

CENTRAL BANK OF ICELAND



2023 | 2

# MONETARY BULLETIN

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 one of its main objectives. In the joint declaration made by the Government of Iceland and Central Bank of Iceland on 27 March 2001, this is defined as aiming at an average rate of inflation, measured as the 12-month increase in the CPI, of as close to 2½% as possible.

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

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

Published by:

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Vol. 25 no. 2, 24 May 2023 ISSN 1670-438X, online

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# Statement of the Monetary Policy Committee 24 May 2023

The Monetary Policy Committee (MPC) of the Central Bank of Iceland has decided to raise the Bank's interest rates by 1.25 percentage points. The Bank's key interest rate – the rate on seven-day term deposits – will therefore be 8.75%.

The Committee has also decided to increase deposit institutions' fixed minimum reserve requirement from 1% to 2%.

Economic activity has been strong in 2023 to date, and the Central Bank's new macro-economic forecast assumes that GDP growth will measure 4.8% this year instead of the 2.6% projected in February. This is due in large part to the prospect of stronger growth in domestic demand, although the outlook is also for more robust activity in the tourism industry.

Inflation measured 9.9% in April and rose slightly between months. Underlying inflation is still increasing, and steep price hikes can be seen in a steadily growing share of the consumption basket. The outlook is for considerably stronger inflationary pressures in 2023 and 2024 than was previously assumed.

Furthermore, long-term inflation expectations have risen and are well above target. Therefore, there is a greater risk that inflation will become entrenched.

In light of this, it is necessary to tighten the monetary stance still further. It is especially important to prevent a wage-price spiral, particularly in view of the strong demand pressures in the economy and how soon the next round of wage negotiations will begin. Therefore, the outlook is for further rate hikes in order to ensure a better balanced economy and bring inflation back to target.

**Symbols:**

- \* Preliminary or estimated data.
- 0 Less than half of the unit used.
- Nil.
- ... Not available.
- . Not applicable.

**Icelandic letters:**

ð/Ð (pronounced like th in English this)

þ/Þ (pronounced like th in English think)

In this report, ð is transliterated as d and þ as th in personal names, for consistency with international references, but otherwise the Icelandic letters are retained.

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# Monetary Bulletin in a nutshell



Although trading partner GDP growth has softened recently, it has been more resilient than was assumed in the February forecast. The GDP growth outlook for 2023 has therefore improved. Nevertheless, growth is still expected to be sluggish in 2023 and 2024, averaging about 1% per year. Global inflation has eased but underlying inflation remains high, indicating that there is still some ground to cover before measured inflation can be brought back to target.



In Iceland, GDP growth measured 6.4% in 2022, the strongest growth rate since 2007. It was driven by a surge in domestic demand – especially private consumption, which grew by 8.6% year-on-year. GDP growth was slightly below the Bank's February forecast, however, reflecting less favourable external trade and the effects of changes in Statistics Iceland's treatment of intellectual property in the pharmaceuticals sector, offset by stronger growth in domestic demand. GDP growth for Q1/2023 appears to have far outpaced the February forecast and therefore looks set to exceed it for the year as a whole as well. Output growth for 2023 is forecast at 4.8%, as compared with 2.6% in the February forecast. This mainly reflects the impact of stronger growth in domestic demand, plus improved prospects for tourism and the effects of the above-mentioned methodological changes by Statistics Iceland. The outlook for output growth in the coming two years is broadly unchanged from the February forecast, however.



Total hours worked continued to rise in Q1/2023, on top of a steep increase in Q4/2022. Labour supply has increased as well, and unemployment has therefore held broadly unchanged in the past year. As before, it is estimated to be just below its equilibrium level. The labour market remains tight, but job growth is expected to ease, unemployment to rise, and demand pressures in the economy to subside as the forecast horizon advances.



Inflation continued to climb in February, to 10.2%, its highest since autumn 2009. It has eased slightly since then, to 9.9% in April. Inflation excluding the housing component has risen year-to-date, measuring 8.7% in April. Underlying inflation has increased as well, and steep price hikes can be seen in a steadily growing share of the consumption basket. Although offset by declining global inflation, domestic inflationary pressures remain strong, and more so than was assumed in the February forecast. As a result, the outlook is for inflation to exceed that forecast in both 2023 and 2024. This is due largely to an unfavourable initial position, but also to greater demand pressures in 2023, albeit mitigated by a stronger króna. According to the forecast, inflation will exceed 8% throughout this year. It will not fall below 4% until late in 2024 and will not fall below 3% until well into 2026.



The global economic situation has been unusually uncertain for quite some time and still remains so. The shocks of recent years have been numerous and unprecedented: a global pandemic and war in Europe led to severe supply chain disruptions and soaring energy and commodity prices, which the global economy is still grappling with. The global economic outlook could therefore be overestimated. The same is true of the domestic inflation outlook, as the anchoring of inflation expectations to the target has weakened, thereby exacerbating the risk of larger pass-through of exchange rate and wage shocks, which in turn increases the risk that a wage-price spiral will develop.

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

# The global economy and terms of trade



## The global economy

### Global GDP growth softened in late 2022

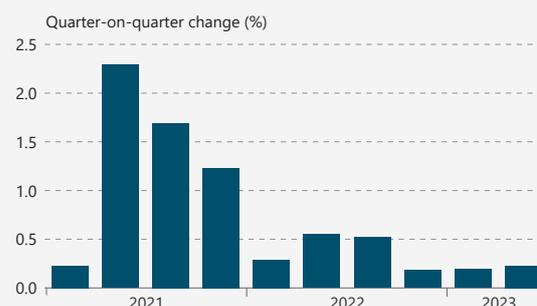
GDP growth among Iceland's main trading partners averaged 0.2% quarter-on-quarter in Q4/2022 (Chart I-1), far less than in the quarters beforehand. The slower increase in economic activity is due largely to high inflation and rising financing costs, which have eroded households' disposable income, tightened their financial conditions, and cut into demand. In Europe, high energy prices and uncertainty about energy supplies for the winter had a dampening effect on economic activity during the quarter.

GDP growth deteriorated particularly in Sweden, where it contracted by 0.5% quarter-on-quarter (Chart I-2). There was also a slight downturn in the eurozone, driven mainly by a 0.5% contraction in Germany. In most of Iceland's other trading partner countries, output growth was flat or negligible during the quarter. Activity slowed markedly in China, owing to the surge in COVID-19 cases there. Growth was stronger in the US, however, and economic activity in Denmark and Norway was more robust than expected. This is the main reason the average GDP growth rate among trading partners slightly outpaced the Bank's February forecast during the quarter.

### The global economy has proven more resilient in 2023 to date ...

Global economic activity has been more resilient than generally expected thus far in 2023. In the US, GDP grew 0.3% quarter-on-quarter in Q1, with strong growth in private consumption offsetting the impact of weaker inventories. In the euro area, GDP was up 0.1% between quarters, and similar growth rates were recorded in

Chart I-1  
GDP growth in Iceland's main trading partners<sup>1</sup>  
Q1/2021 - Q2/2023



1. Seasonally adjusted data. Central Bank baseline forecast Q1/2023 and Q2/2023.  
Sources: Refinitiv Datastream, Central Bank of Iceland.

Chart I-2  
GDP growth in main trading partners in Q4/2022<sup>1</sup>



1. Seasonally adjusted data. Figures for Norway exclude the production and shipping of oil and gas.  
Source: Refinitiv Datastream.

the UK and the Nordic region. There was a strong turnaround in China after public health measures were eased. Trading partner GDP growth is estimated to have averaged 0.2% quarter-on-quarter in Q1, whereas a marginal contraction was forecast in February.

Activity was more robust in nearly all trading partner countries, mainly in the eurozone. It was due largely to favourable developments in Europe’s energy situation, owing to unusually mild weather, energy saving, and increased natural gas imports from suppliers other than Russia. This can be seen in historically large natural gas inventories on the continent; furthermore, natural gas prices have fallen below the level seen before Russia invaded Ukraine (Charts I-3 and I-17).

Furthermore, the employment situation in leading advanced economies has been more favourable than previously anticipated, with continued strong labour demand, historically low unemployment, and rising nominal wages (Chart I-4). Although there are signs that labour market tensions are easing, the market remains tight, particularly in the US, where job vacancy numbers are historically high. As a result, households’ and businesses’ expectations about the economic situation in leading advanced economies have improved, and there is increased optimism about the prospect of avoiding an overall economic contraction this year.

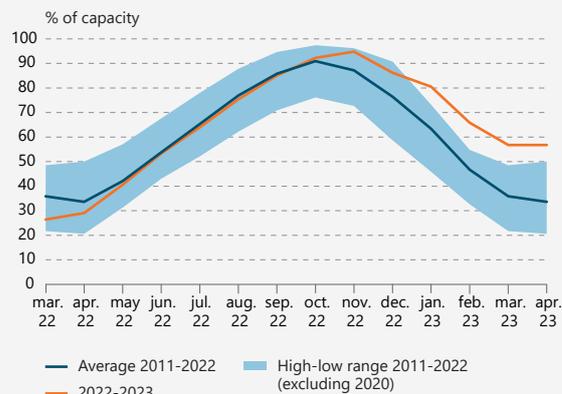
**... owing largely to strong activity in services sectors**

The year-to-date increase in economic activity among major advanced economies can be attributed in particular to the recovery of services sectors, while manufacturing still appears to be facing headwinds (Chart I-5). The pick-up in services may be due to the unusually mild weather early in the year, but changed consumption patterns and the pent-up pandemic-era demand for services are factors as well. This is especially the case in the US, where retail services surged early in 2023 (Chart I-6). Manufacturers appear more optimistic about the coming term, however, given the improved energy situation and expectations of a continued decline in inflation. Furthermore, the supply chain issues that have plagued the global economy in the recent term appear to be receding (see further discussion below). Industrial manufacturing has therefore picked up slightly in the recent past (Chart I-6).

**Improved GDP growth outlook for 2023 as a whole ...**

Leading indicators and international forecasts suggest that the outlook for GDP growth among Iceland’s trad-

Chart I-3  
Natural gas inventories in the EU



Source: Refinitiv Datastream.

Chart I-4  
Unemployment and nominal wage growth<sup>1</sup>



1. Wage measures are US average hourly earnings, UK private sector regular pay growth (Bank of England’s estimate of underlying pay growth between January 2020 and November 2022), and quarterly euro-area negotiated wages. Sources: Bank of England, Refinitiv Datastream.

Chart I-5  
PMI for manufacturing and services<sup>1</sup>  
October 2019 - May 2023



1. S&P Global purchasing managers’ index for services (Services Business Activity Purchasing Managers’ Index) and manufacturing (Manufacturing Purchasing Managers’ Index). The index is published monthly and is seasonally adjusted. An index value above 50 indicates month-on-month growth in output, and a value below 50 indicates a contraction. Source: Refinitiv Datastream.

ing partners in Q2 is broadly in line with the Bank's February forecast. The outlook for H2/2023 has deteriorated slightly, however, as a result of continued interest rate hikes and high inflation, which put a damper on private sector demand. In spite of this, GDP growth for the year as a whole is projected to exceed the February forecast, mainly because of stronger growth in Q1. Trading partner GDP growth is expected to average 1% in 2023 (Chart I-7). Although, this is still well below the average of recent decades, it is 0.4 percentage points above the Bank's February forecast. The outlook for 2024 and 2025 is somewhat poorer, however. Trading partner imports are expected to follow a similar pattern.

These projections accord with the International Monetary Fund's (IMF) April forecast, which assumes that global GDP growth will decline from 3.4% in 2022 to 2.8% this year and then ease upwards to 3% in 2024. This is broadly in line with the Fund's January 2023 and October 2022 forecasts, but far below the twenty-year average. Growth will subside particularly in advanced economies, falling from 2.7% in 2022 to 1.3% in 2023. Although the outlook for the euro area has improved relative to the IMF's most recent forecasts, prospects for 2023 remain poor. A contraction is still expected in the UK, although the GDP growth forecast for the US has been revised upwards to 1.6%. The IMF forecasts that growth in world trade will slow markedly this year, in line with weaker global output growth.

### ... but significant uncertainty remains

The economic outlook remains highly uncertain. Economic developments will depend to a large extent on how much financial conditions deteriorate and whether further vulnerabilities in the global financial system have yet to emerge in the wake of the recent problems in the international banking market (see further discussion below). They will also depend on developments in inflation and the impact of world-wide cost increases on households' and businesses' financial position. Another important factor is the pace at which households draw down their pandemic-era savings. Moreover, the outlook will be affected by the war in Ukraine – how it develops, how long it lasts, and what impact it has. Next winter's energy supply in Europe is uncertain as well, albeit to a lesser degree than before. In addition, global economic developments will depend to a large extent on developments in China, which has yet to resolve the weaknesses in its real estate market. Another uncertainty centres on public finances in the US and Federal Government's debt ceiling. Furthermore, rising US interest rates and

Chart I-6

### Industrial production and retail sales<sup>1</sup>

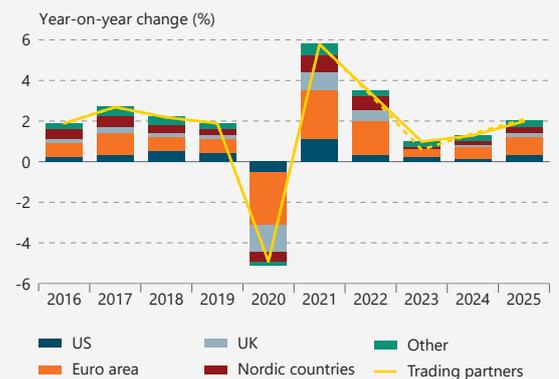
January 2019 - April 2023



1. Seasonally adjusted volume indices (2020 = 100).  
Source: Refinitiv Datastream.

Chart I-7

### GDP growth in Iceland's trading partners and contribution from selected countries 2016-2025<sup>1</sup>



1. Trade-weighted contribution from selected countries. Central Bank baseline forecast 2023-2025. Broken line shows forecast from MB 2023/1. "Nordic countries" is the average for Denmark, Norway, and Sweden.  
Sources: Refinitiv Datastream, Central Bank of Iceland.

the strength of the US dollar pose continuing problems for many emerging economies, particularly those with fragile economies and large amounts of dollar-denominated debt. It is possible that prospects for global GDP growth have been overestimated (see the discussion of risks and uncertainties in Box 1).

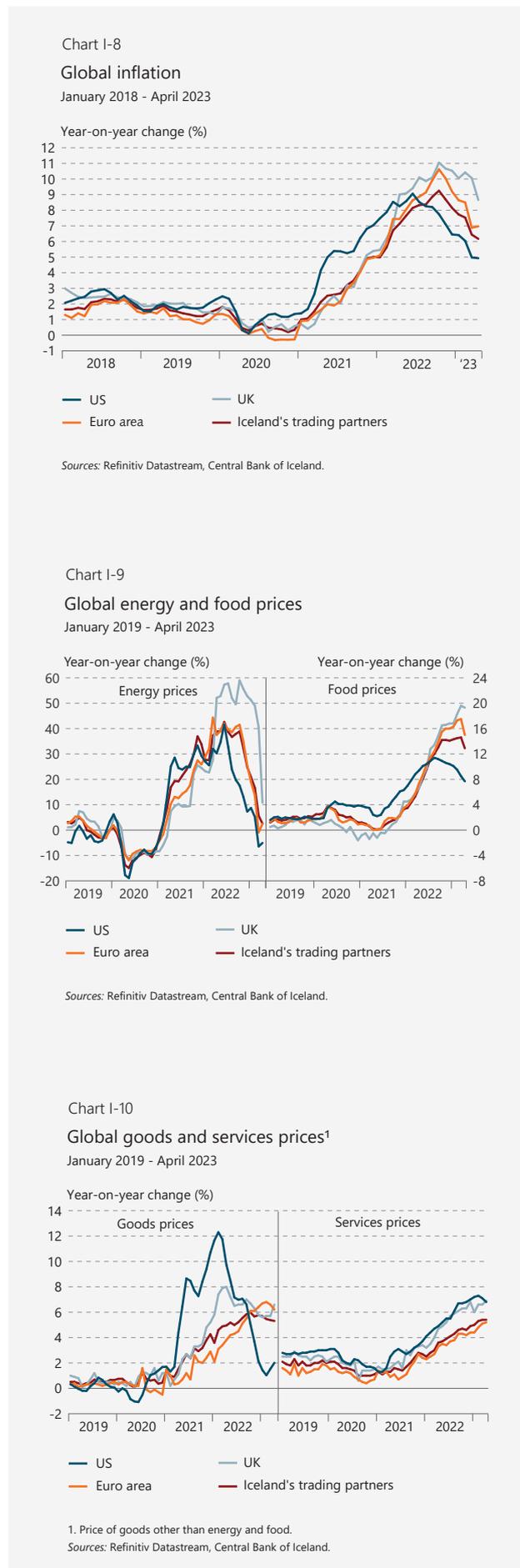
### Global inflation has begun to subside ...

Inflation has soared worldwide ever since mid-2021, and much more than was generally forecast. Although it remains high among Iceland's main trading partners, it has eased in recent months (Chart I-8). This is due in large part to the decline in energy prices, which surged in 2022 following Russia's invasion of Ukraine (Chart I-9). The year-on-year rise in food prices has also begun to lose pace, although food price inflation remains high. Furthermore, the overall increase in goods prices has been tapering off as households have shifted their consumption from goods to services after having had limited access to services during the pandemic (Chart I-10). In addition, supply chain bottlenecks have eased and commodity prices have fallen, slowing down goods price inflation. It will probably take a bit longer for these effects to pass through fully to the price level, though. Goods price inflation has slowed noticeably in the US, where prices rose both higher and earlier during the pandemic. Presumably, last year's steep appreciation of the US dollar against many other currencies also contributes to the relatively slower rise in import prices in the US compared with other countries. Furthermore, the more persistent increase in goods prices in the eurozone and the UK is probably due to last year's jump in energy prices, which may still be passing through to the price level.

Services prices, on the other hand, have fallen only slightly or have even picked up (Chart I-10), probably due in large part to pent-up demand from the pandemic, continued tension in the labour market, and large nominal pay rises. This is the main reason underlying inflationary pressures have proven more persistent than was generally expected. Core inflation (excluding the direct impact of food and energy prices) averaged 5.6% in trading partner countries in April 2023.

### ... but looks set to be more persistent than previously forecast

Trading partner inflation averaged 7.2% in Q1/2023, some 1.4 percentage points lower than in Q4/2022 and 0.4 percentage points below the Bank's February forecast. The deviation is due to an unexpectedly



rapid decline in energy prices. Measured inflation will therefore continue to ease but will be offset by more persistent underlying inflation, causing the inflation outlook to deteriorate later in the forecast horizon. Trading partner inflation is projected to measure 2.6% in 2024, instead of the 2.3% forecast in February, and is not expected to fall to 2% until H1/2025, about half a year later than was assumed in February.

### Central bank interest rates keep rising ...

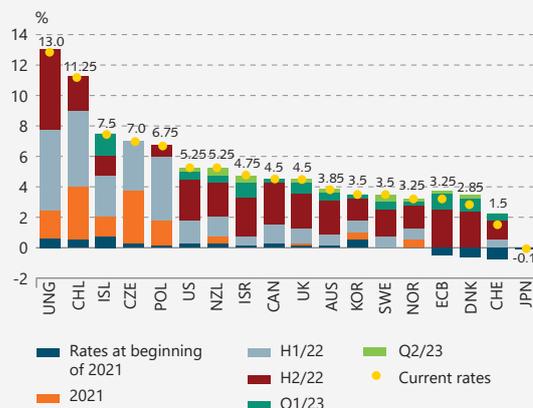
Central banks in leading advanced economies have continued to tighten their monetary stance in response to more resilient economic activity early in 2023, a still-tight labour market, and more persistent underlying inflation (Chart I-11). Central bank rates are at their highest since the run-up to the global financial crisis in 2008. However, the pace of interest rate hikes has eased recently, after last year's historically large and rapid increases.

### ... but the international banking system was roiled in March ...

Financial conditions worsened in many countries in 2022, concurrent with a bleaker economic outlook, elevated uncertainty, and historically rapid monetary tightening by leading central banks (Chart I-12). They began to improve again towards the end of the year, however. That trend broadly continued early in 2023, in tandem with increased confidence that advanced economies would avoid an overall recession during the year. Global share prices picked up, credit spreads on high-risk financial assets eased, and last year's sharp appreciation of the US dollar reversed in part (Chart I-13).

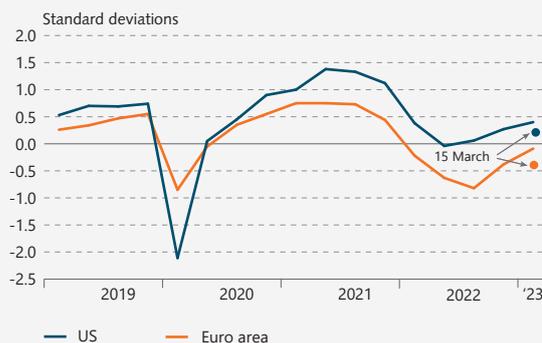
Financial conditions worsened sharply and uncertainty escalated, however, after the collapse of two medium-sized regional banks in the US and the forced takeover of Swiss banking giant Credit Suisse in March. These events gave rise to serious concerns about potential contagion and about the possibility of further vulnerabilities in the financial system, which could jeopardise financial stability. The concerns centred largely on whether excessive interest rate risk had accumulated within financial institutions during the era of low interest rates, possibly leading to losses in the wake of monetary tightening. Another point of concern was the risk possibly faced by certain financial institutions because of excessive homogeneity among depositors and the large share of uninsured deposits. Confidence in financial institutions eroded thereafter, affecting regional banks in the US perhaps the most,

Chart I-11  
Central bank policy rates in OECD countries and changes since beginning of 2021<sup>1</sup>



1. 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.  
Source: Refinitiv Datastream.

Chart I-12  
Global financial conditions<sup>1</sup>  
Q1/2019 – Q1/2023



1. Financial conditions index. A lower index value indicates a deterioration in financial conditions. The dots indicate financial conditions on 15 March 2023, after the onset of banking system turmoil.  
Source: International Monetary Fund.

Chart I-13  
Global share prices  
1 January 2018 - 19 May 2023



Source: Refinitiv Datastream.

causing share prices to fall and risk premia to rise. Furthermore, a large volume of deposits were moved from smaller banks to larger financial institutions and money market funds. Measures taken by governmental authorities in the two countries seem to have soothed the market, apart from a temporary tremor caused by the failure in May of a third regional bank in the US.

### ... exacerbating uncertainty about central banks' next moves

Turmoil in the global financial market has made central banks' next steps more complicated. The above-described events and the possibility that further weaknesses will emerge have given rise to increased concerns about the adverse impact of a tight monetary stance on financial stability. Problems in the banking system could spread to the real economy if banks tighten lending requirements and raise their risk premia. Households' and businesses' access to credit could be curtailed as a result, and financial conditions could grow tighter. In that case, central banks could need to raise interest rates less than they otherwise would in order to achieve a given monetary stance and bring inflation back to target within an acceptable time frame. This can be seen in forward interest rates, which suggest that market agents do not expect central banks to raise rates as high as they expected before the banking system turmoil in early March (Chart I-14). Furthermore, long Treasury bond yields have widely fallen since early March, although they remain close to their highest in over a decade (Chart I-15).

## Export prices and terms of trade

### Marine product prices projected to fall less in 2023 ...

Foreign currency prices of Iceland's marine product exports have risen by 36% since hitting their pandemic-era low in Q1/2021 (Chart I-16). In 2022 they increased by 21% year-on-year, owing to elevated uncertainty about supply in the wake of the sanctions imposed by the West on Russia, an important marine product exporter. Despite indications that prices in foreign markets were softening again in H2/2022, the price of Icelandic marine product exports continued to rise. They fell marginally in early 2023 but remained above the level forecast in February.

Global marine product prices picked up again in early 2023, and demand for Icelandic products has been stronger than expected. This is offset by a larger capelin roe catch in 2023 than in 2022, making it

Chart I-14  
Central bank policy rates<sup>1</sup>  
January 2018 - June 2026



1. Daily data 1 January 2018 through 19 May 2023, and quarterly data Q2/2023 through Q2/2026. 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 as of mid-May 2023, and broken lines as of early March 2023.

Sources: Bloomberg, Refinitiv Datastream.

Chart I-15  
10-year government bond yields  
1 January 2018 - 19 May 2023



Source: Refinitiv Datastream.

likely that prices will fall between years. As in February, marine product export prices are still expected to fall further as the year advances, but by less than previously assumed, or around 1% instead of the 4% decline forecast in February. The outlook for the next two years is broadly unchanged, however.

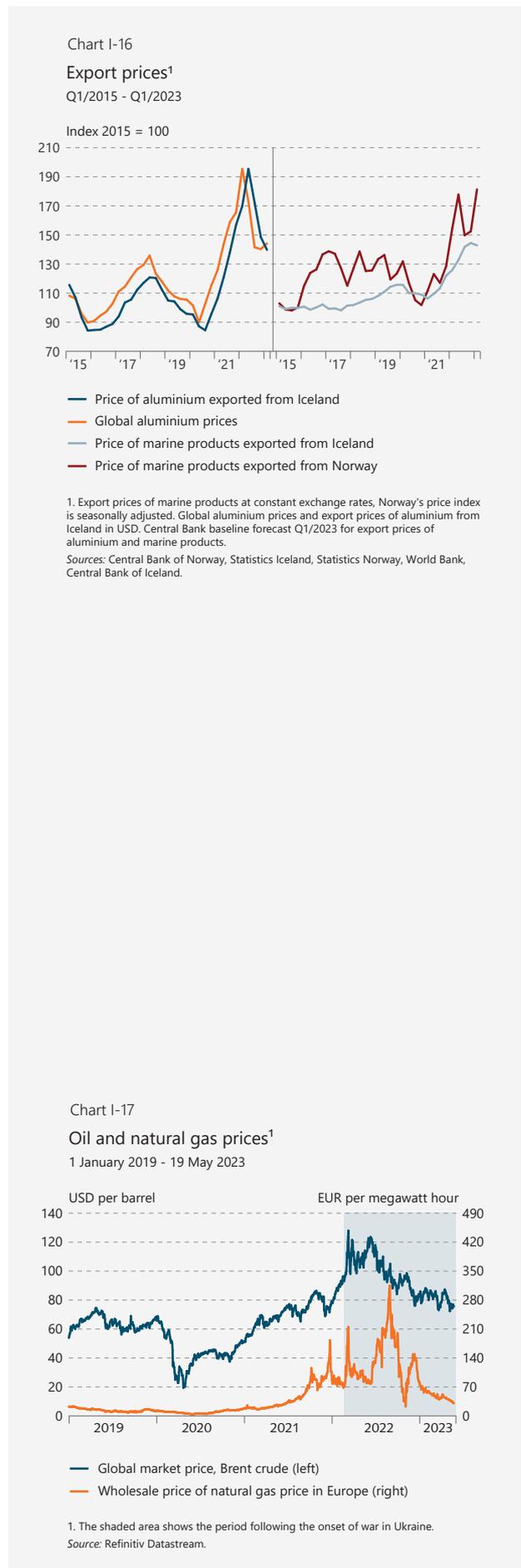
**... while aluminium prices look set to fall broadly in line with the February forecast**

After hitting a historical high in March 2022, global aluminium prices began to give way in Q2/2022, owing to increased uncertainty about supplies in the wake of the invasion of Ukraine (Chart I-16). Prices kept falling in H2/2022, and by December the average price was considerably lower than before the invasion, largely because of increased pessimism about the global economic outlook and reduced demand from China. The price of Iceland’s aluminium exports moved broadly in line with global market prices, peaking in Q2/2022 and tumbling in the second half of the year. It rose by nearly one-third year-on-year in 2022 as a whole.

