Monetary Bulletin 2018/2[1]

Global GDP growth is still on the rise. It measured 3.8% in 2017 and, among Iceland's main trading partners, was 2.4%, the strongest since 2010. This recovery has benefited the Icelandic economy, boosting exports last year and further improving terms of trade. The improvement in external conditions has been slower, however, than in 2015-2016. In particular, there has been a slowdown in export growth, which has significantly outpaced trading partners' GDP growth in recent years.

The slower recovery of external conditions has reduced GDP growth from its 2016 peak of 7.5%. According to preliminary figures from Statistics Iceland, output growth measured 3.6% in 2017, which was well in line with the forecast in the February *Monetary Bulletin*. The GDP growth outlook for 2018 and the following two years is also largely unchanged. Growth is projected to measure 3.3% this year, close to last year's level, and then subside further in the next two years, approaching its long-term potential of just under 3%. This will be driven by weaker growth in exports and in private sector consumption and investment spending, but offset by increased public sector activity. Even though domestic demand growth will ease as well, it appears set to continue outpacing GDP growth, further narrowing the current account surplus.

Labour demand grew strongly in Q1/2018, and unemployment continued to decline. As in the Bank's February forecast, job creation is expected to ease over the forecast horizon, in line with declining GDP growth. The labour market remains tight, even though it is offset by large-scale importation of labour. The output gap is still considered to be significant, and slightly wider than was assumed in February. As was the case then, it is estimated to have peaked already and is expected to close by end-2020.

Inflation measured 2.5% in Q1/2018, after rising by 0.6 percentage points from the previous quarter. Underlying inflation has risen as well and, like headline inflation, is close to the Bank's inflation target. The inflation outlook is broadly unchanged from the February forecast. Inflation is expected to rise over the course of the year, measuring 2.9% in Q4, and then taper off again in 2019 and hover around the target for the remainder of the forecast horizon.

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

I Economic outlook, key assumptions, and main uncertainties

Central Bank baseline forecast

Global output growth outlook continues to improve

The global economy gained momentum in H2/2017, supported by favourable financial conditions and increased optimism among households and businesses. Global GDP growth measured 4% in H2 and 3.8% in 2017 as a whole, the strongest since 2011 and 0.6 percentage points above year-2016 growth. The economic outlook for the next few years continues to improve. The International Monetary Fund (IMF) projects global GDP growth at 3.9% in 2018 and 2019 and expects the persistent slack that has plagued advanced economies to close in the latter half of this year.

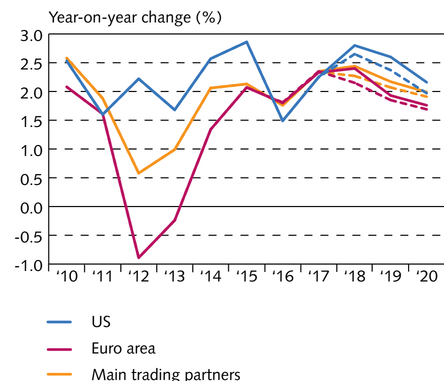
GDP growth averaged 2.4% among Iceland's main trading partners in 2017, an increase of 0.6 percentage points year-on-year. The baseline forecast assumes that it will also measure 2.4% this year, slightly more than was forecast in the February *Monetary Bulletin* (Chart I-1). The improvement is due mainly to an improved GDP growth outlook for the eurozone and the United States. As in the Bank's previous forecasts, it is assumed that trading partner growth will ease over the next two years, although the forecast for both years has been revised upwards since February. Further discussion of the global economy can be found in Chapter II, and uncertainties in the global outlook are discussed later in this chapter.

Baseline forecast assumes a slight additional appreciation of the króna through next year

Terms of trade for goods and services improved by 1.7% in 2017 and have improved by nearly 15% since 2013. Terms of trade for goods deteriorated slightly, however, in spite of a more than 20% rise in aluminium prices, as foreign currency prices of imports rose by nearly 9%. Furthermore, foreign currency prices of marine products fell by 1%. Because of the quota reduction in the Barents Sea and increased optimism about market prospects, however, marine product prices are now expected to rise more than was assumed in February. In spite of this and the recent surge in aluminium prices, the outlook is for terms of trade for goods and services to deteriorate by 0.4% this year, after four years of uninterrupted improvement. The main reason for this is the rise in inflation in trading partner countries. The most important factor is a 20% rise in oil prices this year and an increase of nearly 6% in other commodities prices. Although they have deteriorated compared to the February forecast, terms of trade are expected to improve over the next two years by a total of 2½%, or 1½ percentage points more than was projected in February (Chart I-2). The main difference is that the outlook for the coming two years is now for lower global oil prices than was indicated by futures prices in February.

