

CENTRAL BANK OF ICELAND



2023 | 4

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:

The Central Bank of Iceland, Kalkofnsvegur 1, 101 Reykjavík, Iceland
(+354) 569 9600, sedlabanki@sedlabanki.is, www.sedlabanki.is

Vol. 25 no. 4, 22 November 2023 ISSN 1670-438X, online

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

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Statement of the Monetary Policy Committee 22 November 2023

The Monetary Policy Committee (MPC) of the Central Bank of Iceland has decided to keep the Bank's interest rates unchanged. The Bank's key interest rate – the rate on seven-day term deposits – will therefore remain 9.25%.

Inflation fell slightly between months and measured 7.9% in October. Underlying inflation has subsided as well. Indicators continue to suggest a slowdown in private consumption and investment.

According to the Central Bank's new forecast, however, the inflation outlook has deteriorated. The output gap has been larger than previously anticipated, and the króna has depreciated. Inflation expectations have also remained high, and it appears that cost increases have a stronger and more persistent impact on inflation than they did previously.

Although the effects of recent interest rate hikes are coming more clearly to the fore, the poorer inflation outlook suggests that it may prove necessary to tighten the monetary stance still further. In spite of this, the MPC has decided to keep the key interest rate unchanged, owing to uncertainty about the economic impact of seismic activity on the Reykjanes peninsula. As before, near-term monetary policy formulation will be determined by developments in economic activity, inflation, and inflation expectations.

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



Global GDP growth has softened due to steep cost hikes and rising household living expenses. As in August, trading partner GDP growth is forecast at roughly 1% in both 2023 and 2024. Global inflation is also expected to continue easing. Underlying inflation has fallen less, however, and the outlook is for policy rates in major advanced economies to remain high.



GDP growth in Iceland measured 5.8% in H1/2023, or 0.4 percentage points above the Bank's August forecast. Although private consumption growth has eased, domestic demand has been a major driver of economic activity in 2023. Added to this is favourable external trade, fuelled by strong growth in tourism. The outlook is for 3.7% GDP growth in 2023 as a whole, up from 3.5% in the August forecast. This represents a sharp decline relative to 2022, although it remains well above the trend growth rate of the economy. As in August, GDP growth is expected to keep slowing, averaging 2¾% per year over the next three years.



The labour market remains tight and unemployment is low. Job growth has slowed, however, and unemployment appears to have bottomed out. The baseline forecast assumes that as the output gap narrows, unemployment will start rising, reaching 4.8% in 2024 and then easing to 4% in the latter half of the forecast horizon.



Inflation measured 7.9% in October and fell slightly between months. Underlying inflation fell also, and there are signs that momentum is easing, although inflation remains high and broad-based. It looks set to hold broadly unchanged for the rest of the year and fall more slowly in 2024 than previously expected. The output gap appears somewhat wider than was assumed in August, and the króna has been weaker. There are also signs that cost increases have a stronger and more persistent impact on inflation than before. According to the baseline forecast, inflation will measure just under 5% at the end of 2024 and not fall below 3% until H2/2026.

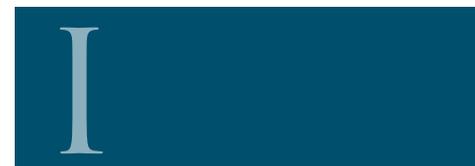


The supply side of the global economy has largely normalised after recent shocks, and non-energy commodity prices have fallen. The outlook is uncertain, however, not least because of the wars in Ukraine and the Middle East. The resilience of the recovery in major advanced economies and China remains uncertain as well. Although measured inflation has eased, underlying inflation has proven stubborn. The inflation outlook is uncertain in Iceland as well, as inflation expectations appear less firmly anchored to the target and the upcoming wage negotiations could throw the prospect of continued disinflation into disarray.

Domestic uncertainty has also escalated due to increased seismic activity on the Reykjanes peninsula. If a large eruption takes place near key infrastructure, the resulting damage could be substantial. The economy could also be strongly affected by a protracted eruption. The impact on tourism, other exports, public sector performance, the exchange rate, and inflation could be significant.

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

The global economy and terms of trade



The global economy

Global GDP growth has softened ...

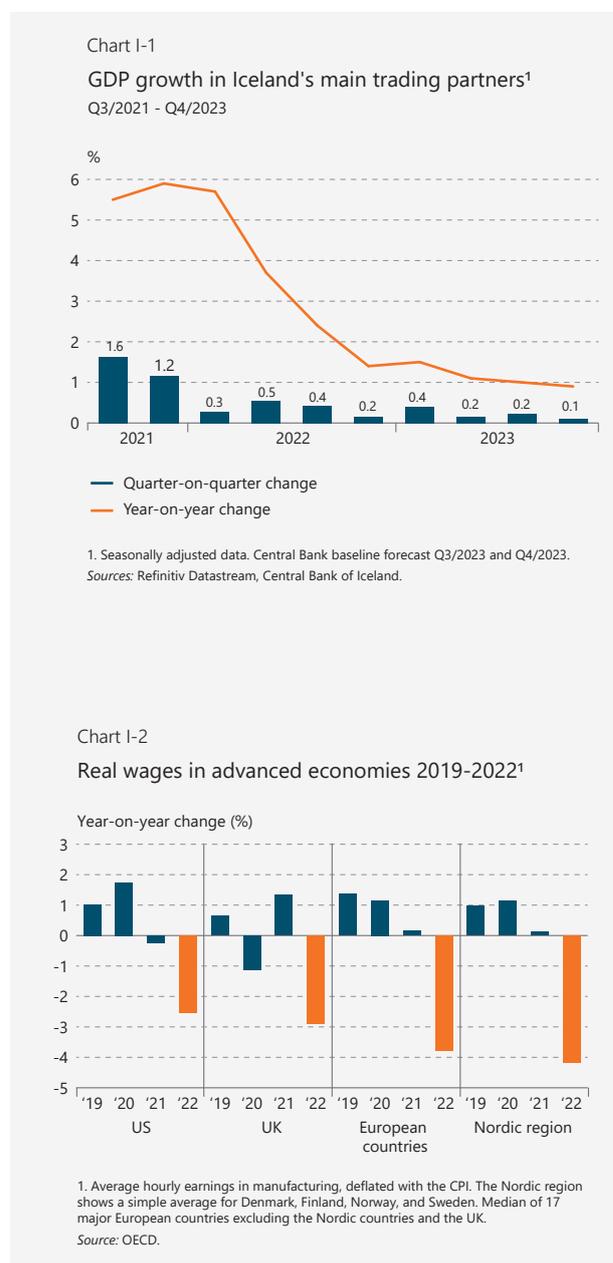
GDP growth among Iceland's main trading partners measured 0.2% quarter-on-quarter in Q2/2023, somewhat below the Bank's August forecast and well below the average of the past two years (Chart I-1). Year-on-year GDP growth in trading partner countries has also lost momentum, averaging 1.1% in Q2/2023, down from 3.7% in the same quarter of 2022.

... in line with rapidly rising living costs ...

The past few quarters' decline in trading partner GDP growth is due in large part to the effects of steep cost increases and elevated uncertainty about economic developments in the wake of Russia's February 2022 invasion of Ukraine. Tighter monetary policy has also been a major factor. Households' living costs have therefore surged in a relatively short period of time, cutting into real disposable income and domestic demand (Chart I-2). Higher costs and interest rates have a dampening effect on firms' investment plans as well.

... but has been offset by a favourable employment situation

Despite high inflation, rising interest rates, and elevated uncertainty about the economic outlook, the employment situation in major advanced economies has been better than expected. Labour demand has remained strong, job numbers have risen, unemployment has been historically low, and nominal wages have risen considerably in many economies (Chart I-3). In the US, for instance, job growth has exceeded expectations in the recent term, and the number of new applications for unemployment benefits is still historically low.



Although labour markets remain tight in major advanced economies, the tension appears to be easing, as can be seen in higher labour participation rates and fewer job openings. In the UK, for example, unemployment has started to increase and more strongly than previously expected, although wage growth has picked up even further.

Developments in output growth vary greatly among trading partners ...

Although global GDP growth has eased overall, developments vary from one country to another. Economic activity has been particularly strong in the US, where year-on-year growth increased to 2.4% in Q2/2023 (Chart I-4). Growth has softened in Norway and Denmark, however, measuring about 1% in both countries. Economic activity has sagged even more in the UK and the eurozone, and Sweden recorded a sizeable contraction in Q2.

... owing largely to differences in private consumption growth

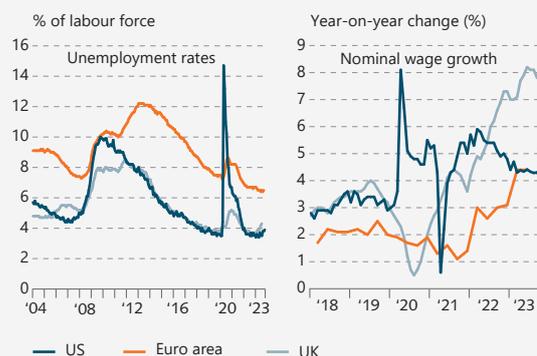
To a large degree, these divergent developments reflect differences in private consumption growth, which has been strong in the US and was the main driver of GDP growth there in Q2. However, private consumption grew only slightly year-on-year in the UK, the eurozone, and Denmark in Q2, and it contracted markedly in Sweden. It fell in Norway as well, albeit offset by a positive contribution from net trade and public consumption.

This is reflected in divergent developments in saving behaviour: households in the US have been allocating a larger share of their disposable income to consumption than their counterparts in other major advanced economies and have drawn down their pandemic-era savings faster than others have. On the other hand, households in the euro area and the UK are still putting more money aside than they did before the pandemic. This greater caution among European consumers is probably due in large part to the effects of the war in Ukraine, coupled with elevated uncertainty about energy supplies (see Box 2).

Trading partner GDP growth outlook remains poor

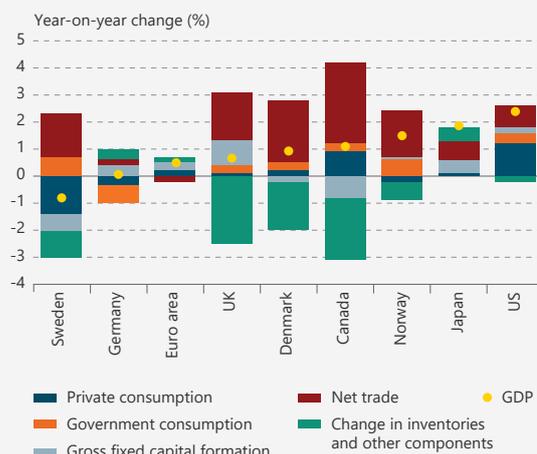
The global GDP growth outlook for H2/2023 is broadly unchanged since August. As was the case then, trading partner GDP is estimated to have grown by 0.2% quarter-on-quarter in Q3 and is expected to shrink further in Q4, to 0.1%. This can be seen, for instance, in PMI indices, which have fallen steeply over the course of this year, mainly because of weaker activity in ser-

Chart I-3
Unemployment and nominal wage growth¹



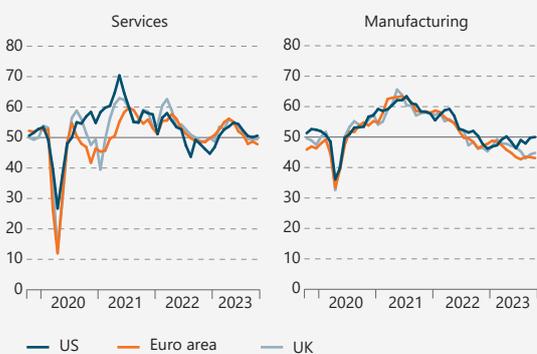
1. Wage measures are US average hourly earnings, UK private sector regular pay growth (Bank of England's estimate of underlying pay growth between January 2020 and November 2022), and quarterly euro-area negotiated wages. Sources: Bank of England, Refinitiv Datastream.

Chart I-4
GDP growth and contribution of components in main trading partners in Q2/2023¹



1. Seasonally adjusted data. Source: OECD.

Chart I-5
PMI for manufacturing and services¹
October 2019 - October 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.

services sectors, although manufacturing output has also weakened further (Chart I-5).

Developments in GDP growth still differ greatly from one country to another: in the US, GDP grew even more in Q3, far outpacing expectations, while in the eurozone it contracted marginally between quarters (Chart I-6). This greater resilience in the US can also be seen in stronger retail sales figures and growing manufacturing output (Chart I-7). Furthermore, PMI indices have fallen less in the US than in the UK and the eurozone in the recent term.

According to the Bank's baseline forecast, trading partners' year-2023 GDP growth is forecast at 1.1%, well below the average of recent decades (Chart I-8). In early 2024, growth is expected to increase again relative to the H2/2023 level, but for 2024 as a whole it is projected to measure just over 1%, as was forecast in August. The outlook has improved for the US but deteriorated for the eurozone.

As in August, GDP growth is expected to gain pace over the course of the forecast horizon. Nevertheless, the outlook for 2025 has deteriorated slightly, as the slow decline in underlying inflation is expected to require higher interest rates than previously envisioned.

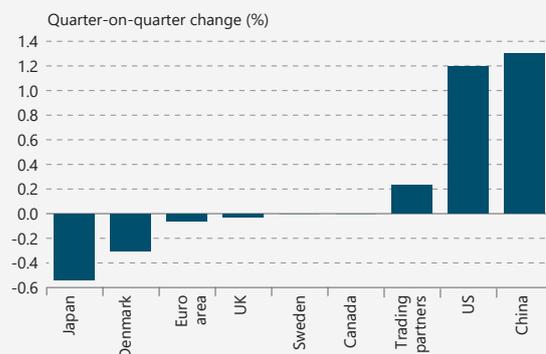
Sluggish global GDP growth in the offing ...

The Central Bank's baseline forecast for GDP growth in trading partner countries accords well with the International Monetary Fund's (IMF) new global forecast. The IMF projects that global GDP growth will fall from 3.5% in 2022 to 3% in 2023 and 2.9% in 2024. This is in line with the Fund's recent forecasts, but well below the twenty-year average. Growth will subside particularly in advanced economies, falling from 2.6% in 2022 to 1.5% in 2023 and 1.4% in 2024. Prospects have improved for the US, according to the IMF, but have worsened for the eurozone and China.

... and growth in world trade has lost pace

Despite the continuing recovery of global tourism and dwindling supply chain problems, growth in world trade has slowed markedly this year. This is probably due for the most part to weaker global output growth, but also to an increase in the weight of domestic services in the household consumption basket. The steep appreciation of the US dollar in 2022 had a negative impact as well, owing to the widespread use of the dollar in the pricing of cross-border trade. Furthermore, the number of new trade barriers and the past few years' shift towards increased protectionism have probably caused world trade to grow more weakly than it would have other-

Chart I-6
GDP growth in main trading partners in Q3/2023¹



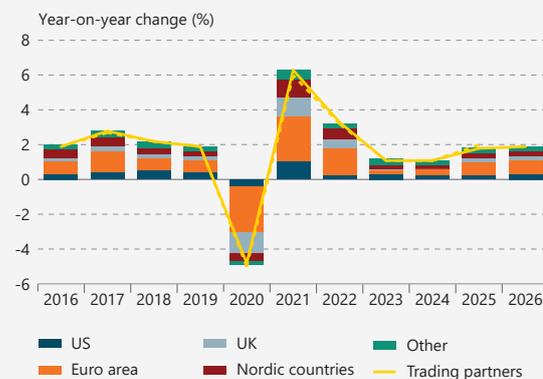
1. Seasonally adjusted data. Central Bank baseline forecast for average trading partners growth rate.
Sources: Refinitiv Datastream, Central Bank of Iceland.

Chart I-7
Industrial production and retail sales¹
January 2019 - October 2023



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

Chart I-8
GDP growth in Iceland's trading partners and contribution from selected countries 2016-2026¹



1. Trade-weighted contribution from selected countries. Central Bank baseline forecast 2023-2026. Broken line shows forecast from MB 2023/3. "Nordic countries" is the average for Denmark, Norway, and Sweden.
Sources: Refinitiv Datastream, Central Bank of Iceland.

wise. As a result, world trade has slowed more than GDP growth, and the outlook for imports in advanced economies has deteriorated in particular.

The economic outlook is highly uncertain

Even though economic activity in trading partner countries has softened less than was previously feared and inflation has eased, the economic outlook is still highly uncertain. To a large extent, economic developments will depend on how fast inflation falls and how households and businesses handle the shocks and cost increases that have hit them in the recent term. Developments in China will be important also, as the weaknesses in the real estate market are still unresolved and this year's economic recovery has been weaker than expected.

In addition, the economic outlook will depend on the impact of the wars in Ukraine and the Middle East, especially the impact on commodity prices. Although uncertainty about energy supplies in Europe has receded markedly and inventories for the coming winter are sizeable, the situation could change radically; for instance, if the weather is unusually cold. Furthermore, further vulnerabilities in the global financial system could come to the fore, and the fiscal situation in the US remains uncertain. Moreover, rising US interest rates and the strength of the US dollar pose continuing strains for many emerging economies, particularly those with fragile economies and large amounts of dollar-denominated debt. The global GDP growth outlook could therefore be overestimated. Box 1 contains a discussion of uncertainties and presents alternative scenarios featuring weaker global economic activity and more rapid disinflation in trading partner countries than are provided for in the baseline forecast.

Global inflation is on the decline ...

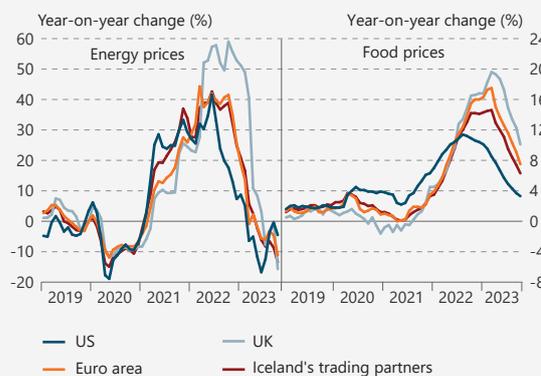
Inflation is still high in Iceland's main trading partner countries. It has fallen rapidly year-to-date, however, averaging just under 3% in October, down from nearly 8% at the beginning of 2023 (Chart I-9). The disinflation is due in large part to the drop in energy prices, which had surged in 2022 following Russia's invasion of Ukraine (Chart I-10). The twelve-month rise in food prices has fallen steeply as well, albeit from a very high level. The year-on-year increase in goods prices has also slowed further, in line with the shift in household consumption from goods to services (Chart I-11). Fewer disruptions in production and lower commodity prices have also eased upward price pressures on both goods and food. In Europe, the smaller twelve-month

Chart I-9
Global inflation¹
January 2018 - October 2023



1. Central Bank estimate for trading partners in October 2023.
Sources: Refinitiv Datastream, Central Bank of Iceland.

Chart I-10
Global energy and food prices¹
January 2019 - October 2023



1. Central Bank estimate for trading partners in October 2023.
Sources: Refinitiv Datastream, Central Bank of Iceland.

rise in goods prices in recent months suggests that last year's energy price hikes have already passed through to goods prices to a large degree.