Despite some volatility early in 2023, triggered partly by uncertainty about the impact China’s economic recovery would have on the aluminium market, global aluminium prices have developed in line with the Bank’s February forecast. The price of Icelandic aluminium exports is projected to decline this year by 1 percentage point more than was forecast in February and be just over 16% lower than in 2022. It is expected to rise more strongly in 2024, however. Unlike the February forecast, the price of imported alumina appears to have surged again in Q1/2023, after falling in H2/2022. As a result, the price of alumina is expected to fall less between years than was assumed in February.

**Oil prices declined in H2/2022 ...**

Global crude oil prices skyrocketed early in 2022, during the lead-up to and aftermath of Russia’s invasion of Ukraine (Chart I-17). They began to slide in H2, however, in response to mounting concerns about the global economic outlook and reduced demand from China. Increased production in the US and the OECD’s decision to put some of its strategic oil reserves on the market boosted supply and lowered prices. Pulling in the other direction, however, was the cutback in production by the OPEC+ countries. Furthermore, crude oil prices were probably supported by uncertainty about the impact of Western sanctions on Russia’s oil exports. Import embargoes and the price cap imposed by the G7 on Russian oil exports took effect in early December but seem to have had less impact on global oil supplies than



initially expected. This is due to Russia’s having stepped up its exports to countries not participating in the sanctions – India and China in particular – albeit at markedly reduced prices. The recent announcement of a small contraction in Russia’s oil production suggests that the sanctions have begun to bite a bit harder, however.

**... and have eased a bit more in 2023 to date**

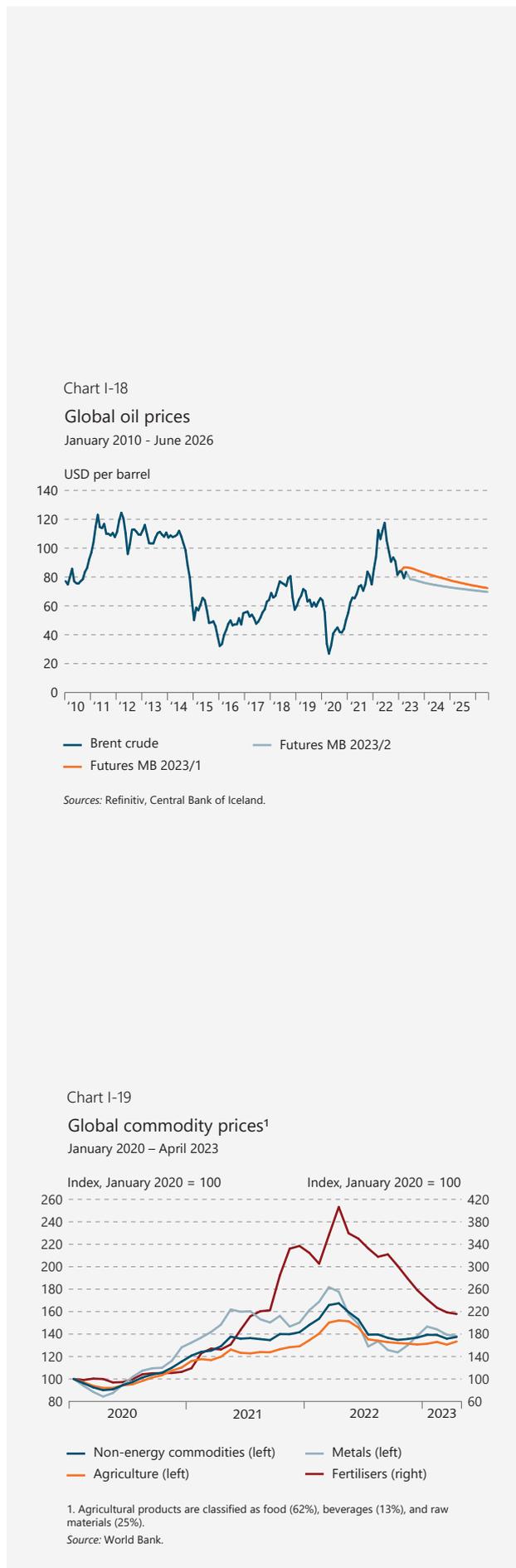
Oil prices started rising again in late 2022 and early 2023, driven in particular by waning pessimism about the global economic outlook and the prospect of an abrupt economic recovery in China, the world’s largest oil importer. Then, in April, the OPEC+ countries’ unexpected announcement of further production cuts pushed prices higher. Increased concerns about the global economic outlook, including concerns about the state of the banking market, have offset the price hikes, however. In May 2023 to date, the average price of Brent crude has been 76 US dollars per barrel, about 10% below the January 2023 average and roughly a third below the May 2022 level. Oil futures prices suggest that prices will fall further during the forecast horizon and be below the Bank’s February forecast over the entire period (Chart I-18).

**European natural gas prices have fallen as well**

The price of natural gas in Europe soared early in 2022, driven by mounting concerns and uncertainty about supply on the continent following the onset of war in Ukraine and reduced supply from Russia (Chart I-17). Prices started to fall again in late summer, however, and are now broadly where they were in mid-2021. The drop in price is due in particular to reduced use of energy during an unusually mild winter, more energy saving, and increased imports from countries other than Russia. This is reflected in historically strong inventories on the continent, as is discussed earlier in this chapter. In addition, futures prices suggest that prices will be lower in coming years than was forecast in February.

**Non-energy commodity prices are below pre-invasion levels**

The surge in non-energy commodity prices following the invasion of Ukraine also reversed in H2/2022 (Chart I-19). Metals prices fell most sharply, reflecting weaker demand from China and greater pessimism about global output growth. Increased supplies of agricultural products also contributed to a decline in commodity prices, owing largely to an increase in exports of grains and other agricultural products from Ukraine after an agreement on shipping via the Black Sea was reached



with the Russians. In addition, high grain prices supported production in other countries. Fertiliser prices have also continued to fall.

Non-energy commodities rose in price again in Q1/2023, and by somewhat more than was forecast in February, mainly because of an increase in metals prices. Nevertheless, commodity prices are still far lower than they were just before the invasion of Ukraine. The supply chain disruptions that started during the pandemic have continued to ease, however, after a brief setback in late 2022. Strain on global supply chains is broadly as it was before the pandemic, as are shipping costs (Chart I-20). All else being equal, this should contribute to a further decline in commodity prices. The outlook is for non-energy commodity prices to fall by an average of just over 7% year-on-year in 2023, broadly in line with the February forecast. On the other hand, they are expected to fall more in 2024 than was projected in February.

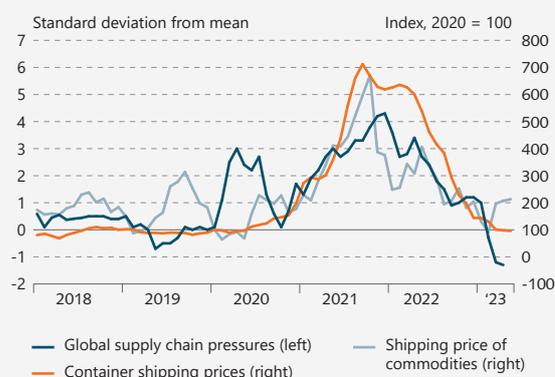
### Terms of trade set to deteriorate slightly more in 2023

Terms of trade for goods and services improved by 3% year-on-year in 2022, overtaking the February forecast. The deviation is due entirely to Statistics Iceland's revision of the price deflators for external trade for the first three quarters of the year, particularly for general goods imports, which increased less than previous figures had suggested.

The rise in aluminium product prices in H1/2022 weighed heavily in the year's improvement in terms of trade, which measured only 0.7% year-on-year if aluminium prices are excluded (Chart I-21). The price of silicon products and marine products also rose in H1, but price hikes for most categories of goods exports reversed in H2. Import prices continued to increase over the course of the year, however.

Terms of trade are now projected to deteriorate by 5.5% in 2023, owing in large part to unfavourable base effects from last year's surge in aluminium prices (Chart I-22). Excluding aluminium products, terms of trade look set to worsen by 2.2%, and the outlook for 2023 as a whole has deteriorated since February. This stems largely from unfavourable developments in the price of other goods exports, owing to a larger drop in prices in late 2022. Added to this is the prospect of higher alumina prices, although it is offset by a more favourable outlook for marine product prices. Terms of trade are projected to remain virtually unchanged over the next two years instead of deteriorating by just over 1½%, as was forecast in February.

Chart I-20  
Indicators of supply-side pressures<sup>1</sup>  
January 2018 – May 2023



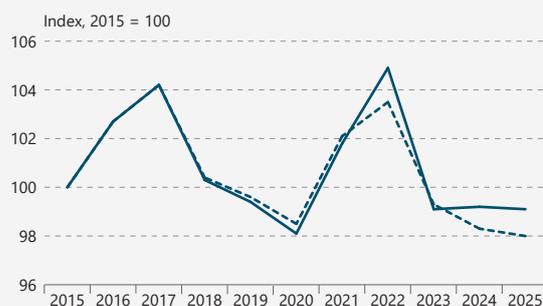
1. The Global Supply Chain Pressure Index (GSCPI) combines the effects of 27 different measures of shipping costs and delivery times, adjusted for demand-side effects. Container shipping based on the Freightos Global Container Index. Shipping cost of commodities is the Baltic Dry Index. Data through 19 May 2023. Source: Refinitiv Datastream.

Chart I-21  
Terms of trade with and without aluminium prices<sup>1</sup>  
Q1/2015 - Q1/2023



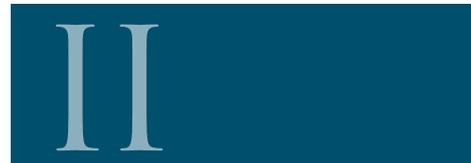
1. Terms of trade for goods and services excluding the impact of aluminium prices on export prices and excluding the impact of alumina prices on import prices. Central Bank baseline forecast Q1/2023. Sources: Statistics Iceland, Central Bank of Iceland.

Chart I-22  
Terms of trade for goods and services 2015-2025<sup>1</sup>



1. Central Bank baseline forecast 2023-2025. The broken line shows the forecast from MB 2023/1. Sources: Statistics Iceland, Central Bank of Iceland.

# Monetary policy and domestic financial markets



## Monetary policy and market interest rates

### Policy rate continues to rise ...

At its February and March meetings, the Central Bank Monetary Policy Committee (MPC) decided to raise the Bank's key interest rate (the rate on seven-day term deposits) by a combined 1.5 percentage points (Chart II-1). The key rate was therefore 7.5% just before the publication of this *Monetary Bulletin*, its highest since mid-2010. Short-term market rates have developed in line with the key rate.

The Bank's real rate has risen concurrent with the increase in the key rate. Based on the average real rate as calculated from various measures of inflation and one-year inflation expectations, the real rate is currently 0.2% and is positive for the first time since February 2020. It has risen by 0.9 percentage points since the February *Monetary Bulletin* and is now 3.6 percentage points above its trough from just over a year ago. The interest rate differential with abroad narrowed rapidly in H2/2022, concurrent with the swift increase in global interest rates, but has widened again this year, as short-term rates have risen faster in Iceland in the recent term.

### ... and market agents expect further rate hikes ...

According to the Bank's market expectations survey from May, respondents expect the key rate to rise to 8.5% in Q2/2023, then begin to fall in early 2024, and measure 6% two years from now (Chart II-1). This is well above the rate they expected in the last survey. Forward interest rates, which have risen as well, indicate that the Bank's key rate will be nearly 9% in early 2024.

Chart II-1

### Central Bank of Iceland key interest rate<sup>1</sup>

1 January 2015 - 30 June 2026



— CBI key interest rate (seven-day term deposit rate)  
● Market agents' expectations

1. The Central Bank's key interest rate and Treasury bond yields are used to estimate the yield curve. Broken line shows forward market interest rates prior to MB 2023/1. Market agents' expectations from Central Bank's survey. Estimated from the median response on expectations concerning the collateralised lending rate. Survey carried out 8-10 May 2023.

Source: Central Bank of Iceland.

Chart II-2

### Government-guaranteed bond yields<sup>1</sup>

2 January 2018 - 19 May 2023



— 5-yr, nominal      - - 5-yr, indexed  
— 10-yr, nominal      — 10-yr, indexed

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.

The Bank's baseline forecast assumes that the key rate will develop in line with the monetary policy rule in the Bank's macroeconomic model, which ensures that forecasted inflation will be broadly at the Bank's inflation target over the medium term.<sup>1</sup>

### ... but long-term rates have fallen since March

Long-term nominal Treasury bond yields rose virtually unimpeded starting in mid-2020 but have eased since the beginning of March. The yield on ten-year nominal Treasury bonds was 6.2% just before this *Monetary Bulletin* was published and had fallen by 0.9 percentage points from its spring 2022 peak (Chart II-2). Because short-term rates have continued to rise, the nominal yield curve is even more inverted, and the yield on one-year Government-guaranteed bonds is now 2.5 percentage points above the ten-year yield.

The yield on ten-year indexed Treasury bonds held broadly steady early this year but then started to fall marginally in mid-April. It was 2% just before the publication of this *Monetary Bulletin*. Most of the concurrent increase in long nominal yields can therefore be attributed to a higher breakeven inflation rate, as twelve-month inflation rose at the beginning of the year and the outcome of the wage negotiations was uncertain (Chart II-3). The breakeven rate began to fall again in late February, however, and fell still further in the wake of the steep policy rate increase in late March (for further discussion of inflation expectations, see Chapter V).

## Exchange rate of the króna

### The króna is at the same level as in February ...

The króna began to appreciate in late January, after having weakened from late September onwards, largely because it appreciated against the US dollar, which weakened against major currencies after surging in 2022. The króna began to depreciate in late April, however, and is now broadly at the level seen at the time of the February *Monetary Bulletin* (Chart II-4).

1. According to the monetary policy rule in the model, the key interest rate is determined in part by developments in the Bank's neutral real rate, which is the real rate that would be required, all else being equal, to keep inflation at target and ensure full factor utilisation. The neutral real rate is estimated to have fallen during the post-crisis period, to just over 1% at the beginning of the 2020s (see Box 1 of *Monetary Bulletin* 2019/4 and Chapter II of *Monetary Bulletin* 2021/2). It is estimated to have risen again slightly and is assumed to lie between 1½% and 2% during the forecast horizon. This assessment is highly uncertain, however.

Chart II-3  
Breakdown of change in nominal bond interest rates<sup>1</sup>



1. Change in nominal Treasury bond yields (estimated using the Nelson-Siegel method) and contribution of corresponding changes in inflation-indexed bond yields and the breakeven inflation rate.  
Source: Central Bank of Iceland.

Chart II-4  
Exchange rate of the króna<sup>1</sup>  
2 January 2015 - 19 May 2023



1. Price of foreign currency in krónur. Narrow trade index.  
Source: Central Bank of Iceland.

Chart II-5  
Net payment card flows<sup>1</sup>  
January 2010 - April 2023



1. Domestic turnover of foreign payment cards net of turnover of domestic payment cards abroad. Seasonally adjusted figures.  
Source: Central Bank of Iceland.

### ... despite favourable underlying flows and a wider interest rate differential with abroad

Capital flows relating to new investment have been positive since last autumn. These inflows stem in large part from direct investment in domestic technology and telecommunications companies and inflows into the domestic equity market following Iceland's promotion to secondary emerging market status by index provider FTSE Russell. Furthermore, the interest rate differential with abroad has widened. They are offset by the pension funds' continued foreign currency purchases.

Furthermore, there was a favourable shift in tourism-related net payment card flows: seasonally adjusted net foreign currency flows due to payment card use were positive in the first four months of 2023, after having been negative for most of the period since the onset of the pandemic (Chart II-5). Optimism about tourist arrivals has increased as well, and exporters may have sold a portion of their expected foreign currency inflows via forward contracts (Chart II-6).

### Króna projected to be stronger than was forecast in February

The trade-weighted exchange rate index stood at around 200 points in Q1/2023. The exchange rate of the króna was therefore some 1½% higher in terms of the trading partner average than was assumed in February. The króna strengthened as the quarter advanced, as has been noted previously, and in Q2 to date it is a full 3% stronger than was provided for in the February forecast. According to the current forecast, it will remain broadly at this level throughout the forecast horizon, and somewhat stronger than was assumed in February (Chart II-7).

## Money holdings and lending

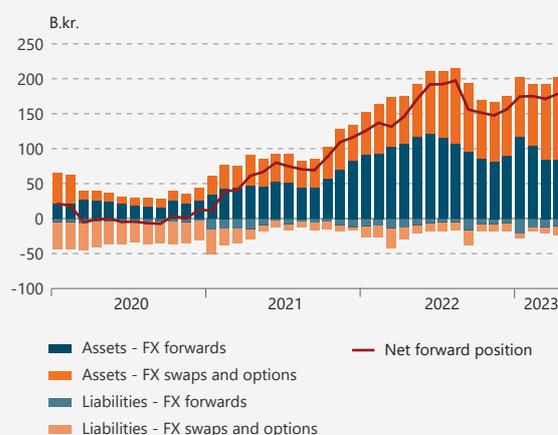
### Growth in household deposits is picking up again ...

Year-on-year growth in M3 measured 9% in Q1/2023, somewhat less than in Q4/2022 (Chart II-8). The weight of household deposits in year-on-year growth has increased again, while growth in corporate deposits has eased, although it remains robust.

Corporate deposits surged in 2022, in tandem with increased economic activity and growth in corporate loans, but the recent wage agreements and one-time retroactive payments were probably a factor in the shift of deposits from businesses to households (see also Box 2).

Chart II-6

Commercial banks' forward foreign exchange position<sup>1</sup>  
January 2020 - April 2023



1. Forward foreign exchange position involving the króna against foreign currency.  
Source: Central Bank of Iceland.

Chart II-7

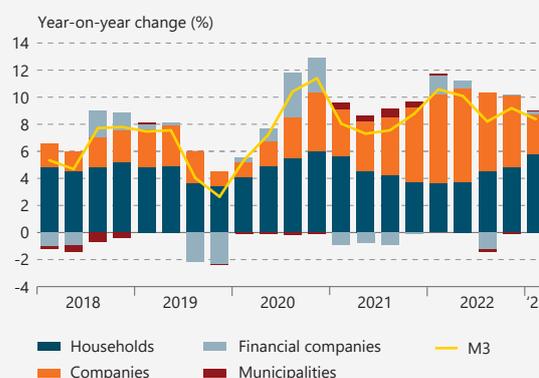
Exchange rate of the króna 2015-2025<sup>1</sup>



1. Price of foreign currency in krónur. Narrow trade index. Central Bank baseline forecast 2023-2025. Broken line shows forecast from MB 2023/1.  
Source: Central Bank of Iceland.

Chart II-8

Money holdings<sup>1</sup>  
Q1/2018 - Q1/2023



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

### ... while mortgage lending growth has begun to ease

Annual growth in overall credit system lending has continued to gain steam, measuring 11.3% in Q1/2023 (Chart II-9). Growth in credit system lending to households has lost pace, however, although it remains strong, at just over 9% in Q1. The impact of rising interest rates and tighter borrowing requirements shows more clearly, though, in the reduction in the banks' net new mortgage lending (Chart II-10). This is in line with the results of the Central Bank's lending survey, conducted in April. In the survey, commercial banks reported declining demand for mortgage loans in the previous three months and expected the trend to continue. This is offset by an increase in the pension funds' share in mortgage lending, although signs of a slowdown can also be seen there.

### Continuing robust growth in corporate lending

Loans to companies have grown rapidly in the past year, after contracting continuously since the beginning of 2021, and have been the main driver of credit system lending growth in the recent past. As is discussed in Box 2, this activity was offset by direct market-based financing and non-banking system financing. Despite large interest rate hikes, year-on-year growth measured 14.8% in Q1/2023, or 13.3% when adjusted for the effects of exchange rate movements on foreign-denominated corporate loans (Chart II-9). Credit growth has continued to gain steam in virtually all sectors, led by lending to construction and services companies (Chart II-11). It is likely that companies have a pent-up need to invest after the pandemic-era contraction in corporate lending, and the Central Bank's investment survey indicates that investment spending will continue to rise (see Chapter III). The results of the Bank's lending survey show that despite more rapid lending growth, demand for corporate loans has contracted slightly. The banks assume that this trend will continue in coming months, in tandem with reduced corporate loan supply.

## Asset prices

### Housing supply is up strongly and house price inflation has eased

Real estate market activity surged in mid-2020, peaking in early 2021, as interest rates had plummeted, wages were up sharply, and households had accumulated sizeable unallocated savings during the pandemic. House prices rose swiftly as a result. From the time the

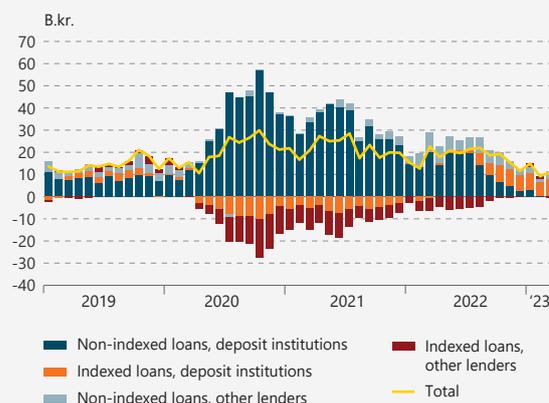
Chart II-9  
Credit system lending<sup>1</sup>  
January 2018 - March 2023



1. Credit stock adjusted for reclassification and effect of Government debt relief measures. Excluding loans to deposit institutions, failed financial institutions, and the Government. Companies include non-financial companies and non-profit institutions serving households.

Source: Central Bank of Iceland.

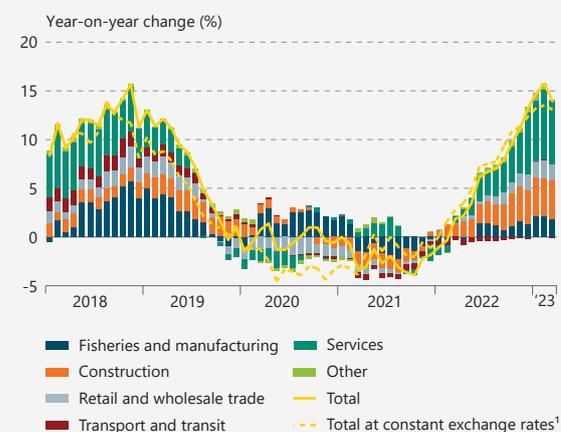
Chart II-10  
Net new lending to households<sup>1</sup>  
January 2017 - March 2023



1. Net new lending consists of new lending net of prepayments of older loans. Other lenders consists of pension funds, the Housing and Construction Authority, and the IL Fund.

Source: Central Bank of Iceland.

Chart II-11  
Credit system lending to non-financial companies  
January 2018 - March 2023



1. The foreign-denominated credit stock is calculated using the March 2023 trade-weighted exchange rate index value.

Source: Central Bank of Iceland.

Central Bank started raising interest rates in mid-2021, housing market activity began to ease. But prices kept climbing, and the year-on-year increase peaked at 25.5% in greater Reykjavík in July 2022 (Chart II-12). This is probably attributable to a severe imbalance between supply and demand, as the number of homes built during the years prior to the pandemic could not satisfy the increased demand that developed in its wake. At the April 2022 trough, only around 1,000 properties were advertised for sale nationwide, and the average time-to-sale was only about a month (Chart II-13). Supply began to grow over the course of the year, however, owing to reduced market activity and an increase in the number of new homes up for sale. By April 2023, there were around 3,200 properties for sale nationwide, and the average time-to-sale had lengthened to 6 months. The year-on-year increase in house prices has therefore eased to 8.6% as of April, implying that real house prices are now lower than a year ago.

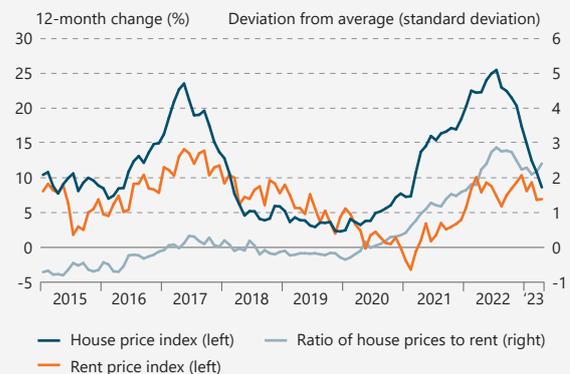
#### The housing market imbalance has receded ...

