include Brazil and Russia, and on a relatively smooth adjustment to changed GDP growth drivers in China. This is highly uncertain, however, and the Fund now considers it more likely that GDP growth will be weaker in coming years than it did in January.

… and for growth in world trade to be weaker than growth in global output for the second year in a row

The IMF forecasts weaker growth in world trade in 2016 than in global output, as was the case in 2015. Since 1980, there have only been two instances where this has happened in two consecutive years, and both of them were in connection with deep economic contractions in 1982 and 2009 (Chart II-5).[1] Whether weak growth in world trade reflects a weak global economy or whether the period of ever-increasing

1. See Box 1.1 in International Monetary Fund (2009). *World Economic Outlook*, April 2009.

globalisation of trade has come to an end is subject to debate.[2] In the recent term, growth in world trade has been particularly weak in emerging market economies, which have rapidly reduced trade in investment goods as investment activity has declined.

Outlook for GDP growth and demand in trading partner countries has deteriorated since February …

In Iceland's main trading partner countries, the outlook is for weaker growth in output and demand than was forecast in February, in line with the worsening outlook for global GDP growth and world trade. Trading partners' GDP growth is projected at 1.6% this year, a reduction of 0.3 percentage points since February, but is expected to measure 2% per year in the next two years. Trading partners' import growth will also be weaker this year than was forecast in February, averaging 3%. The reduction is due in part to base effects, however, as trading partners' demand turned out nearly ½ a percentage point stronger in 2015 than was assumed in the last *Monetary Bulletin*, owing mainly to stronger demand in the UK, Sweden, and the eurozone.

… and inflation looks set to rise more slowly than previously assumed

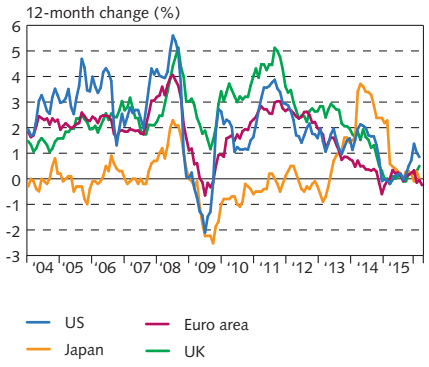
Global inflation remains low (Chart II-6). The drop in oil and commodity prices is a major factor, but low underlying inflation is widespread, as there is still a sizeable output slack in many developed countries. In the euro area, deflation returned in April. Inflation rose to 0.5% in the UK in March, the highest inflation rate in about fifteen months, following a period of deflation last autumn. Inflation has tapered off in the US, however, to 0.9% in March. Trading partners' inflation is projected to measure 0.9% this year, which is below the February forecast but is still higher than inflation measured a year ago.

Unrest in global financial markets and doubts about central banks' scope for further action

Under conditions of declining GDP growth in emerging market economies, a continued weak recovery in developed countries, the end of a long upswing in commodity markets, a stronger US dollar, and protracted strain on monetary policy in major economies, global financial markets can be sensitive to shocks. Because of market agents' limited confidence in governments' ability to control the situation, unrest can easily develop when, for example, indicators suggest that the outlook for GDP growth and inflation is deteriorating. When global market volatility increased a year ago, many central banks responded to disinflation and falling inflation expectations with broad-based measures to ease monetary policy. Turbulence resurfaced in late summer and again at the beginning of 2016, owing in both instances to developments in China. In all of these cases, the situation calmed down again, partly in response to action taken by governments and central banks (Charts II-7 and II-8).

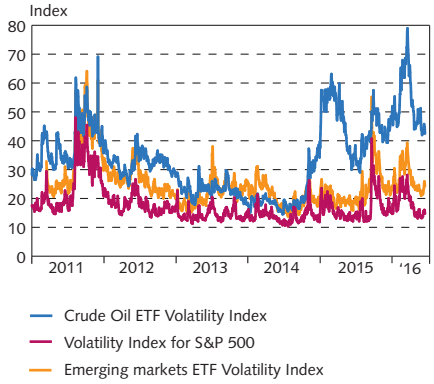
2. See, for example, B. Hoekman (2015). *The Global Trade Slowdown: A New Normal?* Washington: Center for Economic and Policy Research Press; and Box 1.1 in International Monetary Fund (2016). *World Economic Outlook*, April 2016.

Chart II-6
Inflation in selected industrialised countries
January 2004 - April 2016



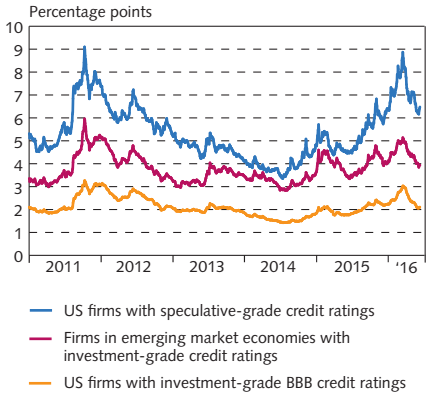
Source: Macrobond.

Chart II-7
Global market volatility[1]
Daily data 3 January 2011 - 6 May 2016



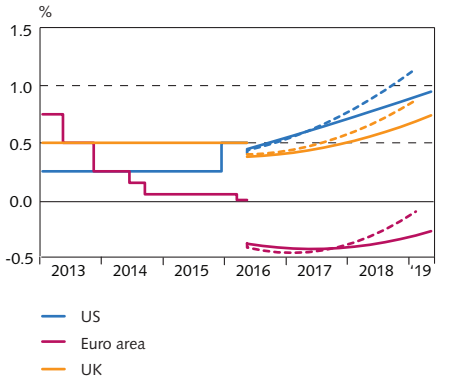
1. The VIX volatility indices indicate the implied volatility of financial products.
Source: Federal Reserve Bank of St. Louis Federal Reserve Economic Data (FRED) database.

Chart II-8
Interest premia on corporate US dollar bonds in global markets[1]



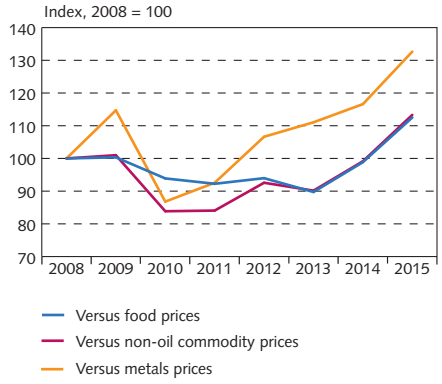
1. According to Bank of America Merrill Lynch bond indices.
Source: Federal Reserve Bank of St. Louis Federal Reserve Economic Data (FRED) database.

Chart II-9
Policy rates in selected industrialised economies[1]
January 2013 - May 2019



1. Daily data 1 January 2013 through 6 May 2016, and quarterly data Q2/2016 through Q2/2019. US interest rates are the upper bound of the US Federal Reserve bank's interest rate corridor, and rates for the euro area are the European Central Bank's key rate. Forward rates are based on six-month overnight index swaps (OIS) and the Euro Overnight Index Average (EONIA) for the euro area. Solid lines show forward curves from 6 May 2016 onwards and the broken lines from 5 February 2016 onwards.
Sources: Bloomberg, Macrobond.

Chart II-10
Ratio of marine export prices to global commodity prices 2008-2015[1]



1. All prices in US dollars.
Sources: International Monetary Fund, Macrobond, OECD, Statistics Iceland.

During the unrest at the beginning of the year, market agents' attention was drawn primarily to the status of emerging market economies following the drop in commodity prices, declining capital flows to these economies, the appreciation of the US dollar, and their widespread dollar-denominated corporate debt. A little later, however, market agents became increasingly concerned about the position of financial institutions, particularly in Europe and Japan, owing to the effects of negative central bank interest rates on these institutions' profits. European banks were already dealing with widespread default and the need to strengthen their capital and liquidity positions in order to satisfy tighter requirements. A number of market agents and analysts were concerned that further central bank measures would undermine financial institutions' operating position to an even greater degree. The aim of the measures taken by the European Central Bank (ECB) in early March – to ease the monetary stance still further – appears to have been achieved, however. In addition, the ECB seems to have strengthened the financial position of the banking system by granting banks access to long-term funding on extremely favourable terms. Forward interest rates indicate that investors expect interest rates of major central banks to be held low for a longer period than was anticipated in February (Chart II-9).

Export prices and terms of trade

Marine product prices have risen sharply in the past two years, while aluminium prices have fallen

Marine product prices have risen by over 19% in the past two years, led by demersal prices. The rise in prices slowed down in the first two months of 2016 but still measures about 3.5% year-on-year. Marine export prices have risen significantly relative to other commodity prices, and there has been steady demand for Icelandic demersal products (Chart II-10). Some adjustment is expected, however, and marine product prices are projected to fall by a total of 4% over the next two years (Chart II-11).

Global aluminium prices have fallen steadily from mid-2014, however, and the average price in Q1/2016 was down about 16% year-on-year. The outlook is for aluminium prices to fall by almost 13% this year, after adjusting for the expected price premium from foreign buyers to the Icelandic aluminium companies. In the following two years, however, they are expected to recover somewhat, rising by a total of just over 4% (Chart II-11).

Petrol prices fell sharply in 2015 but are expected to rise in the coming year

Oil prices fell 47% year-on-year in 2015, concurrent with a steep increase in overall supply, Iran's entry into the oil market, and declining global GDP growth. They have risen somewhat in the recent past, however, from about 26 US dollars per barrel in mid-January to about 45 dollars just before the publication of this *Monetary Bulletin*. They are still some 60% lower than they were just before they began to tumble in late 2014. Oil prices are expected to be down about a fourth year-on-year in 2016, a somewhat smaller decline than was assumed

in February. They are expected to rise by another fourth year-on-year in 2017 and then by 11% in 2018, which is broadly in line with the forecast in the February *Monetary Bulletin* (Chart II-11).

Non-oil commodity prices have fallen 30% since 2011

Non-oil commodity prices fell by 17.5% in 2015 and were down by 30% from 2011, owing to increased supply and a downturn in demand. Food prices rose at the beginning of the year, however, due to the El Niño effect. Metals prices rose year-on-year in February, for the first time in five months, but then declined again in March. Commodity prices are expected to fall still further this year but remain relatively stable from 2017 onwards (Chart II-11).

Terms of trade have improved markedly

Terms of trade for goods and services have improved year-on-year without interruption since Q2/2014, and the terms of trade effect has been much more positive in Iceland than in many other industrialised countries, particularly in comparison with other industrialised commodity exporters (see Box 1). According to preliminary figures from Statistics Iceland, terms of trade improved by 0.7% year-on-year in Q4 (Chart II-12). Over 2015 as a whole, the improvement measured 6.8%, in line with the February forecast. In spite of this improvement, terms of trade in 2015 were still nearly 14% below the pre-crisis peak. Indicators imply that they have improved even further year-to-date. They are expected to improve by nearly 2% in 2016 as a whole, followed by a slight deterioration in the following two years.

Real exchange rate above its thirty-year average …

In Q1/2016, the real exchange rate in terms of relative consumer prices rose to its highest since the beginning of 2008 (Chart II-12). The increase from the same quarter in 2015 measured 9.6%, as the nominal exchange rate rose by 8.5% and domestic inflation was just over a percentage point above the trading partner average. The real exchange rate thus measured is therefore nearly ½% above its thirty-year average. As is discussed in Box 3, it is likely that the equilibrium real exchange rate has risen somewhat in the recent term and that this appreciation reflects to some extent the adjustment of the real exchange rate to a higher equilibrium level.

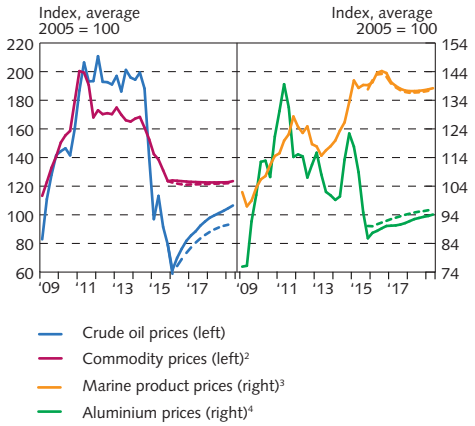
… eroding Iceland's competitive position

If the forecast in this *Monetary Bulletin* materialises, the real exchange rate in terms of relative consumer prices will be nearly 8% higher this year than in 2015. In terms of relative unit labour costs, it is expected to rise even more – by over 16% year-on-year – owing to the large pay increases provided for in recent wage settlements (see Chapter V). Icelandic firms' wage costs have risen considerably more than those in competitor countries in recent years (Chart II-13), and Iceland's competitive position has therefore deteriorated. The outlook for wage developments in coming years suggests an even weaker competitive position during the forecast horizon. Other things being equal, this will have a negative effect on Iceland's external trade (see Box 2 in *Monetary Bulletin* 2015/4).

Chart II-11

Prices of marine products, aluminium, oil, and commodities[1]

Q1/2009 - Q2/2019



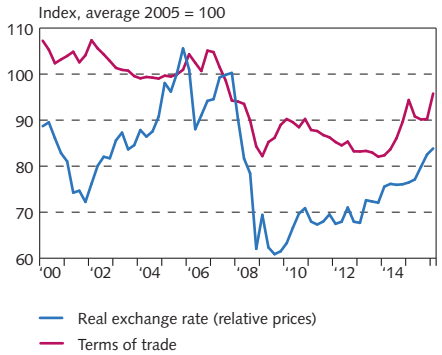
1. Central Bank baseline forecast Q2/2016-Q2/2019. Broken lines show forecast from MB 2016/1. 2. Non-oil commodity prices in USD. 3. Foreign currency prices of marine products are calculated by dividing marine product prices in Icelandic krónur by the export-weighted trade basket. 4. Foreign currency prices of aluminium products are calculated by dividing aluminium prices in Icelandic krónur by the exchange rate of the USD.

Sources: Bloomberg, Statistics Iceland, Central Bank of Iceland.

Chart II-12

Real exchange rate and terms of trade[1]

Q1/2000 - Q1/2016

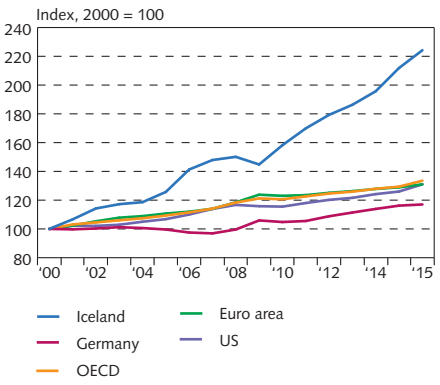


1. Terms of trade and real exchange rate in Q1/2016 according to Central Bank baseline forecast.

Sources: Statistics Iceland, Central Bank of Iceland.

Chart II-13

Unit labour costs in developed countries 2000-2015



Sources: Macrobond, Central Bank of Iceland.

III Monetary policy and domestic financial markets

The Central Bank's key interest rate has been unchanged since November 2015, but its real rate has risen with the decline in inflation and inflation expectations. According to a recent Central Bank survey, market agents appear to expect the Bank's key rate to remain unchanged until the year-end but to increase in the first half of 2017. Bond market yields have remained relatively stable in spite of increased new investment by non-residents. The rise in risk premia on Iceland's sovereign obligations at the beginning of 2016 has reversed for the most part, and the CDS spread is at its lowest since 2008. The króna has continued to appreciate in spite of substantial foreign currency purchases by the Central Bank. Money holdings have continued to grow, and corporate lending has begun to pick up again after contracting year-on-year without interruption since mid-2010. Asset prices have risen, and private sector debt has declined. In spite of a steep drop in recent years, the private sector debt ratio is still relatively high in international context. Overall, private sector financial conditions have continued to improve.

Monetary policy

Nominal Central Bank interest rates unchanged ...

The Central Bank of Iceland Monetary Policy Committee (MPC) decided to hold the Bank's interest rates unchanged at its February and March meetings. Prior to the publication of this *Monetary Bulletin*, the Bank's key interest rate – the rate on financial institutions' seven-day term deposits with the Bank – was 5.75%. Overnight rates in the interbank market for krónur have remained close to the Bank's key rate (Chart III-1). Interbank market turnover grew in the second half of 2015 but has contracted again, owing partly to the effects of changes in reserve requirements.

Similarly, interest rates in auctions of bills issued by the banks have moved broadly in line with the Central Bank's collateralised lending rate. Accepted rates in Treasury bill auctions have continued to fall, however, and are now more than 4 percentage points below the floor of the interest rate corridor. Financial institutions in winding-up proceedings have been one of the largest owners of Treasury bills in the recent term. Demand for Treasury bills contracted when their estates were settled in late 2015. Declining interest rates in the most recent Treasury bill auctions are probably due to the fact that the largest participants in the auctions are currently owners of offshore krónur, who have very few investment options, most of them offering low interest rates.

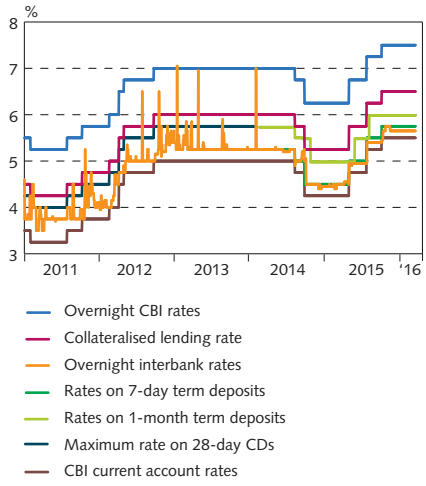
... but the real Central Bank rate has risen

Even though the Central Bank's nominal interest rates have been held unchanged, the monetary stance in terms of the Bank's real rate has tightened since the publication of the February *Monetary Bulletin.* In terms of the average of various measures of inflation and inflation expectations, the Bank's real rate has risen by 0.2 percentage points since February, to 2.8%. Concurrent with the recent decline in inflation, real

Chart III-1

Central Bank of Iceland interest rates and short-term market rates

Daily data 3 January 2011 - 6 May 2016

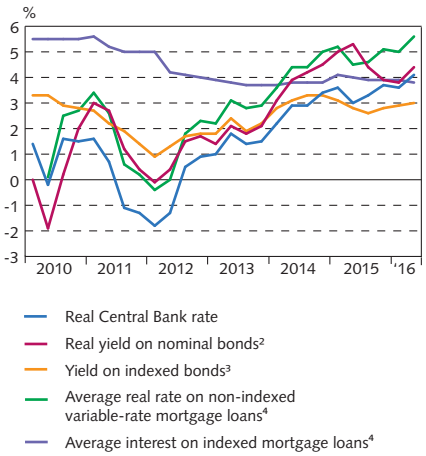


Source: Central Bank of Iceland.

Chart III-2

Real Central Bank interest rate and real market rates

Q1/2010 - Q2/2016[1]

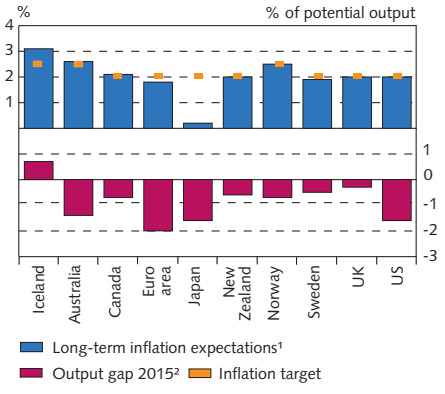


1. Based on data until 6 May 2016. 2. Five-year rate from the estimated nominal yield curve. 3. Five-year rate from the estimated real yield curve. 4. Simple average lowest lending rates from the three largest commercial banks. Fixed-rate period of five years or more on indexed mortgage loans.

Source: Central Bank of Iceland.

Chart III-3

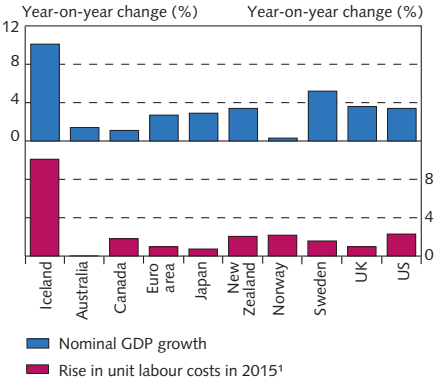
Inflation expectations and output gap in selected industrialised countries



1. Market agents' four- to five-year inflation expectations (based on IMF forecast four years ahead for UK and Canada and five-year inflation swap agreements five years ahead for Japan and Australia). 2. Central Bank estimate for Iceland; IMF estimate for other countries.
Sources: Bloomberg, International Monetary Fund, websites of the relevant central banks, Central Bank of Iceland.

Chart III-4

Nominal GDP and wage costs in selected industrialised countries

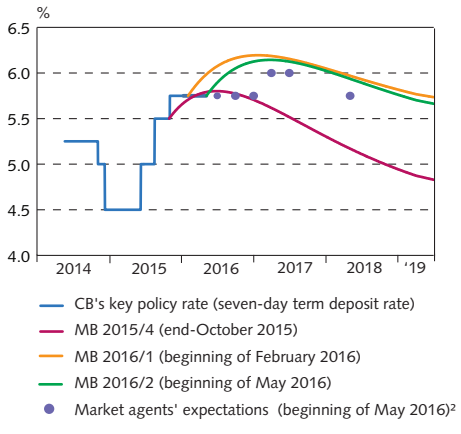


1. Figures for Iceland are based on estimates in *Monetary Bulletin* 2016/2.
Sources: OECD, Statistics Iceland, Central Bank of Iceland.

Chart III-5

Central Bank of Iceland key policy rate and expected developments¹

Daily data 21 May 2014 - 30 June 2019



1. Interbank interest rates and Treasury bonds were used to estimate the yield curve. 2. Estimated from the median response in the Central Bank's survey of market agents' expectations of collaterlised lending rates. The survey was carried out during the period 2-4 May 2016.
Source: Central Bank of Iceland.

rates in terms of past inflation have risen somewhat more, or by 0.5 percentage points, to 4.1% (Table III-1). The November 2015 and February 2016 issues of *Monetary Bulletin* discuss the weaknesses in monetary policy transmission through the interest rate channel in H2/2015, which developed concurrent with the decline in long-term nominal Treasury bond yields caused by non-residents' increased new investment. Although these effects are less pronounced at present, they can still be felt, and the nominal yield curve is still virtually flat. Yields on nominal Treasury bonds are broadly unchanged since the publication of the February *Monetary Bulletin*, and real rates on these bonds are still close to the Central Bank's real rate (Chart III-2). Yields on indexed Treasury bonds have also stood virtually still, as have the commercial banks' deposit and lending rates and the pension funds' average lending rates.