... and year-on-year services price inflation is finally starting to subside

The twelve-month rise in services prices has turned out more persistent than other consumer price hikes in 2023 to date. The price of services has probably been affected for the most part by pent-up demand from the pandemic era, a tight labour market, and generous nominal pay rises. After two years of virtually uninterrupted price rises, the average year-on-year increase in services prices has finally begun to abate in trading partner countries (Chart I-11). Price hikes were still sizeable in October, however, or just under 5%, on average, and core inflation has therefore remained high, only falling to 4.2%.

Inflation in trading partner countries averaged 4.4% in Q3, as was forecast in August, and looks set to measure 5.1% in 2023 as a whole, down from 7.6% in 2022. It is projected at 2.9% in 2024, slightly above the August forecast, owing mainly to slower disinflation in the eurozone and some of the Nordic countries. As before, however, trading partner inflation is expected to measure around 2% in 2025.

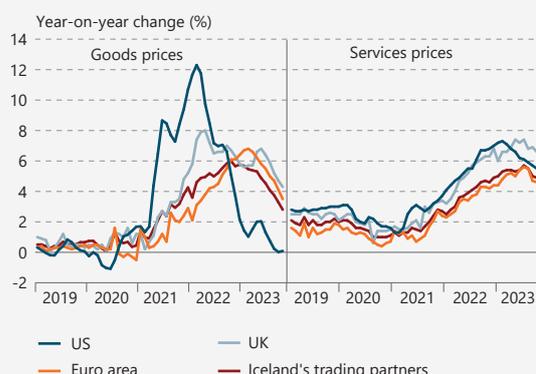
Central banks in advanced economies continue to raise interest rates ...

Central banks in advanced economies raised their policy rates further this summer, in response to continuing labour market tightness and high underlying inflation (Chart I-12). On average, interest rates are at their highest in over two decades in Iceland's main trading partner countries. The European Central Bank (ECB) raised its policy rate by another 0.25 percentage points in September and then kept it unchanged in October. The central banks in Sweden and Norway also raised rates by 0.25 percentage points in September. In the US and the UK, however, the central banks have held interest rates unchanged at their last two rate-setting meetings. Furthermore, central banks in several emerging market economies have started cutting interest rates, although they generally raised rates earlier, and higher, in the last two years than their counterparts in advanced economies did.

... and the outlook is for interest rates to remain high for a while to come

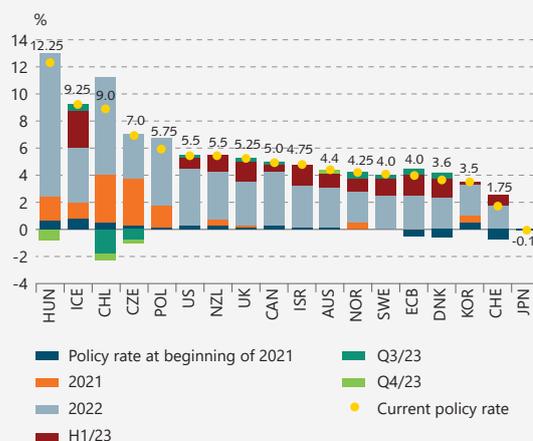
Although inflation is still high and labour markets tight, it appears that central bank interest rates in advanced

Chart I-11
Global goods and services prices¹
January 2019 - October 2023



1. Price of goods other than energy and food. Central Bank estimate for trading partners in October 2023.
Sources: Refinitiv Datastream, Central Bank of Iceland.

Chart I-12
Central bank policy rates in OECD countries and changes since the beginning of 2021¹



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.

economies have already peaked or will do so soon. Nevertheless, monetary authorities have stressed that interest rates will probably be kept high for a while longer in order to ensure that inflation falls back to target within an acceptable time frame. This can be seen in forward interest rates in the market, which show that market agents expect advanced economies' interest rates to remain well above pre-pandemic levels as late as year-end 2026 (Chart I-13).

Advanced economies' bond interest rates have risen even higher this year

Government bond yields in advanced economies rose steeply in 2022, in line with steep and rapid policy rate hikes (Chart I-14). They have risen even more in H2/2023, and some countries' bond rates are at their highest in over a decade.

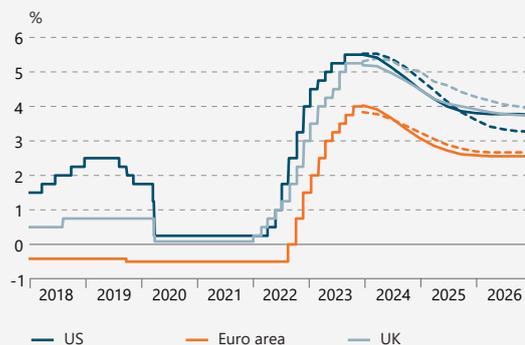
The rise in yields in recent months reflects continued interest rate hikes, together with forward guidance from central banks indicating that interest rates will be lowered less in coming years than was previously assumed. Yields on long-term bonds have therefore risen more than short-term yields in the recent term, and major advanced economies' yield curves are less downward-sloping than before. Furthermore, long-term rates have risen even more because many central banks have scaled down their bondholdings in a bid to tighten financial conditions after aggressive quantitative easing in the wake of the pandemic. These measures have probably caused term premia to rise, particularly on longer bonds. The rise in bond rates may also stem from an increase in risk premia due to elevated uncertainty about the economic outlook and developments in short-term interest rates in coming years. Expectations of an increase in government bond supply due to several years of deficit operations and the likelihood of continued deficits in the years ahead have probably pushed long-term rates up as well.

Financial conditions have improved in 2023 to date

Global financial conditions deteriorated markedly in 2022, reflecting a poorer economic outlook, greater uncertainty, and steep and rapid policy rate hikes by major central banks (Chart I-15). Global share prices fell, risk premia on high-risk financial assets rose, and financing costs surged (Chart I-16). Demand for safe financial assets, including US Treasury securities, grew as well, and the US dollar appreciated to its strongest in more than two decades.

Financial conditions in advanced economies started to improve again towards the end of the year,

Chart I-13
Central bank policy rates¹
January 2018 - December 2026



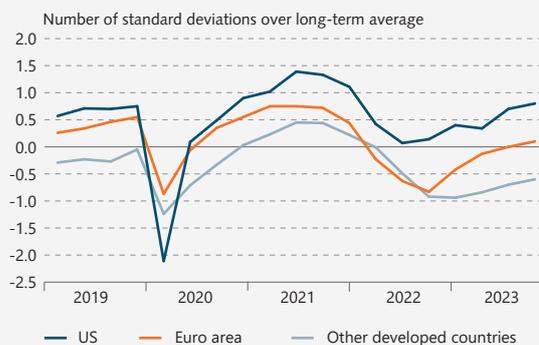
1. Daily data 1 January 2018 through 17 November 2023, and quarterly data Q4/2023 through Q4/2026. US interest rates are the upper bound of the US Federal Reserve Bank's interest rate corridor, and rates for the euro area are the European Central Bank's deposit facility rate. Forward rates are based on overnight index swaps (OIS). Solid lines are based on forward rates as of mid-November 2023, and broken lines as of mid-August 2023.
Sources: Bloomberg, Refinitiv Datastream.

Chart I-14
10-year government bond yields
1 January 2018 - 17 November 2023



Source: Refinitiv Datastream.

Chart I-15
Global financial conditions¹
Q1/2019 - Q3/2023



1. Financial conditions index. A higher (lower) index value indicates an improvement (a deterioration) in financial conditions.
Source: International Monetary Fund, *Global Financial Stability Report*, October 2023.

however, and have continued to improve in 2023, apart from a temporary hiccup due to turbulence in the international banking market in March. Conditions have improved especially in the US and the eurozone in spite of further interest rate hikes and tighter lending conditions imposed by financial institutions, owing mainly to more favourable developments in share prices and a reduction in risk premia on high-risk assets. For the most part, this probably reflects stronger market expectations that advanced economies will manage a “soft landing”; i.e., that central banks will be able to bring inflation down within an acceptable time frame without a severe decline in economic activity. If this more favourable scenario materialises, there will be less need for further policy rate hikes, and major central banks could perhaps begin to lower rates again in early 2024.

Export prices and terms of trade

Outlook for higher marine product prices ...

After a sustained increase starting in Q2/2021, the foreign currency price of Icelandic marine product exports started to fall early this year, in line with reduced demand in foreign markets and a bleaker economic outlook in trading partner countries (Chart I-17). Prices fell still further in Q2, to more than 2% below the end-2022 level, although they remained above the 2022 average.

It appears that marine product prices have increased again in Q3, whereas in August they were expected to keep declining. A major factor here is that sales of the historically large capelin roe catch have been weaker than expected, and the drop in capelin roe export prices has not weighed as heavily in the marine product price index as was previously anticipated (see Chapter III). Furthermore, reduced supplies of cod from Norway and Russia have kept cod prices high, and the price of fish meal and fish oil rose again, and more strongly than previously assumed.

The outlook is for foreign currency prices of marine product exports to be an average of 4.9% higher in 2023 than in 2022, which represents a 3 percentage point larger increase than was projected in August. Higher prices in H2/2023 will also mean a smaller decline in 2024 than was forecast in August. Another important factor in this is the prospect of a weaker global cod supply due to reduced catch quotas in the Barents Sea.

Chart I-16
Global share prices
1 January 2019 - 17 November 2023

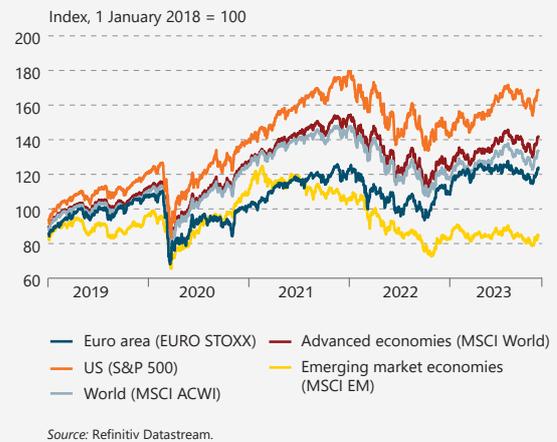
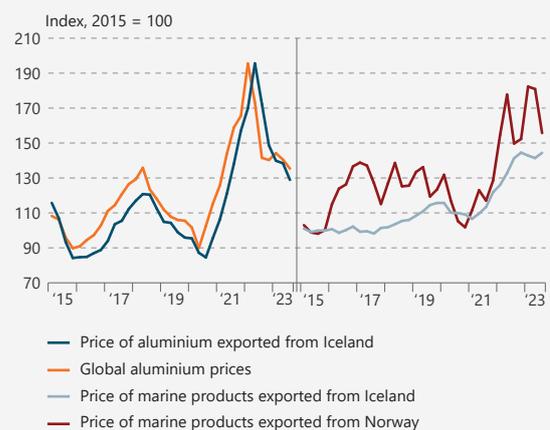


Chart I-17
Export prices¹
Q1/2015 - Q3/2023



1. Export prices of marine products at constant exchange rates, Norway's price index is seasonally adjusted. Global aluminium prices and export prices of aluminium from Iceland in USD. Central Bank baseline forecast Q3/2023 for export prices of aluminium and marine products.
Sources: Central Bank of Norway, Statistics Iceland, Statistics Norway, World Bank, Central Bank of Iceland.

... but less favourable aluminium prices

Global aluminium prices have been falling steeply after hitting a historical peak in Q1/2022, following Russia's invasion of Ukraine (Chart I-17). They bounced back in Q1/2023 but then retreated again in Q2. They kept falling in Q3 and are now about a third lower than in Q1/2022.

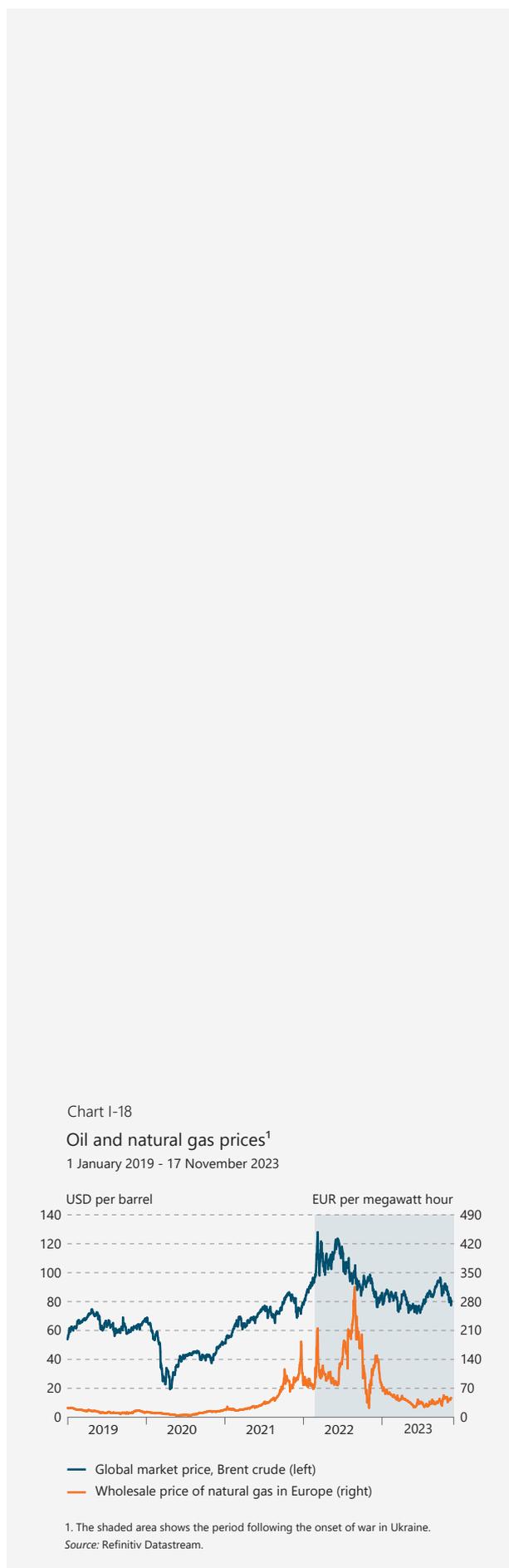
The drop in aluminium prices in the recent term is due primarily to a bleaker-than-expected global economic outlook and a weaker economic recovery in China. The price of Iceland's aluminium exports has moved in line with global prices. It plunged 24% year-on-year in H1/2023 and is expected to keep falling in H2. Because global prices fell more steeply in Q3 than was forecast in August, the twelve-month drop in Icelandic aluminium export prices for the year as a whole is now projected at 22% instead of the previously assumed 19%. In addition, prices are expected to rise less markedly in 2024 than was forecast in August.

Oil prices fell during the spring ...

Global oil prices declined in Q2/2023, despite the OPEC+ countries' unexpected announcement in April of production cutbacks. Increased concerns about the global economic outlook weighed heavier, partly because of headwinds in manufacturing sectors, unrest in the banking market, tighter monetary policy in advanced economies, and concerns about a more tepid economic recovery than previously expected in China.

... but started to pick up again in the summer

Oil prices began to rise again in July, however, and climbed higher in September, both times in response to announcements of further production cutbacks by OPEC+ (Chart I-18). The escalation of unrest in the Middle East since October due to the Israel-Hamas war has fostered still more uncertainty about oil supplies and pushed prices higher. Over one-third of global seaborne oil trade comes from the Middle East. Stronger demand from China and declining global inventories have pulled in the same direction, supporting oil prices. Increased production in other countries, the US in particular, has partly offset the reduction in OPEC+ output and kept oil prices in check. There are also signs that demand for oil in the US has softened, and uncertainty about the outlook for demand has mounted, partly in response to leading central banks' announcements that interest rates will be kept higher than previously expected. Furthermore, oil exports from Russia have increased in the recent term, and the G7 countries' sanctions appear not to have delivered



the intended results, as the price of Russian oil exports has risen well above the ceiling of 60 US dollars. New sanctions recently imposed by the US government on companies that transport Russian oil at prices above the 60-dollar cap may turn this situation around.

In October 2023, the average price of Brent crude was 89 US dollars per barrel, about 18% higher than in June but 5% lower than in October 2022. Although oil prices have fallen again in November to date, and oil futures suggest that it will fall still further in coming year, they will remain above the August forecast throughout the forecast horizon (Chart I-19). This is highly uncertain, however, and developments will depend largely on production decisions made by OPEC+ and the impact of the war in the Middle East.

European natural gas prices have risen as well ...

The price of natural gas in Europe has also inched upwards in recent months, probably due in large part to uncertainty about the effects of the Middle East war and related unrest about the supply of liquid gas, plus temporary production bottlenecks in Norway and Australia (Chart I-18). Nonetheless, prices are still considerably lower than they were a year ago and look set to remain low, given the abundant supplies and strong inventories in Europe in advance of the wintertime surge in demand.

... while non-energy commodity prices have fallen

Non-energy commodity prices have fallen after an increase in Q1 (Chart I-20). Metals prices have sagged in particular, owing to the prospect of a weaker-than-expected economic recovery in China and the ongoing problems in the Chinese real estate market, as the country's construction sector accounts for a fifth of global demand for metals. Continued central bank interest rate hikes and sluggishness in European manufacturing have also contributed to lower metals prices. The price of most key agricultural products has also fallen this year, prompted by good harvests and increased supply of grains and oil seeds. Furthermore, production difficulties from the time of the pandemic have eased and shipping costs are broadly back to pre-pandemic levels, which has also contributed to lower commodity prices. On the other hand, fertiliser prices have risen since June, in line with the increase in energy prices, but are still down year-to-date, and considerably lower than in 2022.