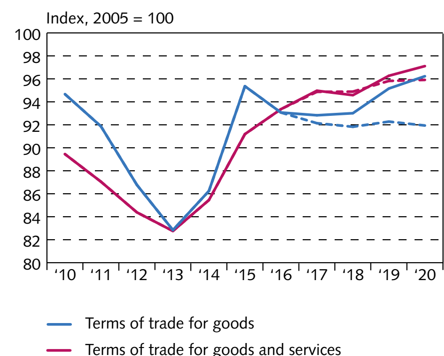
The króna has appreciated by 1½% versus the average of other currencies since the February *Monetary Bulletin* and has been a full 1% higher in Q2 to date than was assumed in February. According to

Chart I-1
Global output growth 2010-2020[1]



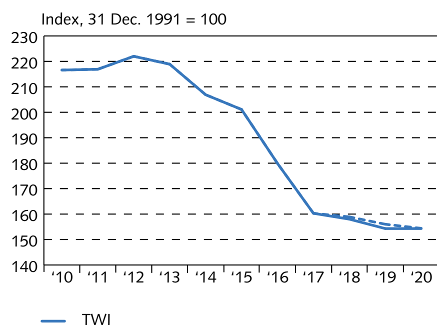
1. Central Bank baseline forecast 2018-2020. Broken lines show forecast from MB 2018/1.
Sources: OECD, Thomson Reuters, Central Bank of Iceland.

Chart I-2
Terms of trade 2010-2020[1]



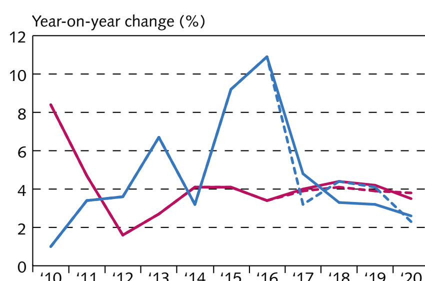
1. Central Bank baseline forecast 2018-2020. Broken lines show forecast from MB 2018/1.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart I-3
Exchange rate 2010-2020[1]



1. Narrow trade basket. Central Bank baseline forecast 2018-2020. Broken line shows forecast from MB 2018/1.
Source: Central Bank of Iceland.

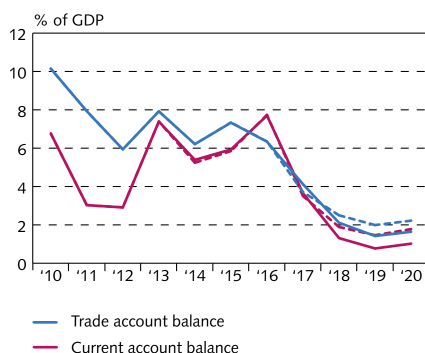
Chart I-4
Exports and global demand 2010-2020[1]



Goods and services exports
Trading partners' imports

1. Central Bank baseline forecast 2018-2020. Broken lines show forecast from MB 2018/1.
Sources: Statistics Iceland, Thomson Reuters, Central Bank of Iceland.

Chart I-5
Current account balance 2010-2020[1]



1. Current account balance based on estimated underlying balance 2008-2015. Central Bank baseline forecast 2018-2020. Broken lines show forecast from MB 2018/1.
Sources: Statistics Iceland, Central Bank of Iceland.

the baseline forecast, the króna is expected to appreciate slightly more this year and be about 1½% above the 2017 average (Chart I-3). As in February, it is assumed to continue strengthening next year, and the exchange rate path is therefore broadly unchanged. As has been discussed in previous issues of *Monetary Bulletin*, the rise in the equilibrium real exchange rate is considered to have played a major role in the recent appreciation of the króna; however, the real exchange rate is now estimated to be close to its equilibrium level. This assessment is always subject to uncertainty, however, as is discussed later in this chapter. Developments in terms of trade and the exchange rate are discussed in Chapters II and III.

Export growth has begun to subside, and the current account surplus looks set to keep narrowing

Growth in services exports slowed markedly in 2017, after booming in the years beforehand. It measured just over 8% in 2017, down from an average of more than 17% in 2015-2016. Developments in tourism are the main factor in this trend, although growth in the sector has eased after the enormous growth of the recent past. Services exports grew considerably faster last year than was assumed in February, owing to unexpected growth in intellectual property exports by pharmaceuticals companies in Q4. This item had contracted sharply in Q3, and the information available at the time suggested that the contraction was a permanent one. This turned out not to be the case, however, which is the main reason total exports grew by 4.8% in 2017 instead of the 3.2% assumed in the Bank's February forecast (Chart I-4). As before, export growth is expected to ease during the forecast horizon, in line with a rising real exchange rate. Growth in tourism is expected to keep subsiding, although the slowdown will be offset by increased marine product exports, which are projected to grow by 4% this year, after shrinking by a similar amount last year and by a total of more than 16% over the past four years.

The surplus on goods and services trade amounted to 4.1% of GDP in 2017, after narrowing by more than 2 percentage points year-on-year (Chart I-5). As in the Bank's previous forecasts, the surplus is expected to keep narrowing, to 2.1% of GDP this year and 1½% of GDP in the two years thereafter. This is a smaller surplus than was forecast in February, reflecting the offsetting effects of less favourable net exports versus more favourable terms of trade. The current account surplus will narrow similarly, from 3.7% of GDP in 2017 to 1.3% this year and about 1% in 2019. Further discussion of exports and the external balance can be found in Chapter IV.

Outlook for continued rapid growth in domestic demand despite slower growth in private consumption and investment

Private consumption growth has been brisk in recent years. Significant rises in real wages, increased employment, improvements in households' asset position, and reduction of debt have all contributed to consumption growth. Furthermore, households have been upbeat about the current situation and economic prospects. Private

consumption growth appears to have peaked in 2017, at 7.8% year-on-year, the strongest single-year growth rate since 2005. Although the outlook is for growth to ease this year, it will remain robust, at 6.3% (Chart I-6). As in February, private consumption is projected to grow by an average of roughly 3½% annually over the next two years. On the whole, this is relatively stronger growth than was forecast in February, as the outlook is for real disposable income to grow more rapidly than was assumed then. Household saving is expected to remain relatively stable at just over 11% of disposable income throughout the forecast horizon.

