

CENTRAL BANK OF ICELAND



# MONETARY BULLETIN



# MONETARY BULLETIN

2019 • 4

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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.

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**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 6 November 2019

The Monetary Policy Committee (MPC) of the Central Bank of Iceland has decided to lower the Bank's interest rates by 0.25 percentage points. The Bank's key interest rate – the rate on seven-day term deposits – will therefore be 3%.

According to the Bank's new macroeconomic forecast, published in the November *Monetary Bulletin*, the GDP growth outlook for H2/2019 has deteriorated relative to the August forecast. In H1, however, GDP growth exceeded the forecast, and a contraction of 0.2% is therefore expected for the year as a whole, as was projected in August. The outlook for 2020 has also deteriorated, with GDP growth now forecast at 1.6%.

Inflation has been at or above 3% since the spring but eased to 2.8% in October. Underlying inflation has been more persistent, however. Headline inflation is expected to subside faster than was forecast in August and align with the target towards the end of this year. Inflation expectations have continued to fall and are at target by most measures. The monetary stance has therefore tightened slightly between MPC meetings.

The Bank's interest rates have been cut by 1.5 percentage points since the spring, and the impact of this has yet to come fully to the fore. Lower interest rates have supported demand, and based on the Bank's forecast, the current interest rate level should suffice to ensure medium-term price stability and full capacity utilisation. The forthcoming fiscal easing will pull in the same direction. The economic outlook could be overly optimistic, however, particularly in view of global economic uncertainty.

Near-term monetary policy decisions will depend on the interaction between developments in economic activity, on the one hand, and inflation and inflation expectations, on the other.

# Monetary Bulletin 2019/4<sup>1</sup>

After a strong upsurge, GDP growth in Iceland lost pace rapidly over the course of 2018. Global growth softened and uncertainty increased – not least after the escalation of the US-China trade dispute. Additional idiosyncratic Icelandic shocks, such as the collapse of airline WOW Air, other setbacks in the airline industry, and the failure of the capelin catch, slowed domestic GDP growth still further as 2019 advanced. GDP growth fell to 0.9% in H1/2019, after measuring 3.2% in H2/2018 and 6.7% in H1/2018.

Yet even though growth lost pace in H1/2019, it turned out somewhat stronger than had been assumed in the Bank's August forecast. Domestic demand contracted more than projected but was outweighed by more favourable net trade, indicating a stronger-than-anticipated expenditure switch towards domestic goods and services. However, the outlook for H2 is for a stronger contraction than was forecast in August, owing primarily to a sizeable contraction in goods exports in Q3. There are also signs that private consumption growth has slowed and that firms' investment spending will be weaker than previously assumed. GDP growth is forecast to contract by 0.2% this year, as was assumed in the August forecast. The outlook for 2020 has deteriorated, however. GDP growth for the year is projected at 1.6% instead of 1.9%, owing mainly to a poorer outlook for growth in domestic demand.

According to Statistics Iceland's labour force survey, job numbers fell by 0.4% year-on-year in Q3, in the first decline since late 2011. Unemployment was broadly unchanged between quarters, at 3.7%, but was 0.6 percentage points higher than in Q1, before WOW Air failed. Employment is expected to decline further in Q4 and unemployment to climb to a peak of just over 4% before tapering off over the course of 2020. At the same time, the slack that opened up in the economy in mid-2019 is expected to start narrowing again, and capacity utilisation is projected to normalise by the end of next year.

Inflation was broadly at target well into 2018 but rose following the depreciation of the króna in the autumn. It peaked at 3.7% in December but has eased since then, measuring 3.1% in Q3 and falling to 2.8% in October. Although underlying inflation has proven more persistent, inflation expectations have returned to the target by most measures after rising in 2018. Headline inflation was slightly below the August forecast in Q3, and the short-term outlook has improved. It is projected to average 2.5% in Q4, 0.4 percentage points below the August forecast. The outlook is for inflation to be at or near the target for most of the forecast horizon, although it is forecast to dip temporarily below target in H2/2020.

1. The analysis presented in this *Monetary Bulletin* is based on data available in early November.

# I Economic outlook, key assumptions, and main uncertainties

## Central Bank baseline forecast

### Global GDP growth slips further

GDP growth has slowed worldwide in the past year, and pessimism about the economic outlook has increased, particularly among manufacturing companies, which are most vulnerable to the adverse effects of the ongoing trade dispute between the US and China. Global GDP growth measured 3.6% in 2018 but lost momentum over the course of the year and continued to slow down in H1/2019. The International Monetary Fund (IMF) expects global output growth to measure only 3% in 2019, 0.3 percentage points below the Fund's spring forecast and the weakest growth rate since 2009. The outlook for 2020 has deteriorated as well.

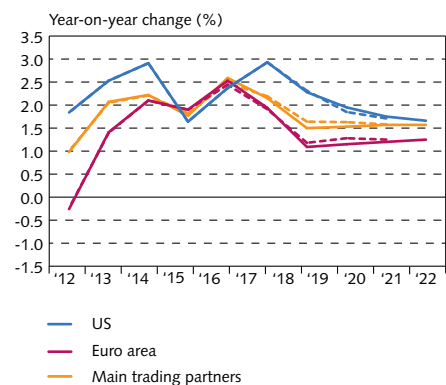
Among Iceland's main trading partners, output growth averaged 2.3% in H1/2018 but had receded to 1.8% by Q4. The downward trend has continued in 2019 to date. Growth averaged 1.6% in Q2 and is projected to measure 1.3% in H2. If this forecast materialises, growth will have fallen 1½ percentage points from its late 2017 peak. The reversal is due mainly to substantially reduced GDP growth in the eurozone, although growth has softened in the UK and Sweden as well. If projections are borne out, GDP growth among Iceland's main trading partners will average 1.5% in 2019 and 2020, and about 1.6% in the years thereafter (Chart I-1). Further discussion of the global economy can be found in Chapter II, and uncertainties in the global outlook are discussed later in this chapter.

### Exchange rate developments broadly in line with the August forecast

Terms of trade improved markedly from 2014 until mid-2017, whereupon they began to deteriorate again. By the time the slide stopped at the end of 2018, terms of trade had worsened by over 7%. About half of the deterioration occurred in 2018, driven by a 30% rise in the price of both oil and alumina, which outweighed a nearly 4% rise in foreign currency prices of Icelandic exports. For this year, the outlook is for a partial reversal of the steep rise in imported input prices, as alumina, oil, and other commodities are expected to decline in price between years. This notwithstanding, and despite a handsome rise in foreign currency prices of marine products, terms of trade are expected to deteriorate slightly year-on-year (Chart I-2). This is due in large part to a 13% decline in aluminium prices, although foreign currency prices of exported services are expected to fall as well. As in the August forecast, terms of trade are expected to improve by a total of 3% over the next three years.

The trade-weighted exchange rate index (TWI) has hovered around 180 points in the past year, after the króna depreciated by more than 10% in autumn 2018, following news of mounting operational difficulties at WOW Air, concerns about then-pending wage negotiations, and increased pessimism about the overall economic

Chart I-1  
Global output growth 2012-2022<sup>1</sup>



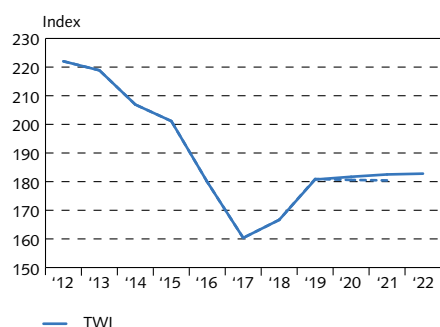
1. Central Bank baseline forecast 2019-2022. Broken lines show forecast from MB 2019/3.  
Sources: OECD, Thomson Reuters, Central Bank of Iceland.

Chart I-2  
Terms of trade 2012-2022<sup>1</sup>



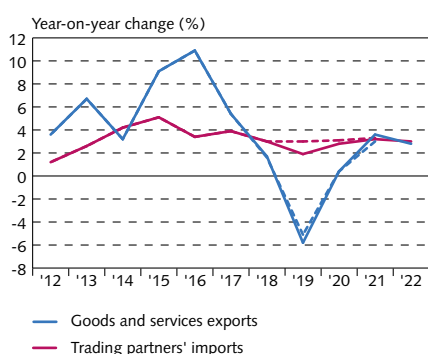
1. Central Bank baseline forecast 2019-2022. Broken line shows forecast from MB 2019/3.  
Sources: Statistics Iceland, Central Bank of Iceland.

Chart I-3  
Exchange rate 2012-2022<sup>1</sup>



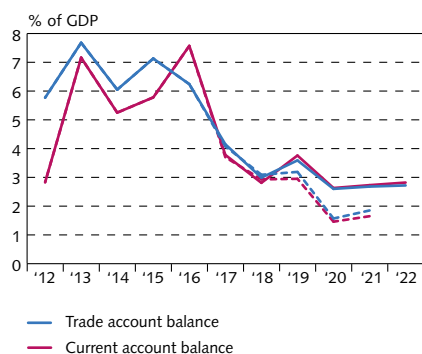
1. Narrow trade basket. Central Bank baseline forecast 2019-2022. Broken line shows forecast from MB 2019/3. Source: Central Bank of Iceland.

Chart I-4  
Exports and global demand 2012-2022<sup>1</sup>



1. Central Bank baseline forecast 2019-2022. Broken lines show forecast from MB 2019/3. Sources: Statistics Iceland, Thomson Reuters, Central Bank of Iceland.

Chart I-5  
Current account balance 2012-2022<sup>1</sup>



1. Current account balance based on estimated underlying balance 2008-2015. Central Bank baseline forecast 2019-2022. Broken lines show forecast from MB 2019/3. Sources: Statistics Iceland, Central Bank of Iceland.

outlook. The króna has depreciated in trade-weighted terms by 0.7% since the August *Monetary Bulletin* and is now slightly lower than in the beginning of November 2018. In H2 to date, the króna has developed broadly as was projected in August. As a result, the exchange rate assumptions in the baseline forecast are similar to those in the August forecast. The TWI is projected to average about 181 points this year and about 182 points in the years to follow (Chart I-3). Therefore, the adjustment of the exchange rate to recent external shocks has already come largely to the fore through a decline in the equilibrium real exchange rate (i.e., the real exchange rate consistent with internal and external balance in the economy) and a narrowing of the interest rate differential with abroad. Further discussion of uncertainties about the exchange rate outlook can be found later in this chapter, and terms of trade and the exchange rate are discussed in Chapters II and III.

### Exports set to contract markedly this year, and more than was assumed in August

Goods and services exports contracted by 2.8% year-on-year in H1, somewhat less than the Bank projected in August. Services exports shrank more than 9%, reflecting the sharp contraction in tourism following the collapse of WOW Air in late March and the grounding of Icelandair's Boeing 737 Max jets. On the other hand, goods exports grew by a full 3% year-on-year in H1, although excluding exports of ships and aircraft – which stemmed primarily from the sale of aircraft from WOW Air's operations – they contracted by 5½%. This overall contraction was due in large part to an 8% decline in marine product exports, itself a result of the capelin catch failure, and to a nearly 4% drop in aluminium exports.

The outlook is for exports to contract more in H2 than was forecast in August. The contraction in air transport is expected to be larger, albeit offset by a smaller contraction in tourists' spending in Iceland. Furthermore, figures on net trade suggest a strong contraction in goods exports in Q3, driven largely by reduced aluminium exports in the wake of production problems in the domestic aluminium industry. For 2019 as a whole, goods and services exports are forecast to shrink by 5.8% year-on-year, some 0.7 percentage points more than was assumed in August (Chart I-4). As in the August forecast, they are expected to pick up slightly in 2020 and then grow by an average of 3% per year in 2021 and 2022.

Imports contracted by over 10% in H1, owing largely to reduced activity in tourism, in addition to a decline in imports of investment goods and consumer durables. Because imports are expected to shrink more than exports, the outlook for 2019 is for a larger trade surplus than was forecast in August. This sluggish growth in imports also explains why the 2020 surplus is forecast to be larger than was projected in August. The trade surplus is now expected to narrow to 2.6% of GDP and remain there for the rest of the forecast horizon (Chart I-5). The current account surplus is assumed to develop in a similar manner. Further discussion of exports and the external balance can be found in Chapter IV.

### Outlook for domestic demand to contract this year, for the first time since 2010

Private consumption growth began to ease in late 2018, and by H1/2019 it had fallen to 2.2%, the weakest year-on-year growth rate since H2/2013. Although it developed in line with the August forecast in H1, indicators imply that it was weaker in Q3 than previously expected. As a result, private consumption growth for 2019 as a whole is projected to be slightly below the August forecast, or 1.7% instead of 1.9% (Chart I-6). Growth is expected to gain steam in coming years, bolstered by rising disposable income, which is projected to average just over 3% in the next three years, owing partly to Government decisions to lower taxes and increase transfers to households (see also Chapter IV, Box 3, and the discussion of the economic impact of the measures later in this chapter).

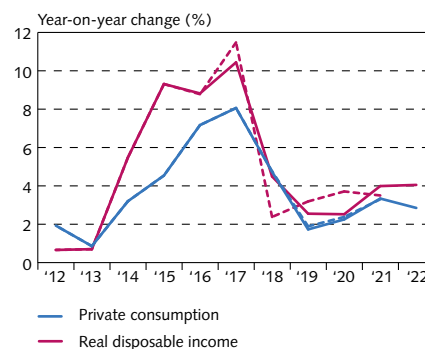
After the surge of the past several years, business investment contracted by nearly 16% year-on-year in H2/2018 and then by another third in H1/2019. To some extent, this steep contraction reflects the sale of aircraft from WOW Air's operations, which measures as goods exports and negative investment in the national accounts. However, general business investment (i.e., excluding energy-intensive industry, ships, and aircraft), also contracted in H1, by 15%. This is a somewhat larger contraction than was assumed in the August forecast, and the outlook for the year as a whole has therefore been revised downwards. Business investment is expected to shrink by 16% year-on-year in 2019 and not 13%, as was forecast in August (Chart I-7). This is compounded by the prospect of weaker-than-expected growth in residential investment and reduced public investment spending relative to the August forecast. Total investment is forecast to fall by 8.4% between years instead of 5%, as was projected in August. Next year's turnaround is also expected to be weaker than in the August forecast. The investment-to-GDP ratio is set to fall by 1½ percentage points this year, to 20.8%, and then inch upwards to its historical average in 2020.

Domestic demand, which reflects all public and private sector consumption and investment spending, contracted by 2.4% in H1, with 1 percentage point of that amount due to negative effects of inventory changes. This, in turn, was due in part to destocking in the fishing industry in response to the capelin catch failure in the spring. Weaker investment activity resulted in a larger contraction in domestic demand than was forecast in August. The outlook for H2 has deteriorated as well. Domestic demand is forecast to contract by 0.9% in 2019 as a whole, instead of the 0.2% assumed in August (Chart I-8). If this projection is borne out, it will be the first year-on-year contraction in domestic demand since 2010. Further discussion of private consumption, investment, and domestic demand can be found in Chapter IV.

### GDP growth losing pace rapidly and expected to turn negative in H2

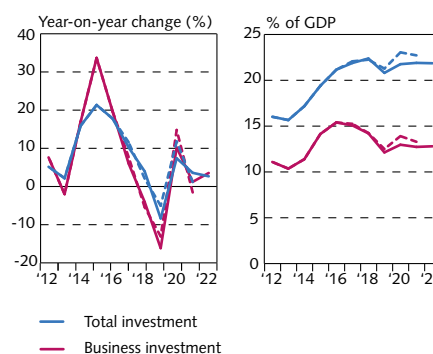
According to preliminary figures from Statistics Iceland, GDP growth measured 0.9% in H1/2019, down from 3.2% in H2/2018 and 6.7% in H1/2018. Even though domestic demand contracted more in H1

Chart I-6  
Private consumption and disposable income  
2012-2022<sup>1</sup>



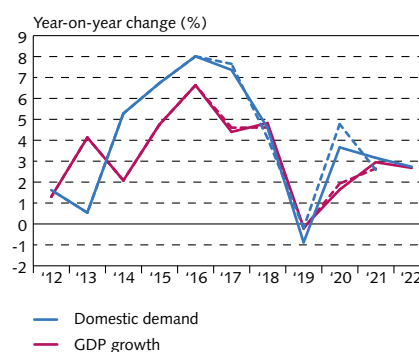
1. Central Bank baseline forecast 2019-2022. Broken lines show forecast from MB 2019/3.  
Sources: Statistics Iceland, Central Bank of Iceland.

Chart I-7  
Investment 2012-2022<sup>1</sup>



1. Central Bank baseline forecast 2019-2022. Broken lines show forecast from MB 2019/3.  
Sources: Statistics Iceland, Central Bank of Iceland.

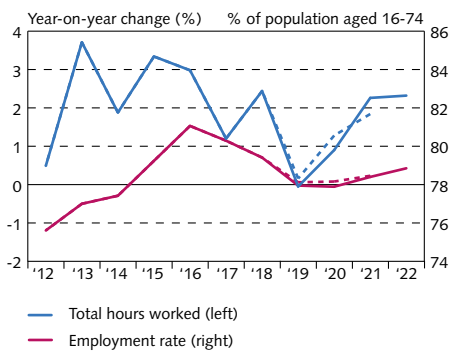
Chart I-8  
Domestic demand and GDP growth  
2012-2022<sup>1</sup>



1. Central Bank baseline forecast 2019-2022. Broken lines show forecast from MB 2019/3.  
Sources: Statistics Iceland, Central Bank of Iceland.

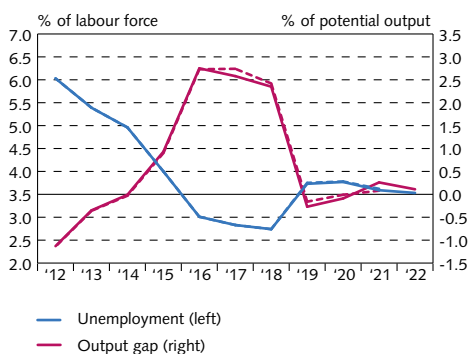


Chart I-9  
Total hours worked and employment rate  
2012-2022<sup>1</sup>



1. Central Bank baseline forecast 2019-2022. Broken lines show forecast from MB 2019/3.  
Sources: Statistics Iceland, Central Bank of Iceland.

Chart I-10  
Unemployment and output gap 2012-2022<sup>1</sup>



1. Central Bank baseline forecast 2019-2022. Broken lines show forecast from MB 2019/3.  
Sources: Statistics Iceland, Central Bank of Iceland.

than was assumed in the August forecast, GDP growth turned out 0.4 percentage points above that forecast, mainly because of a stronger-than-anticipated expenditure switch towards domestic goods and services. However, figures on net trade imply that goods exports shrank markedly in Q3, and GDP is therefore estimated to have contracted during the quarter, which explains in large part the poorer H2 output growth outlook relative to the August forecast. GDP is now expected to contract by 1.2% in H2 and by 0.2% in 2019 as a whole, the same as in the August forecast (Chart I-8). If the forecast materialises, the year will see Iceland's first economic contraction since 2010. The output growth outlook for 2020 has been revised downwards, however, reflecting the bleaker outlook for growth in domestic demand, albeit offset by a more favourable contribution from net trade. GDP growth is projected to measure 1.6% in 2020 and align with long-term potential in 2021. Further discussion of developments in GDP growth can be found in Chapter IV.

**Job numbers decline and unemployment has risen, but indicators imply that the contraction will be relatively brief**

According to Statistics Iceland's labour force survey (LFS), total hours worked fell by 0.4% year-on-year in Q3/2019, broadly consistent with the Bank's August forecast. Job numbers also fell by 0.4% between years — the first year-on-year contraction measured in the LFS since late 2011. In line with the August forecast, seasonally adjusted unemployment measured 3.7% in Q3 and was broadly unchanged from the previous quarter. In comparison with Q1 (the last quarter before WOW Air failed), this is an increase of 0.6 percentage points.

The outlook is for total hours worked to fall still further in Q4 and to be an average of 0.1% fewer in 2019 than in 2018, whereas the August forecast assumed a year-on-year increase of 0.2% (Chart I-9). The employment rate is therefore expected to fall for the third year in a row. Although this will be mitigated by a declining labour participation rate, unemployment is set to continue rising, measuring 3.7% for the year as a whole, or 1 percentage point more than in 2018 (Chart I-10). The outlook for the labour market is therefore largely unchanged from the August forecast. As was assumed then, total hours worked are projected to pick up again in 2020, as is the employment rate; however, unemployment will keep rising during the year, measuring 3.8% for 2020 as a whole, before starting to ease once more.

Leading indicators give cause to hope that capacity utilisation has begun to improve again and that the contraction following the recent negative shocks will be relatively brief. The output gap that developed following the past several years' surge in output growth is estimated to have closed and a small slack to have opened up. The slack in output is expected to peak in mid-2020 and close by the end of the year. This is broadly similar to the outlook described in the August forecast (Chart I-10). It should be noted, however, that estimating the output gap is always uncertain, particularly at sharp cyclical turning points like the present one. Further discussion of the labour market and factor utilisation can be found in Chapter V.

### Inflation expected to align with the target in Q4/2019

Inflation was broadly at the Bank's 2.5% target well into 2018 but then rose somewhat following the depreciation of the króna in the autumn. It peaked in December at 3.7% and has gradually tapered off over the course of this year, averaging 3.1% in Q3 and falling to 2.8% by October. Underlying inflation has been somewhat more persistent, measuring 3.4% in October. Inflation expectations have fallen as well after rising last year, fuelled by concerns about wage settlements and the depreciation of the króna. By most measures, inflation expectations are well in line with the target.

Wages have risen markedly in the recent past, and the share of gross factor income is high in historical terms. Based on estimated productivity growth, unit labour costs are expected to rise by an average of just over 6% this year (Chart I-11). This is a slightly smaller increase than was forecast in August, owing in part to more favourable developments in productivity. The outlook for the next three years is broadly unchanged, however, with unit labour costs forecast to rise by about 4% per year.

Inflation was slightly below the August forecast in Q3 and is expected to fall even faster in Q4. It is projected to average 2.5% during the quarter, as opposed to the August forecast of 2.9%. The changed outlook is due primarily to a faster-than-projected decline in inflation this autumn, but in other respects, the inflation outlook for the rest of 2019 is largely unchanged. According to the forecast, inflation will be at target for most of the forecast horizon, although it will fall slightly below target in H2/2020 and remain below it into 2021 (Chart I-12). From mid-2020 onwards, the inflation outlook is therefore very similar to the August forecast. The uncertainties in the inflation forecast are discussed below, developments in global prices in Chapter II, and domestic inflation and inflation expectations in Chapter VI.

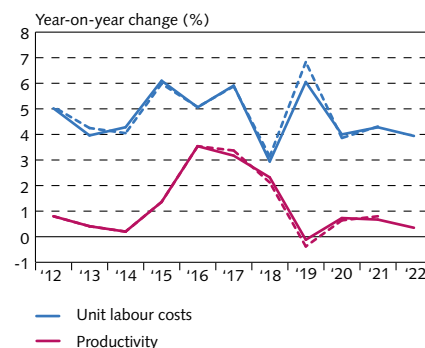
## Key assumptions and main uncertainties

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 the external environment of the Icelandic economy, as well as assessments of the effectiveness of individual markets and how monetary policy is transmitted to the real economy. All of these factors are subject to uncertainty. The assumptions concerning domestic economic policy are outlined below. Also discussed are several important uncertainties and the ways in which changes in key assumptions could lead to developments that deviate from the baseline forecast.

### The fiscal stance and monetary policy

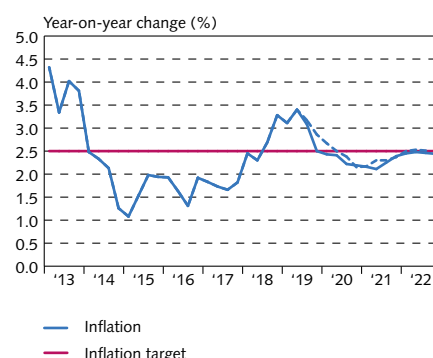
According to revised figures from Statistics Iceland, the fiscal stance (as measured in terms of changes in the cyclically adjusted primary balance) eased more in 2018 than the previous estimate had implied. The fiscal stance is estimated to be virtually neutral this year, but the outlook is for it to ease again in 2020 and 2021, in accordance with the Government's plans in connection with recently finalised wage

Chart I-11  
Unit labour costs and productivity 2012-2022<sup>1</sup>



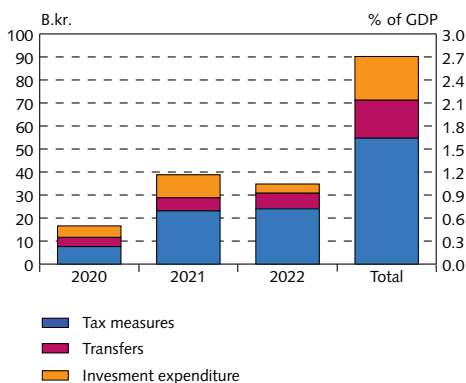
1. Productivity measured as GDP per total hours worked. Central Bank baseline forecast 2019-2022. Broken lines show forecast from MB 2019/3. Sources: Statistics Iceland, Central Bank of Iceland.

Chart I-12  
Inflation<sup>1</sup>  
Q1/2013 - Q4/2022



1. Central Bank baseline forecast Q4/2019-Q4/2022. Broken line shows forecast from MB 2019/3. Sources: Statistics Iceland, Central Bank of Iceland.

Chart I-13  
Fiscal measures 2020-2022<sup>1</sup>



1. Tax measures consist of personal income tax cuts and authorisation to allocate third-pillar pension savings tax-free towards mortgage loans. Increased transfer expenditure consists of increased child benefits and housing benefits and lengthening of childbirth leave. Increased investment expenditure is in connection with transportation initiative.

Source: Central Bank of Iceland.

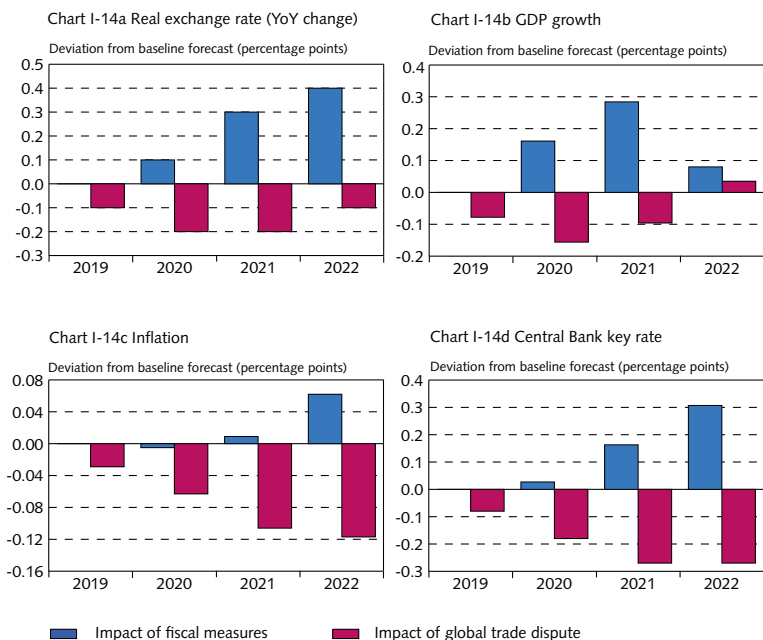
agreements and in order to support the economy in the wake of recent negative shocks (see Chapter IV and Box 3). The easing over the forecast horizon is roughly as was assumed in May, when the Bank last assessed the fiscal stance. Further discussion of the economic impact of these discretionary measures can be found below.

The Central Bank's key interest rate has fallen steeply in recent months. As of this writing, it is 3.25% and has therefore fallen by 1.25 percentage points since May (see Chapter III). The baseline forecast assumes 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.

### Fiscal measures boost disposable income and stimulate demand

If the fiscal budget proposal is approved as introduced, it will legalise the discretionary measures announced by the Government in connection with private sector wage agreements this past spring. In the main, the measures entail adding an extra tax bracket and lowering the personal income tax. In addition, the authorisation to allocate a portion of third-pillar pension savings tax-free to mortgage loans has been extended by two years, child benefits and housing benefits have been increased, and childbirth leave has been lengthened (see Chapter IV and Box 3). The combined scope of the tax measures amounts to an estimated 55 b.kr. over the period 2020-2022, and transfer outlays will rise by a total of 16.5 b.kr. over the same period (Chart I-13). Thus the total cost to the Treasury for these measures comes to just over 71 b.kr., roughly as was estimated in connection with the wage settlements in the spring (see Box 3 in *Monetary Bulletin* 2019/2). In addition, the authorities assume an increase of 19 b.kr. in invest-

Chart I-14  
Alternative scenario



Source: Central Bank of Iceland.

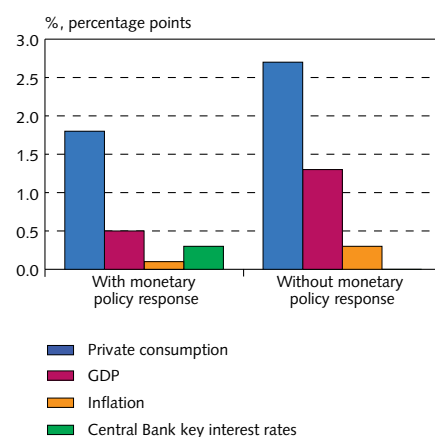
ment expenditure over the three-year period, including spending on a transportation initiative. Overall, the scope of the aforementioned measures totals 0.5% of estimated GDP in 2020, and about twice that in the latter half of the forecast horizon (Chart I-13). Over the entire three-year period, it therefore comes to 90 b.kr., or 2.7% of GDP.

The measures will boost households' disposable income and stimulate demand, and the impact is already incorporated into the baseline forecast. The GDP growth effect is less pronounced than the impact on domestic demand because a portion of the increased demand will be channelled towards imported goods and services. Furthermore, Central Bank interest rates will be higher than they would be otherwise, so as to ensure that inflation will remain at target over the medium term. The króna will therefore be stronger than it would be otherwise and, together with higher interest rates, will curb private sector demand and exports and further shift spending out of the domestic economy. As can be seen in Chart I-14, the Central Bank's key rate is projected to be 0.3 percentage points higher by 2022 than it would be otherwise, and the real exchange rate is projected to be just under 1% higher. These fiscal measures are estimated to boost GDP growth by 0.2 percentage points in 2020 and 0.3 percentage points in 2021. From then on, the GDP growth impact of the measures begins to taper off, but GDP will be 0.5% higher and private consumption 1.8% higher in 2022 than would otherwise be the case (Chart I-15). The inflationary impact will be minor, however, because of a higher key interest rate and a stronger króna. If monetary policy does not respond, though, the inflationary impact will be stronger, as Chart I-15 indicates. In that instance, the measures will have a more pronounced demand-side effect, pushing GDP 1% higher in 2022 than it would be without them and pushing inflation 0.3 percentage points higher (and 0.5 percentage points higher in 2023). The later monetary policy responds, the greater the inflationary impact will be, as will the risk of gradually undermining the credibility of the inflation target, ultimately requiring a larger response in order to bring inflation to target.