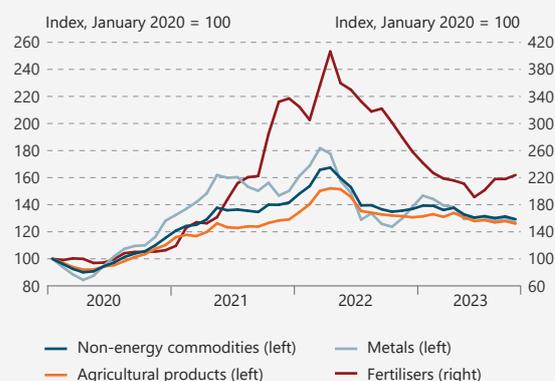
The outlook is for non-energy commodity prices to fall by 9.3% year-on-year in 2023. This is a larger drop than in the Bank's August forecast, as prices were

Chart I-19
Global oil prices
January 2010 - December 2026



Sources: Refinitiv, Central Bank of Iceland.

Chart I-20
Global commodity prices¹
January 2020 - October 2023



1. Agricultural products are classified as food (62%), beverages (13%), and raw materials (25%).
Source: World Bank.

lower in Q3 than was assumed in August. Furthermore, commodity prices look set to fall more in 2024 and be lower throughout the forecast horizon than was projected in August. The outlook is uncertain, however, partly because the Black Sea Grain Initiative was not extended. Developments will also be determined by the impact of the Middle East war and whether, and how much, El Niño affects global agricultural output. Moreover, there is uncertainty surrounding the recent ban on rice exports from India and the impact of economic developments in China on commodity prices.

Terms of trade still set to deteriorate markedly in 2023, driven by aluminium prices

Terms of trade for goods and services improved by 2.4% year-on-year in 2022, which is 0.5 percentage points less than the improvement assumed in August. It is due to Statistics Iceland's revision of last year's price deflators for external trade, particularly the price of other goods imports, which increased more than previously estimated. The revision also resulted in a smaller-than-expected year-on-year deterioration in terms of trade in H1/2023, or 7.7% instead of the 8.7% in the August forecast. As is discussed in the May issue of *Monetary Bulletin*, developments in aluminium export prices have weighed heavily in terms of trade, both last year and this year. Excluding the effects of aluminium and alumina prices, terms of trade worsened far less in H1, or by 1.8% between years (Chart I-21).

They are expected to deteriorate by 4.4% year-on-year in 2023, slightly more than was projected in August (Chart I-22), reflecting more favourable developments in marine product prices versus a larger decline in aluminium prices and larger rises in the price of other goods imports. If the impact of aluminium and alumina prices is excluded, however, terms of trade are projected to improve by just under 1% this year. As in the August forecast, terms of trade will remain broadly unchanged at the current level in the next two years. Nevertheless, they will be lower throughout the forecast horizon than was projected in August, owing to a less favourable initial position.

Chart I-21
Terms of trade with and without aluminium prices¹
Q1/2015 - Q3/2023



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 Q3/2023.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart I-22
Terms of trade for goods and services 2015-2026¹



1. Central Bank baseline forecast 2023-2026. The broken line shows the forecast from MB 2023/3.
Sources: Statistics Iceland, Central Bank of Iceland.

Monetary policy and domestic financial markets



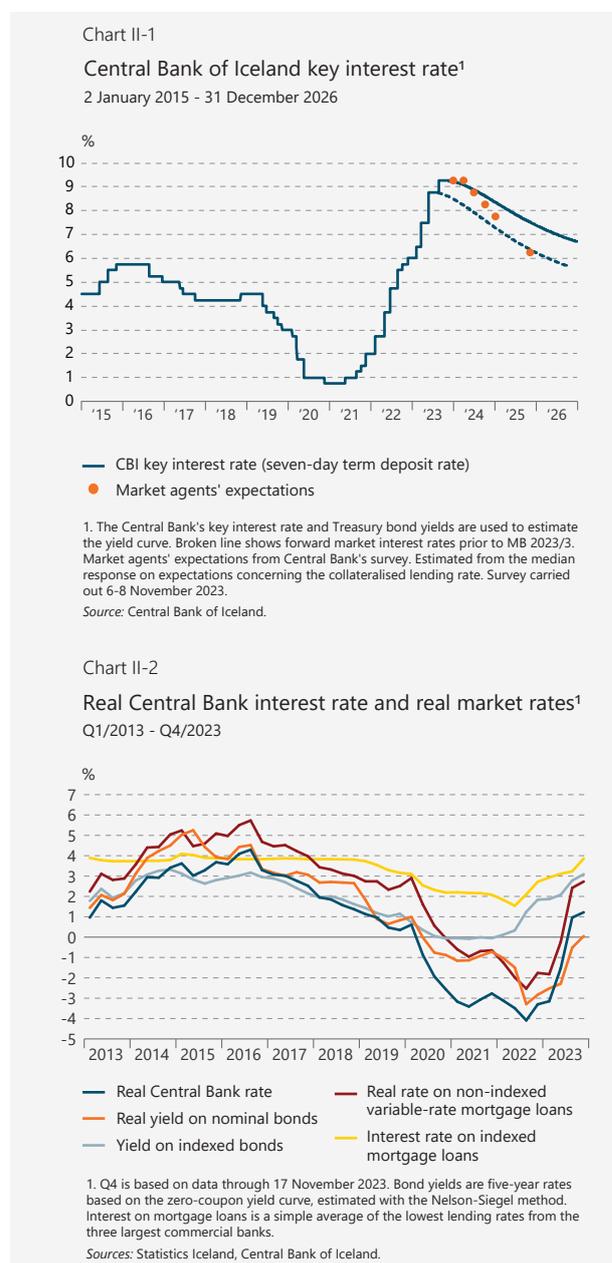
Monetary policy and market interest rates

Key interest rate held unchanged in October ...

At its August meeting, the Central Bank Monetary Policy Committee (MPC) decided to raise the Bank's key interest rate (the rate on seven-day term deposits) by 0.5 percentage points, while at the October meeting it kept the key rate unchanged. At that point, the Bank's interest rates had been increased at fourteen consecutive meetings (Chart II-1). The key rate was therefore 9.25% just before the publication of this *Monetary Bulletin*, its highest since H2/2009. Thus far in 2023, the key rate has been raised by 3.25 percentage points, and short-term market rates have developed in broadly the same vein.

Real rates have risen markedly in H2/2023 (Chart II-2). The Bank's real rate, based on the average real rate as calculated from various measures of inflation and one-year inflation expectations, is currently 2.7%, as compared with 1.3% at mid-year and -0.2% at the beginning of 2023. It has risen by 0.2 percentage points since the August *Monetary Bulletin*. The interest rate differential with abroad has also widened year-to-date, as short-term rates have risen more in Iceland than in trading partner countries.

The 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.¹ According to the Bank's



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,

November survey of market agents' expectations, respondents expect the key interest rate to remain unchanged until spring 2024 but then start to decline, reaching 6.25% in two years' time (Chart II-1). This is a somewhat higher interest rate than they expected in the previous survey. Forward interest rates similarly suggest that the Bank's interest rates have peaked.

... but long-term nominal rates have risen ...

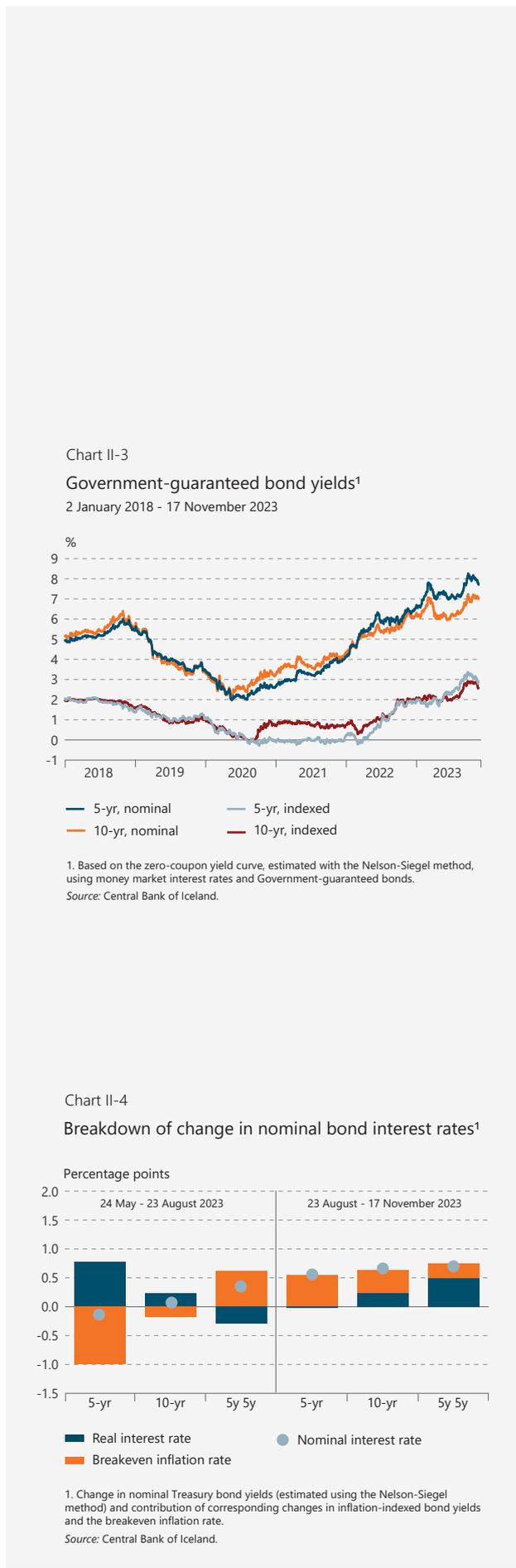
Over the summer months, yields on long-term nominal Treasury bonds were more or less unchanged, while headline inflation began to subside and real estate prices stood virtually still. In the wake of the policy rate hike in August and an uptick in inflation that same month, yields began rising again, however. The yield then fell in November, following the surge in seismic activity on the Reykjanes peninsula. There is significant uncertainty about the economic consequences of a possible volcanic eruption in the region and the impact on the Government's need for funding, which could have a considerable impact on Treasury bond yields.

The yield on ten-year nominal Treasury bonds has risen by 0.9 percentage points in H2/2023 to date. It was 7% just before this *Monetary Bulletin* was published (Chart II-3). Short-term rates have risen less, and the slope of the nominal yield curve has therefore flattened since mid-year. The spread between one- and ten-year nominal Treasury bond yields is now -2.3 percentage points.

... partly due to a higher real rate

The yield on ten-year indexed Treasury bonds was 2.6% just before this *Monetary Bulletin* was published. It held broadly unchanged in H1 but has risen over the course of the year, as has the Central Bank's real rate. Therefore, the rise in longer nominal rates in H2 partially reflects the increase in the real rate (Chart II-4). The yield started declining in November, however, as demand for indexed bonds spiked following increased uncertainty about the situation on the Reykjanes peninsula. The breakeven inflation rate in the bond market has risen by some measures, as investors may be of the view that inflation is falling more slowly than was assumed this summer and that uncertainty about the inflation outlook has increased (see Chapter V). As

to keep inflation at target and ensure full factor utilisation. The neutral real rate is estimated to have fallen in the years following the financial crisis, 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), but to have risen slightly once again. The updated estimate suggests that it lies between 1½% and just over 2%. This assessment is highly uncertain, however.



is noted above, investors also appear to expect the Central Bank's key rate to remain higher than they previously anticipated. Furthermore, changes in the breakeven rate may also be due to changes in the risk premium reflecting uncertainty about the inflation outlook and extraordinary circumstances in the bond market.

Exchange rate of the króna

The króna has depreciated this autumn

The króna appreciated between the spring and late August. Tourism was brisk at that time, and news of the sale this summer of domestic biotech firm Kerecis to foreign investors apparently gave rise to expectations of increased foreign currency inflows and a stronger króna. The króna started to weaken in late August, however, mainly against the US dollar, which generally appreciated versus other currencies at that time. In part, the appreciation of the dollar stemmed from expectations that US interest rates will be kept high for longer than previously anticipated (see Chapter I). Following the surge in seismic activity on the Reykjanes peninsula, the króna has fallen further. It is now 6.4% weaker in trade-weighted terms than it was at the time of the August *Monetary Bulletin* (Chart II-5), including the 3.6% depreciation starting in November, when seismic activity began to intensify. The Central Bank intervened in the foreign exchange market and sold currency for 2.8 b.kr. in November, in its first intervention since January.

Forward FX sales have eased but are offset by positive payment card flows

Capital flows relating to new investment were limited over the summer but have picked up this autumn, partly because pharmaceuticals company Alvotech was added to the OMXI10 index this summer and is thereby included in FTSE share price indices as well. Furthermore, inflows due to non-resident investors' Treasury bond purchases have increased, as the interest rate differential with abroad has widened this year. The pension funds have also scaled down their foreign currency purchases this autumn.

Growing activity in the tourism industry can be seen clearly in payment card-related foreign currency inflows, which have risen year-to-date despite a simultaneous increase in Icelanders' foreign travel (Chart II-6). On the other hand, forward FX sales appear to have eased since the summer. In part, this is probably because of contracts that were closed out in August,

Chart II-5

Exchange rate of the króna¹
2 January 2015 - 17 November 2023



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

Chart II-6

Net payment card flows¹
January 2010 - October 2023



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

after the settlement of the Kerecis sale, although it may also reflect expectations of a further depreciation of the króna. The results of the Central Bank's market expectations survey show, however, that survey participants expect the króna to remain broadly stable into 2024.

Króna set to be weaker than was assumed in August

The exchange rate index stood at 190 points in Q3, in line with the Bank's August forecast. The króna has depreciated in trade-weighted terms thus far in Q4 and is below the level projected in August. According to the baseline scenario, the average exchange rate will fall slightly over the forecast horizon, and remain below the August forecast (Chart II-7).

Money holdings and lending

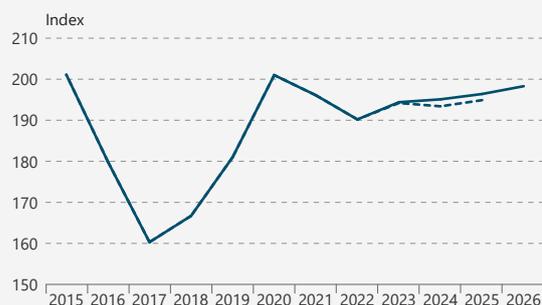
Household deposits still on the rise ...

Broad money holdings grew by nearly 11% year-on-year in Q3/2023 (Chart II-8), somewhat above the growth rate seen earlier in the year. To an extent, this can be attributed to payments made to residents following the sale of Kerecis to foreign investors in late August. Households deposits have also kept increasing, although private consumption growth has eased recently and households appear to have stepped up their saving again (see Chapter III). The increase in saving is concentrated in savings accounts, while households' current account deposits have shrunk in line with the widening difference in interest rates on these types of deposits. Growth in corporate deposits has slowed significantly relative to H1, however, as corporate lending has subsided and firms' liquidity position has deteriorated, likely because of large wage hikes in the recent term.

... and mortgage lending seems to be picking up once more

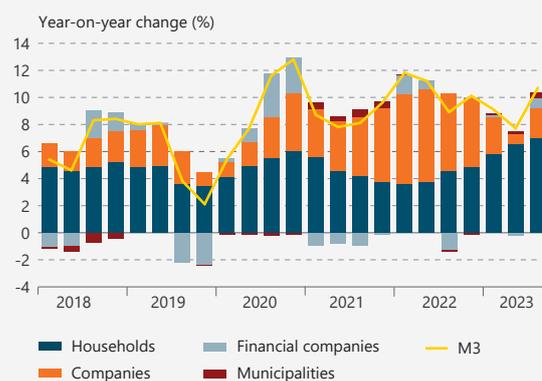
Year-on-year growth in credit system lending has eased thus far in 2023, measuring 8.3% in Q3 (Chart II-9). Twelve-month growth in credit system lending to households has eased steadily, to 6% as of September. Presumably, slower growth in the credit stock largely reflects declining demand due to higher interest rates and tighter borrower-based measures. The past few months' increase in net new lending to households could indicate, however, that growth in the credit stock may start to pick up again (Chart II-10). Real estate market turnover has inched upwards once more, which

Chart II-7
Exchange rate of the króna 2015-2026¹



1. Price of foreign currency in krónur. Narrow trade index. Central Bank baseline forecast 2023-2026. Broken line shows forecast from MB 2023/3.
Source: Central Bank of Iceland.

Chart II-8
Money holdings¹
Q1/2018 - Q3/2023



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.

Chart II-9
Credit system lending¹
January 2018 - September 2023



1. Credit stock adjusted for reclassification and effects 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.

may explain this uptick in lending, although the Central Bank's October lending survey indicates that commercial banks have not detected an increase in demand for mortgage loans recently. By and large, new loans have been inflation-indexed, and retirement of non-indexed loans has increased, as non-indexed lending rates have risen steeply in the wake of Central Bank rate hikes. Furthermore, in some cases fixed-rate clauses on older loans have expired. The lending survey suggests, however, that demand for mortgage loans will decline slightly in the coming term.

Growth in corporate lending loses pace

Growth in corporate lending was very strong in 2022 and during H1/2023, when it averaged 14.2% year-on-year. Loans to construction and services companies increased the most, in line with brisk activity in those sectors, although there was no discernibly large increase in lending to tourism companies. Since mid-year, however, growth has subsided, falling back to 9% in Q3/2023 (Chart II-9). Net new lending to companies has eased, and bond issuance has also lost pace relative to recent years. In addition, growth in institutional investment funds' corporate lending has tapered off in comparison with 2022. The shift is probably due to some extent to the rise in real interest rates, but the economic outlook has grown bleaker and the results of the next round of wage negotiations are highly uncertain. According to the lending survey, the commercial banks expect demand for corporate loans to keep falling in the next six months.

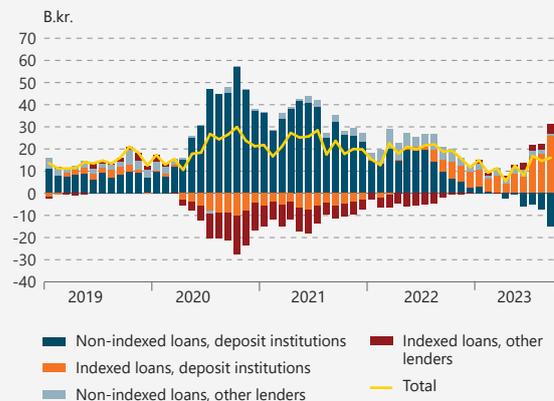
Asset prices

Twelve-month house price inflation declined sharply in early 2023 ...