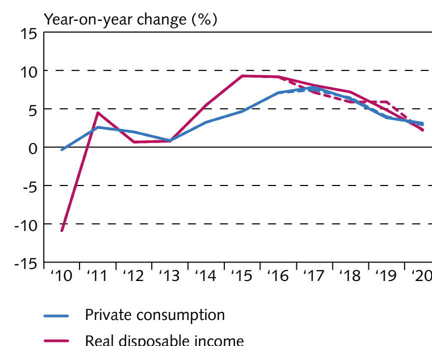
Investment growth has eased after a surge dating back to 2014. The slowdown in business investment is a major factor, as it grew by 4.3% in 2017, as opposed to nearly 25% per year for the three years beforehand. Total investment therefore grew by 9.3% last year and has risen from 15.6% of GDP in 2013 to 22.1% in 2017, which is 1 percentage point above the twenty-five year average. As in the Bank's previous forecasts, investment growth is expected to keep subsiding this year. Business investment is projected to contract by 2.5% year-on-year, whereas general business investment – i.e., business investment excluding energy-intensive industry and ships and aircraft – is expected to grow by 3.6%. In all, investment is projected to grow by 6.5% this year, more than was forecast in February, owing mainly to a sizeable revision of public investment. The prospect of more rapid general business investment growth in the coming two years means that total investment is also expected to grow faster in the next two years than was forecast in February. If the forecast materialises, the investment-to-GDP ratio will rise still further, to 23½% beginning in 2019. The ratio of general business investment to GDP is also well above its historical average, whereas the ratio of business investment to GDP will taper off to its historical average (Chart I-7).

Domestic demand, which reflects all public and private sector consumption and investment spending in Iceland, grew by 6.8% in 2017 and 9% in 2016. With the slowing of growth in private consumption and business investment, the outlook is for domestic demand to continue easing this year. Demand is expected to grow by 5.2% in 2018 and then taper off to 4.6% in 2019 and just under 3% in 2020 (Chart I-8). This is slightly above the February forecast, owing mainly to the prospect of stronger investment growth than was assumed then. Further discussion of developments in private consumption, investment, and domestic demand can be found in Chapter IV.

GDP growth eases in line with February forecast, and outlook is broadly unchanged

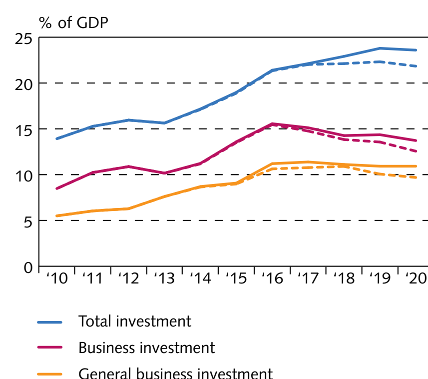
GDP growth slowed markedly as 2017 progressed, measuring only 1.5% in Q4. For 2017 as a whole, it measured 3.6%, well below the previous year's 7.5% (Chart I-8). It was largely foreseeable that output growth would taper off, as it was clear that growth in services exports would lose pace, and exports and inventories in the fishing industry declined as a result of the fishermen's strike in early 2017. This slowdown in GDP growth was therefore well in line with the Bank's

Chart I-6
Private consumption and disposable income 2010-2020[1]



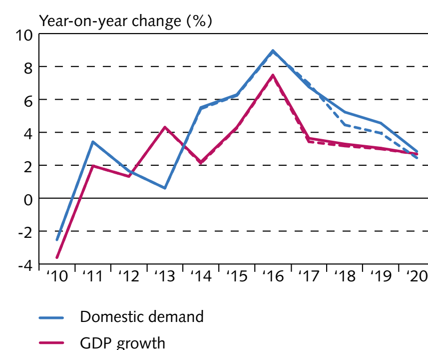
1. Central Bank baseline forecast 2018-2020. Broken lines show forecast from MB 2018/1.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart I-7
Investment 2010-2020[1]



1. General business investment is business investment excluding energy-intensive industry and ships and aircraft. Central Bank baseline forecast 2018-2020. Broken lines show forecast from MB 2018/1.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart I-8
Domestic demand and GDP growth 2010-2020[1]



1. Central Bank baseline forecast 2018-2020. Broken lines show forecast from MB 2018/1.
Sources: Statistics Iceland, Central Bank of Iceland.

February forecast, even though growth for the year turned out 0.2 percentage points stronger than projected. By the same token, the output growth outlook for 2018 is broadly unchanged since February. Growth is estimated to have picked up in Q1, reflecting in part the rise in fishing industry inventories following the contraction in the wake of the fishermen's strike. Output growth is forecast at 3.3% for 2018 as a whole instead of the 3.2% projected in February. As in February, it is expected to ease further over the next two years, to 3% in 2019 and 2¾% in 2020, close to its long-term trend rate. Further discussion of developments in GDP growth can be found in Chapter IV.