### The US-China trade dispute has exacerbated global economic uncertainty ...

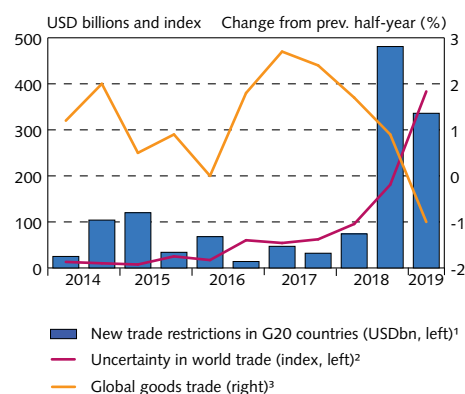
In October, the US and China reached an agreement to postpone the tariff hikes planned earlier in the month, while they attempt to come to a broader resolution of the dispute that erupted in summer 2018 and has escalated since. The two countries have repeatedly taken turns raising tariffs, imposing them on an increasing number of products, and threatening further tariffs. As can be seen in Chart I-16, the resulting restrictions on world trade have increased substantially: since H2/2018, new trade restrictions have affected G20 countries' imports worth over 400 billion US dollars. This represents a sevenfold increase from the average from 2014 through mid-2018.<sup>2</sup> The impact on the global economy has been substantial. Uncertainty has increased, and

Chart I-15  
Economic impact of fiscal measures<sup>1</sup>



1. The effect on private consumption and GDP (in %) and inflation and the key rate (in percentage points) in 2022, with and without monetary policy response to the Government's fiscal measures.  
Source: Central Bank of Iceland.

Chart I-16  
Turnaround in world trade  
H1/2014 - H1/2019

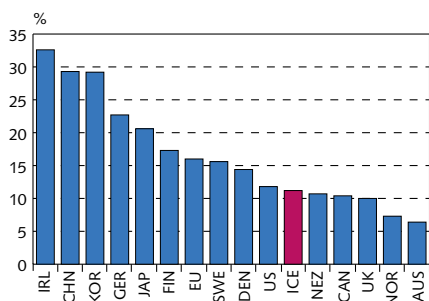


1. Estimated scope of new trade restrictions on G20 countries' imports (OECD-UNCTAD-WTO). 2. WTU index, Ahir et al. (2018). 3. Half-year change in global goods trade (CPB World Trade Monitor).  
Sources: Ahir et al. (2018), CPB, OECD-UNCTAD-WTO.

2. The estimate of the scope of trade restrictions is obtained from OECD-UNCTAD-WTO (2019), *21st Report on G20 trade and investment measures*, June 2019. The measure of uncertainty in world trade is taken from Ahir, H., N. Bloom, and D. Furceri (2018), "The world uncertainty index", International Monetary Fund.

Chart I-17

Share of manufacturing in total output  
in selected advanced economies<sup>1</sup>



1. Manufacturing as a % of gross value added. The countries are Ireland (IRL), China (CHN), South Korea (KOR), Germany (GER), Japan (JAP), Finland (FIN), European Union (EU), Sweden (SWE), Denmark (DEN), the United States (US), Iceland (ICE), New Zealand (NEZ), Canada (CAN), the United Kingdom (UK), Norway (NOR) and Australia (AUS). 2014-2018 average except for Iceland, Japan and the US (2014-2017) and China (2015-2018).  
Sources: Statistics Iceland, OECD.

firms are more pessimistic about the economic outlook than they have been for quite some time. As a result, they have postponed both investment decisions and, increasingly, hiring decisions. Global goods trade has receded markedly and began to contract year-on-year in Q2, for the first time since end-2009.

The trade dispute has thrown global value chains into disarray and increased the cost of engaging in cross-border trade. Because the tariff hikes have primarily affected a variety of manufactured goods, it is likely that the dispute has the strongest impact on economies that rely on manufacturing, such as Ireland, Germany, and Japan (Chart I-17). It is also likely that the dispute directly affects the Chinese economy more than the US economy. The direct impact on economies that rely on commodity exports rather than manufacturing exports, such as Iceland, is probably less pronounced. That said, the overall effect could prove significant once the indirect effects of the trade war on global private sector sentiment, households' and businesses' willingness to spend, and their ability to finance that spending are factored in.

### ... and adversely affected GDP growth worldwide

Although the recent détente between the US and China reduces the likelihood of further escalation, the most prominent issues between the two countries remain unresolved. Furthermore, the tariff increases already in effect have not been withdrawn, and as yet there have been no announcements that the tariffs planned for December by the US have been abandoned. Under these circumstances, the dispute could easily erupt again.

Chapter I of *Monetary Bulletin 2018/4* contains an assessment of the impact of the trade dispute on the Icelandic economy, based on the tariff hikes proposed or already in force at that time. Since then, new tariffs have been put in place, but it appears that the US administration's ideas about imposing tariffs on all motor vehicle imports have been shelved for the time being. Furthermore, some of the tariff increases were implemented later than was assumed in the Bank's original analysis. It could therefore be informative to re-evaluate the impact of the trade dispute on the domestic economic outlook. As in the previous instance, the assessment is based on the IMF's analysis of the global impact of the dispute, which also takes into consideration the effect of increased global economic uncertainty in the wake of the dispute and how this uncertainty leads to rising interest rate spreads on corporate bonds. Furthermore, it takes account of the negative impact on global productivity, as the dispute leads to inefficient reallocation of resources.<sup>3</sup> According to the IMF assessment, global GDP growth will be 0.2 percentage points lower this year than it would have been if no dispute had arisen. The impact on the global economy is expected to peak in 2020, with GDP growth 0.4 percentage points weaker than it would have been otherwise.

Reduced global output growth and weaker world trade will in-

3. See International Monetary Fund (2018, 2019) *World Economic Outlook*, Chapter 1, October 2018 and 2019. It should be noted that some of the tariff increases are in place and have already affected the global economy; therefore, they are already reflected in the baseline forecast.

evitably cut into demand for Icelandic production. As in *Monetary Bulletin* 2018/4, account is taken of the impact that weaker global economic activity will have on Iceland's terms of trade. Furthermore, it is assumed that the rise in global corporate spreads will spill over to Iceland. Reduced demand from abroad will cause exports to grow more slowly than is assumed in the baseline forecast. This, together with the deterioration in terms of trade and the rise in interest rate spreads, will push estimated GDP growth down relative to the baseline scenario by 0.1 percentage points in 2019 and 0.2 percentage points in 2020. Poorer external conditions and a more accommodative monetary stance will lower the exchange rate of the króna, thereby mitigating the contractionary impact of the trade dispute (see Chart I-14 above). The GDP growth effects will taper off, but by 2022 the domestic economy is projected to be 0.3% smaller than it would be without the trade dispute (Chart I-18). This is similar to the economic impact on the eurozone and other advanced economies, but less than the impact on the global economy and on the two parties to the dispute, which suffer the most – especially China, where GDP will be 1% lower by 2022.

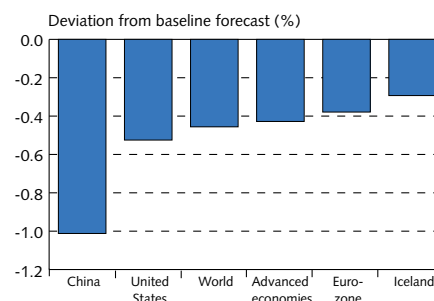
#### **UK and EU negotiate another Brexit postponement, and uncertainty persists about the future of trade**

In mid-October, the UK and the European Union (EU) reached an agreement on the UK's exit from the EU, after the previous agreement had been rejected three times by the British Parliament. Even though the new agreement appears to enjoy stronger Parliamentary support than its predecessor, the British government has not yet managed to get it approved. As a consequence, the UK's planned departure from the EU at the end of October has been postponed again, this time until end-January. The fact that the new exit agreement appears to have majority support in Parliament probably means that the risk of a no-deal Brexit has diminished, an outcome that virtually all analyses have warned against.<sup>4</sup> But the situation is still unresolved, as the new agreement is in effect only an interim arrangement for EU-UK interactions until a permanent agreement can be reached. To some extent, the problem has merely been postponed for the time being, as Brexit-related uncertainty remains and will probably continue to frustrate UK and EU businesses' investment plans.

#### **Ambiguous global outlook and interruptions in oil production have exacerbated uncertainty about oil prices**

Shocks to oil production and steep rises in oil prices usually have a profound impact on the global economic outlook. The recent 15% jump in oil prices following the drone attack on the world's largest oil processing facility, located in Saudi Arabia, exacerbated pessimism about the global economic outlook. Even though prices settled down again, uncertainty remains about the security of oil resources on the Arabian peninsula, not least in view of the growing instability at the

Chart I-18  
Impact of global trade dispute on output<sup>1</sup>

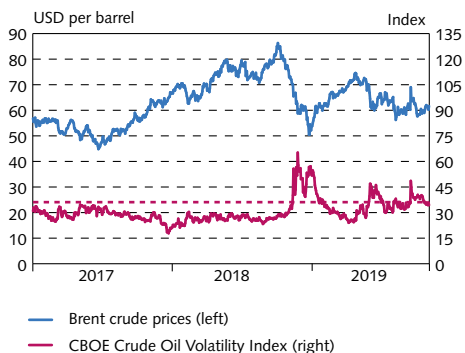


1. Impact of the trade dispute between the United States and other countries. The figure shows the accumulated deviations from baseline in 2022.

Sources: IMF, Central Bank of Iceland.

4. Chapter I of *Monetary Bulletin* 2019/2 contains a discussion of the economic effects of a no-deal Brexit and the likely impact on the Icelandic economy.

Chart I-19  
Global oil prices<sup>1</sup>  
1 January 2017 - 1 November 2019



1. Underlying volatility in crude oil option prices from the Chicago Board Options Exchange (CBOE). The broken line shows the CBOE volatility index average for 2007-2019.  
Source: Thomson Reuters.

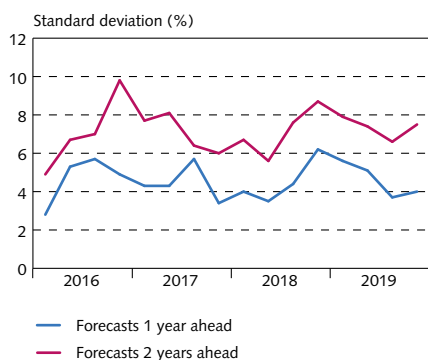
eastern end of the Mediterranean. Uncertainty about oil prices increased markedly after the drone strike, as can be seen in a surge in underlying volatility in oil futures immediately following the attack, although it did not reach the same level as in autumn 2018 (Chart I-19). Oil futures suggest that prices will ease slightly in the coming term (see Chapter II), but this could easily change in the event of further supply disruptions, which could undermine an already fragile global economy. This would inevitably have a detrimental effect on exports and GDP growth in Iceland and would complicate domestic monetary policy formulation, as the negative economic impact would be offset by increased domestic inflationary pressures (see, for instance, Chapter I in *Monetary Bulletin* 2018/4).

### Airline seat capacity uncertain in 2020

The collapse of WOW Air this past spring caused a significant drop in the number of flights to and from Iceland. Icelandair managed to respond to the downturn to a degree, but the grounding of its new Boeing 737 Max jets complicated its plans to increase seat capacity (see Chapter IV). Initially, the Max jets were to account for a fourth of Icelandair's fleet this summer, but it quickly became clear that they would not be available until autumn – a delay that was then extended until the turn of the year. Based on recent news reports, the Max jets will not be available for use even then. Therefore, the baseline forecast assumes that they will not be used until early next year, and if they cannot be flown then, the forecast assumes that Icelandair will lease other aircraft instead. The possibility of a lengthier grounding cannot be excluded, however, nor can the possibility that Icelandair will be unable to lease other aircraft, as many other airlines are in the same predicament. The assumption in the baseline forecast concerning airline seat capacity in 2020 could therefore prove overly optimistic.

On the other hand, it could turn out overly pessimistic, given the news reports about new airlines rising to take WOW Air's place. The company that seems to be furthest advanced in this endeavour has already applied for a licence and plans to start operating in 2020. In addition, international airlines that already fly to Iceland could expand their activities more than is assumed in the baseline forecast.

Chart I-20  
Dispersion in exchange rate forecasts<sup>1</sup>  
Q1/2016 - Q4/2019



1. Standard deviations in responses in the Central Bank's survey among market participants for the exchange rate of the króna against the euro after 1 and 2 years.  
Source: Central Bank of Iceland.

### Exchange rate outlook uncertain

The baseline forecast assumes that the króna will remain broadly stable throughout the forecast horizon. This assumption is highly uncertain, as are the economic factors that generally determine exchange rate movements, such as the GDP growth outlook in Iceland and abroad, the interest rate differential with abroad, and the outlook for Iceland's terms of trade. However, the dispersion in market agents' expectations about the exchange rate in the next two years indicates that uncertainty about the exchange rate outlook has subsided since last year (Chart I-20). The dispersion is less now than it was at the end of 2018, whereas it had increased over the course of the year, alongside mounting concerns about wage settlements and the overall economic outlook.

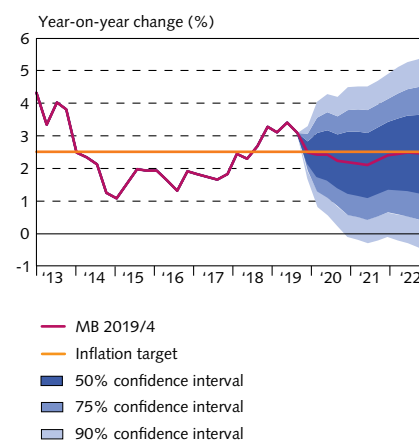
### Uncertainty about the inflation outlook considered broadly similar to the previous forecast

The inflation outlook is less uncertain than it was in 2018, when the outcome of private sector wage negotiations was still entirely unknown. Added to this was increased uncertainty following the depreciation of the króna and the rise in inflation expectations in autumn 2018. Although uncertainty has diminished, it has not disappeared, as wage agreements for a large segment of the public sector work force are still pending. Furthermore, there is always uncertainty about wage drift and about the degree to which large pay rises for the lowest-paid workers will spread up the pay scale. Underlying inflationary pressures could therefore be underestimated, as the share of wages in gross value added has risen steeply in the recent term, cutting into firms' profit margins. Another major uncertainty concerns the exchange rate of the króna. The exchange rate assumptions in the baseline forecast could prove overly optimistic; for instance, if the setbacks in the tourism industry prove more long-lasting, or if terms of trade deteriorate further. The impact of recent export sector shocks on potential output could also be underestimated and the slack in the economy therefore smaller than is assumed in the baseline forecast. Moreover, inflation expectations may be less firmly anchored to the target than is currently assumed.

Neither can the possibility be excluded that inflation will turn out lower than is assumed in the baseline forecast. The króna could appreciate further, for instance, if external conditions improve. The global economic outlook could prove to be overestimated, and exports and GDP growth could therefore turn out weaker than is currently forecast. Inflation could therefore subside faster if the króna does not lose ground. Furthermore, it could take longer than currently expected to resolve the supply problems in the airline sector, and the forecast for the recovery of tourism could prove too optimistic. The productivity growth forecast could also be too pessimistic, and the slack in the economy could turn out deeper and more persistent than is currently projected.

In order to reflect these uncertainties, Chart I-21 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). The uncertainty in the inflation outlook is considered to be broadly as it was in the August forecast, and the probability distribution is by and large symmetric, as it was then. There is a roughly 50% probability that inflation will be in the 1½-3% range in one year and in the 1¼-3¾% range by the end of the forecast horizon.

Chart I-21  
Inflation forecast and confidence intervals  
Q1/2013 - Q4/2022



Sources: Statistics Iceland, Central Bank of Iceland.





## II The global economy and terms of trade

Global output growth continued to slow in H1/2019, and the overall outlook has deteriorated. Weaker growth is attributable in large part to reduced activity in the manufacturing sector, which has been hit heavily by rising tariffs and the US-China trade dispute. This is reflected in growing corporate pessimism, weaker investment growth, and more sluggish growth in world trade. In addition, inflation has fallen again in many economies. Although China and the US have recently negotiated a temporary halt to planned tariff hikes, the most important issues between them remain unresolved, and the global economic situation is highly uncertain. Iceland's terms of trade deteriorated more than previously expected in H1/2019 and are now projected to worsen slightly for the year as a whole. The real exchange rate has held relatively stable year-to-date but is lower than in 2018, reflecting in part the economy's adjustment to a lower equilibrium real exchange rate.

### Global economy

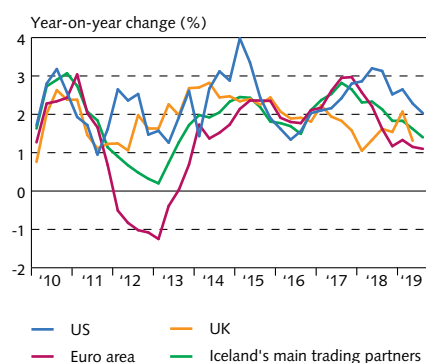
#### Trading partners' GDP growth slides still further ...

GDP growth among Iceland's main trading partners has softened significantly in the recent term (Chart II-1). It measured 1.7% in H1, down by 1 percentage point from its H2/2017 peak. Growth has eased in virtually all trading partner economies, but particularly in the eurozone, where exports have softened in tandem with declining global demand. This is especially the case for Germany, where industrial production has contracted since Q4/2018 and corporate executives report increased pessimism (Chart II-2). The situation is affected to a degree by temporary production problems in the automobile industry and weaker sales worldwide, although the US-China trade dispute also has an impact. Output growth has suffered in France as well, and in Italy, where it has been negligible in recent quarters.

The protracted uncertainty about Britain's exit from the European Union (EU) and its impact has also adversely affected activity in the euro area, and no less in the UK, where GDP contracted between quarters in Q2, for the first time in over six years. This is due in part to a negative contribution from inventory changes, as inventories had increased temporarily in Q1, in preparation for the original Brexit date at the end of March. Furthermore, business investment continues to contract alongside growing pessimism among corporate executives. Although the EU and the UK reached an exit agreement in mid-October, the deal was not approved by the British Parliament, and Britain's departure from the EU has been postponed once again, this time until end-January. In view of this, together with the fact that the new exit agreement gives the UK and EU only until end-2020 to negotiate a permanent trade agreement, the cloud of uncertainty hanging over Brexit is likely to impede firms' decisions on new investment.

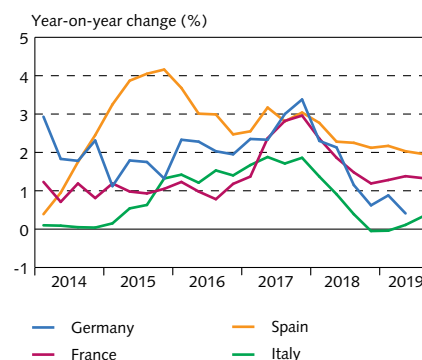
GDP growth has also eased in the US as the effects of last year's tax cuts have tapered off. Investment and exports have lost momentum, but as in the UK and the eurozone, continued growth in private

Chart II-1  
Global GDP growth<sup>1</sup>  
Q1/2010 - Q3/2019



1. Central Bank baseline forecast Q3/2019 for main trading partners.  
Sources: Thomson Reuters, Central Bank of Iceland.

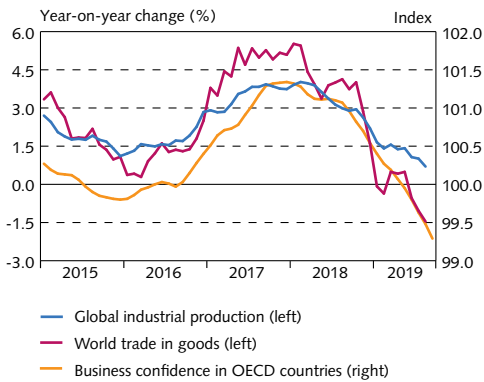
Chart II-2  
GDP growth in the eurozone  
Q1/2014 - Q3/2019



Source: Thomson Reuters.

Chart II-3  
Industrial production, trade and business confidence<sup>1</sup>

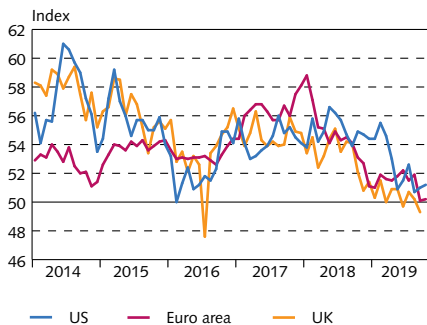
January 2015 - September 2019



1. OECD business confidence index (BCI). Volume of world trade. Three-month moving average of industrial production and world trade. Sources: CPB, OECD.

Chart II-4  
Composite PMI<sup>1</sup>

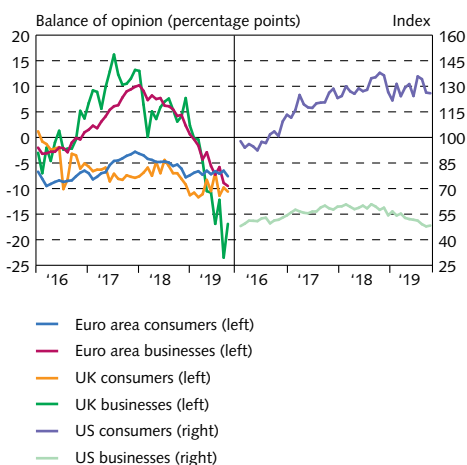
January 2014 - October 2019



1. Markit composite output purchasing managers' index. 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.

Chart II-5  
Private sector expectations<sup>1</sup>

January 2016 - October 2019



1. European Commission expectations index for the eurozone and the UK; ISM Report on Business for the US. Sources: European Commission, Thomson Reuters.

consumption has mitigated the situation. Despite signs that hiring has slowed, the labour market has been robust on both sides of the Atlantic. Unemployment has either stood still or declined, and wages have risen. This is due mainly to increased activity in the services sector, which has supported domestic demand and consumer sentiment.

### ... as has global output growth

Global output growth has softened since 2018, driven largely by slowing growth in advanced economies, particularly in the euro area, but also in the US and in developed Asian countries. GDP growth has slowed markedly in emerging and developing economies as well, especially in China, where growth is at its weakest in almost three decades. Reduced global output growth is due in large part to weaker activity in the manufacturing sector, particularly in Germany and Japan. This stems partly from a contraction in the auto industry, but also from reduced economic activity in China. However, declining manufacturing worldwide is probably due in large part to the highly detrimental impact of widely imposed tariff hikes and the US-China trade dispute, which has escalated in the past year (see Chapter I). Trade disputes and ever-increasing uncertainty about the future of world trade have exacerbated pessimism among corporate executives, especially in the manufacturing sector, and had a negative impact on value chains and investment spending, as can be seen in weakened growth in world trade (Chart II-3).

### The 2019 GDP growth outlook for major advanced economies has worsened ...

Leading indicators and international forecasts suggest that the GDP growth outlook for advanced economies in 2019 has deteriorated. Preliminary figures show that output growth in the eurozone lost momentum in Q3, as could have been expected in view of declining purchasing managers' indices (PMI) and mounting corporate pessimism (Charts II-4 and II-5). This is probably due mainly to continued sluggishness in the manufacturing sector, particularly in Germany, which is likely to see its second consecutive quarter-on-quarter contraction in GDP. In the main, the services sector in the eurozone has held its ground, although there are signs of a slowdown in growth.

Output growth in the eurozone is estimated at only 1.1% for 2019, the weakest since 2013. The GDP growth outlook has also deteriorated for the UK, where PMIs have tumbled and the economy appears to have contracted still further between Q2 and Q3. For the US, however, the outlook is for GDP growth to be broadly in line with the Bank's August forecast, reflecting the offsetting effects of increased corporate pessimism and weaker investment growth, on the one hand, and continued growth in private consumption, on the other. The US administration's recent announcement of a partial accord with China could also have a positive impact on the GDP growth outlook. Among other things, the agreement involves a postponement of tariffs that were to be imposed in mid-October. Uncertainty is still significant, however, and a final resolution of the dispute is far off. For instance, the interim agreement does not extend to tariff hikes already in place,

nor does it cover the tariff increases planned for December, which primarily affect consumer goods imported from China. The trade dispute between the US and the EU has also intensified once more with the US administration's plans to impose tariffs on imports from Europe, including on aircraft and agricultural products, and the EU's announcement of corresponding tariff increases on goods imported from the US.

### ... and global output growth is expected to lose momentum

According to the International Monetary Fund's (IMF) most recent forecast, global output growth will measure 3% this year. This is 0.2 percentage points below the Fund's July forecast and 0.3 points below its April forecast. The downward revision is due primarily to a poorer output growth outlook for some emerging market economies, as well as among advanced economies, as can be seen in leading indicators such as the PMI for the global economy, which has fallen virtually unimpeded since the beginning of 2018. If this forecast materialises, global GDP growth will be the weakest since the financial crisis.

### Growth in world trade has slowed markedly in 2019

Growth in world trade has slowed considerably in the recent past (Charts II-6 and II-3 above). Trade increased by only 1% year-on-year in H1, its slowest in seven years. This is due in fair measure to declining imports to China and elsewhere in East Asia, although growth in imports to the US has lost pace as well (Chart II-7). It goes hand-in-hand with the slowdown in investment growth, as investment goods and intermediate goods generally constitute a large share of cross-border trade. The impact of the trade war between the US and China is a major factor in this trend, although the effects of the contraction in the auto industry and weaker growth in spending on consumer durables can be felt as well. The IMF's October forecast assumes that world trade will grow by only 1.1% in 2019, more than 2 percentage points below its spring forecast.

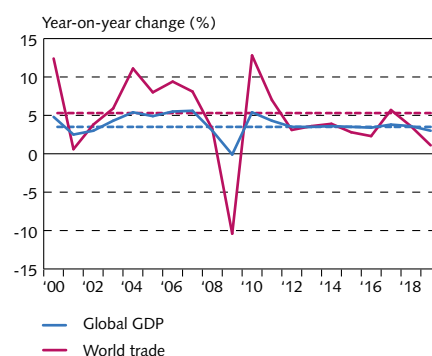
### The outlook for trading partner demand and GDP growth has deteriorated ...

In line with the poorer outlook for global GDP growth and trade, growth in output and imports among Iceland's main trading partners is now projected to be weaker than was assumed in the Bank's August forecast. Trading partners' GDP growth is projected to average 1.5%, which is 0.1 percentage points below the August forecast. The main reason for the downward revision is the weaker outlook for the euro-zone, the UK, and Sweden. Forecasts for trading partner imports have also been lowered significantly in accordance with weaker growth in world trade. Imports are now projected to increase by 1.9% this year, as compared with 3% in the August forecast.

### ... and trading partner inflation is set to ease as well

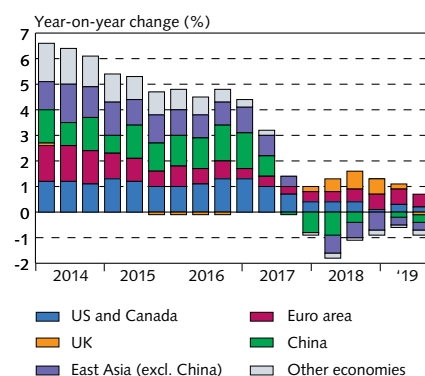
Among Iceland's main trading partners, inflation has subsided again, and inflation expectations have fallen in the wake of the drop in oil prices and weaker growth in overall economic activity (Chart II-8). Inflation measured only 1.3% in Q3, somewhat below the forecast

Chart II-6  
Global GDP and trade 2000-2019<sup>1</sup>



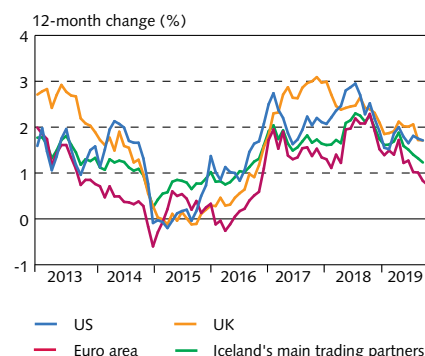
1. Broken lines show average of 1980-2018. The values for 2019 are based on the IMF forecast (*World Economic Outlook*, October 2019). Sources: International Monetary Fund, Central Bank of Iceland.

Chart II-7  
Contribution to global imports<sup>1</sup>  
January 2018 - June 2019



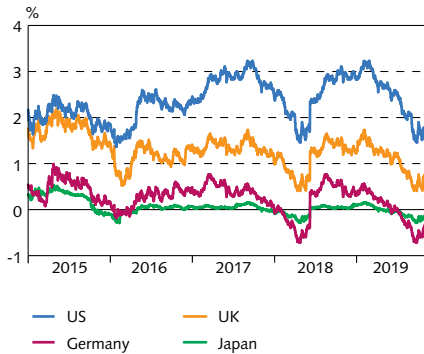
1. Three-month moving average. Source: International Monetary Fund.

Chart II-8  
Global inflation  
January 2013 - October 2019



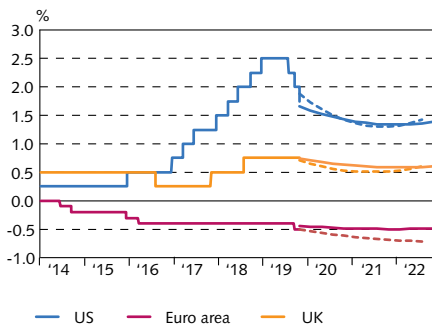
Sources: Thomson Reuters, Central Bank of Iceland.

Chart II-9  
10-year government bond yields in selected industrialised countries  
1 January 2013 - 1 November 2019



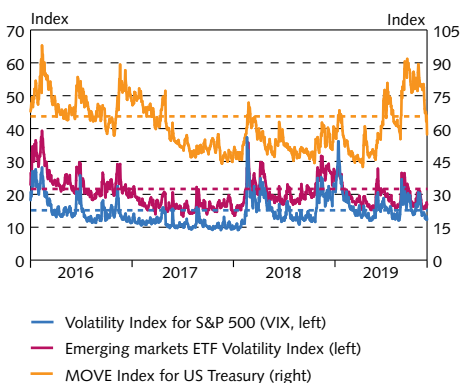
Source: Thomson Reuters.

Chart II-10  
Policy interest rates in selected industrialised economies<sup>1</sup>  
January 2014 - December 2022



1. Daily data 1 January 2014 through 1 November 2019, and quarterly data Q4/2019 through Q4/2022. 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 deposit facility rate. Forward rates are based on overnight index swaps (OIS). Solid lines are based on forward rates during the period 28 October - 1 November 2019 and the broken lines during the period 19-23 August 2019.  
Source: Thomson Reuters.