House prices rose swiftly during the pandemic, and twelve-month house price inflation peaked at 25.5% in greater Reykjavík in July 2022 (Chart II-11). By July 2023, however, it had subsided to 0.8%, probably due for the most part to higher interest rates, tighter borrower-based measures, and lower real disposable income. This is the smallest year-on-year rise in house prices in more than a decade, although the figure is affected by base effects from the same month in 2022.

The number of purchase agreements registered nationwide declined by a fifth year-on-year in the first nine months of 2023. In October 2023, some 4,400 homes were advertised for sale, more than four times the number from the low point in April 2022, and the number of newly built homes for sale increased

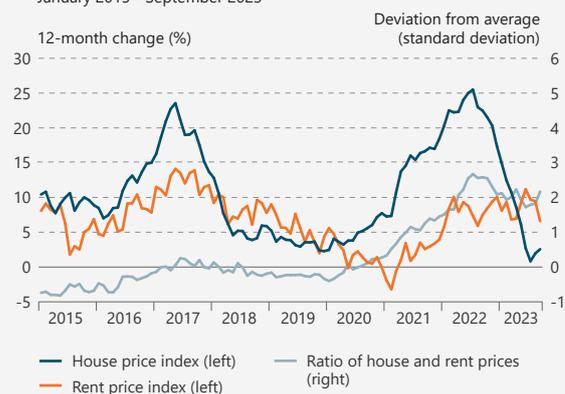
Chart II-10
Net new lending to households¹
January 2019 - September 2023



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

Source: Central Bank of Iceland.

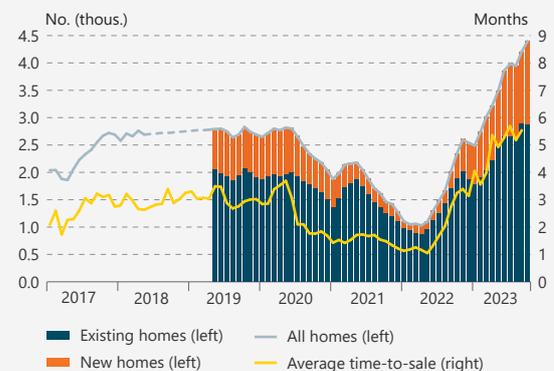
Chart II-11
House prices and rent¹
January 2015 - September 2023



1. House prices and rent in the greater Reykjavík 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-12
Number of homes for sale and average time-to-sale nationwide¹
January 2017 - October 2023



1. Data on number of homes for sale from June 2018 to April 2019 are not available; therefore, the interval is estimated using linear interpolation.

Sources: Housing and Construction Authority, Morgunblaðid Real Estate Website (mbl.is), Central Bank of Iceland.

ninefold over the same period (Chart II-12). The average time-to-sale nationwide was 5.5 months as of September 2023, up from just over a month at the trough in May 2022 and about three months during the years preceding the pandemic.

The share of homes sold at a premium on the asking price peaked at 53% in June 2022 but fell steadily from then until March 2023. It is now just under 11%, which is broadly in line with the pre-pandemic level. The share of newly built homes selling above the asking price has fallen more steeply, however, as the supply has mushroomed (Chart II-13).

... but has inched upwards in the past two months

House prices in greater Reykjavík rose by 2.6% year-on-year in September (Chart II-11). The annual increase has therefore gained pace in recent months, but as is mentioned above, real estate market turnover has risen slightly since the spring. At the same time, the number of new mortgage loans has risen again, and the share of first-time buyers has increased markedly since mid-year. Even though nominal house prices have risen again, real prices are down 5% between years.

House prices are still high relative to rent and wages

Rent in the capital area has eased since June but still measured 6.6% year-on-year in September (Chart II-11). To some extent, the rise in rent prices is attributable to overall developments in the price level. Furthermore, the immigrant population has grown apace in the past year, and indicators suggest that short-term tourist rentals are up year-to-date. The ratio of house prices to rent has therefore risen again in recent months and is still above its historical average. On the other hand, the ratio of house price to wages has fallen somewhat, although it is still rather higher than at the onset of the pandemic. House prices are now developing more in line with fundamentals than they were previously.

Housing market activity expected to remain muted, but the outlook is highly uncertain

House prices have eased rapidly and have developed broadly in line with the Bank's August forecast. The outlook is for a continued slowdown in year-on-year house price inflation for the remainder of 2023 and for a decline in real prices throughout the forecast horizon. Housing market activity looks set to remain relatively sluggish, and the supply of homes for sale is likely to keep rising in coming months, as the number of properties under construction is at an all-time high. As a

Chart II-13
Properties sold at a premium on the asking price nationwide¹
January 2017 - September 2023



1. Properties sold at a premium on the asking price as a percentage of sold properties. Three-month moving average.

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

result, a some year-on-year increase in the number of fully finished homes is expected in 2023 (see Chapter III). This is somewhat uncertain, however, as increased costs in the construction industry could cause delays in development projects. There is also uncertainty on the demand side of the market, given the upcoming wage agreements and the pickup in short-term rentals to tourists. However, the biggest uncertainty relates to the recent seismic activity on the Reykjanes peninsula, which could put great strain on the housing market if a volcanic activity should cause severe damage to housing in the region.

Share prices still on the decline

The OMXI10 share price index is down 15.3% in 2023 to date, and most listed companies' share prices have fallen this year. The index has fallen considerably in the past two years, reflecting to some extent the steep rise in interest rates during that period and the deterioration of the economic outlook. Equity market turnover totalled slightly more than 620 b.kr. over the first ten months of 2023, a 29% decline year-on-year, and the total trade count has also fallen between years. Sales of shares in equity funds have been slightly less in 2023 than in previous years, and redemptions net of sales totalled just under 8 b.kr. for the first nine months of the year. Households' holdings of equity fund shares have shrunk by slightly more than 6 b.kr. over the same period, and a portion of the sales proceeds has probably been deposited to savings accounts.

Financial conditions

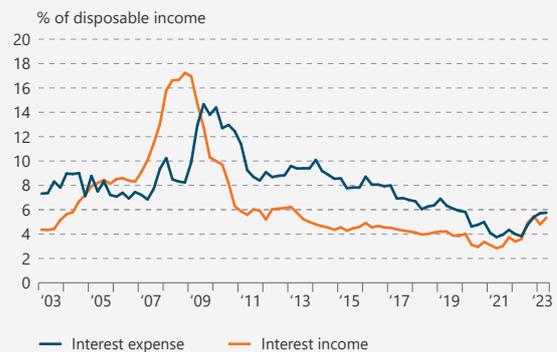
Households' equity position is strong, but their interest expense has increased

Households' equity position has increased substantially in the past decade. Furthermore, the household debt-to-GDP ratio has held broadly steady in recent years and remains historically low. Unemployment is low as well, and households are therefore strong overall. The share of non-performing household loans has risen marginally this year, however, owing primarily to an increase in the number of frozen loans. Overdraft loans have increased year-to-date, but in the context of price level movements and population growth, they have changed little in recent years.

Households' interest expense has risen markedly since mid-2022, as non-indexed lending rates have increased in line with Central Bank rate hikes (Charts II-14 and II-15). Indexed lending rates have also started rising this year, as have other real interest rates.

Chart II-14

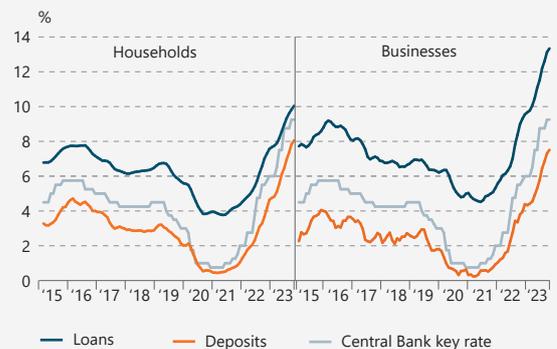
Households' interest expense and interest income
Q1/2003 - Q2/2023



Source: Statistics Iceland.

Chart II-15

Interest rates on deposits and loans¹
March 2015 - September 2023



1. New non-indexed deposits and loans. Large commercial banks' average interest rates, weighted by amount. "Household loans" refers to mortgage loans. Three-month moving averages.

Source: Central Bank of Iceland.

Nevertheless, the ratios of interest expense to both GDP and disposable income are still below historical averages. Furthermore, competition for household deposits has grown, interest rates on non-indexed savings accounts have increased alongside the rise in the Central Bank's key rate, and indexed deposit rates have also inched upwards. As a result, households' interest income has also increased over this period.

Companies' interest expense has increased as well, although their debt levels are still low

Corporate lending rates have kept rising in tandem with the increase in the key rate, and the average rate on new non-indexed loans to companies was 13.7% in September 2023. The deposit rates offered to companies have also been rising, albeit more slowly, and the spread between corporate deposit and lending rates have widened. Interest rates on foreign-denominated corporate loans are up, and firms' foreign debt increased in H1 despite the stronger króna. Thus far in 2023, corporate insolvencies have been more frequent than in the last few years, but the number of new company registrations year-to-date is also above the pre-pandemic level. Company arrears are still historically low, and their debt-to-GDP ratio is low.

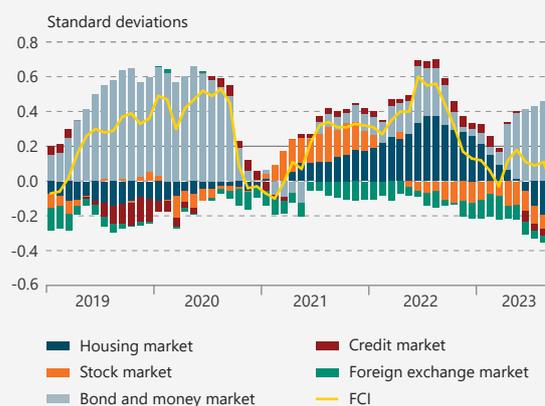
Financial conditions tighter than they were a year ago

On the whole, households' and businesses' financial conditions have grown more challenging since this time in 2022 (Chart II-16). They were unusually favourable from H1/2021 well into 2022, but since then they have tightened significantly. This shift is due primarily to the slowdown in the housing market and higher interest rates, supported by lower share prices, a weaker króna, and more sluggish lending growth. Even so, households' and businesses' financial conditions do not seem unusually tight in historical terms, which accords with the situation in other advanced economies, including the US and the eurozone (see Chapter I).

Chart II-16

Financial conditions¹

January 2019 - September 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. A more detailed description can be found in a Box in Financial Stability 2023/1.

Source: Central Bank of Iceland.

Demand and GDP growth



Domestic private sector demand

Private consumption growth has eased ...

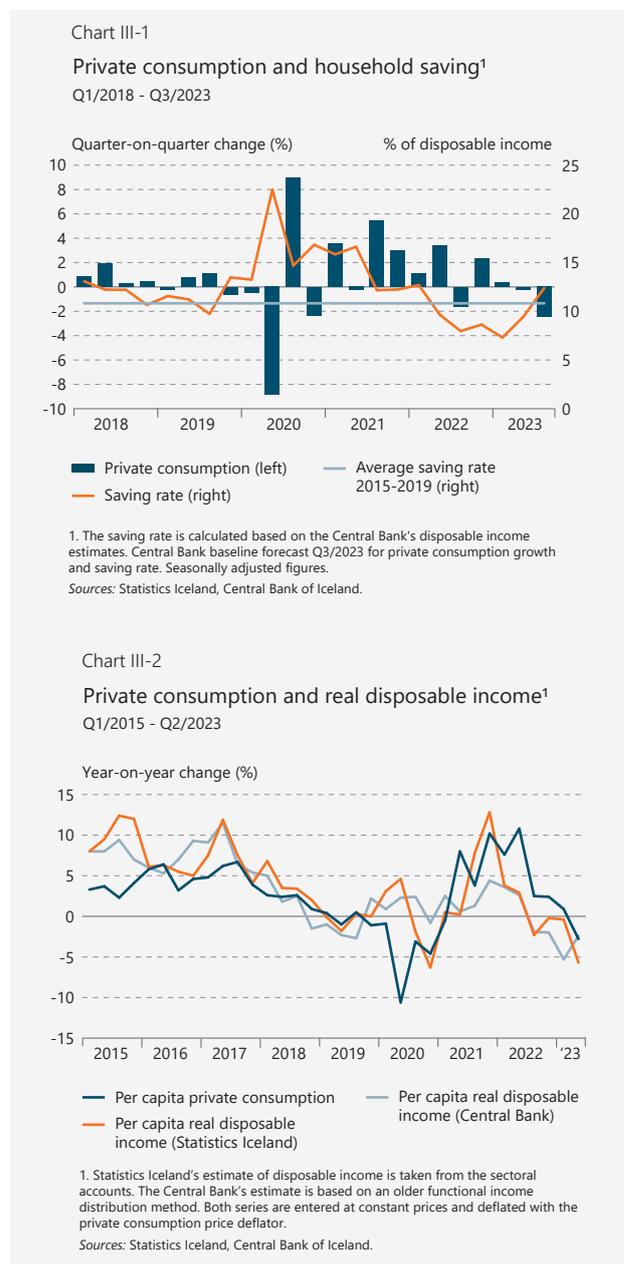
According to preliminary figures from Statistics Iceland, seasonally adjusted household consumption spending shrank by 0.2% quarter-on-quarter in Q2/2023 (Chart III-1). It grew by only 0.5% relative to Q2/2022, which is well below the 4.6% growth rate recorded in Q1 and the average of just over 8% over the past two years. Excluding the aftermath of the pandemic, it is the weakest year-on-year growth rate measured in a single quarter since Q2/2013.

This robust growth in private consumption in recent quarters is due in part to a surge in the population (see Chapter IV). Per capita private consumption actually contracted by 2.8% year-on-year in Q2, as real disposable income per capita had started to shrink in H2/2022, after rising steeply in the year beforehand (Chart III-2).

Although private consumption softened considerably in Q2, it turned out stronger than had been assumed in the Bank's August forecast. In August, it was projected to contract by 1% year-on-year, as payment card turnover had declined by 4.2% during the quarter (Chart III-3). As a result, private consumption grew more strongly in H1 than was forecast in August, or 2.5% instead of the projected 1.8%.

... and the household saving rate has increased again

Leading indicators suggest that annual growth in private consumption was broadly unchanged between Q2 and Q3 (Chart III-3). Total payment card turnover continued to shrink year-on-year but was partially off-



set by a minor increase in new motor vehicle registrations (excluding car rental agencies). This is in line with Gallup's survey of planned motor vehicle purchases, which indicated an increase between surveys.

Furthermore, the Gallup Consumer Confidence Index rose slightly between quarters, although it began to fall again towards the end of the quarter, possibly indicating that consumers have grown more pessimistic again. Moreover, inflation has eased more slowly than previously hoped, and financial conditions are tighter than they were a year ago (see Chapter II). If the Bank's forecast of private consumption in Q3 materialises, households have stepped up their saving again, pushing the saving rate above its pre-pandemic average once more (Chart III-1).

Private consumption growth outlook broadly unchanged since August

Although the outlook for Q3 is for weaker private consumption growth than was forecast in August, prospects for the year as a whole are broadly unchanged. It is still assumed that households will be cautious in their spending decisions and maintain roughly the same saving rate in 2023 as in 2022. Private consumption growth is estimated at 1.8% for 2023 as a whole, or 0.2 percentage points above the August forecast (Chart III-4). This reflects the offsetting impact of stronger growth in H1 versus the weaker outlook for the remainder of the year. As in August, private consumption growth is expected to pick up slightly as the forecast horizon progresses. It is projected at 2% in 2024 and 2½% per year in 2025-2026. If this forecast materialises, the household saving rate will hold relatively steady at around 9½% of disposable income throughout the forecast horizon, somewhat below the pre-pandemic average.

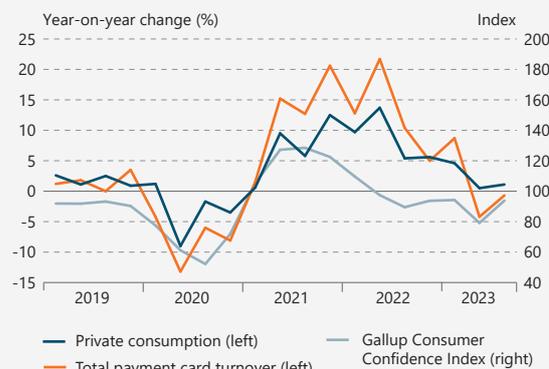
Business investment grew strongly in H1

Business investment grew by 5.8% year-on-year in H1/2023, outpacing the Bank's August forecast. The increase is due mainly to general business investment (i.e., excluding energy-intensive industry, ships, and aircraft), which grew by 7.9%, whereas investment in ships and aircraft contracted by nearly one-third. Investment in the energy-intensive sector also turned out weaker than was forecast in August (Chart III-5).

Expansion of land-based aquaculture weighs heavily in 2023 investment plans

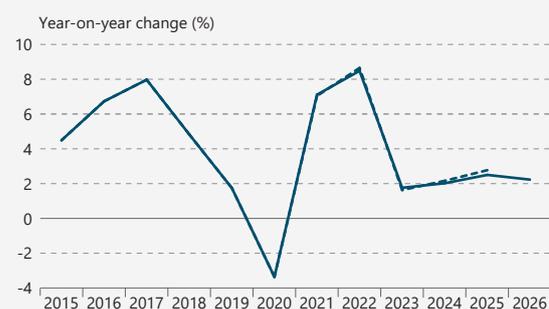
According to the results of the Central Bank's investment survey, taken in September, firms plan to increase

Chart III-3
Private consumption and its indicators¹
Q1/2019 - Q3/2023



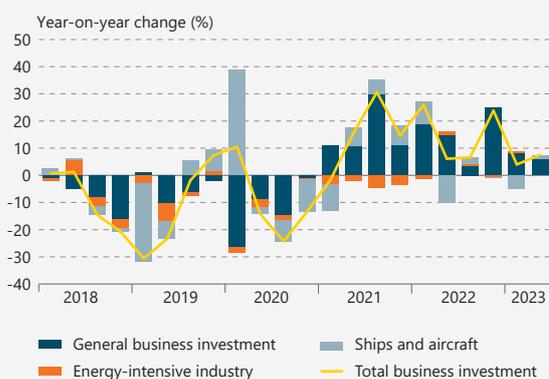
1. Central Bank baseline forecast Q3/2023 for private consumption.
Sources: Gallup, Statistics Iceland, Central Bank of Iceland.