Growth in labour demand remains strong, but demand pressures in the economy seem to be receding

Total hours worked increased in Q1/2018 by 2.3% year-on-year, close to the average since the labour market recovery began. The number of jobs increased by 1.6% year-on-year, and seasonally adjusted unemployment continued to fall, measuring 2.6%, which is close to the 2003-2007 average.[2] In addition, the number of underemployed workers – those who are employed part-time and would like to work more – has declined, and the ratio of underemployed to the labour force is broadly in line with the 2003-2007 average.

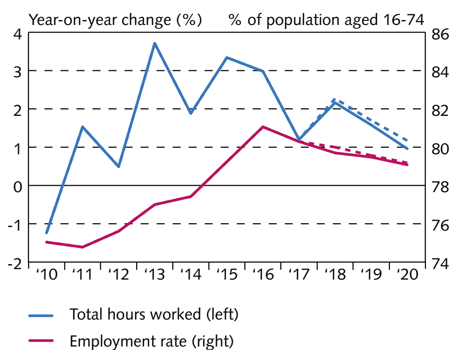
Total hours worked are estimated to have increased by 2.2% this year and the employment rate to have declined marginally since 2017 (Chart I-9). As in the February forecast, it is assumed that total hours will rise more slowly in the coming two years, in line with slower GDP growth, and that the employment rate will continue to fall to just over 79% of the working-age population. Unemployment is projected to remain broadly the same, on average, this year as in 2017, or 2.9%, and then inch upwards gradually to 3½%, the level considered consistent with price stability (Chart I-10).

As in the Bank's February forecast, the output gap is considered to have peaked at year-end 2016 (Chart I-10). Revised GDP figures for the past few years increase the end-2016 output gap by ⅓ of a percentage point relative to the February forecast, however.[3] Furthermore, the outlook for this year and next year is for a slightly wider gap, which will almost close in 2020, as was projected in February. It should be noted, however, that estimating the output gap is always subject to uncertainty. Further discussion of the labour market and factor utilisation can be found in Chapter V.

Inflation at target in Q1 and projected to remain there throughout the forecast horizon

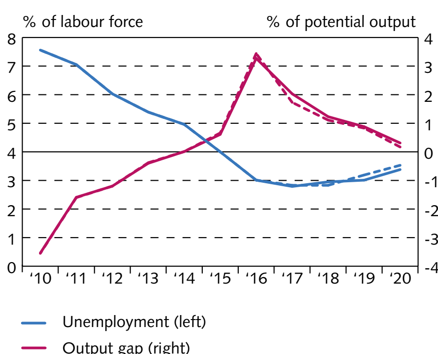
Inflation measured 2.5% in Q1/2018, after rising by 0.6 percentage points from the previous quarter. The increase was in line with the Bank's February forecast, which had assumed that inflation would

Chart I-9
Total hours worked and employment rate 2010-2020[1]



1. Central Bank baseline forecast 2018-2020. Broken lines show forecast from MB 2018/1.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart I-10
Unemployment and output gap 2010-2020[1]



1. Central Bank baseline forecast 2018-2020. Broken lines show forecast from MB 2018/1.
Sources: Statistics Iceland, Central Bank of Iceland.

2. Box 2 discusses data on labour volume, which Statistics Iceland has recently begun publishing. Labour volume data are based on a larger amount of more detailed information than the labour force survey alone, and it is hoped that they will result in improved estimates of total hours.
3. Box 3 discusses a new measure of factor utilisation that is expected to improve the Bank's estimates of developments in the output gap still further.

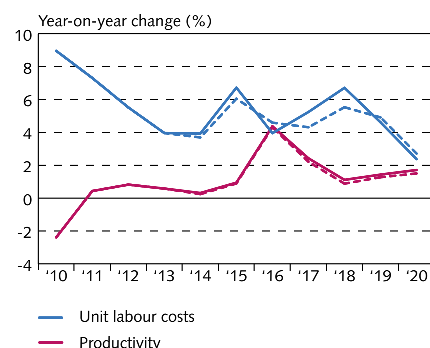
average 2.4% during the quarter. Headline inflation rose over the course of the quarter, reaching 2.8% in March, the first time in four years that it exceeded the Bank's target. It tapered off again in April, however, to 2.3%. Measures of inflation including and excluding housing have begun to converge as house price inflation falls, and both the CPI excluding housing and the HICP were virtually unchanged year-on-year. The effects of the past years' appreciation of the króna have tapered off, and imported goods and services prices have begun to rise again after falling virtually unimpeded in krónur terms since 2013. Underlying inflation has risen as well and is now just below the inflation target (see Box 4).

Inflation expectations were persistently well above target but then began falling in 2012, aligning with the target in 2016. The breakeven inflation rate in the bond market has risen again in the recent term, however, but this appears to reflect a rising risk premium on non-indexed long-term bonds rather than a rise in long-term inflation expectations. Inflation expectations therefore still appear anchored to the target.

Wage costs seem to have risen more in 2017 than was assumed in the Bank's February forecast. This revision of last year's twelve-month wage increases also affects the measured annual increase for this year. In addition, wage drift has been stronger year-to-date than was assumed in February. Estimates of productivity growth are broadly unchanged, however, and unit labour costs therefore appear to have risen more in 2017 than was forecast in February (Chart I-11). The increase is projected at 5.2% in 2017 and 6.7% in 2018. As in February, it is assumed that this rise in unit labour costs will ease over the next two years and converge with the inflation target by the end of the forecast horizon.