Table III-1 The monetary stance (%)

Real interest rates in terms of:[1]	*Current stance (6 May '16)*	*Change from MB 2016/1 (5 Feb. '16)*	*Change from MB 2015/2 (8 May '15)*
Twelve-month inflation	4.1	0.5	1.1
Business inflation expectations (one-year)	2.7	0.6	1.2
Household inflation expectations (one-year)	2.3	0.6	0.8
Market inflation expectations (one-year)[2]	2.5	-0.1	1.6
One-year breakeven inflation rate[3]	2.9	0.1	1.0
Central Bank inflation forecast[4]	2.1	-0.5	0.3
Average	2.8	0.2	1.0

1. Assuming that the seven-day term deposit rate is the Central Bank's key rate. 2. Based on survey of market participants' expectations. 3. The one-year breakeven inflation rate based on the difference between the nominal and indexed yield curves (five-day rolling average). 4. The Central Bank forecast of twelve-month inflation four quarters ahead.
Source: Central Bank of Iceland.

Interest rates higher in Iceland than in other industrialised countries

In most industrialised economies, central bank interest rates have remained very low for several years and are negative in some instances (see Chapter II). As Charts III-3 and III-4 indicate, this reflects economic conditions that differ greatly from those in Iceland. Long-term inflation expectations have persistently been above target in Iceland, while in other industrialised countries they are firmly anchored at the inflation target or have fallen below it, as in Japan. There is still considerable slack in other industrialised economies, whereas a positive output gap has begun to develop in Iceland. Finally, nominal demand growth and wage rises are much larger in Iceland than in comparison countries. All of these factors call for tighter monetary policy in Iceland than in other industrialised countries.

Market agents expect a modest rise in Central Bank rates

According to the survey of market agents' expectations, carried out in early May, respondents expect the Bank's key rate to be held unchanged until the year-end and then be raised by 0.25 percentage points, to 6%, in the first half of 2017. In two years' time, however, survey participants expect the key rate to be back to 5.75% (Chart III-5). This is as much as 0.5 percentage points lower than in a compa-

rable survey conducted in February. Indications from forward interest rates give similar results.[1]

In late 2015, increased inflows related to non-residents' new investment in long nominal Treasury bonds had a significant impact on the shape of the yield curve, but as is discussed below, these effects have reversed in part. At the time of the November *Monetary Bulletin*, forward interest rates indicated that market agents expected a larger decline in the Bank's rates than was implied by other indicators. It is possible that these factors still have some impact on the long end of the yield curve, albeit most likely weaker than before.

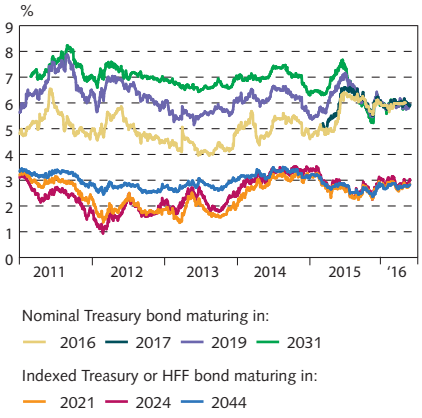
Market interest rates and risk premia

Bond market yields broadly unchanged despite resurgence of new investment by non-residents

In the latter half of 2015, bond market yields fell markedly – particularly on long nominal Treasury bonds – in spite of the Central Bank's interest rate increases (Chart III-6). This could be due in part to increased optimism about the Treasury's position, expectations of reduced Treasury bond issuance, and lower inflation expectations. However, as is discussed in Box 1 in *Monetary Bulletin* 2015/4, it is likely that the decline was due mainly to increased capital inflows connected with non-residents' new investment in long nominal Treasury bonds, which pushed yields downwards, flattening out the yield curve until the term premium on longer bonds seemed to have virtually disappeared. These disturbances in monetary policy transmission along the interest rate channel reversed in part after the Bank's rate increase in early November and the subsequent announcement that the Bank was considering using other policy instruments to restrict carry trade-related capital inflows. Yields on nominal Treasury bonds rose by as much as 0.8 percentage points thereafter, and yields on indexed Treasury bonds and Housing Financing Fund (HFF) bonds rose by up to 0.4 percentage points. Furthermore, non-residents' new investment tapered off towards the end of the year.

Non-residents' new investment in the bond market has picked up once again, totalling 24.3 b.kr. in the first four months of 2016. As before, it is limited to nominal Treasury bonds. In a departure from developments in 2015, market yields have remained relatively stable in spite of these increased inflows. Although the disturbances in monetary policy transmission have not subsided in full, as can be seen in the fact that the yield curve is still virtually flat despite the MPC's indications of further rate hikes, this recent stability indicates that the effects of capital inflows are less pronounced than before and that the bond market is better able to absorb increased inflows. Before the publication of this *Monetary Bulletin*, nominal Treasury bond yields lay in the 5.9-6% range and indexed Treasury and HFF bonds in the 2.8-3% range, similar to those in early November, following the Central Bank's rate increase. Therefore, the breakeven inflation rate in the bond market is broadly unchanged year-to-date (see Chapter V).

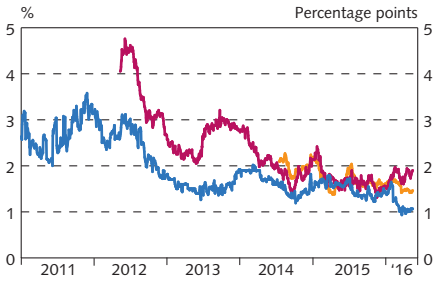
Chart III-6
Nominal and indexed bond yields
Daily data 3 January 2011 - 6 May 2016



Source: Central Bank of Iceland.

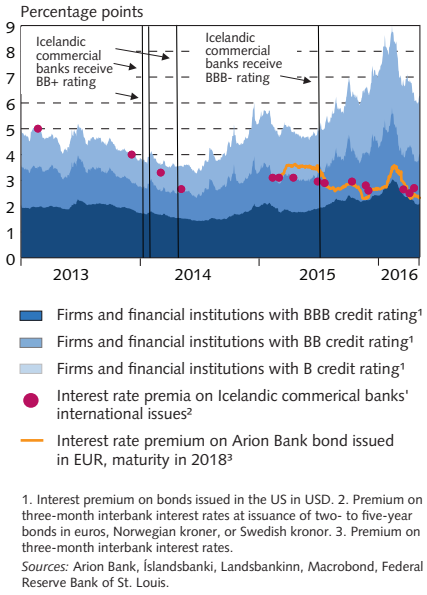
1. Measurement problems at the short end of the yield curve introduce a measure of uncertainty into the indications provided by the yield curve. For further discussion, see Box III-1 in *Monetary Bulletin* 2013/4.

Chart III-7
Risk premia on Icelandic Treasury obligations
Daily data 3 January 2011 - 6 May 2016



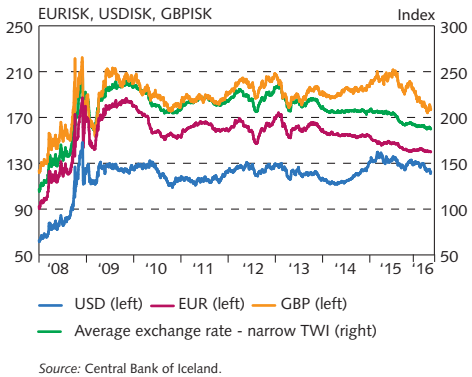
Source: Bloomberg.

Chart III-8
Risk premia on firms and financial institutions
Daily data 2 January 2013 - 6 May 2016



1. Interest premium on bonds issued in the US in USD. 2. Premium on three-month interbank interest rates at issuance of two- to five-year bonds in euros, Norwegian kroner, or Swedish kronor. 3. Premium on three-month interbank interest rates.
Sources: Arion Bank, Íslandsbanki, Landsbankinn, Macrobond, Federal Reserve Bank of St. Louis.

Chart III-9
Exchange rate of foreign currencies against the króna
Daily data 3 January 2008 - 6 May 2016



Source: Central Bank of Iceland.

Risk premia on the Treasury have declined, and the CDS spread is at its lowest since the beginning of 2008

Risk premia on the Treasury's foreign obligations rose at the beginning of 2016, in line with increased unrest in the global financial markets (Chart III-7). Many other countries saw a similar increase in risk premia on their sovereign obligations. The rise in risk premia on Icelandic Treasury obligations has largely reversed, however, as market unrest has retreated (see Chapter II). The interest rate spread between the Treasury's eurobond and a comparable bond issued by Germany is now about 1½ percentage points, about 0.2 points less than at the beginning of the year. A comparable spread vis-à-vis the US is still about 0.4 percentage points larger than at the beginning of the year, at 1.9 percentage points. The CDS spread on five-year Treasury obligations has continued to decline and is now about 1%, or 0.3 percentage points less than at the beginning of the year. In the recent term, it has been at its lowest since the beginning of 2008. The decline is probably a reflection of Standard & Poor's upgrade of Iceland's sovereign credit ratings earlier this year.

The rise in risk premia on the domestic commercial banks at the beginning of this year has also reversed, as it has on US firms and financial institutions with comparable credit ratings (Chart III-8). Interest premia on the commercial banks' international issues are now slightly below those on comparable issues at year-end 2015.

Exchange rate of the króna

Nominal exchange rate rises …

The króna has appreciated by about 1.3% in trade-weighted terms since the February *Monetary Bulletin*, and the index now measures about 187.5 points (Chart III-9). Over this period it has risen 1.9% against the euro, 3.5% against the US dollar, and 3.5% against the pound sterling. As in the recent past, favourable terms of trade, tourism-generated foreign currency inflows, and continued capital inflows in connection with new investment in the bond market have contributed to the appreciation of the króna. As is discussed in Box 3, the appreciation probably reflects an adjustment to a higher equilibrium exchange rate to a large extent.

… in spite of sizeable foreign currency purchases by the Central Bank

The Central Bank has intervened in the interbank foreign exchange market in order to build up foreign reserves financed domestically during the run-up to capital account liberalisation and to mitigate exchange rate volatility. Foreign exchange market turnover year-to-date totals just over 216 b.kr. and the Bank's net purchases about 125 b.kr. This is far more than over the same period in 2015.

Money holdings and lending

Money holdings continue to grow …

Money holdings have grown in tandem with strong growth in nominal demand. In Q1/2016, annual growth in M3 measured 6.1% after ad-

justing for the deposits held by the financial institutions in winding-up proceedings, about the same rate of growth as in the majority of 2015 (Chart III-10). As before, this growth is due primarily to an increase in deposits held by households and non-deposit-taking financial institutions.

… as did Central Bank base money …

In terms of the twelve-month moving average, Central Bank base money (M0) grew 18½% year-on-year in March. This increase is due primarily to an increase in deposit institutions' current account balances with the Bank, which in turn is due to increased reserve requirements (Chart III-11). When adjusted for this, base money grew by 6½% year-on-year in March, owing largely to an increase in banknotes and coin in circulation, which probably stems in part from the continuing increase in tourist visits to Iceland.

… but deposit institutions' excess reserves have contracted

However, deposit institutions' excess reserves with the Central Bank – i.e., current account balances over and above reserve requirements – contracted by over 3% year-on-year in March in terms of the twelve-month moving average. These excess reserves have averaged 10-20 b.kr. per month since the beginning of 2014 (Chart III-11). Therefore, the Central Bank's foreign currency purchases in the last two years have not had a significant impact on market liquidity, as the Bank has applied mitigating measures and sterilised its intervention by offering term deposits (previously certificates of deposit) to financial institutions eligible for Central Bank facilities. In this way, the Bank pulls the increased domestic liquidity from its intervention back into the Bank as term deposits, as the intervention is not intended to affect market liquidity and thereby affect domestic interest rates. The risk exists that, without these offsetting measures, the increase in liquidity could bring short-term money market rates down below the level that the MPC considers conducive to price stability.

Corporate loan stock growing again …

The stock of credit granted by deposit institutions, the HFF, and the pension funds contracted by just over ½% year-on-year in nominal terms in the first quarter of 2016 (Chart III-12). The credit stock adjusted for the Government's debt relief measures is estimated to have grown by almost 1%, however. This increase is due mainly to a rise in lending to businesses, services companies in particular, while lending to households grew marginally year-on-year after adjusting for the debt relief package.

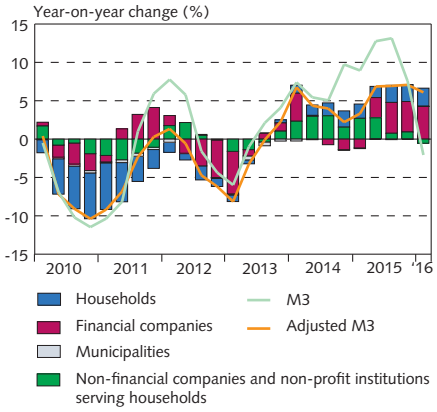
… after contracting uninterrupted since mid-2010

Lending to companies has grown year-on-year in the past four months, after contracting without interruption since mid-2010. The contraction is due in part to refinancing of older loans and conversion to other forms of debt, including marketable securities. Annual corporate bond issuance has increased to a total of 50-100 b.kr. in the past four years. As can be seen in Chart III-13, pension funds have stepped up their corporate lending in recent years by buying corporate bonds.

Chart III-10

Components of money holdings - Adjusted M3[1]

Q1/2010 - Q1/2016

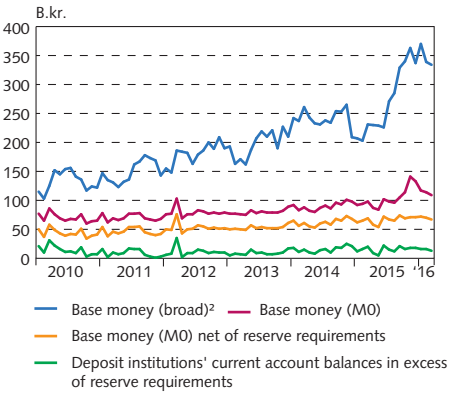


1. Adjusted for deposits of financial institutions in winding-up proceedings.
Source: Central Bank of Iceland.

Chart III-11

Central Bank base money and DMBs' excess reserves with the Bank[1]

January 2010 - March 2016

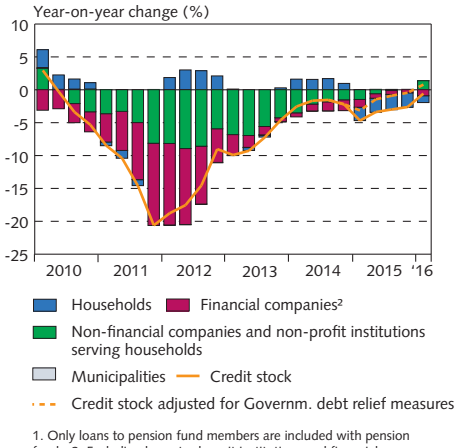


1. Monthly average. 2. Base money including term deposits and certificates of deposit.
Source: Central Bank of Iceland.

Chart III-12

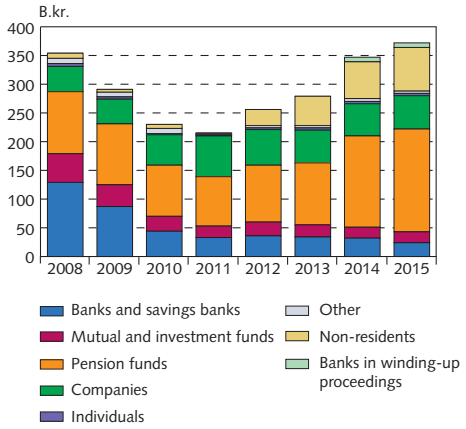
Credit system lending to resident borrowers and sectoral contribution[1]

Q1/2010 - Q1/2016



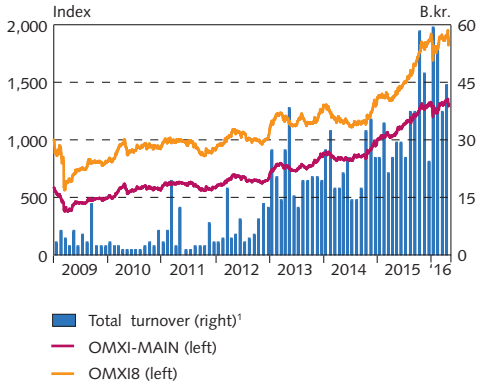
1. Only loans to pension fund members are included with pension funds. 2. Excluding loans to deposit institutions and financial institutions in winding-up proceedings.
Source: Central Bank of Iceland.

Chart III-13
Owners of corporate bonds 2008-2015[1]



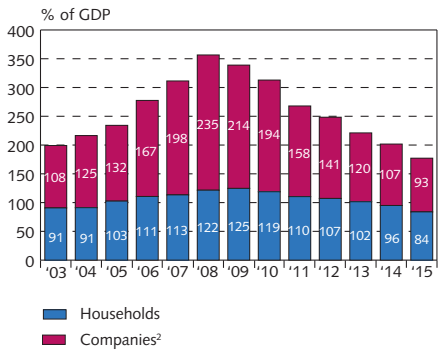
1. Based on market value of bonds.
Source: Central Bank of Iceland.

Chart III-14
Equity market
Daily data 2 January 2009 - 6 May 2016



1. Total monthly volume of listed shares.
Source: Nasdaq OMX Iceland.

Chart III-15
Household and non-financial corporate debt[1]



1. Debt owed to financial undertakings and market bonds issued. 2. Excluding financial institutions and holding companies.
Sources: Statistics Iceland, Central Bank of Iceland.

Asset prices and financial conditions

Moderate rise in house prices expected this year, in line with rising disposable income

According to figures from Registers Iceland, house prices have risen 7.6% year-on-year so far in 2016, just over ½ a percentage point more than was forecast in February. The number of purchase agreements has risen by a fifth year-on-year, and rent has risen by 5.2%. Turnover has therefore increased, and the average time-to-sale has fallen from four months at the beginning of 2015 to two months at the beginning of 2016. The outlook for this year is for house prices to continue rising at broadly the same pace as in 2015, in line with increased disposable income and improvements in households' equity position.

Share prices have risen since the publication of the February *Monetary Bulletin*

Share prices began to drop at the start of the year, similar to market developments abroad, after a steady rise throughout 2015. The announcement of pension funds' increased authorisation for foreign investment took place at the same time. That decline has now reversed, and the Nasdaq Iceland OMXI8 index has risen by 4.3% since the publication of the February *Monetary Bulletin* in spite of recent declines (Chart III-14). Turnover in the Nasdaq Iceland main market totalled more than 190 b.kr. over the first four months of the year, about 85% more than over the same period in 2015.

Year-2015 earnings reports from companies listed on the exchange were positive, and dividends per share rose year-on-year. The operational outlook was generally good, in spite of rising domestic wages and the appreciation of the króna. The newly published Q1/2016 earnings reports were below market expectations, however, owing in part to increased wage costs. As yet there are no signs of substantial new investment by non-residents in domestic equities, which to date totals about 9.8 b.kr. from mid-2015, when new investment in the bond market began to grow.

Continuing private sector deleveraging …

The private sector deleveraging that began in 2009 has continued. Corporate debt declined by over 3% in nominal terms in Q4/2015, to 93% of GDP by the year-end, some 13 percentage points lower than at the end of 2014 (Chart III-15). Corporate debt to foreign financial institutions declined by over a fourth in nominal terms in 2015, while debt to domestic institutions increased. The stock of domestic corporate bonds grew as well, as is mentioned above.

Household debt declined by 1% in nominal terms in Q4/2015, to 84% of GDP by the year-end, 11 percentage points lower than at the end of 2014. The debt-to-GDP ratio is likely to have fallen further this year, with increased economic activity and the continued impact of the Government's debt relief measures. In January 2016, with the payment of the remaining one-fourth of the Government's contribution to the direct reduction of mortgage principal, final settlement of measures took place between the Treasury and the financial institu-

tions. As of end-April 2016, the cumulative direct reduction of mortgage principal totalled 73.4 b.kr., and another 19.7 b.kr. had been paid towards loans through the third-pillar pension savings programme.

... but debt is still relatively high in international context

Private sector debt amounted to 177% of GDP at the end of 2015, or nearly 200 percentage points below the October 2008 peak. The private sector debt ratio is now at its lowest since year-end 2003. The post-crisis reduction in debt has been much larger in Iceland than in other European countries (Chart III-16). However, in spite of this, Iceland's private sector debt level is relatively high in European context, owing to the steep rise during the pre-crisis period.

Arrears have declined among households but risen slightly among firms

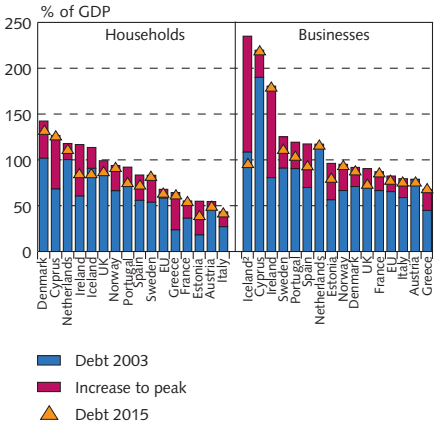
The ratio of non-performing household debt to the three large commercial banks and the HFF had declined to about 6.5% by the end of March (Chart III-17). The number of individuals on the Creditinfo default register has also tapered off. The ratio of non-performing corporate loans rose at the end of 2015, however, after a virtually uninterrupted decline since 2011, and the number of firms on the default register rose slightly as well. The ratio is still about a third lower than at the beginning of 2011, however. In spite of increased arrears among corporate borrowers, the number of insolvencies among private limited companies has declined year-on-year, and new company registrations have increased.