Rent prices in the capital area have risen somewhat in 2023 to date, and as of April, prices were up 6.8% year-on-year (Chart II-12). To a degree, the increase is due to stronger immigration and higher inflation, but in addition, the share of first-time homebuyers has fallen from its Q1/2021 peak. It can therefore be assumed that young people have been turning to the rental market in greater numbers once again, particularly since borrowing requirements were tightened in June 2022. The ratio of house prices to rent prices is still historically high, however, although it has fallen somewhat since last July. The imbalance that developed between house prices and wages during the pandemic also seems to have narrowed, and it appears that house prices have begun to align better with fundamentals.

#### ... and the outlook is for house price inflation to keep easing

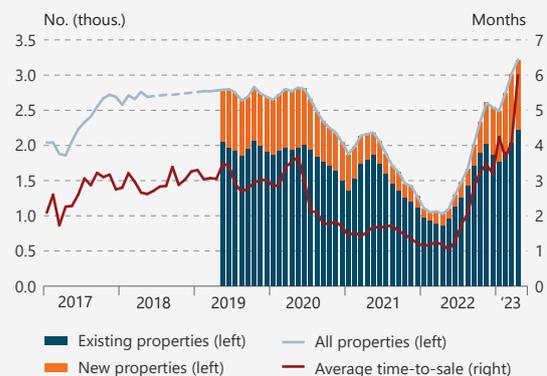
As is mentioned above, the supply of homes for sale has increased markedly, and the number of properties under construction is at its highest in a long time (see Chapter III). Supply could therefore grow even more in the coming term, further reducing price pressures in the market. At the same time, demand for housing has tapered off as interest rates have risen and borrower-based measures have been tightened (Chart II-14). The outlook is thus for a continued slowdown in year-on-year house price inflation and for a decline in real prices throughout the forecast horizon. The outlook is somewhat uncertain, but a more rapid increase

Chart II-12  
House prices and rent<sup>1</sup>  
January 2015 - April 2023



1. House prices and rent in the greater Reykjavik area. Deviation of the house price-to-rent ratio from the 2011-2023 average, measured in standard deviations. Sources: Housing and Construction Authority, Central Bank of Iceland.

Chart II-13  
Number of homes for sale and average time-to-sale nationwide<sup>1</sup>  
January 2017 - April 2023



1. Data on number of residential properties for sale from June 2018 through April 2019 are not available; therefore, the interval is estimated using linear interpolation. Sources: Housing and Construction Authority, Morgunbladid Real Estate Website (mbl.is), Central Bank of Iceland.

in immigration and a surge in demand for short-term rental housing for foreign tourists could put more pressure on house prices than is currently envisioned.

### Share prices falling

The OMXI10 share price index has fallen by 10.9% since the last *Monetary Bulletin*, concurrent with an 14.9% decline in the OMXI Main List index. Although more than half of listed companies saw their share price fall during his period, the majority of the decline in the OMXI stemmed from a 37% drop in the price of pharmaceuticals company Alvotech's shares. The plunge came in the wake of the US Food and Drug Administration's (FDA) mid-April announcement that the company's long-awaited marketing approval was still under review. Before the announcement, Alvotech was the most valuable company on the Icelandic equity market.

## Financial conditions

### Household debt service has increased, but the debt-to-GDP ratio is broadly unchanged ...

The household debt-to-GDP ratio has held broadly unchanged in recent years. Furthermore, household arrears are still low in historical context despite increased debt service due to higher interest rates. Interest rates on new non-inflation-indexed household loans have risen concurrent with Central Bank rate hikes, while interest rates on household deposits have risen faster in recent months, probably because of increased competition (Chart II-15). Indexed interest rates have also risen in line with a generally rising real rate.

Inflation-indexed loans have increased recently as a share of new household loans, as debt service on indexed loans is generally lower.<sup>2</sup> Even so, non-indexed loans still account for around 55% of the mortgage loan stock. The outlook is for borrowers who locked in their mortgage rates at the bottom of the market to see their debt service burden rise when the fixed interest rate period expires, all else being equal.

### ... and the same applies to businesses

As is the case for households, interest rates on companies' new deposits and loans have risen recently, although lending rates have risen slightly faster. The

Chart II-14

Number of homes for sale and real estate website clicks<sup>1</sup>  
October 2019 - April 2023



1. Average number of clicks on advertisements posted on the *fasteignir.is* website and number of homes for sale in the capital area.

Sources: Housing and Construction Authority, Central Bank of Iceland.

Chart II-15

Interest rates on deposits and loans<sup>1</sup>  
March 2015 - March 2023



1. New non-indexed deposits and loans. Deposit institutions' average interest rates, weighted by amount. "Household loans" refers to mortgage loans.  
Source: Central Bank of Iceland.

2. As is discussed in Box 3, some of the increased demand for indexed loans can be attributed to recent interest rate hikes, but it cannot be seen that this has had a significant impact on the monetary policy transmission mechanism.

vast majority of corporate debt is non-indexed and bears variable interest, making it sensitive to interest rate hikes. In addition to higher interest expense, firms' wage costs and input prices have surged recently, although this is offset by still-strong economic activity. Despite rising costs, corporate arrears have continued to decline, and firms should be quite resilient in historical context, as their debt levels remain low and their debt ratios have not risen. Conditions in global credit markets have been challenging, however, and the banks' rising funding costs are likely to affect their corporate clients' financing terms.

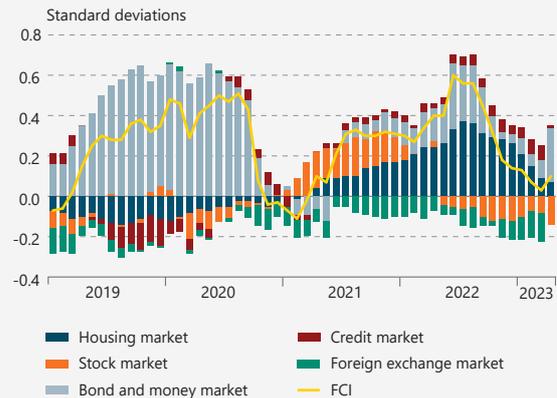
### Financial conditions have tightened

The Central Bank has developed a new financial conditions index with the aim of having a single metric that captures a range of indicators of households' and businesses' financial conditions (Chart II-16).<sup>3</sup> The index shows that financial conditions were unusually favourable well into 2022 but have tightened significantly since then. The main differences lie in the impact of higher interest rates and weaker real estate market activity, although the depreciation of the króna plays a role as well. The index does not suggest, however, that financial conditions are unusually tight in historical terms.

Chart II-16

### Financial conditions<sup>1</sup>

January 2019 - April 2023



1. Financial conditions as measured using the financial conditions index (FCI); i.e., the first three principal components of selected indicators of financial conditions, scaled so that the mean is 0 and the standard deviation is 1. A lower index value indicates a deterioration in financial conditions. The estimation period is 2002-2023. Data for April is estimated. A more detailed description can be found in a Box in *Financial Stability 2023/1*.

Source: Central Bank of Iceland.

3. The financial conditions index is designed to capture the state of households' and businesses' financial conditions based on 14 different measures relating to interest rates, the exchange rate of the króna, asset prices, volatility, and developments in debt. It is described more fully in Box 2 of *Financial Stability 2023/1*.

# Demand and GDP growth



## Domestic private sector demand

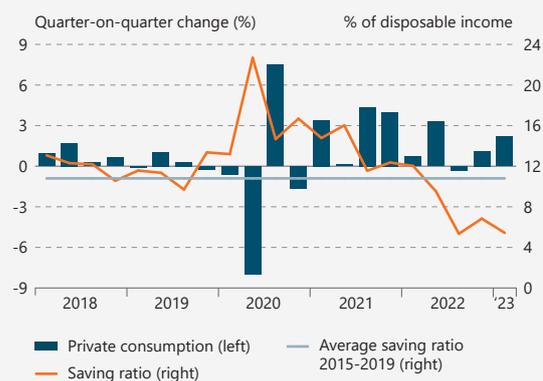
### Private consumption growth eased somewhat over the course of last year ...

Private consumption grew by 1.1% between Q3 and Q4/2022, following an average quarter-on-quarter growth rate of 2% over the preceding four quarters (Chart III-1). Year-on-year growth in private consumption therefore lost pace as 2022 progressed, measuring 4.7% in Q4, down from an average of more than 10% over the first three quarters of the year.

Private consumption growth was stronger in Q4/2022 than had been assumed in the Bank's February forecast, although it was offset by Statistics Iceland's revision of figures for the first three quarters of the year. As a result, growth for 2022 as a whole was in line with the February forecast. Statistics Iceland estimates it at 8.6%, the strongest single-year growth rate since 2005. As in 2021, growth was driven mainly by the purchase of services following the full removal of pandemic-related public health measures in February 2022 (Chart III-2).

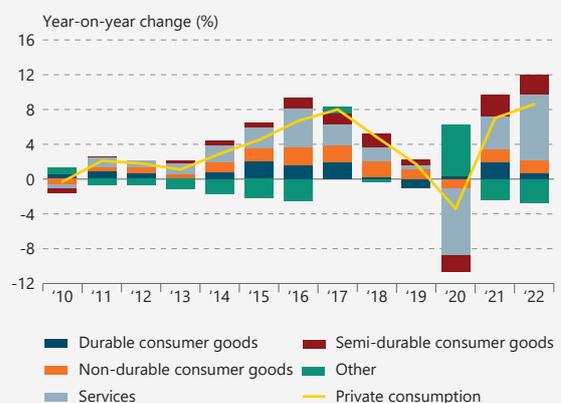
Households' real disposable income has increased markedly in recent years, owing to generous pay rises. Revisions of previous figures suggest, however, that growth in real disposable income was weaker than previously projected, averaging just under 3% over the past three years instead of slightly more than 4%, as was estimated earlier. The revision is due to Statistics Iceland's increase in the private consumption price deflator and to the reduction of disposable income for previous years. The household saving ratio is therefore estimated to have declined more quickly in the past three years. By 2022 it was broadly at the 2015 level and somewhat below its pre-pandemic average (Chart III-1).

Chart III-1  
Private consumption and household saving<sup>1</sup>  
Q1/2018 - Q1/2023



1. The saving ratio is calculated based on the Central Bank's disposable income estimates. Central Bank baseline forecast Q1/2023. Seasonally adjusted figures. Sources: Statistics Iceland, Central Bank of Iceland.

Chart III-2  
Private consumption and contribution of components  
2010-2022<sup>1</sup>



1. "Other" refers to activities of NGOs and Icelanders' spending abroad net of foreign tourists' spending in Iceland. Sources: Statistics Iceland, Central Bank of Iceland.

### ... but there are signs of robust growth in Q1/2023 ...

Icelanders stepped up their payment card use abroad in Q1/2023. Card turnover within Iceland grew strongly as well, and year-on-year growth in total card turnover therefore gained pace during the quarter (Chart III-3). Offsetting this payment card turnover is a more than 7% year-on-year decline in new motor vehicle registrations (excluding car rental agencies) in the first two months of 2023. This accords with Gallup's big-ticket index data on planned motor vehicle purchases, which declined relative to both the previous measurement and the prior year's measurement. However, the Gallup Consumer Confidence Index suggests that consumers are not as pessimistic as they were in H2/2022.

According to the Bank's baseline forecast, household consumption spending increased by 2.2% quarter-on-quarter in Q1/2023, slightly below the peak of the last two years. Private consumption therefore grew by 6.8% year-on-year, about the same as in Q3/2022. This is well above the Bank's February forecast, which was characterised by considerable uncertainty about how much impact the generous pay rises in the recent wage agreements would have at a time when financial conditions have tightened and households have grown more pessimistic (see also Chapter II). The household saving ratio therefore continued to fall in early 2023 (Chart III-1).

### ... followed by weaker growth as the year advances

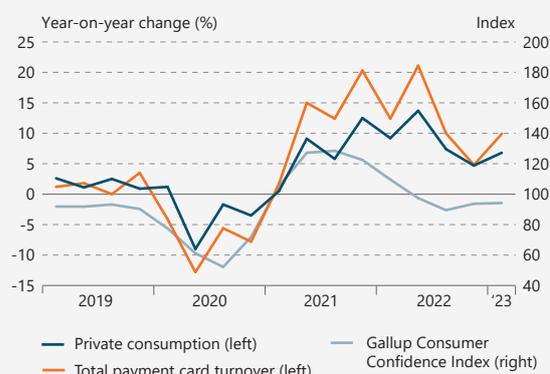
Year-on-year growth in private consumption is projected to ease in Q2/2023, averaging around 3% over the rest of the year and 3.6% for 2023 as a whole. This is 1.1 percentage points above the February forecast (Chart III-4). The improved outlook for the year is due to strong private consumption growth in Q1 and a more favourable employment situation throughout the year (see Chapter IV).

As in February, private consumption growth is likely to ease over the next two years, as financial conditions have tightened, the household saving ratio has fallen, and the outlook is for weaker growth in disposable income relative to recent years. Furthermore, many mortgages taken when interest rates were at their lowest will be up for interest rate review in the fairly near future.

### Business investment grew strongly in 2022 ...

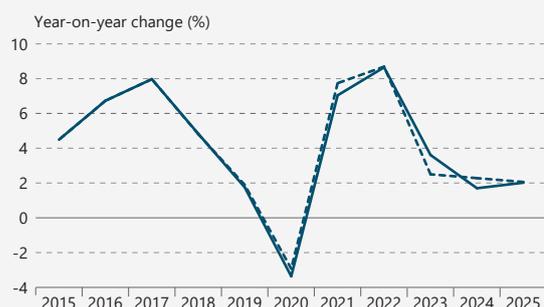
Business investment grew by 15.2% in 2022, outpacing the February forecast. The deviation is due mainly to imports of investment goods, which turned out

Chart III-3  
Private consumption and its indicators<sup>1</sup>  
Q1/2019 - Q1/2023



1. Central Bank baseline forecast Q1/2023 for private consumption.  
Sources: Gallup, Statistics Iceland, Central Bank of Iceland.

Chart III-4  
Private consumption 2015-2025<sup>1</sup>



1. Central Bank baseline forecast 2023-2025. Broken line shows forecast from MB 2023/1.  
Sources: Statistics Iceland, Central Bank of Iceland.

stronger than Statistics Iceland's preliminary figures had indicated. General business investment (excluding energy-intensive industry and ships and aircraft) grew 18.5% year-on-year, which explains the lion's share of the year's increase in business investment (Chart III-5). Historical data on investment in ships and aircraft have also been revised since the last *Monetary Bulletin*, owing to a change in Statistics Iceland's treatment of aircraft leasing agreements in the national accounts (for further discussion, see below).

### ... and looks set to keep growing in 2023, albeit more slowly

Data on investment goods imports and construction industry turnover suggest that business investment remained strong in Q1/2023 (Chart III-6), increasing by 13% year-on-year. Most of this growth is due to a more than 15% increase in general business investment during the quarter.

According to the results of the Central Bank's investment survey, conducted in March, domestic firms intend to increase their investment spending by 8% year-on-year in 2023. The main difference lies in large-scale plans for land-based aquaculture (classified with the fishing industry in Chart III-7), without which the survey would have indicated a year-on-year contraction in business investment. Companies in retail and wholesale trade and in tourism-related sectors plan a minor increase in investment this year, whereas companies in manufacturing, IT, and other services plan to scale down investment spending between years. Gallup's survey of Iceland's 400 largest firms, taken in February and March, is more pessimistic than the Bank's survey, as it indicates that companies planning to cut back on investment outnumber those planning to scale it up. Pessimism about investment plans has increased relative to Gallup's autumn 2022 survey and is at its highest level since March 2021.

The difference between the two sets of survey results suggests that the outlook for business investment in 2023 is somewhat ambiguous. It should be noted, though, that the Bank's survey includes fewer companies and its results are weighted with the volume of each company's investment. Furthermore, it is not a given that aquaculture companies' investment plans are reflected accurately enough in the Gallup survey, as many companies are too small to be included in it.

General business investment is assumed to grow by 7.3% this year, a full 2 percentage points more than was forecast in February. Added to this is significant investment planned by firms in the energy-inten-

Chart III-5  
Business investment and contribution of components  
Q1/2018 - Q4/2022



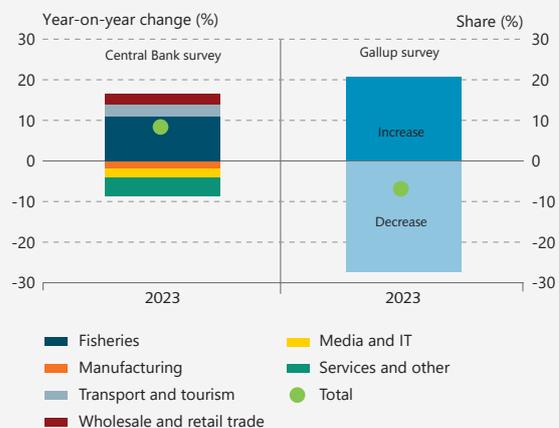
Sources: Statistics Iceland, Central Bank of Iceland.

Chart III-6  
Indicators of general business investment  
Q1/2018 - Q1/2023



1. Business investment excluding energy-intensive industry and ships and aircraft. Central Bank baseline forecast for growth in general business investment in Q1/2023. 2. Combined value of imported investment goods and transport equipment for commercial use (excluding ships and aircraft), deflated with the trade-weighted exchange rate index. 3. Aggregate construction sector turnover. The data are published by two-month value-added tax periods and deflated with the building cost index. Sources: Statistics Iceland, Central Bank of Iceland.

Chart III-7  
Indicators of investment plans in 2023<sup>1</sup>



1. Central Bank survey of firms' investment plans (excluding investments in ships and aircraft). Gallup survey of Iceland's 400 largest firms' investment plans. The chart shows the share of firms intending to increase investment and the share intending to decrease it. Sources: Gallup, Central Bank of Iceland.

sive sector. Overall, business investment is therefore expected to grow by 6.9% year-on-year, well above the February forecast of 2.5% growth.

### This year's residential investment falls short of the February forecast but is set to exceed it later in the forecast horizon

Residential investment shrank by about 6.3% in 2022, more than was forecast in February. This sizeable contraction is somewhat surprising, as data from the Housing and Construction Authority indicate that almost 7,400 homes were under construction nationwide at the end of 2022. It is the largest total since measurements were introduced, reflecting a marked increase in the number of housing starts over the past two years (Chart III-8). Short-term indicators have also implied stronger investment, and credit system lending to construction firms has been growing apace, both in 2022 and in 2023 to date (see Chapter II). Furthermore, Gallup's corporate survey, carried out in March, shows that the vast majority of construction companies are operating at full capacity; i.e., they are short-staffed and would have difficulty responding to an unexpected increase in demand. A majority of these firms therefore want to hire more workers. Most of them expect to invest about the same as in 2022, but in comparison with the last three surveys, fewer of them expect demand to increase in the coming term. Growth in residential investment is now assumed to be slightly weaker in 2023 than was projected in February, at just over 11%, but it is expected to overtake the February forecast later in the forecast horizon. If the forecast materialises, the ratio of residential investment to GDP will have risen to 6½%, slightly above the average of the past decade, by the end of the forecast horizon.

### Outlook for stronger investment growth over the forecast horizon than was projected in February

According to the baseline forecast, total investment will be 5.7% stronger this year than in 2022 (Chart III-9), and nearly 3 percentage points above the last forecast. The deviation is due to a more favourable outlook for business investment, albeit offset by a bleaker outlook for residential and public investment.

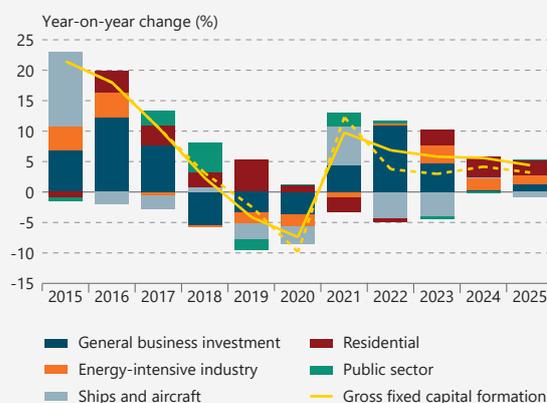
Total investment is expected to increase by an average of 5% per year in 2024 and 2025, compared to the scant 4% forecast in February. The improved outlook for 2024 is due primarily to increased investment in energy-intensive industry, whereas in 2025 residential investment will be the main driver of growth. The investment-to-GDP ratio will hold broadly unchanged,

Chart III-8  
Status of residential construction nationwide<sup>1</sup>  
2000 - 2022



1. Data from Statistics Iceland for 2000-2021 and Housing and Construction Authority for 2022.  
Sources: Housing and Construction Authority, Statistics Iceland.

Chart III-9  
Gross fixed capital formation and contribution of main components 2015-2025<sup>1</sup>



1. General business investment excludes ships, aircraft, and energy-intensive industry. Central Bank baseline forecast 2023-2025. Broken line shows forecast from MB 2023/1.  
Sources: Statistics Iceland, Central Bank of Iceland.

however, measuring just over 23% at the end of the forecast horizon.

## Public sector

### Public consumption to gain steam and public investment to contract in 2023

Public consumption grew by 1.6% in 2022, while public investment shrank by 0.9%. Public sector demand therefore increased overall by 1.3% during the year,<sup>1</sup> less than in 2021, owing mainly to weaker Government investment.

In 2023, growth in public consumption will slightly exceed the 2022 level, while public investment will contract year-on-year. According to the forecast, public consumption and investment combined will grow by 1.2% in 2023, followed by 1½% per year in 2024-2025, when public consumption will grow by nearly 2% per year and public investment will remain broadly flat. If the forecast materialises, the ratio of public consumption and investment to GDP will fall from nearly 30% in 2022 to 29½% by 2025.

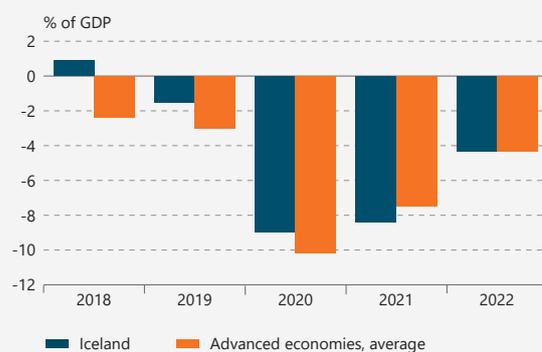
### Treasury primary balance moving towards equilibrium after a large deficit in recent years

The Treasury performance improved in 2022, after a period of sizeable deficit operations during the pandemic. According to preliminary figures from Statistics Iceland, the deficit shrank by 4 percentage points of GDP in 2022, to 3.5%. In recent years, the Treasury performance has weighed heaviest in the overall public sector performance, which improved by 4.1 percentage points of GDP in 2022. Last year's improvement exceeded the average for other advanced economies, as GDP growth in Iceland was stronger, although in Iceland the improvement occurred later (Chart III-10).

Primary Treasury revenues grew by 18.6% in 2022, owing mainly to increased economic activity, plus the effects of inflation on Treasury revenues. Furthermore, dividends paid to the Treasury increased markedly during the year, and both investment tax and corporate income tax grew as well, after declining during the pandemic. According to preliminary figures from Statistics Iceland, primary revenues amounted to just over 28% of GDP, a year-on-year increase of slightly more than ½ a percentage point.

1. Public sector demand is the sum of public consumption and public investment in the expenditure accounts. In order to estimate the public sector contribution to economic activity, however, it is also necessary to take account of revenue-generating measures and transfers undertaken by the State and local authorities.

Chart III-10  
General government balance 2018-2022



Source: IMF Fiscal Monitor April 2023.

Treasury expenditures grew by 6.6% in 2022, reflecting the impact of higher inflation, which caused an increase in interest expense and Treasury consumption spending. On the other hand, the effects of pandemic-related discretionary measures tapered off. Primary Treasury expenditure declined by 3.8 percentage points of GDP in 2022, but because of higher interest expense and price indexation of some expenditure, the reduction in total expenditures was smaller, at 3 percentage points.

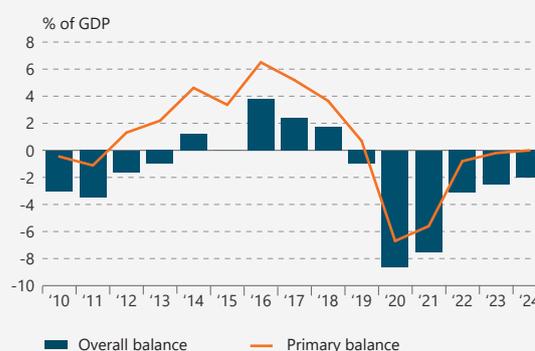
The baseline forecast assumes that the Treasury performance will continue to improve in 2023 (Chart III-11). The main drivers on the revenues side will be robust GDP growth and a strong labour market, as well as a number of discretionary measures introduced in the 2023 fiscal budget and the new fiscal plan, which will boost Treasury revenues slightly during the year. Furthermore, high inflation fuels nominal growth in Treasury revenues. Added to this is robust expenditure growth, although revenues will grow more and the deficit will narrow as a result. The Treasury primary balance is projected to be in equilibrium this year, but high interest expense will cause the overall balance to be negative by 2.3% of GDP.<sup>2</sup>

In 2024, slower revenue growth for most revenue bases will offset increased revenues from measures introduced in the fiscal plan. Treasury primary expenditure is expected to increase as a share of GDP, partly due to the effects of inflation on various expenditure items.<sup>3</sup> On the whole, the Treasury primary balance is projected to be broadly unchanged in 2024, but the deficit on the interest balance is expected to shrink, thereby narrowing the deficit on the overall balance.

### Fiscal stance set to be in line with the Bank's November forecast during the forecast horizon

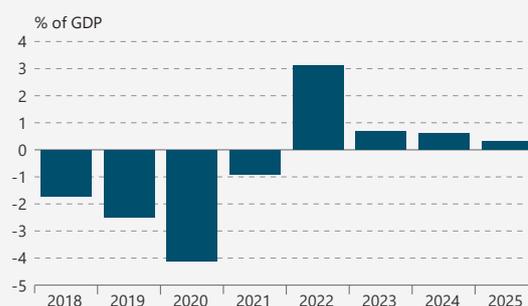
As is noted above, last year's significant improvement in Treasury performance was due largely to the expiry of fiscal support measures during the year. The fiscal stance tightened as a result, by an estimated 3 percentage points of GDP (Chart III-12).