Chart III-4
Private consumption 2015-2026¹



1. Central Bank baseline forecast 2023-2026. Broken line shows forecast from MB 2023/3.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart III-5
Business investment and contribution of underlying components
Q1/2018 - Q2/2023



Sources: Statistics Iceland, Central Bank of Iceland.

their investment spending by 8% in nominal terms this year, which is in line with the results of the survey from this spring. Plans for major investments in land-based aquaculture are prominent in investment spending (classified with the fishing industry in Chart III-6), which would otherwise remain flat year-on-year. Together with fisheries, companies in media and information technology, retail and wholesale trade, and tourism plan a minor increase in investment this year, whereas companies in manufacturing and other services plan to scale down investment spending between years. In real terms, firms' investment spending is projected to increase by 1% relative to 2022.

Gallup's September survey of Iceland's 400 largest firms also indicates stronger investment relative to the spring survey, with more executives now planning an increase than a decrease. Just over half of respondents expect to maintain an unchanged investment level, however. According to the survey, executives in transport, transit, and tourism are most optimistic about investment in 2023, while financial sector executives are most pessimistic.

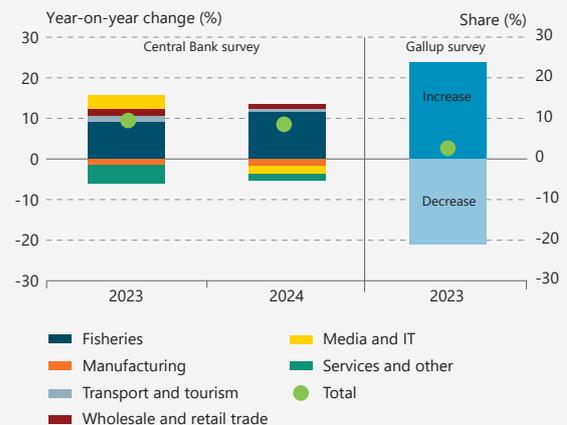
Signs of a contraction in business investment in 2023

The outlook is for the past few years' growth in business investment to flip to a year-on-year contraction in H2. Construction company turnover has grown rapidly in the recent term but lost pace in Q3. Imports of generic investment goods declined sharply as well, or by 16% between years (Chart III-7). General business investment is estimated to have contracted by 7% year-on-year in Q3/2023. Furthermore, the growth rate for the year is projected to be nearly 3 percentage points lower than was forecast in August, or just over 1%. Furthermore, the outlook is for weaker growth in energy-intensive investment, and investment in ships and aircraft is expected to fall by half between years. As a result, business investment is expected to shrink by nearly 1% this year, whereas in August it was forecast to grow by 1.6%. These figures are affected somewhat by reduced investment in ships and aircraft, however, as business investment excluding these items is projected to grow by 3½% this year.

Residential investment set to be weaker in 2023 than was forecast in August

According to preliminary figures from Statistics Iceland, residential investment contracted by 8.1% year-on-year in H1/2023, slightly more than was forecast in August. Residential investment has now declined for

Chart III-6
Indicators of investment plans in 2023-2024¹



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.

Chart III-7
Indicators of general business investment¹
Q1/2018 - Q3/2023



1. Business investment excluding energy-intensive industry and ships and aircraft. Central Bank baseline forecast for growth in general business investment in Q3/2023. Imported investment goods and transport equipment for commercial use (excluding ships and aircraft). 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.

eight consecutive quarters. Key short-term indicators imply, however, that construction sector activity started to increase at the beginning of 2021, peaked in mid-2022, and has been easing until well into this year. This prolonged contraction in residential investment is somewhat surprising (Chart III-8).

As of mid-November, some 7,600 homes were under construction nationwide, the largest total on record, according to the Housing and Construction Authority. The number of homes being built is due to a strong increase in housing starts in the past two years, alongside a decline in the number of fully finished properties on the market. For 2023 as a whole, however, the outlook is for some year-on-year increase in the number of finished homes on the market (Chart III-9).

The results of Gallup's autumn survey of Iceland's 400 largest firms suggest that a larger share of construction firms are now operating at or near full capacity, in that they are short-staffed and would have difficulty meeting an unexpected increase in demand. Nevertheless, respondents are less upbeat than in the summer survey. Executives from most companies still want to hire more workers and are expecting to invest more than in 2022, but they expect demand to contract in the next six months. Residential investment is now expected to grow by 2.2% in 2023, which is below the August forecast. The outlook for the forecast horizon overall is broadly unchanged, however. If the forecast materialises, the ratio of residential investment to GDP will have risen to 5½%, 1½ percentage points above the average of the past decade, by the end of 2026.

Investment set to contract in 2023 and then grow more slowly in 2024

The baseline forecast assumes that total investment will contract by 0.7% in 2023 and then grow by just over 5% in 2024, which is below the August forecast (Chart III-10). The poorer outlook is due primarily to a contraction in both business and public investment, plus the prospect of slower growth in residential investment.

The outlook for 2025 has slightly improved between forecasts, however, with investment now set to grow by 4% that year, up from 3½% in the August forecast. This year's investment-to-GDP ratio will be just under 22%, which is in line with the twenty-five-year average. The forecast assumes that the investment ratio will rise to nearly 23% by the end of the forecast horizon, slightly below the August forecast.

Chart III-8
Indicators of residential investment¹
Q1/2010 - Q3/2023



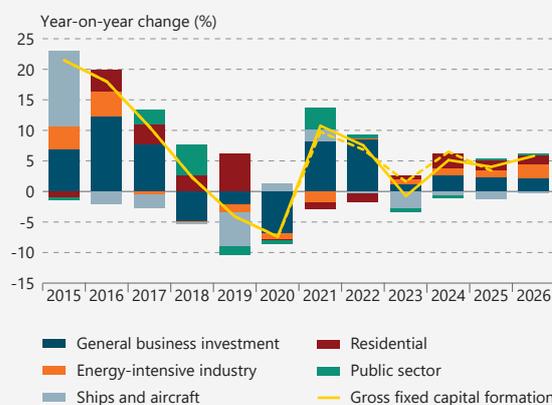
1. The first principal component of selected indicators of residential investment; it is scaled so that its mean value is 0 and the standard deviation is 1. The data used are: cement sales excluding heavy industry, consumer sentiment towards expected purchases of real estate property, employment in construction, imports of building materials, and sentiment of construction companies towards expected investment activity. Seasonally adjusted data.
Sources: Aalborg Portland Iceland, Gallup, Sementsverksmiðjan ehf., Statistics Iceland, Central Bank of Iceland.

Chart III-9
Status of residential building construction nationwide¹
2006 - 2023



1. Data for 2023 based on status between 1 January and 17 November 2023.
Sources: Housing and Construction Authority, Central Bank of Iceland.

Chart III-10
Gross fixed capital formation and contribution of main components 2016-2026¹



1. General business investment excludes ships, aircraft, and energy-intensive industry. Central Bank baseline forecast 2023-2026. The broken line shows the forecast from MB 2023/3.
Sources: Statistics Iceland, Central Bank of Iceland.

Public sector

Growth in public sector demand eases

Growth in public sector demand lost pace in H1/2023, owing largely to a 7.5% contraction in public investment while public consumption increased by 1.5%. This falls short of the August forecast, owing not least to Statistics Iceland's revision of previous figures for public consumption and investment in 2022, which turned out stronger than previous figures had indicated.

Public consumption is expected to develop similarly in H2/2023 and grow by 1.6% over the year as a whole. Public investment is forecast to shrink 4.2%, with a larger contraction at the local government level than at the State level. Public sector demand will therefore increase by 0.8% year-on-year, down from 1.4% in the August forecast (Chart III-11). The change stems primarily from base effects due to the above-mentioned revision of earlier data.

In 2024, public consumption is projected to grow by 1.8% and public investment to contract by just over 3%. This represents somewhat weaker growth in public sector demand than in the Bank's last forecast, as a larger share of consolidation in central government spending shows on the expenditures side than was provided for in the 2024-2028 fiscal strategy plan. The outlook for the latter half of the forecast horizon is broadly unchanged, although reconstruction following infrastructure damage due to seismic activity on the Reykjanes peninsula could call for increased public expenditure.

Treasury deficit set to keep shrinking

The Treasury outcome has improved markedly in the recent term, fuelled by strong growth in economic activity and the expiry of fiscal support measures. In 2022, the Treasury deficit adjusted for irregular items totalled 108 b.kr., or 2.8% of GDP (Chart III-12).¹ The Treasury primary balance adjusted for the same items remained negative, by around 0.2% of GDP. This is a major turnaround from the year beforehand, however, when the primary balance was negative by 5.6% of GDP.

For 2023, it is assumed that the deficit will shrink, as economic activity and high inflation foster growth in Treasury revenues during the year. Nevertheless, as is

1. This refers to the Treasury Part A outcome based on data from Statistics Iceland and adjusted for irregular and one-off items according to information from the Ministry of Finance and Economic Affairs. If no adjustment is made for these items, the deficit for 2022 comes to 3.1% of GDP.

Chart III-11

Public sector final demand 2015-2026¹

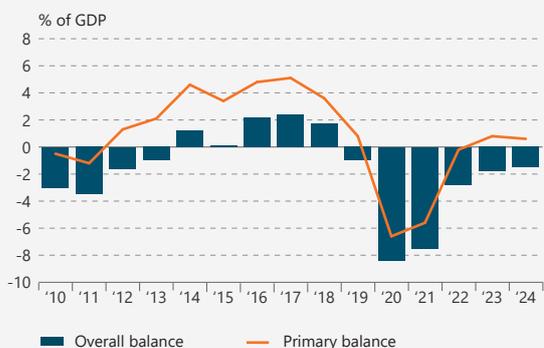


1. Public sector final demand in the national expenditure accounts is the sum of government consumption and public investment. Central Bank baseline forecast 2023-2026. Broken line shows forecast from MB 2023/3.

Sources: Statistics Iceland, Central Bank of Iceland.

Chart III-12

Treasury outcome 2010-2024¹



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.

discussed in Box 4, this year's inflation will probably not increase expenditures to any marked degree until next year. The baseline forecast assumes that the Treasury outcome will still be negative in 2023, by 1.8% of GDP.

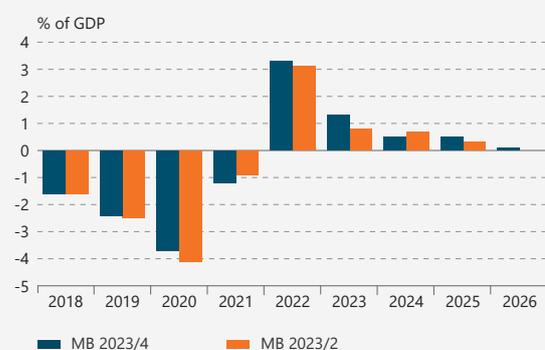
In 2024, however, the surge in revenues seen over the past two years is expected to subside, and price level updates of various expenditure items are set to take account of high year-2023 inflation. This entails a poorer outlook for next year's Treasury performance. Pulling in the other direction are Government measures provided for in the 2024 fiscal budget proposal with the aim of improving the Treasury outcome. The Treasury outcome is projected to be negative by 1.5% of GDP, reflecting a primary surplus and a deficit on the interest balance. This represents a slightly poorer outcome in 2023 and 2024 than is provided for in the fiscal budget proposa.

Moderate fiscal tightening over the forecast horizon

As is noted above, the combination of the expiry of discretionary measures in response to the COVID-19 pandemic and strong growth in economic activity has led to a significant turnaround in the Treasury primary balance in recent quarters. Last year's turnaround was stronger than can be explained by business cycle movements, just as with the 2020-2021 deficit, which, because of these discretionary measures, increased more than could be attributed to underlying economic developments. Fiscal easing, measured as the change in the cyclically adjusted primary balance, is estimated to have totalled 4.9% of GDP in 2020-2021 (Chart III-13). It reversed to an extent in 2022, when the fiscal stance tightened by just over 3% of GDP, and the outlook is for a further tightening of 1.3% in 2023.

In 2024, the Treasury primary surplus is expected to narrow in spite of the consolidation measures provided for in the fiscal budget proposal. On the other hand, demand pressures in the economy will ease more quickly, with the result that the fiscal stance will tighten by an additional 0.5% of GDP. The fiscal stance is expected to tighten by a similar amount in 2025 and then hold broadly unchanged in 2026. As a result, the outlook is for marginally tighter fiscal policy in 2023-2025 than was assumed this past spring, when the fiscal stance was last assessed.

Chart III-13
Change in central government cyclically adjusted primary balance 2018-2026¹



1. Adjusted for irregular and one-off items. Central Bank baseline forecast 2023-2026.
Sources: Ministry of Finance and Economic Affairs, Statistics Iceland, Central Bank of Iceland.

External trade and the current account balance

Services exports broadly back to the 2018 peak ...

Exports of goods and services grew by 7.9% year-on-year in Q2/2023, or 2.6 percentage points more than was assumed in the August forecast (Chart III-14). Goods exports contracted by 0.9%, while services exports jumped by an unexpectedly strong 19.5%.

This stronger growth is due mainly to services exports other than transport and tourism, which increased somewhat, although they had been expected to contract as in Q1. The difference is due partly to a revision of previously published year-2022 figures, which estimated growth in services exports at 58.3% instead of 53.8%. Of that total, growth in other services measured 17%, more than twice the estimate based on previous figures. Developments in subcomponents included in other services changed somewhat after the revision, with the result that the value of personal, cultural, and recreational services increased threefold, owing in large part to film production. Most subcomponents of other services grew markedly once again in Q2, rising to an all-time high for this time of year (Chart III-15).

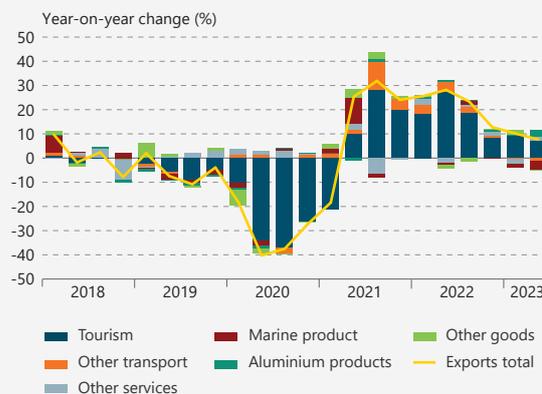
On the other hand, continued growth in tourism alongside an increase in flight offerings explain the majority of export growth during the quarter. Passenger transport by air shifted far closer to the pre-pandemic level, and for the first time, total services exports were broadly in line with the 2018 peak.

... with even stronger growth projected for Q3

In the first ten months of the year, 1.9 million tourists visited Iceland, as was forecast in August, and since March 2023, monthly totals have been similar to those in 2018. Indicators of tourist spending in Iceland suggest that their average spending in foreign currency declined by 4% year-on-year in Q3, somewhat less than was assumed in the Bank's August forecast (Chart III-16). Their average stay grew shorter relative to the same period in 2022, however, while stronger spending is probably attributable to an increase in the number of cruise ship passengers arriving in July and August.

The nationality composition of arriving passengers in Q3 was broadly similar to that in 2018, and visitors from the US accounted for just over a third of the total. Tourist arrivals from China were still fewer than before, however. Furthermore, domestic airlines' export revenues from passenger transport increased somewhat more than expected during the quarter, as

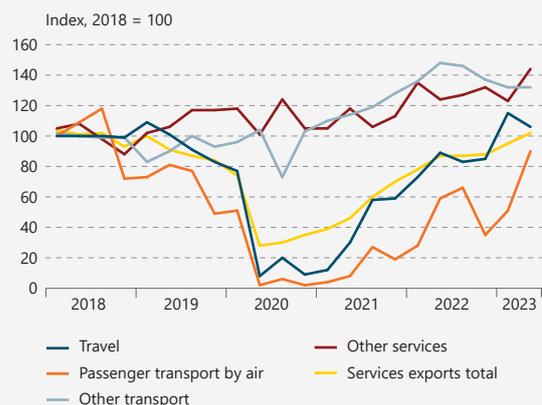
Chart III-14
Exports and contribution of underlying components¹
Q1/2018-Q2/2023



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". Other transport excludes passenger transport by air. Aluminium exports as defined in the national accounts.

Sources: Statistics Iceland, Central Bank of Iceland.

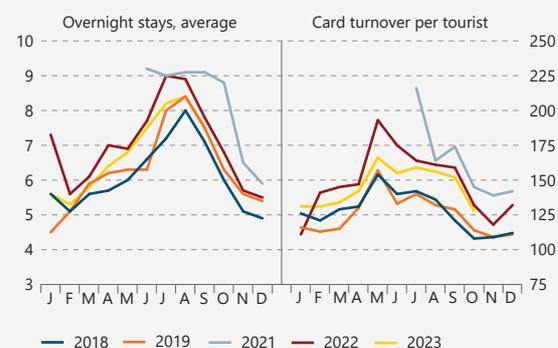
Chart III-15
Services exports and underlying components¹
Q1/2018 - Q2/2023



1. Other transport excludes passenger transport by air. Seasonally adjusted volume indices.

Sources: Statistics Iceland, Central Bank of Iceland.

Chart III-16
Tourism: overnight stays and payment card turnover
2018-2023¹



1. Foreign tourists' average overnight stay according to border survey taken at Keflavik Airport. Average payment card turnover based on monthly turnover with foreign payment cards in Iceland and foreign nationals' monthly departures via Keflavik Airport, in thousands of krónur, at constant exchange rates, October 2023.

Sources: Icelandic Tourist Board, Isavia, Central Bank of Iceland.

airfares remained high despite increased flight offerings to Iceland. On the other hand, the number of transit passengers was still markedly lower than before the pandemic (Chart III-17). Revenues from cargo shipping look set to keep contracting year-on-year, concurrent with global price reductions.