Mortgage lending rates broadly unchanged

Interest rates on indexed and non-indexed mortgage loans from the commercial banks have been unchanged since the publication of the February *Monetary Bulletin*, apart from one bank's 0.1 percentage point reduction in the rate on indexed fixed-rate mortgages. The average rate on indexed loans granted by the majority of pension funds is also unchanged. Most pension funds have eased their borrowing requirements and have begun to offer non-indexed loans. Interest rates on pension fund loans are now up to 1 percentage point lower than rates on comparable mortgages offered by the commercial banks. Concurrent with these changes, the pension funds' mortgage lending activity has increased and the stock of pension fund loans has grown in recent months, after having contracted before then, in part because of the Government's debt relief measures. In spite of this increase, their lending activity is relatively limited thus far, and these loans constitute a historically small share of the pension funds' net assets.

Chart III-16

Household and corporate debt in selected European countries 2003-2015[1]

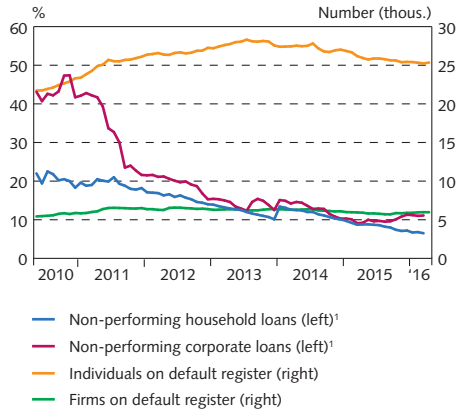


1. The blue columns show household and non-financial corporate debt at year-end 2003. The red columns show the increase in debt to the highest year-end value, and the triangles show the position at year-end 2015. Data for 2014 used if 2015 data are not available. 2. Debt owed to financial undertakings and market bonds issued according to figures from the Central Bank of Iceland.
Sources: Eurostat, Central Bank of Iceland.

Chart III-17

Credit system arrears

May 2010 - March 2016



1. Non-performing loans owed to the three largest commercial banks and the Housing Financing Fund are defined as loans at least 90 days in arrears, those that are frozen, or those for which payment is deemed unlikely. The cross-default method is used; i.e., if one loan taken by a customer is in arrears by 90 days or more, all of that party's loans are considered non-performing. The January 2014 increase is due almost entirely to improvements to the HFF's loan portfolio reports and therefore does not reflect an actual increase. Parent companies, book value.
Sources: CreditInfo, Financial Supervisory Authority, Central Bank of Iceland.

IV The domestic real economy

GDP growth measured 4% in 2015, reflecting robust growth in domestic demand, while the contribution from net trade was negative in spite of strong growth in services exports. GDP growth for the year was broad-based, although increased output from tourism-related activities weighed heavily. Indicators imply robust domestic demand growth year-to-date, and the outlook is for strong growth in private consumption, supported by a steep rise in purchasing power, increased employment, and an improved equity position. In spite of a recent surge in spending, households have stepped up their saving in the past two years and appear likely to continue in 2016. GDP growth is projected at 4.5% this year and about 4% in 2017. If the forecast materialises, it will be the third consecutive year with a GDP growth rate of 4% or more. Jobs have risen rapidly in number, and the labour participation rate is close to its 2007 high. Productivity growth has remained weak, however. It is becoming increasingly difficult to fill available positions, and most indicators imply that the slack in the labour market has disappeared. The slack in output is estimated to have disappeared in 2015, and the positive output gap is projected to continue widening this year.

GDP growth and domestic private sector demand

GDP growth in 2015 in line with February forecast

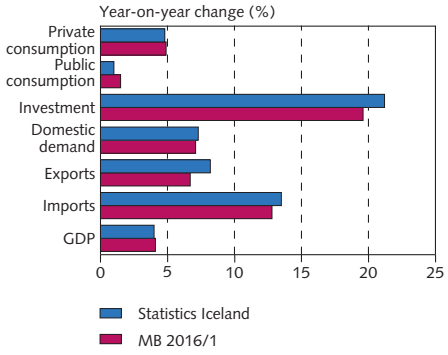
Year-2015 GDP growth measured 4%, in line with the Bank's February forecast. Of the main components of GDP, export growth was the main driver, although business investment and private consumption also contributed strongly (Chart IV-1). It is likely that rapid growth in exports – services exports in particular – play a role in the fact that business investment and private consumption grew as much as Statistics Iceland figures indicate, as extensive tourism activity calls for investment in the sector, as well as creating jobs, thereby increasing households' disposable income. Growth in domestic demand was accompanied by a surge in imports, causing the overall contribution from net trade to be negative by nearly 2 percentage points of GDP.

Year-2015 GDP growth was more than 1 percentage point above the thirty-year average, and growth in domestic demand was at its strongest since 2006. Output growth was somewhat stronger in Iceland than in trading partner countries, where it has been somewhat below its long-term average (Chart IV-2). In Q4/2015, Iceland's seasonally adjusted GDP was more than 16% above the 2010 trough and more than 3% above the pre-crisis peak.

The tradable sector generated the majority of 2015 GDP growth

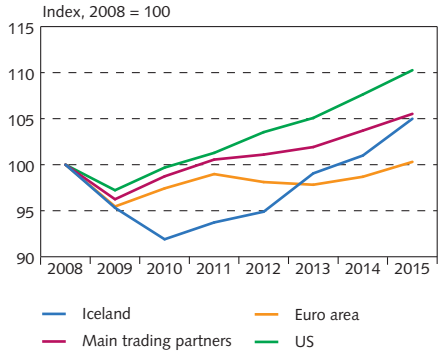
In the production accounts, it can be seen clearly how important a role the tourism sector played in last year's output growth. Real gross factor income rose by 4.4% in 2015, half of it stemming from industries falling under the tradable sector, to which tourism is a major contributor (Chart IV-3). It is interesting to see how broad-based 2015 GDP growth was. After the tradable sector, the main contributors were do-

Chart IV-1
National accounts 2015



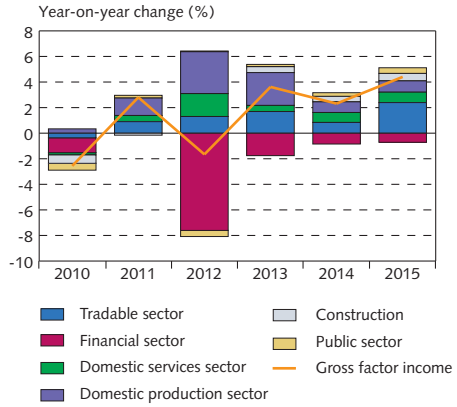
Sources: Statistics Iceland, Central Bank of Iceland.

Chart IV-2
GDP in Iceland and its main trading partners 2008-2015



Sources: Macrobond, Statistics Iceland, Central Bank of Iceland.

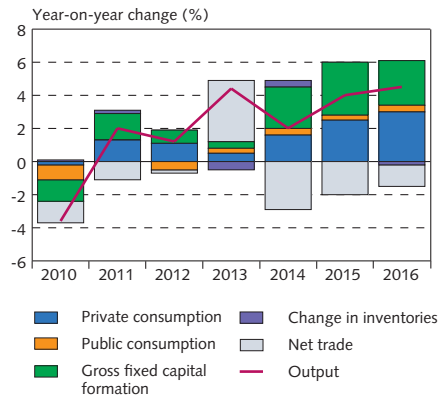
Chart IV-3
Gross factor income and sectoral contributions 2010-2015[1]



1. Gross factor income measures the income of all parties involved in production. It is equivalent to GDP adjusted for indirect taxes and subsidies. Included in the tradable sector are fisheries, fish product processing, manufacture of metals and pharmaceuticals, and 75% of electricity, gas, heat, and water utilities. Other sectors are considered non-tradable and are classified as construction, financial sector, services (excl. financial services), and production.

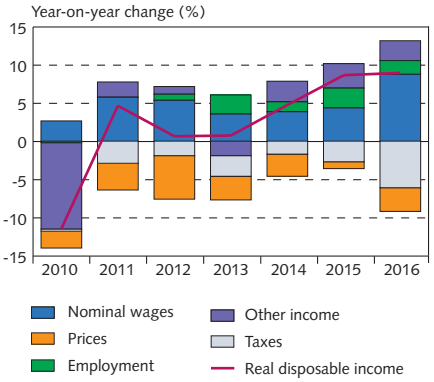
Sources: Statistics Iceland, Central Bank of Iceland.

Chart IV-4
GDP growth and contribution of underlying components 2010-2016[1]



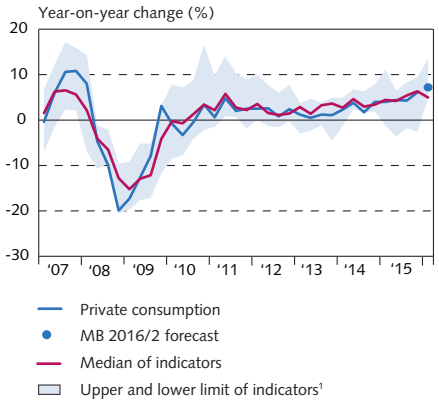
1. Central Bank baseline forecast 2016.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart IV-5
Real disposable income and its main components 2010-2016[1]



1. Central Bank baseline forecast 2015-2016. The contribution of the main underlying components to annual changes in real disposable income is calculated based on each component's weight in disposable income. The combined contribution of underlying components does not add up to the total change due to rounding and incomplete income accounts for households from Statistics Iceland.
Sources: Statistic Iceland, Central Bank of Iceland.

Chart IV-6
Indicators of private consumption
Q1/2007 - Q1/2016



1. Indicators are payment card turnover, groceries turnover, share prices, housing prices, consumer goods imports, new motor vehicle registrations, wages, and unemployment. The indicators are rescaled so that their average and standard deviation are the same as those for private consumption.
Sources: Centre for Retail Studies, Statistics Iceland, Central Bank of Iceland.

mestic production and domestic non-financial services. The construction industry also contributed more to gross factor income last year than at any time since the economic recovery began. Financial services made a negative contribution last year, however, albeit to a lesser degree than in the previous three years.

Outlook for stronger GDP growth in 2016 than previously projected

Output growth is expected to continue this year and to gain pace slightly. The composition of growth is forecast to be broadly similar to that in 2015, with growth in domestic demand offset by a negative contribution from net trade due to robust import growth (Chart IV-4). GDP growth is forecast at 4.5%, or 0.5 percentage points more than in 2015, owing mainly to increased private and public consumption and a less strongly negative contribution from net trade. In 2017 and 2018, GDP growth will lie in the 3-4% range, as the contribution from private consumption and investment will decline and the contribution from net trade will be positive in both years.

In comparison with the Bank's February forecast, the current GDP growth forecast for 2016 assumes a stronger contribution from private consumption, investment, and exports, but it also assumes that import growth will be stronger than was projected in February and that the contribution from net trade will therefore be weaker.

Households' purchasing power has risen sharply …

Households' real disposable income rose sharply in 2015, largely because of nominal wage increases (Chart IV-5). This stimulated household demand during the year. Towards the end of the year, private consumption growth gained pace in comparison with previous quarters, measuring 6% in Q4, the fastest growth rate since Q1/2008. A number of factors supported growing household demand, including increased real wages, rising asset prices, and an improved equity position. This resulted in increased optimism among households and a rise in the Gallup consumer sentiment index. The trend has continued in 2016. Purchasing power has continued to rise steeply, in line with pay increases and low inflation, and household optimism is close to the 2003-2007 average.

… supporting demand in 2016

Increased optimism among households, concurrent with rising purchasing power and an improved equity position, gives cause to reassess year-2016 private consumption growth. This is particularly applicable in view of indicators such as payment card turnover, which suggest that private consumption growth accelerated year-on-year in Q1, to an estimated 7.2% (Chart IV-6). It is assumed that growth for the year as a whole will be 6% and that real disposable income will rise by nearly 9% for the second year in a row (Chart IV-7). Private consumption growth is projected to ease over the next two years and, if the forecast materialises, the ratio of private consumption to GDP will rise from just under 51% to about 52½% by 2018. This is somewhat below both the historical average and the estimated long-term

equilibrium ratio (see Box 3), but in line with the experience of other countries, where domestic saving has generally risen in the wake of financial crises.

Given that conditions have been favourable for rapid private consumption growth in the recent term, the rate of growth has been relatively modest as yet. Households have been more cautious with consumption than often before and have accumulated savings. In view of the experience from before the financial crisis, however, private consumption growth could be underestimated, as is described in the alternative scenario in Chapter I.

Business investment above its long-term average in 2015

After the financial crisis, the ratio of business investment to GDP was far below its long-term average. This reflected both a high capital-to-output ratio and firms' limited desire to undertake new investment under the economic conditions then prevailing. Investment has picked up in the recent term, however, and business investment measured 13.6% of GDP in 2015. It was the first time since 2008 that the ratio of business investment to GDP had risen above its thirty-year average. It is also worth noting that the distribution across types of investment has changed somewhat (Chart IV-8). In 2010-2012, business investment relied heavily on investment in the energy-intensive sector, on the one hand, and ships and aircraft, on the other. These two categories are still quite important, but the construction industry has rallied in the past two years, and construction and construction-related investment accounted for over half of last year's nearly 30% growth in business investment. This can also be seen in the Gallup survey carried out in March, in which executives from the 400 largest companies in Iceland were asked for their assessment of the economic situation and outlook. According to the survey, construction executives are optimistic and expect to increase their staffing levels in the coming term.

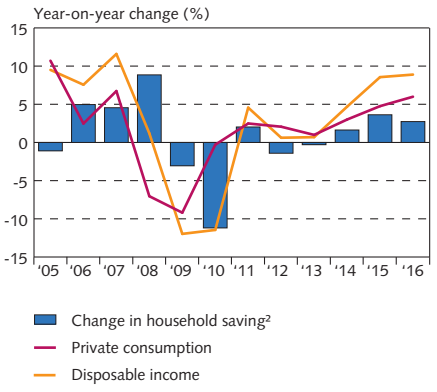
Business investment growth to accelerate in 2016

Business investment is expected to continue growing strongly this year, albeit at a slightly slower pace than in 2015. Investment in energy-intensive industry and ships and aircraft will contribute more to the increase than in 2015, while general business investment is expected to grow a little more slowly than it did last year. Excluding energy-intensive investment, the components of business investment are projected to be somewhat stronger this year than was assumed in February. Total business investment is now forecast to grow by 19% this year, some 4 percentage points more than in the February forecast.

Firms plan increased investment

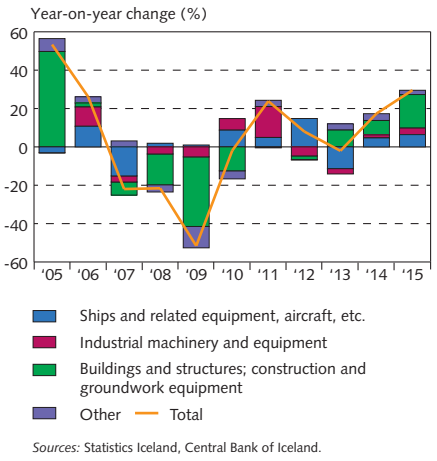
The Central Bank conducted a survey of over 100 firms' investment plans this spring. The survey showed that 2015 investment was stronger than had been indicated in a comparable survey carried out last autumn (Table IV-1). When asked about their investment plans for 2016, respondents indicated that they expect to invest more this year than they projected last autumn. The greatest increase can be seen in the transport/tourism and fishing industries. The survey also includes questions on investment financing, and it is noteworthy that

Chart IV-7
Private consumption and disposable income 2005-2016[1]



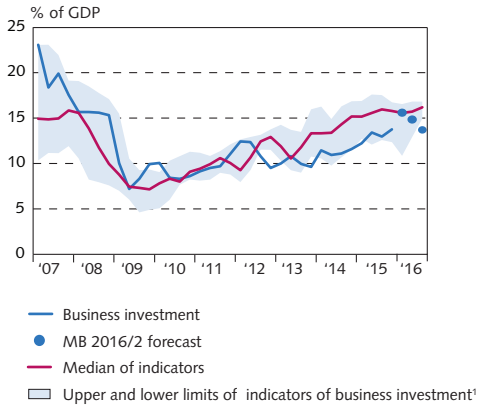
1. Central Bank baseline forecast 2015-2016. 2. Change in the ratio of disposable income to private consumption.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart IV-8
Business investment and contribution by type 2005-2015



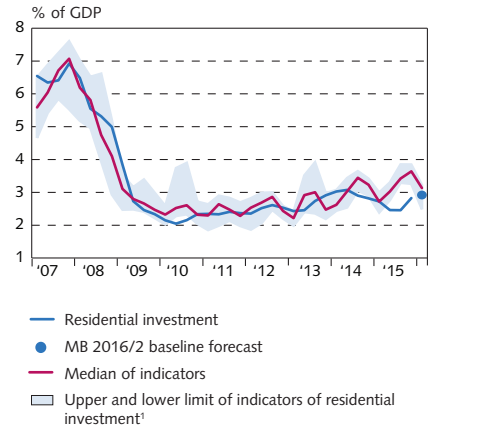
Sources: Statistics Iceland, Central Bank of Iceland.

Chart IV-9
Indicators of business investment
Q1/2007 - Q3/2016



1. The indicators are imports of investment goods at constant prices and responses to four questions from the Gallup survey of Iceland's 400 largest companies. The questions centre on executives' assessment of (a) the economic outlook six months ahead, (b) how they expect domestic demand for their goods or services to develop in the next six months, (c) whether they expect their company's investment to increase year-on-year in the current year, and (d) whether they expect their margins to increase year-on-year. In assessing the range, all variables are rescaled so that their average and standard deviation are the same as those for business investment. Two-quarter moving averages. Investment indicators are lagged by two quarters.
Sources: Gallup, Statistics Iceland, Central Bank of Iceland.

Chart IV-10
Indicators of residential investment
Q1/2007 - Q1/2016



1. The indicators are imports of reinforcing steel, imports of other construction materials, and cement sales to buyers other than energy-intensive firms. In assessing the range, the variables are rescaled so that their average and standard deviation are the same as those for measured residential investment. The chart shows a two-quarter moving average.
Sources: Aalborg Portland Iceland, Sementsverksmiðjan ehf., Statistics Iceland, Central Bank of Iceland.

only about a third of investment will be credit-financed. Nevertheless, this represents an increase from the Bank's previous survey, which indicated that 20-30% of investment would be financed with credit. The survey does not cover hotel construction, but according to information from developers, a sizeable increase in hotel construction can be expected this year. In addition to this is investment in ships and aircraft, based on new information not available at the beginning of 2016. These indications are in line with other information suggesting relatively rapid growth in business investment (Chart IV-9).

Table IV-1 Survey of corporate investment plans (excluding ships and aircraft)[1]

Largest 101 (98) firms Amounts in ISK billions	*2014*	*2015*	*2016*	*Change between 2014 and 2015 (%) (last survey)*	*Change between 2015 and 2016 (%) (last survey)*
Fisheries (16)	5.9	12.2	15.7	106.1 (49.3)	28.1 (1.7)
Industry (18)	4.8	4.3	4.6	-9.9 (-20.4)	8.1 (-0.8)
Wholesale and retail sale (23)	5.1	7.4	7.9	46.2 (24.1)	7.1 (16.7)
Transport and tourism (7)	13.8	18.2	34.0	31.5 (45.3)	86.9 (38.1)
Finance/Insurance (9)	5.1	4.1	6.2	-19.5 (-8.5)	51.7 (32.5)
Media and IT (7)	7.3	7.3	7.3	-0.4 (-2.9)	-0.4 (3.3)
Services and other (21)	14.6	16.4	15.6	12.6 (3.5)	-5.2 (-4.5)
Total 101 (98)	56.6	69.9	91.3	23.5 (16.4)	30.6 (15.0)

1. In parentheses is a comparison with the last survey, in which respondents from 98 firms were asked about investment plans for 2015-2016 (*Monetary Bulletin* 2015/4).
Source: Central Bank of Iceland.

Residential investment to rise marginally this year and pick up strongly in 2017

Residential investment contracted by more than 3% year-on-year in 2015, while the forecast in the last *Monetary Bulletin* assumed a 3% increase. The contraction was somewhat surprising, but new information suggests that the indicators generally used to project residential investment led to an overestimation (Chart IV-10). As is mentioned above, the Gallup survey among Iceland's 400 largest firms indicates that construction industry executives are very optimistic about the near-term economic outlook, but this may reflect planned activity in hotel construction rather than residential construction. This would be in line with the assessment of the Federation of Icelandic Industries, which indicates that fewer residential properties were built in 2015 than previously estimated. Housing starts appear to be increasing in line with previous estimates, however, but the time to completion has lengthened, as contractors have shifted their emphasis to hotel construction. Residential investment is expected to grow by just under 6% this year and nearly a fifth per year, on average, in 2017 and 2018. In spite of this, the ratio of residential investment to GDP will still be below its thirty-year average at the end of the forecast horizon.

Investment in line with its long-term average during the forecast horizon

As is mentioned above, business investment rose above its thirty-year average in 2015, for the first time since 2008. Total investment was still about 1 percentage point below its long-term average, but it has been growing steadily in recent years. According to the forecast, in-

vestment will grow by about 14% this year, driven largely by general business investment and energy-intensive investment (Chart IV-11). The weight of these two investment categories will decline sharply in the next two years, however, and according to the forecast, residential investment will be the largest contributor. If this forecast materialises, the investment-to-GDP ratio will be about 20% this year and in the 19-20% range in 2017 and 2018.

Public sector

Modest growth in public expenditure throughout the forecast horizon

Public spending, particularly central government spending, has been restricted since the financial crisis struck. In 2015, public consumption grew by 1.1%, a decline of ½ a percentage point from the year before, indicating that the sizeable cost increases due to public employees' pay rises have crowded out real growth in public consumption. The forecast assumes that this is the case; therefore, public consumption is projected to grow by an average of only 1½% per year throughout the forecast horizon. The same applies to public investment, which is forecast to grow by an average of 3½% per year over the horizon. This forecast is based on the assumption that the ratio of investment to GDP will remain unchanged throughout the forecast horizon, at just under 3%. A similar assumption concerning public investment can be found in the Ministry of Finance and Economic Affairs' investment strategy. No spending for the construction of the new national hospital is assumed, apart from that already included in the National Budget for 2016, as it is clear that the majority of the construction will take place outside the current forecast horizon.