Chart III-11  
Treasury outcome 2010-2024<sup>1</sup>



1. Adjusted for irregular and one-off items. Central Bank baseline forecast 2023-2024.  
Sources: Ministry of Finance and Economic Affairs, Statistics Iceland, Central Bank of Iceland.

Chart III-12  
Change in central government cyclically adjusted primary balance 2018-2025<sup>1</sup>



1. Adjusted for irregular and one-off items. Central Bank baseline forecast 2023-2025.  
Sources: Ministry of Finance and Economic Affairs, Statistics Iceland, Central Bank of Iceland.

- Adjusted for the effects of irregular items on the Treasury performance, chiefly to include income tax on Landsvirkjun's sale of Landsnet to the State in 2023 and the transfer of Treasury revenues to local authorities from 2023 onwards.
- This pattern, in which higher inflation initially has a positive impact on performance – because a larger share of revenues than expenditures are subject to the contemporaneous effects of inflation before expenditure pressures mount due to the real decline in various expenditure items – is in line with international experience (see, for instance, International Monetary Fund, 2023, *Fiscal Monitor*, April 2023).

In 2023, it is projected to tighten by an additional 0.8% of GDP, owing partly to revenue-generating measures introduced in the last fiscal budget and the new fiscal plan and a reduction in cyclically adjusted primary Treasury expenditures as share of GDP. This is slightly tighter than was assumed in November, when the fiscal stance was last estimated. The current baseline forecast assumes stronger expenditure growth than was provided for in the Bank's November forecast; however, nominal GDP growth is expected to be considerably stronger, so that the expenditure ratio will decline more than was projected in November.

As is discussed above, higher inflation will cause Treasury expenditures to increase in 2024, offsetting the measures introduced in the new fiscal plan. In 2024, fiscal consolidation is projected to be broadly as was forecast in November, or 0.7% of GDP, even though measures on the revenues side are now expected to be broader in scope than in the November forecast. The fiscal stance will tighten slightly more in 2025, albeit less than was forecast in November, reflecting the increased spending provided for in the new fiscal plan. The increased consolidation in 2022-2025 is therefore in line with the assumptions in the November forecast.

### Treasury surplus not expected until 2028, according to the new fiscal plan

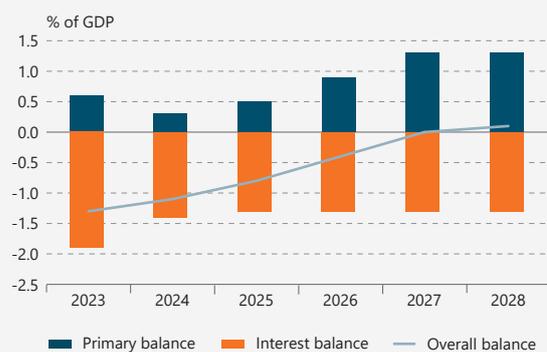
The recently introduced fiscal plan for 2024-2028 contains a new assessment of prospects for the Treasury outcome. The Treasury performance is expected to improve considerably more in 2023 than was provided for in the previous fiscal plan, yielding a deficit of roughly 1.3% of GDP (Chart III-13). For 2024, moderate expenditure growth will be offset by performance-enhancing measures that are expected to deliver a 33 b.kr. improvement during the year. The fiscal plan assumes that the deficit will measure 1.1% of GDP in 2024. The deficit will shrink to 0.8% of GDP in 2025, according to the fiscal plan, and in the latter half of the horizon the Treasury outcome will be in balance, although a surplus will not develop until 2028. Box 1 presents an alternative scenario describing the effect of more ambitious fiscal consolidation on the economy.

## External trade and the current account balance

### Changed treatment of intellectual property exports affects external trade figures for 2022

In Q4/2022, goods and services exports grew by 10.7% year-on-year, less than half the growth rate forecast in

Chart III-13  
Treasury balance 2023-2028<sup>1</sup>



1. Treasury balance according to fiscal strategy plan for 2024-2028  
Source: Medium Term Fiscal Strategy Plan 2024-2028.

February (Chart III-14). The deviation is due to Statistics Iceland's changed treatment of trade in intellectual property, which is now excluded from external trade statistics because it was unclear whether intellectual property trade met the criteria for trade transactions in the national accounts. Services exports therefore grew by 25% year-on-year during the quarter, only half as much as was projected in February. Pharmaceuticals companies' revenues from trade in intellectual property had been forecast to grow strongly during the quarter, based on information from the companies concerned. The surplus on services trade was therefore 50 b.kr. smaller than it would have been otherwise.

### Tourism was buoyant in 2022 ...

Exports grew by 20.6% year-on-year in 2022 and were broadly back to their H2/2019 level by the latter half of the year, mainly because of the rebound in tourism. In H2/2022, gross revenues from tourism (at constant exchange rates) were broadly back to the 2019 level, and visitor arrivals were close to pre-pandemic numbers. Average spending per tourist was unusually high after the pandemic, but in Q4 it seemed to move closer to earlier levels, and the average length of stay shifted back to the pre-pandemic pattern (Chart III-15).

Services exports other than travel and transport grew by 6% year-on-year in Q4 and by 8% in 2022 as a whole, whereas growth in cargo shipping eased somewhat, measuring 5% year-on-year during the quarter and 20% for the year as a whole.

### ... and 2023 is off to a strong start

Foreign nationals' arrivals via Keflavík Airport increased marginally quarter-on-quarter in Q1/2023, to 419,000, as compared with 481,000 at the Q1/2018 peak. Tourist numbers for the quarter outpaced the Bank's February forecast, particularly in March. Indicators of tourist spending in Iceland during the quarter suggest that average spending in foreign currency was slightly less than in Q1/2022, but prospects further ahead remain uncertain. Furthermore, the average length of stay appears to have continued to be close to the pre-pandemic level (Chart III-15). On the other hand, domestic airlines' export revenues from passenger transport appear to have declined quarter-on-quarter, partly because inclement weather affected flight offerings, although seat utilisation ratios remained high. Domestic airlines' activity remains below the pre-pandemic peak but is rising, while the composition of the passenger group has changed. The share of transit passengers has remained considerably smaller and the

Chart III-14  
Exports and contribution of subcomponents<sup>1</sup>  
Q1/2018-Q4/2022

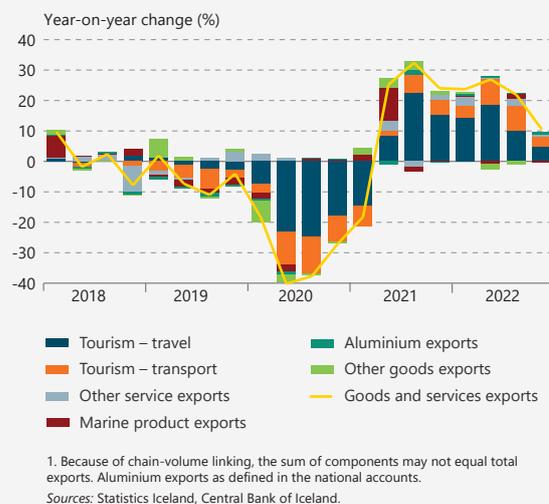
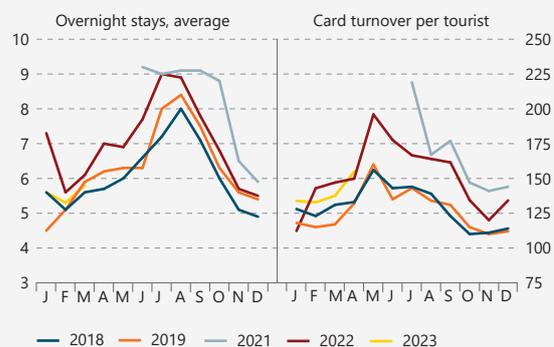


Chart III-15  
Tourism: overnight stays and card turnover 2018-2023<sup>1</sup>



share of Iceland-bound passengers larger than at that time (Chart III-16).<sup>4</sup>

### Prospects for tourism have therefore improved

Economic activity softened in trading partner countries towards the end of 2022, and the overall global GDP growth outlook is poor. A major factor in this is the surge in living costs, which has eroded households' real disposable income (see Chapter I). At yet, however, the impact on travel to Iceland is minimal. Domestic airlines' plans indicate that demand for travel to Iceland remains unabated, and the outlook is for more flight offerings in H2/2023 than was previously assumed. Furthermore, the number of Google searches for flights to Iceland and accommodations within the country appears to have increased year-to-date (Chart III-16). According to data from the International Air Transport Association (IATA), global bookings remain at a similar level as in H2/2022, whereas the recovery of tourism in Iceland last year was among the fastest in Europe (Chart III-17).<sup>5</sup>

Based on prospects for increased flight offerings in H2/2023, greater interest in visiting Iceland, and indicators showing strong bookings, the Bank has revised its projections for 2023 tourist arrivals upwards relative to the February forecast. Tourist numbers are now expected to approach 2.2 million this year, whereas the February forecast assumed a scant 2.1 million. As in February, the outlook is for a more modest year-on-year increase in flight offerings in 2024 and, as a result, more moderate growth in tourism as well. This assessment is highly uncertain, however. As is discussed in an alternative scenario in Box 1, tourist visits to Iceland could increase more rapidly than is assumed here if, for instance, the share of transit passengers remains small, utilisation ratios remain unusually high (as they were in 2022), and airlines' plans for H2/2023 materialise in full. On the other hand, if rising living costs in trading partner countries have a stronger impact, if demand weakens, and if airlines' plans change, tourist numbers could increase more slowly than is assumed here.

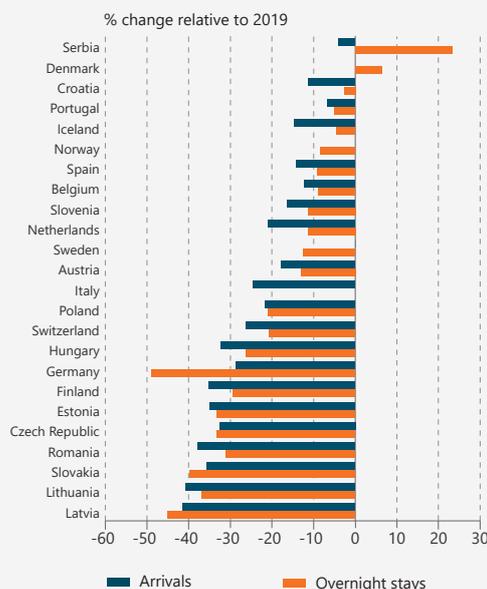
The outlook is for stronger services exports in 2023 than was forecast in February, owing to positive base effects from the above-mentioned changes in treatment of intellectual property in the pharmaceuticals industry coupled with brighter prospects for tourism. Growth in services exports is now projected at

Chart III-16  
Google searches and passengers<sup>1</sup>  
Q1/2018-Q2/2023



1. Search results according to a principal component model combining the frequency of five different Google search strings relating to travel to Iceland (seasonally adjusted). Transit passengers travelling through Keflavik Airport and foreign nationals' departures. Based on data through April 2023.  
Sources: Google Trends, Isavia, Central Bank of Iceland.

Mynd III-17  
Tourist arrivals and overnight stays 2022<sup>1</sup>



1. Available data for 2022 varies by destination.  
Sources: European Travel Commission, TourMIS.

4. Wow Air was still operating at that point, and its share of transit passengers was generally very large.

5. See International Air Transport Association, *Air Passenger Market Analysis*, March 2022.

12.9% instead of the 7% assumed in February. As was forecast in February, the rate of growth is expected to ease in 2024, alongside a slower rise in tourist numbers.

### Year-2022 goods exports developed in line with the February forecast ...

Goods exports grew by 1.4% year-on-year in 2022, some 0.4 percentage points below the February forecast, with the difference stemming from the revision of previously published data for the first three quarters of the year. Marine product exports were up 0.6% between years, reflecting weaker demersal fish exports due to reduced quotas, particularly for cod, versus stronger exports of pelagic products because of a historically large capelin quota. Aluminium exports grew by just over 2% year-on-year, as was forecast in February. Growth in other goods exports was 2 percentage points weaker than projected, however, because of the revision of figures for earlier quarters of the year. Exports of aquaculture products and other industrial goods grew strongly, whereas ferrosilicon exports declined.

### ... and the outlook for 2023 has improved

The outlook for goods exports in 2023 has improved since February, owing mainly to an increased capelin quota. Marine product exports are still expected to shrink year-on-year as a result of reduced quotas, but the contraction is projected to be smaller than was forecast in February. Other goods exports are still assumed to increase markedly this year, particularly aquaculture products, medicinal products, and other industrial goods. Growth is expected to be stronger than was forecast in February, reflecting a correction of previously published figures for 2022 and robust growth in Q1/2023. As in February, aluminium product exports are expected to increase marginally between years. Goods exports are forecast to grow by 1.4% in 2023 instead of contracting by 0.4%, as was projected in February. The outlook for the next two years is broadly unchanged, with growth forecast at 2% per year.

### Stronger growth in total exports expected in 2023, but the outlook for the next two years is broadly unchanged

Total exports are expected to grow by 6.3% this year, about 3½ percentage points more than was assumed in February. The difference is due mostly to stronger growth in services exports, which in turn stems from more favourable prospects for tourism. Furthermore, it will not be offset by a contraction in intellectual

Chart III-18  
Exports and contribution of underlying components  
2015-2025<sup>1</sup>



1. Because of chain-volume linking, the sum of components may not equal total exports. Tourism is the sum of "travel" and "passenger transport by air". Aluminium exports as defined in the national accounts. Central Bank baseline forecast 2023-2025. Broken line shows forecast MB 2023/1.  
Sources: Statistics Iceland, Central Bank of Iceland.

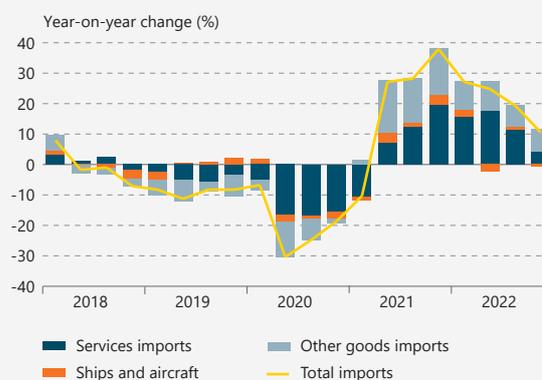
property exports this year, as it was in the February forecast (Chart III-18). The outlook for goods exports is more favourable as well. Over the next two years, total exports are set to grow by 3% per year, broadly as was forecast in February.

### Import growth set to ease in 2023

Goods and services imports grew by 10.5% year-on-year in Q4/2022, and by 19.7% over the year as a whole (Chart III-19). Goods imports have surged in the recent term, growing in 2022 by 11.5% year-on-year, almost 3 percentage points above the February forecast (Chart III-20). The difference is due to the revision of data for the first three quarters of the year, which turned out stronger than previously published numbers had suggested. Imports of fuel and investment goods were revised upwards the most. Indicators imply that Q1/2023 was slightly more sluggish than was projected in February, owing to unusually little importation of transport equipment during the quarter. The outlook is for stronger growth in domestic demand this year than was assumed in February, however, and goods imports are therefore expected to exceed the last forecast in H2/2023. As a result, goods imports are projected to grow by 2.6% this year, as compared with the 1.8% forecast in February.

Services imports grew 12.8% year-on-year in Q4 and were more robust than expected, particularly imports of other business services, which grew by 39.8% between years. However, because of Statistics Iceland's above-mentioned revision, intellectual property-related service imports were excluded from the measurements, and the annual growth rate would have been stronger had they been included. To a large degree, the increase is attributable to a jump in Icelanders' spending while travelling abroad, but service imports other than transport, transit, and travel grew by 14% year-on-year. Indicators imply that developments in Q1/2023 were broadly in line with the February forecast, although fewer Icelanders travelled abroad in March than had been assumed in February. For the year as a whole, however, outlook for Icelanders' overseas travel is in line with the February forecast. Services imports are projected to increase by 5.4% this year, slightly more than was forecast in February, with the change stemming mainly from the change in treatment of intellectual property statistics. Total imports are forecast to grow by 3.5%, well above the 2.6% assumed in February. Growth is expected to maintain a similar pace in 2024, partly because of an increase in importation of ships.

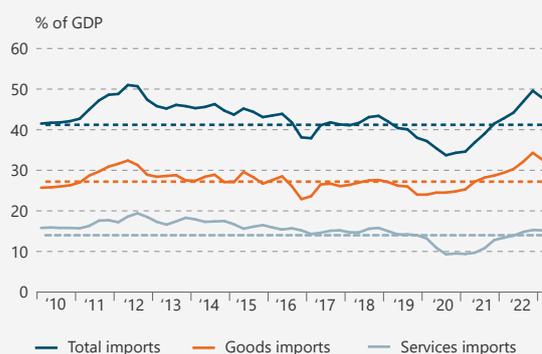
Chart III-19  
Imports and contribution of subcomponents<sup>1</sup>  
Q1/2018 - Q4/2022



1. Because of chain-volume linking, the sum of components may not equal total imports.

Sources: Statistics Iceland, Central Bank of Iceland.

Chart III-20  
Imports of goods and services<sup>1</sup>  
Q1/2010 - Q1/2023



1. Two-quarter moving average. Central Bank baseline forecast Q1/2023. Broken lines show average from 1998.

Heimildir: Hagstofa Íslands, Seðlabanki Íslands.

### Current account deficit set to be larger in 2023 than projected in February but then narrow in the latter half of the forecast horizon

The current account deficit measured 2.1% of GDP in Q4/2022, well above the February forecast. This, too, was strongly affected by Statistics Iceland's revision of its treatment of intellectual property (Chart III-21). It was offset by an unexpectedly large surplus on primary income measuring 5.2% of GDP, the largest single-quarter surplus since 2010. The deficit is due in particular to an abrupt turnaround in aluminium companies' earnings because of the recent decline in global aluminium prices, but the change was more rapid than expected. In addition, pharmaceuticals companies' operating losses increased between quarters.

In 2022, the current account deficit measured 1.5% of GDP, but significant changes were made to data for the first three quarters of the year and for previous years because of the revised treatment of intellectual property statistics, the change in treatment of aircraft leasing agreements, and the revision of primary income.<sup>6</sup> The current account deficit for 2021 was revised from 1.7% of GDP to 2.4%, and for 2020 it was revised from 1.9% to 0.9% (Chart III-22).

This year's primary income balance looks set to be broadly in line with the February forecast, reflecting the changed outlook for aluminium companies' earnings offset by a revision of previously published earnings data for other foreign-owned domestic companies. On the other hand, the trade deficit is expected to be wider despite the favourable outlook for tourism, owing mainly to a more pronounced deterioration in terms of trade (see Chapter I) and the revision of intellectual property in services trade. Thus, the outlook is for the current account to show a deficit of 2.8% of GDP this year and not 2.4%, as in the previous forecast (Chart III-21). The deficit is expected to narrow marginally as the forecast horizon advances and to be smaller at the end of the period than was projected in February.

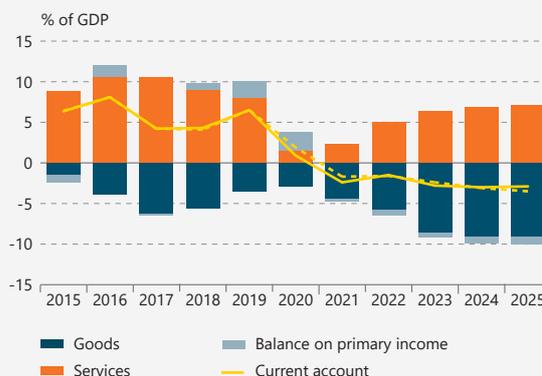
## GDP growth

### Year-2022 GDP growth below the February forecast

According to preliminary figures from Statistics Iceland, GDP grew by 2.2% quarter-on-quarter in Q4/2022. It

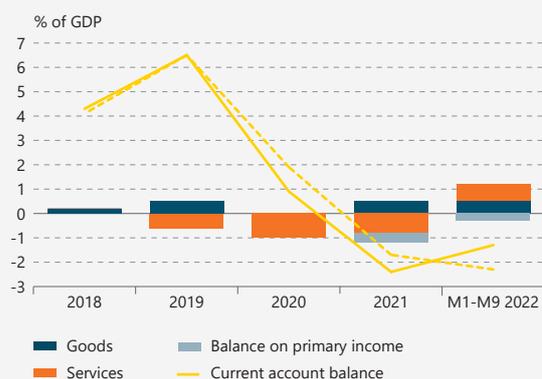
6. The national accounts treatment of aircraft leasing agreements was revised so as to classify aircraft as asset leasing under services imports, whereas they were previously entered under investment and goods imports. This change caused the current account balance to improve by a cumulative 40 b.kr. over the period 2018-2022. Statistics Iceland has been examining this for some time, and the methodology was changed back to that in use before August 2021, when the original change was made.

Chart III-21  
Current account balance 2015-2025<sup>1</sup>



1. Current account excluding the effects of the failed financial institutions in 2015. Balance on secondary income included in the balance on primary income. Central Bank baseline forecast 2023-2025. Broken line shows forecast from MB 2023/1. Sources: Statistics Iceland, Central Bank of Iceland.

Chart III-22  
Revision of the current account balance 2018-9m/22<sup>1</sup>



1. Current account balance after revision. Broken line shows current account balance prior to revision. Contribution of subcomponents to changes resulting from revision. Sources: Statistics Iceland, Central Bank of Iceland.

grew by 3.1% year-on-year, less than in the previous quarters (Chart III-23). Growth during the quarter was also far below the 6.3% assumed in the February forecast, mainly because of the aforementioned change in Statistics Iceland's treatment of data on intellectual property exports in the pharmaceuticals industry, as GDP growth would have measured 6.7% for the quarter if that change had not been made.

GDP growth measured 6.4% in 2022 as a whole, whereas the February forecast assumed a growth rate of 7.1% (Chart III-24). Weaker growth reflects less favourable external trade, which in turn was caused by reduced growth in exports and increased growth in imports. Offsetting this is more robust growth in domestic demand, driven mainly by stronger investment. If the treatment of intellectual property exports had not been changed, GDP growth would have measured 6.6% for the year. The revision therefore has far less impact on full-year GDP growth, as it is offset by the effect on services imports in the first three quarters of the year. Year-2022 GDP growth was Iceland's strongest since 2007 and nearly double the trading partner average.

### Broad-based GDP growth in 2021 and 2022

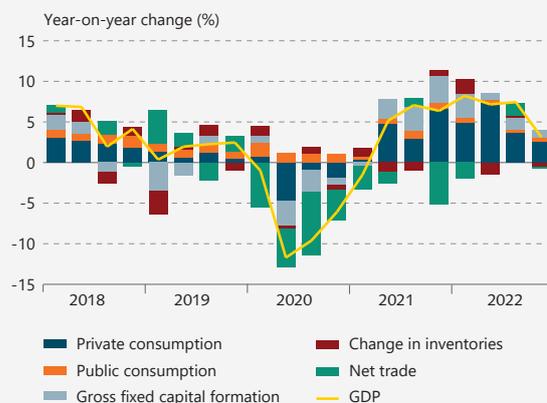
Last year's GDP growth was driven primarily by strong growth in domestic demand, with import growth offsetting robust growth in services exports. This can also be seen in the production accounts, which show significant growth in domestic manufacturing and services (Chart III-25). Growth was measured in all sectors of the economy, however, and last year's GDP growth therefore seems to be relatively broad-based, as it was in 2021. Other competitive sectors, especially tourism, contributed more to GDP growth in 2022 than in 2021, but their share in GDP has not yet returned to 2019 levels.

### Output growth in 2023 set to exceed the February forecast

The outlook is for quarter-on-quarter GDP growth in Q1/2023 to outpace the February forecast by a sizable margin. Domestic demand was considerably stronger, due mainly to a larger increase in private consumption and general business investment, which have been the main drivers of GDP growth in the past two years. Output growth in Q1 is estimated at just over 9%, the fastest growth rate since Q4/2007, when it measured 11.6%.

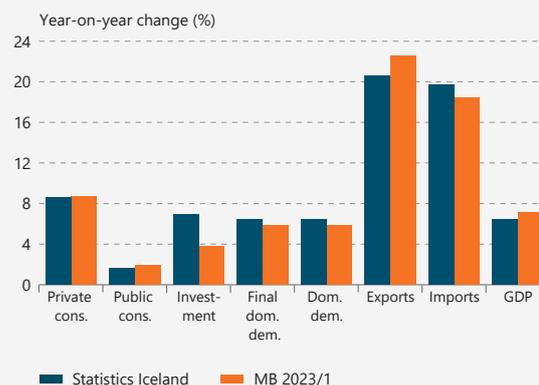
Growth is expected to remain robust in Q2 but then ease somewhat over the remainder of the year. It

Chart III-23  
GDP growth and contribution of components<sup>1</sup>  
Q1/2018 - Q4/2022



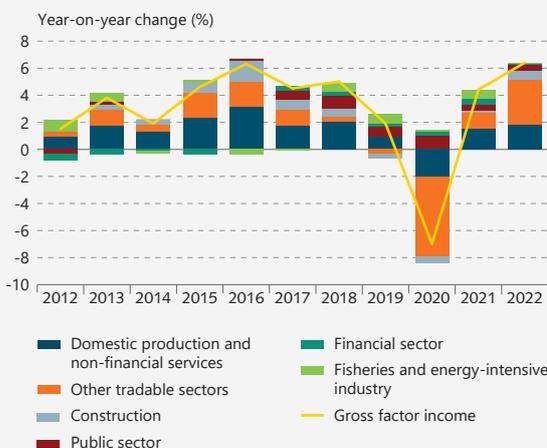
1. Because of chain-volume linking, the sum of expenditure components may not equal GDP growth.  
Sources: Statistics Iceland, Central Bank of Iceland.

Chart III-24  
National accounts 2022



Sources: Statistics Iceland, Central Bank of Iceland.