Chart II-11  
Global market volatility<sup>1</sup>  
1 January 2016 - 1 November 2019



1. The volatility indices indicate the implied volatility of financial products. Broken lines show average volatility from 2013.  
Source: Thomson Reuters.

in the August *Monetary Bulletin*. It has fallen in nearly all advanced economies and is below target in most of them. Underlying inflation has fallen similarly, in spite of wage increases in some economies and rising import duties. Headline inflation among Iceland's trading partners is projected to average 1.5% in 2019, 0.1 percentage points below the August forecast, and is expected to be slightly lower in 2020 as well.

### The monetary stance has eased once again ...

The US Federal Reserve lowered its interest rates by 0.25 percentage points in October, to the current 1.5-1.75%, the third rate cut in a short period. Before then, however, the Fed had not lowered rates in a decade. In September, the European Central Bank (ECB) also lowered its key rate by 0.1 percentage points, to -0.5%, after having held it unchanged for more than three years. The ECB also announced that it will either keep interest rates unchanged or lower them further until clear signs emerge to show that inflation has moved closer to the target. The bank also announced plans to reinstate its bond purchase programme after suspending it late last year. The Fed, too, has resumed Treasury securities purchases, but for the purpose of maintaining financial institutions' ample reserve balances and mitigating fluctuations in interbank rates, which have been unusually volatile in the recent term. Central banks in most other advanced economies have kept rates unchanged but signalled that it may take longer before they raise them again, citing the poorer global output growth outlook and increased uncertainty. Unlike the central banks in other advanced economies, Norges Bank has continued to raise interest rates, to the current 1.5%. However, the bank signalled in September, and again in October, that it would probably raise interest rates more slowly than previously planned.

### ... and long-term interest rates are widely at or near historical lows

Stimulative measures undertaken by leading central banks, falling inflation expectations, and market agents' concerns about weak global output growth are reflected in the bond market (Chart II-9). Bond interest rates have fallen since the spring, and long-term rates are widely at or near historical lows (see Box 1). Furthermore, the stock of negative-yielding bonds has grown rapidly, and by now a significant share of outstanding government bonds bear negative yields, particularly bonds issued by Japan and Germany. Rates on long-term government bonds have also been equal to or below short-term rates in some advanced economies, in a trend not seen for more than a decade, and forward interest rates suggest that market agents expect further central bank rate cuts (Chart II-10). This is also a sign that the market is pessimistic about the economic outlook.

### Financial conditions have improved but have been volatile

Global financial markets have been jumpy in the recent term (Chart II-11), owing largely to uncertainty about the global economy, although stimulative measures by leading central banks have acted as a counterweight and have supported asset prices. The postponement of

further tariff hikes in the US-China trade dispute will tend to support asset prices and mitigate uncertainty, but it is uncertain how long the economic ceasefire will hold, and the risk is that global output growth will lose further ground.

## Export prices and terms of trade

### Marine product prices set to rise more in 2019 than was forecast in August ...

Marine product prices have been highly favourable in the recent past. They have risen virtually uninterrupted since the beginning of 2018 and were up more than 9% year-on-year in Q3/2019 (Chart II-12). Nearly all species have risen in price, buttressed by strong demand in foreign markets. Prices have risen most for demersal frozen-at-sea products and fresh fish products. The current forecast assumes that foreign currency prices of marine products will rise by 7% this year, as opposed to 6% in the August forecast. The main reason for the upward revision is an even better outlook for H2/2019. For 2020, however, the outlook is unchanged.

### ... but a larger decline in aluminium prices is expected

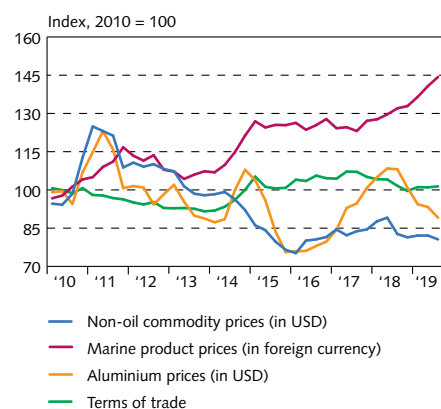
Aluminium prices have fallen virtually without interruption in global markets since this spring, after having held relatively stable in the first four months of the year (Chart II-12). The decline is due largely to excess production in China and reduced demand from the Chinese auto industry. Weaker global output growth and the worldwide contraction in the auto industry have also pushed prices lower. In October, the global market price of aluminium was approximately 1,700 US dollars per tonne, its lowest in three years. According to the Bank's baseline forecast, the average price of aluminium will fall by 13% this year, more than was projected in August. The outlook for 2020 has deteriorated as well.

### Oil prices have fallen again but have been volatile

Oil prices have been quite volatile in the past year (Chart II-13). They rose early in 2019, owing mainly to reduced production by OPEC countries, but also to the US embargo on Venezuela and Iran. However, prices reversed early this summer and fell again in August, as international trade disputes escalated. Demand is expected to ease as a result of weaker global GDP growth, and the International Energy Agency (IEA) forecasts a contraction in overall demand in both 2019 and 2020. Moreover, price pressures have eased as a result of unusually large inventories in oil-producing countries. Because of this strong inventory position, the drone strike on oil production facilities in Saudi Arabia in mid-September had only a short-lived impact on oil prices, even though the attack resulted in a temporary 5% contraction in global production.

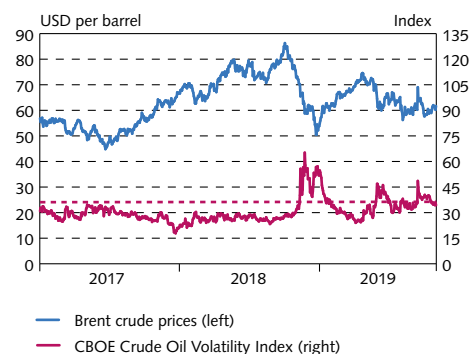
The price of oil is currently just under 62 US dollars per barrel, broadly similar to what it was just before the August *Monetary Bulletin*. Oil futures indicate that prices will remain virtually unchanged through the end of this year, at an average about 11% below the 2018 price (Chart II-14). This is a slightly larger decline than was forecast in

Chart II-12  
Commodity prices and terms of trade<sup>1</sup>  
Q1/2010 - Q3/2019



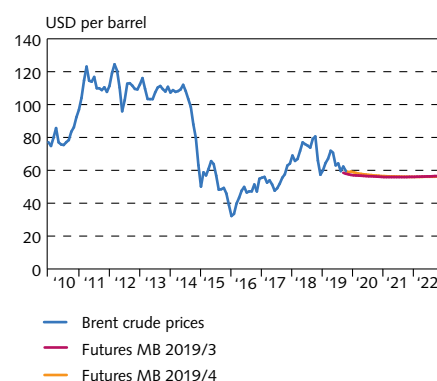
1. Foreign currency prices of marine products are calculated by dividing marine product prices in Icelandic krónur by the trade-weighted exchange rate index. USD prices of aluminium products are calculated by dividing aluminium prices in Icelandic krónur by the exchange rate of the US dollar. Central Bank baseline forecast Q3/2019 for terms of trade. Sources: Statistics Iceland, World Bank, Central Bank of Iceland.

Chart II-13  
Global oil prices<sup>1</sup>  
1 January 2017 - 1 November 2019



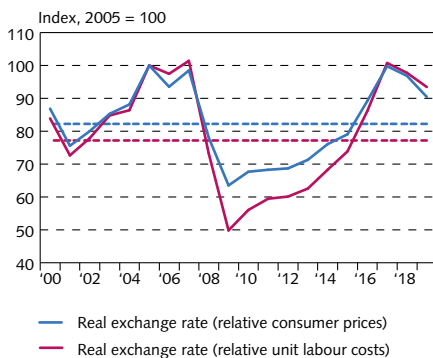
1. Underlying volatility in crude oil option prices from the Chicago Board Options Exchange (CBOE). The broken line shows the CBOE volatility index average for 2007-2019. Source: Thomson Reuters.

Chart II-14  
Global oil prices<sup>1</sup>  
January 2010 - December 2022



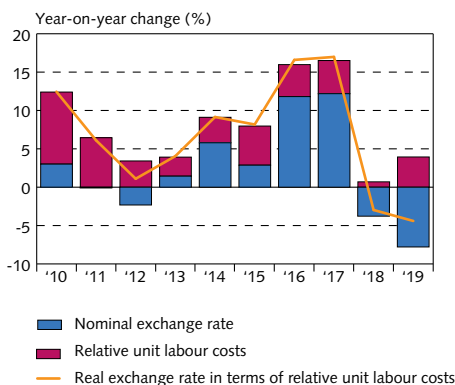
1. Brent crude prices based on data through October 2019. Sources: Thomson Reuters, Central Bank of Iceland.

Chart II-15  
Real exchange rate 2000-2019<sup>1</sup>



1. Broken lines show 25-year average (1994-2018). Central Bank of Iceland baseline forecast 2019.  
Source: Central Bank of Iceland.

Chart II-16  
Real exchange rate in terms of relative unit labour costs 2010-2019<sup>1</sup>



1. Relative unit labour costs are defined as the ratio of unit labour costs in Iceland to unit labour costs abroad, measured in the same currency. Central Bank of Iceland baseline forecast 2019.  
Source: Central Bank of Iceland.

August. As in August, futures prices suggest that oil prices will be virtually flat for the remainder of the forecast horizon. This is highly uncertain, however, in part because of increased tension between Iran, on the one hand, and the US and Saudi Arabia, on the other. The impact of weaker global GDP growth on demand for oil is a factor as well.

### Non-oil commodity prices fall again

After a slight rise early in the year, non-oil commodities have fallen in price once again (Chart II-12). Prices of nearly all types of commodities fell between quarters in Q3, in response to mounting concerns about weaker global GDP growth and reduced demand for commodities, particularly from China. Prices are forecast to rise marginally in Q4, yet remain an average of 4% lower in 2019 than in 2018. This is a larger decline than was forecast in August.

### Terms of trade expected to deteriorate further this year

After deteriorating steadily from mid-2017 onwards, terms of trade for goods and services firmed up this year, supported by smaller rises in import prices (Chart II-12). In spite of a slight uptick at the beginning of this year, they were about 3% poorer in Q2 than in the same quarter of 2018. In H1/2019, they were somewhat weaker than was forecast in August, and the outlook for 2019 as a whole is for a marginal deterioration, whereas in August they were projected to remain virtually unchanged year-on-year. The change from the August forecast is due to a larger decline in aluminium prices and a smaller rise in general export prices, offset by a better outlook for marine product prices. As in August, terms of trade are expected to improve again in 2020.

### The real exchange rate has been relatively stable in 2019 to date ...

The real exchange rate in terms of relative consumer prices has been relatively stable year-to-date, although it was down 5.7% year-on-year in September. The decline, most of which occurred in Q4/2018, was due almost entirely to a nominal depreciation of the króna. In part, the decline in the real exchange rate reflects the fact that the equilibrium real exchange rate – i.e., the real exchange rate that is consistent with internal and external balance in the economy – is considered to have fallen in the wake of the recent negative shocks to Iceland's export sectors, which have led to weaker terms of trade and reduced export growth.

### ... and looks set to be somewhat below its 2018 average this year

The real exchange rate in terms of relative consumer prices fell by nearly 3% year-on-year in 2018, after an uninterrupted rise dating back to 2010 (Chart II-15). According to the baseline forecast, it will be an average of 6.6% lower this year than in 2018, which is broadly in line with the Bank's last forecast. It is expected to fall in terms of relative unit labour costs as well, and consequently, the outlook is for domestic firms' competitive position to improve for the second year in a row. This is due to a lower nominal exchange rate, albeit offset by wage costs, which have risen relatively more in Iceland than in trading partner countries (Chart II-16).

## III Monetary policy and domestic financial markets

The Central Bank's key interest rate has fallen since August, but its real rate is broadly unchanged. Market agents expect the key rate to fall still further next year, and long-term rates are at a historical low. After depreciating in autumn 2018, the króna has been relatively stable in 2019 to date. Growth in broad money has eased, as has growth in both household lending and, in particular, corporate lending. The rise in house prices has lost pace and real estate market turnover has declined. The private sector debt ratio has risen slightly but is low in historical context. Lending rates offered to households and businesses have improved recently, but mortgage lending requirements have grown more stringent in some instances, and firms' access to financing appears to have tightened. Households' and businesses' financial conditions have therefore improved, but their access to credit appears more limited than before.

### Monetary policy

#### The Central Bank's key rate has fallen since May ...

The Central Bank of Iceland's Monetary Policy Committee (MPC) has lowered the Bank's interest rates by 1.25 percentage points in four increments since May. Central Bank rates are at their lowest since March 2001, when the inflation-targeting regime was adopted (see Box 1). Prior to the publication of this *Monetary Bulletin*, the Bank's key interest rate – the rate on seven-day term deposits – was 3.25% (Chart III-1). Accepted rates in auctions of bills issued by the Treasury and the banks have developed in line with the Bank's key rate, as have rates in the interbank market for krónur, although trading in the market has been sparse year-to-date.

#### ... but the Bank's real rate has been broadly unchanged in the recent term

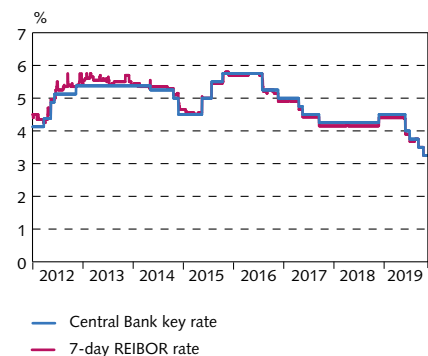
The Bank's real rate fell when the monetary easing phase began in May, but it has been broadly unchanged since then, as the Bank's nominal interest rates have fallen in tandem with the decline in inflation and inflation expectations (Table III-1). The Bank's real rate in

Table III-1 The monetary stance (%)

	Current stance (1 Nov. '19)	Change from MB 2019/3 (23 Aug. '19)	Change from MB 2018/4 (2 Nov. '18)
Real interest rate in terms of: <sup>1</sup>			
Twelve-month inflation	0.4	-0.2	-1.0
Corporate inflation expectations (one-year)	0.7	0.0	-0.5
Household inflation expectations (one-year)	0.2	0.4	-0.5
Market inflation expectations (one-year) <sup>2</sup>	0.8	0.0	0.2
One-year breakeven inflation rate <sup>3</sup>	0.7	0.0	0.4
Central Bank inflation forecast <sup>4</sup>	1.0	-0.2	0.2
Average	0.7	0.1	-0.1

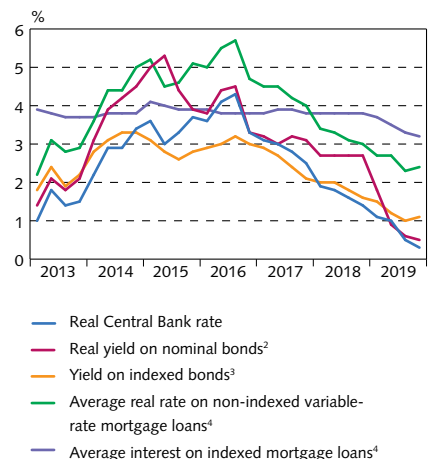
1. The nominal rate on financial institutions' seven-day term deposits with the Central Bank. 2. Based on survey of market participants' expectations. 3. The breakeven inflation rate one year ahead, based on the spread between one-year interest rates according to the estimated yield curve for nominal and indexed Icelandic Treasury bonds (five-day moving average). 4. The Central Bank forecast of twelve-month inflation four quarters ahead. Sources: Statistics Iceland, Central Bank of Iceland.

Chart III-1  
Central Bank of Iceland key interest rate and short-term interest rates<sup>1</sup>  
2 January 2012 - 1 November 2019



1. The Central Bank's key interest rate is defined as follows: the 7-day collateralised lending rate (until 31 March 2009), the rate on deposit institutions' current accounts with the Central Bank (1 April 2009 - 30 September 2009), the average of the current account rate and the rate on 28-day certificates of deposit (1 October 2009 - 20 May 2014), and the rate on 7-day term deposits (from 21 May 2014 onwards). Source: Central Bank of Iceland.

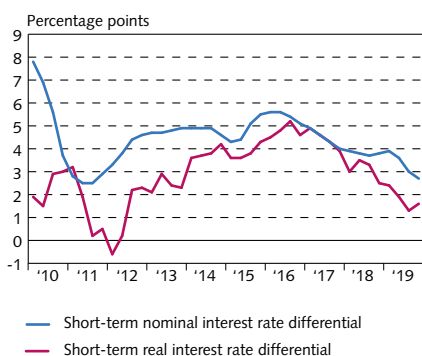
Chart III-2  
Real Central Bank interest rate and real market rates<sup>1</sup>  
Q1/2013 - Q4/2019



1. Based on data through 1 November 2019. 2. Five-year rate based on estimated nominal yield curve. 3. Five-year rate based on estimated real yield curve. 4. Simple average of 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.



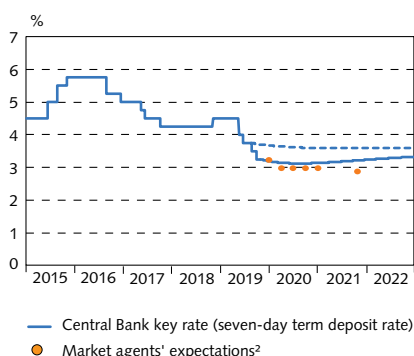
Chart III-3  
Interest rate differential with main trading partners<sup>1</sup>  
Q1/2010 - Q4/2019



1. The difference between the Central Bank of Iceland's key interest rate and the weighted average key rate in Iceland's main trading partner countries. Real rates are based on current twelve-month inflation. Based on data through 1 November 2019. Central Bank baseline forecast for Q4/2019.

Sources: Thomson Reuters, Central Bank of Iceland.

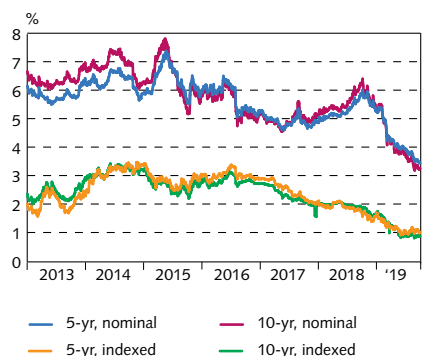
Chart III-4  
Central Bank of Iceland key interest rate and expected development<sup>1</sup>  
1 January 2015 - 31 December 2022



1. The Central Bank's key interest rate and Treasury bond yields were used to estimate the yield curve. Broken lines show forward market interest rates prior to MB 2019/3. 2. Estimated from the median response in the Central Bank's survey of market agents' expectations concerning the collateralised lending rate. The survey was carried out during the period 21-23 October 2019.

Source: Central Bank of Iceland.

Chart III-5  
Government-guaranteed bond yields<sup>1</sup>  
2 January 2013 - 1 November 2019



1. Based on the zero-coupon yield curve, estimated with the Nelson-Siegel method, using money market interest rates and government-guaranteed bonds.

Source: Central Bank of Iceland.

terms of the average of various measures of inflation and one-year inflation expectations is now 0.7%, and 0.4% in terms of current twelve-month inflation. Other real rates have generally moved in line with the Bank's real rate (Chart III-2).

### Interest rate differential with abroad has narrowed

The differential between domestic and foreign nominal interest rates has narrowed considerably since H1, as domestic rates have fallen. The difference between the Bank's key rate and the trade-weighted average nominal rate of other central banks is now 2.7 percentage points, its smallest since 2011 (Chart III-3). The real interest rate differential has also narrowed in line with the decline in domestic real rates, falling by 0.9 percentage points since Q4/2018, and is at its smallest since H1/2012.

### Market agents expect further rate cuts in 2020

According to the Bank's quarterly survey of market agents' inflation expectations, carried out in late October, respondents expect the Bank's key rate to remain unchanged through the end of this year. They expect the Bank to lower the key rate by 0.25 percentage points early in 2020 and then keep it unchanged at 3% through the year-end (Chart III-4). This is a change from the survey conducted in August, when they expected the key rate to remain unchanged at 3.25% through end-2020. Forward interest rates suggest that the Bank's key rate will hold steady at 3.25%, however.

### Market interest rates and risk premia

#### Long-term interest rates fall still further

Yields on nominal Treasury bonds began falling late in 2018 and have continued to slide in 2019 to date. Yields have fallen on both short and long bonds, and the yield curve has been relatively flat since August. The yield on ten-year nominal Treasury bonds was 3.3% just before this *Monetary Bulletin* went to press; therefore, it has fallen by about 2.3 percentage points year-to-date (Chart III-5). Long-term indexed rates have fallen as well, and the yield on ten-year indexed Treasury bonds was about 0.9%, after falling by 0.7 percentage points since the beginning of the year. In the wake of the decline in bond market rates this year, long-term interest rates, both nominal and indexed, are at a historical low (see Box 1). The drop in long-term rates reflects both market agents' pessimism about the GDP growth outlook and the decline in inflation expectations, as the breakeven inflation rate in the bond market (i.e., the spread between nominal and indexed bond market rates) has fallen steeply (see Chapter VI).

#### Risk premium on Treasury foreign obligations broadly unchanged

Measures of the risk premium on Treasury foreign obligations are broadly unchanged, and rating agencies Fitch and Standard & Poor's affirmed Iceland's sovereign ratings with a stable outlook earlier this year. The CDS spread on Treasury obligations is now 0.8 percentage points. By the same token, the interest premium on the domestic commercial banks' international bond issues has changed little in recent months.

## Exchange rate of the króna

### Inflows for new investment broadly as in 2018

In 2019 to date, net capital inflows for new investment (excluding reinvestment) have totalled about 29 b.kr., roughly the same as over the same period in 2018 (Chart III-6). This year's inflows have been mainly for equity securities purchases. Inflows into the bond market have been limited, however, although they increased briefly after the special reserve requirement on foreign-denominated inflows was lowered to zero in March. Outflows deriving from new investment have also stemmed primarily from sales of listed equities. The pension funds have continued to invest in foreign securities this year, in line with their investment strategies, but this does not seem to have weakened the króna to any significant degree.

### The króna has been relatively stable recently

The króna depreciated in autumn 2018, following news of airline WOW Air's financing difficulties and because of the deterioration in terms of trade. At the same time, signs of increased pessimism about the economic outlook and the outcome of wage negotiations began to come to the fore. The króna held relatively stable in H1/2019 despite WOW Air's collapse and concerns about a sudden economic slide. It has remained reasonably stable this autumn after a spate of fluctuations during the summer and is now 0.7% weaker than at the time of the August *Monetary Bulletin* (Chart III-7). Since August, the Central Bank has intervened in the foreign exchange market once, buying foreign currency for roughly 2 b.kr., or about 8% of market turnover for the period.

### Market agents expect the króna to remain broadly stable

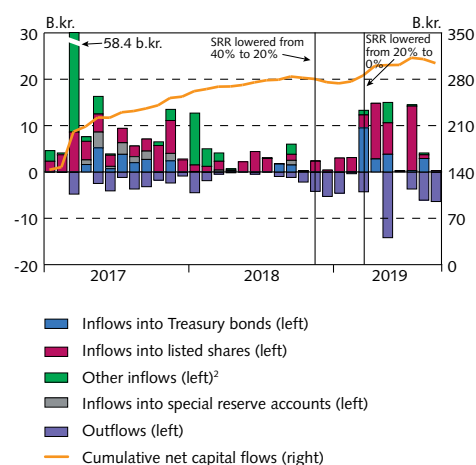
According to the Bank's survey of market agents' expectations, carried out in late October, respondents expect the króna to be virtually unchanged against the euro in October 2020, and marginally weaker in two years' time. This is in line with their responses to a comparable survey taken in August. The dispersion in market agents' responses has diminished since the turn of the year, possibly indicating that survey respondents consider the exchange rate outlook less uncertain now than it was last autumn (see Chapter I).

## Money holdings and lending

### Annual growth in M3 has eased ...

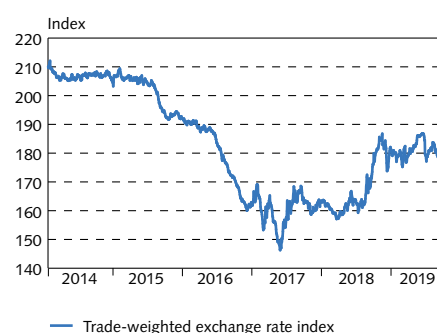
Broad money (M3) grew by 5½% year-on-year in Q3, less than in H2/2018 and early in 2019 (Chart III-8). The past few years' strong growth in money holdings is due in large part to an increase in household deposits, as households have accumulated considerable savings alongside the steep rise in income in recent years. Since the summer, however, growth in deposits has eased, measuring just under 7½% year-on-year in Q3, well below the past two years' annual average of 10%.

Chart III-6  
Capital flows due to registered new investments<sup>1</sup>  
January 2017 - September 2019



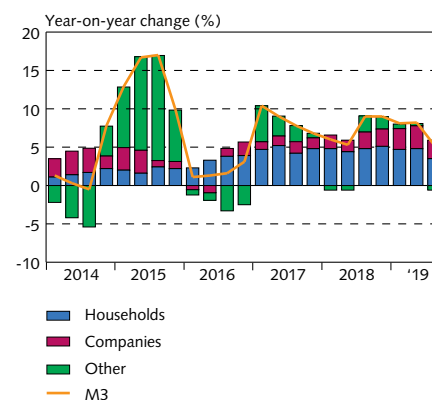
1. Investment commencing after 31 October 2009 and based on new inflows of foreign currency that is converted to domestic currency at a financial institution in Iceland. 2. Other inflows in March 2017 derive almost entirely from non-residents' acquisition of a holding in a domestic commercial bank.  
Source: Central Bank of Iceland.

Chart III-7  
Exchange rate of the króna<sup>1</sup>  
2 January 2014 - 1 November 2019



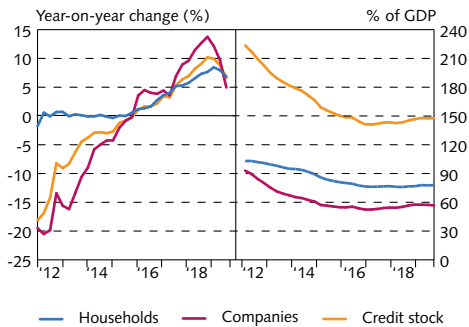
1. Price of foreign currency in krónur (narrow trade index).  
Source: Central Bank of Iceland.

Chart III-8  
Money holdings<sup>1</sup>  
Q1/2014 - Q3/2019



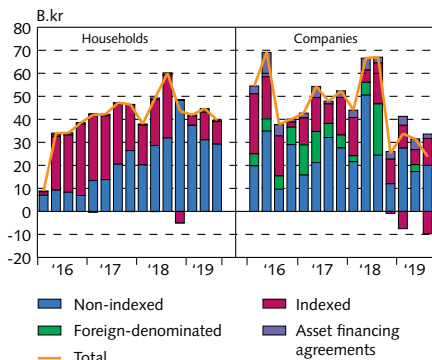
1. M3 is adjusted for deposits of failed financial institutions. Companies include non-financial companies and non-profit institutions serving households. Other includes financial companies and municipalities.  
Source: Central Bank of Iceland.

Chart III-9  
Credit system lending to resident borrowers<sup>1</sup>  
Q1/2012 - Q3/2019



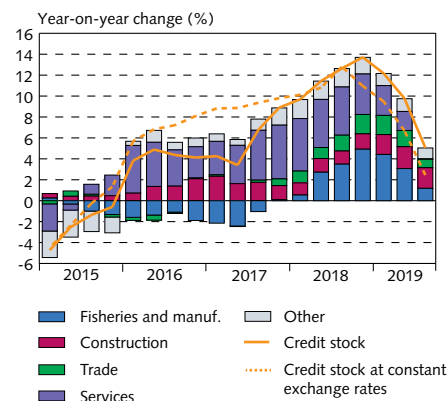
1. Credit stock adjusted for reclassification and effect of Government debt relief measures. Excluding loans to deposit institutions, failed financial institutions, and the government. Businesses include non-financial companies and non-profit institutions serving households. Q3/2019 figures are Central Bank estimates.  
Sources: Statistics Iceland, Central Bank of Iceland.

Chart III-10  
Net new lending to households and non-financial companies<sup>1</sup>  
Q1/2016 - Q3/2019



1. Loans from deposit institutions, Housing Financing Fund, and pension funds. The large-scale retirement of household loans in Q1/2016 is due to the Government's debt relief measures.  
Source: Central Bank of Iceland.

Chart III-11  
Credit system lending to non-financial companies<sup>1</sup>  
Q1/2015 - Q3/2019



1. Excluding loans from failed financial institutions. The foreign-denominated credit stock is calculated using the September 2019 trade-weighted exchange rate index value.  
Source: Central Bank of Iceland.

### ... and lending growth has eased as well ...

Growth in credit system lending to domestic borrowers has lost pace, after surging for two years and peaking at over 10% year-on-year in late 2018. The credit stock is estimated to have grown by 6½% in Q3, although as a share of GDP it has changed very little in the past three years (Chart III-9).

### ... primarily because of weaker growth in corporate lending

Beginning in 2016, there was a steep rise in corporate lending, which peaked at 13½% year-on-year in late 2018 (Chart III-9). Now, however, alongside a broader slowdown in the economy, the year-on-year growth rate has eased to 5% as of Q3, owing to a significant decline in net new loans (Chart III-10). In particular, growth in lending to services companies has slowed in the wake of setbacks in the tourism industry (Chart III-11). Growth in credit system lending to construction companies has remained relatively robust, however, even though real estate market activity has slowed. In spite of this slowdown in credit system lending, firms do not seem to be turning increasingly to bond issuance for financing, as this option is available only to a segment of the corporate market.

### Household lending growth has also lost pace

Reduced turnover in the housing market has coincided with some easing in household lending growth, which measured just under 7% year-on-year in Q3 (Chart III-9). Net new lending to households has been broadly stable year-to-date, after increasing in 2018 (Chart III-10). There has been little increase in short-term loans to households, as their balance sheets are generally strong at present.

## Asset prices and financial conditions

### Real house prices virtually unchanged between years ...

House prices in the capital area rose by 3.5% year-on-year in September. The pace of the annual increase has slowed virtually without interruption from its May 2017 peak of 24%. Developments in the recent term can be traced to more sluggish overall economic activity and households' greater caution about spending, compounded by an increase in the number of properties for sale and under construction. From the beginning of 2018 through this October, house prices in regional Iceland rose faster than those in the capital region (Chart III-12). High prices per square metre in greater Reykjavík may well have stimulated demand for housing elsewhere, particularly in communities on the outskirts of the capital area, but the slowdown in activity has become more widespread recently. The number of purchase agreements registered nationwide fell by 5.7% year-on-year in the first nine months of 2019, including a 3.5% decline in contracts for new construction.