The outlook for tourism is broadly as in August, but uncertainty has mounted due to seismic activity on the Reykjanes peninsula

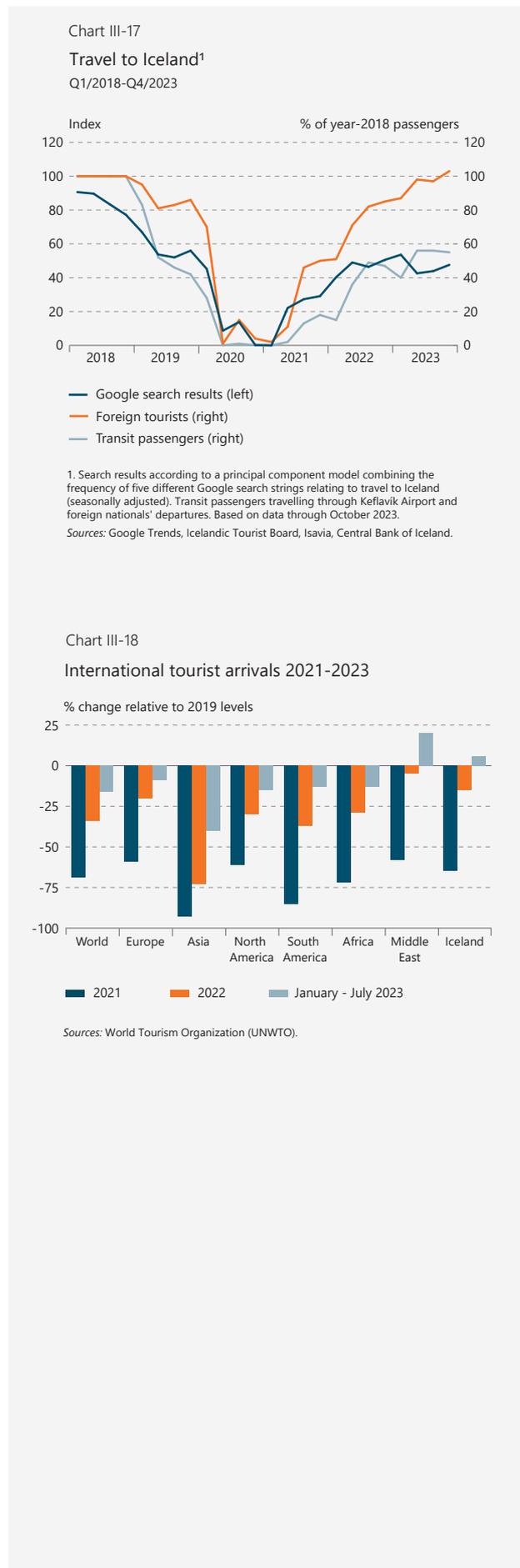
Global tourism recovered rapidly in Q2, and in most markets apart from East Asia and Eastern Europe, tourist arrivals were close to pre-pandemic levels (Chart III-18). On the other hand, growth in travel eased in Q3, and indicators imply that international ticket sales have eased slightly in the recent term.²

Flight offerings to and from Iceland in 2024 are still set to increase. Google searches for flights to Iceland and accommodation in the country are also broadly unchanged. Prospects for tourism are therefore broadly in line with the Bank’s August forecast, with modest growth in tourist arrivals expected in coming years despite somewhat weaker growth in economic activity in trading partner countries. Uncertainty is high in the sector, however, due to the possibility of a volcanic eruption on the Reykjanes peninsula and the consequences for air traffic and appetite for travel to Iceland. Furthermore, there is some uncertainty about developments in services other than tourism, in view of recent volatility and the revision of previously published data. Because other services grew more strongly in H1 and tourism was somewhat more robust in Q3, services exports overall are expected to grow more in 2023 than was forecast in August, or by 13.6% instead of the August forecast of 11%. This is broadly in line with the Bank’s May forecast. Services exports are still expected to grow modestly in 2024, or just under 5%, alongside slower growth in tourism. This is slightly below the August forecast, owing to base effects from stronger growth in other services exports in 2023.

Goods exports unchanged year-on-year in H1/2023 ...

Goods exports contracted marginally in Q2 and were unchanged year-on-year in H1, as was forecast in August. The contraction in marine product exports grew stronger in Q2, measuring 16.4%. The downturn is due to a year-on-year reduction in catch quotas

2. See The International Air Transport Association, *Air Passenger Market Analysis*, September 2023.



for capelin and cod, while the contraction in capelin exports was even greater than in the actual catch. An unusually large share of the catch was used to produce capelin roe, yet the market for it is small and sales have been more sluggish than in 2022 because of strong supply. As a result, a large proportion of the product is still held in inventories. Offsetting the decline in marine product exports was a marked increase in exports of aluminium products and other goods. In the latter category, exports of silicon products, other manufactured goods, and pharmaceuticals and medical equipment increased somewhat, while exports of aquaculture products shrank.

... but the outlook for H2 has deteriorated

The outlook for goods exports in 2023 has worsened since August. Marine product exports are expected to contract further, both because of base effects due to stronger growth in 2022 following Statistics Iceland's revision of previous data and because of more sluggish sales of capelin roe in Q3 than previously forecast. As a result, marine product exports are now projected to contract by 8.3% in 2023, instead of the 5.3% assumed in August. There is also some uncertainty due to the consequences of a possible volcanic eruption on the Reykjanes peninsula, as the closure of marine product processing operations in the area will probably lead to weaker sales this year, until alternate solutions are put in place. The outlook for other exports is also poorer for H2, partly because of maintenance work on Elkem's largest arc furnace, which will cut into production of silicon products in Q4. Pulling in the same direction is the prospect of weaker aquaculture exports, owing to an accident occurring in Q3, when farmed salmon escaped from cages in Patreksfjörður fjord. On the other hand, there are signs of relatively stronger exports of aluminium products in Q3 and therefore slightly more robust growth for the year as a whole. Goods exports are projected to contract by 1.3% this year instead of remaining unchanged, as was forecast in August.

Marine product exports are still expected to grow broadly in line with the August forecast in 2024, reflecting base effects from this year's larger contraction and a larger reduction in capelin exports, as no capelin quota has been issued for next year. Aluminium exports are also expected to grow as previously projected, whereas other goods exports look set to grow more strongly, owing to base effects. As in August, goods exports are expected to grow by an average of 2½% throughout the forecast horizon.

Total export growth set to increase in 2023 but decline in 2024

Total exports are projected to grow by 5.1% in 2023, some 0.5 percentage points more than was forecast in August, due to the prospect of weaker goods exports versus stronger services exports (Chart III-19). The outlook for the next two years is broadly unchanged since August, although growth in services exports is expected to be somewhat weaker in 2024 because of base effects.

Import growth has slowed and looks set to turn negative in H2

Goods and services imports grew by 1.1% in Q2 instead of contracting by that amount, as was forecast in August (Chart III-20). The difference is due mainly to the revision of previously published data on goods imports. Goods imports grew by 2.3% year-on-year, after having contracted in Q1. Imports of fuel, transport equipment, and industrial supplies increased, while imports of consumer goods and investment goods declined. In H1/2023, goods imports increased by 0.4%, after growing nearly 11% in 2022. Indicators imply, however, that they contracted more in Q3 than previously assumed, alongside weaker growth in domestic demand. As a result, goods imports are estimated to contract by 1.3% in 2023 as a whole, or a full 1 percentage point more than was projected in August. Goods imports have been unusually strong in the recent term but their share in nominal GDP appears to have been easing closer to the historical average (Chart III-21).

Services imports turned out weaker than expected in Q2, owing to the revision of data for 2022, and contracted by 0.8% year-on-year. Base effects from the 2022 revision also affected Q3 figures, and fewer Icelanders travelled abroad than previously expected; therefore, services imports are projected to grow by 2.1% this year instead of the 4.5% increase forecast in August. Total imports are projected to contract marginally in 2023, whereas in August they were forecast to grow by 1.2%. The outlook for the forecast horizon overall is broadly unchanged, however.

Narrow current account surplus expected

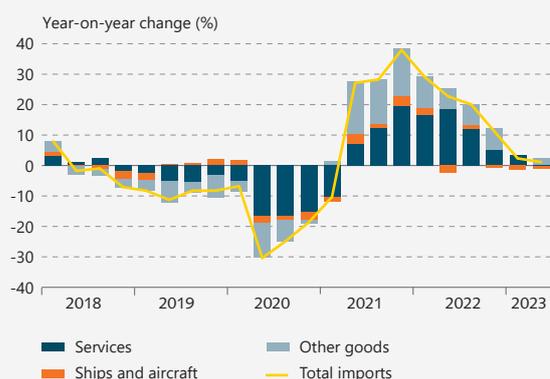
The current account balance was positive by 0.7% of GDP in Q2, the first second-quarter surplus since the COVID-19 pandemic. A deficit of roughly this size was expected in August. The difference stems mainly from stronger-than-expected services exports, owing to the aforementioned revision of historical data. Pulling in

Chart III-19
Exports and contribution of underlying components 2015-2026¹



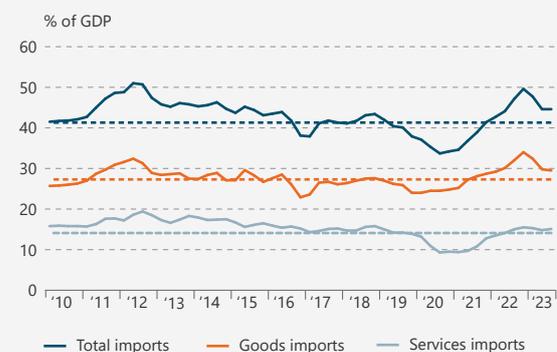
1. Because of chain-volume linking, the sum of components may not equal total exports. Tourism is the sum of "travel" and "passenger transport by air". Aluminium exports as defined in the national accounts. Central Bank baseline forecast 2023-2026. Broken line shows forecast MB 2023/3.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart III-20
Imports and contribution of underlying components¹ Q1/2018 - Q2/2023



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

Chart III-21
Imports of goods and services¹ Q1/2010 - Q3/2023



1. Two-quarter moving average. Central Bank baseline forecast Q3/2023. Broken lines show average from 1998.
Sources: Statistics Iceland, Central Bank of Iceland.

the same direction was a somewhat larger primary income surplus, due to larger-than-anticipated losses recorded by foreign-owned pharmaceuticals companies. Iceland's current account showed a deficit of 0.5% of GDP in H1/2023. Fluctuations in the primary income balance due to foreign-owned companies, particularly aluminium companies, have made a considerable impact on the current account in the recent term, and the 2021 and 2022 current account deficits were revised somewhat in September 2023 because of revisions of aluminium companies' performance (Chart III-22). The current account deficit turned out 0.5 percentage points larger than previously expected in both years, even though the surplus on services trade was 0.3 percentage points larger in 2022, measuring 2% of GDP in 2022 and 3% in 2021.

The outlook for this year's current account balance has improved since August, however, owing largely to the prospect of weaker imports and a larger surplus on services trade, which stems from the revision of last year's figures and a strong Q3 in the tourism industry. Combined goods and services trade looks set to be broadly in balance this year, whereas a 1% deficit was forecast in August. The surplus on primary income is also expected to be larger, owing to the prospect of a poorer outcome for the aluminium and silicon metals companies, which in turn stems from a larger decline in aluminium and silicon product prices than was forecast in August. As a result, the outlook is for the current account balance to show a surplus of 0.6% of GDP this year, as compared with the nearly 1% deficit in the August forecast (Chart III-23).

The same factors will affect 2024 as well, and the outlook is for a small improvement in the trade balance and a continued surplus on primary income. Nevertheless, the outlook is for the primary income balance to deteriorate over the course of the forecast horizon. The current account will therefore be in surplus by roughly $\frac{3}{4}$ % of GDP over the next two years and will be broadly in balance at the end of the forecast horizon, as opposed to the 1-1½% deficit projected in August.

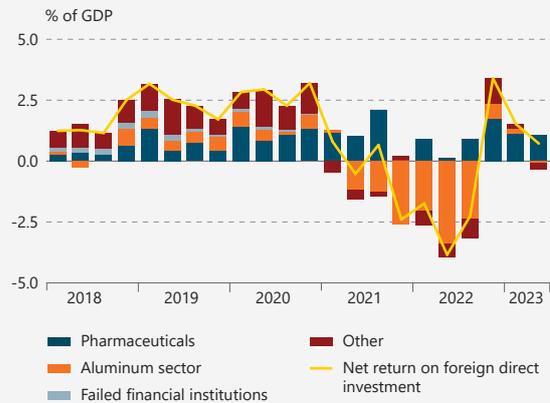
GDP growth

H1 output growth outpaced the August forecast ...

Seasonally adjusted GDP grew by 2.2% quarter-on-quarter in Q2/2023, exceeding the August forecast. It grew by 4.5% year-on-year, whereas it was forecast at 3.7% in August (Chart III-24). The more rapid growth rate is due mainly to a larger increase in consumption and investment spending, as is discussed earlier

Chart III-22

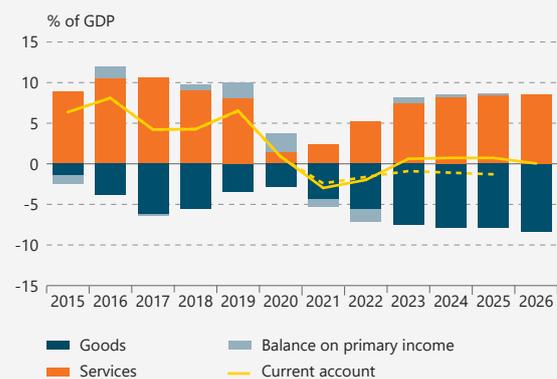
Net return on foreign direct investment
Q1/2018 - Q2/2023



Sources: Statistics Iceland, Central Bank of Iceland.

Chart III-23

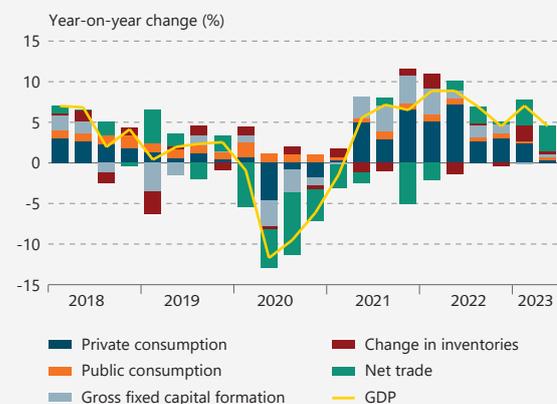
Current account balance 2015-2026¹



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 2023-2026. Broken line shows forecast from MB 2023/3.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart III-24

GDP growth and contribution of components¹
Q1/2018 - Q2/2023



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

in this chapter, together with the effects of Statistics Iceland's revision of previous data, particularly for public consumption and investment. After Statistics Iceland's revision, year-2022 GDP growth proved 0.8 percentage points stronger than previously projected, or 7.2%, which is in line with the Bank's forecast from February, when the year-2022 national accounts were not yet available.

GDP growth measured 5.8% in H1/2023, well in line with the Bank's August forecast of 5.4% for the period (Chart III-25). Growth was driven largely by favourable external trade built on strong revenues from tourism, plus 2.7% growth in domestic demand. Developments were more or less in line with the Bank's projections, although Statistics Iceland's revisions of earlier figures did affect the outcome somewhat.

... and looks set to be slightly stronger in 2023 as a whole ...

GDP is estimated to have grown by 1¾% year-on-year in Q3/2023, somewhat exceeding the August forecast. This is due, on the one hand, to a more favourable outlook for external trade, and on the other, to weaker growth in domestic demand, which mainly reflects poorer prospects for all subcomponents of investment. For the year as a whole, GDP growth is estimated at 3.7%, or 0.2 percentage points above the August forecast (Chart III-26). This is due mostly to a more favourable contribution of net trade to GDP growth, which in turn is due to stronger tourism revenues and a contraction in imports, alongside weaker domestic demand. It is offset primarily by weaker growth in investment and a more negative contribution from inventory changes.

... whereas the outlook further ahead is broadly unchanged

As in August, output growth is expected to ease to 2.6% in 2024. The outlook is for output growth to be slightly stronger in 2025 but broadly unchanged for the next three years as a whole: it is projected to average 2.7% over the three-year period, up from 2.6% in the August forecast. The situation is highly uncertain, however, particularly because of the recent seismic unrest on the Reykjanes peninsula, as severe damage following a possible volcanic eruption would weaken short-term GDP growth, all else being equal. The forecast could also prove overly optimistic if the economic outlook for trading partner countries deteriorates further, for instance, or if domestic inflation proves more stubborn than is provided for in the baseline forecast (see Box 1).

Chart III-25
National accounts for H1/2023

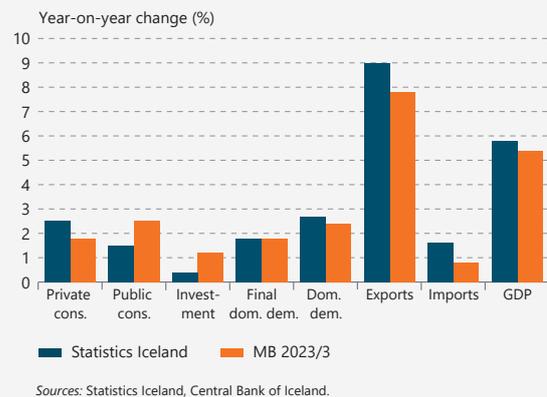
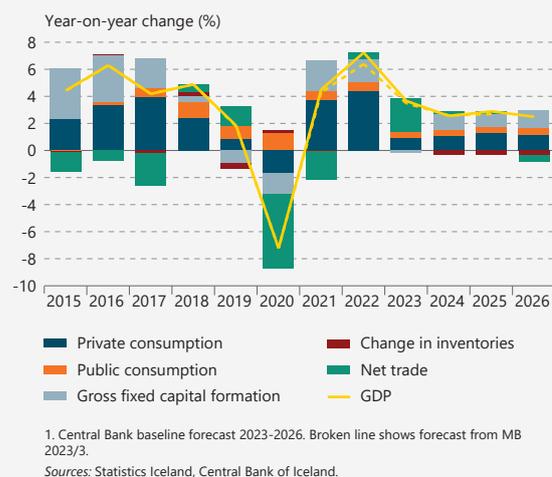


Chart III-26
GDP growth and contribution of underlying components 2015-2026¹



Labour market and factor utilisation



Labour market

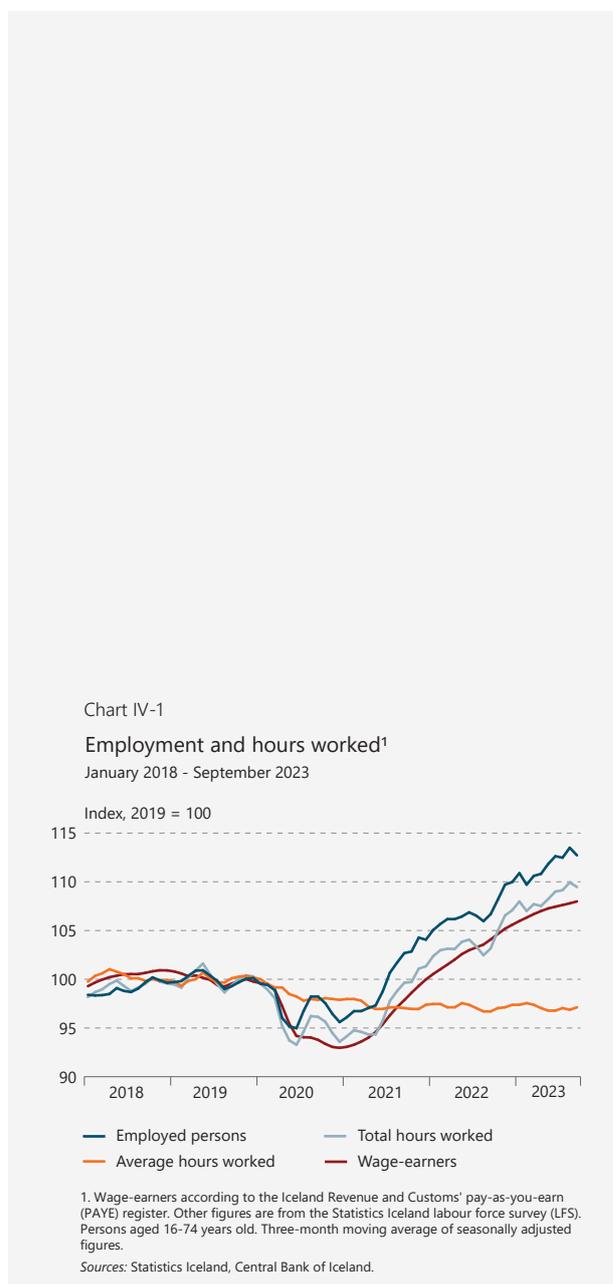
Labour market remains tight, but job growth has slowed ...