Public investment high compared to other countries hit hard by the financial crisis

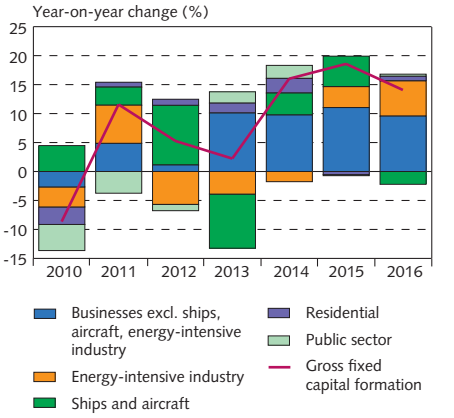
At the end of 2015, the real value of public investment in Iceland was 40% lower than in 2008, when it amounted to 4.7% of GDP. By the end of last year, however, that ratio had fallen by nearly 2 percentage points, to 2.9%. Ireland is the European country that reduced public investment the most in the wake of the crisis, with a decline amounting to 3.4 percentage points of GDP between 2008 and 2013 (Chart IV-12). Spain and Greece were next, with a reduction of over 2 percentage points of GDP. Ireland's investment-to-GDP ratio is also lowest, at 1.8%.

Central and general government performance slightly poorer than forecast in 2015

According to preliminary figures from Statistics Iceland, public sector operations were close to being in balance in 2015, with a deficit of 0.5% of GDP, as opposed to a deficit of 0.1% in 2014. The forecast in the November *Monetary Bulletin* assumed, however, that operations for the year would be in balance. Regular public sector revenues were overestimated by 0.6% of GDP in the forecast, and total expenditures were overestimated by 1.1% of GDP.

Chart IV-11

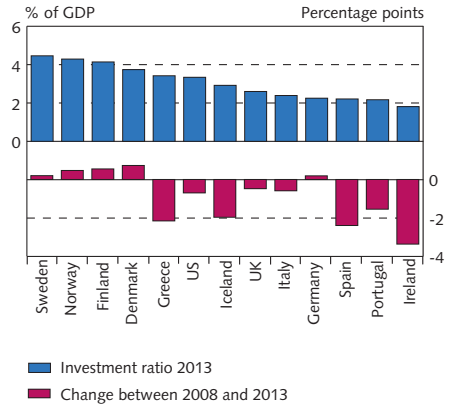
Gross fixed capital formation and contribution of main components 2010-2016[1]



1. Central Bank baseline forecast 2016.
Sources: Statistics Iceland, Central Bank of Iceland.

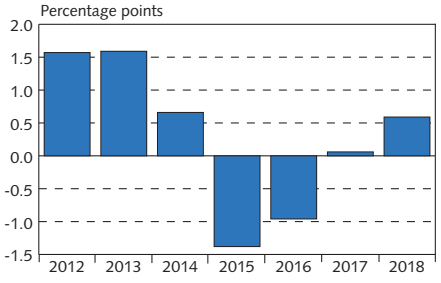
Chart IV-12

Public investment in selected industrialised countries 2013



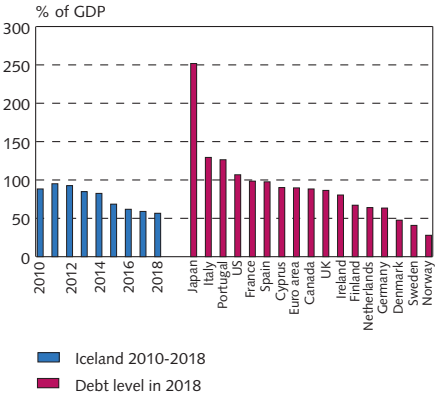
Sources: OECD, Statistics Iceland.

Chart IV-13
Change in central government cyclically adjusted primary balance 2012-2018[1]



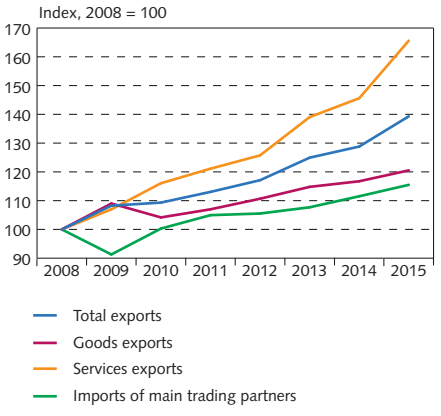
1. Central Bank baseline forecast 2015-2018. Primary balance is adjusted for one-off revenues and expenditures (e.g., dividends and the accelerated write-down of indexed mortgage loans).
Sources: Financial Management Authority, International Monetary Fund, Central Bank of Iceland.

Chart IV-14
General government gross debt



Sources: International Monetary Fund, Ministry of Finance and Economic Affairs, Central Bank of Iceland.

Chart IV-15
Exports and trading partner demand 2008-2015



Sources: Macrobond, Statistics Iceland, Central Bank of Iceland.

New fiscal strategy and plan for 2017-2021

According to the Act on Public Finances, Parliamentary resolutions on a fiscal policy and a fiscal plan for the next five years were presented before Parliament for discussion at the end of April. The plan assumes that central and general government results will be positive by at least 1% of GDP in all five years. Municipalities' performance is thus projected to be in balance over the same period. The fiscal strategy is similar to what was provided for in the medium-term plan accompanying the fiscal budget proposal for 2016. The forecast in *Monetary Bulletin* assumes that the Treasury outcome will be 0.5% of GDP weaker per year than in the fiscal strategy over the next two years, or 0.6% of GDP in 2017 and a surplus of just below 1% of GDP in 2018.

Significant fiscal easing two years in a row

Excluding revenues from stability contributions, central government performance will deteriorate in 2016 according to the Bank's baseline forecast and then improve slightly in the following two years. The positive output gap is projected to widen this year and remain relatively sizeable for the majority of the forecast horizon. This year's cyclically adjusted primary balance will therefore deteriorate by about 1% of GDP year-on-year. The fiscal easing by this amount comes on the heels of easing in 2015 by about 1.4%, for a total of 2.4% in 2015 and 2016 combined, which is somewhat more than was assumed in the Bank's February forecast. The current forecast assumes slight fiscal tightening amounting to 0.7% of GDP in the next two years, which is virtually identical to the February forecast (Chart IV-13). The vast majority of the tightening will take place on the expenditures side.

Public sector debt declines rapidly, but slower than previously assumed

Estimates of the decline in Treasury debt have assumed that the 30% stake in Landsbankinn will be sold during the current electoral term; however, this is unlikely to happen because Parliamentary elections are to be held early. As a result, it is now assumed that Treasury debt will amount to 54% of GDP at the end of 2016 instead of just under 50%, as was assumed in the forecast in *Monetary Bulletin* 2015/4. Public sector debt will total 62% of GDP at the same time, and 57% by the end of the forecast horizon (Chart IV-14).

External trade and the current account balance

Outlook for strong export growth for the second year in a row

Goods and services exports increased by 8.2% year-on-year in 2015, due mainly to services exports, which rose by nearly 14%. This is somewhat more than was forecast in February, primarily because of increased revenues from transport services. Goods exports also increased more than was projected in February, due to strong aluminium exports in Q4/2015. Total export growth therefore outpaced the February forecast by about 1½ percentage points. This year's strong services exports come in addition to the upsurge in the past few years, with annual growth averaging about 7½% over the past five years.

This sizeable increase, which is well in excess of growth in goods exports, is particularly noteworthy because demand in trading partner countries has been relatively weak and the real exchange rate has risen somewhat over the same period (Chart IV-15).

Goods exports have contracted somewhat year-on-year so far in 2016, but indicators suggest that services exports will continue to grow briskly. For instance, figures on tourist departures via Keflavík International Airport show a 35% increase year-on-year in the first four months of 2016. Furthermore, Iceland's two largest airlines have indicated that they will increase their seat offerings by a third year-on-year in 2016. The outlook is for services exports to grow at about the same pace as in 2015, and if this materialises, it will be the second year in a row with a growth rate of more than 12% year-on-year. Growth in goods exports is also expected to be broadly unchanged from 2015. As a result, total exports are forecast to grow by nearly 8% year-on-year, over 1 percentage point more than was forecast in February. The deviation is due mainly to stronger growth in tourism.

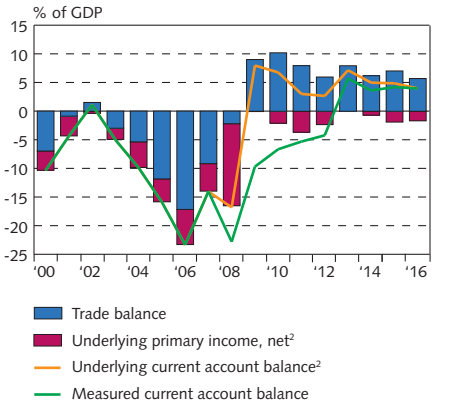
Significant growth in consumer and investment goods imports

Goods and services imports grew by 13.5% in 2015, the largest single-year increase since 2005. Imports of ships and aircraft were sizeable, but excluding these, imports grew by 12% year-on-year, which is well in line with the Bank's February forecast. This surge in growth reflects rapid growth in domestic demand, which is reflected, among other things, in robust imports of consumer durables. Statistics Iceland's external trade figures imply that import growth has continued in this vein year-to-date, with significant imports of consumer goods – motor vehicles in particular – and investment goods. As a result, the outlook is for year-2016 goods imports to be consumer-driven to a large degree, as growth in domestic demand and services exports is forecast to increase during the year. Furthermore, Icelandic Tourist Board figures on Icelanders' departures via Keflavík International Airport indicate that services imports will increase year-on-year and be somewhat stronger than was forecast in February. In addition, imports of ships and aircraft are expected to rise, and total imports will therefore increase by nearly 12% year-on-year. This is somewhat more than was forecast in February, as the outlook is for stronger growth in domestic demand than was envisioned then.

Negative contribution of net trade to GDP growth despite robust export growth

Imports have a general tendency to move in line with domestic demand, as they did in 2015, when the contribution from net trade was negative by 2 percentage points of GDP despite strong growth in exports. This year, growth in both imports and exports is expected to be somewhat weaker than in 2015, but the slowdown in import growth will be greater, and as a result, net trade will be less of a drag on GDP growth than it was last year. This will gradually turn around as the forecast horizon progresses, and the contribution from net trade will be positive by the end of the period, as the new silicon plants are expected to have begun export manufacturing by then.

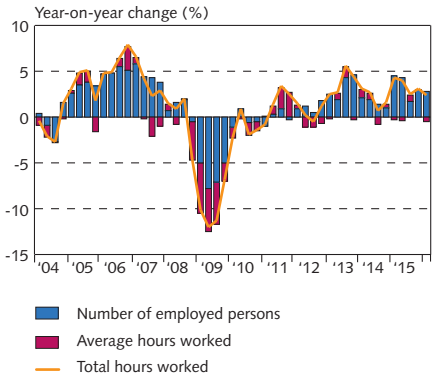
Chart IV-16
Current account balance 2000-2016[1]



1. Including secondary income. Central Bank baseline forecast 2016.
2. Excluding the calculated income and expenses of DMBs in winding-up proceedings and the effects of pharmaceuticals company Actavis on the balance on income until 2012. Also adjusted for the failed DMBs' financial intermediation services indirectly measured (FISIM). With the recent settlement of the failed banks' estates, as of 2016 there is no longer any difference between headline and underlying current account numbers.

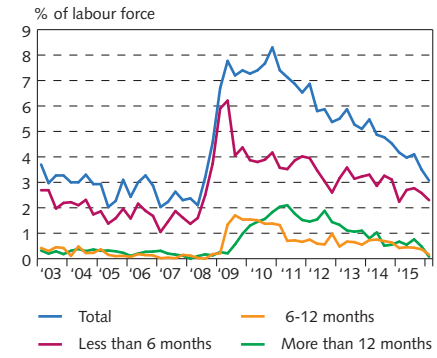
Sources: Statistics Iceland, Central Bank of Iceland.

Chart IV-17
Changes in employment and hours worked
Q1/2004 - Q1/2016



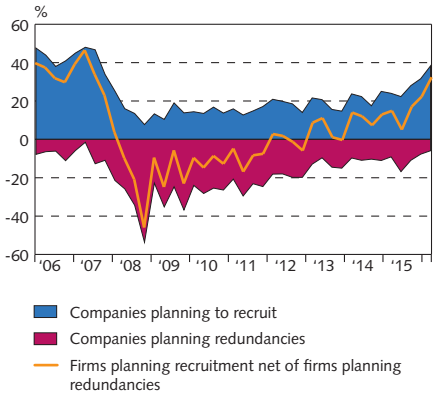
Source: Statistics Iceland.

Chart IV-18
Unemployment by duration[1]
Q1/2003 - Q1/2016



1. Seasonally adjusted.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart IV-19
Companies planning to change staffing levels within 6 months
Q1/2006 - Q1/2016



Source: Gallup.

Outlook for shrinking current account surplus

Last year's trade surplus amounted to 7% of GDP, which is broadly in line with the February forecast. If the forecast materialises, this year's surplus will be somewhat smaller than was forecast in February, or about 5½%, because of the increase in imports of ships and aircraft.

The underlying current account surplus totalled 108 b.kr. in 2015, or about 4.9% of GDP, about the same as in 2014 (Chart IV-16). The current account surplus is expected to narrow to 4% of GDP this year, in line with a shrinking trade surplus, and continue to decline for the remainder of the forecast horizon.[1] If this forecast materialises, gross national saving will be about 23-24% of GDP during the forecast horizon.

Labour market

Strong growth in labour demand

In Q1, year-on-year growth in labour demand was broadly in line with the February forecast. According to the Statistics Iceland labour force survey (LFS), total hours worked rose by 2.3%, while the forecast assumed an increase of 2.1%. The rise in total hours is due to a 2.8% increase in the number of employed persons, whereas average hours worked declined by 0.5% as hours worked by the youngest age group fell by nearly 4% (Chart IV-17). The labour participation rate and the employment rate also rose between years, and the number of persons outside the labour market continued to fall. Seasonally adjusted unemployment measured 3.1% in Q1, having declined by 0.4 percentage points between quarters.[2] It declined by less than the increase in the employment rate, as the participation rate also rose. Figures on unemployment also show a continued decline in long-term unemployment. The share of unemployed persons who have been out of work for longer than six months is at its lowest since 2008 (Chart IV-18).

Executives expect stronger staff recruitment than at any time since 2007

The outlook is for labour demand to remain robust. For example, Gallup's spring survey indicated that firms interested in recruiting staff in the next six months outnumbered those planning redundancies by nearly a third (Chart IV-19). This is considerably more than in the winter survey and in the Gallup survey from a year ago. The percentage is at its highest since 2007, as is the number of firms planning to hire workers in coming months. The change since the last survey is due both to an increase in the number of firms planning to recruit and to a decline in the number planning to lay workers off. According to the most recent survey, more executives in all sectors except fishing were planning

1. In recent years, the Central Bank has published estimates of the underlying current account balance, which attempt to look through the effects that the calculated accrued obligations of the failed banks' estates will have on the current account balance. The recent settlement of the estates has obviated the need for this distinction, however, and as of this year, there is no longer any difference between the headline and underlying current account numbers.
2. Unemployment as registered by the Directorate of Labour (DoL) was less, or 2.3%, in Q1, after adjusting for seasonality. It had declined by 0.3 percentage points between quarters and by 0.8 percentage points between years.

to recruit staff, and the share of firms intending to increase staffing levels was larger among those that sell their products abroad than among firms that sell domestically. Demand for labour is strongest, however, in construction, where the share of firms planning to add on staff in the next six months exceeded the share planning to downsize by about 70 percentage points. This is the largest percentage of construction firms planning to recruit since the survey was introduced in 2002.

Increased labour use rather than productivity growth

Labour productivity grew by 0.6% in 2015 and is expected to remain sluggish. In 2016 and 2017, it is forecast to grow by an average of roughly 1% per year, which is broadly in line with the last forecast, although the distribution between the two years is slightly changed. As has been discussed previously in *Monetary Bulletin*, the current recovery is considerably different from previous recoveries as regards the weak recovery of productivity; however, this is in line with developments in many developed economies in the recent past.

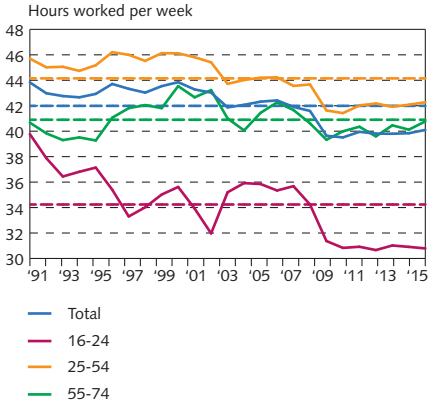
Shorter work week a cyclical development but also part of a long-term trend

As has been discussed previously in *Monetary Bulletin*, average hours worked have increased slowly since the labour market recovery began in 2010, after having declined sharply in the wake of the financial crisis.[3] The shortening of the work week appears to be only partly connected to the business cycle position, however, as working hours among all age groups except the oldest workers had already begun to fall somewhat before the 2008 recession began (Chart IV-20). The employment rate in the youngest age group has risen somewhat, however, while the employment rate among workers over age 54 has declined (Chart IV-21). Because of these changes, the youngest age group's share in total hours worked has fallen from an average of more than 13% in the 1990s to just over 12% in 2015, while the oldest age group's share rose from 16% to more than 23% over the same period. The share of the core group (aged 25-54) in total hours worked has also declined, from just under 71% to slightly more than 64%, owing to shorter hours worked, and the employment rate for this group reached its long-term average in 2015. If average hours worked in each age group had been the same in 2015 as in 2003, when the economy was relatively well balanced, total hours worked would have been 4.4% more than they actually were.

Uncertain how readily those marginally attached to the labour market can find work

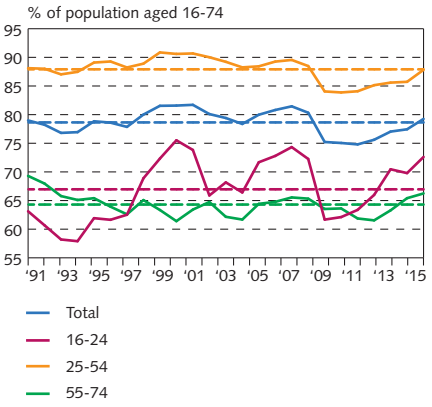
People who are considered unemployed according to the LFS definition are part of the labour supply. In addition to this group are three others that can be considered a potential addition to the labour market (see Box 3 in *Monetary Bulletin* 2015/2): those who are employed part-time but would like to work more (often referred to as under-

Chart IV-20
Hours worked, by age group 1991-2015[1]



1. Broken lines show 1991-2015 average.
Sources: Statistics Iceland, Central Bank of Iceland.

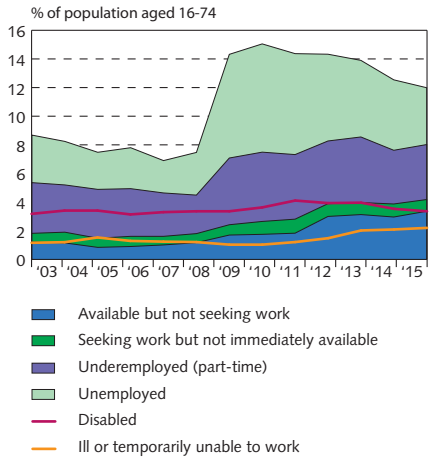
Chart IV-21
Employment rate, by age group 1991-2015[1]



1. Broken lines show 1991-2015 average.
Sources: Statistics Iceland, Central Bank of Iceland.

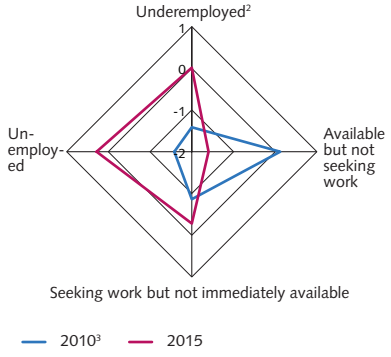
3. Based on the working hours of persons who worked at least one hour during the reference week.

Chart IV-22
Labour market status 2003-2015



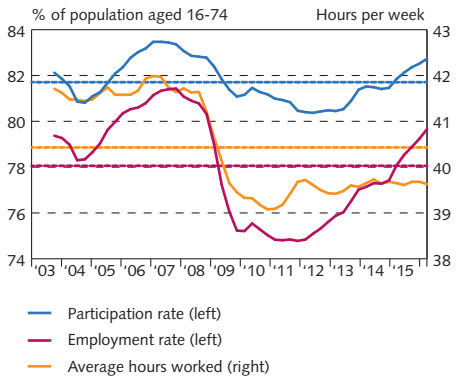
Source: Statistics Iceland.

Chart IV-23
Indicators of labour market tension[1]
Deviation from 2003-2015 average (number of standard deviations)



1. As a percentage of population. Multiplied by -1 so that a negative deviation from the average indicates tension. 2. Number of underemployed part-time workers. 3. The year when labour market recovery began.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart IV-24
Labour participation, employment, and hours[1]
Q1/2003 - Q1/2016



1. Four-quarter moving average. Broken lines show Q1/2003 - Q1/2016 average.
Sources: Statistics Iceland, Central Bank of Iceland.

employed) and can therefore be viewed as part-time unemployed,[4] those who are seeking work but cannot begin within two weeks, and those who could begin work within two weeks but are not looking for a job. The last two of these groups are classified as outside the labour market, but the former includes, for instance, those who cannot work because they cannot find childcare within two weeks, and the latter includes people who have given up looking for work, among others.

These three groups grew significantly when labour demand contracted in 2008. After the labour market recovery began in 2010, there was a decline in the number of underemployed persons and those looking for work but unable to begin immediately. The group who are available to work but not looking for a job continued to grow and is still doing so, probably because these workers' attachment to the labour market has weakened (Chart IV-22).[5]

Given the deviation in these three groups and the unemployed from their averages, it seems that the scope for increased labour market participation is greatest among those who are available but not seeking work (Chart IV-23). On the other hand, it is uncertain how easy it will be for them to find jobs, as people who have been unemployed or outside the labour market for a long time often have greater difficulty finding work, as employers tend to consider the long-term unemployed to constitute limited human capital.