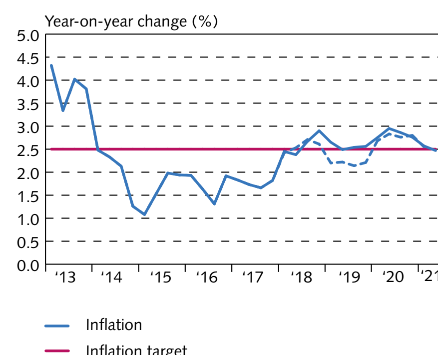
In the Bank's last forecast, it was assumed that the upper value-added tax rate would be lowered next year, in line with the Government's intentions at the time the forecast was prepared. As has been discussed in previous issues of *Monetary Bulletin*, this would cause a decline in measured inflation until the effects of the tax cut drop out of twelve-month inflation measurements. But these plans now have been abandoned, and measured inflation will therefore be somewhat higher in 2019 than was assumed in February (Chart I-12). As Chart I-13 indicates, however, the inflation outlook is broadly unchanged since February, after adjusting for this changed assumption about value-added tax. According to the current baseline forecast, headline inflation is expected to measure 2.4% in Q2/2018 and rise to 2.9% in Q4. It is forecast to fall back to the target next year, though, and hover around it for the rest of the forecast horizon. As is mentioned above, this is similar to the assumptions in February, reflecting the expectation of a higher exchange rate well into 2019 versus a larger increase in wage costs and a slightly wider output gap early in the forecast horizon. The uncertainties in the inflation forecast are discussed below. Developments in global prices are discussed in Chapter II, and domestic inflation and inflation expectations are discussed in Chapter VI.

Chart I-11
Unit labour costs and productivity 2010-2020[1]



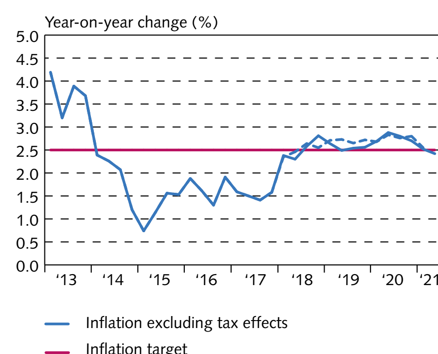
1. Productivity measured as GDP per total hours worked. Central Bank baseline forecast 2017-2020. Broken lines show forecast from MB 2018/1.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart I-12
Inflation[1]
Q1/2013 - Q2/2021



1. Central Bank baseline forecast Q2/2018 - Q2/2021. Broken line shows forecast from MB 2018/1.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart I-13
Inflation excluding effects of indirect taxes[1]
Q1/2013 - Q2/2021



1. Central Bank baseline forecast Q2/2018 - Q2/2021. Broken line shows forecast from MB 2018/1.
Sources: Statistics Iceland, Central Bank of Iceland.

Key assumptions and main 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 domestic economic policy and Iceland's external environment. It is also based on an assessment of activities in individual markets and how monetary policy is transmitted to the real economy. All of these factors are subject to uncertainty. The discussion below explains the assumptions about domestic economic policy. It also lists several important uncertainties and explains how changes in key assumptions could lead to developments that deviate from the baseline forecast.

Fiscal and monetary policies

As in previous forecasts, it is assumed that the fiscal stance will tighten this year. The tightening will be somewhat less than was forecast in February, however, or 0.3% of GDP instead of 0.8% (see Chapter IV). According to the Government's fiscal plan, however, fiscal policy will ease in the next two years by 0.9% of GDP over the next two years, broadly in line with the Bank's February forecast of 0.8%. Therefore, it will ease by 0.7% of GDP over the period from 2018 through 2020 instead of being neutral, as was assumed in the February forecast.

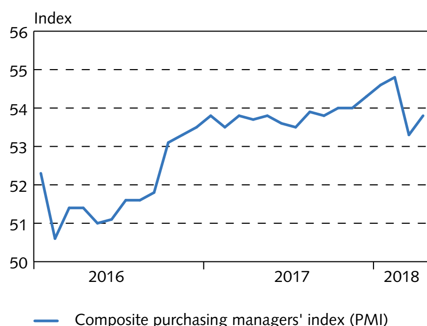
The Bank's key interest rate has been unchanged at 4.25% since October 2017, at which time it had been lowered by 1.5 percentage points from its post-crisis peak in August 2016 (see Chapter III). The baseline forecast is based on the assumption that, during the forecast horizon, the key rate will develop in line with the monetary policy rule in the Bank's macroeconomic model, which ensures that inflation will be broadly at target over the medium term.

Optimism about the global economy has increased, but risks are tilted to the downside

Optimism about the global economic outlook appears to have increased across the board, and financial conditions are widely favourable in spite of market unrest early in February. As before, though, the global economic outlook is uncertain. Output growth for 2018 could be underestimated if the underlying momentum behind the economic recovery turns out stronger than is currently assumed. Recent retail trade figures have been disappointing, however, and manufacturing indices fell sharply in March (Chart I-14). The decline was broad-based, extending to industrial manufacturing and services. Although it is due to some extent to temporary factors such as unusually inclement weather in Europe, the possibility that the short-term GDP growth outlook is too optimistic cannot be ruled out. Furthermore, the recovery could prove fragile if interest rates in major advanced economies rise faster than markets expect.