Chart III-25  
Gross factor income and sectoral contributions  
2012-2022<sup>1</sup>

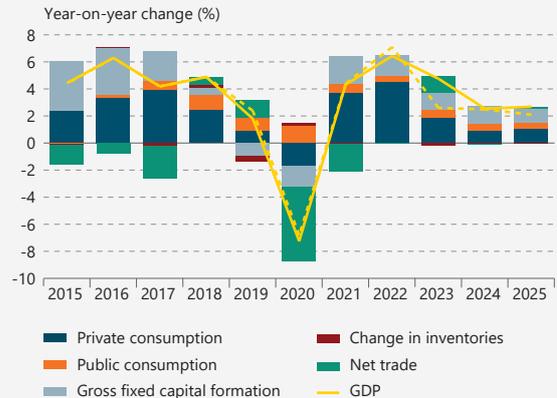


1. Gross factor income measures the income of all parties involved in output. It is equal to GDP adjusted for indirect taxes and production subsidies. 75% of utilities are classified with energy-intensive industry and 25% with domestic production. Other tradable sectors include tourism and pharmaceuticals production.  
Sources: Statistics Iceland, Central Bank of Iceland.

is projected to average 4.8% for 2023 as a whole, or 2.2 percentage points above the February forecast (Chart III-26). This is due largely to the prospect of stronger growth in private consumption and investment, supported by a more positive contribution from net trade because of the favourable outlook for tourism. Added to this is the impact of the aforementioned methodological change, which is estimated to add 0.6 percentage points to this year's GDP growth. As in the previous forecast, output growth is expected to be slower for the rest of the forecast horizon, measuring 2¾% per year in 2024 and 2025. Growth in domestic demand is projected to ease because of base effects from strong growth in 2023, and private sector financial conditions look set to keep tightening.

If the baseline forecast materialises, per capita GDP growth will not return to its 2019 level until 2025. This outlook is quite uncertain, however. Box 1 presents alternative scenarios describing the effects of a tighter fiscal stance, on the one hand, and a more rapid rise in tourist numbers, on the other.

Chart III-26  
GDP growth and contribution of underlying components 2015-2025<sup>1</sup>



1. Central Bank baseline forecast 2023-2025. Broken line shows forecast from MB 2023/1.  
Sources: Statistics Iceland, Central Bank of Iceland.

# Labour market and factor utilisation



## Labour market

### Total hours worked increased in Q1/2023 ...

According to the Statistics Iceland labour force survey (LFS), total hours worked rose by 4.4% year-on-year in Q1/2023, as the number of employed persons increased 4% and the average work week was longer by 0.4%. Seasonally adjusted job numbers and hours worked increased only marginally between quarters, after a strong job growth in Q4/2022 (Chart IV-1). Furthermore, recent pay rises and the ongoing strikes during the quarter may have cut into labour demand.

The number of workers on the pay-as-you-earn (PAYE) register rose commensurably. According to seasonally adjusted wage-earner numbers, most sectors have returned to an employment level comparable to that seen during the last year before the pandemic, although some fared better than others. In construction, real estate sales, IT and telecommunications, and the public sector, the number of employees in March 2023 was 11-16% above the 2019 level. In tourism and manufacturing, however, job numbers were similar to those in 2019, while in the fishing industry they were lower.

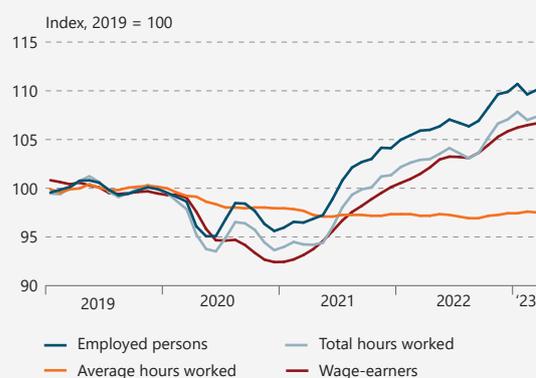
### ... and unemployment was low ...

As 2022 drew to a close, the labour participation rate was 1.6 percentage points higher than in the last year before the pandemic, and the highest since Q2/2017, according to seasonally adjusted LFS data. It fell marginally in Q1/2023, but the employment rate fell slightly more, and unemployment therefore inched upwards by 0.1 percentage points. Unemployment measured 3.7% in Q1 and has held broadly unchanged over the past year (Chart IV-2). Seasonally adjusted registered unemployment continued to fall, however, to 2.6% by

Chart IV-1

### Employment and hours worked<sup>1</sup>

January 2019 - March 2023



1. Wage-earners according to the Iceland Revenue and Customs' pay-as-you-earn (PAYE) register. Other figures are from the Statistics Iceland labour force survey (LFS). Persons aged 16-74 years old. Three-month moving average of seasonally adjusted figures.

Sources: Statistics Iceland, Central Bank of Iceland.

April, its lowest since summer 2018. The LFS measure of the slack in the labour market increased between quarters, however. Nevertheless, it, like unemployment, is still ½ a percentage point lower than just before the pandemic hit Iceland. Furthermore, long-term unemployment is low. In April, 0.8% of the labour force had been on the unemployment register for more than one year, about the same as before the pandemic.

### ... as strong demand for labour ...

Seasonally adjusted results of Gallup's spring survey among executives from Iceland's 400 largest companies show that 30% of firms were planning to recruit staff and only 12% were planning to downsize. The balance of opinion is therefore positive by 18 percentage points, or more than 10 percentage points above the historical average, even though it has narrowed relative to the winter survey (Chart IV-3). Statistics Iceland's corporate survey counted nearly 7,600 job vacancies in Q1, an increase of 120 jobs year-on-year. The number of vacancies was therefore 10% less than the number of unemployed persons – a sizeable share at this time of year. For comparison, in Q1/2019, a year before the pandemic reached Iceland, the number of unemployed was twice the number of available jobs.

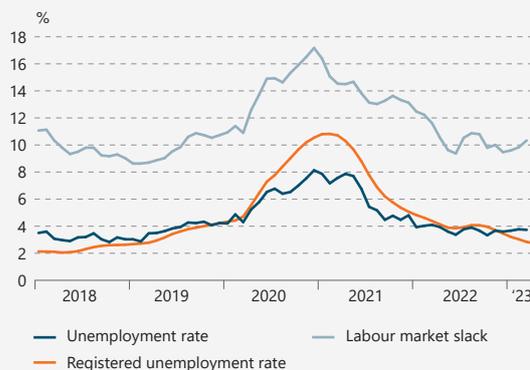
### ... was addressed with a record-breaking expansion of the foreign labour force

In 2022, foreign immigrants outnumbered foreign emigrants by nearly 10,500, resulting in a population growth rate of 3.1%, Iceland's most rapid since measurements began in 1734. It is rapid in international context as well, far outpacing other advanced economies. Population growth has repeatedly outpaced expectations, and the Bank's forecasts of growth in the working-age population have frequently been revised upwards (Chart IV-4). The outlook is for a significant increase this year, too: in Q1/2023 the overall population grew 3.6% year-on-year and the working-age population by 3.7%, the fastest growth rate since the LFS was introduced. Capacity pressures look set to be stronger in Iceland than in trading partner countries during the forecast horizon, laying the groundwork for continued population growth, both in 2023 and over the forecast horizon as a whole. Refugees constituted a large share of immigrants to Iceland in 2022, and a sizeable number of applications for asylum have been submitted in 2023 to date. According to estimates from the Directorate of Immigration, the total for the entire year is unlikely to be lower than that in 2022.

Chart IV-2

### Unemployment and labour market slack<sup>1</sup>

January 2018 - April 2023



1. The labour market slack is the sum of unemployed persons, underemployed part-time workers, and the potential addition to the labour market (persons seeking work but not ready to work within two weeks and persons available but not seeking work), expressed as a percentage of the extended labour force (labour force plus the potential addition to the labour market). Registered unemployment excludes persons receiving part-time unemployment benefits from March 2020 onwards. Three-month moving average of seasonally adjusted figures.  
Sources: Directorate of Labour, Statistics Iceland, Central Bank of Iceland.

Chart IV-3

### Firms' recruitment plans<sup>1</sup>

Q1/2006-Q1/2023

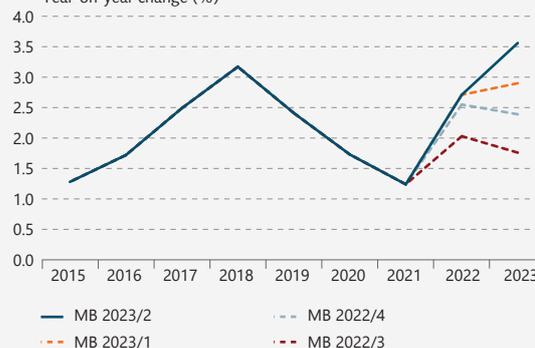


1. Share of firms planning redundancies shown with a negative sign. Broken line shows period average. Seasonally adjusted figures.  
Sources: Gallup, Central Bank of Iceland.

Chart IV-4

### Working-age population in Central Bank forecasts<sup>1</sup>

Year-on-year change (%)



1. Persons aged 16-74. Central Bank baseline forecasts.  
Sources: Statistics Iceland, Central Bank of Iceland.

## Growth in total hours worked is set to ease in coming years

The labour market remains tight, and surveys of firms' recruitment plans suggest that job numbers will keep rising in the coming term. Presumably, these jobs will be filled largely by imported workers, who will continue to be the main driver of the increase in total hours worked.

According to the baseline forecast, total hours will increase this year by 4.6%, exceeding the Bank's February forecast (Chart IV-5), and then increase by an average of 1% per year in 2024 and 2025. The outlook is for unemployment to be somewhat lower than in the last forecast, or 3.7% in 2023, rise to 4.3% in 2024, and remain there until the end of the forecast horizon.

## Indicators of factor utilisation

### Weak productivity growth during the economic recovery

Labour productivity contracted by 0.2% year-on-year in 2022, in terms of GDP per LFS-based hour worked. A slightly larger contraction of 0.5% was seen in Statistics Iceland's official labour productivity statistics which are based on gross factor income per hour worked from the national accounts (Chart IV-6). The numbers are strongly affected by the change in sectoral composition brought on in part by the post-pandemic rebound in tourism, which, like other labour-intensive sectors, is generally characterised by low productivity levels.

According to the most detailed breakdown obtainable from Statistics Iceland's publicly available data, eight of the ten sectors or sectoral groups that contributed the most to last year's rise in total hours worked showed a productivity level below the average for the economy as a whole. Without the effect of this compositional shift, productivity would have increased by 0.4%, but it is also worth noting that compositional effects boosted productivity growth in 2020. Over the period spanning the pandemic and the ensuing recovery – 2020 through 2022 – labour productivity thus measured grew by only 0.6% per year, on average, irrespective of compositional shifts. Developments in GDP per hour worked according to the LFS were even more unfavourable, showing a contraction averaging 0.4% per year over the same period.

### Continued strong capacity pressures

According to the seasonally adjusted results of Gallup's spring survey, 44% of company executives considered themselves short-staffed and 58% reported that their

Chart IV-5

Total hours worked and unemployment 2015-2025<sup>1</sup>



1. Total hours worked and unemployment according to Statistics Iceland labour force survey (LFS). Central Bank baseline forecast 2023-2025. Broken lines show forecast from MB 2023/1.

Sources: Statistics Iceland, Central Bank of Iceland.

Chart IV-6

Labour productivity 2010-2022<sup>1</sup>



1. Labour productivity as derived from the Central Bank's macroeconomic model is measured as GDP per hour worked, based on total hours worked according to Statistics Iceland labour force survey (LFS). However, labour productivity as published by Statistics Iceland is measured as gross factor income per hour worked, based on total hours worked according to national accounts data.

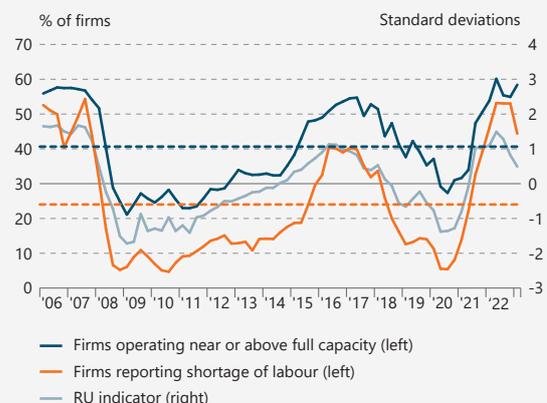
Sources: Statistics Iceland, Central Bank of Iceland.

firms would have difficulty responding to an unexpected increase in demand. The resource utilisation (RU) indicator, which combines various indicators of factor utilisation, has been above its historical average since mid-2021 but declined for the third quarter in a row (Chart IV-7). Indicators of strong capacity pressures therefore remain, even though certain measures suggest that they may be easing.

According to the newly published national accounts, GDP was revised downwards by a total of just over 1% for the three-year period from 2019 through 2021. In addition, year-2022 GDP growth turned out somewhat weaker than was projected in February, partly because of a change in the methodology used to measure intellectual property exports in the pharmaceuticals sector. There was a change in the treatment of aircraft leasing contracts as well, which affects the capital stock (see also Chapter III). These changes in methodology do not affect potential output, but they make its estimation more difficult.

The output slack in the wake of the pandemic is now considered to have been somewhat larger than previously assumed. As a result, the positive output gap in 2022 was marginally smaller than was assumed in February, or about 2% of capacity (Chart IV-8). A similar output gap is expected this year, whereas the February forecast assumed that it would narrow year-on-year. A more persistent output gap reflects the outlook for stronger demand than was previously forecast, albeit offset by prospects of more rapid growth in the working-age population. As in February, the output gap is projected to narrow gradually as the forecast horizon advances. This assessment is, as before, highly uncertain. Further discussion of the uncertainties in the forecast, together with alternative scenarios, can be found in Box 1.

Chart IV-7  
Capacity utilisation<sup>1</sup>  
Q1/2006 - Q1/2023



1. Indicators of capacity utilisation are based on the Gallup Sentiment Survey conducted among Iceland's 400 largest companies. The resource utilisation indicator (RU indicator) is the first principal component of selected indicators of capacity 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. Seasonally adjusted figures. Broken lines show period averages.  
Sources: Gallup, Central Bank of Iceland.

Chart IV-8  
Output gap 2015-2025<sup>1</sup>



1. Central Bank baseline forecast 2023-2025. Broken line shows forecast from MB 2023/1.  
Source: Central Bank of Iceland.

# Inflation



## Recent developments in inflation

### Inflation surged in Q1 ...

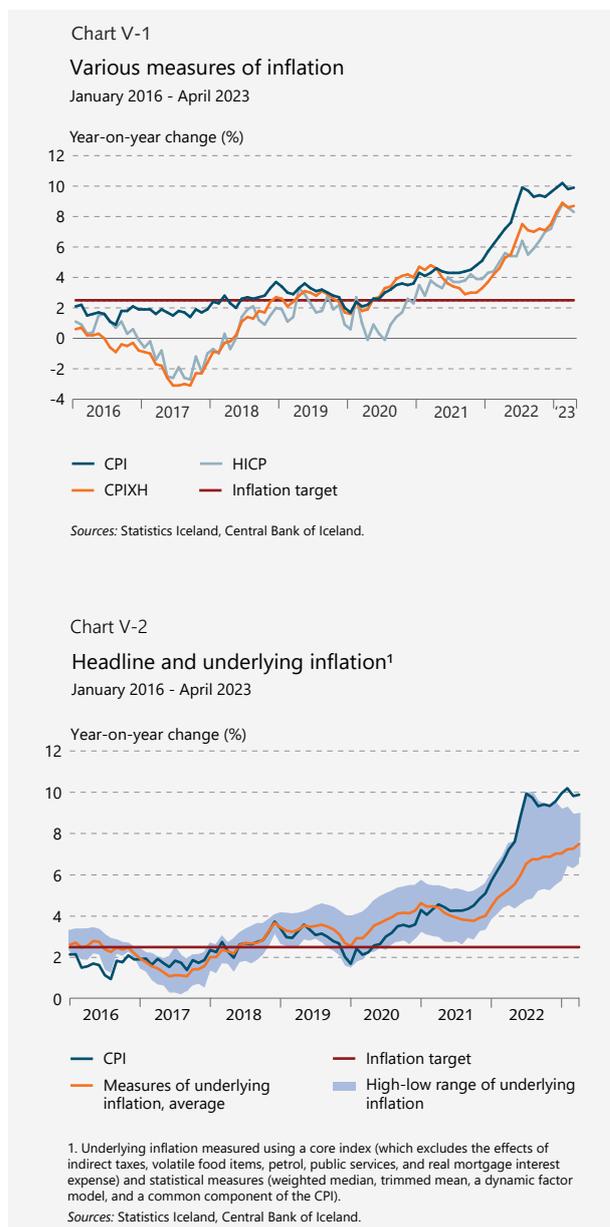
Inflation averaged 10% in Q1/2023, overtaking the forecast of 9.5% in the last *Monetary Bulletin*. It rose sharply in February, to 10.2%, the highest level seen since autumn 2009. The main drivers of the increase in the CPI during the quarter were food, services, and new motor vehicles. The housing component continued to rise as well. Petrol prices have eased in 2023 to date and were one of few subcomponents to fall in Q1.

### ... and price hikes have been widespread ...

Inflation measured 9.9% in April (Chart V-1). The CPI rose by 1.3% month-on-month, which was driven mainly by housing, food prices, and airfares. The contribution of the housing component to headline inflation has subsided gradually since last year, as housing market activity has eased (see Chapter II). On the other hand, house prices jumped in April, both in greater Reykjavik and in regional Iceland, with the result that the housing component contributed more to the rise in the CPI than at any time since June 2022. Inflation excluding housing measured 8.7% and has risen by 0.4 percentage points since January. HICP inflation, which also excludes the cost of owner-occupied housing, has increased as well from January to 8.3% in April.

### ... as can be seen in rising underlying inflation

Underlying inflation has kept climbing. It measured 7.5% in April, according to the average of various measures (Chart V-2). Most measures have risen steeply since January. Inflation is therefore increasingly widespread: in April, nearly half of the CPI consump-



tion basket had risen more than 10% year-on-year and nearly 40% were up by 5-10% (Chart V-3).

This can also be seen in a comparison of the composition of twelve-month inflation now and at the end of 2022, when the inflation rate was similar to the current one (Chart V-4). The contribution of housing to inflation has tapered off, but at the same time the contribution from food, services, and miscellaneous imported goods, has increased markedly. At present, one-third of twelve-month inflation is attributable to the cost of owner-occupied housing, down from nearly 40% at the end of 2022. Inflation has therefore grown more widespread in recent months, and price hikes have increasingly spread across CPI subcomponents.<sup>1</sup>

## Indicators of inflationary pressures

### Strong demand and firms' cost increases have exacerbated inflationary pressures ...

As is discussed in Chapter III, private consumption has remained strong, partly because of recent wage increases, but also because households have been drawing down the savings they accumulated during the pandemic. Due to strong household demand, increased tourist numbers, and tight labour market, firms appear to have passed cost increases through to prices more readily than they might have otherwise. Domestic goods prices have risen by 12.2% in the past twelve months, owing largely to the increase in food prices.

Private services prices have risen by over 8% in the past year, as compared with a year-on-year increase of 6.6% in January 2023 (Chart V-5). Price hikes have been spread across a range of subcomponents of services, albeit dominated by the rise in airfares and restaurant prices. The price of public services prices has risen as well and was up slightly more than 7% year-on-year in April.

### ... and imported inflation is high as well

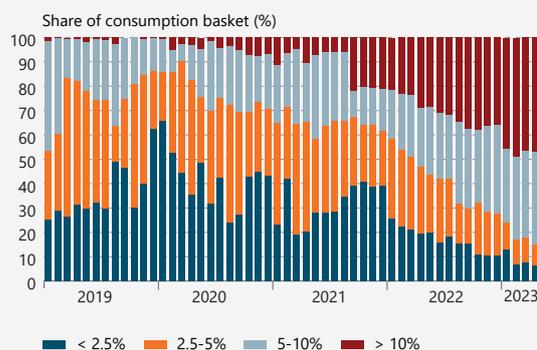
The price of imported foods and other imported goods such as clothing and furniture has continued to rise in recent months. The year-on-year increase in imported food prices measured 10.6% in April and has accelerated markedly since January. When winter sales came to an end, it could be seen that overall, the price of various imported goods, furniture and housewares in particular, rose well in excess of the typical end-of-sale

1. See, for example, T. G. Pétursson (2022), "Af hverju hafa sveiflur í verðbólgu aukist á ný? [Why has inflation volatility increased again?]" Central Bank of Iceland, *Kalkofninn*, 19 December 2022 (in Icelandic).

Chart V-3

### Price increases<sup>1</sup>

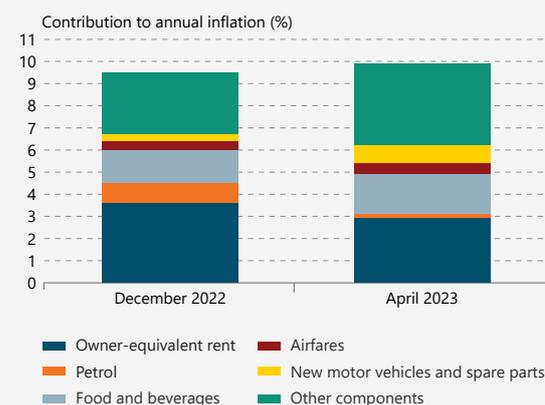
January 2019 - April 2023



1. The share of the CPI consumption basket categorised by annual increase.  
Sources: Statistics Iceland, Central Bank of Iceland.

Chart V-4

### Components of CPI inflation

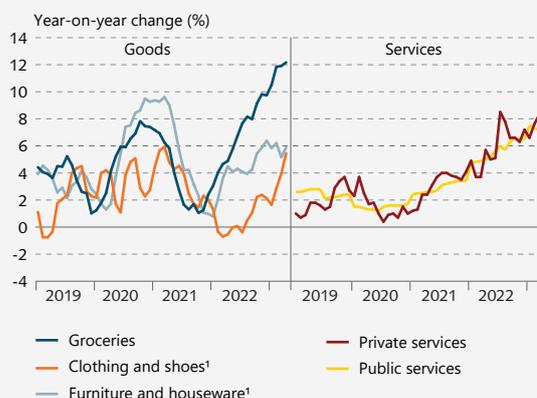


Sources: Statistics Iceland, Central Bank of Iceland.

Chart V-5

### Goods and services prices

January 2019 - April 2023



1. Based on a three-month average.  
Sources: Statistics Iceland, Central Bank of Iceland.

effects (Charts V-5 and V-6). This stems in part from the fact that at the end of January, when the króna was at its weakest in 2023 to date, the exchange rate had fallen by 8.5% since September 2022. Global inflation is still high as well even though oil and commodity prices have been falling since last year (see Chapter I).

The króna has appreciated by 4.2% since end-January, but there are few signs as yet that the stronger króna and the decline in commodity prices have started to pass through to the domestic price level. Domestic petrol prices are down 2.2% year-to-date but are still 16.4% higher than just before Russia invaded Ukraine.

As is noted above, it is clear that inflationary pressures are strong and that they extend to most CPI subcomponents, as they stem from strong domestic demand pressures. On the other hand, the results of Gallup's spring survey of corporate expectations, carried out in February and March, show that the share of respondents who expect to raise their product prices has continued to fall, although it remains historically high, at 60%. The share of executives who expect input prices to rise is broadly unchanged, however, at nearly 80%.

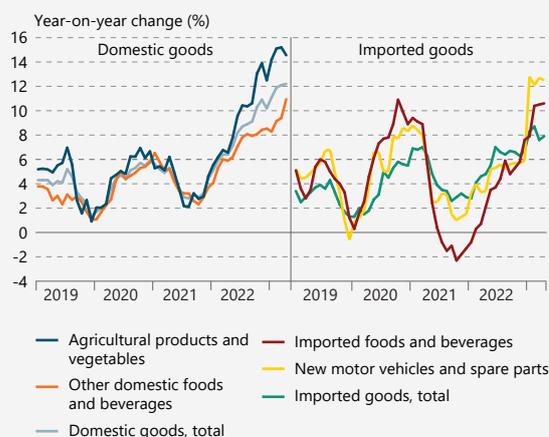
### Wage costs up sharply in 2022 and 2023

The wage share – i.e., the ratio of wages and related expenses to gross factor income – was 59.2% in 2022. The ratio was somewhat lower than in 2021, reflecting a steep rise in wage costs offset by elevated inflation. Wages and related expenses per hour worked rose 8% year-on-year, concurrent with a decline in labour productivity (see Chapter IV). Unit labour costs therefore increased by 8.2%, whereas the price deflator of gross factor income rose even more, or by 9.5%, thereby lowering the wage share between years.

Real wages also shrank marginally in 2022, as consumer prices rose in excess of wages. However, real wages rose more during the first two years of the pandemic and fell much less in 2022 than they did in other advanced economies (Chart V-7). In the past three years – that is, from the onset of the pandemic – real wages rose by an average of 2% per year in Iceland, whereas they contracted by 1% per year in other European countries and by 0.3% in the US.

The general wage index rose by 3.5% between quarters in Q1/2023, and by 8.9% year-on-year. Even though wages rose strongly during the quarter, real wages were 1% lower than in Q1/2022 (Chart V-8). The proposal submitted by the State Conciliation and Mediation Officer in the labour dispute between the Confederation of Icelandic Employers and the

Chart V-6  
Domestic and imported goods prices  
January 2019 - April 2023



Source: Statistics Iceland.

Chart V-7  
Real wages in developed countries 2019-2022<sup>1</sup>



1. Average hourly earnings in manufacturing, deflated with the CPI. The Nordic region (excl. Iceland) shows a simple average for Denmark, Finland, Norway, and Sweden. The 17-country median excludes the Nordic countries and the UK

Sources: OECD, Central Bank of Iceland.

Chart V-8  
Wages  
Q1/2015 - Q1/2023



Source: Statistics Iceland.

Efling labour union was implemented in large part in March, but the proposal also provided for retroactive payments that are not captured by Statistics Iceland's general wage index. Furthermore, large public sector employee groups landed wage agreements in Q2.

Both the Mediation Officer's proposal and the recently concluded public sector agreements were broadly consistent with the Bank's February forecast. On the other hand, the outlook is for a larger terms of trade deterioration this year relative to the February forecast, which will have a negative impact on national income and wages (see Chapter I). Wages per hour are now expected to rise by 9% in 2023, followed by an average increase of 6% per year in 2024-2025.