### ... but near-term developments are somewhat uncertain

In Q3, real house prices were nearly 60% above the early 2010 trough (Chart III-13). As has been discussed in previous issues of *Monetary Bulletin*, demand for housing soared in the interim, driven mostly by

strong population growth, a steep rise in households' disposable income, and increased short-term rentals to tourists. The supply of new housing grew slowly over this period. The price increases of the past few years were not driven by a surge in lending to households, however, as house prices have developed increasingly in line with income and building costs. Now the rise in real house prices has halted, and the ratio of prices to these determinants has fallen. It is somewhat uncertain how house prices will develop in the coming term. Wages have risen somewhat, and mortgage lending rates are more favourable in the wake of Central Bank rate cuts, but lending requirements have been tightened (see below). Furthermore, it is unknown how long the contraction in tourism will last. The supply of new housing is still large, although there are signs that growth in residential investment is easing (see Chapter IV). There is also considerable uncertainty about planned Government measures in the mortgage lending market and the impact they will have.

### Share prices up in 2019 to date

The Nasdaq OMXI10 index is broadly unchanged since the August *Monetary Bulletin* but about 26% higher than in early November 2018. Developments have been driven mainly by the rise in Marel shares, which weigh heaviest in the index. They surged in price in H1/2019, in part because of the company's planned listing on the exchange in Amsterdam. Since this summer, share prices have fallen in all sectors, led by real estate and financial firms; however, prices have picked up since mid-October (Chart III-14). Total trading in equities on Nasdaq Iceland amounted to 447 b.kr. over the first nine months of the year, a substantial increase over the same period in 2018.

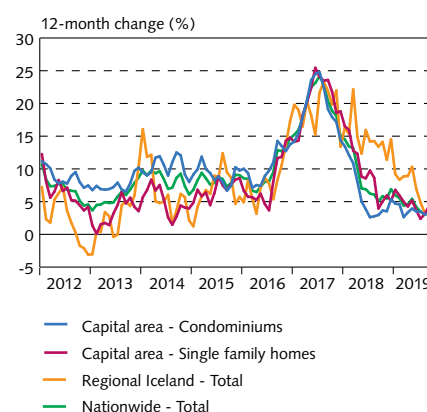
### Private sector debt ratio still historically low ...

Private sector debt totalled 162% of GDP in mid-2019 (Chart III-15). Corporate debt, which had risen by just under 7% in nominal terms since mid-2018, totalled 87% of GDP. Corporate debt to domestic financial institutions grew most, whereas debt to foreign financial institutions and foreign-owned marketable bonds declined. At mid-year, household debt had risen just under 8% in nominal terms since mid-2018, but as a share of GDP it is broadly unchanged year-on-year.

### ... and corporate insolvencies have declined

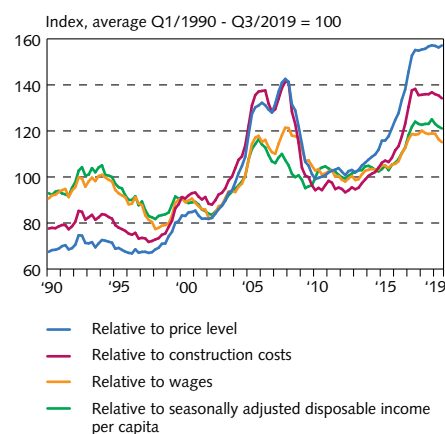
Non-performing household loans from the three largest commercial banks and the Housing Financing Fund (HFF) accounted for 2.3% of total loans at the end of September, broadly the same as in September 2018. The number of individuals on the CreditInfo default register fell by 1% over the same period. The share of corporate loans in arrears has continued to fall, to 4.6% by September, a reduction of 1.8 percentage points between years. The number of firms on the default register declined early in the year and bottomed out in late May. Since then, it has risen again, although at the end of September it was nearly 1% lower than at the same time in 2018. Corporate insolvencies have declined in number by a fourth between years. The number of new company registrations is now broadly the same as it was a year ago.

Chart III-12  
Market price of residential housing  
January 2012 - October 2019



Source: Statistics Iceland.

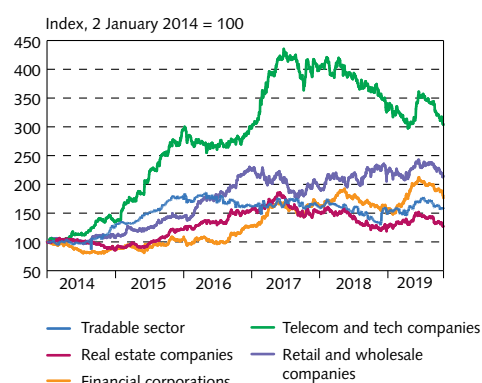
Chart III-13  
House prices relative to price level, construction costs, wages, and income<sup>1</sup>  
Q1/1990 - Q3/2019



1. The ratio of house prices to the CPI, the building cost index, the wage index, and disposable income per capita (based on the working-age population).

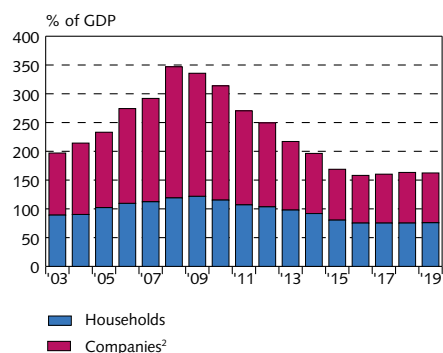
Sources: Statistics Iceland, Central Bank of Iceland.

Chart III-14  
Share prices by sector<sup>1</sup>  
2 January 2014 - 1 November 2019



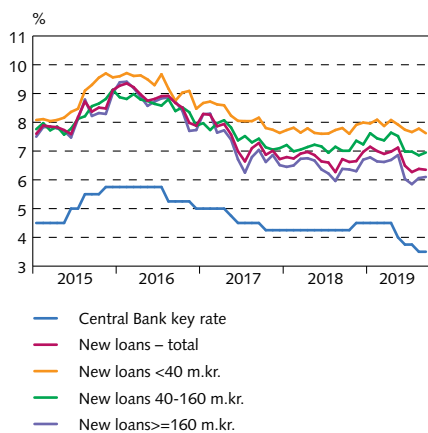
1. Average change in share price of listed companies in selected sectors, adjusted for dividend payments and share capital reductions.  
Source: Nasdaq Iceland.

Chart III-15  
Household and non-financial corporate debt  
2003-2019<sup>1</sup>



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

Chart III-16  
Key rate and non-indexed corporate  
lending rates<sup>1</sup>  
January 2015 - September 2019



1. Large commercial banks' non-indexed variable lending rates, weighted average, by loan amount. Source: Central Bank of Iceland.

### Lending rates have declined, but access to credit has tightened

The commercial banks' non-indexed mortgage lending rates have fallen by nearly 1 percentage point since May, concurrent with Central Bank rate cuts. The banks' indexed mortgage lending rates have fallen as well, to an all-time low of around 3.3%. Pension fund rates have developed in a broadly similar manner. In general, deposit interest rates have moved in line with the Central Bank's rate reductions, apart from sight deposits, which now bear interest rates close to 0% in most cases. The impact of Central Bank rate cuts on household debt service can probably be felt earlier now than in the past, as more lenders than before offer variable-rate loans, and the imposition of the cap on lending fees in 2016 has made it easier for borrowers to take advantage of lower interest rates and refinance older debt. That said, some of the commercial banks have placed restrictions on loan-to-value ratios, particularly for refinancing. The largest pension funds have done likewise, lowering maximum loan-to-value ratios for residential mortgages from 75% to 70%, and one of the large pension funds recently tightened its lending rules. Presumably, the pension funds have done this because the weight of loans to fund members is approaching the benchmark in their investment strategy. As a result, households' access to mortgage loans has tightened marginally, but there are no signs that access to other financing has changed.

Businesses, like households, have benefited from more favourable interest rates in the recent term. Most new corporate loans in Icelandic krónur are nominal variable-rate loans, whose average interest rate has fallen by 0.8 percentage points since May (Chart III-16). A further breakdown by loan amount and maturity reveals a similar trend. On the other hand, it appears that firms have less access to credit than before. To an extent, this is probably due to changes in the domestic economy, but it may also reflect increased liquidity difficulties at some financial institutions.

## IV Demand and GDP growth

After several robust years, GDP growth slowed markedly in H1/2019. Developments year-to-date have been broadly in line with the Bank's August forecast, although imports have contracted more than previously expected and demand has shifted more towards domestic goods and services. As a result, GDP growth was somewhat stronger than expected in H1. The reversal that has taken place in the economy can be attributed in large part to reduced activity in tourism and its effect on household demand and firms' investment plans. This is expected to continue in H2, and GDP could contract marginally in 2019 as a whole.

### GDP growth and domestic private sector demand

#### H1 GDP growth the weakest since early 2014 ...

According to preliminary figures from Statistics Iceland, GDP growth measured 0.9% in the first six months of 2019; however, developments in the two quarters of that half diverged markedly, with a contraction of 0.9% in Q1, followed by a rebound to 2.7% in Q2 (Chart IV-1). The contraction in Q1 is due largely to a decline in inventories in Q1, which in turn was attributable to the failure of the capelin catch, while in Q2 a sharp contraction in imports resulted in a positive contribution from net trade despite negative external shocks and a sizeable contraction in exports.

Total consumption and investment declined by 1.4% in H1, but because of the aforementioned inventory changes, the contraction in domestic demand was larger, at 2.4%. Exports shrank by 2.8% during the half, yet the contribution from net trade was positive by 3.3 percentage points, as imports contracted by 10.6% during the period. GDP growth in H1/2019 was the weakest since Q1/2014, and well below the five-year average of 4.5%.

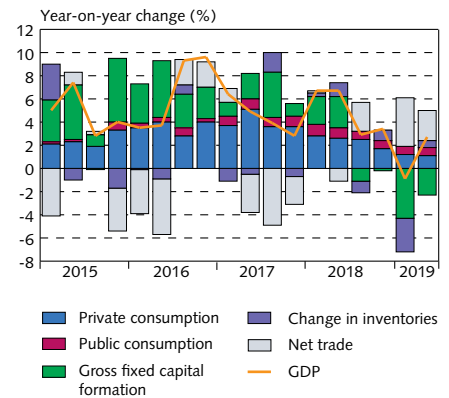
#### ... but stronger than was projected in the Bank's August forecast

GDP growth measured 1.7% in Q1, according to Statistics Iceland's preliminary estimates from August. Based on this figure, the Bank projected a contraction of nearly 1% for Q2 in its August forecast. Because Statistics Iceland's revision of Q1 GDP growth figures was so large – owing mainly to a reassessment of residential investment and its distribution within the period – it is more informative to examine the first two quarters together. Doing so reveals that GDP growth for H1 was stronger than had been forecast in August, at 0.9% instead of the projected 0.5% (Chart IV-2). Business investment turned out somewhat weaker than anticipated, while the contribution from net trade to output growth was considerably more positive.

#### Disposable income growth has eased after rising steeply for several years

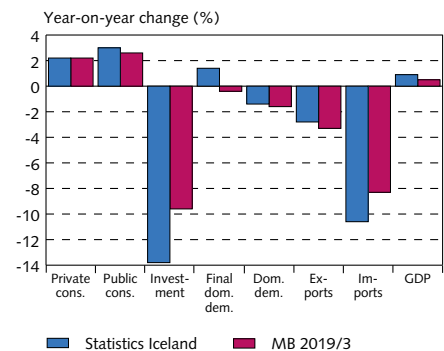
In 2018, households' real disposable income increased by 4.5%, well below the 2015-2017 average of 9.5%. A major factor in this was a decline in investment income (Chart IV-3). Inflationary effects played

Chart IV-1  
GDP growth and contribution of underlying components<sup>1</sup>  
Q1/2015 - Q2/2019



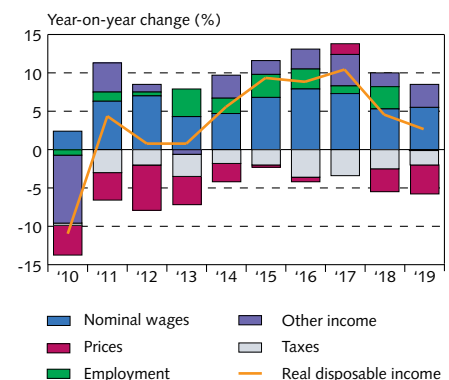
1. Because of chain-volume linking, the sum of components may not equal GDP growth.  
Sources: Statistics Iceland, Central Bank of Iceland.

Chart IV-2  
National accounts for H1/2019



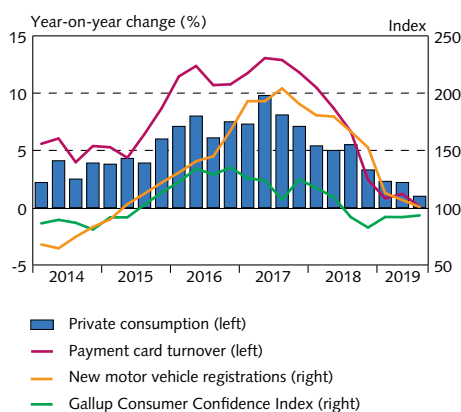
Sources: Statistics Iceland, Central Bank of Iceland.

Chart IV-3  
Real disposable income and its main components 2010-2019<sup>1</sup>



1. The contribution of the main underlying components in 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 equal the total change due to rounding and incomplete household income accounts from Statistics Iceland. Disposable income is deflated using the private consumption price index. Central Bank baseline forecast 2019.  
Sources: Statistics Iceland, Central Bank of Iceland.

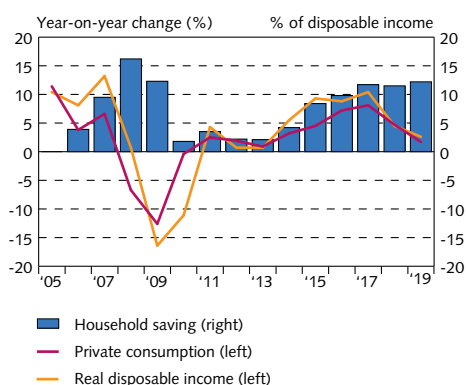
Chart IV-4  
Private consumption and its indicators<sup>1</sup>  
Q1/2014 - Q3/2019



1. Private consumption and payment card turnover are year-on-year changes, while the figure for new motor vehicle registrations is a seasonally adjusted index with a mean of 100. New motor vehicle registrations net of car rental agencies' applications for new registrations in each quarter. Central Bank baseline forecast Q3/2019 for private consumption.

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

Chart IV-5  
Private consumption, disposable income,  
and saving 2005-2019<sup>1</sup>



1. There is some uncertainty about Statistics Iceland's figures on households' actual income levels, as disposable income accounts are not based on consolidated income accounts and balance sheets. The saving ratio is calculated based on the Central Bank's disposable income estimates, as Statistics Iceland figures are rescaled to reflect households' estimated expenses over a long period. Central Bank baseline forecast 2019.

Sources: Statistics Iceland, Central Bank of Iceland.

an important role as well, as the private consumption price deflator rose last year, whereas it had fallen in 2017. This year, wage income is expected to grow more slowly than in 2018, owing largely to a reversal in demand for labour (see Chapter V). As a result, growth in real disposable income is projected to ease year-on-year. This is offset in part by reduced payments of debt interest and increased transfer income for households. If this is borne out, households' real disposable income will increase by 2.6% this year.

### Private consumption growth has eased, as anticipated ...

Private consumption grew by 2.2% in H1/2019, in line with the Bank's August forecast, whereas private consumption per capita was virtually unchanged between years. After several strong years, private consumption growth has slowed in recent quarters to its weakest since H2/2013. The slowdown in real disposable income growth, increased uncertainty about the economic outlook, and saturation in the market for consumer durables are probably the main reasons for the change.

### ... and looks set to slow further in H2

Leading indicators imply that private consumption growth slowed still further in Q3 (Chart IV-4). Setbacks in the tourism industry have affected the labour market, which in turn affects household income. By the same token, sentiment among both consumers and retail and wholesale executives has been tepid. The forecast assumes that private consumption will grow by 1.2% year-on-year in H2 and that the full-year increase will measure 1.7%, slightly below the August forecast of 1.9%. If this materialises, household saving will increase slightly this year, as disposable income will rise more than consumption spending (Chart IV-5).

### All categories of business investment contract year-on-year

Total investment was down 13.8% year-on-year in H1/2019, a somewhat larger contraction than the Bank had assumed in August. The main difference was in business investment, which contracted by nearly a third, whereas the August forecast had assumed a contraction of a fourth. Most of the deviation was due to general business investment (i.e., excluding energy-intensive industry, ships, and aircraft), which contracted by 15% in H1. The contraction in business investment was distributed across all of its major categories: in addition to the downturn in general business investment, investment in energy-intensive industry and related sectors declined by over 17%, and sales of ships and aircraft were recorded as a contraction in investment during the period. Offsetting this reduction in business investment were a nearly one-third increase in residential investment and a more than 6% rise in public investment.

### Firms expect to invest less in 2019 than they anticipated this spring

The results of the Bank's autumn survey of businesses' investment plans suggest that their nominal investment spending will be about

Table IV-1 Survey of corporate investment plans (excluding ships and aircraft)<sup>1</sup>

Sector (number of companies)	2018 (b.kr.)	2019 (b.kr.)	2020 (b.kr.)	Change 2018-2019 (%) (last survey)	Change 2019- 2020 (%)
Fisheries (16)	9.8	11.2	12.0	13.6 (21.4)	7.6
Manufacturing (14)	7.4	5.2	4.9	-30.4 (-34.9)	-6.1
Wholesale and retail trade (22)	7.8	11.8	9.2	51.3 (68.7)	-22.4
Transport and tourism (8)	19.6	13.0	15.5	-33.5 (-4.1)	19.2
Finance/Insurance (10)	3.3	4.7	8.4	41.7 (63)	77.8
Media and IT (6)	8.0	9.2	8.9	15 (20.7)	-3.8
Services and other (21)	14.1	16.6	11.5	18 (15.4)	-30.7
Total (97)	70.1	71.8	70.4	2.4 (14.3)	-1.9

1. Paired comparison with the survey discussed in *Monetary Bulletin* 2019/2.  
Source: Central Bank of Iceland.

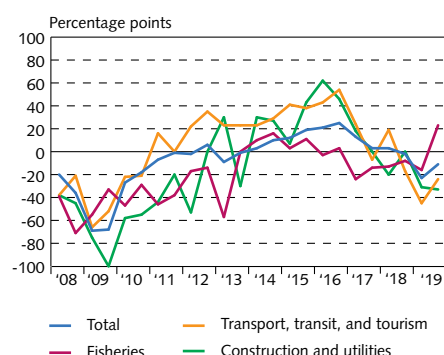
2.4% more this year than in 2018. The main difference lies in increased investment plans by firms in trade and services, whereas firms in tourism and transport, as well as in manufacturing, plan to reduce their investment spending this year (Table IV-1). The previous survey, conducted by the Bank this spring, indicated a much larger increase in planned investment than the autumn survey did. The change between surveys is due in large part to a change in plans by a small number of large companies in trade, tourism, and transport.<sup>1</sup> Even though the survey results indicated an increase in planned investment, firms intending to scale down investment between years outnumbered those planning to step it up.

The Gallup survey among Iceland's 400 largest firms, taken in September, gives a somewhat different picture of respondents' investment plans (Chart IV-6). According to the survey, executives expect to invest less this year than in 2018. Only in the fishing industry does the number of firms planning increased investment exceed the number planning to scale investment down. Compared with the Gallup survey conducted this spring, the number of executives in all sectors who expect to invest less than in 2018 has fallen. As a result, the balance of opinion on investment plans (those planning an increase net of those planning a reduction) was less negative this autumn than it was in the spring survey. This does not apply to the construction and utilities sector, however, where the share of firms intending to scale down investment has risen further. This accords with the sentiment among executives in these sectors concerning demand for their products and services, and it indicates that construction activity may slow still further (Chart IV-7).

### Outlook for business investment weaker than in the last forecast

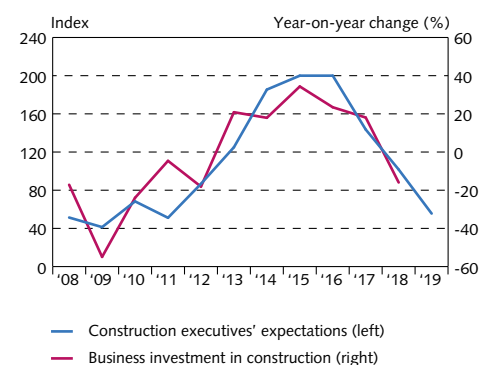
The outlook for business investment in 2019 has therefore worsened in comparison with the Bank's investment survey findings from the spring, although the Gallup survey indicates a less pronounced change. The surveys do suggest, however, that the contraction in business investment has already abated (Chart IV-8). Based on these surveys and other indicators of developments in investment and firms' investment

1. It should be noted that the Bank's survey does not include firms' planned investment in ships, aircraft, heavy industry, or hotel construction.

Chart IV-6  
Investment: balance of opinion, by sector<sup>1</sup>

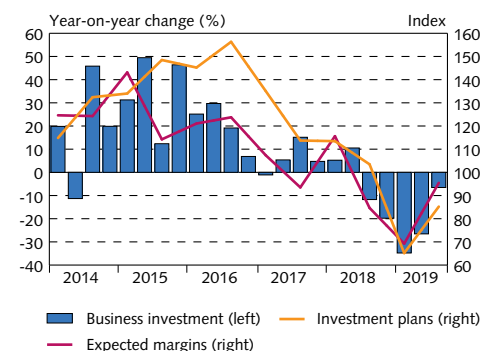
1. The balance of opinion is the share of firms that expect to increase investment between years net of the share that expect to reduce investment.

Source: Gallup.

Chart IV-7  
Expectations within construction sectors and developments in construction<sup>1</sup>  
2008-2019

1. Expectations of executives in the construction and utilities sectors on developments in domestic demand for their firms' goods and/or services in the next six months. The index takes a value between 0 and 200, with a value of 100 indicating parity between those expecting an increase and those expecting a decrease.

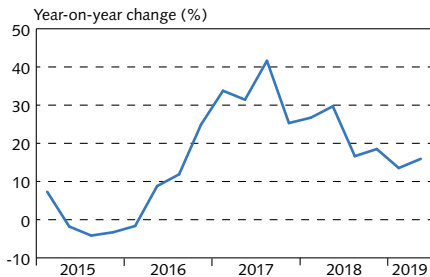
Sources: Gallup, Statistics Iceland, Central Bank of Iceland.

Chart IV-8  
Business investment and its indicators<sup>1</sup>  
Q1/2014 – Q3/2019

1. Figures on expected margins (EBITDA) and investment plans are indices that measure expectations six months ahead as reported by executives from Iceland's 400 largest companies. The indices are rescaled so that their average from 2006 onwards equals 100. Central Bank baseline forecast Q3/2019 for business investment.  
Sources: Gallup, Statistics Iceland, Central Bank of Iceland.

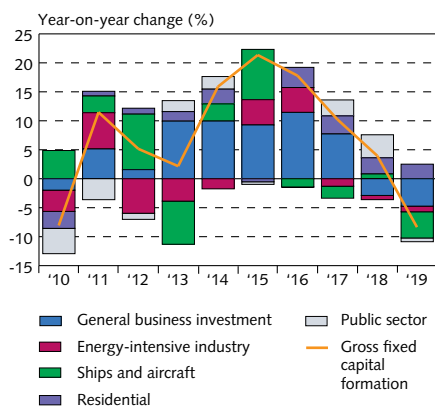


Chart IV-9  
Residential investment<sup>1</sup>  
Q1/2015 - Q2/2019



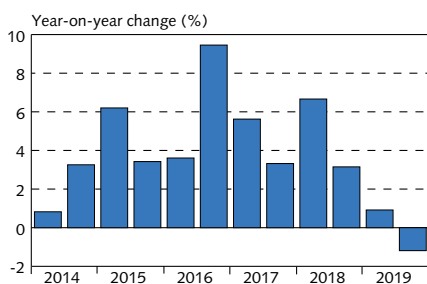
1. Four-quarter moving average of year-on-year changes.  
Source: Statistics Iceland.

Chart IV-10  
Gross fixed capital formation and contribution  
of main components 2010-2019<sup>1</sup>



1. General business investment excludes ships, aircraft, and energy-intensive industry investment. Central Bank baseline forecast 2019.  
Sources: Statistics Iceland, Central Bank of Iceland.

Chart IV-11  
GDP growth<sup>1</sup>  
H1/2014 - H2/2019



1. Central Bank baseline forecast H2/2019.  
Sources: Statistics Iceland, Central Bank of Iceland.

plans, it is assumed that general business investment will contract by nearly 4% in H2 and close to 10% in 2019 as a whole. Overall business investment is projected to contract by a full 16%, although the adverse impact of ship and aircraft sales and the contraction in energy-intensive investment weigh heavily as well. In comparison with the Bank's August forecast, the outlook is poorer for all key categories of business investment, which mainly reflects a larger contraction in H1, as the outlook for H2 is broadly unchanged.

### Growth in residential investment appears to have begun to ease

Residential investment grew by just under a third year-on-year in H1/2019, broadly as was forecast in August. Year-on-year growth has eased somewhat (Chart IV-9), and key indicators imply that construction activity lost pace further still in Q3. The Federation of Icelandic Industries' most recent figures suggest, for instance, that the number of flats in the first stages of construction has fallen since March, when the previous count was taken. Residential investment is projected to grow by 13% this year, roughly as was forecast in August. If the forecast materialises, the contribution of residential investment to output growth will be slightly less positive this year than in 2018 and the residential investment-to-GDP ratio just under 5%.

### Gross capital formation to contract in 2019 after several years of strong growth

Gross capital formation is projected to decrease year-on-year by 2.6% in H2 and by 8.4% in 2019 as a whole. This would be the first contraction between years since 2010. Setbacks in the airline industry have a significant impact, and a large share of the contraction is attributable to the sale of ships and aircraft, which is added to the sizeable contraction in general business investment (Chart IV-10). This contraction, which is somewhat larger than was forecast in August, extends to all categories of investment. If the forecast materialises, the investment-to-GDP ratio will decline by just over 1½ percentage points between years, to 20.8%, slightly less than 1 percentage point below its twenty-five-year average.

### GDP set to contract in 2019 despite expansion in H1

As is mentioned above, output growth in H1 somewhat exceeded the August forecast. GDP is assumed to have contracted again in Q3, owing largely to a sharp contraction in goods exports (see below). As a result, it is projected to contract by 1.2% in H2 (Chart IV-11), giving a contraction of 0.2% for the year as a whole. A contraction in investment and the negative impact of inventory changes weigh against continued growth in consumption spending and a positive contribution from net trade (Chart IV-12).

The GDP growth outlook for 2019 as a whole is therefore unchanged since August, even though H1 growth was stronger than previously projected. The outlook for H2 has deteriorated, however, owing in particular to more sluggish growth in domestic demand and a poorer outlook for exports, although this is offset in part by the pros-

pect of a larger contraction in imports. If the forecast materialises, the year will see Iceland's first economic contraction since 2010.

## Public sector

### Public consumption growth set to grow faster in 2019 than forecast in August

In the first half of the year, public consumption growth measured 3%, slightly more than was forecast in August. This was offset, however, by weaker growth in public investment. Total public spending according to the national accounts increased by 3.3%, in line with the Bank's forecast. The outlook for 2019 as a whole is for a 3.2% increase in public consumption and a positive contribution to output growth of 0.8 percentage points (Chart IV-13). This would be the third consecutive year with public consumption growth exceeding 3% year-on-year. The new fiscal plan contains consolidation plans that appear likely to materialise, as growth in central government consumption spending is below 2% year-to-date. Municipal and social security spending has grown much more, however.

The outlook is for a contraction of nearly 4% in public investment in 2019. The contraction is due to a large increase in 2018, when the Hvalfjarðargöng tunnel was transferred from private to public ownership. Excluding the effects of the transfer, public investment is projected to increase by 5.7% this year. The public investment-to-GDP ratio is expected to return to its pre-crisis level for the first time in a decade.

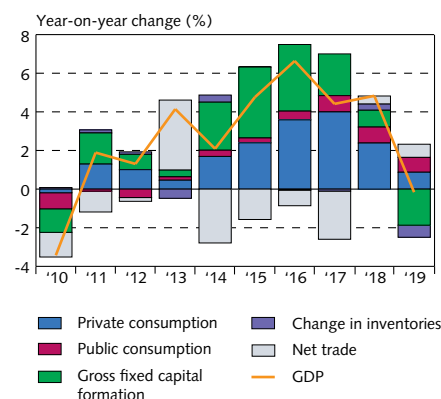
### Treasury primary surplus smaller in 2019 than in 2018

According to figures from Statistics Iceland, the Treasury operated at an overall surplus of 0.9% of GDP in 2018, some 0.4 percentage points less than preliminary figures had indicated. This year, the surplus is expected to shrink by 0.5 percentage points year-on-year, to 0.4% of GDP (Chart IV-14). At the same time, the primary surplus is expected to decline to 1.9% of GDP. This is a poorer outcome than the Bank had forecast in May, when it last assessed the fiscal stance. The change in the forecast is due for the most part to the aforementioned changes in last year's outcome and the base effects those changes entail.

### Fiscal stance set to ease during the forecast horizon

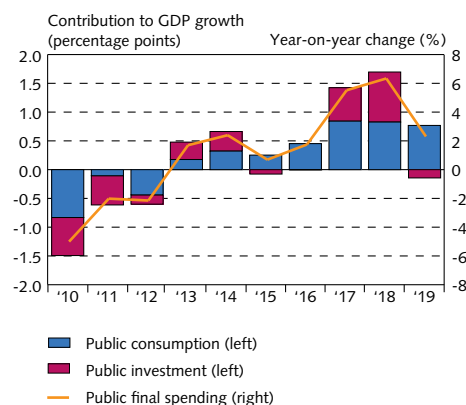
It is assumed that the cyclically adjusted primary balance will deteriorate by 0.2% of GDP this year, broadly as was forecast in May (Chart IV-15). The easing in 2020 reflects discretionary measures outlined in the fiscal plan, which were decided in connection with the private sector wage settlements finalised in the spring. These measures entail increased expenditures and tax cuts (the fiscal budget proposal is discussed in Box 3). As a result, the assessment of the fiscal stance over the forecast horizon is broadly unchanged from the Bank's previous assessment. According to the baseline forecast, public sector debt will continue to fall and, by the end of the forecast horizon, will be within the limits provided for in the debt rule in the Act on Public Finances.

Chart IV-12  
GDP growth and contribution of underlying components 2010-2019<sup>1</sup>



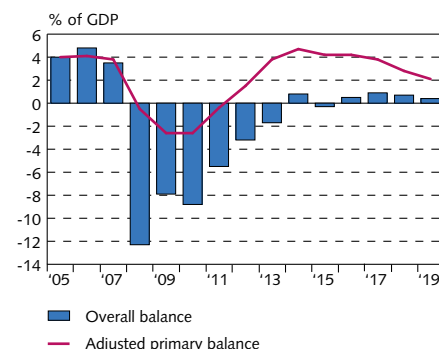
1. Central Bank baseline forecast 2019.  
Sources: Statistics Iceland, Central Bank of Iceland.