According to the Statistics Iceland labour force survey (LFS), total hours worked rose by 6.4% year-on-year in Q3/2023. Job creation measured 5.7% year-on-year, and the average work week grew longer by 0.7%.

The year-on-year growth rate for jobs and total hours worked during the quarter was affected strongly by the quarter-on-quarter decline a year earlier. In terms of seasonally adjusted LFS data, job numbers were broadly flat between quarters and total hours worked increased by 0.4%. That is a slower quarter-on-quarter growth rate than was seen in H1 in both instances. The number of workers on the pay-as-you-earn (PAYE) register also rose more slowly in seasonally adjusted terms in Q3 than in H1, or by 0.5% quarter-on-quarter, after rising by an average of nearly 1% quarter-on-quarter in H1.

Since the onset of the pandemic, the number of employed persons has been somewhat higher according to the LFS than according to the PAYE register. According to the LFS, total hours were up nearly 10% and the number of employed persons by nearly 13% relative to the year before the pandemic, whereas worker numbers according to the PAYE register rose slightly less, or 8%, over the same period. The difference was slightly wider than during the summer (Chart IV-1).¹

1. The LFS uses population data from Registers Iceland to determine the number of employed persons. Year-2021 census data show, however, that the population of Iceland is overestimated in Registers Iceland figures, which could partly explain the difference in employment according to the LFS versus the PAYE register. Statistics Iceland has been working on improvements to its population estimates, which are set for publication from year-end 2023 onwards.



... and unemployment remains low but appears to have bottomed out

Seasonally adjusted LFS data for Q3 show strong labour participation and employment rates (Chart IV-2). In fact, both rates are at their highest since mid-year 2017, if the employment rate in Q2/2023 is ignored. By the same token, unemployment is low, at 3.3% during the quarter, broadly in line with the H1 average (Chart IV-3). A broader measure of unemployment, which includes the underemployed and the potential addition to the labour force, has held relatively stable at close to 10% since mid-2022, which is broadly equal to the pre-pandemic rate. Seasonally adjusted registered unemployment is low as well, but it rose slightly between quarters, for the first time since late 2020. It measured 3.2% in Q3, or 0.1 percentage point more than in the quarter beforehand, and continued to rise to 3.4% in October.

Since early this summer, there has been an increase in the number of persons who have been on the unemployment register for less than six months, which was up by just under 600 year-on-year in October. Thus there are indications that the unemployment register inflows are growing or that exits from them are slowing. The number of persons on the register for over a year has had an offsetting effect, as it had declined by close to 800 persons year-on-year in October. At the same time long-term unemployment measured 0.6% of the labour force, a little less than during the year before the pandemic.

Although surveys suggest that job growth will continue ...

According to the seasonally adjusted results of the Gallup survey carried out this autumn among Iceland's 400 largest firms, the balance of opinion on staffing plans (i.e., firms planning to recruit as compared with those planning redundancies) was positive by 16 percentage points. It is broadly unchanged in 2023 to date, after having been positive by nearly 30 percentage points throughout 2022. Even so, it is still above its historical average (Chart IV-4). Furthermore, there were close to 6,800 job vacancies in Q3, according to Statistics Iceland's corporate survey. They have fallen in number since 2022, however, and were only slightly above the level from the same period in 2019. The ratio of job vacancies to jobless persons has developed similarly. The ratio increased strongly in 2022 but has fallen back to some extent this year. In Q3, job vacancies and the number of unemployed persons were broadly the same, whereas in 2019 there were roughly two jobless persons for each vacancy.

Chart IV-2

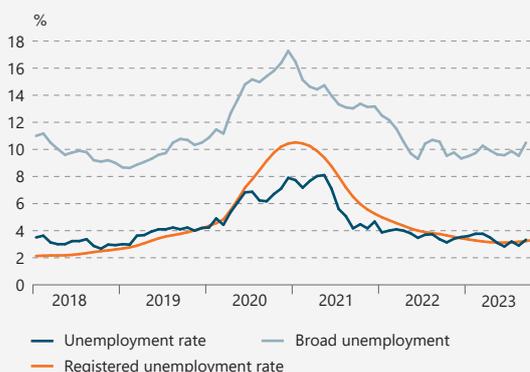
Labour participation and employment rate¹
January 2018 - September 2023



1. Three-month moving average of seasonally adjusted figures.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart IV-3

Unemployment¹
January 2018 - October 2023



1. Broad unemployment 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) according to LFS figures. 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-4

Firms' recruitment plans¹
Q1/2006-Q3/2023



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.

... it will probably ease if population growth keeps losing pace ...

Iceland's population grew by 3% year-on-year in Q3 (Chart IV-5). Net inward migration of foreign nationals – the main driver of job creation in the recent term – was just over 2,400 during the quarter. Increased inflows of refugees have also explained a fair share of population growth from 2022 onwards. Although population growth is still strong in historical context, it has eased somewhat in the past two quarters. This applies to arrivals of refugees and to other foreign immigrants, whose numbers have subsided in line with slower growth in economic activity.

It is difficult to forecast population developments due to the surge in refugees, but it is assumed that inward migration will lose pace as domestic demand pressures subside and start to resemble more closely the situation in trading partner countries as the forecast horizon advances.

... and the labour market will remain tight this year but ease in 2024

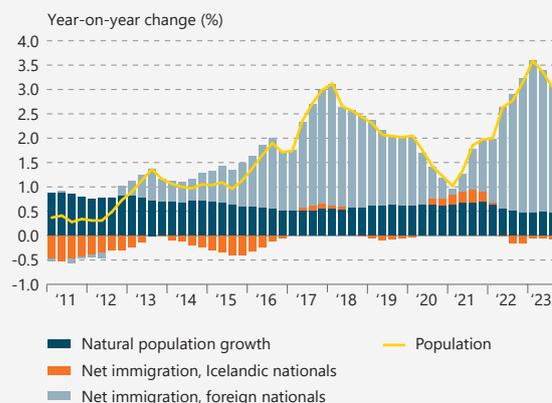
The labour market is still quite tight, even though there are signs that it is easing. The baseline forecast assumes that growth in total hours worked will measure 4.4% in 2023 and then lose pace significantly in 2024, to about 0.5%. Labour demand is expected to recover by the latter half of the forecast horizon, when total hours worked will increase by an average of 1¾% per year. LFS-based unemployment is projected to measure 3.4% this year and increase to 4.8% in 2024, when a slack will develop in the labour market and remain until 2025. This reflects, among other things, a tighter monetary stance and declining demand for labour due to higher wage costs. Unemployment is expected to taper off again over the course of 2024 and measure 4% at the end of the forecast horizon, in line with the Bank's estimate of the equilibrium unemployment rate (Chart IV-6).

Indicators of factor utilisation

Modest productivity growth expected over the forecast horizon

Measures of labour productivity have been highly volatile since the pandemic struck. In terms of GDP per hour worked according to the LFS, labour productivity grew by 0.5% year-on-year in 2022, far less than in 2021. In terms of Statistics Iceland's measures based on labour volume in the national accounts, it grew even less, or 0.2% (Chart IV-7). By that measure, however,

Chart IV-5
Population
Q1/2011-Q3/2023



Source: Statistics Iceland.

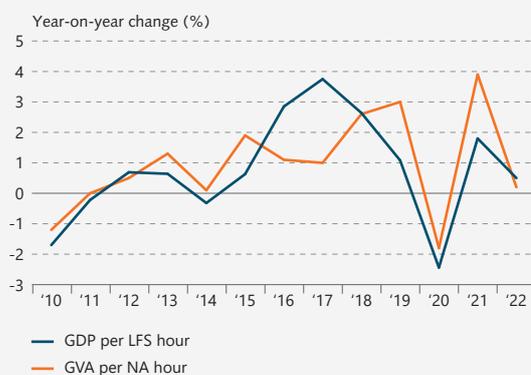
Chart IV-6
Total hours worked and unemployment 2015-2026¹



1. Total hours worked and unemployment according to Statistics Iceland labour force survey (LFS). Central Bank baseline forecast 2023-2026. Broken lines show forecast from MB 2023/3.

Sources: Statistics Iceland, Central Bank of Iceland.

Chart IV-7
Labour productivity 2010-2022¹



1. Labour productivity measured as gross domestic product (GDP) per hour worked, based on total hours worked according to Statistics Iceland labour force survey (LFS), and as gross value added (GVA) at factor cost per hour worked, based on total hours worked according to national accounts standards (NA).

Sources: Statistics Iceland, Central Bank of Iceland.

productivity has been stronger in the past three years than according to the LFS measure of GDP per hours worked, or 0.8%, as compared with no growth at all.

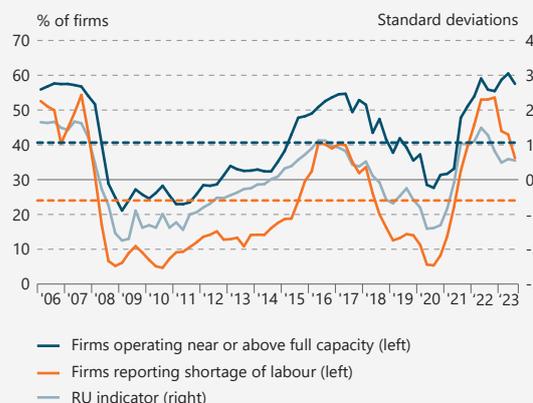
The baseline forecast assumes that GDP per hour worked will fall by 0.7% in 2023. The outlook is still for modest productivity growth for the next three years, with GDP per hour worked according to the LFS increasing by an average of 1¼% per year in 2024-2026.

Positive output gap larger than projected in 2022 and expected to narrow more slowly over the forecast horizon

According to the seasonally adjusted results of Gallup's autumn survey, 36% of executives considered themselves short-staffed, some 7 percentage points less than in the previous survey. On the other hand, 58% of survey respondents reported difficulty responding to an unexpected increase in demand. This share is still close to its historical peak. The resource utilisation (RU) indicator, which combines various indicators of factor utilisation, suggests that considerable strain on production factors remains, although the indicator has fallen by nearly one standard deviation from its mid-2022 peak. On the other hand, it has not fallen thus far in 2023 (Chart IV-8).

Statistics Iceland's most recent national accounts figures imply that the output gap was wider in 2022 than previously estimated. This difference will more or less remain throughout the forecast horizon. The output gap is expected to narrow later in the forecast horizon but remain slightly positive at the end of the period, whereas in the last forecast the output gap was projected to close by the end of 2025 (Chart IV-9).

Chart IV-8
Capacity utilisation¹
Q1/2006 - Q3/2023



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-9
Output gap 2015-2026¹



1. Central Bank baseline forecast 2023-2026. Broken line shows forecast from MB 2023/3.
Source: Central Bank of Iceland.

Inflation



Recent developments in inflation

Headline inflation has proven extremely persistent

...
Inflation eased this summer, measuring 7.8% in Q3, as compared with the projected 7.7% in the August *Monetary Bulletin*. Price hikes on groceries and public services had the strongest impact on the CPI during the quarter, although private services prices have inched upwards as well.

Inflation has been above the Central Bank's inflation target for more than three years. It measured 7.9% in October, down from 8% in September, but has increased since the publication of the August *Monetary Bulletin* (Chart V-1). House prices and food were the main drivers of inflation in October. Inflation excluding housing measured 7.3% and has developed broadly in line with headline inflation. HICP inflation, which also excludes the cost of owner-occupied housing, has increased as well, to 8.5% in October.

... while underlying inflation has eased marginally over the same period ...

Underlying inflation measured 6.3% in October, according to the average of various measures, and has fallen since July (Chart V-2). These measures have lain in a narrow range recently, but all of them have eased since the summer. At present, underlying inflation is lowest in terms of the core index that excludes indirect taxes, volatile food items, fuel, public services, and real mortgage interest expense. In October, it had risen by 5.7% in the previous twelve months, whereas the year-on-year increase peaked in summer 2022. Underlying inflation is highest, however, in terms of the weighted

Chart V-1
Various measures of inflation
January 2016 - October 2023

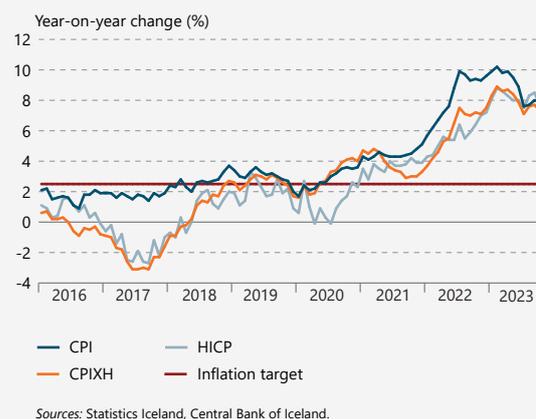
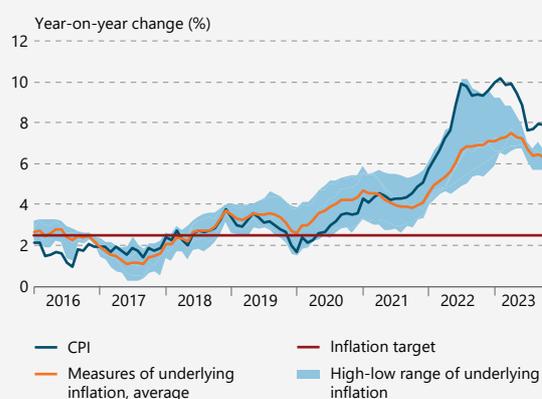


Chart V-2
Headline and underlying inflation¹
January 2016 - October 2023



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

Sources: Statistics Iceland, Central Bank of Iceland.

median CPI value, at 6.7% in October, after peaking in Q2/2023.

... although price hikes are still widespread

Inflation is still high and very broad-based, but price hikes appear to have lost pace recently. Measures of inflation momentum suggest that the pace has slowed; for instance, annualised seasonally adjusted three-month inflation measures just under 6% (Chart V-3). Price hikes remain widespread, however: in October, over 40% of the consumer basket had increased in price by more than 10% year-on-year (Chart V-4). The housing component is chief among these items. The proportion of the consumer basket that has risen by less than 5% between years is broadly unchanged in 2023 to date, at about one-fifth.

The housing component therefore remains a strong driver of the rise in the CPI. Its contribution to headline inflation eased in the summer, when housing market activity tapered off, but it has increased again to almost one-third of twelve-month inflation (Chart V-5). The contribution from private services to inflation has also inched upwards recently.

Indicators of inflationary pressures

Domestic inflation has been persistent despite weaker growth in economic activity ...

Although domestic demand growth has tapered off recently, domestic goods and services prices have continued to rise (see Chapter III). As is discussed in Chapter IV, the labour market is still quite tight, unemployment is low, and the effects of steep cost increases in the recent term are therefore still coming to the fore. In October, domestic goods prices had risen by 10.8% in the previous twelve months, owing largely to higher food prices. As is noted above, however, price hikes have lost some pace since H1/2023.

Public services prices are up 7.5% in the past twelve months, and private services prices by 7.8% (Chart V-6). The year-on-year increase in both categories has therefore picked up slightly since July. Price hikes are spread across a range of subcomponents of services, although they are still dominated by the rise in airfares and restaurant prices. Airfares were up 8% year-on-year in October, and restaurant prices were up 10.5% over the same period.

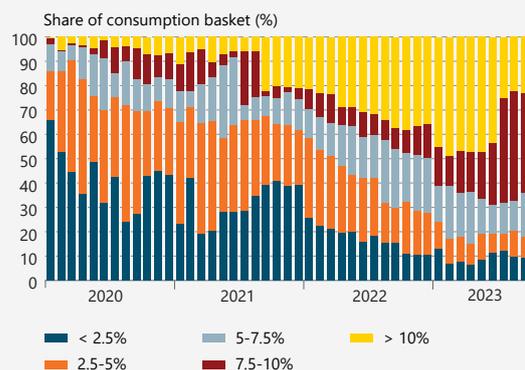
As is discussed in Chapter II, house prices have risen again in recent months. It therefore seems that price pressures remain in the market, as households are still drawing down their excess savings from the

Chart V-3
Inflation and inflation momentum¹
January 2020 - October 2023



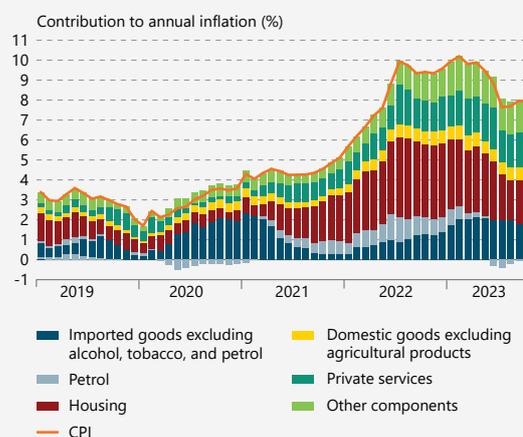
1. Seasonally-adjusted figures (excl. annual inflation). Weighted annual inflation is estimated with a measure constructed by Eckhout (2023), where most recent monthly CPI changes receive more weight than previous changes. The weights of monthly changes are based on a convex kernel-based function.
Sources: J. Eckhout (2023), "Instantaneous inflation", UPF Barcelona, Statistics Iceland, Central Bank of Iceland.