The global growth outlook could also be too optimistic further ahead. Support for free and open global trade has weakened, and the risk of a trade war between the US and China has increased. This could have an adverse effect on world trade and global GDP growth. Financial conditions could also change faster than markets expect; for instance, if inflation rises faster in the US than is currently forecast.

Chart I-14
Leading indicator of global GDP growth[1]
January 2016 - April 2018



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: Thomson Reuters.

It could prove particularly trying for emerging market economies if a faster rise in US interest rates leads to an appreciation of the US dollar, thereby increasing many emerging economies' interest rate burden and total external debt. It could also exacerbate the risk of capital flight from these economies. Added to this is increased geopolitical uncertainty. All of these factors indicate the risk that global output growth is overestimated and that global demand for Icelandic products will therefore be weaker than is assumed in the baseline forecast.

Exchange rate outlook uncertain

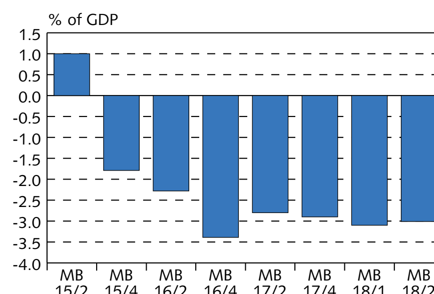
According to the baseline forecast, the exchange rate of the króna will continue to rise through 2019. This technical assumption is affected, on the one hand, by the growth outlook and the interest rate differential with abroad, and on the other, by the estimated equilibrium real exchange rate. The equilibrium rate is estimated to have risen in the recent term, concurrent with the improvement in terms of trade and rapid growth in exports, which supported the current account surplus and improved Iceland's international investment position (see, for example, Box 3 in *Monetary Bulletin* 2016/2). The real exchange rate is now considered close to its equilibrium value, but this assessment is highly uncertain. Developments in the equilibrium real exchange rate, as in the real exchange rate itself, will be determined by developments in external conditions.

Fiscal easing could be underestimated

As is discussed above and explored further in Chapter IV, the new fiscal plan entails less fiscal tightening this year than was assumed in the Bank's February forecast. Furthermore, the outlook is for more easing over the forecast horizon than previously projected. This is in line with previous experience, as can be seen in Chart I-15, which shows that the fiscal stance has repeatedly been more accommodative than has been forecast. For example, the forecast for 2015-2017 as published in *Monetary Bulletin* 2015/2 provided for fiscal tightening amounting to 1% of GDP, but by the time the new fiscal budget proposal was presented in the autumn, the assessment had turned around and the November forecast provided for 2% easing. The estimated easing increased even further in the spring 2016 issue of *Monetary Bulletin*, when the new fiscal plan was presented, and even further that autumn, although the new fiscal budget proposal was not yet available. The new transport strategy was presented, however, and it provided for sizeable additional unfunded expenditures. These plans were largely excluded from the spring 2017 fiscal plan, however, and the fiscal stance was estimated to be less accommodative in *Monetary Bulletin* 2017/2. Since then, the assessment of fiscal easing has increased slightly and is now estimated at a total of 3% of GDP. Since the forecast in the spring 2015 issue of *Monetary Bulletin*, the fiscal stance for 2015-2017 – the period when the output gap was at its widest – has therefore eased by 4% of GDP, or the equivalent of 102 b.kr. in terms of year-2017 GDP. In view of this experience and public discussion of even further easing, the current assessment may overestimate the tightness of the fiscal stance.

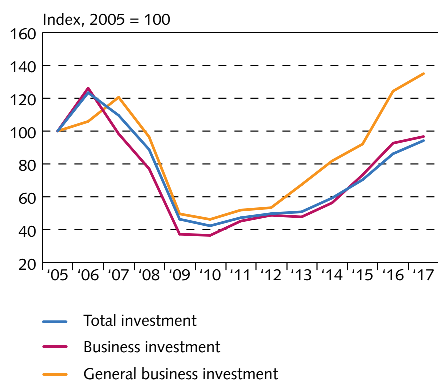
Chart I-15

Accumulated change in the cyclically adjusted primary balance 2015-2017[1]



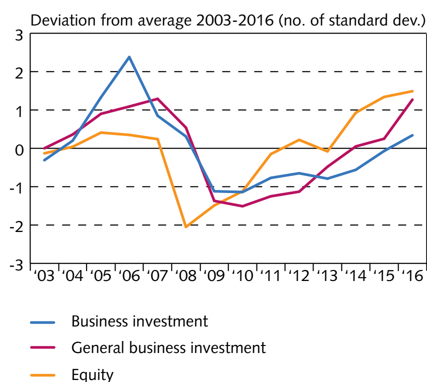
1. Estimated change in the cyclically adjusted primary balance (adjusted for one-off revenues and expenditures) in 2015-2017, as presented in various issues of *Monetary Bulletin* since 2015.
Source: Central Bank of Iceland.

Chart I-16
Investment 2005-2017[1]



1. General business investment is business investment excluding energy-intensive industry and ships and aircraft.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart I-17
Equity and business investment 2003-2016[1]



1. Investment as a share of GDP and equity as a share of total assets. Commercial enterprises excluding pharmaceuticals, financial, and insurance companies. General business investment is business investment excluding investment in energy-intensive industry and ships and aircraft.
Sources: Statistics Iceland, Central Bank of Iceland.