As is discussed in Chapter IV, labour productivity has hardly increased since the pandemic struck, and the outlook is for continued weak growth over the forecast horizon. If the Bank's forecast materialises, unit labour costs will increase by 8.8% this year and an average of 4¼% per year in 2024 and 2025. This exceeds the rise in the GDP price deflator, causing the wage share to rise again this year. Wage developments over the forecast horizon are highly uncertain, however, especially because the newly negotiated wage agreements expire early next year.

## Inflation expectations

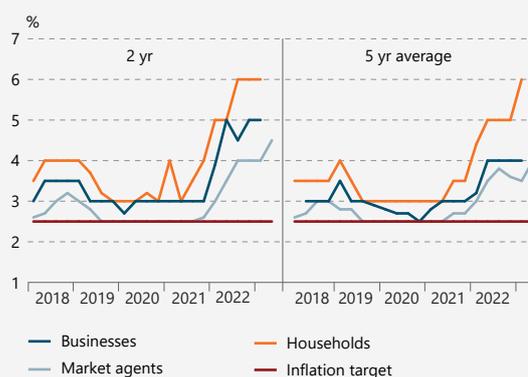
### Market agents' short-term inflation expectations have risen ...

According to a recent survey, market agents' two-year inflation expectations have risen to 4.5%. Households' and businesses' two-year inflation expectations are also well above the target. Corporate executives expect inflation to have declined to 5% after two years, while households expect it to be 6% (Chart V-9).

### ... as have their long-term inflation expectations

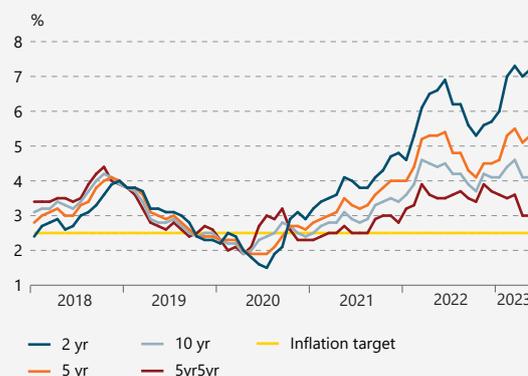
Market agents' five- and ten-year inflation expectations have also risen since the January survey: market participants expect inflation to average 4% over the next five years – the highest measurement since 2013 – and 3.5% over the next ten years. On the other hand, businesses' inflation expectations were unchanged between surveys, at an average of 4% over the next five years. Households are more pessimistic, though, and their long-term inflation expectations rose to 6%. The breakeven inflation rate in the bond market has fluctuated somewhat in recent months but fell after the Bank's March interest rate decision. The ten-year breakeven rate was just over 4% in mid-May, about the

Chart V-9  
Two- and five-year inflation expectations<sup>1</sup>  
Q1/2018 - Q2/2023



1. Gallup surveys of households' and businesses' inflation expectations and Central Bank survey of market agents' inflation expectations. Median responses.  
Sources: Gallup, Central Bank of Iceland.

Chart V-10  
Breakeven inflation rate<sup>1</sup>  
January 2018 - May 2023



1. Monthly averages. Data through 19 May 2023.  
Source: Central Bank of Iceland.

same as at the beginning of February. The five-year breakeven rate five years ahead has fallen by ½ a percentage point, however, to 3.1% (Chart V-10).

There are signs that inflation expectations have grown less firmly anchored to the target, as inflation has been above target since summer 2020 and surged in the past year (see Box 2 of *Monetary Bulletin* 2022/4). Market agents' long-term inflation expectations started to rise in H2/2021 and have been above the target ever since. In other advanced economies, however, inflation expectations have not risen discernibly, and they appear to be more firmly anchored to target (Chart V-11). Therefore, there is a greater risk that inflation will be more persistent in Iceland than in other advanced economies and that bringing it back to target will take longer.

## The inflation outlook

**The short-term inflation outlook has deteriorated ...**

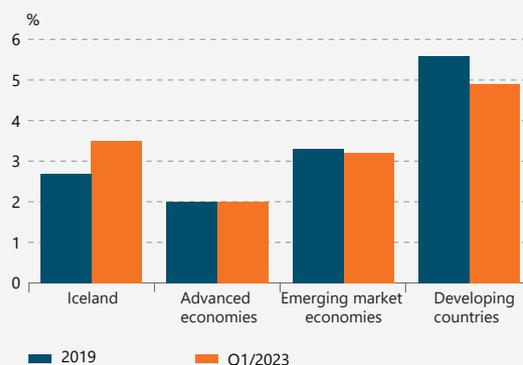
Inflation overshoot the Bank's February forecast in Q1/2023, owing to stronger and more widespread inflationary pressures than were assumed in the forecast. The near-term outlook has therefore deteriorated, mainly because of a more unfavourable initial position. Inflation is projected at 9.4% in Q2 and 8% in Q3, some 2 percentage points above the February forecast. The positive output gap is expected to be wider in 2023 than previously estimated, as is reflected in stronger forecasted private consumption and investment, among other factors. According to the baseline forecast, inflation has peaked and will average 8.8% in 2023 as a whole.

This year's developments in inflation as depicted in the baseline forecast are broadly in line with the average outcome of the Bank's short-term forecasting models, which give results ranging between 7¾% and 9½% (Chart V-12). The baseline forecast is also well in line with the results indicated by the Bank's DSGE model (DYNIMO).

**... and the outlook is for inflation to subside slowly ...**

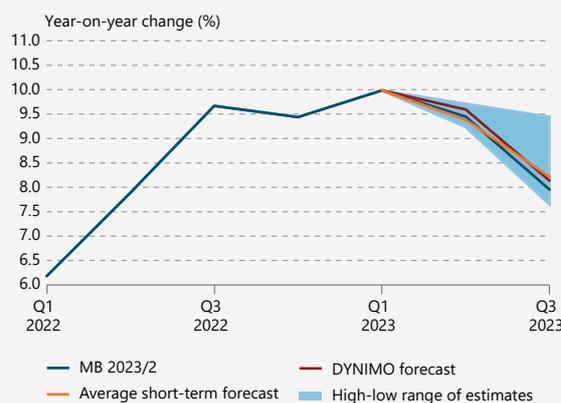
Inflation is still expected to fall slowly. It is expected to remain above 8% in Q4/2023 and measure around 4% by the end of 2024 (Chart V-13). As a result, inflation will fall more slowly than was projected in February. This is not least because of indications that it has become much more entrenched and that house prices will decline less than previously forecast. It will be off-

Chart V-11  
Global comparison of long-term inflation expectations<sup>1</sup>



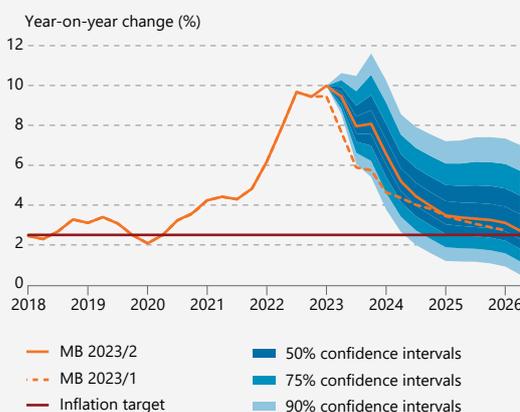
1. Based on market agents' and professional forecasters' five-year inflation expectations.  
Sources: International Monetary Fund, Central Bank of Iceland.

Chart V-12  
Short-term inflation forecast<sup>1</sup>  
Q1/2022 - Q3/2023



1. A comparison of the baseline forecast, the DSGE model DYNIMO forecast, and the average of five statistically estimated inflation models used by the Bank for short-term inflation forecasts.  
Sources: Statistics Iceland, Central Bank of Iceland.

Chart V-13  
Inflation forecast and confidence intervals  
Q1/2018 - Q2/2026



Sources: Statistics Iceland, Central Bank of Iceland.

set, however, by a somewhat stronger króna. Inflation is expected to average 3.4% in 2025 and approach the target at the end of the forecast horizon, conditional upon the interest rate path in the baseline forecast. This is somewhat later than is generally expected in other advanced economies.<sup>2</sup>

**... and inflation risk is still concentrated on the upside**

As is discussed in Box 1, the inflation outlook depends on developments in a range of uncertainties. The newly landed wage agreements expire at the beginning of 2024, and the results of the upcoming negotiations will affect developments in inflation over the forecast horizon. In addition, global oil and commodity prices could rise again, depending on how the war in Ukraine develops. Although housing market activity has eased, it has done so slowly, and near-term developments in house prices remain highly uncertain. Overall activity in the domestic economy could be underestimated and, all else being equal, inflation could fall more slowly than is currently projected. In view of all of this, the risk profile is considered tilted to the upside; i.e., near-term inflation is likelier to be underestimated in the baseline forecast than it is to be overestimated. There is a roughly 50% probability that inflation will lie in the 4-6½% range one year from now and in the 2½-5% range in two years, while there is a more than 60% chance that it will be higher than is forecast here (Chart V-13).

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2. For further information, see Chapter 1 of the *World Economic Outlook*, International Monetary Fund, April 2023.

## Alternative scenarios and uncertainties

The Central Bank's baseline forecast reflects the likeliest economic developments over the forecast horizon. The economic outlook is uncertain, however, and could change in response to changes in key assumptions underlying the forecast.

One important assumption behind the forecast centres on developments in public finances over the forecast horizon, as the forecast assumes that the fiscal stance will be broadly in line with the Government's recently issued fiscal plan. The potential impact of a tighter fiscal stance on the domestic economy is described in an alternative scenario.

Another important assumption underlying the baseline forecast centres on developments in tourist arrivals throughout the forecast horizon. The Bank has revised its forecast of tourist numbers upwards to accord with the most recent indicators, but the forecast could nevertheless be overly cautious. The potential impact on the economy of a rapid rise in tourist numbers is explained in another alternative scenario.

Finally, this Box discusses a number of other risks that could affect the outlook for domestic GDP growth and inflation over the forecast horizon.

### Alternative scenario: Tighter fiscal stance

**The Treasury performance has improved more slowly than robust economic activity might suggest**

The COVID-19 pandemic strongly affected public sector finances in Iceland and elsewhere. The primary balance (the overall balance excluding the financial balance) adjusted for irregular items went from a surplus averaging nearly 4% of GDP over the five years prior to the pandemic to a deficit of 6.6% in 2020. Since then the deficit has narrowed, as is discussed in Chapter III. The improvement in performance is somewhat less pronounced than could have been expected given the historical link between fiscal performance and economic activity, however (Chart 1).

These deficit operations correspond to a public sector saving level that is negative and therefore well below that needed to finance Government investment. The contribution of deficit operations to the current account balance has been negative ever since 2019 (Chart 2), offsetting the positive contribution from a high private sector saving level. As Chart 2 shows, the private sector saving ratio has fallen over the past two years; therefore, the current account

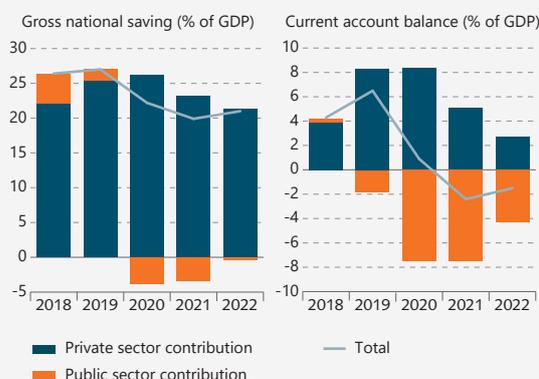
Chart 1  
Treasury performance and GDP growth 2010-2023<sup>1</sup>



1. Treasury outcome, adjusted for irregular and one-off items. Central Bank baseline forecast 2023.

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

Chart 2  
National saving and current account balance 2018-2022<sup>1</sup>



1. The sectoral split of national saving is obtained from Statistics Iceland's income accounts. The contribution of the private sector to the current account balance is the difference between private sector saving and private sector investment (business and residential investment and inventories). The contribution of the public sector to the current account balance is the difference between public saving and public investment. Central Bank estimates for 2022.

Sources: Statistics Iceland, Central Bank of Iceland.

deficit has shrunk only slightly, even though the deficit on public sector operations has narrowed.

### **More rapid fiscal tightening would support monetary policy**

The overall Treasury deficit totalled 3.5% of GDP in 2022. The recently approved fiscal plan assumes that it will narrow to 1.3% in 2023, remain broadly at that level in 2024, and then flip to a small surplus in 2025. The Central Bank's baseline forecast is somewhat more pessimistic, as it provides for an additional year-2023 deficit of roughly 1 percentage point of GDP (see Chapter III).

Under current conditions, with the economy running fairly hot and inflation well above target, a tighter fiscal stance would be beneficial. Not only would it ease the strain on capacity in the economy and improve Iceland's external position, but it would also lighten the burden on monetary policy.

To depict this more clearly, Chart 3 shows the potential impact of more rapid fiscal tightening on the domestic economy as estimated using the Bank's QMM model. It is assumed that fiscal tightening will improve the primary balance relative to the baseline forecast by roughly 60 b.kr. in 2023 and 45 b.kr. in 2024. This corresponds to an improvement totalling about 2½% of GDP over the two-year period. It is assumed that tightening measures will be equally distributed between revenues and expenditures.

As Chart 3a shows, a tighter stance would reduce private consumption relative to the baseline forecast. This reflects lower disposable household income, as transfers to households would be smaller and taxes higher, although this would be mitigated by lower interest rates (see below). Private consumption would grow more slowly by ½ a percentage point in 2023 and 1 percentage point in 2024. By the end of the forecast horizon, private consumption would be 2¼% below the baseline level. Weaker economic activity also cuts into investment growth, although lower interest rates pull in the opposite direction. The impact on investment would be minimal in 2023, but in 2024 and 2025 investment would overtake the baseline forecast (Chart 3b). Fiscal consolidation would also have a positive effect on the external balance of the economy: as a share of GDP, the current account deficit would be smaller by ¼% this year and by 1% in 2025 (Chart 3c).

GDP growth would be affected less strongly than domestic demand, as some of the reduced demand would be directed at imported goods and services, causing part of the consolidation measures to "leak" out of the domestic economy. GDP growth would be weaker by ¾ of a percent-

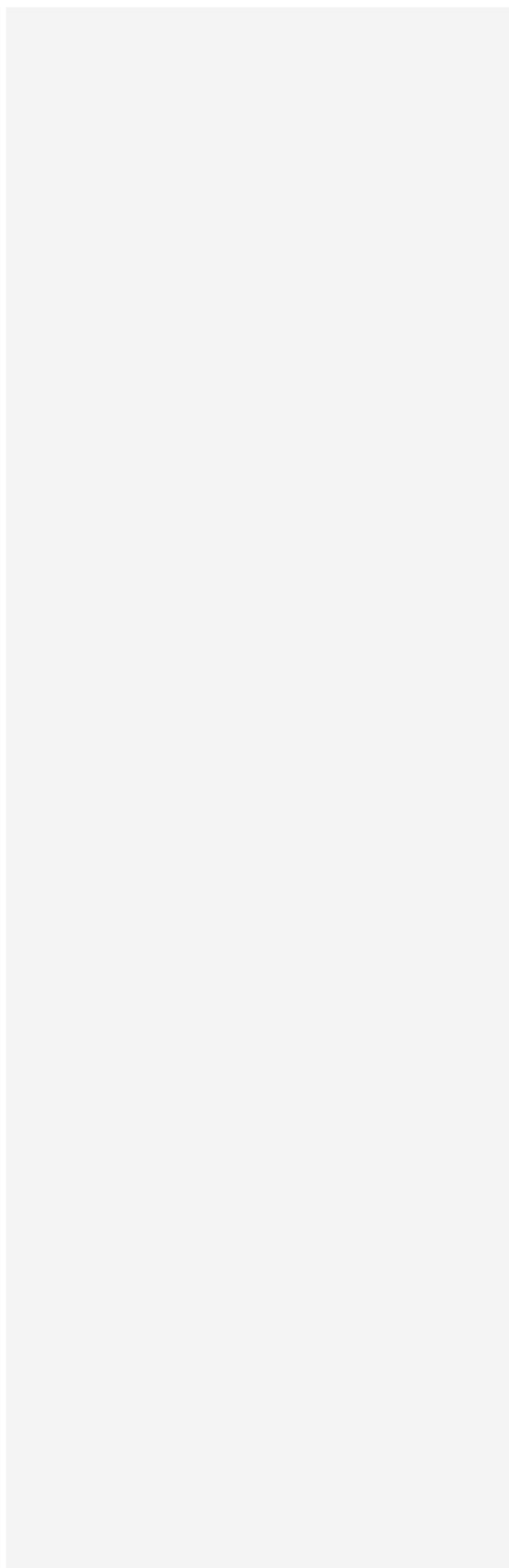
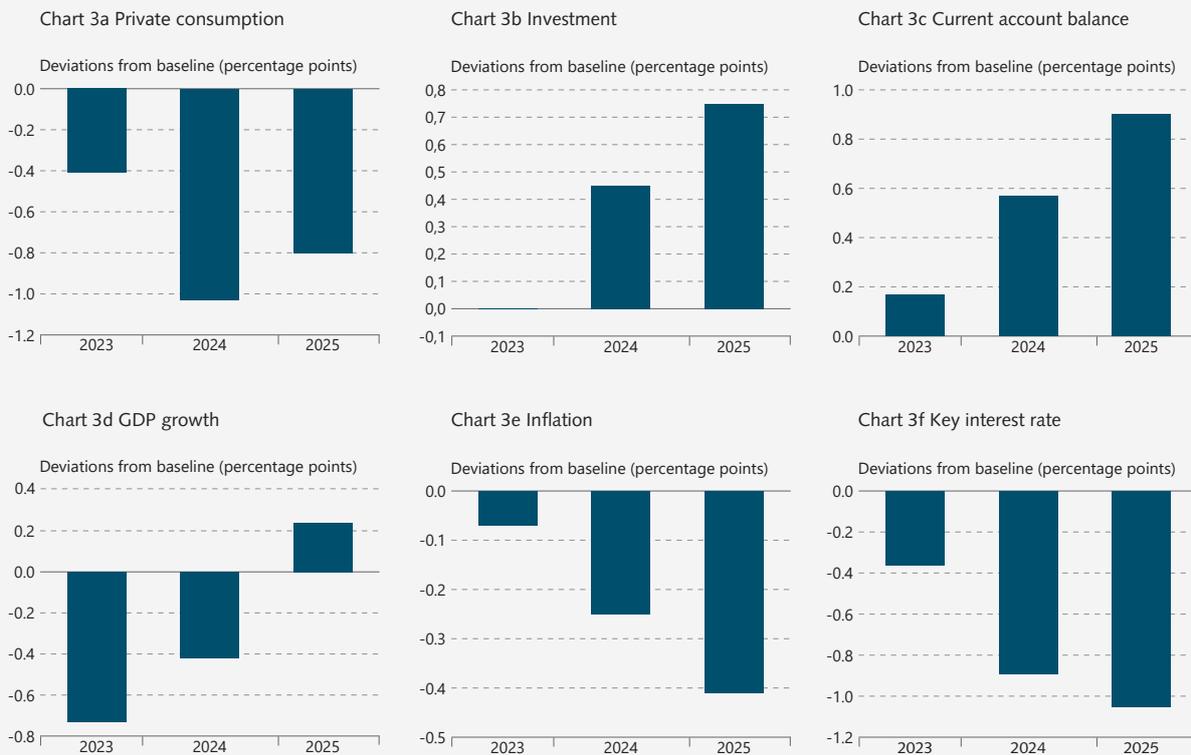


Chart 3

Alternative scenario: Fiscal stance tighter than in the baseline



Source: Central Bank of Iceland.

age point in 2023 and ½ a percentage point in 2024, but in 2025 the situation would reverse, and GDP growth would be marginally stronger than in the baseline forecast (Chart 3d). As a result, GDP level would be 1% lower than in the baseline at the end of the forecast horizon.

Weaker growth in economic activity would ease domestic inflationary pressures, with the result that by 2025 inflation would be ½ a percentage point lower than in the baseline (Chart 3e). According to the monetary policy rule in the model, the Central Bank policy rate would therefore be roughly 1 percentage point lower by the end of the forecast horizon (Chart 3f).

**Expenditure consolidation generally has a stronger impact than consolidation on the revenues side**

The alternative scenario assumes that fiscal tightening will be divided equally between revenues and expenditures, but the economic impact may differ, depending on whether the consolidation measures target revenues or expenditures.<sup>1</sup> In general, tightening on the expenditures side has

1. As is discussed in Chapter I of *Monetary Bulletin* 2019/4, the impact of the fiscal tightening would also be larger if monetary policy is not allowed to react at the same time.

a stronger and swifter effect on economic activity, as public sector demand for goods and services has a direct impact on GDP growth. On the other hand, tightening on the revenues side, whether in the form of tax increases or reduced transfer income, affects economic activity only indirectly, through its impact on households' disposable income and spending decisions. The same applies to measures targeting businesses.

Chart 4 compares the effects of alternative versions of the above-described consolidation measures. As the chart shows, a tighter stance on the expenditures side has a faster and more forceful impact on GDP growth than comparable measures on the revenues side would. Increased consolidation on the revenues side affects private consumption considerably more strongly, however, as the primary effect is to dampen household demand. The alternative scenario shown in Chart 3, however, is a mixture of the two, as is noted above.

### Alternative scenario: More rapid rise in tourist numbers

#### The assumption concerning tourist numbers in the baseline forecast could prove overly cautious ...

Tourism surged worldwide after pandemic-related travel restrictions were lifted. When living costs shot up due to rising energy and commodity prices following Russia's invasion of Ukraine, it was feared that the recovery of tourism would suffer a setback, but the effect on consumers' appetite for travel has been weaker than expected.

About 1.7 million tourists visited Iceland in 2022, more than double the total from 2021. Growth in tourism has remained strong in 2023 to date, as is discussed in Chapter III, and the baseline forecast assumes that visitor numbers will approach 2.2 million for the year as a whole, nearly 4% more than in the Bank's February forecast. Iceland's share in European tourism has therefore risen again after plunging during the pandemic (Chart 5).

#### ... and growth in economic activity over the forecast horizon may be underestimated

Even though a large number of tourists are expected to visit Iceland this year, the 2018 record of 2.3 million arrivals is expected to stand until 2025. Some analysts are more upbeat, however, and expect the record to be broken in 2023. As a result, it is quite possible that the Bank's baseline forecast is too cautious and that the recovery will be even stronger than is currently assumed. The Bank's QMM model is used to estimate the potential impact of this scenario on

Chart 4  
Effects of various versions of consolidation measures<sup>1</sup>



1. Comparison of the effects of fiscal tightening on the expenditures side versus revenues side.  
Source: Central Bank of Iceland

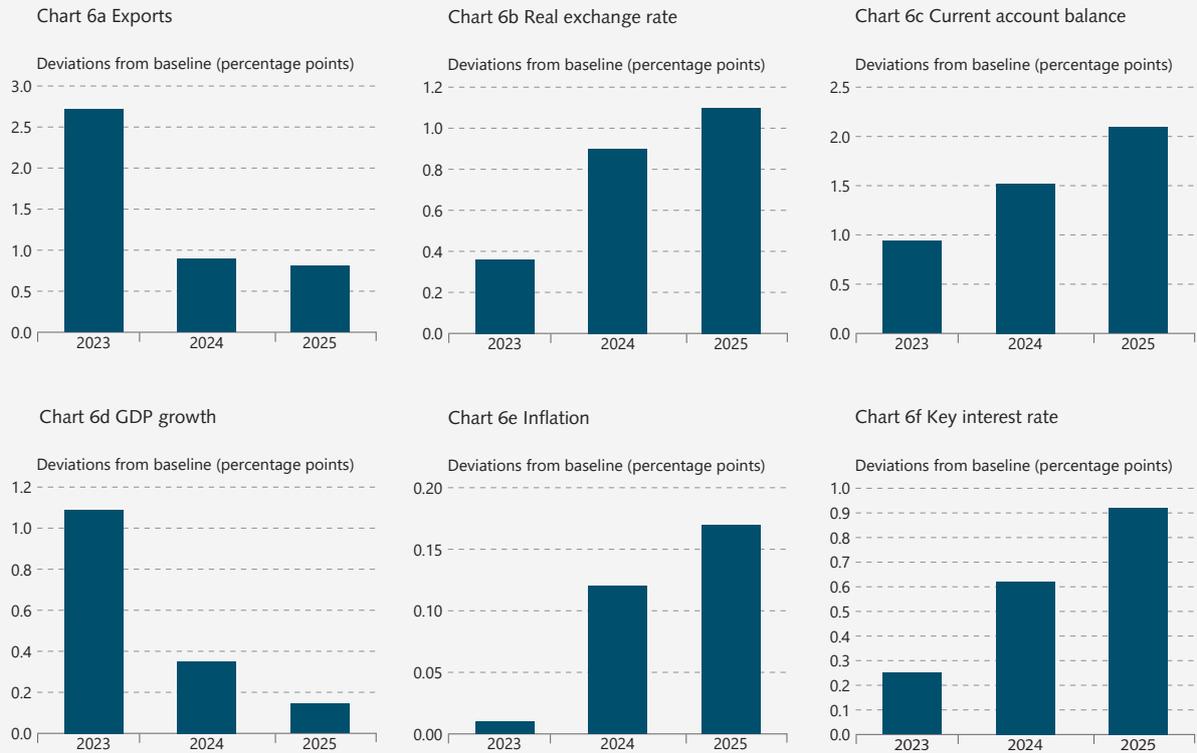
Chart 5  
Tourism sector activity 2010-2023<sup>1</sup>



1. Central Bank baseline forecast 2023. Iceland's share in European countries' travel exports (in US dollars).  
Sources: Icelandic Tourist Board, Isavia, UN Conference on Trade and Development (UNCTAD), Central Bank of Iceland.

Chart 6

Alternative scenario: Tourist numbers increase faster than in the baseline forecast



Source: Central Bank of Iceland.

the domestic economy. It is assumed that 2.3 million tourists will visit Iceland in 2023 and that visitor numbers will rise somewhat faster in the two years afterwards, so that Iceland’s share in European tourism will return to its 2017 peak by the end of the forecast horizon. This also implies that spending per tourist will exceed the baseline forecast which assumes that it will decline year-on-year after rising to an unusually high level in the wake of the pandemic. This alternative scenario assumes as well that increased activity in tourism will call for even more labour importation, which offsets the pressures on capacity from increased economic activity. Chart 6 illustrates the potential impact on the economy.