Chart IV-13  
Public consumption and investment 2010-2019<sup>1</sup>



1. Central Bank baseline forecast 2019.  
Sources: Statistics Iceland, Central Bank of Iceland.

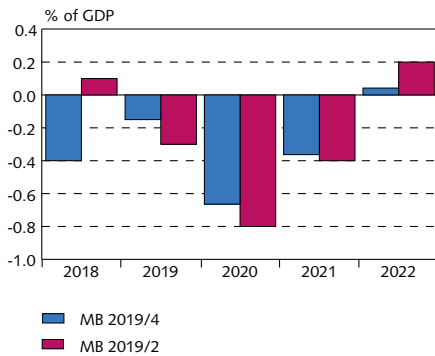
Chart IV-14  
Treasury balance 2005-2019<sup>1</sup>



1. The primary balance is adjusted for one-off items. For 2016-2018, the primary and overall balances are adjusted for stability contributions, accelerated write-downs of indexed mortgages, a special payment to LSR Pension Fund Part A, and dividend payments over and above budgetary allocations. Central Bank baseline forecast 2019.  
Sources: Ministry of Finance and Economic Affairs, Statistics Iceland, Central Bank of Iceland.

Chart IV-15

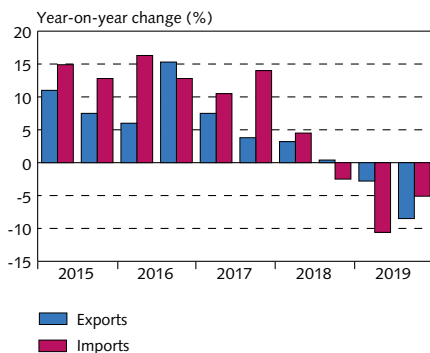
Change in central government cyclically adjusted primary balance 2018-2022<sup>1</sup>



1. The primary balance is adjusted for one-off items. Central Bank baseline forecast 2019-2022.  
Sources: Ministry of Finance and Economic Affairs, Statistics Iceland, Central Bank of Iceland.

Chart IV-16

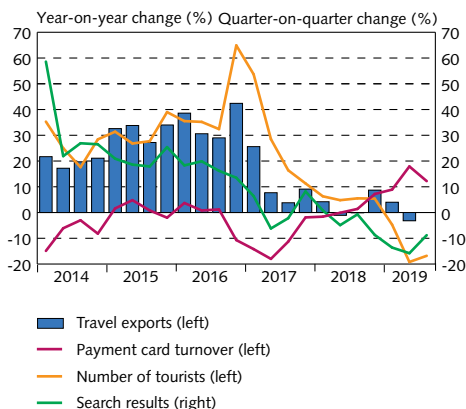
Imports and exports of goods and services<sup>1</sup>  
H1/2015 - H2/2019



1. Central Bank baseline forecast H2/2019.  
Sources: Statistics Iceland, Central Bank of Iceland.

Chart IV-17

Indicators of tourism sector activity<sup>1</sup>  
Q1/2014 - Q3/2019



1. Travel exports are at constant prices, and card turnover per tourist (excluding passenger transport and public levies) is deflated with the CPI. Tourist numbers are derived from foreign nationals' departures via Keflavik Airport. Search results are based on a factor model combining the frequency of five different Google search strings relating to travel to Iceland (seasonally adjusted two-quarter moving average).  
Sources: Centre for Retail Studies, Google Trends, Icelandic Tourist Board, Isavia, Statistics Iceland, Central Bank of Iceland.

## External trade and the current account balance

### Q2 contraction in goods and services exports the largest in a decade

Goods and services exports contracted by 6.9% year-on-year in Q2 and by 2.8% in H1, a slightly smaller contraction than was projected in August (Chart IV-16). Services exports contracted by 9.2% in H1, owing largely to the contraction in tourism-related services exports. The lion's share of the downturn in tourism exports can be traced to the collapse of airline WOW Air and the smaller increase in Icelandair seat capacity following the grounding of its new Boeing 737 Max jets. In addition, export revenues from foreign tourists in Iceland contracted, although steep decline in visitor numbers was offset by a marked increase in average spending per tourist.

Goods exports declined by 2.9% in Q2, particularly because of a steep contraction in marine product exports, as no capelin quotas were issued this year. Aluminium exports also contracted between years, albeit partly offset by increased exports of miscellaneous manufactured goods. Even though goods exports contracted in Q2, they grew by just over 3% year-on-year in H1. This increase, however, stemmed in large part from the exportation of ships and aircraft, which in turn was due mainly to the sale of aircraft from WOW Air's operations. Excluding exports of ships and aircraft, combined goods and services exports contracted by 7.1% in H1/2019.

### Contraction in tourism expected to peak in H2 ...

Based on developments in foreign tourists' spending in Iceland, the outlook is for travel exports to contract further in H2/2019, but less than was forecast in August. Foreign tourists declined in number by 17% year-on-year in Q3 (Chart IV-17). This was a smaller contraction than in Q2, as well as being smaller than was projected in the August forecast. At the same time, payment card turnover figures suggest that average spending per tourist increased more than had been assumed in August. Other indicators also imply that tourism revenues shrank less than could have been expected given the drop in visitor numbers. For instance, a survey carried out by the Icelandic Tourist Board and Statistics Iceland suggests that tourists' average stay has grown longer. In addition, the number of hotel bed-nights booked by foreign tourists rose by 0.7% year-on-year in Q3, although a contraction in non-hotel accommodation pulled in the other direction. Foreign tourists' overnight stays in all types of accommodation also declined much less in H1/2019 than the number of tourists did. The increased demand for hotel accommodation and the rise in turnover per tourist may reflect a change in the composition of the tourist group and its consumption patterns, owing in turn to the reduced presence of budget airlines at Keflavik Airport. Furthermore, the number of Google searches for travel to Iceland suggests that interest in Iceland may be on the rise again.

The outlook for air travel has deteriorated, however, and is still highly uncertain. Key indicators for Q3, which is Iceland's peak tourist season, show that domestic carriers' export revenues from air trans-

port declined more than was expected in August, owing to larger reductions in airfares and a declining load factor. The number of flights to and from Iceland fell by 29% year-on-year in Q3. The reduction in domestic carriers' seat capacity was offset to a degree by an increase in foreign carriers' seat capacity. Seat capacity on flights to and from Keflavík Airport is expected to be 22% lower in the next two quarters than it was over the same period last year (Chart IV-18). The reduction in domestic carriers' seat capacity is offset in part by an increase in foreign carriers' capacity. All else being equal, foreign carriers appear on track for a market share of one-third of Keflavík Airport's winter schedule. The grounding of the Max jets still affects Icelandair's flight schedule, and uncertainty about the airline's fleet, coupled with the bleaker outlook for the global economy, has prompted a downward revision of the forecast for travel exports in 2019 and 2020. On the whole, then, the outlook is for the contraction in tourism to deepen in H2/2019 and for total services exports to shrink by nearly 12% in 2019 as a whole, as opposed to just over 11% in the August forecast.

### ... and goods exports to grow more slowly this year

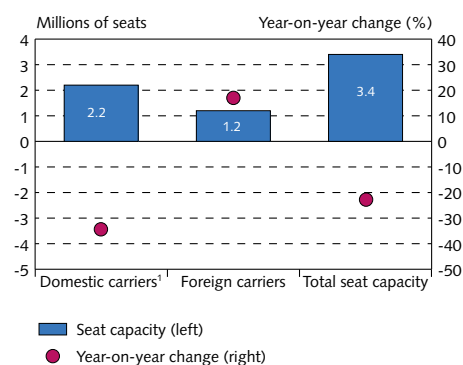
In addition to a stronger contraction in services exports, goods exports are now expected to grow more slowly than was forecast in August. Goods exports in H1 were slightly stronger than was assumed in the August forecast, but preliminary net trade figures for Q3 suggest a much larger contraction than was projected then. This is due primarily to a larger contraction in aluminium exports, the result of manufacturing difficulties at a domestic smelter this summer, and the prospect of a larger-than-expected contraction in marine product exports in H2. On the other hand, other goods exports – farmed fish and equipment for fisheries and food processing in particular – are expected to grow more than previously assumed.

On the whole, it is assumed that goods and services exports will contract this year by 5.8% and not 5.1%, as in the August forecast (Chart IV-19).

### Largest single-quarter contraction in imports in a decade ...

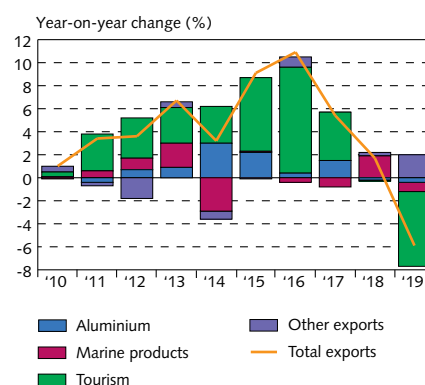
Imports of goods and services contracted by 12.4% between years in Q2, the largest single-quarter contraction in a decade. This comes on the heels of an 8.4% contraction in Q1, making for a downturn of 10.6% for the first half of the year (Chart IV-16). One of the main causes was a reduction in aircraft leasing, coupled with a larger-than-expected contraction in Icelanders' spending while travelling abroad. Reduced activity in tourism also affected goods imports, particularly imports of fuel and transport equipment (such as rental cars), which contracted by nearly a fifth year-on-year in Q2. The impact of reduced investment activity and slower growth in private consumption also shows in imports of investment goods and other consumer durables, which shrank by nearly a fifth in Q2. Preliminary goods trade figures indicate that the contraction in imports eased in Q3, and the outlook is for total goods and services imports to contract by 7.8% in 2019 as a whole, 2.4 percentage points more than was assumed in the August forecast (Chart IV-20). The larger contraction

Chart IV-18  
Airline seat capacity to and from Keflavík  
1 October 2019 – 28 March 2020



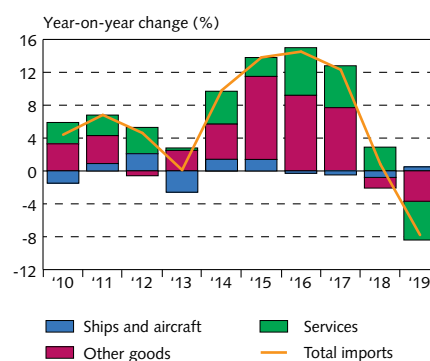
1. According to Isavia's flight schedule, Icelandair expects to use its Max jets beginning in January 2020. WOW Air became insolvent on 28 March 2019.  
Sources: Isavia, Central Bank of Iceland.

Chart IV-19  
Exports and contribution of subcomponents  
2010-2019<sup>1</sup>



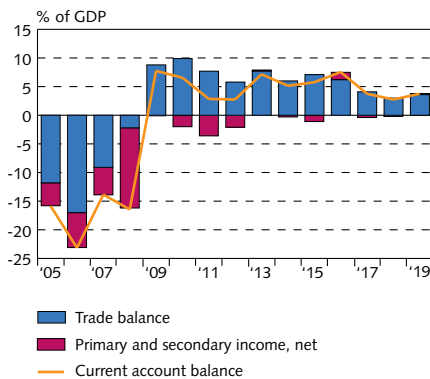
1. Because of chain-volume linking, the sum of components may not equal total exports. Aluminium exports as defined in the national accounts. Tourism is the sum of the services category "travel", i.e., revenues from foreign tourists in Iceland, and "passenger transport by air", i.e., Icelandic airlines' revenues from transporting foreign passengers. Central Bank baseline forecast 2019.  
Sources: Statistics Iceland, Central Bank of Iceland.

Chart IV-20  
Imports and contribution of subcomponents  
2010-2019<sup>1</sup>



1. Because of chain-volume linking, the sum of components may not equal total imports. Central Bank baseline forecast 2019.  
Sources: Statistics Iceland, Central Bank of Iceland.

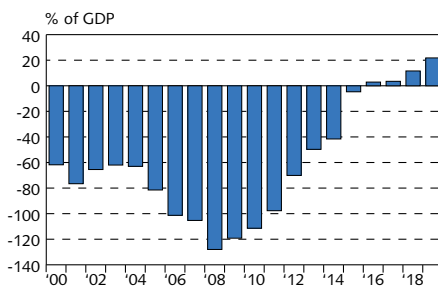
Chart IV-21

Current account balance 2005-2019<sup>1</sup>

1. Current account excluding the effects of the failed financial institutions (2008-2015) and the pharmaceuticals company Actavis (2009-2012) on primary income. Also adjusted for the failed financial institutions' financial intermediation services indirectly measured (FISIM). Central Bank baseline forecast 2019.

Sources: Statistics Iceland, Central Bank of Iceland.

Chart IV-22

Iceland's net international investment position (NIIP) 2000-2019<sup>1</sup>

1. Underlying NIIP for 2008-2014. The figure for 2019 is the end-Q2 position.

Sources: Statistics Iceland, Central Bank of Iceland.

is due primarily to a stronger contraction in the travel component of services imports.

### ... and the prospect of a larger current account surplus in 2019

The surplus on combined goods and services trade measured 3% of GDP in H1/2019 – more than was forecast in August and up from H1/2018, when it measured only 0.2% of GDP. The trade surplus for 2019 as a whole is now expected to measure 3.6% of GDP, 0.4 percentage points more than was forecast in August. A larger surplus on services trade, which stems in particular from reduced imports, is the main reason for a larger trade surplus than was previously forecast, although weaker terms of trade and a poorer outlook for goods exports pull in the opposite direction.

The outlook is for the current account surplus to increase again this year, after shrinking for the previous two years. It measured 3.6% of GDP in H1 and is projected to measure 3.8% in 2019 as a whole, which is on a par with 2017 (Chart IV-21). Its composition is different, however, as the services account surplus has narrowed and the goods account deficit has shrunk as well. To some extent, the smaller deficit on goods trade is due to the sale of aircraft from WOW Air's fleet, but the contraction in goods imports has also deepened over the course of the year, in line with weaker economic activity and a lower real exchange rate. In addition, the balance on primary and secondary income has turned positive after having shown a deficit for the past two years.

If the forecast materialises, 2019 will be Iceland's eleventh consecutive year with a current account surplus, the longest uninterrupted surplus in its history. The persistent current account surplus largely reflects the post-crisis increase in domestic saving. Gross national saving has averaged 25½% of GDP in the past five years but is expected to ease to 24½% this year. The large current account surplus, together with the settlement of the failed financial institutions' estates and their stability contributions, has yielded a net international investment position that is positive by 21.8% of GDP, the strongest in Iceland's history (Chart IV-22).

## V Labour market and factor utilisation

Total hours worked declined year-on-year in Q3, in line with the Bank's August forecast. Both the employment rate and the labour participation rate fell, while the unemployment rate was broadly unchanged after a sharp increase in Q2. The results of the Gallup survey among Iceland's 400 largest firms suggest that job numbers will continue to fall in the next six months, yet pessimism among executives appears to have receded. Total hours worked are expected to decline this year instead of increasing, as was assumed in the August forecast, but the outlook for developments in unemployment is broadly unchanged. The number of firms considering themselves understaffed rose for the first time since the spring 2018 survey, and there are signs that factor utilisation is gradually firming up after the slack that opened up in the wake of recent economic setbacks.

### Labour market

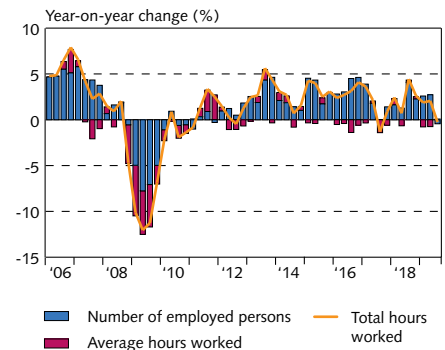
#### Total hours worked fell in Q3 ...

According to Statistics Iceland's labour force survey (LFS), total hours worked fell by 0.4% year-on-year in Q3/2019, in line with the Bank's August forecast. The number of employed persons also declined by 0.4% year-on-year, but the average work week was broadly unchanged from Q3/2018 (Chart V-1). A similar trend can be seen in the number of wage-earners on the pay-as-you-earn (PAYE) register, which shows that the number of employed persons (excluding the self-employed and those on childbirth leave) fell by 1.3% year-on-year in August. The decline in job numbers appears to affect most sectors, yet on the other hand, public service jobs – i.e., in public administration, education, healthcare, and social services – have increased significantly in number. Public sector job numbers began to rise in early 2017, around the time job growth in tourism-related sectors began to ease. In August, the year-on-year increase was roughly equal to the decline in tourism-related jobs over the same period (Chart V-2). Public sector job creation has therefore offset the loss of private sector jobs, although it is uncertain how long this can last.

#### ... and unemployment has risen markedly year-to-date

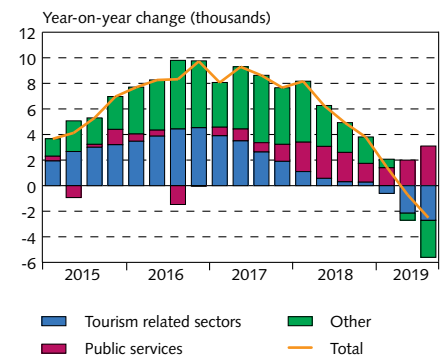
The drop in job numbers in Q3 came to the fore in a decline in the employment rate. The outlook is for a 1½ percentage point decline this year, making 2019 the third consecutive year with a falling employment rate. According to seasonally adjusted LFS data, the employment rate was 77.7% in Q3, a reduction of 0.5 percentage points between quarters. At the same time, the labour participation rate fell by 0.4 percentage points, to 80.9%. Both the employment rate and the labour participation rate were 1 percentage point below their long-term averages during the quarter. Seasonally adjusted unemployment fell by 0.1 percentage point since Q2, to 3.7%. However, it had risen by 0.6 percentage points since Q1, before airline WOW Air failed. Registered unemployment also measured 3.7% in Q3 after adjusting for season-

Chart V-1  
Employment and hours worked<sup>1</sup>  
Q1/2006 - Q3/2019



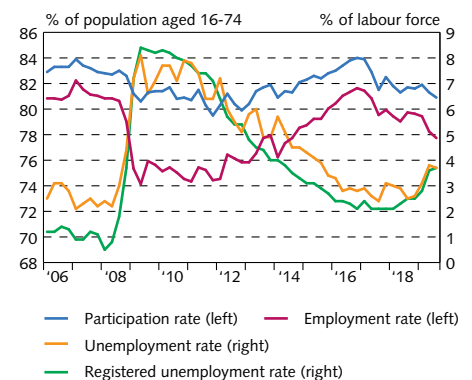
1. Quarterly averages of monthly figures.  
Source: Statistics Iceland.

Chart V-2  
Number of employed persons according to PAYE-register<sup>1</sup>  
Q1/2015 - Q3/2019



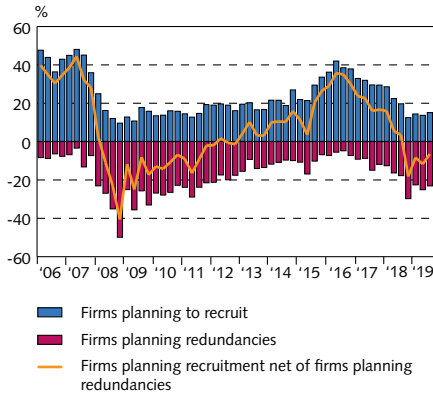
1. The number of persons of all ages on the pay-as-you-earn (PAYE) register, excluding the self-employed and those on childbirth leave. Public services comprises public administration, education, healthcare, and social services. Q3/2019 figures are August values. The most recent figures are preliminary.  
Source: Statistics Iceland.

Chart V-3  
Unemployment, employment, and labour participation<sup>1</sup>  
Q1/2006 - Q3/2019



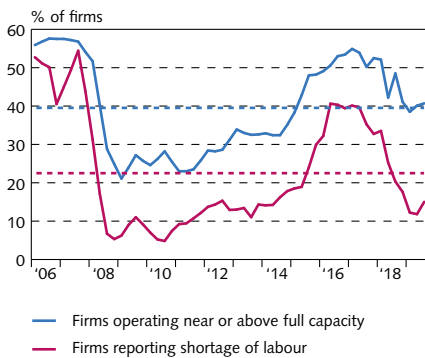
1. Seasonally adjusted figures. The registered unemployment rate is seasonally adjusted by the Central Bank.  
Sources: Directorate of labour, Statistics Iceland, Central Bank of Iceland.

Chart V-4  
Firms planning to change staffing levels  
within 6 months<sup>1</sup>  
Q1/2006 - Q3/2019



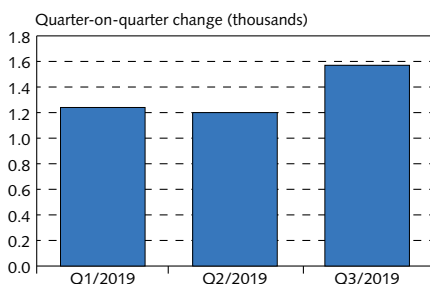
1. Seasonally adjusted figures.  
Sources: Gallup, Central Bank of Iceland.

Chart V-5  
Capacity utilisation<sup>1</sup>  
Q1/2006 - Q3/2019



1. Indicators of factor utilisation are from the Gallup Sentiment Survey conducted among Iceland's 400 largest companies. Seasonally adjusted figures. Broken lines show period averages.  
Sources: Gallup, Central Bank of Iceland.

Chart V-6  
Foreign nationals residing in Iceland<sup>1</sup>  
Q1/2019 - Q3/2019



1. Calculations based on quarter-end figures for foreign nationals.  
Source: Registers Iceland.

ality, slightly more than in Q2 (Chart V-3). It rose by just over 1 percentage point in the first five months of the year, although nearly  $\frac{2}{3}$  of the increase occurred after WOW Air's collapse. From May through September, however, registered unemployment remained unchanged. The outlook for the remainder of 2019 is broadly unchanged from the August forecast. According to the baseline forecast, it will rise above 4% late this year and then begin to taper off again as 2020 progresses. As in August, it is expected to average 3.7% this year.

### Job numbers set to keep falling, but pessimism among executives has receded

According to the seasonally adjusted results of the Gallup survey carried out this autumn among Iceland's 400 largest firms, the balance of opinion on staffing plans (i.e., firms planning to recruit as compared with those planning redundancies) was negative by 7 percentage points (Chart V-4). Therefore, survey respondents were somewhat less pessimistic than in the summer survey, when the same balance of opinion was negative by 12 percentage points. Sentiment improved markedly between surveys in the fishing industry and in transport, transit, and tourism. In the summer survey, the balance of opinion was negative by 19 percentage points in the fishing industry and by 16 percentage points in transport, transit, and tourism. In the autumn survey, however, the balance of opinion on staffing plans was broadly neutral in both sectors. Executives in construction and utilities and in wholesale and retail trade were more pessimistic than in the summer. The outlook is for a potentially steep decline in job numbers in these sectors, as well as in the financial sector, where the balance of opinion was negative by 25-28 percentage points.

Overall, the baseline forecast reflects the results of Gallup's autumn survey. According to the forecast, job numbers will fall through this year and then begin to recover in 2020. The forecast also assumes that firms will attempt to streamline by cutting their employees' working hours. Total hours worked are therefore set to fall this year by 0.1% year-on-year, as opposed to rising by 0.2%, as was forecast in August.

### Indicators of factor utilisation

#### The share of understaffed firms has risen but is still below its historical average

After adjusting for seasonality, 15% of executives considered themselves short-staffed – a slightly higher percentage than in the summer survey (Chart V-5). This is the first time since the spring 2018 survey that the number of firms considering themselves understaffed has risen between surveys. The reported shortage was largest in miscellaneous specialised services, where a fourth of firms considered themselves understaffed. It was second-largest in the fishing industry, where the share of executives considering themselves short-staffed rose by 17 percentage points between surveys, to 21%. Only a few respondents in wholesale and retail trade reported staff shortages, and no one in the financial and insurance sector did so. The share of firms with staffing shortages was below its long-term average in all sectors except fishing.

### Foreign labour force still growing despite fewer jobs

Figures from Registers Iceland on the number of foreign nationals living in Iceland suggest that the foreign labour force continues to expand. The foreign population grew by nearly 1,600 quarter-on-quarter in Q3, somewhat more than in the previous two quarters (Chart V-6). Workers from temporary employment agencies and foreign services firms have increased slightly in number, to just under 1,300, or 0.6% of the labour force, by September. Issuance of new temporary work permits has continued to lose pace, however, with the number of new permits down by nearly 80 year-on-year in the first nine months of 2019.

### Labour productivity broadly unchanged year-on-year

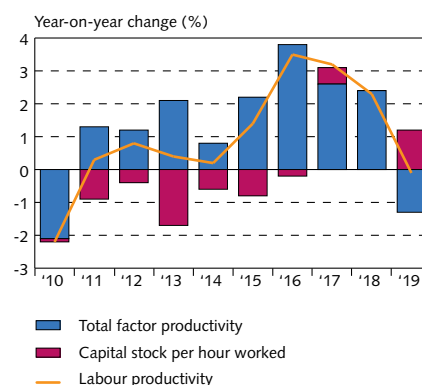
The national accounts revision in September led to a marginal change in historical GDP figures and a correspondingly small change in productivity growth data. Even though the GDP growth outlook for 2019 is unchanged, the outlook is for productivity to develop somewhat more favourably than was forecast in August, owing to the above-described revision of total hours worked. Labour productivity is now projected to decline by 0.1% this year instead of 0.4%, as was forecast in August (Chart V-7). The ratio of the capital stock to total hours worked in 2019 is similar to the August forecast; therefore, the difference is largely due to a less negative contribution from total factor productivity.

### Small output slack to open in 2019 and close in 2020

According to the Gallup autumn survey, 41% of executives reported that they would have difficulty responding to unexpected demand, after adjusting for seasonality. This percentage was broadly unchanged from the summer survey and has been close to its long-term average since the autumn 2018 survey. Nearly three out of five executives in the specialised services sector reported that they would have difficulty responding to unexpected demand, as opposed to only a fourth in retail and wholesale trade, financial services, and the transport, transit, and tourism sector.

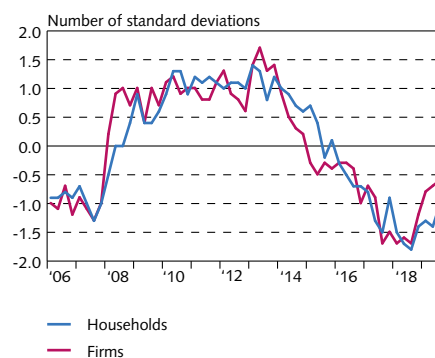
It appears as though the downbeat sentiment that developed in the wake of the recent setbacks is gradually receding. The difference between households' and businesses' economic expectations six months ahead and their assessment of the current situation has narrowed somewhat year-to-date (Chart V-8). Furthermore, the resource utilisation (RU) indicator, which combines various indicators of factor utilisation, rose somewhat in Q3 for the second quarter in a row (Chart V-9), a sign that the economic contraction could be relatively brief. As in August, the output gap is estimated to have closed, and a modest slack is expected to develop by the end of this year. The slack is projected to peak in mid-2020 and close before the year-end.

Chart V-7  
Labour productivity and its subcomponents  
2010-2019<sup>1</sup>



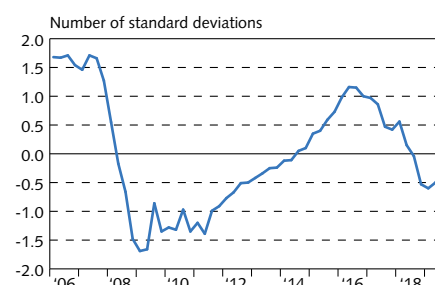
1. Labour productivity is calculated as GDP per total hours worked. Total factor productivity is calculated as the deviation of GDP from the output level obtained with full factor utilisation using the production function in the Bank's macroeconomic model. Central Bank baseline forecast 2019.  
Sources: Statistics Iceland, Central Bank of Iceland.

Chart V-8  
Difference between expectations 6 months  
ahead and assessment of the current situation<sup>1</sup>  
Q1/2006 - Q3/2019



1. Measurements of household expectations, taken from the monthly Gallup Consumer Confidence Index, show the position of the end of the quarter. Corporate expectations are taken from Gallup's quarterly survey of Iceland's 400 largest firms. The index for the assessment of the current economic situation is deducted from the index of expectations six months ahead. Deviation from period average.  
Source: Gallup.

Chart V-9  
RU indicator<sup>1</sup>  
Q1/2006 - Q3/2019



1. The resource utilisation (RU) indicator is the first principal component of selected indicators of factor utilisation; it is scaled so that its mean value is 0 and the standard deviation is 1. A more detailed description can be found in Box 3 in MB 2018/2.  
Source: Central Bank of Iceland.





## VI Inflation

Inflation measured 2.8% in October and has fallen since the last *Monetary Bulletin*. Underlying inflation, however, has proven more persistent and is above headline inflation. The contribution from the housing component has weakened, and the rise in import prices has slowed. Even though the wage share is high, the outlook is for a gradual easing of domestic inflationary pressures: fewer firms expect to raise their product prices in the near future, and the outlook is for unit labour costs to rise less than previously assumed. Inflation expectations have also fallen in the recent past, and market expectations are at or near the inflation target.

### Recent developments in inflation

#### Inflation approaching the target

Inflation has subsided somewhat in recent months (Chart VI-1). It measured 3.1% in Q3, 0.1 percentage points below the August forecast. The main driver was the decline in petrol prices and airfares, which was offset by a rise in private services prices, partly due to seasonal factors such as price hikes at restaurants and cafés. Another factor was the rise in the housing component of the consumer price index (CPI), which stemmed from rising house prices (Chart VI-2). However, this was offset by the interest component of imputed rent, which has lowered inflation recently, as real mortgage interest expense has fallen in response to Central Bank rate cuts. As a result, the CPI is estimated to be 0.2-0.3 percentage points lower than it would be otherwise.

The CPI rose by 0.36% month-on-month in October, and twelve-month inflation eased to 2.8%. It is now at its lowest since September 2018, before the onset of difficulties in the airline industry and the ensuing depreciation of the króna. The strongest impact on the CPI in October was from the rise in house prices. The subcomponent for transport also rose somewhat month-on-month, mostly due to increases in new motor vehicle prices and airfares. Competition pressures in travel to and from Iceland appear to have made it more difficult for other airlines to raise airfares following the failure of WOW Air in March 2019. Since then, ticket prices are up almost 6% and are just over 1% higher than they were a year ago.

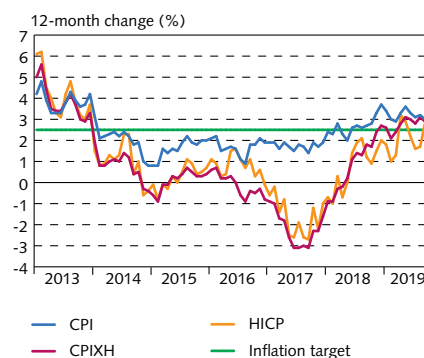
Inflation excluding housing measured 2.6% in October and has also fallen since the last *Monetary Bulletin*. The difference between inflation with and without housing is therefore small at present. HICP inflation, which also excludes housing, measured 2.8% in September.