Indicators of factor utilisation

Increasing shortage of labour …

According to the spring survey conducted by Gallup, just under a third of firms considered themselves short-staffed, the largest share since year-end 2007 and an increase of nearly 14 percentage points year-on-year. Almost 60% of construction firms and 40% of transport and tourism companies considered themselves understaffed, and the share of companies in these sectors that plan to increase their staffing levels is at an all-time high. Only about half of firms considered themselves able to respond to an unexpected increase in demand, about the same as in Q3/2008. This proportion has declined by 10 percentage points year-on-year and by over 25 percentage points from its 2011 peak. The shortage of labour has to some extent been addressed through importation of labour, but net immigration of foreign nationals has measured just under 3 percentage points since Q3/2012, when it turned positive.

… and most indicators imply that the slack in the labour market has disappeared

There is increased tension in the labour market, owing to strong labour demand. The participation rate is back to its 2007 peak and, as did the

4. A distinction is made according to whether those wishing to work more hours are employed part-time or full-time. Those who are employed full-time and want to work more want more income, not necessarily longer working hours, whereas those who are employed part-time and want to work more are classified as underutilised labour force.

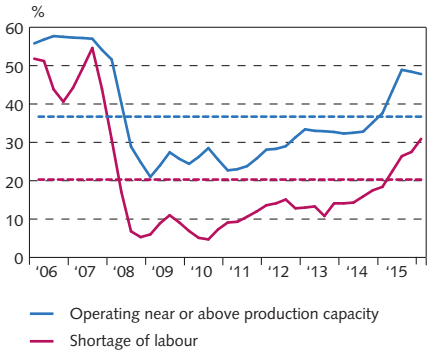
5. The findings of Bjarni G. Einarsson (2015), "The ins and outs of Icelandic unemployment", Central Bank of Iceland *Working Paper* no. 69, indicate, for instance, that a third of changes in unemployment occur because workers exit the labour market.

employment rate, reached its 2003-2015 average in the first half of last year (Chart IV-24). Average hours worked is still below its historical average, however, and the measure of a potential addition to the labour market is above it. Therefore, there could still be some room to respond to increased labour demand by lengthening the work week, importing labour, or increasing the participation of groups classifiable as a potential addition to the labour market, as these factors have generally developed in line with the business cycle to some degree.

Output gap to widen in 2016

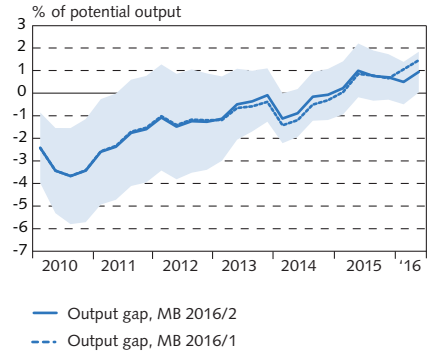
Surveys among executives indicate that a growing number of firms are having difficulty filling available positions and responding to increased demand (Chart IV-25). This supports the assessment that a positive output gap opened up in 2015 after several years of factor underutilisation, and that it will widen somewhat this year. GDP growth averaged about 3½% over the past three years, somewhat in excess of potential output. As in February, the slack in output is considered to have disappeared early in 2015, and the positive output gap is projected to grow markedly as 2016 progresses, as the outlook is for robust GDP growth this year (Chart IV-26). As always, though, this assessment is subject to considerable uncertainty.

Chart IV-25
Indicators of factor utilisation[1]
Q1/2006 - Q1/2016



1. According to Gallup Sentiment Survey among Iceland's 400 largest firms. Seasonally adjusted data. Data on the operation level relative to production capacity are reported semiannually. Quarterly data are generated via interpolation. Broken lines show period averages.
Sources: Gallup, Central Bank of Iceland.

Chart IV-26
Output gap[1]
Q1/2010 - Q2/2016



1. Shaded area shows ± 1 five-year standard deviation. Central Bank baseline forecast 2016.
Sources: Statistics Iceland, Central Bank of Iceland.

V Inflation

Inflation measured 1.9% in Q1/2016, in line with the forecast in the February *Monetary Bulletin,* and has now been below the Central Bank's 2.5% inflation target for over two years. House prices have been the main driver of inflation in the recent term. The appreciation of the króna and a marked improvement in terms of trade over the past two years have given firms greater scope to absorb cost increases. As a result, sizeable wage rises and increased economic activity have not yet surfaced in rising domestic goods and services prices to any significant degree. Wage costs will rise even further this year, and domestic demand is growing rapidly. It is not certain whether the factors that have contained inflationary pressures in the recent past will provide still further scope for firms to take on cost increases without raising prices. Although long-term inflation expectations have been gradually declining over the last few years, they remain somewhat above the inflation target and are broadly unchanged since February.

Recent developments in inflation

Inflation has subsided since the last *Monetary Bulletin*

Inflation has been below target for over two years and has subsided in recent months. It measured 1.9% in the first quarter of the year, in line with the forecast in the February *Monetary Bulletin*. Declining imported goods prices had the greatest impact on developments in the CPI during the quarter, largely due to the cancellation of import duties on clothing and footwear at the turn of the year, although petrol prices fell somewhat as well. The appreciation of the króna in the recent term has also reduced inflation. Pulling in the other direction during the quarter were rising house prices and public services prices.

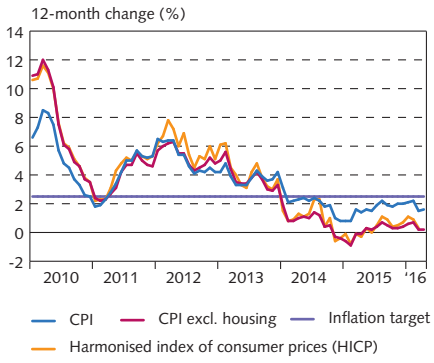
The CPI rose 0.2% month-on-month in April, bringing twelve-month inflation to 1.6%, or 0.6 percentage points less than at the time of the last *Monetary Bulletin* (Chart V-1). In April, the main drivers of inflation were the rise in petrol prices and the housing component. Twelve-month inflation excluding housing measured only 0.2% in April and has fallen somewhat less than headline inflation since January. HICP inflation, which also excludes housing costs, was 0.3% in March.

Underlying inflation and other indicators of inflationary pressures

Domestic inflationary pressures have emerged mostly in house prices ...

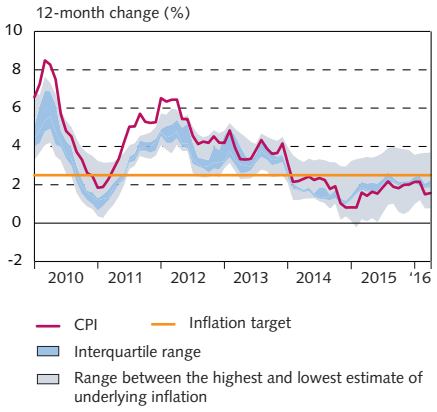
Underlying twelve-month inflation as measured by core index 3 (which excludes the effects of indirect taxes, volatile food items, petrol, public services, and real mortgage interest expense) has been at or below target since autumn 2014 and measured 1.9% in April. It has declined since the publication of the February *Monetary Bulletin*, as have most other measures of underlying inflation. Statistical measures of underly-

Chart V-1
Various measures of inflation
January 2010 - April 2016



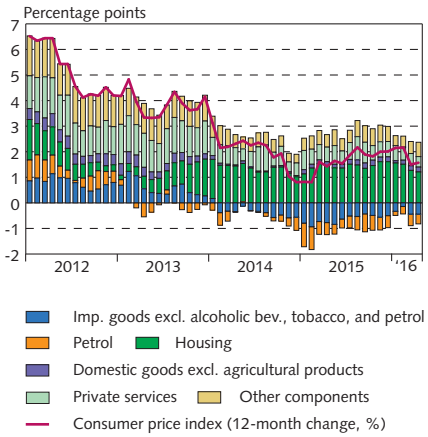
Sources: Statistics Iceland, Central Bank of Iceland.

Chart V-2
Headline and underlying inflation[1]
January 2010 - April 2016



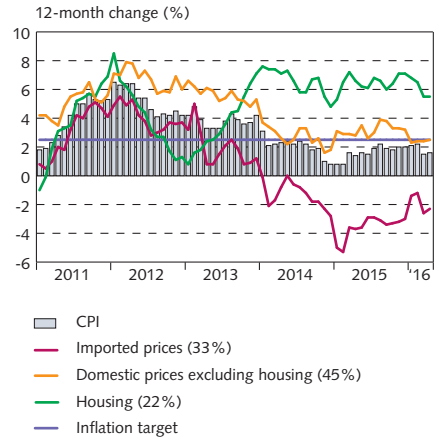
1. The shaded area includes different measures of underlying inflation; core indices that exclude the effects of volatile food items, petrol, public services and owner-equivalent rent and statistical measures such as the weighted median, the trimmed mean and a dynamic factor model.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart V-3
Components of CPI inflation
Contribution to inflation January 2012 - April 2016



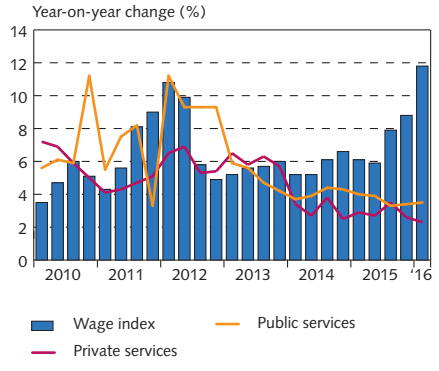
Source: Statistics Iceland.

Chart V-4
Imported and domestic inflation[1]
January 2011 - April 2016



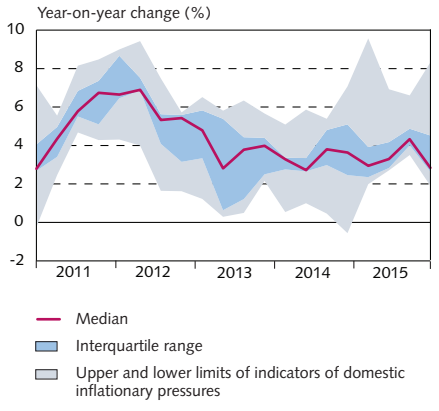
1. Imported inflation is estimated using imported food and beverages and the price of new motor vehicles and spare parts, petrol, and other imported goods. Domestic inflation is estimated using the price of domestic goods and the price of private and public services. The figures in parentheses show the current weight of these items in the CPI.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart V-5
Developments in wages and services prices
Q1/2010 - Q1/2016



Source: Statistics Iceland.

Chart V-6
Domestic inflationary pressures[1]
Q1/2011 - Q4/2015



1. The shaded area includes five indicators of domestic inflationary pressures. The indicators are unit labour costs (moving average), the GDP price deflator, prices of private services and domestic goods, and producer prices of goods sold domestically.
Sources: Statistics Iceland, Central Bank of Iceland.

ing inflation have also fallen since January. They lay in the 1½-3½% range in April (Chart V-2).

Inflation has been driven by rising house prices in the recent term (Chart V-3), as inflation excluding housing has averaged only 0.4% during the current episode of below-target inflation. The twelve-month rise in the housing component of the CPI measured 5.5% in April. Large pay increases in the past year, rising real wages, and growing economic activity have given the real estate market a boost (see Chapter III) but have not yet led to steep increases in goods and services prices (Chart V-4). Domestic goods prices rose by approximately 2% year-on-year in Q1/2016, and private services prices were up about 2.3%. It is noteworthy that services inflation thus measured is at its lowest since the beginning of 2004. Public services prices have risen more strongly between years, however, or by 3.5% in Q1. Some municipalities have cited contractual wage increases in connection with price list increases, but some public services are more labour-intensive than private services (Chart V-5). Increased domestic cost pressures have not been reflected in larger increases in the production price of domestically sold goods, which fell by 0.5% year-on-year in Q1, after a notable increase in the recent term. Chart V-6 shows that in terms of the median of several different factors that reflect domestic costs, domestic inflationary pressures had subsided quarter-on-quarter at year-end 2015 and were also less pronounced than at year-end 2014. The distribution of the various measures has increased markedly, however.

… as a stronger króna and an improvement in terms of trade offset the cost effects of wage settlements

It is clear that the appreciation of the króna in the recent past and the decline in the price of imported goods, oil in particular, have kept price increases in check in the wake of cost pressures stemming from pay rises. Imported goods prices have fallen by 2.3% in the past twelve months, whereas the króna has appreciated by more than 9% over the same period. As is discussed in Box 5, these are the main reasons inflation has remained below target for the past two years. Given how low domestic inflation excluding housing has been, it is likely that strong effects from the króna appreciation and global deflation can also be seen in measures of domestic inflation, including reductions in the price of both imported inputs used to produce domestic goods and domestic goods that compete with similar imported goods. The marked improvement in terms of trade over the past two years has therefore enabled many firms to absorb cost increases without passing them through to prices (see also Box 1). As a result, inflation has not yet risen as much as was previously projected. Indications of greater scope to take on cost increases can also be seen in a recent Gallup survey of the current situation and outlook, conducted among corporate executives in February. According to the survey, 45% of respondents indicated that their margins had increased in the past six months and only 16% said they had declined. Participants were considerably more upbeat than in a comparable survey carried out last autumn.

Some indicators suggest that changes in the inflation outlook are on the horizon, however. According to the Gallup survey, about

half of executives anticipate needing to raise their goods and services prices in the next six months, as opposed to 42% in the autumn 2015 survey. This percentage has risen steadily over the past two years and is now at its highest since March 2012 (Chart V-7). Furthermore, price increases have grown somewhat more frequent in the recent past, with an average of 52% of CPI subcomponents rising monthly in Q1 a slight increase since year-end 2015 (Chart V-8).

Wages are considered to have risen somewhat less than projected in 2015 ...

The private sector pay increases provided for in the January wage settlements have affected the wage index as was provided for in the last forecast, and wage drift has been broadly as projected. The wage index rose by 4% quarter-on-quarter and 11.8% year-on-year in Q1/2016; however, it should be noted that the twelve-month rise includes two contractual pay increases in the private sector.

As is discussed in Box 2, the first estimates from Statistics Iceland indicated that wages per hour rose 5.5% in 2015, about half of the 10.4% projected in the February *Monetary Bulletin*. It is likely that they rose more than this, however, given the size of the negotiated pay increases. In addition, this increase is smaller than the year-on-year rise in the wage index, which was 7.2%. Furthermore, it is unlikely, given the pay rises provided for in the 2015 wage settlements and the low level of productivity growth, that the wage share declined between years, as the Statistics Iceland estimates indicate, notwithstanding the considerable improvement in terms of trade, as is discussed in Box 1. In view of this and other indications of wage developments, the forecast presented here assumes that wages per hour rose somewhat less than previously forecast, or about 9%. The wage share is therefore estimated to have been just under 63% of gross factor income last year, an increase of 1½ percentage points since 2014 (Chart V-9). According to the forecast, it will rise still further this year and over the coming two years.

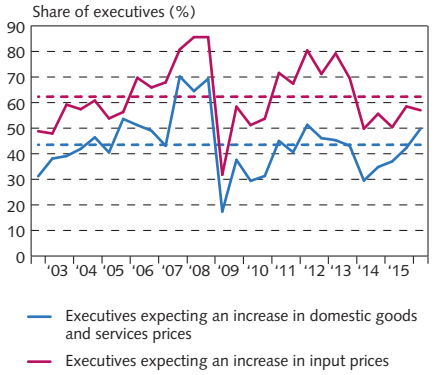
... but are expected to continue rising strongly this year

Wage increases in 2016 and the following two years are assumed to be broadly in line with the last forecast, even though this year's twelve-month rise will be larger, owing to base effects from the smaller increase in 2015. Given the tension that appears to be developing in the labour market (see Chapter IV), wage drift could be underestimated in the forecast, particularly later in the forecast horizon.

The smaller than previously assumed wage increase in 2015 leads to a similar revision of the increase in unit labour costs. As wage increases for this year have not been revised, the base effects from last year lead to stronger growth in unit labour costs in 2016 compared to the February forecast. The rise in 2016 is assumed to be just under 10%, an increase of ½ a percentage point from February (Chart V-10). Growth in the next two years is expected to be broadly in line with the February forecast, however, at about 5% per year.

Chart V-7

Corporate expectations of input and product prices six months ahead 2002-2016[1]

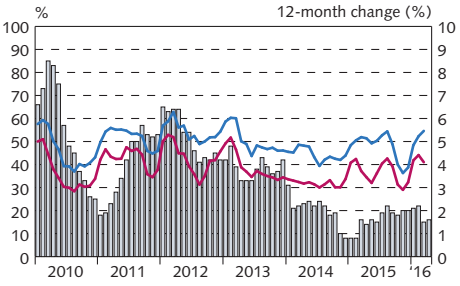


1. Broken lines show averages from 2002.
Source: Gallup.

Chart V-8

Distribution of price increases in the CPI

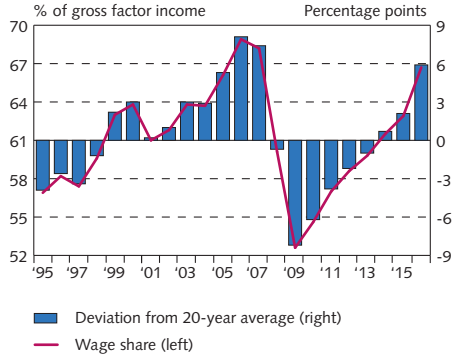
January 2010 - April 2016



1. The share of goods categories that rise in price is a 3-month centred average.
Source: Statistics Iceland.

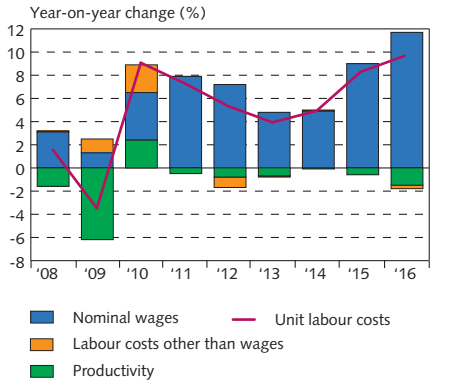
Chart V-9

Wage share 1995-2016[1]



1. Wages and related expenses as a share of gross factor income. The 20-year average is 60.8% (1995-2014, base 1997). Central bank baseline forecast 2015-2016.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart V-10
Unit labour costs and contribution of underlying components 2008-2016[1]

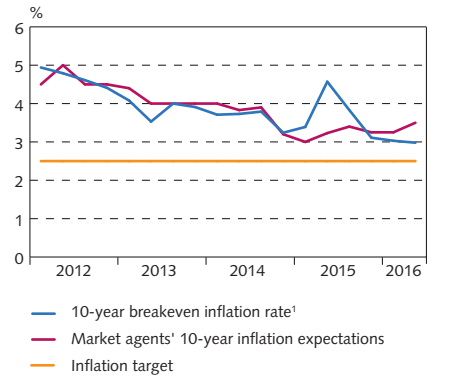


1. Labour productivity growth is shown as a negative contribution to an increase in unit labour costs. Central Bank baseline forecast 2015-2016.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart V-11
Inflation and inflation expectations one year ahead
Q1/2012 - Q2/2016

Sources: Gallup, Statistics Iceland, Central Bank of Iceland.

Chart V-12
Long-term inflation expectations
Q1/2012 - Q2/2016



1. The value for Q2/2016 is the Q2 average to date.
Source: Central Bank of Iceland.

Inflation expectations

Diverging developments in short-term inflation expectations ...

Short-term inflation expectations have fallen by several measures since the last *Monetary Bulletin* but are still above the inflation target, even though both observed and underlying inflation have been below target for over two years. According to the Gallup survey of corporate executives' inflation expectations carried out in February, respondents project inflation at about 3% one year ahead, a reduction of about 0.6 percentage points since the winter survey, conducted in November (Chart V-11). On the other hand, two-year inflation expectations were unchanged at 3.5%. Household inflation expectations appear to follow a similar pattern, although as before, households expect somewhat higher inflation than executives. According to the February Gallup survey, households expect inflation to measure 3.4% in one year, a 0.6 percentage point decline from the November 2015 survey. On the other hand, their two-year inflation expectations were unchanged at 4%.

According to the Central Bank's survey of market agents' inflation expectations carried out just before the publication of this *Monetary Bulletin*, respondents expect inflation to rise in the coming term. Survey participants expect inflation to measure 3.2% in one year, an increase of 0.2 percentage points since the February survey. Their expectations two years ahead measured 3.4%, about the same as in February. The two-year breakeven inflation rate in the bond market, as calculated from the spread between indexed and non-indexed bond interest, has remained broadly unchanged over the same period. The two-year breakeven rate averaged just over 3% in April. Recent developments in the short- and long-term breakeven inflation rate do not appear to have been as strongly affected by capital inflows into the bond market as they were for most of 2015 (see Chapter III). The breakeven rate should be interpreted with caution, however, as it contains both a risk premium related to bond liquidity and a risk premium reflecting uncertainty about inflation. It can be assumed that these risk premia have fluctuated somewhat in the recent past, resulting in changes to the breakeven rate that are unrelated to changes in market agents' inflation expectations.

... and long-term inflation expectations still somewhat above target

Market agents' long-term inflation expectations have slightly risen since February but have remained broadly unchanged in the past year. They expect inflation to average 3.5% over the next ten years, which is 0.2 percentage points higher than in February (Chart V-12). The breakeven inflation rate five and ten years ahead is somewhat below market agents' expectations, averaging about 3% in April. Inflation expectations have therefore remained relatively stable in the recent term, and it is possible that the short-term factors that have offset domestic inflationary pressures have also affected long-term expectations. Although inflation expectations have eased downwards in recent years, it appears that they have yet to be firmly anchored at target.

Box 1

Improved terms of trade and rising economic prosperity

According to preliminary figures from Statistics Iceland, Iceland's terms of trade improved by 6.8% in 2015, after having improved by 3.3% in 2014. This significant improvement means that Iceland's economic prosperity is growing somewhat more than is reflected in recent robust GDP growth figures. This Box discusses this development and places it in context with the recent interaction between wage rises and inflation.