If tourist numbers rise as high as is assumed in the alternative scenario, this year’s growth in services exports could exceed the baseline forecast by 6½ percentage points. Total exports would grow by an additional 2¾ percentage points in 2023 and nearly 1 percentage point more per year in 2024 and 2025 (Chart 6a). Export volumes would then be 4½ percentage points greater than in the baseline by 2025. Stronger exports, increased economic activity, and higher interest rates (see below) cause the króna to appreciate, and by the end of the forecast horizon, the real

exchange rate would be a 2½% higher than in the baseline scenario (Chart 6b). The external balance of the economy would improve as well, and by the end of the period the current account balance would be 2 percentage points more favourable (Chart 6c).

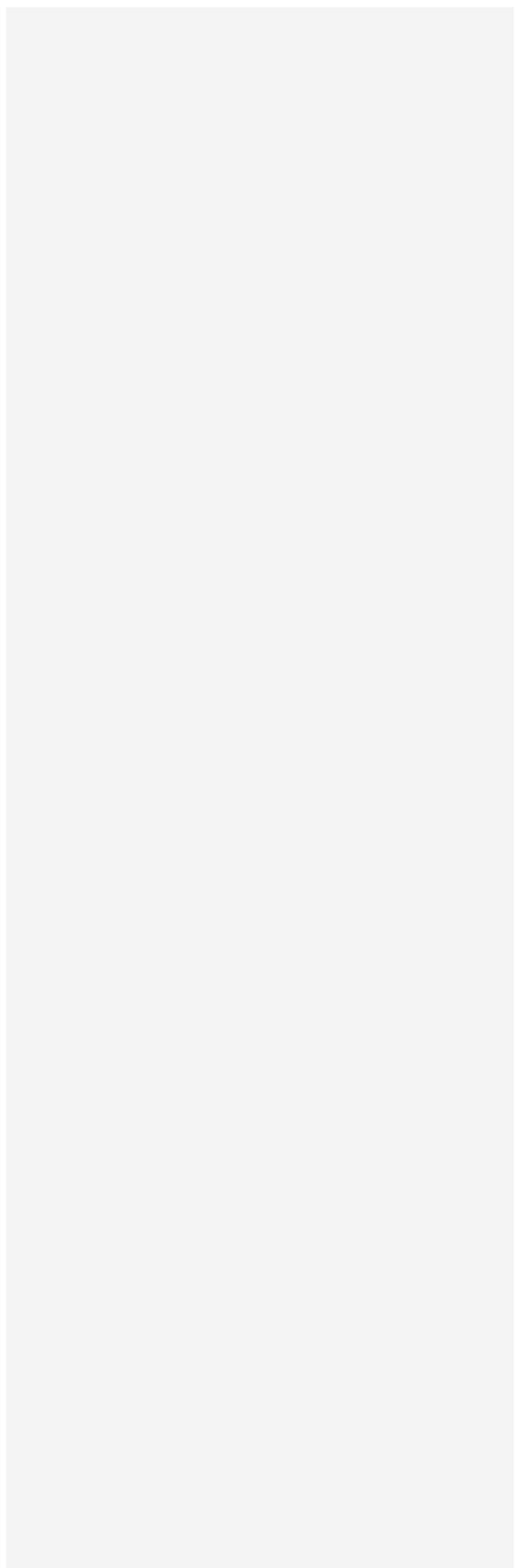
More rapid growth in exports would also bolster GDP growth, causing it to overtake the baseline forecast by an additional 1 percentage point in 2023 and ½ a percentage point in 2024 (Chart 6d). GDP would therefore be 1½% above the baseline level at the end of the forecast horizon. Stronger economic activity would cause inflation to be somewhat higher over the period than is provided for in the baseline scenario, although it would be offset by a stronger króna (Chart 6e). Higher interest rates would therefore be needed to offset increased inflationary pressures, and the Central Bank's key rate would be 1 percentage point higher than in the baseline by the end of the forecast horizon (Chart 6f).

## Other uncertainties

### **The global GDP growth outlook could prove overly optimistic**

The global economic situation has been unusually uncertain for quite some time. The shocks of recent years have been numerous and unprecedented: a global pandemic and war in Europe led to severe supply chain disruptions and soaring energy and commodity prices, which the global economy is still grappling with. The war has exacerbated pessimism about the global economic outlook and has aggravated geopolitical tensions. Moreover, recent banking system problems in the US and Switzerland have amplified concerns, both about bank stability in many parts of the world and about the risk that shocks to the banking system will spread to the real economy (see Chapter I).

As a result, there is a possibility that the premises of the baseline forecast regarding global economic activity are overly optimistic. For instance, the war in Ukraine could intensify still further, and energy and commodity prices could start climbing again. Furthermore, underlying global inflation could turn out more persistent than is currently assumed, requiring a more aggressive monetary policy response and even an overall contraction in key trading partner countries in order to bring it under control. Vulnerabilities in the global financial system could also prove more severe, undermining the real economy. In addition, the rapid rise in US interest rates and the appreciation of the US dollar have put pressure on financial systems in many emerging countries that carry dollar-denominated



debt. On the other hand, it seems that households in leading advanced economies are still cushioned to an extent by pandemic-era savings, which they could tap in response to the adverse effects of weaker economic activity and stubborn inflation on their financial position.

### **Inflation could prove more persistent than is currently assumed**

The above-described uncertainty about prospects for global GDP growth and inflation will clearly affect the domestic inflation outlook. This applies not least to global energy and commodity prices, but also to how persistent underlying inflation proves to be among Iceland's main trading partners.

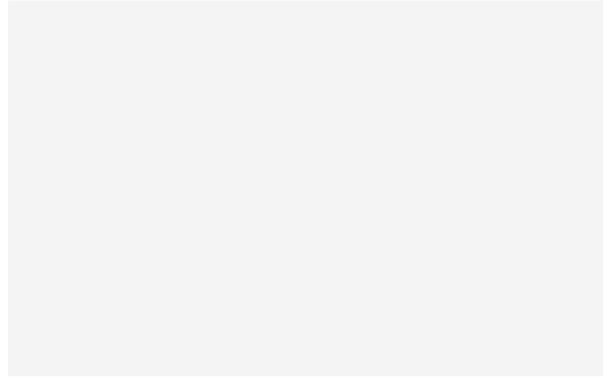
Added to this is uncertainty about the domestic inflation outlook. A key factor in the domestic situation is uncertainty about wage developments over the forecast horizon, particularly given that wage agreements will be up for negotiation again early next year. If negotiations result in larger pay rises than are provided for in the baseline forecast, inflation could become even more entrenched than is currently projected. This would greatly exacerbate the risk of a persistent wage-price spiral – not least because inflation expectations have become less firmly anchored to the Bank's inflation target (see Box 2 in *Monetary Bulletin* 2022/4). More generous pay hikes would also push house prices upwards and, through the housing component of the CPI, slow down the disinflation process.

Furthermore, underlying inflationary pressures could be underestimated if domestic economic activity proves more resilient than is assumed in the baseline; for instance, if the tourism industry grows even more than is currently envisioned or if the household saving ratio falls faster than projected (see the alternative scenario in Box of *Monetary Bulletin* 2021/4). Moreover, the positive output gap that has opened up in the domestic economy may be underestimated, for as has been discussed in previous issues of *Monetary Bulletin*, it has been extremely difficult to estimate potential output. The premises underlying the baseline exchange rate forecast could prove overly optimistic as well, given the high level of global economic uncertainty, unfavourable developments in terms of trade, and the current account deficit that developed with the onset of the pandemic in early 2020.

Inflation could, however, fall faster than is depicted in the baseline if global economic activity softens further or if domestic GDP growth turns out weaker than in the forecast; for instance, if the housing market cools more rapidly or the fiscal stance is tightened more than is allowed for in the

baseline. In addition, the króna could end up stronger than in the baseline forecast, given the widening interest rate differential with abroad.

As in the Bank's recent forecasts, the risk profile is tilted to the upside: inflation is likelier to be higher and more persistent than in the baseline scenario than it is to fall faster and farther, not least because inflation expectations are less firmly anchored to the target. The inflation outlook depicted in the baseline forecast could therefore prove overly optimistic.



## Money and credit in the wake of the pandemic

The global economic outlook appeared to be improving in early 2020, but that changed abruptly with the onset of the COVID-19 pandemic. When Iceland's first case was diagnosed in late February 2020, the Central Bank's key interest rate was 2.75% and had been lowered by 1.75 percentage points since May of the previous year. The pandemic had a profound economic impact: GDP contracted by more than 7% in 2020, unemployment surged, and the króna depreciated, pushing inflation upwards. The Central Bank's key rate was cut even further in spring 2020, to an all-time low of 0.75% by the year-end.

Since February 2022, when all of Iceland's pandemic-related restrictions were lifted, the economy has gained steam, unemployment has fallen steeply, and inflation has risen even higher. Not only do these economic twists and turns show in significant interest rate movements, but they also strongly affected developments in money and credit. This Box takes a closer look at these shifts, partly to shed light on how monetary policy measures are reflected in developments in money holdings and lending and to illustrate the generally close relationship between these two variables.

### When the pandemic struck, interest rates declined and lending to households surged ...

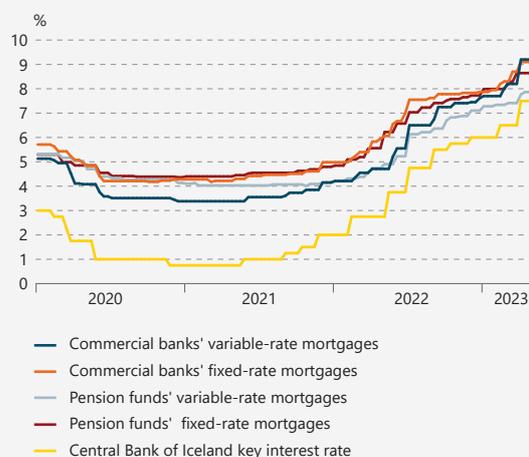
Lending to households spiked during the pandemic. The banks' mortgage lending rates declined in tandem with the reduction in the Bank's key rate, and pension funds' lending rates fell likewise, albeit to a lesser degree (Chart 1). The pension funds' required actuarial yield may have affected their willingness to step up lending when interest rates were at a historical low. Furthermore, it is possible that the funds chose to focus more on other investments, as asset prices rose steeply after the rapid decline in domestic and foreign interest rates.

Housing market activity grew markedly in the wake of interest rate cuts, with the surge in housing demand driven also by the public health measures, which forced people to spend more time at home, and the significant increase in household saving, a result of limited spending options. The share of first-time buyers rose, and house prices soared. Falling interest rates and rising house prices prompted a wave of mortgage refinancing, and some households took advantage of increased collateral capacity and financed

Chart 1

Central Bank of Iceland key interest rate and non-indexed mortgage rates<sup>1</sup>

1 January 2020 - 11 May 2023



1. Simple average of the lowest mortgage rates. Rates are fixed for 3-5 years.  
Source: Central Bank of Iceland.

home renovations and consumption spending. From the arrival of the pandemic in Iceland until the final abolition of public health measures in February 2022, lending to households grew by 20% in nominal terms, and household deposits increased by 19% (Chart 2). A similar trend could be seen widely in other countries, as global interest rates were at historical lows, central banks were making every effort to ensure adequate liquidity – including through large-scale bond purchases – and governments launched extensive fiscal support measures in response to the pandemic.

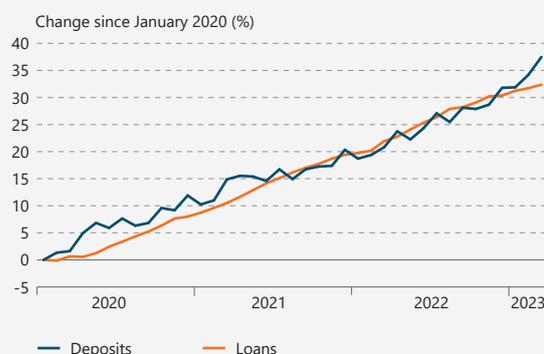
### ... fuelling growth in money holdings ...

There are close links between lending and money holdings, the latter of which primarily comprises household and business deposits.<sup>1</sup> This is no coincidence, as when a commercial bank grants a loan, a corresponding deposit is made at the same time, thereby increasing the supply of money in circulation, as that deposit did not exist until the bank issued the loan. This does not mean banks can create unlimited new loans and deposits, however. To simplify somewhat, it can be said that banks grant new loans after considering three factors: the borrower – in most cases an individual or a company – must apply for the loan; the bank must assess how likely the borrower is to pay the loan back; and the bank must determine the interest rate at which it is willing to lend. How much banks lend depends mainly on the last of these; i.e., the interest rate to which both bank and borrower consent. That interest rate is determined in large part by monetary policy, which sets short-term interest rates in the domestic economy, although other factors also play into the equation; e.g., competition with other lenders, the regulatory framework, market funding availability, and capital and liquidity requirements. Just as deposits are created when loans are issued, they shrink as loans are paid down and retired. Therefore, money holdings contract each month when deposits are used for loan payments, whereas they increase when banks issue new loans. Only deposit institutions can create new deposits in connection with their lending activity. This mechanism does not apply to lenders that do not accept deposits, such as pension funds.

### ... partly due to a change in composition of lenders

During the pandemic, the composition of mortgage loans changed markedly after interest rates began to fall, as the

Chart 2  
Household deposits and loans<sup>1</sup>  
January 2020 - March 2023



1. Credit stock adjusted for Government debt relief measures.  
Source: Central Bank of Iceland.

1. By definition, money holdings comprise banknotes and coin in circulation and banking system deposits. As a result, money holdings represent the private sector's claim on the banking system (deposit institutions and the Central Bank).

banks were offering better terms than the pension funds were. Many individuals therefore sought out non-inflation-indexed mortgages from the banks, as can be seen in Chart 3 (see also Box 3). The composition of the lender group therefore changed significantly when retirement of pension fund loans began to increase and, at the same time, the State-owned ÍL Fund's stock of mortgage loans continued to contract, maintaining the pattern of preceding years. As a result, this increase in the mortgage loan stock affected money holdings not only because lending began to increase, but also because it shifted to the banks, which create new deposits in the manner described above.

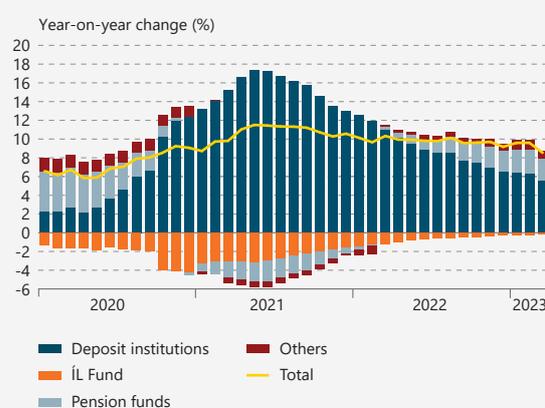
This can be contrasted to loans issued by the pension funds, as the money they lend was previously held as the funds' own deposits in the banking system or was tied up in other investments. Pension fund lending therefore does not have the same impact on money holdings as bank lending does. By the same token, the effects of loan retirement differ according to the type of lender. When borrowers retire their pension fund loans, the pension fund is left with a deposit, whereas money holdings contract when a bank loan is paid off. Because of this, household deposits increased during the pandemic, although they were also affected by limited consumption options, fiscal support measures, and generous contractual pay rises.

### Lending to the corporate sector took longer to rebound

Unlike loans issued to households, the corporate loan stock more or less remained flat in the wake of the pandemic (Chart 4). It had grown considerably during the years beforehand, although the growth rate had started to slow in the months prior to the pandemic as the economic outlook had deteriorated and some banks had reassessed the required rate of return on corporate loans. In part, this was connected to the sale of the banks: at the time, major steps had been taken in the sale of creditors' and the Government's holdings in Arion Bank and Íslandsbanki in the aftermath of the financial crisis. Furthermore, the economic impact of the pandemic and the ensuing uncertainty is likely to have significantly reduced firms' capacity and appetite for investment.

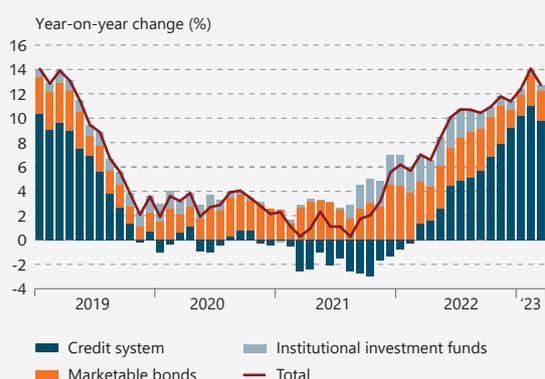
However, the Government launched a programme of support measures to assist the companies that had been hit hardest by the pandemic and the subsequent public health measures. The Government granted support loans to these companies, among other forms of assistance, and the banks took steps to lengthen loan maturities and offer moratoria on payment. These measures shored up companies' opera-

Chart 3  
Credit system lending to households<sup>1</sup>  
January 2020 - March 2023



1. Credit stock adjusted for reclassification and Government debt relief measures.  
Source: Central Bank of Iceland.

Chart 4  
Lending to non-financial companies  
January 2019 - March 2023



Source: Central Bank of Iceland.

tions, particularly those most affected by the public health measures. At the same time, other firms were performing well, and some of Iceland's largest companies took advantage of easier access to credit and lower interest rates and refinanced their debt on better terms, which enabled them to undertake new projects.

Even so, the stock of credit system loans to companies remained all but flat for two years after the pandemic started. On the other hand, institutional investment funds stepped up their corporate lending, and corporate bond issuance picked up. Some firms were therefore able to obtain external financing at low interest rates. As a result, the composition of corporate lenders changed, just as the composition of household lenders did. Although Government measures supported businesses' operations, thereby safeguarding their deposits, the shift in lending from the banking system to other lenders cut into growth in money holdings during the period, whereas the reverse happened in the case of households (Chart 5).

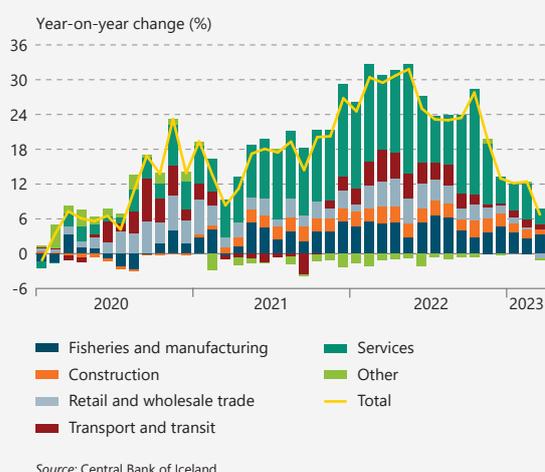
#### Household lending growth has eased in the recent term ...

From the time monetary tightening began in spring 2021, the Central Bank's key interest rate has been raised by a total of 6.75 percentage points. In the wake of this tightening, growth in household lending has softened. Declining activity in the real estate market suggests that this trend will continue. Growth in money holdings could slow down if new banking system lending does not keep pace with loan retirement and instalment payments on older loans and if the pension funds' share in credit growth continues to increase at the expense of the banking system.

#### ... whereas corporate lending growth has gained momentum

In spite of substantial interest rate hikes, credit system corporate lending began to gain steam early in 2022. Presumably, firms' need to invest had accumulated following the pandemic-induced contraction in lending. Furthermore, the composition of the lender group has changed once again, and most of the recent increase in lending is due to the commercial banks, while institutional investment fund lending and corporate bond issuance have subsided. Increased lending and the change in lender composition supports corporate deposits, thereby supporting growth in money holdings, although brisker economic activity – as can be seen, for instance, in strong private consumption growth and a jump in tourism and export revenues – also has an impact. Rising wages and retroactive wage payments fol-

Chart 5  
Non-financial companies' deposits  
January 2020 - March 2023

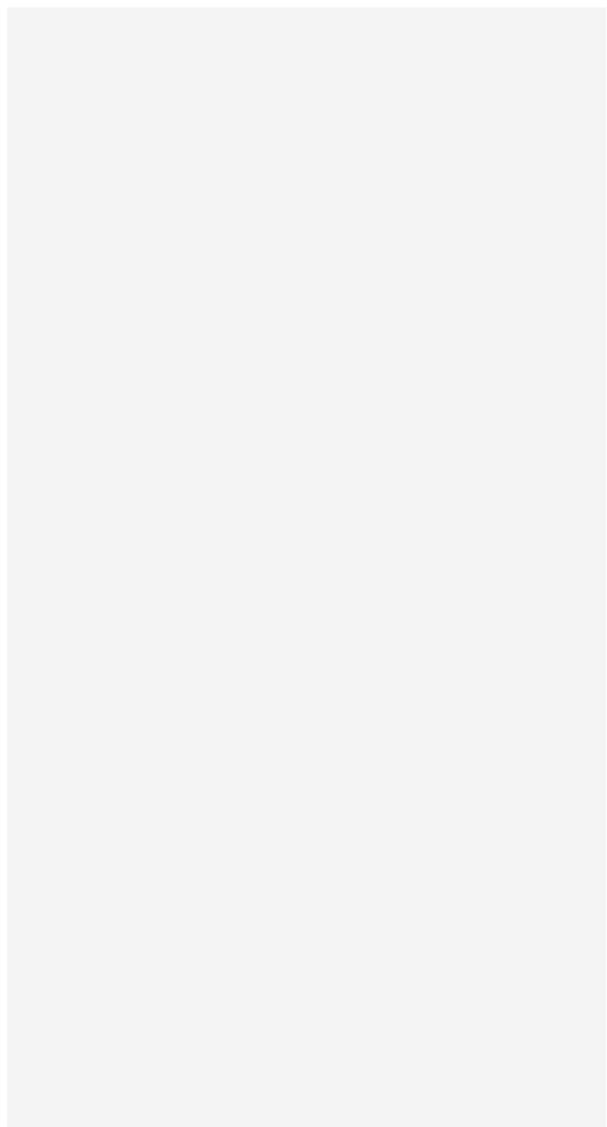


lowing the recent round of labour market negotiations have possibly led to a shift in deposits from firms to households.

### Summary

The pandemic and the fiscal and monetary policy responses to its economic effects made a wide-ranging impact on the domestic economy. Cutting the monetary policy rate to a historical low supported demand and boosted real estate market activity. Lending to households increased, as could be seen in continued growth in banking system deposits, owing to the close link between money and credit. Furthermore, when households increasingly sought out loans from the commercial banks, the change in lender composition was conducive to growth in money holdings, as it led to faster growth in deposits, which does not happen in the case of pension fund loans. The composition of corporate lenders changed during the pandemic as well: market-based financing and institutional investment fund lending grew, while bank lending contracted.

Growth in household loans has eased and real estate market activity has tapered off since the Central Bank began tightening the monetary stance. Pension fund lending has picked up again, which – together with slower lending growth – should dampen growth in money holdings. Offsetting this is the rebound in corporate lending, which started after pandemic-related uncertainty subsided in early 2022. Furthermore, the banks' share in corporate lending growth has increased, which also supports growth in money holdings because of the interaction between lending and deposits, as is described in this Box.



## Monetary policy and households' choice of mortgage type

The share of households that finance home purchases with non-inflation-indexed loans has risen in recent years, particularly since Central Bank interest rates plunged in the wake of the pandemic-related economic contraction. But in the past year, the share of non-indexed mortgages has fallen again in response to rising Central Bank interest rates, although it remains high in historical context. As is discussed in this Box, the reduction in the share of non-indexed mortgages appears to mirror the rise in interest rates to some extent. This trend does not seem to have affected how monetary policy affects the economy, however.

### The non-indexed mortgage share rose early in the decade but started to fall again in 2022 ...

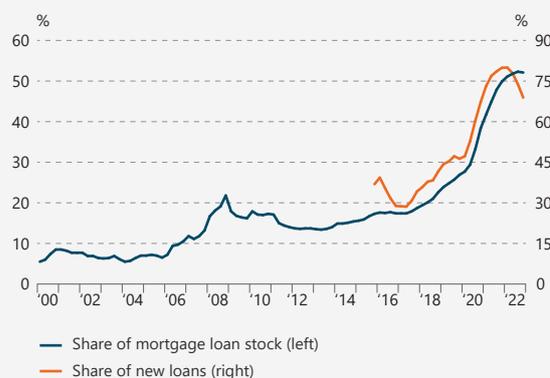
Historically, Icelanders have financed their home purchases predominantly with inflation-indexed mortgages. Non-indexed mortgages were available, but few buyers chose them.<sup>1</sup> Non-indexed loans held steady at just under 10% of the stock of household borrowing through most of the 2000s and did not reach one-fifth until mid-2018, by which time just over a third of new borrowing were non-indexed (Chart 1). The share of non-indexed loans surged over the course of 2020, however, as mortgage lending rates had plunged in response to the COVID-induced reduction in Central Bank rates. By end-2020, nearly 70% of new borrowing were non-indexed, and by mid-2022 that share had peaked at nearly 80%. It began to fall again thereafter but is still far above its historical average. The same applies to non-indexed borrowing as a share of the total loan stock.

### ... apparently due in part to the effects of a rising monetary policy rate

The post-pandemic increase in the share of non-indexed mortgages went hand-in-hand with the steep drop in interest rates that followed the easing of the Central Bank's monetary stance in a bid to offset the contractionary effects of the pandemic. Similarly, last year's shift back to indexed loans coincided with the sharp rise in interest rates following the recent surge in inflation.

1. Data on mortgages is not separated from other household borrowing for the whole period. The data used here therefore covers total inflation-indexed and non-indexed household borrowing, which are predominantly mortgages.