### Underlying inflation and other indicators of inflationary pressures

#### Underlying inflation is above headline inflation

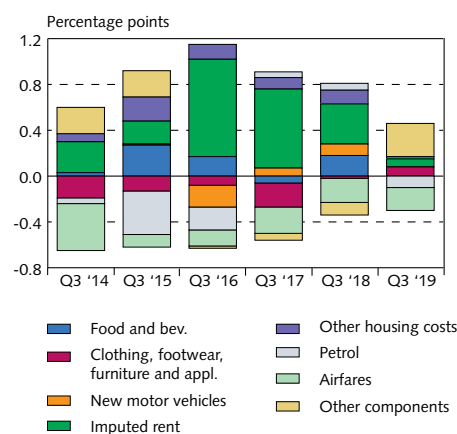
Headline and underlying inflation have followed broadly similar paths in the recent term but started to diverge somewhat this autumn. In October, underlying inflation in terms of the median of various measures was 3.4%, or 0.6 percentage points above headline inflation

Chart VI-1  
Various measures of inflation  
January 2013 - October 2019



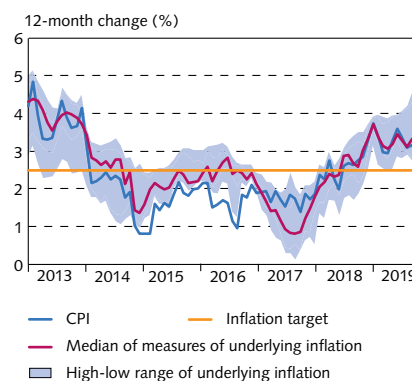
Sources: Statistics Iceland, Central Bank of Iceland.

Chart VI-2  
Subcomponents' effects on the CPI  
in Q3 2014-2019



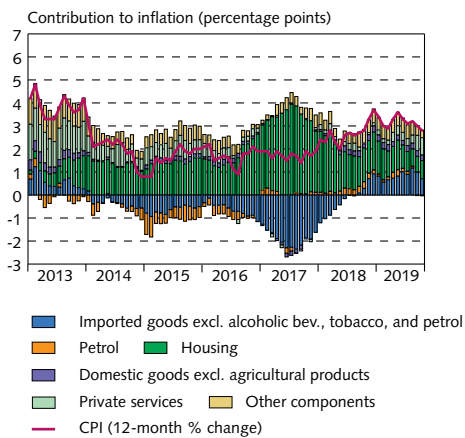
Source: Statistics Iceland.

Chart VI-3  
Headline and underlying inflation<sup>1</sup>  
January 2013 - October 2019



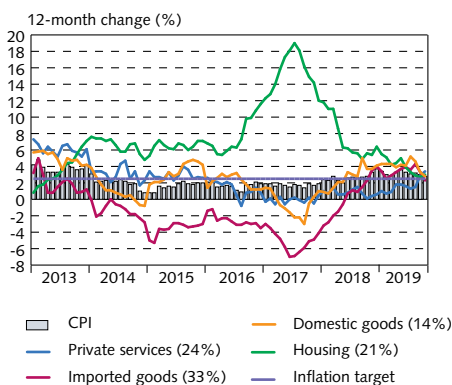
1. Underlying inflation measured using a core index (which excludes the effects of indirect taxes, volatile food items, petrol, public services, and real mortgage interest expense) and statistical measures (weighted median, trimmed mean, a dynamic factor model, and a common component of the CPI).  
Sources: Statistics Iceland, Central Bank of Iceland.

Chart VI-4  
Components of CPI inflation  
January 2013 - October 2019



Source: Statistics Iceland.

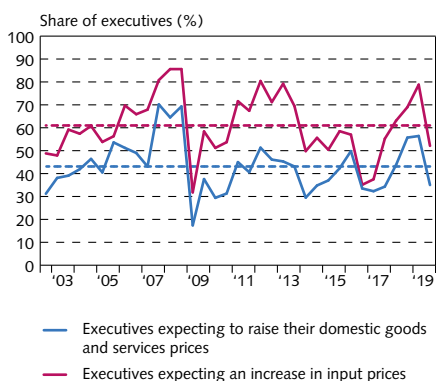
Chart VI-5  
Imported and domestic inflation<sup>1</sup>  
January 2013 - October 2019



1. Imported inflation is estimated using the price of imported food and beverages, new motor vehicles and spare parts, petrol, and other imported goods. The figures in parentheses show the current weight of these items in the CPI.

Sources: Statistics Iceland, Central Bank of Iceland.

Chart VI-6  
Corporate expectations of input and product prices 6 months ahead 2002-2019<sup>1</sup>



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

(Chart VI-3). This is due in part to this past summer's drop in petrol prices, which are excluded from estimates of underlying inflation. The dispersion of various measures of underlying inflation has also increased recently, suggesting greater uncertainty about the estimates.

As is discussed in Chapter III, demand in the residential real estate market has eased concurrent with an increase in supply. Imputed rent, or owner-occupied housing expense, has risen by 2.6% in the past twelve months, and the pace of the increase has eased steadily in 2019 to date, even though it picked up somewhat in October. The contribution of the housing component to inflation has weakened since July. In October, housing accounted for just over one-fourth of twelve-month inflation (Chart VI-4).

### Imported inflation has tapered off again ...

The króna has been relatively stable since the last *Monetary Bulletin* and is slightly lower than it was a year ago. Imported inflation has eased in recent months, to 2.3% year-on-year in October (Chart VI-5). The twelve-month rise appears to have peaked at 4.3% in August and, in all categories of imported goods, has lost pace since. It is noteworthy that in general, firms appear not to have fully passed the autumn 2018 depreciation of the króna, measuring over 10%, through to prices. As is discussed in Box 2 on the findings from a recent survey of firms' pricing decisions, there are signs that a depreciation affects consumer prices less now than it did just over a decade ago. Furthermore, the survey results suggest that the impact of exchange rate movements on pricing decisions is more symmetric than it was previously. Various other factors have also reduced companies' need and opportunity to raise prices in response to recent cost increases; for instance, global disinflation, increased competition, and weaker economic activity. And finally, inflation expectations have become better anchored at the target (see below).

### ... and fewer executives expect to have to raise product prices

According to Gallup's autumn survey of executives from Iceland's 400 largest firms, the outlook is for a possible weakening of inflationary pressures in the coming term. Just over one-third of respondents expected to have to raise the price of their own goods and services in the next six months, as compared with more than half in the spring 2019 survey (Chart VI-6). The share of executives planning price hikes is now at its smallest in two years. Furthermore, fewer executives expect input prices to rise in the next six months. The survey revealed that 60% of respondents cite wage costs as the strongest factor in their decisions to raise their prices. This is a marked decline from the surveys taken in spring 2019 and autumn 2018 (both of which were carried out before private sector wage agreements had been finalised). Almost one-third of executives said that competition and markups were the strongest factor in decisions to lower their prices. This is a slight decline from the survey taken a year ago (Chart VI-7).

Indicators suggest that domestic inflationary pressures have peaked. The price of domestic goods in the CPI was up by 2.8% year-on-year in October, and the contribution of these goods to inflation

has weakened since the summer. The twelve-month rise in producer prices for goods sold domestically has also eased slightly, to just over 5% in Q3. On the other hand, the contribution of private services to inflation has increased in recent months and is similar to the contribution from the housing component. Private services prices have risen by 3.4% in the past twelve months, as compared with 1.3% in July.

### Wage share above its historical average

In September, Statistics Iceland published revised figures on wages and related expenses. According to the new figures, the wage level was an average of 0.5% lower in 1997-2018 than the previous numbers had indicated. The revision did not have the same impact on year-on-year wage changes, which were virtually the same as before. Statistics Iceland also published revised gross factor income figures, although the revision there was not as large. As a result, the wage share (the ratio of wages and related expenses to gross factor income) was slightly lower overall than previously assumed. It measured 63.7% in 2018, or 0.6 percentage points less than the previous figures had indicated. The 2018 figure was also 3.5 percentage points above the twenty-year average (Chart VI-9).

### Outlook for unit labour costs is largely unchanged

The impact on the general wage index of the wage agreements finalised in 2019 to date has been in line with the Bank's forecasts. Similarly, wage drift has been broadly as the Bank had projected. In Q3/2019, the wage index increased by 0.6% quarter-on-quarter and about 4.3% year-on-year (Chart VI-10). The year-on-year increase in wages has somewhat lost pace, partly reflecting the fact that wage settlements for public sector employees and a small segment of the private sector were still not concluded in Q3. A large proportion of those contracting parties reached an agreement to postpone negotiations until after the summer, in return for a one-off payment to wage-earners at the end of July. However, that one-off payment is not included in the wage index, which only takes into account regular payments made each month.

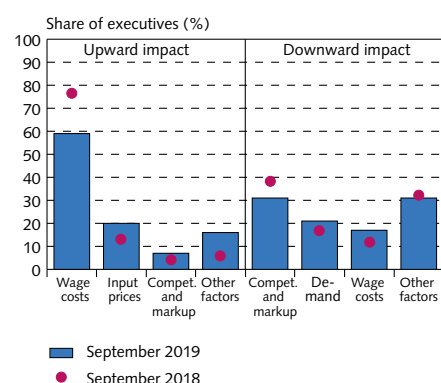
Although some public sector workers reached an agreement in late October, the general settlement with public workers is set to be concluded at a later date than was assumed in the Bank's August forecast. In other respects, the outlook for wage developments is largely unchanged. Wages per hour are expected to increase by 5.7% between annual averages in 2019, as opposed to 6.1% in the August forecast. The outlook for productivity growth has also improved slightly from the August forecast (see Chapter V), and as a result, unit labour costs will rise less than was forecast in August, or 6.1% instead of 6.8%.

## Inflation expectations

### Short-term inflation expectations have declined by most measures ...

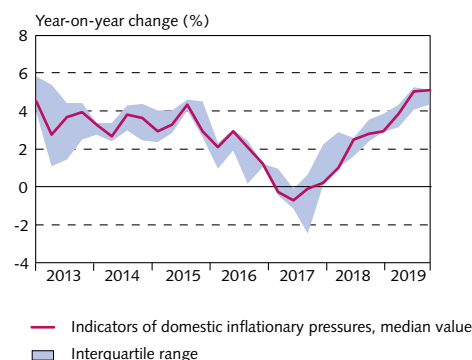
By most measures, short-term inflation expectations have fallen since August. According to Gallup's autumn survey, households' and businesses' one-year inflation expectations fell between surveys. House-

Chart VI-7  
Firms' price-setting decisions<sup>1</sup>



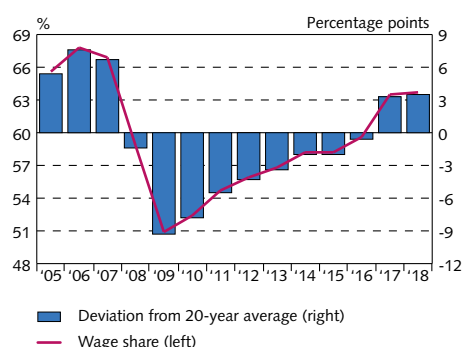
1. Executives' responses concerning which factors would have the strongest impact on their price-setting decisions over the coming six months.  
Source: Gallup.

Chart VI-8  
Domestic inflationary pressures<sup>1</sup>  
Q1/2013 - Q3/2019



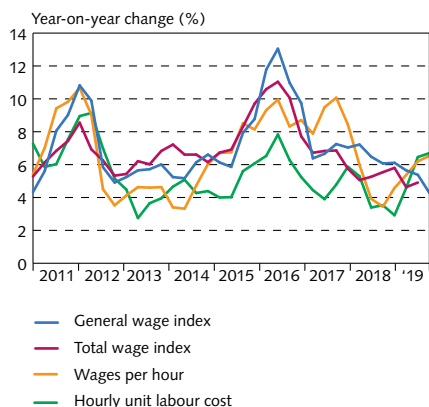
1. The shaded area includes five indicators of domestic inflationary pressures. The indicators are unit labour costs (moving average), the GDP price deflator, prices of private services and domestic goods, and producer prices of goods sold domestically. Central Bank baseline forecast Q3/2019 for GDP price deflator and unit labour costs.  
Sources: Statistics Iceland, Central Bank of Iceland.

Chart VI-9  
Wage share 2005-2018<sup>1</sup>



1. Wages and related expenses as a share of gross factor income. The 20-year average is 60.2% (1999-2018, base 1997).  
Sources: Statistics Iceland, Central Bank of Iceland.

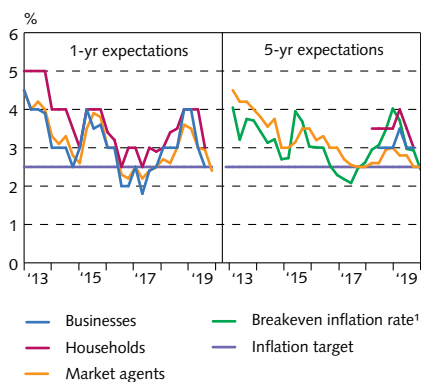
Chart VI-10  
Different measures of wages<sup>1</sup>  
Q1/2011 - Q3/2019



1. Wages per hour are based on annual figures for the wage portion of wages and related expenses according to the production accounts, as a share of total hours worked according to the Statistics Iceland labour force survey. Wages per hour and a four-quarter moving average for unit labour costs are based on Central Bank estimates for the first three quarters of 2019.

Sources: Statistics Iceland, Central Bank of Iceland.

Chart VI-11  
Inflation expectations  
Q1/2013 - Q4/2019



1. The most recent value is the average of daily values from 1 October through 1 November 2019.

Sources: Gallup, Central Bank of Iceland.

holds expect inflation to measure 3% in one year's time, and businesses' expectations have fallen back to the inflation target. Market agents' one- and two-year inflation expectations are also at target, as is the breakeven inflation rate in the bond market (Table VI-1 and Chart VI-11).<sup>1</sup>

### ... and long-term inflation expectations in the market have aligned with the target

According to Gallup's autumn survey, households and businesses expect inflation to average 3% over the next five years. In the case of households, expectations have fallen relative to the summer 2019 and autumn 2018 surveys. Market agents' long-term inflation expectations remain at target and are down by ½ a percentage point since autumn 2018. The five- and ten-year breakeven inflation rate in the bond market has fallen steeply in the recent past, to an average of 2.4% in Q4 to date. Significant progress has therefore been made in bringing inflation expectations back to target after the spike in late 2018.

Table VI-1 Inflation expectations (%)<sup>1</sup>

	Q4 2019	Q3 2019	Q4 2018	Q4 2019	Q3 2019	Q4 2018
	1 year			2 years		
Businesses	-	2.5	4.0	-	3.0	3.5
Households	-	3.0	4.0	-	3.2	4.0
Market agents	2.4	3.0	3.6	2.5	2.5	3.2
Breakeven inflation rate	2.7	3.1	3.5	2.5	3.0	3.8
	5 years			10 years		
Businesses	-	3.0	3.0	-	-	-
Households	-	3.0	3.5	-	-	-
Market agents	2.5	2.5	3.0	2.5	2.6	2.9
Breakeven inflation rate	2.4	2.8	4.0	2.4	2.7	4.1

1. The most recent Gallup surveys of corporate and household inflation expectations were carried out in September 2019, and the Central Bank's survey of market agents' expectations was conducted at the end of October 2019. Households and businesses are not asked about ten-year inflation expectations. The most recent figure for the breakeven inflation rate in the bond market is the average of daily values from 1 October to 1 November 2019.

Sources: Gallup, Central Bank of Iceland.

1. The breakeven inflation rate is calculated from the spread between indexed and nominal bond interest rates. It should be borne in mind, however, that the breakeven rate also includes a liquidity risk premium and an inflation risk premium.

Long-term real interest rates in Iceland have fallen by a full 4 percentage points in the past twenty-five years and have probably never been lower than they are at present. A similar pattern can be seen internationally. Demographic changes and declining productivity growth have been cited as the chief causes of this trend. These factors have combined to boost worldwide saving and dampen demand for capital, thereby pressing long-term equilibrium real rates downwards. The changes have also led to a decline in the central bank rate that, other things being equal, is needed to keep inflation at target and ensure full factor utilisation – in other words, the “neutral” rate. Before the financial crisis, Iceland’s neutral real rate was estimated at 4.5%. By now, however, it is thought to have fallen to 2%.

### Global interest rates have fallen to historical lows

The Central Bank of Iceland lowered its key interest rate to 3.25% in October. In the past five months it has cut the key rate by a total of 1.25 percentage points. The Bank’s interest rates are now at their lowest since the adoption of the inflation target in March 2001. As Chart 1 shows, long-term nominal bond rates have also fallen steeply and are now at their lowest in a quarter-century.<sup>1</sup> The same is true of long-term real rates, which have been around 1% since mid-year. Chart 1 also shows how the past few years’ decline in long-term nominal and real rates has generally gone hand-in-hand with the decline in the Central Bank’s nominal and real rates.

Charts 2 and 3 show that the decline in domestic nominal and real rates has also coincided with the decline in global interest rates. Nominal rates in major advanced economies averaged about 5% over the period from 1995 through 2007, but in the past decade they have fallen by nearly 4 percentage points, to just over 1% (even turning negative in some countries, such as Germany). Global nominal rates also fell in the 1980s, but that decline primarily reflected the drop in global inflation and inflation expectations following the inflationary 1970s. However, the decline in nominal rates since the mid-1990s coincides with the global drop in real rates. In major advanced economies, real rates averaged 2.7% in 1995–2007, whereas in the past decade they have averaged -1%. This decline of 3.7 percentage points is well in line with the drop in nominal rates.

For comparison, long-term nominal rates in Iceland averaged 8.7% in 1995–2007 but have averaged 5.7% since 2010. They have therefore fallen by 3 percentage points, about the same as in the US but slightly less than in the UK and Germany. Domestic long-term real rates have followed a similar pattern, averaging 5.1% in 1995–2007 and then averaging 2.3% in the past decade.

Charts 4 and 5 show clearly how unusual this is in historical terms. Chart 4 gives the key rate at the Bank of England (BoE) since its founding in 1694. Until 2008, the bank’s interest rates were never below 2%, but since then they have been below 1%, bottoming out at 0.25% in 2016. This is a lower rate than the BoE considered necessary to support the economy at several critical junctures: at the end of the English Civil War, when the bank was established; during the Napoleonic Wars early in the nineteenth century; and during both World War I and World War II in the twentieth century. By the same token, long-term interest rates are probably at an all-time low, as can be seen in Chart 5, which shows that over the past century and a half, rates have averaged 4½–5% in major advanced economies, well above the current level.

1. A comparison with data further back is complicated by the fact that for a long time, interest rates were not market-determined. It can be inferred from the data that are available, however, that interest rates in Iceland are probably at a historical low.

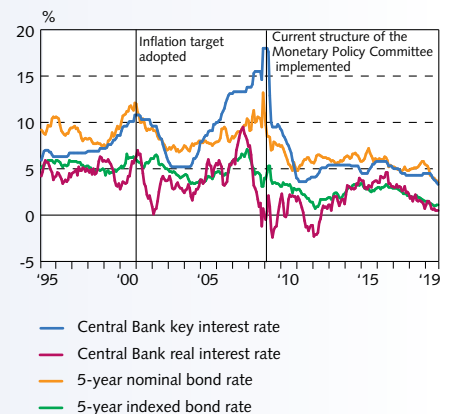
## Box 1

### Global decline in real interest rates and the Central Bank’s neutral rate

Chart 1

Central Bank of Iceland interest rates and bond interest rates<sup>1</sup>

January 1995 - October 2019

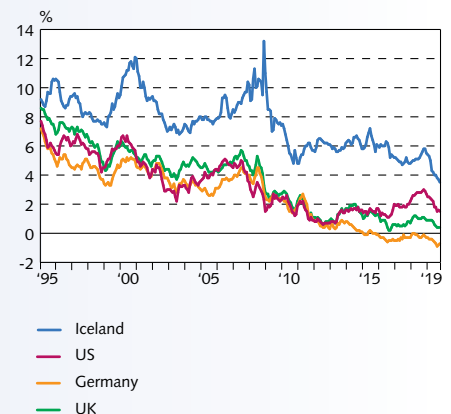


1. Real Central Bank rate based on current twelve-month inflation. Five-year rate estimated from government bond zero-coupon yield curve. Monthly averages. Source: Central Bank of Iceland.

Chart 2

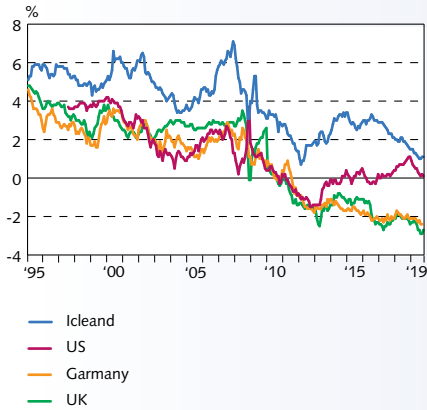
Nominal government bond rates<sup>1</sup>

January 1995 - October 2019



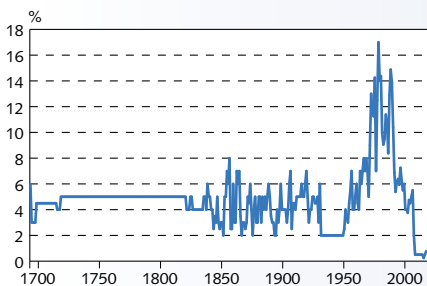
1. Nominal five-year rate estimated from government bond zero-coupon yield curve. Monthly averages. Sources: Thomson Reuters, Central Bank of Iceland.

Chart 3  
Real government bond rates<sup>1</sup>  
January 1995 - October 2019



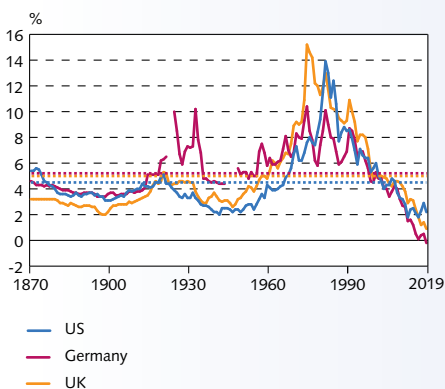
1. Real rate on five-year government bonds estimated from zero-coupon yield curves of indexed rates except for Germany (real rate based on five-year inflation expectations). Monthly averages.  
Sources: Bundesbank, Thomson Reuters, Central Bank of Iceland.

Chart 4  
Bank of England key interest rate 1694-2019<sup>1</sup>



1. Year-end figures except for 2019. The 2019 figure is the end-October interest rate.  
Source: Bank of England.

Chart 5  
Long-term interest rates in the US, Germany, and the UK 1870-2019<sup>1</sup>



1. Ten-year government bond rate (annual average). Data for 1870-2016 are from the database of Jordá *et al.* (2019). The 2019 average is based on available data year-to-date. Broken lines show averages for the entire period.  
Sources: Jordá *et al.* (2019), Thomson Reuters.

### What explains the past two decades' declining interest rates?

In general, long-term real interest rates are determined by how much wealth individuals want to hold at a given real interest rate – i.e., the supply of savings – and how much firms are willing to invest at a given real rate – i.e., demand for capital. The underlying reasons for the fall in international real rates could therefore be reflected both in factors that encourage individuals to save more than before and in factors that have caused a slowdown in global investment.

The factor generally considered most important in explaining the worldwide decline in real interest rates over the past two decades is increased worldwide saving, which in turn stems from an aging population caused by lower birth rates and increased longevity (see, for instance, Rachel and Smith, 2015, and Brand *et al.*, 2018). In general, people accumulate savings during their working lives and tap them upon retirement. As the average age of the population has risen, people's tenure in the job market has grown longer, as has the time they have to amass savings. This is compounded by the fact that people expect to live longer after they retire, which increases the need to build up savings for their old age. Added to this is a greater tendency among emerging market economies and other small countries to self-insure by building up contingency funds in the wake of the Asian crisis of the 1990s, as well as increased caution among households and businesses in the wake of the recent global financial crisis, which prompted an increase in precautionary saving. Moreover, increased income inequality in some advanced economies may have led to an increase in global saving, as higher-income individuals tend to save proportionally more than those with lower incomes.

In the developed world, investment has also been unusually weak in historical context in the past decade. To some extent, this is a consequence of the financial crisis and the uncertainty that took hold afterwards. On the other hand, it is also likely that the reduction in investment activity is linked to the fact that expected returns on investment are weaker than before, as can be seen in a slowdown in productivity growth among advanced economies. There is debate about the extent to which weaker productivity growth reflects the repercussions of the financial crisis versus the extent to which it is a symptom of deeper and more persistent factors (see, for example, Summers, 2014). In any event, it is likely that declining demand for capital at a given real interest rate level, which can be seen in weaker investment activity, has played a part in the worldwide drop in real interest rates in the past two decades.

### The same trends can be observed in Iceland

Chart 6 shows how these underlying factors have developed in Iceland over the past quarter-century. As can be seen, population growth has been slower, on average, in the post-crisis period, owing to the offsetting effects of a lower birth rate and a steep rise in immigration by foreign nationals. A large percentage of these foreign nationals are of working age, and this, together with a longer average life expectancy, has significantly lowered the dependency ratio, in a pattern similar to that in other advanced economies. As the chart shows, the decline in the dependency ratio is due primarily to a reduction in the percentage of persons under age 16, while the percentage of persons aged 75 and over has risen.<sup>2</sup> Predictably, these demographic changes have coincided with a steep rise in national saving, although it is likely that increased saving is also a precaution-

2. Unlike what has been seen widely in other countries, labour participation among the elderly has remained broadly unchanged in Iceland. An increase in the number of working elderly could mitigate the need to accumulate savings to finance spending in later life.

ary response to the lessons from the financial crisis. Furthermore, in recent years, investment activity has been weaker than it was before the financial crisis, although it has picked up somewhat in the past few years. This coincides with a reduction in average productivity growth relative to the pre-crisis average.

### The Central Bank's neutral rate has probably fallen

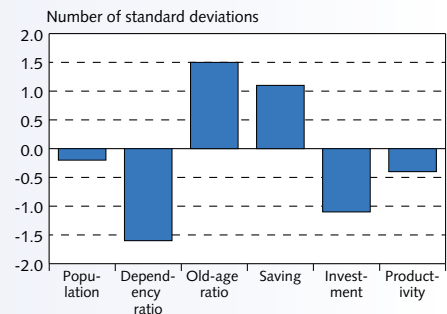
The steep decline in global real interest rates suggests that the long-term equilibrium real rate – i.e., the real rate that balances supply and demand for capital – has fallen. This affects monetary policy formulation worldwide, as a lower long-term equilibrium real rate means that the central bank rate needed to keep inflation at target and ensure full factor utilisation is lower than before. In other words, the neutral central bank rate is probably lower than it used to be.<sup>3</sup> Although the above-described changes in the proclivity to save and invest are probably the main reasons for the gradual decline in the neutral rate, other factors that could cause it to fluctuate around its long-term equilibrium level have pulled in the same direction. For example, uncertainty grew and risk premia rose during the aftermath of the financial crisis. This led to a deterioration in private sector financial conditions (absent changes in central bank rates), and all else being equal, lower interest rates were needed to achieve monetary policy goals. The increased levies imposed on the financial system during the post-crisis period, with the aim of boosting the system's security and resilience, probably had a similar impact.

Although the neutral rate is important for understanding monetary policy and its formulation, as well as understanding how interest rates move over time, it cannot be used directly to guide specific interest rate decisions, as the neutral rate cannot be observed and must therefore be estimated using statistical methods, and such estimates are always subject to uncertainty. A number of recent studies indicate, however, that it has fallen markedly in recent decades (see, for instance, International Monetary Fund, 2014; Rachel and Smith, 2015; and Brand *et al.*, 2018). The findings of Holston *et al.* (2017) suggest, for example, that in major advanced economies, the neutral real rate during the pre-crisis period was 2-2½%, whereas it is now 1½% in the UK and Canada, ½% in the US, and about 0% in the euro area (Chart 7). This represents a decline of 1-2½ percentage points. A similar trend has been seen in the other Nordic countries. Before the financial crisis, the neutral rate was estimated at 2-3% in Norway and Sweden, whereas it is now estimated to have fallen to 0-1% in Norway and ½-2% in Sweden.<sup>4</sup>

The method used most often to estimate the neutral rate is based on Laubach and Williams (2003). The Laubach-Williams model estimates the neutral interest rate from its theoretical long-term relationship with the economy's trend growth rate.<sup>5</sup> Among other methods, Daniélsson *et al.* (2016) use a version of this method, adjusted for small open economies (see Kirker, 2008), to estimate the neutral real rate in Iceland. Chart 8 shows an updated estimate of the rate, together with the Central Bank's real rate as measured in

3. This interest rate is variously referred to as the neutral interest rate, the short-term equilibrium interest rate, or the natural interest rate.
4. See "Estimates of the neutral real interest rate" in Norges Bank's *Monetary Policy Report* 2/2018 and "The repo rate in the long run" in the Swedish Riksbank's February 2017 *Monetary Policy Report*.
5. In essence, the estimate of the real neutral rate is based on its long-term relation with potential output:  $r^n = (1/\sigma)g + z$ , where  $r^n$  is the neutral real rate,  $\sigma$  is the intertemporal elasticity of substitution,  $g$  is the trend rate of GDP growth, and  $z$  captures other economic factors (domestic and international) that affect the neutral rate. Because none of these variables is directly observable, they must all be estimated with the help of an underlying macroeconomic model.

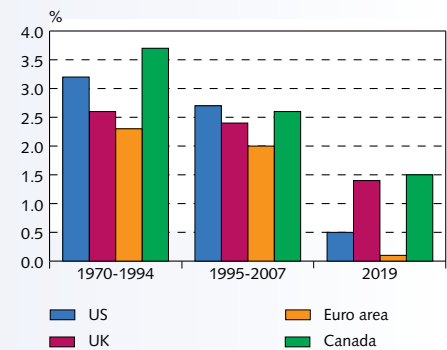
Chart 6  
Change in factors underlying saving and investment decisions in Iceland<sup>1</sup>



1. Change between 1995-2007 average and 2008-2018 average as a ratio to total sample standard deviation. The dependency ratio is the population under age 16 and over age 74 as a share of the working-age population. The old-age dependency ratio is the population over age 74 as a share of the working-age population. For population and productivity, a comparison of average growth rates for the periods is shown. For national saving and investment, a comparison of average ratios to GDP is shown.