Uncertainty about business investment

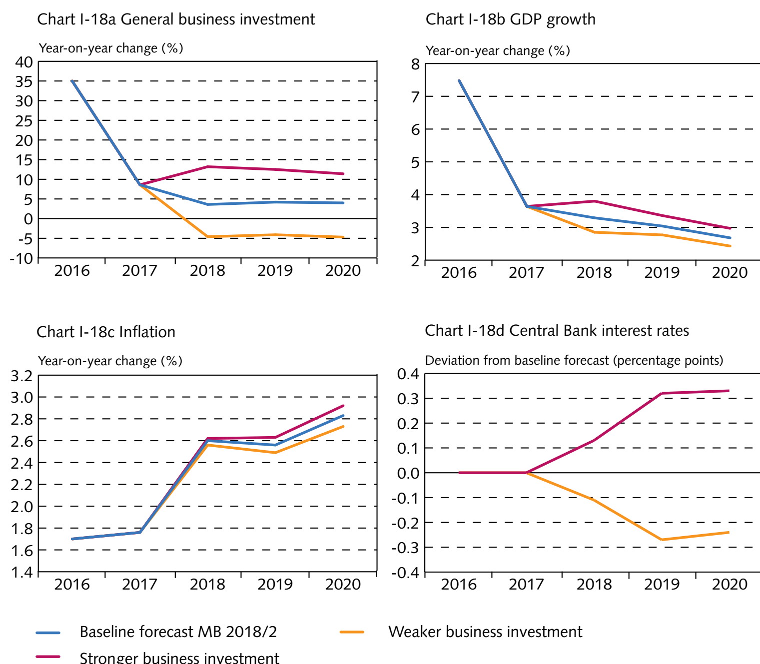
After a steep contraction following the financial crisis, businesses' investment spending has increased substantially since 2013, and the business investment-to-GDP ratio has been above its historical average since 2015. In 2017, however, it was about one-fourth below its 2006 high in real terms (Chart I-16). In part, this reflects unusually strong investment spending during the pre-crisis years, in connection with the construction of the Reyðarfjörður aluminium smelter. In terms of general business investment, however – business investment excluding energy-intensive industry and ships and aircraft – the investment level in 2017 was 12% above its pre-crisis peak.

Concurrent with the surge in business investment, companies' financial position has improved markedly. Corporate debt has fallen considerably, and equity ratios are higher than ever before (see Chapter III). Firms' financial capacity to invest is therefore greatly increased and looks set to remain strong. This can be seen clearly in Chart I-17, which shows that firms' equity ratio exceeds the historical average by more than the investment-to-GDP ratio, although the difference between the two narrowed in 2016, when general business investment grew by 35% year-on-year. As a result, the possibility cannot be ruled out that investment is underestimated in the baseline forecast. Investment growth could also be overestimated in the forecast, however. The Central Bank's new investment survey, for instance, suggests a shift in the investment plans of Iceland's largest companies (see Chapter IV), and the recent surge in the real exchange rate could indicate that firms in the tradable sector have less investment capacity than is assumed in the baseline forecast.

The outlook for corporate investment in 2018 and the following two years is therefore uncertain. As a result, Chart I-18 illustrates two possible scenarios in which business investment develops differently than in the baseline forecast. In the first alternative scenario, general business investment is assumed to grow by an average of just over 12% per year in 2018 and the two years thereafter, instead of the 4% provided for in the baseline example. This would put the ratio of general business investment to GDP above its historical average by about the same amount as firms' equity ratio as shown in Chart I-17. This is also well in line with the historical relationship between firms' investment spending and their equity position. If this materialises, domestic demand will increase by 1 percentage point more per year in 2018 through 2020 than in the baseline forecast, but because this partly reflects increased imports of investment goods, the GDP growth impact will be less pronounced. GDP growth would be 3.8% this year, or 0.5 percentage points more than in the baseline forecast, and in the next two years it would be 0.3 percentage points more. Stronger economic activity is reflected in increased inflationary pressures; however, this would be offset by Central Bank interest rates, which would be ⅓ of a percentage point higher than they would otherwise from 2019 onwards, weakening domestic demand and causing inflation to develop well in line with the baseline forecast.

In the latter alternative scenario, however, it is assumed that general business investment will contract by nearly 5% per year in

Chart I-18
Alternative scenario[1]



1. General business investment is business investment excluding energy-intensive industry and ships and aircraft.
Sources: Statistics Iceland, Central Bank of Iceland.

2018 through 2020, which would bring it back to its historical average relative to GDP by 2019 and even slightly below it in 2020. GDP will then be 0.4 percentage points less this year and about ¼ of a percentage point less in the following two years. As in the first alternative scenario, the inflation outlook is broadly unchanged from the baseline forecast, but Central Bank interest rates would be about ¼ of a percentage point lower than in the baseline forecast from 2019 onwards.