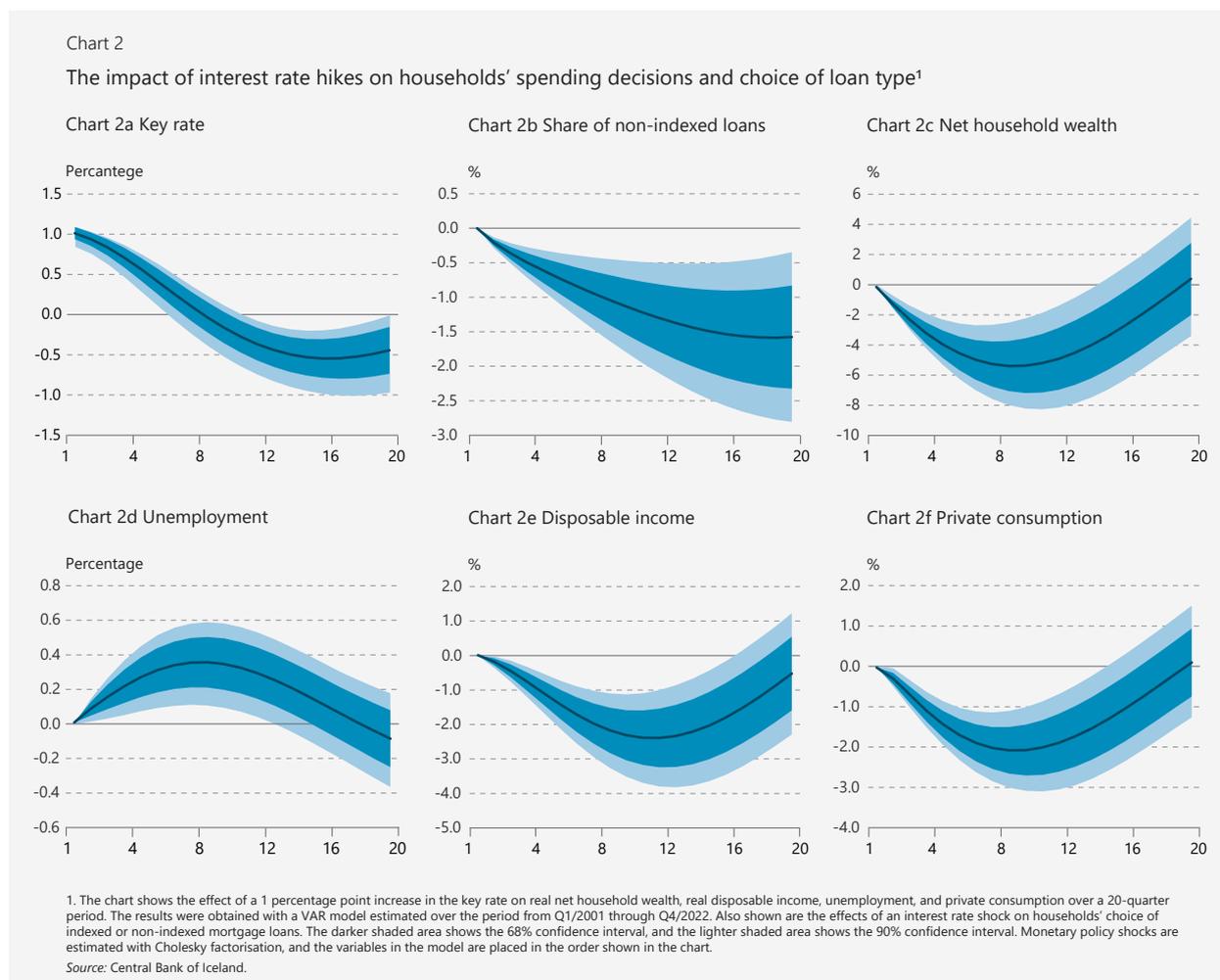
Chart 1  
Non-indexed mortgages as a share of the mortgage loan stock<sup>1</sup>  
Q1/2000 – Q4/2022



1. The share of new loans is a four-quarter moving average.  
Source: Central Bank of Iceland.

It is therefore appropriate to ask whether monetary policy has affected households' choice of loan form. A structural vector autoregression (VAR) model is a useful tool to answer this question. The VAR model is a multivariate time series model that is particularly well suited to assessing the impact of monetary policy on economic activity, as the variables in the model are all treated as endogenous and the effects of a monetary policy shock on other economic variables can be identified.

The VAR model is estimated using quarterly data for the period dating from the adoption of the current inflation-targeting regime; i.e., from 2001 through 2022. The model contains the standard determinants of private consumption (see, for instance, *Daniélsson et al., 2019*): real disposable income, unemployment, and households' real net wealth, as well as the Central Bank's key interest rate. In addition, it contains the share of non-indexed loans in the total household loan stock.<sup>2</sup> The VAR model contains



2. The ratio of non-indexed loans to the total loan stock is used, as data on the share of new loans extend only back to 2015. As can be seen in Chart 1, these two ratios developed in a broadly similar manner.

one time lag (based on the Schwartz information criterion), and conventional Cholesky factorisation is used to identify monetary policy shocks in the model. The logarithm of the variables is used (except for interest rates, unemployment, and the share of non-indexed loans). The model also contains a constant, a linear trend, and seasonal dummies.

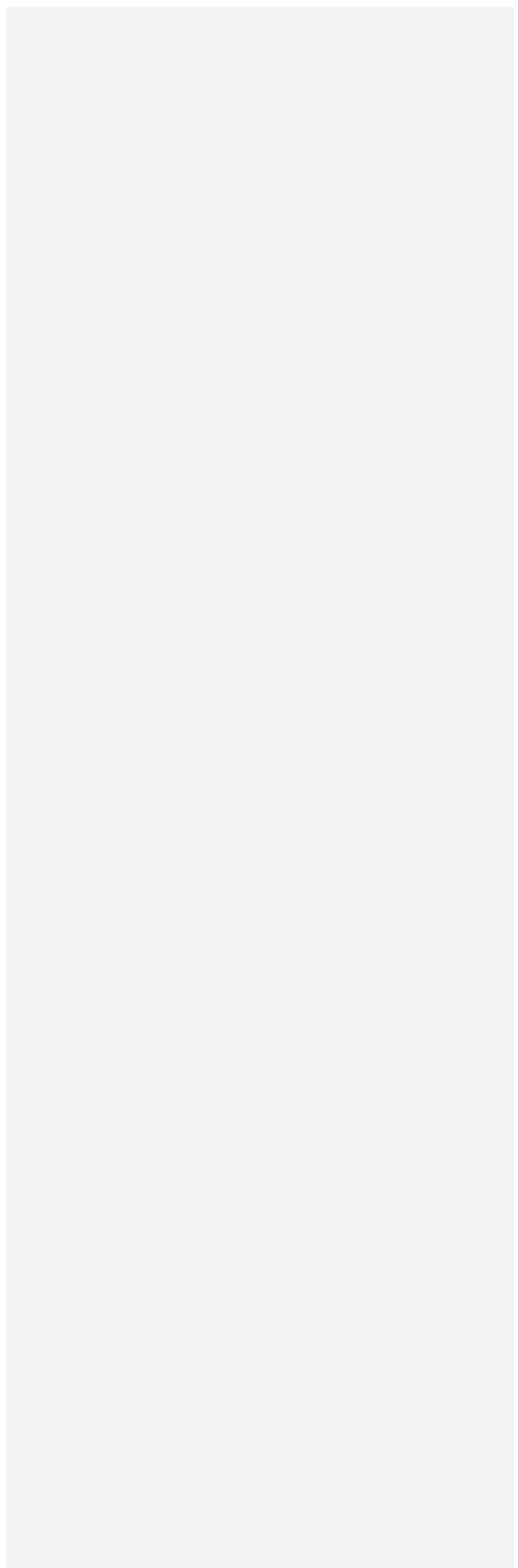
Chart 2 shows impulse responses; i.e., the effects of unexpected policy rate hikes on other variables in the model over a period of 20 quarters (five years). The chart also shows the 68% and 90% confidence intervals of the estimates. The key rate rises by 1 percentage point in period 1 but then begins to fall again gradually and has returned to its baseline value two years later, based on the confidence bands. The effects on other economic variables are as expected (see, for instance, Pétursson, 2001; Boivin *et al.*, 2011; and Lane, 2022): higher interest rates erode household wealth because, all else being equal, they lead to lower asset prices (e.g., house and share prices), higher unemployment, and a contraction in households' disposable income. All of these cause private consumption to shrink. The effects of the policy rate hike peak about two years after the initial hike, when private consumption is some 2% lower than it would have been otherwise, and have subsided after about four years, based on the confidence bands.

Chart 2 also shows the effects of higher interest rates on households' choice of mortgage type. As can be seen, higher interest rates cause households to shift from non-indexed to indexed loans, and when the effects peak four years after the rate hike, the share of non-indexed loans has fallen by 1½ percentage points. To put the magnitude of the effects into context, it is worth noting that the share of non-indexed loans fell by over 10 percentage points in 2022 (see Chart 1), concurrent with a 4 percentage point rise in the Central Bank's key rate.

### **Does households' choice of loan type affect monetary policy transmission?**

In public discourse, it is often asserted that monetary policy has far less bite – and even none at all – when inflation-indexed mortgage loans are widespread. If this is so, the impact of monetary policy should have increased when the share of non-indexed mortgage loans grew in 2020 and then decreased again when the non-indexed share started to reverse in 2022.

It is possible to analyse this by allowing the parameters of the VAR model to change over time and then examining whether the impact of monetary policy varied with the share of non-indexed loans. To do this, the VAR model was



re-estimated using a Bayesian approach, excluding the loan share (see, for instance, Lubik and Matthes, 2015). Chart 3 compares the effect on private consumption of an unexpected 1 percentage point interest rate hike in Q1/2012 and Q4/2021, two periods when average inflation was broadly similar but the composition of loans to households differed markedly: during the former period, non-indexed loans accounted for just over 10% of the loan stock, while in the latter period, that share had risen to around 50%.

Despite this difference in loan composition, it can be seen in Chart 3 that the effects of the rate hike on private consumption are virtually identical. The same is true of the probability distribution of the impulse responses.<sup>3</sup> The short-run effects of the rate hike on private consumption are also similar to those in the simple VAR model in Chart 2, although the peak effect is somewhat smaller and tapers off more quickly over time than in that model. But crucially, it cannot be seen from the Bayesian VAR model that the choice of mortgage type had much impact on monetary policy transmission during this period.

Another way to analyse the effect of households' choice of loan type on the impact of monetary policy is to estimate a standard private consumption equation and examine whether the interest rate elasticity of private consumption varies in line with the share of non-indexed loans. The estimated equation takes the following form:

$$(1) \quad c_t = \alpha + \beta y_t + \gamma wel_t - \delta UR_t - \phi R_t + \epsilon_t$$

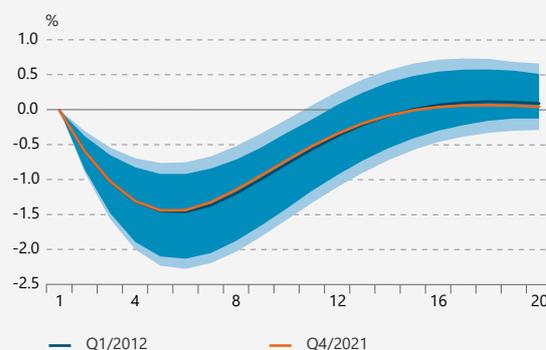
where  $c_t$  is the log of private consumption,  $y_t$  is the log of real disposable income,  $wel_t$  is the log of real net household wealth,  $UR_t$  is the unemployment rate, and  $R_t$  is the Central Bank's key interest rate.

The model is estimated over the same period as the VAR model in Chart 2, with quarterly data spanning 2001-2022. Because the data are non-stationary but co-integrated, it is not possible to use conventional regression analysis to estimate the parameters and their standard errors. In this instance, the fully modified least squares (FMOLS) method of Phillips and Hansen (1990) was used.

As Table 1 indicates, all of the explanatory variables are statistically significant, and the signs are as expected: higher disposable income and household wealth boost

Chart 3

The impact of interest rate hikes on private consumption during periods with differing non-indexed mortgage loan shares<sup>1</sup>



1. The chart shows the median and 68% probability distribution of the estimated effect of a 1 percentage point policy rate shock on private consumption over a 20-quarter period, with a focus on two periods featuring differing non-indexed mortgage loan shares. The model was estimated using a time-varying Bayesian VAR model over the period from Q1/2003 through Q4/2022. The darker shaded area shows the 68% confidence interval for Q1/2012, and the lighter shaded area shows the 68% confidence interval for Q4/2021.

Source: Central Bank of Iceland.

3. The impulse responses for other variables in the model are identical as well. Furthermore, the results are the same if other time periods are chosen for comparison. In order to obtain the initial values of the time-varying Bayesian VAR model, a standard fixed-coefficient Bayesian VAR model is pre-estimated using data for 1993-2002, leaving the period from 2003 through 2022 for the estimation of the time-varying model. The chart shows the median of the distribution of the impulse responses. This is obtained using a posterior sample size of 50,000 draws obtained using the Gibbs sampler.

private consumption, all else being equal, while higher unemployment and interest rates dampen it. The impact of interest rates on private consumption is smaller than according to the VAR model, as the table shows only the direct impact of explanatory variables on private consumption, holding all the other variables constant.

To determine whether the share of non-indexed loans affects the interest rate elasticity of private consumption, the loan-type share is allowed to interact with the interest rate in the second panel of the table. If the effect of interest rates on private consumption varies directly with the share of non-indexed loans, the coefficient of the interactive term should have a negative and statistically significant sign. But as the table shows, this is not the case: as before, the direct impact of interest rates is statistically significant, but the interactive term does not have a statistically significant additional impact.

Table 1 Interest rate elasticity of private consumption and household loan composition<sup>1</sup>

	Equation (1)		Equation (2)	
	Parameter estimation	t value	Parameter estimation	t value
Constant	5.141	14.81	5.551	11.75
Disposable income	0.342	5.12	0.286	3.69
Household wealth	0.201	5.63	0.219	5.88
Unemployment	-0.512	-2.69	-0.608	-2.92
Key interest rate	-0.400	-4.08	-0.580	-3.12
Interactive term between interest rates and loan composition			1.280	1.28
$R^2$	0.969		0.971	
Standard error of the equation	0.030		0.029	

1. The table shows the parameter estimation for Equation (1). In Equation (2), the explanatory variable  $H_t \times R_t$  is added to Equation (1), where  $H_t$  is non-indexed loans as a share of the total household loan stock. Equations (1) and (2) are estimated using quarterly data over the period 2001-2022. The equations are estimated using the FMOLS method of Phillips and Hansen (1990), as the data are non-stationary and co-integrated. The t values are calculated using Newey-West adjusted standard errors. The regression also contains seasonal dummies.

Source: Central Bank of Iceland.

### Summary

The results of the statistical analysis presented in this Box indicate that a tighter monetary stance prompts households to shift their mortgage financing from non-indexed to indexed loans. Such a shift should enable some households to lower their debt service for the short term, thereby supporting more spending than they could otherwise achieve. In spite of this, the shift towards indexed mortgages does not appear to have a visible impact on the capacity of monetary policy to affect household demand and spending decisions.

There could be a number of reasons why the share of indexed loans does not affect the monetary policy transmission mechanism. For example, some households can mitigate the effects of higher debt service by drawing down savings, which could cause the effects of monetary policy to remain broadly the same, regardless of which financing option is chosen. It should also be borne in mind that at any given time, some proportion of households are taking new loans and are faced with higher interest rates, no matter whether they choose non-indexed or indexed loans, because a higher real policy rate typically pushes indexed interest rates upwards (see, for instance, Box 1 in *Monetary Bulletin* 2018/4).

It is also important to remember that monetary policy affects private consumption and aggregate demand not only by changing households' mortgage lending terms.<sup>4</sup> For example, higher interest rates generally cause asset prices to fall (see Chart 2) which discourages household spending. They also erode households' collateral capacity, reducing their ability to finance new spending. In addition, they affect banks' willingness and ability to grant loans – for instance, because lower asset prices erode both the value of the banks' own asset portfolios and the quality of borrowers' collateral.

Monetary policy also affects firms' position and their recruitment and investment plans, through higher financing costs and lower asset prices. Furthermore, higher domestic interest rates push the domestic currency exchange rate upwards, reducing export companies' competitiveness. Individuals who are debt-free or have loans with long fixed-interest periods might need to review their spending plans and moderate their consumption if, for instance, they work for companies that are forced to scale down their activities and cut employees' working hours in response to a worsening financial position and reduced demand for their products.

Although it is well to bear in mind that only a short time has passed since the share of non-indexed loans began to rise significantly, the results of the statistical analysis discussed in this Box suggest that when all of these factors are combined, the monetary policy transmission mechanism is largely unaffected by the share of indexed versus non-indexed mortgages.

4. Nevertheless, research has shown that the effects can vary, depending on the structure of the financial system in the economy concerned, how widespread variable-rate mortgages are, how heavily leveraged households are, and whether households have savings that they can tap in order to smooth out their spending (see, for instance, Calza *et al.*, 2013; and Flodén, *et al.*, 2021).

## References

- Boivin, J., M. T. Kiley, and F. S. Mishkin (2011), "How has the monetary transmission mechanism evolved over time?", *Handbook of Monetary Economics*, Vol. 3A, 369-422 (eds. B. M. Friedman and M. Woodford). Elsevier, Amsterdam.
- Calza, A., T. Monacelli, and L. Stracca (2013), "Housing finance and monetary policy", *Journal of the European Economic Association*, 11, 101-122.
- Daniélsson, Á., L. Eliasson, M. F. Gudmundsson, S. J. Haraldsdóttir, L. S. Kro, T. G. Pétursson, and T. S. Sveinsson (2019), "A quarterly macroeconomic model of the Icelandic economy, Version 4.0", Central Bank of Iceland, *Working Paper* no. 82.
- Flodén, M., M. Kilström, J. Sigurdsson, and R. Vestman (2021), "Household debt and monetary policy: Revealing the cash-flow channel", *Economic Journal*, 131, 1742-1771.
- Lane, P. R. (2022), "The transmission of monetary policy", European Central Bank. Speech given at the SUERF, CGEG/Columbia/SIPA, EIB, and Société Générale conference, 11 October 2022.
- Lubik, T. A., and C. Matthes (2015), "Time-varying parameter vector autoregressions: Specification, estimation, and an application", Federal Reserve Bank of Richmond, *Economic Quarterly*, 101, 323-352.
- Pétursson, T. (2001), "The transmission mechanism of monetary policy", *Monetary Bulletin* 2001/4, 59-74.
- Phillips, P. C. B., and B. E. Hansen (1990), "Statistical inference in instrumental variables regression with I(1) processes", *Review of Economics Studies*, 57, 99-125.

# Appendix

## Forecast tables

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

	2021	2022	2023	2024	2025
Private consumption	7.0 (7.7)	8.6 (8.7)	3.6 (2.5)	1.7 (2.3)	2.0 (2.1)
Public consumption	2.4 (2.2)	1.6 (1.9)	2.1 (2.2)	2.0 (1.7)	1.6 (1.8)
Gross capital formation	9.8 (12.3)	6.9 (3.8)	5.7 (3.0)	5.7 (4.2)	4.4 (3.2)
Business investment	14.4 (19.1)	15.2 (9.3)	6.9 (2.5)	3.8 (-0.6)	2.8 (4.6)
Residential investment	-5.2 (-5.2)	-6.3 (-1.9)	11.1 (13.2)	15.5 (16.3)	10.1 (1.7)
Public investment	18.9 (18.7)	-0.9 (-6.0)	-4.8 (-8.8)	-1.5 (2.5)	0.8 (1.0)
National expenditure	6.3 (7.1)	6.4 (5.8)	3.5 (2.4)	2.6 (2.5)	2.5 (2.3)
Exports of goods and services	14.7 (12.7)	20.6 (22.6)	6.3 (2.9)	3.5 (3.7)	3.2 (3.1)
Imports of goods and services	19.9 (20.3)	19.7 (18.4)	3.5 (2.6)	3.7 (3.6)	2.7 (3.3)
Gross domestic product (GDP)	4.3 (4.4)	6.4 (7.1)	4.8 (2.6)	2.6 (2.5)	2.7 (2.1)
GDP at current prices (ISK trillions)	3.24 (3.25)	3.77 (3.76)	4.16 (4.07)	4.49 (4.33)	4.77 (4.57)
Public sector demand <sup>2</sup>	4.4 (4.2)	1.3 (0.8)	1.2 (0.8)	1.6 (1.8)	1.5 (1.7)
Total investment (% of GDP)	22.2 (22.7)	22.4 (22.3)	22.7 (22.7)	23.3 (23.2)	23.6 (23.3)

1. Year-on-year change (%) unless otherwise specified (figures in parentheses are from the forecast in MB 2023/1).

2. Public sector demand in the expenditure accounts is the sum of public consumption and public investment.

Sources: Statistics Iceland, Central Bank of Iceland.

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

	2021	2022	2023	2024	2025
Marine production for export	8.5 (8.5)	0.6 (0.6)	-1.6 (-3.1)	1.9 (1.1)	1.0 (2.3)
Aluminium production for export <sup>2</sup>	0.7 (0.7)	2.3 (2.3)	1.0 (0.4)	0.5 (0.8)	1.1 (1.1)
Goods exports. total	7.3 (7.3)	1.4 (1.8)	1.4 (-0.4)	2.1 (2.0)	1.9 (2.7)
Services exports. total	28.5 (21.7)	53.8 (56.1)	12.9 (7.0)	5.1 (5.3)	4.5 (3.5)
Contribution of net trade to GDP growth (percentage points)	-2.0 (-2.7)	-0.1 (1.3)	1.3 (0.2)	-0.1 (-0.1)	0.2 (-0.2)
Terms of trade for goods and services	3.8 (3.6)	3.0 (1.4)	-5.5 (-4.0)	0.1 (-1.1)	-0.1 (-0.3)
Trade balance (% of GDP)	-2.0 (-1.8)	-0.7 (0.1)	-2.1 (-1.7)	-2.1 (-2.3)	-1.9 (-2.4)
Current account balance (% of GDP)	-2.4 (-1.7)	-1.5 (-1.6)	-2.8 (-2.4)	-2.8 (-3.1)	-2.5 (-3.5)
Inflation in main trading partners <sup>3</sup>	2.8 (2.8)	7.6 (7.6)	5.0 (5.1)	2.6 (2.3)	2.1 (2.0)
GDP growth in main trading partners <sup>3</sup>	5.8 (5.8)	3.4 (3.3)	1.0 (0.6)	1.3 (1.4)	2.0 (2.1)

1. Year-on-year change (%) unless otherwise specified (figures in parentheses are from the forecast in MB 2023/1).

2. According to Statistics Iceland's external trade data.

3. Forecast based on Consensus Forecasts, IHS Markit, IMF, and OECD.

Sources: Consensus Forecasts, IHS Markit, International Monetary Fund, OECD, Refinitiv Datastream, Statistics Iceland, Central Bank of Iceland.

Table 3 Employment, wages, and factor utilisation<sup>1</sup>

	2021	2022	2023	2024	2025
Total hours worked <sup>2</sup>	2.7 (2.7)	6.7 (6.7)	4.6 (2.2)	0.6 (0.6)	1.2 (1.3)
Unemployment (% of labour force) <sup>2</sup>	6.0 (6.0)	3.8 (3.8)	3.7 (4.0)	4.3 (4.4)	4.3 (4.6)
GDP per hour worked <sup>3</sup>	1.6 (1.7)	-0.2 (0.4)	0.2 (0.4)	1.9 (1.9)	1.5 (0.9)
Unit labour costs <sup>4</sup>	4.3 (4.7)	8.2 (8.4)	8.8 (9.0)	4.8 (5.1)	3.8 (4.4)
Real disposable income <sup>5</sup>	3.1 (5.7)	2.5 (4.9)	1.2 (1.0)	1.9 (2.3)	3.2 (2.9)
Output gap (% of potential output)	-1.9 (-1.3)	2.0 (2.4)	2.1 (1.6)	1.0 (1.3)	0.4 (0.4)

1. Year-on-year change (%) unless otherwise specified (figures in parentheses are from the forecast in MB 2023/1).

2. According to Statistics Iceland labour force survey (LFS).

3. Based on hours worked according to Statistics Iceland labour force survey (LFS).

4. Compensation of employees as a share of GDP, constant prices.

5. Ratio of disposable income to private consumption price index. Disposable income according to Central Bank estimate, based on Statistics Iceland's sector accounts.

Sources: Statistics Iceland, Central Bank of Iceland.

Table 4 Exchange rate and inflation<sup>1</sup>

	2021	2022	2023	2024	2025
Trade-weighted exchange rate index <sup>2</sup>	2.5 (2.5)	3.1 (3.1)	-3.5 (-6.1)	-0.5 (-0.1)	0.0 (1.2)
Real exchange rate (relative consumer prices)	3.9 (3.9)	3.9 (3.9)	0.1 (-4.3)	1.7 (1.7)	1.2 (2.4)
Inflation (consumer price index, CPI)	4.4 (4.4)	8.3 (8.3)	8.8 (7.2)	5.0 (4.2)	3.4 (3.2)

1. Year-on-year change (%) unless otherwise specified (figures in parentheses are from the forecast in MB 2023/1).

2. Average exchange rate in terms of narrow trade basket. Positive figures represent an increase in the exchange rate of the króna versus the average of other currencies.

Sources: Statistics Iceland, Central Bank of Iceland.

Table 5 Quarterly inflation forecast (%)<sup>1</sup>

Quarter	Inflation (year-on-year change)	Inflation (annualised quarter-on-quarter change)
Measured value		
2022:2	7.9 (7.9)	13.7 (13.7)
2022:3	9.7 (9.7)	10.8 (10.8)
2022:4	9.4 (9.4)	5.0 (5.0)
2023:1	10.0 (9.5)	10.5 (8.5)
Forecasted value		
2023:2	9.4 (7.7)	11.5 (6.4)
2023:3	8.0 (5.9)	4.9 (3.7)
2023:4	8.1 (5.8)	5.5 (4.6)
2024:1	6.6 (4.6)	4.5 (3.8)
2024:2	5.2 (4.4)	5.9 (5.6)
2024:3	4.4 (4.0)	2.0 (1.9)
2024:4	3.9 (3.8)	3.5 (3.7)
2025:1	3.5 (3.4)	2.6 (2.4)
2025:2	3.4 (3.2)	5.5 (4.9)
2025:3	3.3 (3.1)	1.7 (1.3)
2025:4	3.3 (2.9)	3.3 (3.1)
2026:1	3.1 (2.7)	2.0 (1.7)
2026:2	2.7	3.8

1. Figures in parentheses are from the forecast in MB 2023/1.

Sources: Statistics Iceland, Central Bank of Iceland.