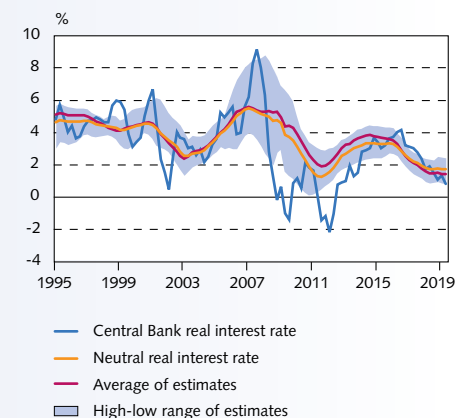
Sources: Statistics Iceland, Central Bank of Iceland.

Chart 7  
Neutral real central bank interest rates in selected advanced economies<sup>1</sup>



1. The estimate for 2019 is the H1/2019 average.  
Source: Holston *et al.* (2017).

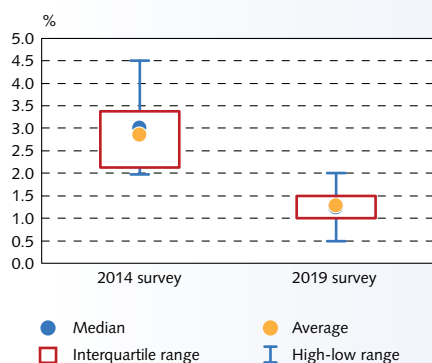
Chart 8  
Central Bank of Iceland neutral real interest rate<sup>1</sup>  
Q1/1995 - Q2/2019



1. Observed real rate based on current twelve-month inflation. Neutral real rate estimated according to Kirker (2008). The average and the high-low range of different estimates based on various versions of the Kirker (2008) and Berger and Kempa (2014) models.  
Source: Central Bank of Iceland.



Chart 9  
Market agents' estimate of the neutral real rate<sup>1</sup>



1. Survey taken among market agents in August 2014 and May 2019. Respondents were asked, "What domestic real interest rate would in your view be sufficient to ensure that output was at its long-term potential and inflation at target?".  
Source: Central Bank of Iceland.

terms of current twelve-month inflation. As the chart indicates, the neutral rate appears to have fallen below its pre-crisis level. It averaged 4.3% in 1995-2007, then fell to an average of 2.8% after the financial crisis, and has averaged 1.9% in the past three years. Inevitably, the estimates are subject to uncertainty, particularly for the period including and surrounding the financial crisis. The chart shows, for example, the high-low range of the estimate using various versions of the Kirker (2008) and Berger and Kempa (2014) models. The estimates range from 3% to 5½% before the crisis but have declined to 1¼-2¾% in the past three years.

The underlying assumption concerning the neutral real rate in the Central Bank's baseline forecasts reflects this estimate. Before the financial crisis, the Bank's baseline forecasts assumed that the neutral real rate was 4.5%, which is consistent with measured real rates in 1995-2007. After the crisis, the real rate is assumed to have fallen to 2%, which is in line with the average of measured real rates over the last decade. This is a more pronounced decline than in the Bank's previous estimate, according to which the neutral real rate had fallen to 3% after the crisis. However, the revised assumption concerning the neutral real rate is closer to market agents' estimates, which average about 1¼%, according to a recent Central Bank survey (Chart 9).

The Bank's neutral real rate is therefore estimated to have fallen by 2½ percentage points from its pre-crisis level. This is in line with the decline in the US and the eurozone, as Chart 7 indicates. The nominal interest rate that corresponds to a neutral monetary stance – i.e., the rate that is neither expansionary nor contractionary – has therefore fallen significantly in the past decade. If the neutral real rate is 2%, the corresponding neutral nominal rate is 4.5% (the neutral real rate plus the Bank's 2.5% inflation target), whereas before the crisis it was 7%.<sup>6</sup> The Bank's key interest rate is currently a full 1 percentage point below this neutral level, which means that monetary policy is highly expansionary during the current slowdown in activity.

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6. When comparing neutral nominal rates with those in other countries, it is important to bear in mind that Iceland's inflation target is 0.5 percentage points higher than that in other advanced economies.

How firms decide their goods and services prices plays an important role in both developments in the general price level and transmission of monetary policy; therefore, it is important that central banks understand the drivers of the decisions. In summer 2008, the Central Bank of Iceland conducted a survey of domestic firms' pricing decisions (Ólafsson *et al.*, 2011). At that time, inflation measured 12.4% and had averaged just over 5% since the inflation target was adopted in 2001. Inflation has subsided markedly in recent years, however, averaging close to the 2.5% target since the beginning of 2012. The Bank therefore decided to repeat the survey, which was conducted by Gallup during the period from 18 March through 20 April 2019. The sample included 279 businesses with four or more employees (Guðlaugsdóttir *et al.*, 2020). As before, the objective of the survey was to gain a fuller understanding of the factors that affect Icelandic firms' pricing decisions, the frequency of price changes, the effects of exchange rate movements and wage costs on pricing, and whether these factors have changed in the past decade.

### Price change frequency has fallen

Before a price change is made, a firm will examine whether it is profitable to make the change, as there can be direct costs involved, such as the cost of changing price tags. Furthermore, price changes can affect both demand and the firm's reputation, thereby affecting sales and market share. If a company considers it profitable to change prices, it does so following such an examination. According to the survey, just under 40% of firms review their prices on a regular basis, and nearly half usually review their prices regularly but also following specific events (Chart 1). These results are similar to those from the 2008 survey, which is interesting because the Icelandic economy has been more stable in recent years than before the crisis, and inflation has been much lower and less volatile. Because of these factors, it could have been expected that a larger share of firms would review their prices only at regular intervals, as there are fewer specific events calling for a review of prices. However, this may reflect the fact that at the time the 2019 survey was taken, inflation had spiked to about 3% following the depreciation of the króna the previous autumn, owing to concerns about the status of airline WOW Air and pessimism about upcoming wage negotiations and the overall economic outlook (see Chapter III). The rise in inflation and inflation expectations following the depreciation of the króna, together with uncertainty about the overall outlook, could therefore have affected the survey results to a degree; however, this may be offset somewhat by the relatively favourable outcome of the wage settlements negotiated around the same time.

Another noteworthy point is the decline between surveys in the share of firms that consider prospects for the future a more important factor in pricing decisions than the assessment of the current situation and recent developments. Apparently, future prospects weigh heavier in the decisions of large companies, which presumably are better able to assess the outlook than their smaller counterparts, including by tasking some of their employees with financial planning.<sup>1</sup> There are also signs that firms whose imported inputs account for a large share of total production costs give closer consideration to the current situation and past developments when setting prices – an understandable tendency in view of such firms' sensitivity to exchange rate movements, which are difficult to predict.

The survey results show that, in the twelve months preceding the survey, firms had examined less often whether there were

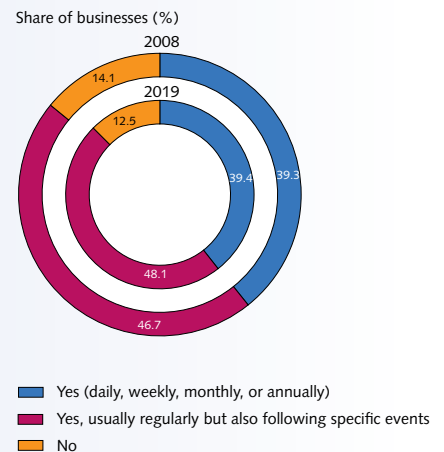
1. This is well documented in international research; see, for instance, Ball (2000) and Kumar *et al.* (2015).

## Box 2

### Firms' pricing decisions

Chart 1

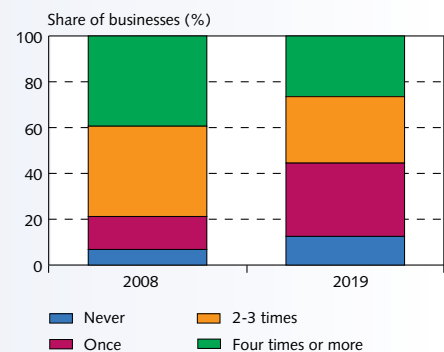
Is the price of the main product reviewed on a regular basis?



Sources: Gallup, Central Bank of Iceland.

Chart 2

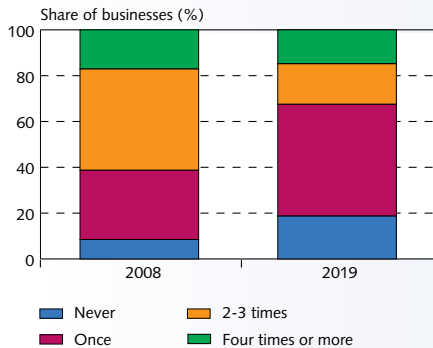
In the past 12 months, how often has your company examined whether there were reasons to change the price of its main product?



Sources: Gallup, Central Bank of Iceland.

Chart 3

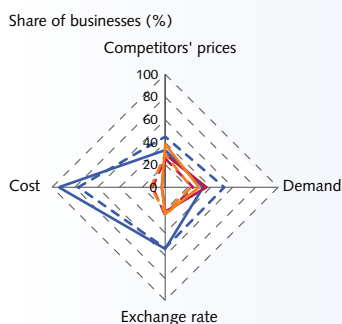
In the past 12 months, how often has your company actually changed the price of its main product?



Sources: Gallup, Central Bank of Iceland.

Chart 4

How important are the following factors in a decision to change the price of your company's main product?

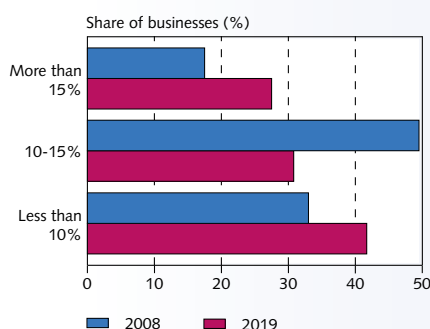


— Very important for increase  
 — Irrelevant for increase  
 — Unimportant for increase  
 — Very important for decrease  
 — Irrelevant for decrease  
 — Unimportant for decrease

Sources: Gallup, Central Bank of Iceland.

Chart 5

How much must the króna depreciate in one quarter in order for your company to raise the price of its main product?



Sources: Gallup, Central Bank of Iceland.

reasons to change the price of their main product (without having changed it) than in the 2008 survey (Chart 2). This is in line with the past few years' decline in inflation and inflation volatility. However, a larger drop between surveys could have been expected because, according to the median response, firms reviewed their prices 2.5 times over a twelve-month period, as opposed to 3 times in the last survey.

Studying how often firms changed the price of their main product over a twelve-month period reveals, however, that price changes occur less often now than they did a decade ago. This is also in line with expectations. About half of respondent firms had changed their prices once in the twelve months preceding the survey, and just under a third had changed their prices two or more times (Chart 3). In the previous survey, about 30% of firms reported having changed their prices once during the preceding twelve months, and a full 60% had changed them two or more times.

### Exchange rate pass-through to prices appears more symmetric than suggested by the previous survey

Survey participants considered their costs to be the most important factor underlying both upward and downward price changes (Chart 4). Just over half of firms considered movements in the exchange rate of the króna an important factor in decisions either to raise prices or to lower them. Therefore, exchange rate movements appear to have a more symmetric impact on pricing decisions now than they did just over a decade ago, when a much larger number of firms considered exchange rate movements a factor in price hikes more often than in price cuts.

That said, the survey results are not unambiguous as regards the impact of the exchange rate on the price level. When firms were asked how much the króna would have to depreciate in a single quarter before they would raise prices, nearly 42% responded that a depreciation of less than 10% would suffice, up from one-third of respondents in 2008 (Chart 5). On the other hand, nearly 28% of firms specified that the króna would have to depreciate by more than 15% in a single quarter, up from just under 18% of firms in the last survey.

When respondents were asked how much the króna would have to appreciate in a single quarter before they would lower their prices, the results were similar to the responses to the corresponding question about a depreciation (Chart 6). This is another indication that the impact of exchange rate movements on pricing decisions is more symmetric now than it was a decade ago. Just under 40% of respondents answered that the króna would have to rise by less than 10% in a given quarter, as opposed to one-third in 2008. In addition, the share that considered an appreciation of more than 15% necessary was about 30%, broadly the same as in the previous survey. It seems, then, that firms are more inclined to pass a currency appreciation through to the price level by lowering their prices than they were a decade ago.

### Price changes are less frequent among firms with relatively high wage costs

It is noteworthy that the ratio of wage costs to total production costs has risen markedly in the past decade. In 59% of respondent firms, wage costs account for more than 40% of total expenses, up from 42% of firms in the last survey (Chart 7). To some degree, this reflects the large pay raises implemented in recent years, but it is probably affected as well by the boom in tourism, a labour-intensive sector. The survey shows that wage costs weigh heaviest in services sectors. It appears that firms with significant wage costs change their

prices less often than other firms do. This is probably because wages are less flexible than, for instance, imported input prices. About  $\frac{3}{4}$  of firms whose wage costs account for a large share of their total expenses changed their prices once or not at all during the twelve-month period covered by the survey (Chart 8), compared to about 40% in the 2008 survey.

Firms whose wage costs account for a large share of their total expenses are also more likely to base their pricing decisions on developments in the consumer price index. This could make price increases more persistent. Firms that rely heavily on imported inputs, for example, are likely to raise prices in the wake of a currency depreciation. The general price level then rises, and because firms with proportionally high wage costs are likelier to change their prices to accord with the general price level, they will also raise prices even though their largest expense item has not changed. This could also be seen in the last survey. In that survey, about one-third of firms with significant wage costs reported that developments in the general price level affected their pricing decisions most strongly. That share has fallen to 17% in the current survey. Overall, the number of firms that set the price of their main product in response to the general price level has fallen (Chart 9). To some extent, this decline in the number of firms that align prices with the general price level (regardless of developments in their own costs or developments in demand) probably reflects greater price stability and more firmly anchored inflation expectations.

#### Do firms think competition has increased?

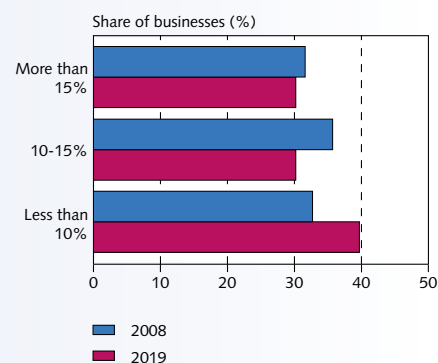
There are signs that competition has increased in recent years:  $\frac{3}{4}$  of survey participants were of the view that it has, and the share of firms reporting that there are few competitors in the market has declined (Chart 10). Interestingly, firms that are of the view that competition has not stiffened also use a simpler pricing rule – for instance, they follow the general price level or rely on a fixed markup on their costs – whereas firms that consider themselves engaged in stronger competition are more likely to consider competitors' prices or rely on a variable markup. The share of firms that rely largely on competitors' prices when setting their own prices has risen, which indicates growing competition (Chart 9).

#### The impact of e-commerce and digital technology on pricing

Adoption of digital technology has had wide-ranging effects on the economy in recent years, including on pricing. It is unclear what impact digital technology has on inflation (see, for example, Cavallo, 2017, and Sveriges Riksbank, 2015). First of all, it can be expected that the rise of e-commerce has lowered goods and services prices. Increased online shopping boosts competition and transparency, potentially forcing companies to reduce their markups. Just over a third of firms have already set up an online sales platform or plan to do so. Among these companies, about half are engaged in retail and wholesale trade and in hotel-, restaurant-, or transport-related operations. However, a large majority of firms report that e-commerce has little or no impact on their goods and services prices, while about 20% of retailers and wholesalers consider online shopping to have led to moderate or large price reductions. Second, digital technology can result in lower prices if firms' operating expenses fall and efficiency is enhanced. On the other hand, since it can be quite expensive to adopt digital technology, the overall effect on prices is unclear. About a third of firms report that adopting digital technology has reduced their operating expenses. The signs of this are clearest among companies in services (other than hotels, restau-

Chart 6

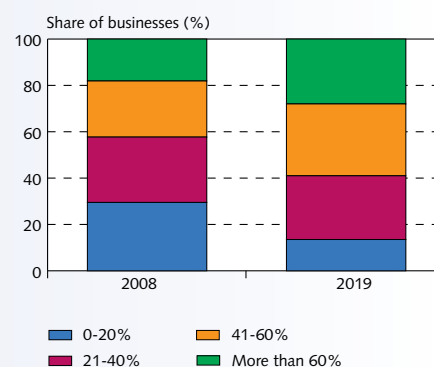
How much must the króna appreciate in one quarter in order for your company to lower the price of its main product?



Sources: Gallup, Central Bank of Iceland.

Chart 7

What percentage of the total production cost of your company's main product is due to wage costs?

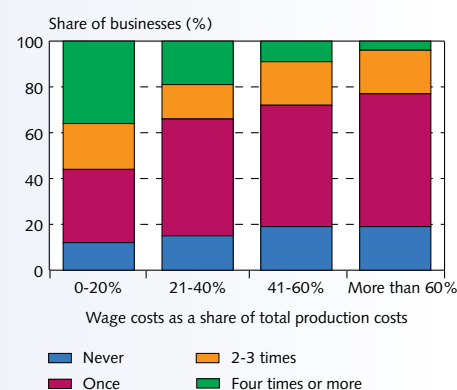


Sources: Gallup, Central Bank of Iceland.

Chart 8

In the past 12 months, how often has your company actually changed the price of its main product?

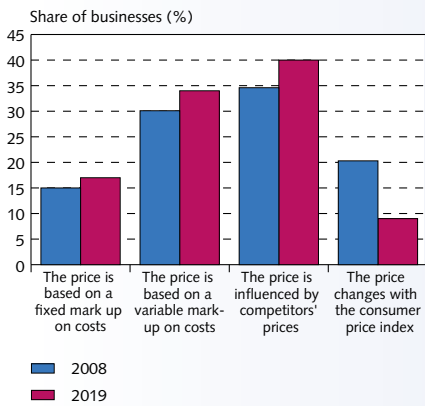
Sorted by the share of wage costs



Sources: Gallup, Central Bank of Iceland.

Chart 9

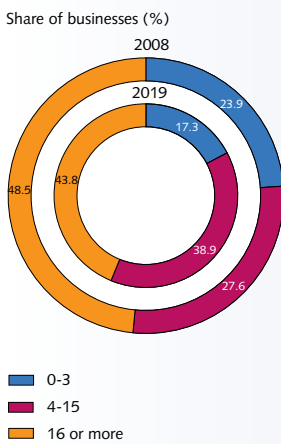
Which of the following statements best applies to the price setting method your company uses for its main product?



Sources: Gallup, Central Bank of Iceland.

Chart 10

How many competitors are there in the domestic market for your company's main product?



Sources: Gallup, Central Bank of Iceland.

rents, and transport). In those sectors, about half of firms report that digital technology has led to lower operating expenses.

### Summary

Many of the survey responses indicate clearly that economic conditions have improved since the previous survey was carried out. Inflation has declined and is more stable than before, the króna has been relatively stable, the relative weight of economic sectors has changed, and competition has increased. Firms now appear both to review and to change prices less often than they did a decade ago, probably reflecting to some extent the improvement in monetary policy conduct.

Developments in costs are of paramount importance in firms' pricing decisions, and there are signs that the impact of exchange rate movements on pricing decisions is now more symmetric than before. Firms are now likelier to lower their prices following a currency appreciation, and a larger share of them report that a sizeable depreciation would be needed to prompt them to raise prices. These factors have doubtless played a part in the disinflation of the past few years. Given how steeply inflation and inflation expectations have fallen in recent years, it is interesting that 58% of firms – a larger share than in the last survey – consider it unlikely that inflation will be close to target in five years' time. To some extent, this may reflect the increase in inflation and uncertainty around the time the survey was taken, owing to then-recent difficulties in airline operations, labour disputes, and a depreciation of the króna.

Overall, the survey suggests that firms' price-setting behaviour is now more consistent with low and stable inflation than it was a decade ago. What also appears clear, however, is the importance of continuing to strengthen the credibility of monetary policy and of anchoring inflation expectations even more firmly. In international comparison, Iceland's episode of price stability is a relatively brief one; therefore, it could take more time for firms to believe inflation will remain at target in the long run than it would otherwise.

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The fiscal budget proposal for 2020 was introduced in Parliament in September. The macroeconomic assumptions behind the proposal are the same as those underlying the fiscal plan approved in June. Table 1 shows the forecast issued by Statistics Iceland in May, on which the estimates in the budget proposal are based. The forecast in *Monetary Bulletin 2019/2*, also published in May, is shown for comparison.<sup>1</sup>

**Table 1 Macroeconomic assumptions in the 2020 fiscal budget proposal**

	<i>Statistics Iceland forecast (%)</i>	<i>MB 2019/2 (%)</i>
Private consumption	2.8	2.9
Public consumption	1.3	2.1
Gross capital formation	6.2	10.4
Exports	2.5	2.4
Imports	3.6	6.7
Gross domestic product	2.6	2.4
Consumer price index	3.2	2.7
Unemployment	3.8	3.8
Trade-weighted exchange rate index (TWI)	0.2	-0.2
General wage index	5.5	4.7

Sources: Statistics Iceland, Central Bank of Iceland.

### Various assumptions in the 2020 fiscal budget proposal

**Wage assumptions:** The 2019 National Budget assumed a 3.1% weighted average wage increase, adjusted to reflect the fact that the increase applied only to seven months of the year. According to an assessment based on the private sector wage agreements made this past spring, Government employees' wages are assumed to rise by an estimated 4% year-on-year, on average. The revision of the wage assumptions for 2019 necessitates that wage expenses for 2020 be revised upwards by 2.6 b.kr. A weighted average increase of 3% is assumed for 2020. Expenditures stemming from wage increases during the year are estimated at 13.1 b.kr.

**Price assumptions:** The 2019 National Budget assumed that inflation would measure 2.9% during the year. The new budget proposal assumes that this assumption will be borne out; therefore, no adjustment in next year's indexation is required. As a result, the price update for other operating expenditures amounts to 3.2% for 2020, in line with the Statistics Iceland forecast. The cost of the price update is 6.6 b.kr.

**Exchange rate assumptions:** The exchange rate assumptions are based on the exchange rate of the króna on the first business day of August. The TWI is 1.7% higher than was assumed in the 2019 Budget. Institutions' budgetary authorisations will rise by 500 m.kr. as a result, owing mainly to foreign policy expenses and drug costs.

**Unemployment and social security benefits:** The budget proposal assumes that benefits will increase by 3.5% on 1 January 2020. The cost of this increase is estimated at 6.3 b.kr.

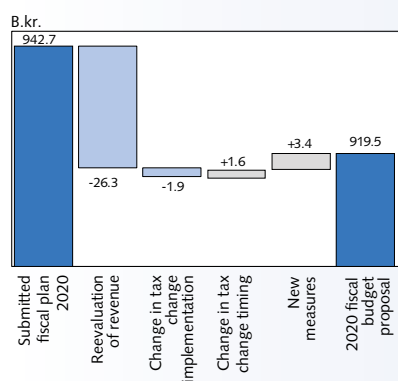
In all, the above-specified changes to budgetary authorisations in the 2020 budget proposal – changes in wages, benefits, prices,

1. The economic outlook for 2020 has deteriorated in the interim, and the Central Bank therefore assumes the GDP growth for the year will be weaker than in the May forecast (see Chapter IV).

## Box 3

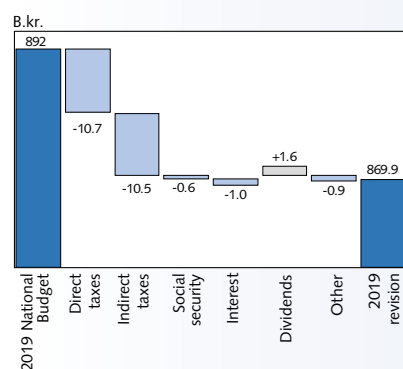
### Fiscal budget proposal for 2020

Chart 1  
Change in expected revenues from fiscal plan to 2020 budget proposal



Source: 2020 fiscal budget proposal.

Chart 2  
Revision of revenues from 2019 National Budget to August 2019 revision



Source: 2020 fiscal budget proposal.

Table 2 Changes in wages, benefits, prices, and exchange rate in 2020

Accrual basis	
Wage assumptions	
	B.kr.
Wage increases in 2019 in excess of budgetary assumptions	2.6
Estimated wage increases 2020	10.5
<b>Total wage increases</b>	<b>13.1</b>
Unemployment and social security benefits	6.3
General price level assumptions	6.6
Exchange rate assumptions	0.5
<b>Changes in wages, benefits, prices, and exchange rate</b>	<b>26.5</b>

Source: Fiscal budget proposal 2020.

and exchange rates, as well as increased unemployment and social security benefits – amount to just over 26 b.kr. (see Table 2).

Furthermore, it is assumed that changes in the tax system, both statutory and non-statutory (not yet passed into law), will reduce next year's Government revenues by just over 5 b.kr. (Table 3).

Table 3 Impact of tax changes on Treasury revenues in 2020

Accrual basis	
Statutory changes	
	B.kr.
Payroll tax reduction, 0.25 percentage points	-4.0
Carbon tax increase, 10%	0.6
<b>Total</b>	<b>-3.4</b>
Non-statutory changes	
Changes in personal income tax	-5.5
New green taxes	1.5
Further support for energy switching	-0.2
Changes in taxation of motor vehicles and petrol	0.9
Fees charged to tourists	0.5
Anti-tax fraud measures	1.0
<b>Total</b>	<b>-1.8</b>
<b>Total changes, statutory and non-statutory</b>	<b>-5.2</b>

Source: Fiscal budget proposal 2020.

### Changes on the revenues side

In the fiscal plan introduced in March, plans for several changes to the tax system were announced for 2020. Among them are a 0.25 percentage point reduction in the payroll tax, the first phase in a revision of the personal income tax system, a 10% increase in the carbon tax, and further anti-tax fraud measures. These plans have been incorporated into the fiscal budget proposal for 2020.

Chart 1 shows changes in the revenues side between the fiscal plan and the budget proposal. The re-estimation of the tax base led to a 26.3 b.kr. reduction in revenues, owing to changed economic assumptions for 2019 and 2020. Modifications in the design and timing of tax changes relative to the fiscal plan are more expensive by 300 m.kr., while new revenue measures will generate an additional 3.4 b.kr.

### Revision of 2019 revenue estimates

In the 2019 National Budget, revenues were estimated at 892 b.kr.; however, they are now assumed to total just under 870 b.kr. (Chart 2). Tax revenues are estimated to decline by 21.2 b.kr., and other revenues by 0.9 b.kr.

### Changes on the expenditures side

The main changes in 2019 expenditures from the 2019 National Budget to the 2020 budget proposal can be seen in Chart 3. The three most important increases are as follows: (1) committed expenditures for economic and structural changes, such as those relating to projected growth in the elderly and disabled population; (2) the estimated impact of changes in wages, prices, and the exchange rate; (3) an increase in Government expenditures relating to various categories and ministerial functions. Total expenditures for these three items will be 79 b.kr. more in 2019 than was assumed in the 2019 National Budget.

### Small deviations between fiscal plan and budget proposal

Based on the assumptions above, total revenues are only 300 m.kr. higher than in the fiscal plan and total expenditures 700 m.kr. higher. The fiscal budget proposal is therefore very similar to the fiscal plan as regards revenues, expenditures, and outcome.

### Primary surplus for 2020 in line with fiscal plan but narrows year-on-year

The 2020 fiscal budget proposal assumes that the primary balance will be positive by 48.4 b.kr., as compared with a surplus of 77.2 b.kr. in the 2019 National Budget. The primary surplus will therefore narrow by 1.1 percentage points of GDP between years, from 2.7% to 1.6% (Table 4). Various revenue and expenditure measures are assumed. Primary income is estimated at 910.1 b.kr., an increase of 29.6 b.kr. from the 2019 National Budget. The 2020 fiscal budget proposal assumes that primary expenditure will total 861.7 b.kr., as opposed to 803.3 b.kr. in the 2019 National Budget. Excluding changes in wages, exchange rate, and price level, the real increase in primary expenditure is 31.9 b.kr. According to the budget proposal, the interest balance is virtually unchanged between years. Including changes in the interest balance, the overall Treasury outcome is projected to be positive by 400 m.kr., which is in line with the fiscal strategy approved by Parliament in June.

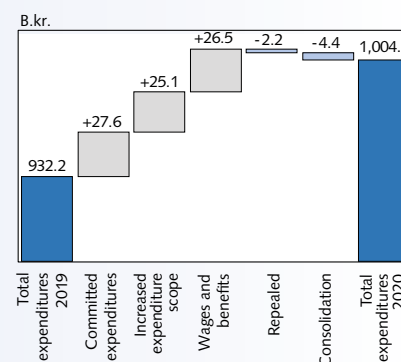
In estimating the fiscal stance, it is necessary to consider the degree to which the primary balance is affected by irregular revenue and expenditure changes and the degree to which the outcome simply reflects changes in overall economic activity. Chapter IV further analyses the outcome after adjusting for these automatic stabilisers, and Chapter I discusses the economic impact of the measures outlined in the budget proposal.

Table 4 Summary of fiscal outcome: 2019 National Budget and 2020 budget proposal

	B.kr.			% of GDP		Change in percentage points
	Budget 2019	Budget proposal 2020	Change In b.kr.	Budget 2019	Budget proposal 2020	
<i>National accounts basis</i>						
Primary revenues	880.5	910.1	29.6	30.7	29.6	-1.1
Primary expenditures	803.3	861.7	58.4	28.0	28.1	0.1
Primary balance	77.2	48.4	-28.8	2.7	1.6	-1.1
Interest income	11.2	9.3	-1.9	0.4	0.3	-0.1
Interest expense	59.4	57.4	-2.0	2.1	1.9	-0.2
Interest balance	-48.2	-48.0	0.2	-1.7	-1.7	0.0
Total revenues	891.7	919.5	27.8	31.1	30.0	-1.1
Total expenditures	862.7	919.1	56.4	30.1	29.9	-0.2
Overall balance	29.0	0.4	-28.6	1.0	0.0	-1.0

Source: Fiscal budget proposal 2020.

Chart 3  
Change in total expenditures between 2019 and 2020, by type



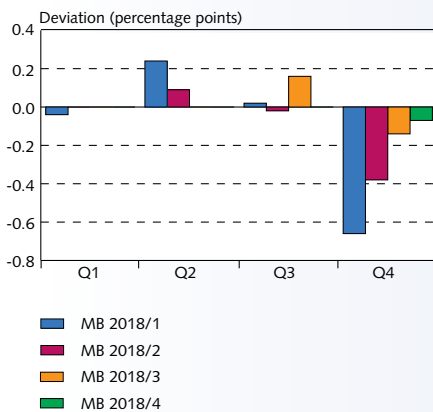
Source: 2020 fiscal budget proposal.



## Box 4

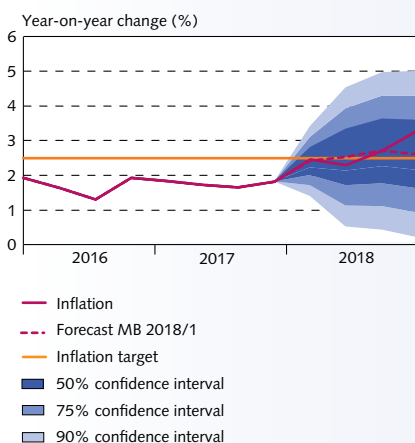
## The Central Bank of Iceland forecasting record

Chart 1  
Inflation forecasting errors in *Monetary Bulletin* 2018



Source: Central Bank of Iceland.