Terms of trade have improved markedly in the past two years …

Terms of trade measure the price Icelanders receive for their exports relative to the price of goods and services imported to Iceland. Terms of trade therefore improve, for instance, when export prices rise and when import prices decline. The past two years' 10% improvement in terms of trade stems from a nearly 1% increase in export prices in krónur terms, coupled with a nearly 9% reduction in local currency import prices. The most important contributor is the decline in global oil and commodity prices, although the nearly 20% increase in the foreign currency price of marine products is a factor as well.[1] This rise in the relative price of exports means that it is possible to buy more imports for a given volume of exports; i.e., the purchasing power of Icelandic exports has increased. This can be seen in Chart 1, which shows that the purchasing power of exports rose by 15.5% in 2015 and nearly 23% in 2014 and 2015 combined. At the same time, export volumes have risen by a total of 11.5%.

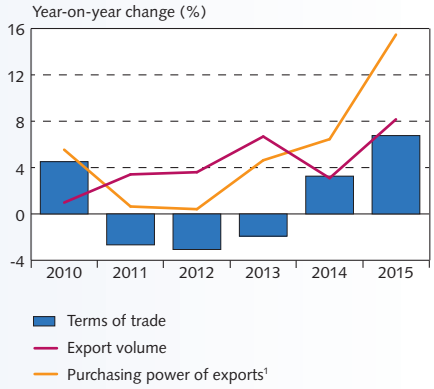
… generating a positive terms of trade effect not seen since the 1970s

One way to estimate the impact of improved terms of trade on the economy is to measure the so-called terms of trade effect, which compares the purchasing power of exports with export volumes and expresses the difference as a percentage of the previous year's GDP.[2] As Chart 2 indicates, the terms of trade effect was positive by 3.9% of GDP in 2015, and by a total of 5.8% in the past two years combined. The last time Iceland experienced such a strongly positive terms of trade effect over a two-year period was in the mid-1970s. On the other hand, the current upsurge comes in the wake of an almost uninterrupted deterioration in terms of trade since 2007, which generated a negative terms of trade effect totalling over 9% of GDP. As a result, there is quite a bit of ground to cover before terms of trade return to the pre-crisis level.

As can be seen in Chart 3, Iceland's terms of trade effect is considerably more positive than that in other OECD countries. The countries coming closest to Iceland are South Korea and Ireland, whereas the terms of trade effect has been strongly negative in other OECD countries that rely heavily on commodity exports, such as Norway. It is noteworthy how different Iceland's experience has been from that of other commodity-exporting countries.

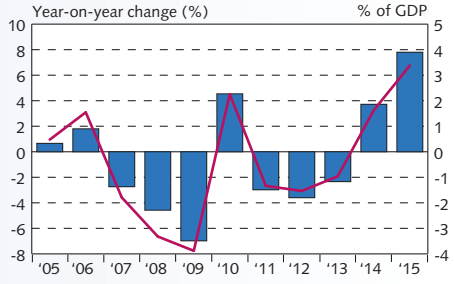
1. At the same time, aluminium prices have fallen by a total of nearly 5%. This decline is borne in large part by large international producers. A part of the improvement in terms of trade can also be traced to the recent appreciation of the króna. As is discussed in Box 2 in *Monetary Bulletin* 2015/4, historical experience indicates that a 1% appreciation leads to a roughly 0.2% improvement in terms of trade. In the past two years, the exchange rate has risen by an average of approximately 8%; therefore, nearly a fifth of the 10% improvement in terms of trade is attributable to the appreciation of the króna.
2. The terms of trade effect is therefore calculated as $X(\pi_x-\pi_m)/[(1+\pi_x)(1+\pi_m)]$, where X is total nominal exports, π_x is the change in export prices, and π_m is the change in import prices. The terms of trade effect is therefore positive if export prices rise more than import prices; i.e., if terms of trade improve.

Chart 1
Exports and terms of trade



1. Purchasing power of exports measured as the value of goods and services exports deflated with import prices.
Sources: Statistics Iceland, Central Bank of Iceland.

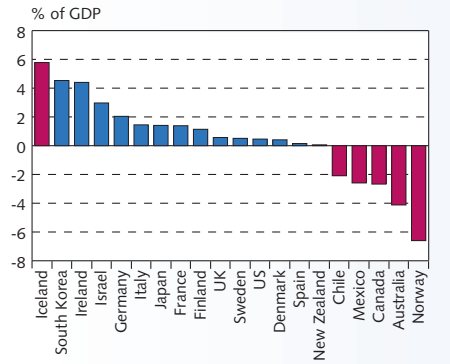
Chart 2
Terms of trade and terms of trade effects[1]



1. Terms of trade for goods and services (relative prices of imports and exports). Terms of trade effects measure the difference between the purchasing power of exports and export volumes relative to the previous year's GDP.
Source: Statistics Iceland.

Chart 3

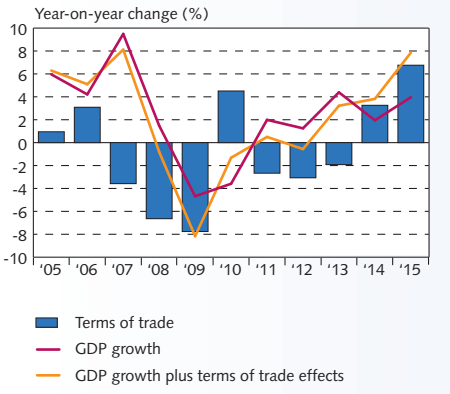
Terms of trade effects in 20 OECD countries 2014-2015[1]



1. The difference between the purchasing power of exports and export volumes relative to the previous year's GDP. Combined effect for 2014-2015. Countries classified as commodity exporters in terms of the weight of commodities in net exports are denoted by red columns.
Sources: OECD, United Nations (UNCTAD), Statistics Iceland.

Chart 4

GDP growth and growth in RGDI[1]



1. Real gross domestic income (RGDI) is measured as GDP plus terms of trade effects.
Sources: Statistics Iceland, Central Bank of Iceland.

GDP growth has been strong in the past two years, but when adjusted for the terms of trade effect, the economic recovery is even stronger

The conventional measure of economic activity is gross domestic product (GDP), which reflects the market price of the goods and services produced in a given country. Therefore, by this measure, the volume change in GDP captures the overall growth rate of the economy. In general, developments in GDP should reflect changes in a country's economic well-being with reasonable accuracy, but this need not be the case when terms of trade change substantially. When terms of trade improve, this causes the purchasing power of domestic producers' revenues to rise. The increased revenues then accrue to the owners of the factors of production (i.e., shareholders and employees of the firms) and are therefore channelled into the economy, which then has proportionally more income to purchase domestic and imported goods and services. The purchasing power of GDP therefore increases more than growth in output, which does not fully reflect the increased prosperity in the economy concerned, nor does it reflect the scope that exists to allocate resources domestically; i.e., towards wages and private consumption.

Therefore, to better reflect the state of the economy when terms of trade change as much as they have recently, it would be possible to consider GDP growth as measured by volume changes in GDP adjusted for the effects of changes in terms of trade. This measure of economic activity could be called the purchasing power of GDP and is sometimes called real gross domestic income (RGDI), although this term has not been used in the Icelandic national accounts. As can be seen in Chart 4, RGDI growth has been twice as much as GDP growth in the past two years: in 2014 it was nearly 2 percentage points more, or 3.8% instead of 2%, and in 2015 it was nearly 4 percentage points more, or 7.9% instead of 4%. Conversely, the contraction in RGDI during the preceding years is larger; therefore, average growth during the post-crisis period is the same by both measures, or 0.8%.

National income has also outpaced GDP growth in the past two years ...

Another measure of economic activity – one more commonly used in Iceland – is gross national income (GNI). In addition to the terms of trade effect, GNI takes account of wage and investment income that Icelanders receive from activities abroad, such as that deriving from foreign companies that they own. By the same token, wage and investment income received by foreigners working in Iceland must be deducted. Therefore, the impact of changes in net investment and wage income from abroad – i.e., the balance on primary income – is added to the terms of trade effect.[3]

In the same way that RGDI growth captures more effectively the direct impact of improved terms of trade on domestic well-being, GNI growth reflects more accurately the effects of changes in net primary income from abroad on the performance of the economy. When the profit of Icelandic firms operating abroad rises, for instance, increased dividends to domestic owners are measured directly through GNI but not through GDP. GNI is therefore a more accurate measure of the resources available to the country for consumption or saving than GDP.

However, the problem with this measure of economic developments lies in how difficult it is to measure this net primary income,

3. GDP plus the balance on primary income is what is termed gross national product (GNP). For further discussion, see Box IV-1 in *Monetary Bulletin* 2013/4.

particularly since the onset of the financial crisis. As is discussed in Box IV-1 in *Monetary Bulletin* 2013/4, the problem lies in the fact that headline net primary income numbers are based on figures that include the calculated accrued interest income and expense deriving from the failed domestic financial institutions' foreign assets and liabilities. Because these institutions' foreign liabilities far exceeded their assets, calculated accrued interest expense came to a substantial amount that reflected neither actual distributions from their estates nor interest expense that would ever be paid, as has now been confirmed with the recently approved settlement of the estates. Therefore, in the aforementioned Box IV, GNI is re-estimated based on the Central Bank's assessment of underlying primary income, which has been used as a basis for the estimate of the underlying current account balance as published regularly by the Bank ever since the financial crisis struck. Chart 5 gives a comparison of these two measures.[4]

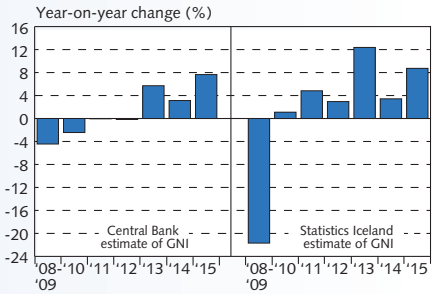
As could be expected, developments diverge greatly just after the crisis, depending on whether they are viewed in terms of headline primary income figures or if the effects of the failed banks' estates on the current account balance are excluded. In terms of the headline figures, the GNI contraction is much greater, but the ensuing recovery is also stronger. The difference has narrowed over time, however, and in 2015, headline figures indicated that growth in GNI measured 8.7%, as opposed to 7.7% when adjusted for the effects of the failed banks' estates on the primary income balance. From 2017 onwards, growth in GNI will be the same by both measures, as underlying primary income will be the same as in the headline figures beginning in 2016.

… and domestic economic prosperity increases somewhat more than is reflected in conventional measures of GDP growth

Chart 6 compares developments in economic prosperity by the three measures described above. As the chart shows, GNI contracted more than GDP immediately after the crisis, irrespective of whether output is adjusted for the terms of trade effect or not, as Icelanders' net income from foreign assets turned much more strongly negative with the collapse of the financial system, even if the effects of the failed banks' estates are excluded. In addition to this, terms of trade deteriorated markedly when the global financial crisis triggered a worldwide economic crisis, which led to a drop in key export prices. As can be seen in Table 1, this double shock caused economic prosperity – in terms of RGDI or GNI – to contract more in the wake of the crisis than GDP itself did. Output began to grow again in 2010, but the two income measures did not begin to rise in earnest until two years later. However, income has risen more rapidly since then, and in 2015, GNI was a full 9% above its pre-crisis peak. GDP has also returned to its previous high and, in 2015, was an average of 5% above the 2008 peak. However, RGDI was slightly less than 4% above the previous peak, as terms of trade were still about 13% below their pre-crisis peak.

Chart 5

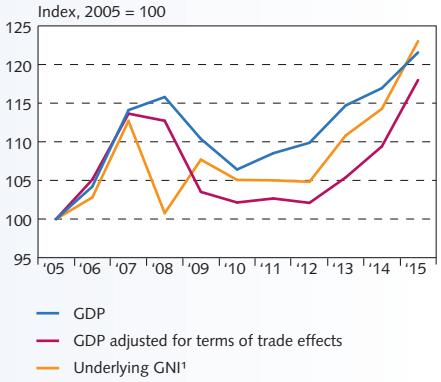
Gross national income – comparison of Central Bank and Statistics Iceland estimates[1]



1. The difference between the two measures lies in the treatment of the failed financial undertakings' net interest expense following the financial crisis (see explanation in main text). 2008-2009 are combined, as this interest expense is excluded from the underlying estimate as of Q3/2008, when the failed banks went into winding-up proceedings, creating a large fluctuation in year-on-year growth in GNI between 2008 and 2009.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart 6

Different measures of economic activity



1. Underlying GNI is GNI adjusted for the effects of the failed financial institutions on net income on assets from abroad.
Sources: Statistics Iceland, Central Bank of Iceland.

4. Estimating underlying GNI during the year of the onset of the financial crisis is problematical, however, because the failed financial institutions' obligations are included in the assessment of underlying primary income in the first three quarters of 2008 but not in the fourth quarter, when they became insolvent. This causes large fluctuations in underlying GNI in 2008 and 2009, where the deficit on the underlying balance on primary income grows steeply in 2008 and then shrinks again in 2009. Because of this, GNI contracts sharply in 2008 and then grows markedly in 2009. This is why these two years are represented together in Chart 5.

Table 1 Post-crisis economic developments (%)

	Terms of trade	*GDP*	*RGDI*	*GNI*
Post-crisis change[1]	-21.0	-8.1	-10.2	-10.6
Change from pre-crisis peak[2]	-13.0	5.0	3.8	9.2
Change from post-crisis trough[3]	10.2	14.2	15.6	22.1
Growth in 2014-2015	10.2	6.0	12.0	11.0
Growth in 2015	6.8	4.0	7.9	7.7

GDP is gross domestic product, RGDI is GDP adjusted for the terms of trade effect, and GNI is underlying gross national income (see main text). 1. Change in relevant variable from pre-crisis peak (2000-2008) to post-crisis trough (2008-2015). 2. Change between 2015 and pre-crisis peak. 3. Change between 2015 and post-crisis trough.

Sources: Statistics Iceland, Central Bank of Iceland.

Increased economic prosperity and the interaction between wage rises and inflation

The resources available for domestic distribution have grown more rapidly than is reflected in the robust GDP growth of the past two years. To some extent, this can shed light on recent economic developments such as the recent wage settlements and their impact on individuals' consumption and saving decisions, on the one hand, and on inflation, on the other hand.

The wage settlements concluded in 2015 entailed pay rises well in excess of productivity growth, which generally lead to rising inflationary pressures, other things being equal. However, the improvement in terms of trade has given exporters greater scope to absorb such increases. These firms have had less need to pass the additional costs associated with large pay hikes through to prices; furthermore, reduced import prices have lowered the marginal costs faced by firms that use foreign inputs for their production. The direct impact of pay increases on inflation is therefore weaker than it would be otherwise. What remains, however, is the direct impact of pay rises on firms that have not benefited from the improvement in terms of trade, as well as the indirect impact on inflation, through the effect of large wage increases on inflation expectations and demand. These indirect effects can be expected to surface later than the direct effects (the determinants of inflation are discussed in Box 5). Therefore, the improvement in terms of trade in the past two years could shed some light on why the impact of the recent pay increases on inflation has been less pronounced and slower to emerge than originally thought.

Box 2

First Statistics Iceland figures on 2015 wage costs and revision of previous figures

In March of this year, Statistics Iceland published its first wage cost figures based on the national accounts for 2015 and revised figures for 2012-2014. In preparing its macroeconomic forecasts, the Central Bank uses wage cost figures from Statistics Iceland's production accounts (see also Box 4 in *Monetary Bulletin* 2015/4). Because these figures are published with a lag, forecasts are also based on Bank staff's assessments of recent wage developments, using various indicators such as the Statistics Iceland wage index. Experience has shown that there are two factors in particular that cause errors in the Bank's estimates of historical wage developments: on the one hand, revisions of Statistics Iceland's historical national accounts data, which have been revised both upwards and downwards, resulting in errors in both directions, and on the other hand, underestimation of wage drift.

Wages per hour rose almost 1 percentage point less in 2012-2014 than previously projected

As Chart 1 indicates, national accounts figures for wages and related expenses change somewhat with each revision, and revisions often extend back in time by many years. Whether the revision results in an increase or a decrease seems to follow no particular pattern. According to the current revision, wages were on average slightly lower in 2012-2014 than previous figures indicated.

Wages rose less than the wage index in 2015, according to Statistics Iceland estimates ...

According to figures from Statistics Iceland, wages and related expenses rose by a total of over 9% in 2015. Adjusting this figure to reflect developments in wage-related expenses (primarily payroll taxes and employers' pension fund contributions) and then deriving wages per hour using data on the number of employed persons and average hours (taken from the Statistics Iceland labour force survey) reveals that wages per hour rose by 5.5% between 2014 and 2015. This is somewhat less than the 7.2% increase suggested by the Statistics Iceland wage index. As is discussed in *Monetary Bulletin* 2015/4, it is likely that the wage index underestimates the contractual wage rises in 2015, as some of the wage settlements provided for retroactive increases that were often paid out as a lump sum, whereas the index does not include such irregular one-off items.

... and considerably less than has been assumed in the Central Bank's baseline forecast

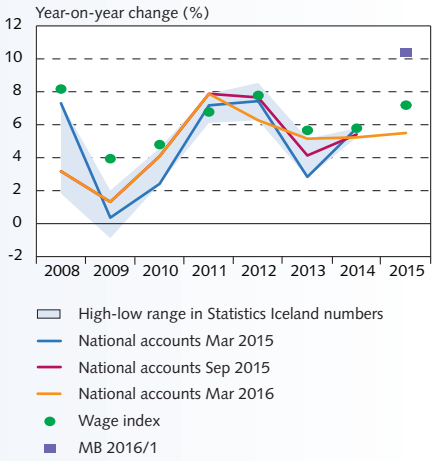
Statistics Iceland's first figures for 2015 also show a smaller increase in wages than was assumed in the Bank's February baseline forecast, which was based on estimates of both the contractual pay increases negotiated in 2015 and wage drift. The Bank estimated that wages per hour increased by 10.4% in 2015, nearly twice the amount indicated by Statistics Iceland's first figures.

It is unlikely that wages per hour rose nearly 2 percentage points less than the wage index, given that the wage index probably represents an underestimation of wage increases. There are also indications that wage increases according to information on wages paid were somewhat larger once figures for the entire year were available than at the time the Statistics Iceland estimate was prepared, as a large share of public sector wage settlements took effect towards the end of the year.

Based on the pay rises negotiated in 2015 and the increase in total hours worked, it is also unlikely that the wage share rose marginally year-on-year, as Statistics Iceland's estimate shows (Chart 2). For reference, it is useful to examine the 2011 wage settlements,

Chart 1

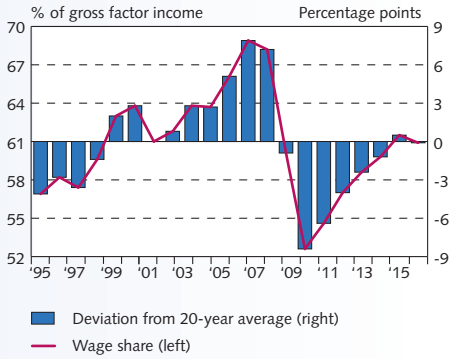
Wages per hour[1]



1. The chart shows various Statistics Iceland estimates of wage costs according to national accounts as compared with the wage index and the Central Bank's estimate for 2015.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart 2

Wage share according to Statistics Iceland figures[1]



1. Wages and related expenses as a share of gross factor income. The 20-year average is 61% (1996-2015, base 1997).
Sources: Statistics Iceland, Central Bank of Iceland.

which provided for a wage increase averaging 5%. Statistics Iceland figures now show, five years later, that wages per hour rose by 9.6% that year. Given that private sector wage agreements provided for an average wage increase of 7% in 2015 and public employees received pay rises of up to 10% following the arbitration panel ruling, it is unlikely that the rise in wages per hour was substantially less in 2015 than in 2011.

Revised Central Bank estimate of 2015 wage increases

In view of these indicators, the forecast in this *Monetary Bulletin* assumes that wages per hour rose by 9% in 2015 and not by 5.5%, as Statistics Iceland's first figures indicate. There is precedent for this. For example, in 2014, when the first figures for 2013 were available, it was decided not to use Statistics Iceland's first estimate of a 2.8% increase in wages per hour but to use 4.5%, which was the average of the Statistics Iceland estimate and the one in the previous Central Bank forecast, which was 6%. In March 2016, when Statistics Iceland published its most recent revision, it assumed that wages rose 5.2% in 2013, which is much closer to the Central Bank's estimate than to Statistics Iceland's own original estimate.

Box 3

Has the equilibrium real exchange rate risen?

The real exchange rate fell steeply in 2008 but has risen somewhat in the recent term, as can be seen in Chart 1, and is now close to its thirty-year average. As Chart 2 indicates, the rise is due for the most part to the nominal appreciation of the króna, although higher inflation in Iceland than in trading partner countries has also contributed. Over this period, there has been a sustained surplus on external trade. Furthermore, GDP growth has been robust, terms of trade have improved, and the external debt position has improved substantially. As a result, it can be assumed that this rise in the real exchange rate reflects to some extent a rise in the equilibrium real exchange rate. This Box attempts to estimate the current level of the equilibrium real exchange rate and how much it has changed in recent years.

Definitions

There are various ways to estimate the equilibrium real exchange rate (see, for instance, Appendix 1 in *Monetary Bulletin* 2007/3). This Box focuses on the method based on the external sustainability of the economy, which means that the net international investment position (NIIP) as a share of GDP is stable over time. The equilibrium real exchange rate is then defined as the real exchange rate that ensures a large enough surplus on external trade to ensure that the NIIP remains unchanged over time.

If we let CA be the current account balance, X and M exports and imports (and $NX = X - M$ net exports), A Icelanders' external assets, D their external debt and r^A and r^D their respective rates of return, the following accounting relationship applies (where the variables in parentheses are what is termed the balance on primary income):

$$CA = NX + (r^A A - r^D D)$$

It also applies to the NIIP – that is, the difference between Icelanders' external assets and their liabilities ($NA = A - D$) – that, if changes in the value of assets and liabilities (for instance, changes in share prices or write-offs due to bankruptcy) are ignored, the change in the NIIP will be equal to the current account balance:

$$NA = NA_{-1} + CA$$

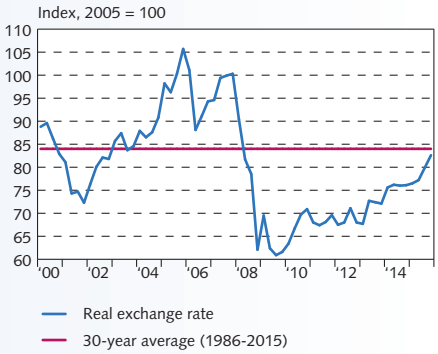
where NA_{-1} denotes net assets in the prior year. If there is a current account deficit, it must be financed, which means that the NIIP deteriorates: liabilities increase and/or assets decline. By the same token, the NIIP improves over time if there is a current account surplus.