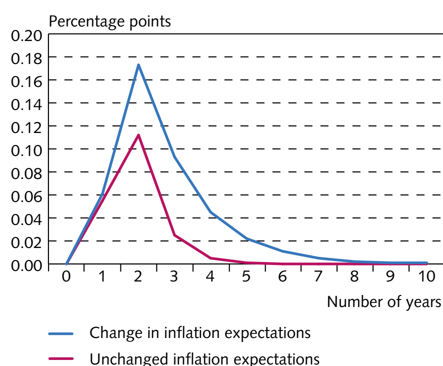
The impact of rising import prices on domestic inflation will depend on how firmly inflation expectations are anchored

Long-term inflation expectations have fallen markedly in the recent term, and indicators imply that they have become more firmly anchored to the Central Bank's inflation target.[4] Market agents' and analysts' expectations concerning average inflation over the next ten years have fallen, for instance, from an average of 4% in 2012-2015 to approximately 2.5% as of early 2017. This decline in inflation expectations has played a key role in the disinflation that has occurred in Iceland in recent years, and a stronger anchor is conducive to mitigating fluctuations in real interest rates — and therefore in output growth, employment, and the exchange rate. A firmer anchor is also of vital importance in determining what impact higher import prices will have on domestic inflation, now that trading partners' export prices have started to rise after declining for several years. If the anchor holds, imported price hikes will have less pronounced and less protracted ef-

4. See Thórarinn G. Pétursson (2018), "Disinflation and improved anchoring of long-term inflation expectations: The Icelandic experience", Central Bank of Iceland *Working Paper* no. 77.

Chart I-19

Effect of a 1% increase in import prices on inflation[1]



1. The chart shows the structural effect of a 1% permanent increase in import prices on domestic inflation. Two examples are shown. In the first, the increase affects long-term inflation expectations, but in the latter, inflation expectations remain unchanged at the Central Bank of Iceland inflation target.

Source: Central Bank of Iceland.

fects on domestic inflation and give less cause for monetary policy response. If the anchor gives way, however, there is an increased risk that imported price hikes will spread to other prices, making a stronger and more persistent impact on inflation.

To illustrate this, Chart I-19 compares the effects of a rise in global oil prices on domestic inflation, depending on the impact the price increase has on inflation expectations. The chart shows the effect of a 15% rise in oil prices, which is similar to the average twelve-month rise in the past four quarters. Increased oil prices are also assumed to raise other export prices in trading partner countries, as well as raising consumer prices in those economies. In all, import prices in Iceland therefore rise permanently by 1%. The inflation equation in the Central Bank's macroeconomic model is used, which assumes that a deviation in inflation from target at any given time is determined by past and expected deviations of inflation from target, in addition to the output gap, the real exchange rate of imports, and wage costs. Two examples are shown. The former assumes that the anchor for inflation expectations will weaken and that expectations will rise in line with recent inflation, whereas the latter assumes that inflation expectations will remain anchored to the target. As can be seen, the impact is much less pronounced if the anchor holds: inflation rises less, and the effects taper off more quickly. The overall long-term impact on the price level is also considerably less. If inflation expectations rise in line with recent inflation, this 1% rise in import prices will ultimately lead to a permanent 0.4% rise in the CPI, as opposed to only 0.2% if the anchor holds.

Inflation could rise faster in the near future than is assumed in the baseline forecast

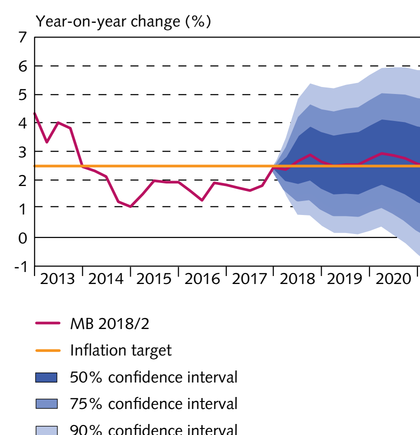
The issues discussed above highlight the uncertainty that generally accompanies the economic outlook. Some of these factors could indicate that inflation is underestimated in the baseline forecast. The most important of them is the uncertainty about near-term developments in wages. Although wage settlements were not terminated in February 2018, the underlying dissatisfaction with wages and income distribution remains, and this could lead to larger pay rises than the baseline forecast assumes, particularly given the current low unemployment and palpable tension in the labour market. Wage drift could also be underestimated. Various other factors could cause inflation to rise more during the forecast period than is provided for in the baseline example. For example, global inflation could rise faster and the króna could weaken more than is currently expected, house price inflation could prove more persistent, and demand pressures in the domestic economy could be underestimated, especially if the fiscal stance eases more than is anticipated. As is discussed above, the strength of the recently achieved anchoring of inflation expectations will be of considerable importance in determining the impact of these factors on inflation.

Neither can the possibility be excluded that inflation will turn out lower than is assumed in the baseline forecast. The króna could appreciate more strongly than forecast – if external conditions prove more

favourable, for instance. Weaker global GDP growth and lower global oil and commodity prices could further impede domestic economic activity and reduce import prices. In addition, house price inflation could subside faster than is currently forecast. The baseline forecast could also underestimate growth in productivity and potential output, thereby resulting in an underestimation of the speed at which the output gap narrows.

In order to reflect these uncertainties, Chart I-20 illustrates the confidence intervals of the forecast; i.e., the range in which there is considered to be a probability of up to 90% that inflation will lie over the next three years (the methodology is described in Appendix 3 in *Monetary Bulletin* 2005/1). Uncertainty about the inflation outlook is considered broadly the same as in the previous forecast; however, uncertainty about short-term inflation is considered tilted to the upside. In the longer term, the probability distribution is considered to be roughly symmetric, however. There is a roughly 50% probability that inflation will be in the 1½-3½% range in one year and in the 1-3¾% range by the end of the forecast horizon.

Chart I-20
Inflation forecast and confidence intervals
Q1/2013 - Q2/2021



Sources: Statistics Iceland, Central Bank of Iceland.