Chart 2  
Inflation forecast and confidence intervals  
*Monetary Bulletin* 2018/1  
Q1/2016 - Q4/2018



Sources: Statistics Iceland, Central Bank of Iceland.

The Central Bank's macroeconomic and inflation forecasts are prepared four times a year over a horizon of three years and are published in its *Monetary Bulletin*. The forecasts are based on models that present a simplified view of the economy: the equations of the models describe the economic relationships that are most important, while those less significant are inevitably omitted.

Underlying each forecast is an in-depth analysis of the current state of the economy. National accounts and other official statistics provide the primary basis for the analysis, but in addition, experts from the Bank's Economics and Monetary Policy Department prepare an independent assessment of economic developments and prospects based on surveys and discussions with corporate executives, directors of institutes, and labour market partners, as well as other sources. The assumptions concerning global economic developments are based primarily on forecasts from international institutions and the information implied by commodity futures. The Central Bank's quarterly macroeconomic model (QMM) is the tool used to manage this information and ensure that the forecast does not neglect to take into account the interactions between various types of information. The Bank's dynamic stochastic general equilibrium (DSGE) model, DYNIMO, also plays an important role in forecast preparation, not least as a cross-check of the baseline forecast (see Box 3 in *Monetary Bulletin* 2017/4). Monetary policy performance over the forecast horizon is a key factor in the preparation of each forecast. In QMM, monetary policy is set with a forward-looking monetary policy rule wherein Central Bank interest rates are determined by the expected deviation of inflation from the inflation target and the current output gap. This rule ensures that inflation will be close to target by the end of the forecast horizon.<sup>1</sup>

Economic developments often diverge from forecasts. The simplified view of the economy presented by models can give rise to forecasting errors, although errors can occur for other reasons. For example, forecasts are based in part on preliminary figures and estimates that may change upon review. In addition, unforeseeable events that strongly affect economic variables – such as oil price shocks – could take place. Because studying past forecast errors helps to identify uncertainties in the new forecast and possible structural changes in the economy, the Bank evaluates its forecasting record once a year. This evaluation is also useful in further developing the Bank's macroeconomic models.

### The Bank's inflation forecasts for 2018

Inflation increased to an average of 2.7% in 2018, up from 1.8% in the previous year. The 2018 average was therefore marginally above the Bank's inflation target after four years of below-target inflation. Inflation excluding indirect tax effects was slightly lower, at 2.6%. As has been discussed in previous issues of *Monetary Bulletin*, the main driver of inflation in 2018 was the rise in house prices, as had been the case in previous years, although higher imported goods prices played a role as well. Inflation measured 2.4% in January 2018 and then rose over the course of the year, to 3.7% by December. The rise in inflation primarily reflected the depreciation of the króna by more than 10% that autumn, itself a result of mounting concerns about the position of airline WOW Air and substantial uncertainty about upcoming wage negotiations and the state of the economy more generally.

1. See Daniélsson, Á., L. Elíasson, M. F. Guðmundsson, S. J. Haraldsdóttir, L. S. Kro, T. G. Pétursson, and T. S. Sveinsson (2019), "QMM: A quarterly macroeconomic model of the Icelandic economy – Version 4.0", Central Bank of Iceland *Working Paper*, forthcoming.

The Bank's forecasts of average inflation in 2018 were well in line with the final outcome for the year (Table 1). As Chart 1 shows, the Bank's baseline forecast assumed that inflation would be lower than the actual outcome early in the year – particularly the first forecast of the year, published in February. However, the aforementioned depreciation of the króna strongly affected Q4/2018 inflation. In spite of this, inflation for the year was well within the 50% confidence band for the February forecast (Chart 2).

Table 1 Inflation forecast for 2018

Year-on-year change (%)	Monetary Bulletin				Final result
	2018/1	2018/2	2018/3	2018/4	
Inflation	2.6	2.6	2.7	2.7	2.7
Inflation excl. indirect tax effects	2.5	2.5	2.6	2.6	2.6

Sources: Statistics Iceland, Central Bank of Iceland.

### Inflation forecast errors over the past decade

Chart 3 shows errors in Central Bank inflation forecasts one, four, and eight quarters ahead, from Q1/2009 through Q3/2019 (forecasts prepared in 2007-2019). Inflation one quarter ahead was overestimated more often than underestimated, and actual inflation averaged 0.1 percentage points below the Bank's forecasts. In the first half of the period, the Bank's forecasts underestimated inflation four and eight quarters ahead more often than they overestimated it. This reversed in 2014, when overforecasts became more common, partly due to an unexpected decline in oil prices, global deflation, and the appreciation of the króna. As can be seen in Chart 3, errors in the Bank's inflation forecasts in the past two years have been negligible at all horizons: one, four, and eight quarters ahead.

Table 2 shows the mean deviation (which gives an indication of whether inflation is being systematically over- or underforecast) and the root mean square error (RMSE, which shows the uncertainty in the forecast) in forecasts from Q1/2009 onwards. As is stated above, the mean deviation is usually positive, and it is greatest in forecasts two quarters ahead, when inflation was overforecast by an average of 0.2 percentage points, and four quarters ahead, when inflation was underforecast – again, by an average of 0.2 percentage points. The mean deviation is not statistically significant, however, indicating that inflation was not systematically under- or overforecast during this period.

From the time the capital controls were imposed in autumn 2008 until the forecast published in *Monetary Bulletin* 2016/4, the Bank's macroeconomic and inflation forecasts were based on the technical assumption that the exchange rate of the króna would remain unchanged throughout the forecast horizon. Experience shows that large errors in inflation forecasts in Iceland are usually related to exchange rate fluctuations (Chart 4), as the correlation between the numerical errors in inflation and exchange rate fore-

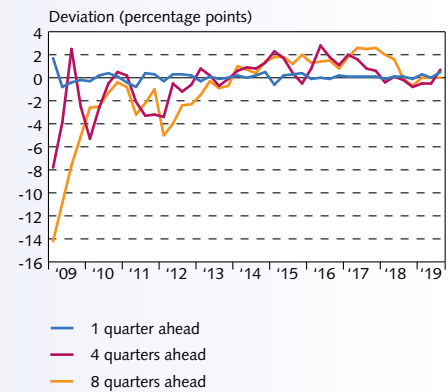
Table 2 Forecast errors in Central Bank of Iceland inflation forecasts<sup>1</sup>

%	One quarter	Two quarters	Three quarters	Four quarters	Eight quarters	Twelve quarters
No. of observations	43	42	41	40	36	32
Mean forecast error (%)	0.1	0.2	0.1	-0.2	0.1	0.0
RMSE (%)	0.4	0.9	1.2	1.7	1.9	1.4

1. Forecast errors from Q1/2009 through Q3/2019.

Source: Central Bank of Iceland.

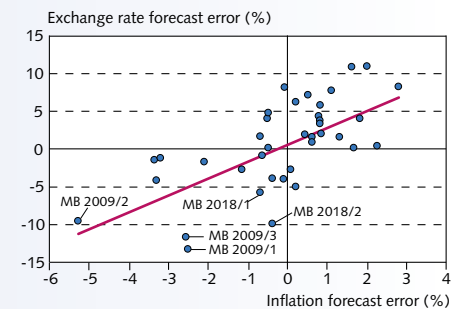
Chart 3  
Inflation forecasting errors in *Monetary Bulletin*<sup>1</sup>  
Q1/2009 - Q3/2019



1. The first quarter is the quarter in which the report is published or the first quarter forecasted. Four quarters ahead is three quarters after the report has been published. Eight quarters ahead is seven quarters after the report has been published.

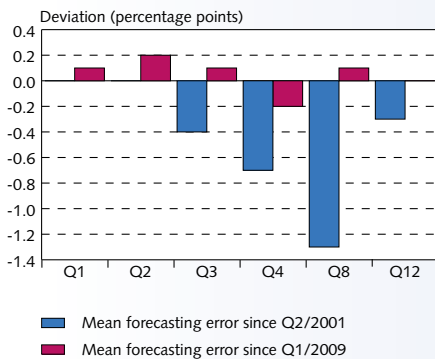
Source: Central Bank of Iceland.

Chart 4  
Inflation forecasting errors in *Monetary Bulletin*  
and deviation of average exchange rate from  
forecast 2009-2018  
Forecast one year ahead



Source: Central Bank of Iceland.

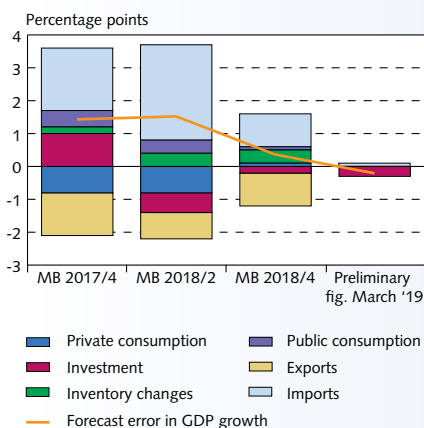
Chart 5  
Mean inflation forecasting errors  
in *Monetary Bulletin*<sup>1</sup>



1. The first quarter is the quarter in which the report is published or the first quarter forecasted. Two quarters ahead is the quarter immediately thereafter, etc.

Source: Central Bank of Iceland.

Chart 6  
Contribution of expenditure items to errors  
in GDP growth forecasts 2018<sup>1</sup>



1. Based on real figures in August 2019.

Sources: Statistics Iceland, Central Bank of Iceland.

casts is 0.63. The chart also shows that inflation was usually underforecast in those instances when the króna turned out weaker than the forecast had assumed. This is particularly the case for forecasts prepared during the wake of the financial crisis, but it also applies to forecasts prepared in early 2018. In instances when the exchange rate of the króna turned out higher than forecasts assumed, inflation was usually overestimated.

### Comparison of inflation forecast errors since the adoption of the inflation target

Since the Bank adopted the inflation target in 2001 and began publishing inflation forecasts, it has made substantial changes to its forecast preparation methods. The Bank began using its quarterly macroeconomic model (QMM) at the beginning of 2006, and it did not prepare forecasts of the exchange rate or Central Bank interest rates until 2007.<sup>2</sup>

Chart 5 compares the mean error in Central Bank inflation forecasts from Q2/2001 onwards, on the one hand, and from Q1/2009 onwards, on the other. The forecast errors in inflation forecasts from 2001 onwards are not statistically significant one, two, and three quarters ahead. On the other hand, the errors in forecasts four and eight quarters ahead are large and statistically significant. This suggests that inflation was systematically underforecast over that period. The mean error in inflation forecasts prepared in the last decade is generally smaller than in forecasts prepared since 2001. This indicates that forecasting performance has improved significantly, particularly over longer horizons.

### Central Bank GDP growth forecasts for 2018

In order to obtain a clearer view of the Central Bank's success in inflation forecasting, it is necessary to examine its success in forecasting developments in the real economy. It is likely that inflation will be generally underforecast during periods when growth in domestic demand is also underforecast and demand pressures in the economy are therefore underestimated as well.

Statistics Iceland publishes preliminary national accounts estimates for each quarter two months after each quarter-end. The first figures for Q4/2018 and for the year as a whole were published in March 2019 and then revised in August. The Bank's forecasts and Statistics Iceland's estimates of developments in key macroeconomic variables can be seen in Table 3. In February 2018, when *Monetary Bulletin* 2018/1 was published, Statistics Iceland's national accounts estimates for Q3/2017 were available. As a result, the Bank had to base its forecast for the full year 2018 on the forecast for Q4/2017, as well as on preliminary figures for the first three quarters of 2017 – figures that would subsequently change.

Statistics Iceland's figures for 2018 changed between the publication of the preliminary numbers in March 2019 and the revision in August. Growth in domestic demand was underestimated in the preliminary figures, particularly to include a 1.9 percentage point underestimation of investment growth, which is often the item that is subject to the largest revisions. Statistics Iceland's estimates of developments in net trade changed as well. Imports proved to have been underestimated more than exports, with the result that net trade contributed less to GDP growth than was initially assumed. Year-2018 GDP growth according to Statistics Iceland's August figures was therefore 4.8%, or 0.2 percentage points more than in the March figures.

2. See Ólafsson, T. T. (2007), "Publication of its own policy rate path boosts the effectiveness of central bank monetary policy", *Monetary Bulletin* 2007/1, pp. 71-86.

Output growth for the year turned out stronger than in the Bank's forecasts. The largest deviation, 1.6 percentage points, was in the *Monetary Bulletin* 2018/1 forecast, where the Bank projected GDP growth for the year at 3.2%. The deviation has narrowed with each of the Bank's forecasts, and since the November 2018 forecast it has been relatively small, as that forecast was based on Statistics Iceland's preliminary figures for the first half of the year. In the main, domestic demand has developed in line with the Bank's forecasts, and the deviation in GDP growth forecasts has stemmed mainly from errors in forecasts of external trade (see Table 3 and Chart 6). The forecast for export growth proved overly optimistic, although the deviation was smaller than in the import growth forecast. Because of the sizeable overestimation of import growth, the contribution of net trade to output growth was considerably larger than had been forecast early in the year, and output growth was therefore underestimated.

Table 3 *Monetary Bulletin* macroeconomic forecasts and Statistics Iceland data for 2018

	MB 18/1 (forecast from Q4/'17)	MB 18/2 (forecast from Q1/'18)	MB 18/3 (forecast from Q2/'18)	MB 18/4 (forecast from Q3/'18)	MB 19/1 (forecast from Q4/'18)	Pre- liminary figures (March 2019)	Revised figures (Aug. 2019)
Private consumption	6.4	6.3	5.6	4.6	4.5	4.8	4.7
Public consumption	2.3	1.9	2.5	2.9	3.6	3.3	3.5
Investment	3.8	6.5	5.2	5.0	2.9	2.1	4.0
Domestic demand	4.4	5.2	4.7	4.2	4.1	4.1	4.6
Exports	4.4	3.3	3.6	3.9	2.8	1.6	1.7
Imports	7.4	7.7	6.0	3.3	2.0	0.1	0.8
GDP growth	3.2	3.3	3.6	4.4	4.3	4.6	4.8

Sources: Statistics Iceland, Central Bank of Iceland.

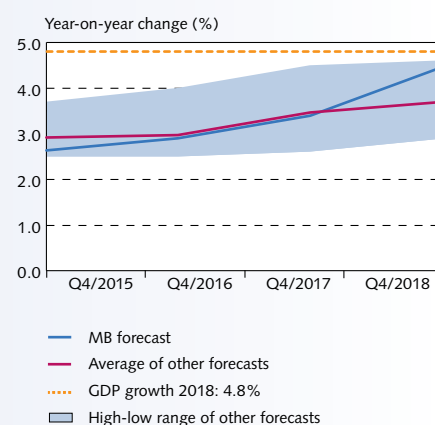
### Central Bank forecasts in comparison with other forecasters' projections

Chart 7 gives a comparison of the Central Bank's output growth forecasts for 2018 and the average of projections from others that publish regular forecasts concerning the Icelandic economy. The Bank's forecasts were all prepared in the fourth quarter of the years 2015-2018. The mean is calculated from each year's last forecast as prepared by eight forecasters: the International Monetary Fund (IMF), Icelandic Federation of Labour (ASÍ), the three large commercial banks, Statistics Iceland, Organisation for Economic Co-operation and Development (OECD), and the European Commission (EC). The range between the highest and lowest forecast values is indicated by the shaded area.<sup>3</sup> In general, it widens during periods of marked uncertainty. Other things being equal, economic forecasts should become more consistent with one another as the end of the forecast period approaches and more detailed information becomes available.

Overall, the Bank's forecasts accord well with the average from other forecasters. Towards the end of the year, the Bank's GDP growth forecasts were closer to the ultimate outcome for the year than the other forecasters' average. Chart 8 also shows that the Bank's inflation forecasts have generally been more accurate than

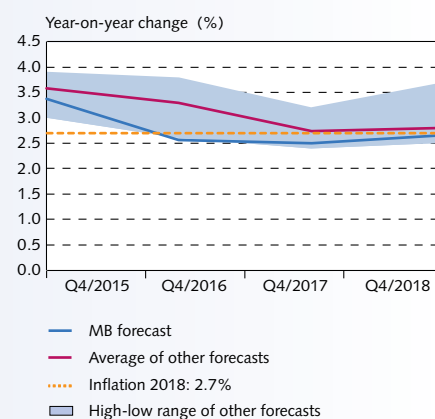
3. Not all of these forecasters prepare forecasts over a horizon of three years; therefore, the 2015 value in Charts 7 and 8 is based only on the forecasts from the IMF, Arion Bank, Statistics Iceland, and Landsbankinn. This explains in part why the high-low range is smaller in 2015 than in 2016.

Chart 7  
GDP growth forecast for 2018



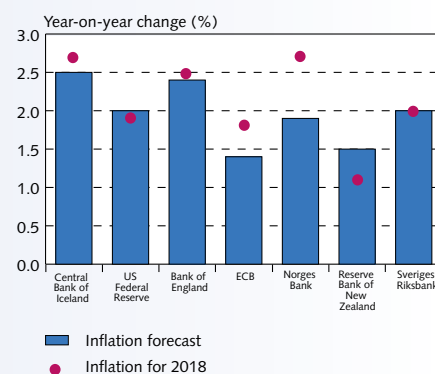
Sources: Arion Bank, European Commission, Icelandic Confederation of Labour, IMF, Islandsbanki, Landsbankinn, OECD, Statistics Iceland, Central Bank of Iceland.

Chart 8  
Inflation forecasts for 2018



Sources: Arion Bank, European Commission, Icelandic Confederation of Labour, IMF, Islandsbanki, Landsbankinn, OECD, Statistics Iceland, Central Bank of Iceland.

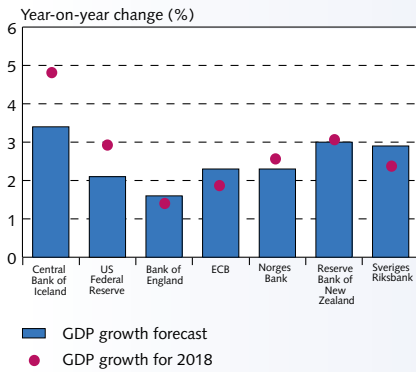
Chart 9  
Inflation forecasts for 2018, selected advanced economies<sup>1</sup>



1. Forecasts prepared at year-end 2017 except the US Federal Reserve, which was prepared in July 2017. The Bank of England projection is Q4 four-quarter CPI inflation.

Sources: Bank of England, ECB, Norges Bank, Reserve Bank of New Zealand, Sveriges Riksbank, Thomson Reuters, US Federal Reserve, Central Bank of Iceland.

Chart 10  
GDP growth forecasts for 2018, selected advanced economies<sup>1</sup>



1. Forecasts prepared at year-end 2017 except the US Federal Reserve, which was prepared in July 2017.

Sources: Bank of England, ECB, Norges Bank, Reserve Bank of New Zealand, Sveriges Riksbank, Thomson Reuters, US Federal Reserve, Central Bank of Iceland.

those from other forecasters. This is in line with experience from previous years.

### International comparison

It can be useful to examine the Bank's forecasts in international context. As Chart 9 indicates, year-2018 inflation turned about higher in most advanced economies than was assumed in late-2017 forecasts prepared by the relevant central banks. This was particularly the case for Norges Bank and the European Central Bank (ECB). Inflation was also underestimated in Iceland, partly because of the steep depreciation of the króna in the latter half of the year. The size of the deviation does not stand out in international context, however.

Chart 10 gives the same type of comparison of GDP growth forecasts. In most countries, year-2018 GDP growth developed broadly in line with forecasts, whereas in Iceland it exceeded forecasts. The deviation in the Bank's GDP growth forecast was relatively large in international comparison, which probably reflects to some extent the relative difficulty of forecasting macroeconomic variables in small open economies like Iceland, where economic shocks can have a much stronger impact than they do in larger economies.

## Appendix 1

### Forecast tables

Table 1 GDP and its main components<sup>1</sup>

	2018	2019	2020	2021	2022
Private consumption	4.7 (4.8)	1.7 (1.9)	2.2 (2.4)	3.3 (3.3)	2.8
Public consumption	3.5 (3.3)	3.2 (2.8)	2.6 (2.5)	2.4 (2.5)	2.5
Gross capital formation	4.0 (2.1)	-8.4 (-5.0)	7.4 (11.8)	3.6 (1.2)	2.7
Business investment	-4.1 (-5.4)	-16.1 (-13.1)	10.2 (14.8)	1.2 (-1.6)	3.5
Residential investment	16.2 (16.7)	13.0 (14.7)	7.5 (11.2)	5.9 (4.4)	5.1
Public investment	28.3 (21.2)	-3.7 (2.7)	-1.8 (2.7)	8.7 (6.6)	-3.6
Domestic demand	4.6 (4.1)	-0.9 (-0.2)	3.7 (4.8)	3.2 (2.6)	2.7
Exports of goods and services	1.7 (1.6)	-5.8 (-5.1)	0.4 (0.4)	3.6 (3.0)	2.8
Imports of goods and services	0.8 (0.1)	-7.8 (-5.4)	5.0 (6.7)	4.1 (2.8)	2.9
Gross domestic product (GDP)	4.8 (4.6)	-0.2 (-0.2)	1.6 (1.9)	2.9 (2.7)	2.7
GDP at current prices (ISK billion)	2,812 (2,803)	2,929 (2,920)	3,078 (3,084)	3,268 (3,264)	3,447
GDP at current prices (growth rate)	7.6 (7.1)	4.1 (4.2)	5.1 (5.6)	6.2 (5.8)	5.5
Total investment (% of GDP)	22.3 (22.2)	20.9 (21.3)	21.8 (23.1)	21.9 (22.7)	21.9
Business investment (% of GDP)	14.2 (14.2)	12.2 (12.6)	12.9 (13.9)	12.7 (13.2)	12.8
Gross national saving (% of GDP) <sup>2</sup>	25.5 (25.5)	24.4 (24.0)	24.4 (24.5)	24.6 (24.3)	24.7
Contribution of net trade to GDP growth (percentage points)	0.4 (0.7)	0.7 (0.0)	-1.9 (-2.7)	-0.1 (0.1)	0.0

1. Year-on-year change (%) unless otherwise specified (figures in parentheses are from the forecast in MB 2019/3). 2. The sum of investment, inventory changes, and the current account balance.

Sources: Statistics Iceland, Central Bank of Iceland.

Table 2 Global economy, external conditions, and exports<sup>1</sup>

	2018	2019	2020	2021	2022
Marine production for export	11.5 (11.5)	-4.5 (-4.0)	-1.0 (-1.0)	1.0 (1.0)	1.0
Aluminium production for export <sup>2</sup>	-1.2 (-1.2)	-2.5 (-0.5)	4.0 (2.0)	1.0 (1.0)	1.0
Foreign currency prices of marine products	4.7 (4.7)	7.0 (6.0)	3.0 (3.0)	3.0 (3.0)	1.5
Aluminium prices in USD <sup>3</sup>	13.3 (13.3)	-13.0 (-11.0)	0.0 (3.0)	4.0 (4.0)	4.0
Fuel prices in USD <sup>4</sup>	30.4 (30.4)	-11.5 (-12.5)	-9.2 (-9.7)	-2.1 (-1.0)	-0.2
Terms of trade for goods and services	-3.6 (-3.9)	-0.4 (0.1)	2.2 (2.5)	0.7 (0.6)	0.2
Inflation in main trading partners <sup>5</sup>	2.0 (2.0)	1.5 (1.6)	1.6 (1.7)	1.7 (1.8)	1.8
GDP growth in main trading partners <sup>5</sup>	2.2 (2.2)	1.5 (1.6)	1.5 (1.6)	1.6 (1.6)	1.6
Main trading partners' imports <sup>5</sup>	3.0 (3.0)	1.9 (3.0)	2.8 (3.1)	3.2 (3.3)	3.0
Policy rates in main trading partners (%) <sup>6</sup>	0.5 (0.5)	0.6 (0.6)	0.5 (0.4)	0.5 (0.4)	0.6

1. Year-on-year change (%) unless otherwise specified (figures in parentheses are from the forecast in MB 2019/3). 2. According to Statistics Iceland's external trade data. 3. Forecast based on aluminium futures and analysts' forecasts. 4. Based on price of Brent crude oil futures during the period 9-15 October 2019. 5. Forecast based on Consensus Forecasts, Global Insight, IMF, and OECD. 6. Forecast based on overnight index swaps rates in main trading partner countries during the period 13 September - 1 October 2019.

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

Table 3 Current account balance and its subcomponents<sup>1</sup>

	2018	2019	2020	2021	2022
Trade balance	3.0 (3.1)	3.6 (3.2)	2.6 (1.6)	2.7 (1.9)	2.7
Balance on primary income <sup>2</sup>	-0.2 (-0.2)	0.2 (-0.2)	0.0 (-0.1)	0.0 (-0.2)	0.1
Current account balance	2.8 (2.9)	3.7 (3.0)	2.6 (1.5)	2.7 (1.7)	2.8

1. % of GDP (figures in parentheses are from the forecast in MB 2019/3). 2. The sum of primary and secondary income.

Sources: Statistics Iceland, Central Bank of Iceland.

Table 4 Public sector finances<sup>1</sup>

	2018	2019	2020	2021	2022
Overall Treasury balance	0.9 (1.3)	0.4 (0.8)	0.0 (0.4)	-0.1 (0.3)	-0.3
Primary Treasury balance	2.8 (3.6)	2.1 (2.5)	1.5 (1.9)	1.2 (1.6)	1.0
Primary Treasury balance excluding one-off items <sup>2</sup>	2.8 (3.6)	2.1 (2.5)	1.4 (1.8)	1.1 (1.5)	1.0
Overall general government balance	0.8 (1.1)	0.3 (1.0)	0.1 (0.6)	0.0 (0.5)	-0.2
Primary general government balance	2.9 (3.6)	2.5 (3.2)	1.9 (2.5)	1.6 (2.2)	1.4
Total general government debt	36 (38)	34 (35)	33 (34)	32 (33)	30
Net general government debt <sup>3</sup>	28 (30)	26 (27)	25 (26)	24 (25)	22

1. % of GDP on an accrual basis (figures in parentheses are from the forecast in MB 2019/2). 2. One-off items are principally dividends in excess of the National Budget 3. 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<sup>1</sup>

	2018	2019	2020	2021	2022
Unemployment (% of labour force)	2.7 (2.7)	3.7 (3.7)	3.8 (3.8)	3.6 (3.6)	3.5
Employment rate (% of population aged 16-74)	79.4 (79.4)	78.0 (78.1)	77.9 (78.2)	78.4 (78.5)	78.8
Total hours worked	2.4 (2.4)	-0.1 (0.2)	0.9 (1.3)	2.3 (1.8)	2.3
Labour productivity <sup>2</sup>	2.3 (2.1)	-0.1 (-0.4)	0.7 (0.6)	0.7 (0.8)	0.4
Unit labour costs <sup>3</sup>	2.9 (3.1)	6.1 (6.8)	4.0 (3.9)	4.3 (4.3)	3.9
Wage share (% of gross factor income)	63.7 (64.3)	64.7 (65.7)	65.1 (65.9)	65.8 (66.7)	66.6
Real disposable income	4.5 (2.4)	2.6 (3.2)	2.5 (3.7)	4.0 (3.5)	4.1
Output gap (% of potential output)	2.3 (2.4)	-0.3 (-0.2)	-0.1 (0.0)	0.3 (0.1)	0.1

1. Year-on-year change (%) unless otherwise specified (figures in parentheses are from the forecast in MB 2019/3). 2. GDP per total hours worked. 3. Wage costs divided by productivity.

Sources: Statistics Iceland, Central Bank of Iceland.

Table 6 Exchange rate and inflation<sup>1</sup>

	2018	2019	2020	2021	2022
Trade-weighted exchange rate index <sup>2</sup>	166.7 (166.7)	180.7 (180.9)	181.7 (180.6)	182.5 (180.4)	182.8
Real exchange rate (relative consumer prices) <sup>3</sup>	96.8 (96.8)	90.4 (90.4)	90.6 (91.2)	90.7 (91.7)	91.1
Real exchange rate (relative unit labour costs) <sup>3</sup>	97.8 (97.9)	93.4 (94.2)	94.8 (96.1)	96.3 (98.1)	97.4
Inflation (consumer prices index, CPI)	2.7 (2.7)	3.0 (3.1)	2.3 (2.4)	2.2 (2.3)	2.5
Inflation (CPI excluding effects of indirect taxes)	2.6 (2.6)	2.9 (3.0)	2.2 (2.3)	2.2 (2.2)	2.4

1. Year-on-year change (%) unless otherwise specified (figures in parentheses are from the forecast in MB 2019/3). 2. Narrow trade basket. The index has been recalculated so that on 2 January 2009 it was assigned a value equivalent to that of the now-discontinued Exchange Rate Index. 3. Average 2005 = 100.

Sources: Statistics Iceland, Central Bank of Iceland.

Table 7 Quarterly inflation forecast (%)<sup>1</sup>

Quarter	Inflation (year-on-year change)	Inflation excluding effects of indirect taxes (year-on-year change)	Inflation (annualised quarter-on-quarter change)
<i>Measured value</i>			
2018:4	3.3 (3.3)	3.2 (3.2)	4.9 (4.9)
2019:1	3.1 (3.1)	3.0 (3.0)	1.9 (1.9)
2019:2	3.4 (3.4)	3.3 (3.3)	4.3 (4.3)
2019:3	3.1 (3.2)	3.0 (3.1)	1.3 (1.7)
<i>Forecasted value</i>			
2019:4	2.5 (2.9)	2.4 (2.8)	2.6 (3.7)
2020:1	2.4 (2.7)	2.3 (2.6)	1.6 (1.1)
2020:2	2.4 (2.5)	2.3 (2.4)	4.2 (3.6)
2020:3	2.2 (2.4)	2.1 (2.3)	0.6 (1.2)
2020:4	2.2 (2.1)	2.1 (2.1)	2.4 (2.7)
2021:1	2.2 (2.2)	2.1 (2.1)	1.5 (1.2)
2021:2	2.1 (2.3)	2.0 (2.2)	4.0 (4.1)
2021:3	2.2 (2.3)	2.2 (2.2)	1.1 (1.2)
2021:4	2.4 (2.4)	2.3 (2.3)	3.0 (3.0)
2022:1	2.4 (2.5)	2.4 (2.5)	1.7 (1.7)
2022:2	2.5 (2.5)	2.4 (2.5)	4.1 (4.2)
2022:3	2.5 (2.5)	2.4 (2.5)	1.1 (1.1)
2022:4	2.4	2.4	2.9

1. Figures in parentheses are from the forecast in MB 2019/3.

Sources: Statistics Iceland, Central Bank of Iceland.