It is possible to show that these two accounting relationships give a simple relationship between the NIIP and the current account balance that ensures external sustainability. If g represents growth in nominal GDP, lower-case letters denote ratios to GDP, and equilibrium ratios are indicated with asterisks, then:

$$ca^* = \frac{g}{1+g} na^*$$

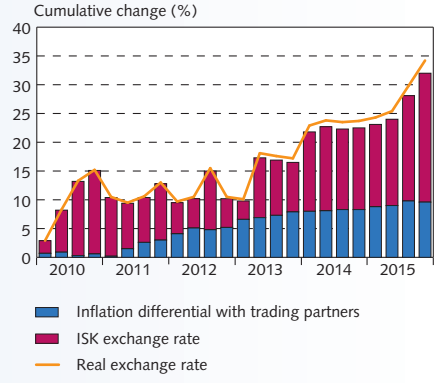
If, for instance, it is assumed that the steady-state GDP growth rate is 2.7%, annual nominal growth in GDP is 5.27%, assuming that the price level rises in line with the Central Bank's inflation target. If the NIIP is -133% of GDP, as it was at year-end 2008, the current account deficit can equal 6.7% of GDP in steady state without further deterioration in the NIIP. As is discussed in Box 4, the NIIP has improved markedly following the settlement of the failed banks' estates, measuring only -14.4% of GDP at the end of 2015. If equilibrium GDP growth and the assumptions concerning returns on assets and liabilities are unchanged, the steady-state equilibrium current account deficit is much smaller, or 0.7%.

Chart 1
Real exchange rate
Q1/2000 - Q4/2015



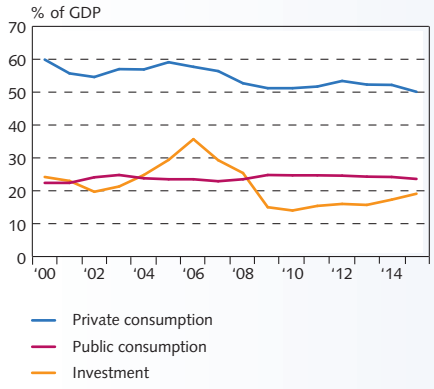
Source: Central Bank of Iceland.

Chart 2
Rise in real exchange rate from Q4/2009



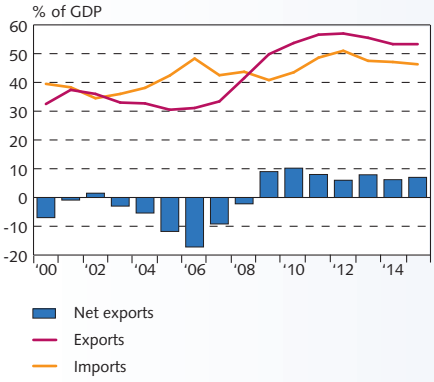
Sources: Statistics Iceland, Central Bank of Iceland.

Chart 3
Ratio of key demand components to GDP
2000-2015



Source: Statistics Iceland.

Chart 4
Ratio of imports and exports to GDP
2000-2015



Source: Statistics Iceland.

Finally, it can be seen that the steady-state value of net exports, *NX*, is determined by the NIIP and the rates of return on external assets and liabilities. If, for simplification purposes, it is assumed that the rates of return on assets and liabilities are equal, then:

$$nx^* = ca^* - r \cdot na^* = \left(\frac{g}{1+g} - r\right) na^*$$

If the foreign interest rates are equal to nominal GDP growth, then external sustainability will be ensured if exports are equal to imports. If foreign interest rates are higher than nominal GDP growth and the NIIP is negative, exports must exceed imports in order to achieve external sustainability. The converse is true if external assets exceed liabilities. Under current conditions in Iceland, where the NIIP is close to zero, external sustainability requires that external trade be approximately in balance, even if nominal GDP growth differs from nominal returns on foreign assets and liabilities.

The trade deficit has turned into a surplus …

Chart 3 shows developments in key economic variables relative to GDP. As can be seen, private consumption and investment declined sharply relative to GDP in the wake of the financial crisis. The investment ratio has gradually risen again, while the ratio of private consumption has remained low. The ratio of public consumption rose during the aftermath of the crisis but has declined slightly since then. As Chart 4 illustrates, the ratio of exports to GDP rose steeply in the wake of the crisis. This is due to the effects of exports from the Reyðarál aluminium smelter, which began in 2007; the decline in the real exchange rate, which raised the ratio of export prices to GDP; and in recent years, the surge in services exports, which is due mostly to the tourism boom. As the chart shows, the ratio of imports has also risen, but less sharply, and the trade deficit has turned into a surplus. The surplus has measured more than 5% of GDP each year since 2009, even though the real exchange rate has risen somewhat in the past few years. As a result, it can be assumed that if the ratio of exports and imports was somewhere close to its equilibrium level in 2015, the equilibrium real exchange rate is somewhat higher than the real exchange rate has been in recent years.

… and the equilibrium real exchange rate has probably risen

In order to calculate the equilibrium real exchange rate, it is necessary to consider two types of effects: the effects of increased demand on imports when variables such as private consumption and investment move towards their equilibrium values, and the effects of a higher real exchange rate on exports and imports. If it is assumed that the equilibrium investment-to-GDP ratio is about 21%, that the equilibrium ratio of public consumption to GDP is 23%, and that exports must be equal to imports in order to ensure external sustainability, it follows that the equilibrium ratio of private consumption to GDP is about 56%.[1] Based on these assumptions and the end-2015 current account balance and external position, and assuming that the rates of returns on external assets and liabilities are similar and are close to the steady-state growth rate of nominal GDP, it can be assumed that the equilibrium real exchange rate is about 89 points,

1. The equilibrium investment ratio is determined by the capital-output ratio, GDP growth, and the rate of depreciation. The investment ratio has been just under 21% of GDP, on average, over the past thirty years, but was 19.1% in 2015. The ratio of public consumption to GDP has averaged 23% of GDP over the past thirty years but was 23.6% in 2015. Further discussion of the connection between steady-state expenditure ratios and the equilibrium properties of the economy can be found in Daníelsson (2009). Also discussed are various assumptions underlying the estimate of the equilibrium real exchange rate.

which is some 13% higher than it was in 2015 and 6% above the thirty-year average.[2]

This represents a somewhat higher equilibrium real exchange rate than previously estimated. For instance, Daníelsson (2009) found that, for the first seven years of this century, the equilibrium real exchange rate was about 72 points, or about a fifth below the current estimate, which is based on conditions in 2015. According to this, the conditions of the economy have improved enough that it can now sustain a higher spending level and a higher equilibrium real exchange rate than it could previously. The main reason for this is that the external balance of the economy has improved with the improvement in terms of trade and stronger exports, particularly in recent years, with the surge in services exports. These findings indicate that the recent rise in the real exchange rate is attributable in large part to the adjustment of the real exchange rate to a higher equilibrium level and that it therefore reflects a normal adjustment of the economy to a higher expenditure level than in recent years.

Estimates of the equilibrium real exchange rate are always somewhat uncertain

The results of such calculations depend on a number of assumptions. Both the actual and equilibrium real exchange rates are likely to continue rising if services exports continue to grow as fast as they have in recent years, because of strong foreign exchange inflows. Neither can the possibility be excluded that Icelanders' propensity to save has risen permanently in the wake of the crisis and that the equilibrium ratio of private consumption to GDP is now lower than before. Under such conditions, the economy could move towards a situation where the NIIP is positive (as it was at the end of World War II), with the associated impact on the equilibrium real exchange rate. Furthermore, global interest rates are uncertain. They have been extremely low for some time, although risk premia have been relatively high so that borrowers with low credit ratings are often faced with unfavourable borrowing terms. If global interest rates continue to be low and domestic GDP growth remains robust, this will also affect the estimate of the equilibrium real exchange rate.

Finally, it should be borne in mind that although it is possible to calculate the equilibrium real exchange rate for individual years and even individual quarters, it is most appropriate to calculate the equilibrium real exchange rate based on conditions over a period of several years. By the same token, it should be noted that the external position need not be consistent with its equilibrium value every year, although it must be in balance over a longer period of time to ensure that it is sustainable. The economy can remain on an unsustainable path for quite some time, and a small economy with low debt levels and a reasonable credit rating can tolerate a real exchange rate well above equilibrium and can accumulate debt before the forces that ultimately halt unsustainable developments make themselves felt.

References

Ásgeir Daníelsson (2009). QMM: A steady state-version, Central Bank of Iceland, *Working Paper*, no. 44.

Ásgeir Daníelsson, Bjarni G. Einarsson, Magnús F. Gudmundsson, Svava J. Haraldsdóttir, Thórarinn G. Pétursson, Signý Sigmundardóttir, Jósef Sigurdsson, and Rósa Sveinsdóttir (2015). QMM: A quarterly macroeconomic model of the Icelandic economy. Version 3.0. Central Bank of Iceland, *Working Paper*, no. 71.

2. The Central Bank's QMM is used here, but a state-space model of the real exchange rate gives similar results. Further information on the QMM can be found in Daníelsson *et al.* (2015).

Box 4

Iceland's external position in historical and international context

Iceland's international investment position (IIP) as measured according to international standards changed radically after the composition agreements of the failed financial institutions' estates were approved on the basis of fulfilled stability conditions late in 2015. As a result, there is no longer any need to calculate separately the underlying IIP, which looked through the settlement of the estates in order to obtain a more realistic view of the external position of the economy going forward.[1] This Box discusses the IIP in historical and international context. Examination reveals that Iceland's net IIP (NIIP), which was negative by 14½% of GDP at the end of 2015, is at its most favourable in about fifty years and is better than in many other developed countries.[2] Foreign direct investment (FDI), which is generally considered more reliable financing than debt, is larger as a share of gross external liabilities than it has been in decades.

External liabilities rose steeply in the early 1930s …

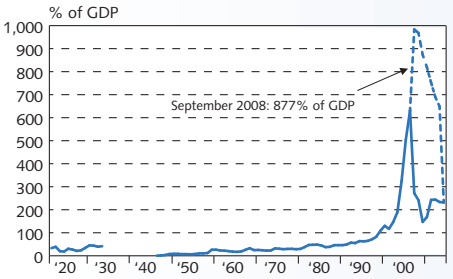
It is no coincidence that historical data on Iceland's external liabilities extend back to 1922.[3] A year earlier, the Icelandic authorities had to take a loan from an English bank in the amount of 8% of GDP in order to resolve the severe banking and currency crisis that had persisted for some time. Afterwards, temporary restrictions on international trade were lifted, and the *de facto* depreciation of the króna against the Danish krone was acknowledged for the first time with a separate exchange rate listing (Einarsson *et al.*, 2015). Thereafter, Statistics Iceland was tasked with collecting information on Iceland's external liabilities, as it was clear to the authorities that, in view of experience, these matters must be monitored more closely (Gudmundsson, 1922). After the English loan was taken, Iceland's gross external liabilities amounted to about a third of GDP and then fell to about a fourth of GDP before the onset of the Great Depression (Chart 1). Then the authorities were faced once again with a severe banking and currency crisis (Einarsson *et al.*, 2015), and gross external liabilities rose to 45% of GDP in 1931.

… but was paid off during World War II before increasing again

Comprehensive information on developments in Iceland's external liabilities during the period from 1935-1946 is lacking, but it can be assumed that most of the liabilities was paid off during World War II, after strong GDP growth and lengthy restrictions on foreign exchange transactions and international trade led to the accumulation of a current account surplus (Chart 2). Substantial foreign liquidity was accumulated as well, but it was depleted in only two years after the close of the war. Gross external liabilities therefore rose again, to just over a fourth of GDP by 1960, following a period of brisk investment, an uninterrupted current account deficit dating back to the end of the war, and two large currency devaluations. Important steps towards more balanced trade and greater economic stability

Chart 1

Iceland's gross external liabilities 1922-2015[1]

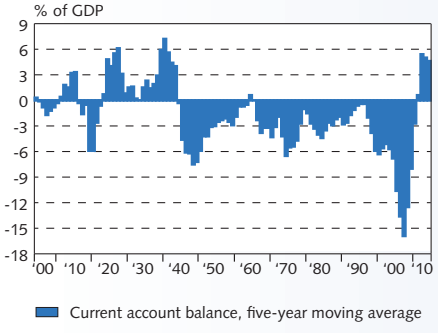


1. Data for 1922-1994 are from the National Economic Institute; however, data for 1935-1946 are lacking. Data for 1995-2015 are from the Central Bank of Iceland and Statistics Iceland. The broken line shows gross external liabilities calculated according to international standards, including the liabilities of the failed financial institutions at full nominal value. The solid line indicates the Central Bank's estimate of Iceland's underlying gross external liabilities.

Sources: National Economic Institute, Statistics Iceland, Central Bank of Iceland.

Chart 2

Current account balance 1905-2015[1]



1. Based on National Economic Institute figures for 1901-1944, Statistics Iceland figures for 1945-1994, and figures from the Central Bank and Statistics Iceland for 1995-2015, and based on the underlying current account balance in 2008-2015.

Sources: National Economic Institute, Statistics Iceland, Central Bank of Iceland.

1. Nevertheless, the failed banks' estates still affect the external position to some degree, and further changes can be expected as their settlement progresses. *Financial Stability* 2016/1 also contains a discussion of Iceland's IIP following the settlement of the failed banks' estates.
2. This Box is based in part on historical data from the National Economic Institute on gross external liabilities during the period 1922-1994 and the NIIP (i.e., the difference between external assets and liabilities) for 1960-1994. There appears to be some discrepancy between the series, as in some instances the NIIP is negative by an amount greater than gross external liabilities. As a result, these older data must be interpreted with some caution.
3. Figures on the banking system's external liabilities are available back to 1886 (see Einarsson *et al.*, 2015) and external Treasury liabilities back to 1908, when the Icelandic Treasury took its first foreign loan in the amount of 500,000 kr. to finance the development of the telephone system (see Snævarr, 1993).

were taken in 1960, but the authorities took nearly full control over external obligations at the same time by requiring Government approval of all foreign loans with a maturity of more than one year. Gross external liabilities declined thereafter, and the NIIP (for which data only extend back to 1960) has never been more favourable than during the herring boom of the mid-1960s, when it was negative by about 8½% of GDP (Chart 3).

The NIIP deteriorated steadily in the following decades …

The NIIP deteriorated steadily from the mid-1960s until the capital account was liberalised in the early 1990s. The Treasury and Central Bank played a leading role in the intermediation of foreign credit to Iceland over these three decades, which generally featured a current account deficit coupled with strong nominal GDP growth, as inflation crises and currency crises were frequent occurrences. The NIIP therefore deteriorated steadily relative to GDP and was negative by about half of GDP by the time nearly all restrictions on foreign borrowing were lifted at the beginning of 1993 (the Act on Foreign Exchange, no. 87/1992). The fact that gross external liabilities totalled about 57% of GDP at that time indicates how limited Iceland's external assets were.

… and Iceland's foreign-denominated balance sheet expanded unabated following the capital account liberalisation and the privatisation of the banking system

Iceland's international balance sheet expanded rapidly in the 1990s, after the capital account liberalisation. Gross external liabilities nearly doubled over the period until year-end 2000, gross external assets grew to nearly half of GDP, and the NIIP was negative by 62% of GDP. This development accelerated, however, following the privatisation of Landsbankinn and Búnaðarbanki Íslands in 2002-2003. From year-end 2002 until the collapse of the banking system in autumn 2008, gross external liabilities mushroomed from 117% to 877% of GDP and gross external assets from 50½% to 691% of GDP, and the NIIP ended by being negative in the amount of 186% of GDP.

External position of the economy uncertain during the post-crisis period and until the settlement of the failed banks' estates

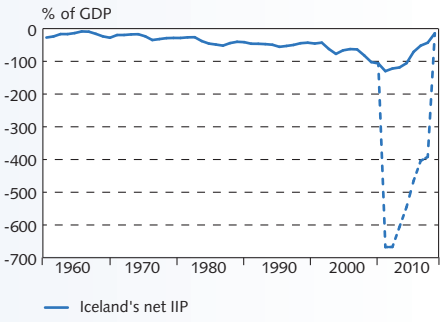
In the wake of the financial crisis, there has been some uncertainty about how Iceland's international balance sheet would look following the settlement of the failed banks' estates and comprehensive restructuring of other domestic balance sheets. The Central Bank has published regular estimates of the underlying position, which deviated greatly from the IIP as calculated according to international standards, as the latter included all of the estates' debt at full nominal value even though it was clear that it would never be paid in full. Iceland's gross external liabilities totalled just over 231% of GDP at the end of 2015 and gross external assets were 217%, giving a negative NIIP of 14½% of GDP. The size of Iceland's international balance sheet is therefore about the same as in mid-2005, and the NIIP is at its most favourable in roughly fifty years. Furthermore, FDI accounts for about 40% of gross liabilities, whereas until now the vast majority of liabilities have been in the form of debt instruments and other investments (Chart 4) that are generally considered riskier and more volatile financing (Ahrend *et al.*, 2012).

NIIP now stronger than is generally seen among developed countries after having been weaker for decades

As Chart 5 shows, for most of the past five decades, Iceland's NIIP has been worse than has generally been seen in developed coun-

Chart 3

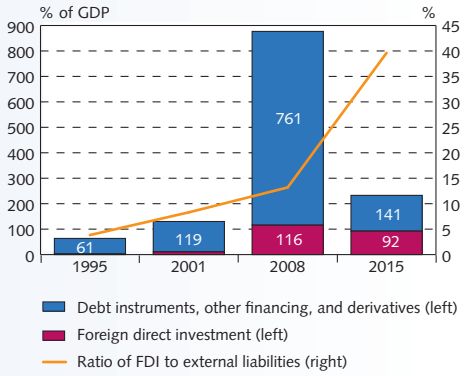
Iceland's net international investment position 1960-2015[1]



1. The chart shows the net international investment position; i.e., the difference between external assets and liabilities. Data for 1960-1994 are from the National Economic Institute, while information from 1995 onwards is based on data from the Central Bank and Statistics Iceland, including the Central Bank's estimate of the underlying NIIP for the period 2008-2014. The broken line shows the NIIP calculated according to international standards, including the liabilities of the failed financial institutions at full nominal value.
Sources: National Economic Institute, Statistics Iceland, Central Bank of Iceland.

Chart 4

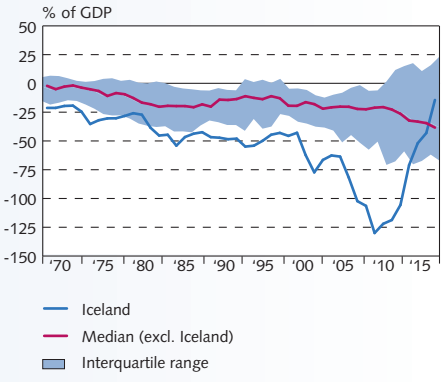
Gross external liabilities and foreign direct investment[1]



1. Gross external liabilities fall into two categories: foreign direct investment, on the one hand, and debt instruments, other financing, and derivatives, on the other. Values for 2008 are as of end-Q3, just before the collapse of the banks.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart 5

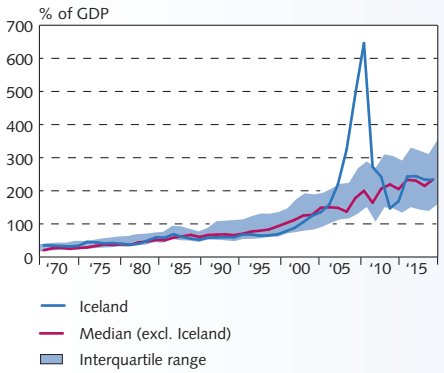
NIIP in 30 developed countries 1970-2015[1]



1. Figures for Iceland are from the National Economic Institute (1970-1994) and the Central Bank and Statistics Iceland (1995-2015), based on the underlying position during the period 2008-2014. Figures from the other countries are from the Lane and Milesi-Ferretti database for 1970-2011. Their data are extended through 2015 based on developments according to the IMF's international financial statistics (IFS) database.
Sources: International Monetary Fund, Lane and Milesi-Ferretti (2007), National Economic Institute, Statistics Iceland, Central Bank of Iceland.

Chart 6

Gross external liabilities in 30 developed countries 1970-2015[1]



1. Figures for Iceland are from the National Economic Institute (1970-1994) and the Central Bank and Statistics Iceland (1995-2015), based on the underlying position during the period 2008-2014. Figures from the other countries are from the Lane and Milesi-Ferretti database for 1970-2011. Their data are extended through 2015 based on developments according to the IMF's international financial statistics (IFS) database.

Sources: International Monetary Fund, Lane and Milesi-Ferretti (2007), National Economic Institute, Statistics Iceland, Central Bank of Iceland.

tries. That has changed in recent years, however, and after the sharp decline in gross external liabilities at the end of 2015, Iceland's NIIP is more favourable than in many developed countries.[4] It is interesting to note that the net position has long been worse than in other developed countries even though gross external liabilities have been similar for most of the period (Chart 6). This reflects, among other things, the fact that restrictions on foreign investment were in place longer in Iceland than in many other countries and that for a long time Iceland had a persistent current account deficit, with the associated accumulation of debt. This has changed radically, as is stated above, and if forecasts of a continued current account surplus materialise, Iceland's NIIP could turn positive in the near term.

References

Ahrend, R., A. Goujard, and C. Schwellnus (2012). International capital mobility: Which structural policies reduce financial fragility? OECD *Economic Policy Papers*, no. 02.

Bjarni G. Einarsson, Kristófer Gunnlaugsson, Thorvardur Tjörvi Ólafsson, and Thórarinn G. Pétursson (2015). The long history of financial boom-bust cycles – Part I: Financial crises. Central Bank of Iceland, *Working Paper* no. 68.

Lane, P. R., and G. M. Milesi-Ferretti (2007). The external wealth of nations mark II: Revised and extended estimates of foreign assets and liabilities, 1970–2004. *Journal of International Economics*, 73, 223-250.

Magnús Gudmundsson (1922). Fiscal affairs – speech by Magnús Gudmundsson, Minister of Finance, in the Lower House of Parliament, 17 February 1922. *Morgunblaðið*, 19 February 1922 [in Icelandic].

Sigurdur Snævarr (1993). *The Icelandic Economy* [in Icelandic]. Reykjavík: Mál og menning University Press.

4. Among other things, this dramatic change has affected the equilibrium real exchange rate, as is discussed in Box 3.

Box 5

Why has inflation been so low in the past two years?

After peaking at 18.6% at the beginning of 2009, following the sharp depreciation of the króna, inflation slowed down to the Central Bank's 2.5% inflation target early in 2014 and remained close to target for most of the year. It fell even further at the end of 2014 and bottomed out at 0.8% early in 2015. Since then it has picked up slightly but remained at or below 2%. Inflation has therefore been below target for over two years, which is unprecedented in the fifteen years since the adoption of inflation targeting in Iceland in March 2001. What are the main reasons for this, and has the drop in inflation been larger and faster than could have been foreseen when the disinflation episode began in early 2014? This Box attempts to answer these questions and quantify the forces underlying this development.

A simple model of inflation

In order to assess the main drivers of the disinflation episode, the inflation equation in the Central Bank's quarterly macroeconomic model, QMM, is used.[1] The equation is based on a conventional Phillips curve where current inflation is determined by recent inflation and expected future inflation. The impact of past inflation reflects general inflation stickiness, which could be, for instance, because of widespread indexation of goods and services prices to past inflation. The impact of inflation expectations on current inflation reflects that price formation is also affected by expectations about future developments in inflation. For example, firms are likelier to raise their output prices if they expect inflation to rise in the future. By the same token, employees are likely to demand larger pay rises if they expect increased inflation in the future.

According to the Phillips curve, inflation is also determined by the intensity of factor utilisation in the economy; i.e., how large an output gap exists. Because some of the goods and services consumed in Iceland come from abroad, global inflation and the exchange rate of the króna can also have a direct impact on domestic inflation. The effects of imported inflation can also surface in domestic production, some of which requires imported intermediate inputs. Finally, as labour is an important input into domestic production of goods and services, inflation will also depend on wage developments; therefore, if wage costs rise in excess of productivity growth, inflation can rise as a result, both directly and through rising inflation expectations and increased demand, thereby widening the output gap.[2]

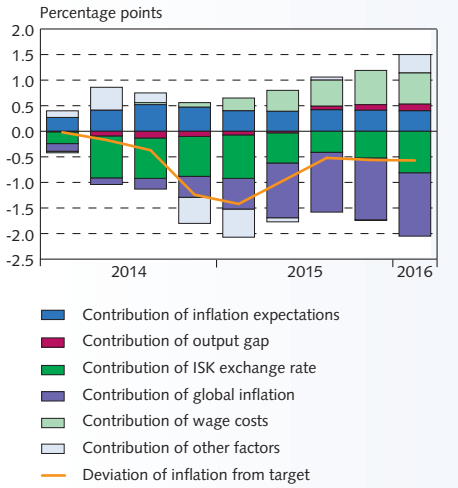
Key reasons why inflation has been below target in recent years

As Chart 1 indicates, inflation has been below target since the beginning of 2014. The deviation from target increased throughout the year, peaking in Q1/2015, when inflation was 1½ percentage points below the target. Since mid-2015 it has been about ½ a percentage point below the target. The chart also illustrates the contribution of individual determinants of inflation according to the Phillips curve. In order to measure the contribution of each factor, inflation is estimated according to the model, but running a sequence of counter-

1. Ásgeir Daníelsson, Bjarni G. Einarsson, Magnús F. Gudmundsson, Svava J. Haraldsdóttir, Thórarinn G. Pétursson, Signý Sigmundardóttir, Jósef Sigurdsson, and Rósa Sveinsdóttir (2015). "QMM: A quarterly macroeconomic model of the Icelandic economy. Version 3.0." Central Bank of Iceland, *Working Paper*, no. 71. Information on the inflation equation can be found on pages 68-70 in the handbook.
2. Further discussion of the economic basis of such inflation models can be found, for instance, in Thórarinn G. Pétursson (1998), "Price determination and rational expectations", *International Journal of Finance & Economics*, 3, 157-167, and (2002), "Wage and price formation in a small open economy", Central Bank of Iceland, *Working Paper*, no. 16.

Chart 1

Deviation of inflation from target and contribution of determinants[1]

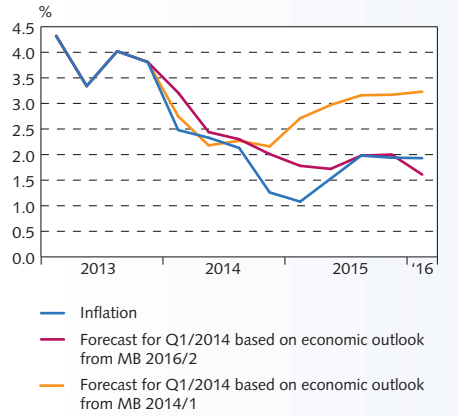


1. Deviation of inflation from target and contribution of individual determinants to the deviation, based on the inflation equation in the Bank's QMM (see explanation in main text). "Other factors" represents the portion of the deviation not captured by the equation.

Source: Central Bank of Iceland.

Chart 2

Inflation paths based on differing assumptions[1]



1. Inflation paths based on the economic outlook used as the basis for the forecasts in *Monetary Bulletin* 2016/2 and 2014/1 (except for inflation expectations, which are unchanged in the comparison).

Sources: Statistics Iceland, Central Bank of Iceland.

factual simulations where the factor in question is consistent with inflation at target. In order to estimate the contribution of inflation expectations, inflation is therefore calculated based on the assumption that inflation expectations were in line with the 2.5% target for the entire period. The same is done with global inflation and unit labour costs. To calculate the contribution of the exchange rate, inflation is calculated based on the assumption that the exchange rate had remained unchanged throughout the period, and the contribution of the output gap is determined by calculating inflation assuming that no output gap had existed during the period. The simulations are dynamic, so that the inflation paths are determined by past inflation from the simulation rather than observed past inflation. The decomposition therefore captures the contribution of the factor in question through past inflation as well.[3]

It is unsurprising that exceptionally low imported inflation is the main reason for low domestic inflation in the past two years. This is due both to the appreciation of the króna (particularly early on) and low global inflation (particularly in 2015), which is due primarily to the steep drop in oil and commodity prices. The slack in the economy until the beginning of 2015 also pulled inflation down below the target, but these effects disappeared as the year progressed and reversed by the year-end. Offsetting the factors that have pulled inflation down below target is the fact that long-term inflation expectations have persistently been above target. According to the Phillips curve, inflation would have been around ½ a percentage point lower if inflation expectations had been consistent with the target. Finally, the chart shows how last year's large pay rises begin increasingly to offset reduced import prices.

Inflation has subsided more than could have been foreseen at the beginning of 2014

It is also interesting to examine the extent to which the disinflation from the beginning of 2014 onwards was foreseeable and the extent to which it was driven by factors that could not have been predicted. To determine this, Chart 2 shows two inflation paths calculated using the Phillips curve: on the one hand, a path based on the most recent assessment of developments in the determinants of inflation and, on the other hand, a path based on the projected developments in these determinants, which were used as a basis for the forecast prepared in January 2014 and published in *Monetary Bulletin* 2014/1. As the chart indicates, inflation has developed broadly as the Phillips curve indicates, in terms of the current assessment of developments in underlying explanatory variables. The largest deviation appears in late 2014 and early 2015, when inflation subsides more than the equation indicates. Overall, however, the Phillips curve gives a relatively accurate view of the disinflation episode early on and the rise in inflation since H2/2015.

The disinflation early in 2014 is also well in line with what the Phillips curve indicates based on the economic outlook as it was at the beginning of that year. However, based on that information, in-

3. In the QMM, inflation expectations are determined by the future inflation rate forecast by the model, so as to ensure internal consistency between forecasted and expected inflation. In the simulations carried out here, however, it is more appropriate to use measures of actual inflation expectations; therefore, ten-year inflation expectations obtained from the Central Bank's market inflation expectations survey are used. Chart 1 also shows the contribution of "other" factors, which is the sum of deviations of inflation from target that the equation does not capture. This can include conventional forecasting errors not captured by the equation or measurement errors in explanatory variables during the period (for example, measurement errors in inflation expectations, the output gap, and unit labour costs). It could also reflect that the effects of the variables concerned during the period in question differ from historical experience.

flation according to the equation should have remained unchanged in Q4/2014 and then risen from the beginning of 2015 onwards, measuring about 3.2% by mid-year, or about 1 percentage point more than it actually did. As Chart 3 shows, the main reason for this deviation is global inflation, which turned out much lower than was forecast at the beginning of 2014, owing mainly to the aforementioned decline in global oil and commodity prices. Pulling in the same direction is the fact that the króna has been stronger than was anticipated at the beginning of 2014, but offsetting it are the recent wage increases, which have been larger than previously forecast.

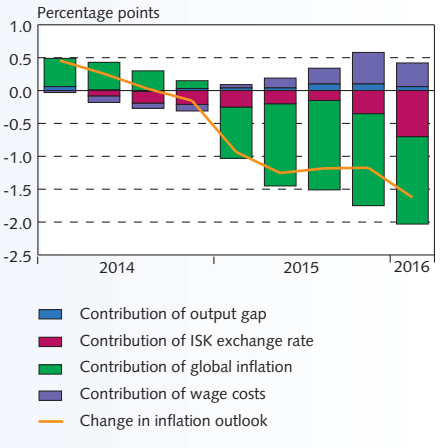
What does this mean for the inflation outlook?

Imported deflationary pressures stemming from the appreciation of the króna and low global inflation are the main reason inflation has been below target for the past two years. Domestic factors have pulled in the opposite direction. Large and unforeseen reductions in import prices are also the main explanation for the Central Bank's over-prediction of inflation in the recent term.

The composition of the offsetting factors in inflation developments gives cause for concern, as it could indicate that inflation will increase again when the effects of the rising exchange rate and falling global oil and commodity prices subside. The risk is that only the effects of the offsetting domestic factors will remain: those that have pushed inflation upwards and have a tendency to be more persistent, particularly the effects of inflation expectations and the output gap.

Chart 3

Change in inflation outlook since 2014 and contribution of determinants[1]



1. Difference in inflation paths based on the economic outlook used as the basis for the forecasts in *Monetary Bulletin* 2016/2 and 2014/1 and the contribution of individual determinants (except for inflation expectations, which are unchanged in the comparison).

Source: Central Bank of Iceland.

Appendix 1

Forecast tables

Table 1 GDP and its main components[1]

	2014	*2015*	*2016*	*2017*	*2018*
Private consumption	3.0 (3.1)	4.8 (4.9)	6.0 (5.3)	5.0 (4.2)	3.6 (3.4)
Public consumption	1.7 (1.8)	1.1 (1.5)	1.5 (1.4)	1.8 (1.6)	1.6 (1.5)
Gross capital formation	16.0 (15.4)	18.6 (19.6)	14.1 (12.4)	5.1 (6.1)	0.1 (-2.3)
Business investment	17.3 (16.3)	29.5 (31.5)	19.1 (14.7)	1.9 (2.6)	-3.3 (-8.6)
Residential investment	14.8 (14.8)	-3.1 (3.3)	5.8 (13.9)	22.4 (23.4)	13.3 (17.5)
Public investment	12.5 (12.8)	-1.1 (-5.1)	2.4 (2.7)	5.4 (4.4)	3.1 (3.2)
Domestic demand	5.3 (5.2)	6.3 (7.1)	6.3 (5.2)	4.2 (3.9)	2.4 (1.7)
Exports of goods and services	3.1 (3.1)	8.2 (6.7)	7.6 (6.4)	2.9 (2.1)	4.0 (3.0)
Imports of goods and services	9.8 (9.8)	13.5 (12.8)	11.7 (8.7)	3.1 (3.1)	2.7 (0.5)
Gross domestic product (GDP)	2.0 (1.8)	4.0 (4.1)	4.5 (4.2)	4.0 (3.4)	3.0 (2.9)
GDP at current price level (ISK billions)	2,004 (1,989)	2,205 (2,190)	2,386 (2,368)	2,574 (2,542)	2,749 (2,697)
Annual growth rate of nominal GDP	6.1 (5.9)	10.1 (10.1)	8.2 (8.1)	7.9 (7.4)	6.8 (6.1)
Total investment (% of GDP)	17.3 (16.7)	19.1 (18.7)	19.9 (19.5)	19.9 (19.8)	19.3 (18.8)
Business investment (% of GDP)	11.3 (10.7)	13.6 (13.1)	14.5 (13.6)	14.0 (13.2)	13.0 (11.7)
Underlying gross national saving (% of GDP)[2]	22.4 (21.5)	24.1 (22.8)	24.0 (23.0)	22.8 (22.1)	22.5 (21.7)
Contribution of net trade to GDP growth (percentage points)	-2.9 (-3.0)	-2.0 (-2.5)	-1.3 (-0.6)	0.1 (-0.3)	0.7 (1.3)

1.Year-on-year change (%) unless otherwise specified (figures in parentheses are from the forecast in *Monetary Bulletin* 2016/1). 2. The sum of investment, inventory changes, and the underlying current account balance.

Sources: Statistics Iceland, Central Bank of Iceland.

Table 2 Global economy, external conditions, and exports[1]

	2014	*2015*	*2016*	*2017*	*2018*
Marine production for export	-12.1 (-12.1)	0.6 (1.0)	-1.0 (-1.0)	3.0 (2.0)	2.0 (2.0)
Aluminium production for export	1.8 (1.8)	5.3 (3.5)	1.5 (1.6)	1.4 (1.0)	1.3 (1.0)
Foreign currency prices of marine products	7.7 (7.7)	10.9 (10.5)	2.5 (2.4)	-3.0 (-2.9)	-1.0 (-1.0)
Aluminium prices in USD[2]	2.1 (2.1)	-6.4 (-4.9)	-12.7 (-11.2)	1.9 (2.5)	2.3 (1.7)
Fuel prices in USD[3]	-7.5 (-7.5)	-47.2 (-47.2)	-24.0 (-30.3)	25.0 (23.2)	11.0 (10.4)
Terms of trade for goods and services	3.3 (3.2)	6.8 (6.8)	1.8 (2.3)	-1.5 (-1.4)	-0.7 (-1.2)
Inflation in main trading partners[4]	1.1 (1.1)	0.6 (0.6)	0.9 (1.3)	1.8 (1.9)	2.0 (2.0)
GDP growth in main trading partners[4]	1.8 (1.8)	1.8 (1.8)	1.6 (1.9)	2.0 (2.1)	2.0 (2.2)
Main trading partners' imports[4]	3.5 (3.5)	3.6 (3.2)	3.0 (3.5)	3.5 (3.8)	3.3 (3.1)
Short-term interest rates in main trading partners (%)[5]	0.5 (0.5)	0.2 (0.2)	0.2 (0.3)	0.6 (0.7)	1.1 (1.3)

1. Year-on-year change (%) unless otherwise specified (figures in parentheses are from the forecast in *Monetary Bulletin* 2016/1). 2. Forecast based on aluminium futures and analysts' forecasts. 3. Forecast based on fuel futures and analysts' forecasts. 4. Forecast from Consensus Forecasts and Global Insight. 5. OECD forecast for three-month money market rates in Iceland's main trading partner countries. .

Sources: Bloomberg, Consensus Forecasts, Global Insight, IMF, New York Mercantile Exchange, Statistics Iceland, Central Bank of Iceland.

Table 3 Current account balance and its subcomponents[1]

	2014	*2015*	*2016*	*2017*	*2018*
Trade balance	6.2 (6.3)	7.0 (6.7)	5.7 (6.4)	4.8 (5.2)	5.0 (5.6)
Headline balance on primary income[2]	-2.6 (-3.0)	-2.8 (-4.0)	-1.7 (-2.9)	-1.9 (-2.9)	-1.8 (-2.7)
Underlying balance on primary income[3]	-0.7 (-1.1)	-1.9 (-2.8)	-1.7 (-2.9)	-1.9 (-2.9)	-1.8 (-2.7)
Headline current account balance[2]	3.7 (3.3)	4.2 (2.7)	4.0 (3.5)	2.9 (2.3)	3.2 (2.9)
Underlying current account balance[3]	5.0 (4.7)	4.9 (3.7)	4.0 (3.5)	2.9 (2.3)	3.2 (2.9)

1.% of GDP (figures in parentheses are from the forecast in *Monetary Bulletin* 2016/1). 2. Calculated according to IMF standards. The sum of primary and secondary income. 3. Adjusted for the calculated revenues and expenses of the DMBs in winding-up proceedings for 2014-2015. The services account balance is also adjusted for the failed DMBs' financial intermediation services indirectly measured (FISIM). With the recent settlement of the failed banks' estates, as of 2016 there is no longer any difference between measured and underlying current account numbers.

Sources: Statistics Iceland, Central Bank of Iceland.

Table 4 Public sector finances[1]

	2014	2015	2016	2017	2018
Overall Treasury balance	0.8 (0.9)	0.0 (0.4)	15.5 (0.3)	0.6 (1.2)	0.9 (0.7)
Primary Treasury balance	4.3 (4.4)	3.4 (3.4)	18.3 (2.7)	3.0 (3.3)	3.2 (2.6)
Overall general government balance	-0.1 (-0.1)	-0.5 (0.0)	15.3 (0.2)	0.4 (0.6)	0.8 (0.4)
Primary general government balance	3.6 (3.6)	3.0 (3.1)	18.2 (2.8)	2.9 (2.8)	3.1 (2.4)
Total general government debt	83 (82)	69 (70)	61 (58)	56 (55)	46 (53)
Net general government debt[2]	56 (56)	50 (52)	44 (38)	40 (35)	36 (35)

1. % of GDP on an accrual basis (figures in parentheses are from the forecast in *Monetary Bulletin* 2015/4). 2. Net debt is defined here as total liabilities excluding pension obligations and accounts payable and net of cash and bank deposits.

Sources: Ministry of Finance and Economic Affairs, Statistics Iceland, Central Bank of Iceland.

Table 5 Labour market and factor utilisation[1]

	2014	2015	2016	2017	2018
Unemployment (% of labour force)	5.0 (5.0)	4.0 (4.0)	3.3 (3.7)	3.2 (3.5)	3.4 (3.6)
Employment rate (% of population aged 16-74)	77.4 (77.4)	79.2 (79.2)	80.0 (79.7)	80.7 (79.7)	80.1 (79.5)
Total hours worked	1.9 (1.9)	3.3 (3.3)	3.0 (3.0)	3.4 (2.4)	1.5 (1.7)
Labour productivity[2]	0.1 (-0.1)	0.6 (0.8)	1.5 (1.2)	0.5 (1.0)	1.5 (1.2)
Unit labour costs[3]	5.0 (5.6)	8.4 (9.5)	9.8 (9.3)	5.2 (4.7)	4.7 (5.0)
Wage share (% of gross factor income)	61.4 (62.2)	62.9 (64.5)	66.7 (67.9)	67.7 (68.5)	68.4 (69.7)
Real disposable income	4.7 (4.7)	8.6 (7.6)	8.9 (8.7)	4.5 (4.1)	2.4 (3.7)
Output gap (% of potential output)	-0.1 (-0.3)	0.7 (0.7)	2.4 (2.1)	2.0 (1.6)	1.0 (0.9)

1. Year-on-year change (%) unless otherwise specified (figures in parentheses are from the forecast in *Monetary Bulletin* 2016/1). 2. Output per total hours worked. 3. Wage costs divided by productivity.

Sources: Statistics Iceland, Central Bank of Iceland.

Table 6 Exchange rate and inflation[1]

	2014	2015	2016	2017	2018
Trade-weighted exchange rate index[2]	206.9 (206.9)	201.1 (201.1)	188.8 (190.5)	188.3 (190.5)	188.3 (190.5)
Inflation (consumer price index, CPI)	2.0 (2.0)	1.6 (1.6)	2.1 (2.3)	4.1 (4.1)	3.8 (3.4)
Inflation (CPI excluding effects of indirect taxes)	2.0 (2.0)	1.2 (1.2)	2.1 (2.2)	4.1 (4.1)	3.8 (3.4)

1. Year-on-year change (%) unless otherwise specified (figures in parentheses are from the forecast in *Monetary Bulletin* 2016/1). 2. Narrow trade basket.

Sources: Statistics Iceland, Central Bank of Iceland.

Table 7 Quarterly inflation forecast (%)[1]

Quarter	Inflation (year-on-year change)	Inflation excluding effects of indirect taxes (year-on-year change)	Inflation (annualised quarter-on-quarter change)
		Measured value	
2015:2	1.5 (1.5)	1.1 (1.1)	5.4 (5.4)
2015:3	2.0 (2.0)	1.6 (1.6)	2.6 (2.6)
2015:4	1.9 (1.9)	1.5 (1.5)	-0.6 (-0.6)
2016:1	1.9 (1.9)	1.9 (1.8)	0.4 (0.3)
		Forecasted value	
2016:2	1.6 (1.9)	1.6 (1.9)	4.1 (5.3)
2016:3	1.9 (2.1)	1.9 (2.1)	3.6 (3.6)
2016:4	3.0 (3.1)	3.0 (3.0)	4.0 (3.2)
2017:1	3.6 (3.8)	3.6 (3.8)	2.6 (3.1)
2017:2	4.0 (4.1)	4.0 (4.1)	5.7 (6.7)
2017:3	4.3 (4.1)	4.3 (4.1)	5.0 (3.7)
2017:4	4.6 (4.2)	4.6 (4.2)	4.9 (3.3)
2018:1	4.4 (3.8)	4.4 (3.8)	2.2 (1.5)
2018:2	4.1 (3.5)	4.1 (3.5)	4.4 (5.6)
2018:3	3.6 (3.4)	3.6 (3.4)	2.9 (3.1)
2018:4	3.2 (3.1)	3.2 (3.1)	3.4 (2.1)
2019:1	2.9 (2.9)	2.9 (2.9)	1.1 (0.8)
2019:2	2.8	2.8	3.7

1. Figures in parentheses are from forecast in *Monetary Bulletin* 2016/1.

Sources: Statistics Iceland, Central Bank of Iceland.