Chart V-4
Price increases¹
January 2020 - October 2023



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

Chart V-5
Components of CPI inflation
January 2019 - October 2023



Sources: Statistics Iceland, Central Bank of Iceland.

pandemic era (see Box 2), population growth is very strong, and net new lending to households has picked up recently.

... although prices of various imported goods are rising more slowly

Global inflation has eased in recent months, partly due to a decline in commodity and energy prices, although underlying inflation remains stubbornly high in many countries (see Chapter I). The króna appreciated by a full 5% over the summer but has lost ground recently, largely due to the seismic activity in the Reykjanes area, and is now just over 1% weaker than it was a year ago. The twelve-month increase in the price of imported foods, new motor vehicles, and other imported goods has eased slightly, although price increases after the end of seasonal sales were very large. Therefore, there are no clear indications as yet that lower commodity prices and declining trading partner inflation are delivering lower prices in Iceland. Fuel prices have risen recently, however, in the wake of global oil price hikes, and are now broadly the same as they were a year ago. On the whole, imported goods prices have risen by 5.4% over the past twelve months, as compared with an increase of 5.6% in July (Chart V-7).

According to the Gallup survey of corporate expectations, carried out in September, the share of executives who expect a rise in input prices and in the price of their own products is smaller than in the spring survey. Nevertheless, over half of survey participants expect to raise their product prices in the near future, which is still above the historical average.

Nominal wages keep rising, and real wages have started climbing again

According to national accounts data published in August and September, the wage share – i.e., ratio of wages and related expenses to gross factor income – was 59.2% in 2022, or 0.5 percentage points below its twenty-year average. The estimate was unchanged relative to the March national accounts.

The general wage index rose by 1.2% between quarters in Q3, and by 10.8% year-on-year (Chart V-8). The total wage index has risen somewhat less in the recent term, however, suggesting that a change in the composition of either wages or the labour market has lowered average wage costs. New wage agreements affecting a large group of public employees took effect in Q2, which explains the increase in wages in Q2 and Q3. In the wake of these pay rises and declining inflation, real wages have risen markedly between years,

Chart V-6
Goods and services prices
January 2019 - October 2023

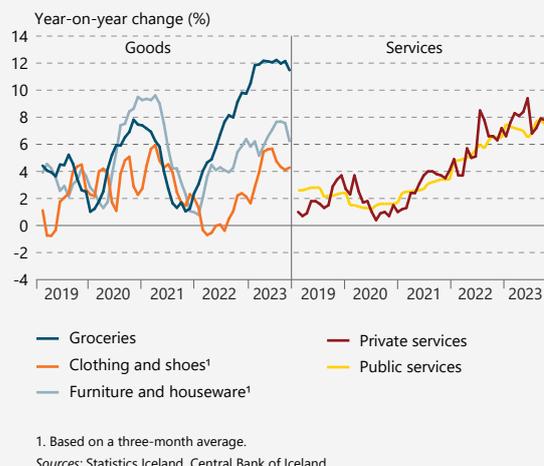


Chart V-7
Domestic and imported goods prices
January 2019 - October 2023

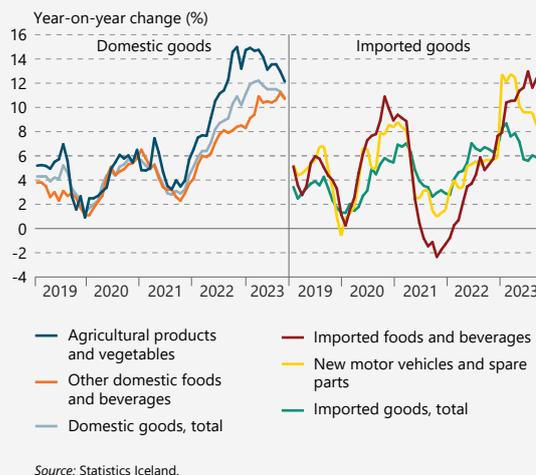


Chart V-8
Wages
Q1/2015 - Q3/2023



after stagnating in 2022. Real wage growth measured 2.8% year-on-year in Q3. As was discussed in the May issue of *Monetary Bulletin*, real wages have not softened in Iceland, as they have in other advanced economies. Wage demands have been higher than usual in some advanced economies, but this should be considered in the light of the erosion of purchasing power in those countries in 2022 (see Chapter I).

The private sector wage agreements finalised in November 2022 expire at the end of January 2024. The labour market is still tight, which could affect wage negotiations, but there are signs that labour market tension is easing (see Chapter IV). As is discussed in Box 3, inflation does not seem to be driven by higher company markups. If the upcoming wage negotiations result in generous pay rises and demand grows as a result, the risk is that firms will have little latitude to absorb the costs and, all else being equal, will pass the cost increases through to consumer prices. Furthermore, unit labour costs have already risen well in excess of the Central Bank's inflation target. This looks set to continue, as the Bank's baseline forecast assumes that unit labour costs will increase by 8.6% in 2023, followed by just over 4% per year, on average, over the next three years. The outcome of the next wage negotiations is highly uncertain but will clearly make a strong impact on inflation during the term of the agreements.

Inflation expectations

Short-term inflation expectations have fallen by some measures but are still well above target ...

Market agents' inflation expectations one and two years ahead eased slightly, according to the recent survey, but are still higher than they were at the turn of the year (Chart V-9). Respondents now expect inflation to measure 5.5% after one year and 4.2% in two years.

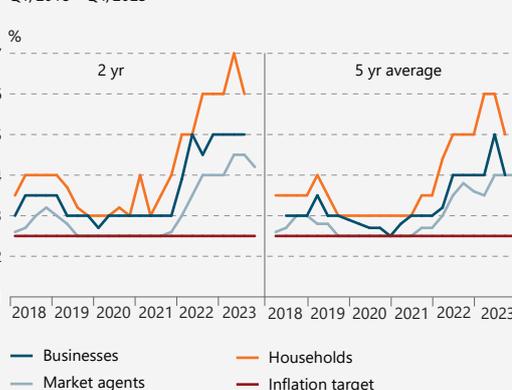
Both corporate executives and households expect higher inflation. According to Gallup's autumn survey, executives still expect inflation to measure 5% in two years, whereas households' expectations declined to 6%. Two-year expectations are therefore well above the target by all measures, as short-term inflation expectations are generally affected to a large degree by recent inflation.

... as are long-term inflation expectations

Market agents' long-term inflation expectations are largely unchanged between surveys: they expect inflation to average 4% over the next five years and 3.5%

Chart V-9

Two- and five-year inflation expectations¹



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.

over the next ten. Long-term corporate expectations are broadly similar: executives expect inflation to average 4% over the next five years, which is a 1 percentage point drop relative to the previous survey. Households' expectations are generally higher, as they expect inflation to average 5% over the next five years, but this is also 1 percentage point lower than in the last survey.

The breakeven inflation rate in the bond market has risen recently, however (Chart V-10). The ten-year breakeven rate was 4.3% in mid-November and has risen since late August. The five-year breakeven rate five years has also risen and was 3.9%.

Long-term expectations are therefore well above the target, although they have fallen recently by some measures; however, as is discussed in Box 1, such a prolonged period of above-target inflation can cause inflation expectations to become unmoored.

The inflation outlook

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

Q3 inflation was only marginally above the forecast in the last *Monetary Bulletin*. The near-term outlook has worsened again, however: inflation is now forecast to measure 7.9% in Q4 and fall to 6.8% in Q1/2024, which is 1 percentage point higher than was projected in August. These projections are in line with the Bank's suite of short-term models, which indicate that inflation could lie between 6.3% and 7% in Q1/2024. The Bank's DSGE model, DYNIMO, gives a similar result (Chart V-11).

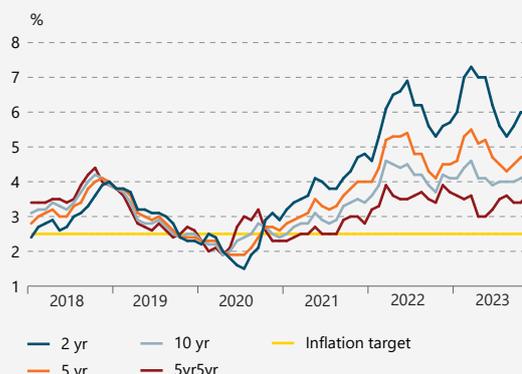
The poorer short-term outlook is due in part to stronger demand pressures and a weaker króna than previously anticipated. House prices have also fallen less than expected in H2. In addition, public services prices look set to increase more at the beginning of 2024 than was assumed in August. There is some uncertainty, however, about how much the price of new electric cars will rise when tax concessions expire.

As a result, the outlook is for inflation to exceed the August forecast through the end of 2024. Demand pressures in the economy look set to subside more gradually than previously envisioned and import prices to rise more, owing to a weaker króna and a slower decline in global inflation. Furthermore, indicators imply that inflation persistence is greater than previously assumed (see Box 6). Inflation is forecast to measure 4.9% at the end of 2024 instead of the 3.9% projected in August.

Chart V-10

Breakeven inflation rate¹

January 2018 - November 2023



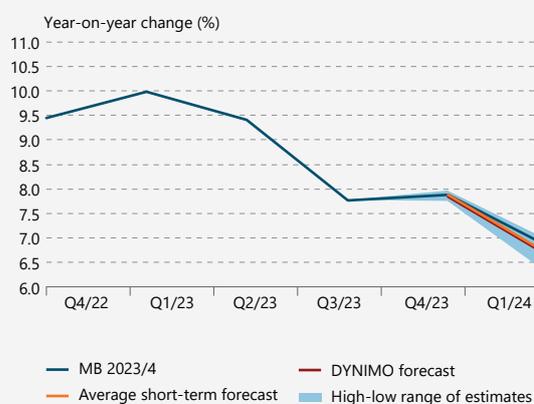
1. Monthly averages. Data through 17 November 2023.

Source: Central Bank of Iceland.

Chart V-11

Short-term inflation forecast¹

Q4/2022 - Q1/2024



1. A comparison of the baseline forecast, the 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.

... but the outlook further ahead is broadly unchanged ...

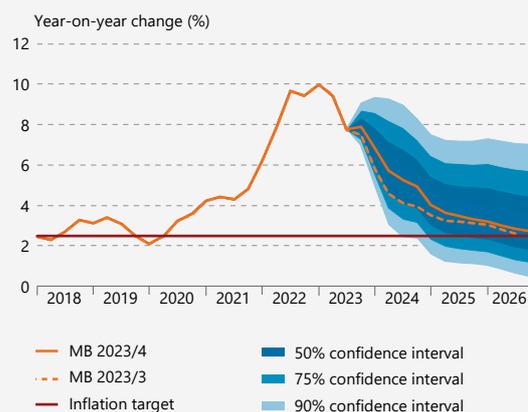
As in the Bank's previous forecasts, inflation is expected to taper off slowly. Economic activity is forecast to continue easing over the course of 2024, although some labour market tightness will remain. Furthermore, the exchange rate of the króna is expected to be slightly lower over the forecast horizon than was projected in August. Inflation is expected to average 3.6% in 2025 and align with the target at the end of the forecast horizon, conditional upon the interest rate path in the baseline forecast.

... and there is considerable uncertainty about how successfully inflation will be brought back to target

Inflation has been high and persistent in recent years, both in Iceland and abroad (see also Box 6). Uncertainty about the short-term inflation outlook has increased markedly with the weakening of the króna due to the seismic activity on the Reykjanes peninsula. There is also some risk that the effects of recent cost hikes are underestimated, given that inflation expectations have become more weakly anchored to the target (see also Box 1). Wage agreements are set to expire at the beginning of 2024, and the results of the new contracts will also have a strong impact on the inflation outlook over the forecast horizon. Housing market activity has subsided, although prices still fluctuate somewhat, and developments in inflation will be determined in part by movements in the housing market. The global economic outlook is poor and could worsen, partly because of war, which would weaken domestic economic activity, all else being equal.

As has been the case for some time, uncertainty in the inflation forecast is concentrated on the upside; i.e., inflation is likelier than not to turn out higher than in the baseline forecast. 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, but there is a more than 60% chance that it will be higher than is forecast here (Chart V-12).

Chart V-12
Inflation forecast and confidence intervals
Q1/2018 - Q4/2026



Sources: Statistics Iceland, Central Bank of Iceland.

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.

Domestic economic activity and inflation will be determined in part by economic developments in trading partner countries and by how rapidly global inflation subsides. The possibility cannot be excluded that the baseline forecast represents an overly optimistic GDP growth outlook for trading partners and that inflation in those countries will fall faster than the forecast assumes. The potential impact of this on the domestic economy is described in an alternative scenario.

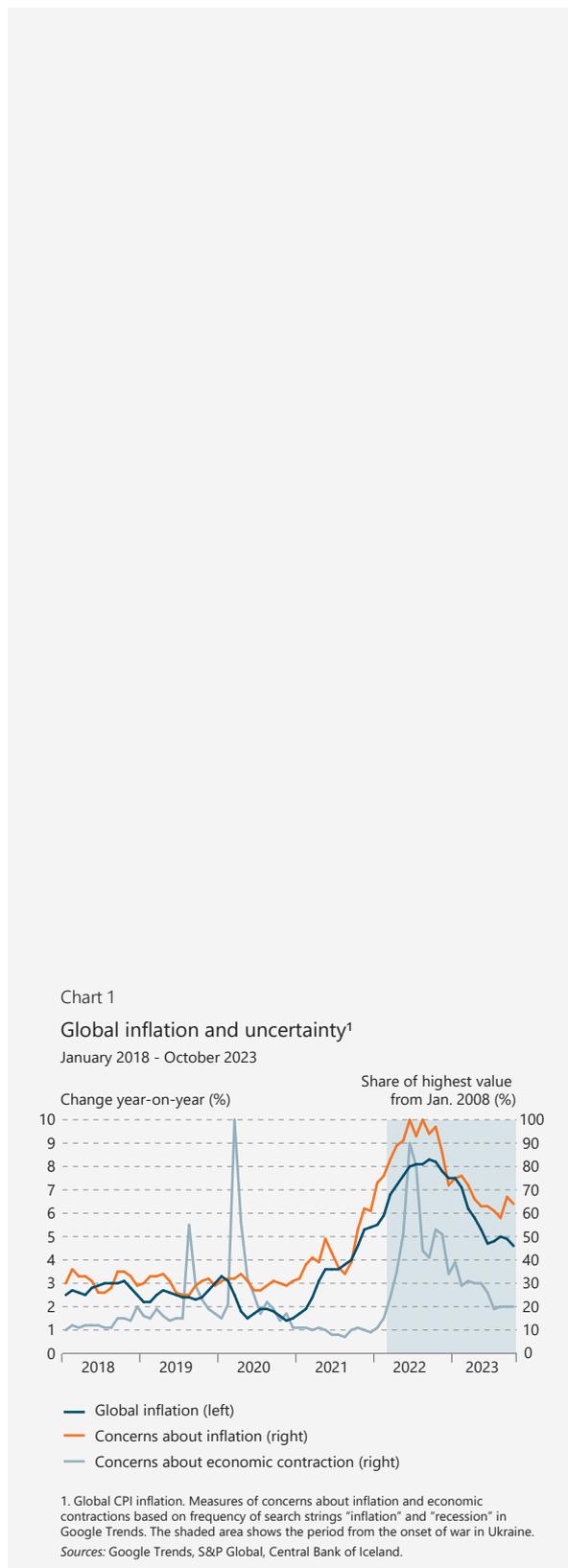
The baseline forecast could also be too optimistic about disinflation in Iceland, in view of indications that inflation expectations are weakly anchored to the target and the characteristics of the inflation process seem therefore to have changed. Thus the impact of recent cost-push shocks and those that are assumed to take place during the forecast horizon could be underestimated in the baseline forecast. The potential impact of this on the domestic economy is described in an alternative scenario.

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

Alternative scenario: Inflation falls faster than in the baseline forecast

Global inflation has begun to ease, although it remains well above target

Inflation has been high in the recent term, both in Iceland and abroad, and has proven both higher and more persistent than previously forecast (see Box 6). As is discussed in Chapter I, however, there are signs that inflationary pressures have been easing, even though inflation is well above target in most economies and the outlook for inflation and GDP growth is unusually uncertain in historical terms (Chart 1). The Bank's baseline forecast assumes that trading partner inflation will continue to ease and will align with major central banks' 2% targets by H2/2025.



The baseline forecast does not assume that the decline in global inflation to target will go hand-in-hand with an economic contraction in leading advanced economies, even though GDP growth is well below historical averages. This is in line with international forecasts. Historically, however, it has often required an economic contraction to bring inflation down when it has been as high and broad-based as it has been in the recent term; therefore, these forecasts could prove overly optimistic. Nor can the possibility be excluded that the global effects of high and rapidly rising interest rates are underestimated and have yet to emerge more fully in the future. It is possible as well that the impact of the problems in the Chinese credit and real estate markets has been underestimated and that GDP growth in China will be weaker than is currently projected. Trading partner inflation could therefore subside faster than is assumed in the baseline forecast. It could also ease more rapidly if the supply side of the global economy recovers more strongly than is currently assumed. Uncertainty about the war in Ukraine and the more recent war in the Middle East is significant, however, and could cause renewed disruptions in global supply chains.

Trading partner inflation could subside faster than is assumed in the baseline forecast ...

This alternative scenario assumes that GDP growth in Iceland's main trading partner countries will be weaker than is provided for in the baseline forecast, causing global inflation to fall more rapidly. The potential impact on global and domestic economic activity is shown in Chart 2.

Trading partner GDP growth is projected to be an average of 1 percentage point below the baseline forecast in 2024 and ½ a percentage point below it in 2025 (Chart 2a). This implies that trading partner GDP will remain virtually flat year-on-year in 2024 but then regain steam in 2025, albeit more slowly than in the baseline forecast.

The Bank's NiGEM model is used to assess the impact of a poorer trading partner outlook on the global economy.¹ According to the model, global oil and commodity prices decline relative to the baseline forecast; furthermore, and trading partner inflation falls faster than in the forecast, turning out 0.3 percentage points lower in 2024 and 1 percentage point lower from 2025 onwards (Chart 2b).

1. NiGEM is a macroeconomic model developed by the National Institute of Economic and Social Research (NIESR) in the UK. It is used by numerous central banks and research institutions to estimate cross-border economic spillovers, among other things. The model extends to 50 countries, and the Central Bank, in cooperation with NIESR, is currently working on adding Iceland to it through the Bank's quarterly macroeconomic model (QMM).

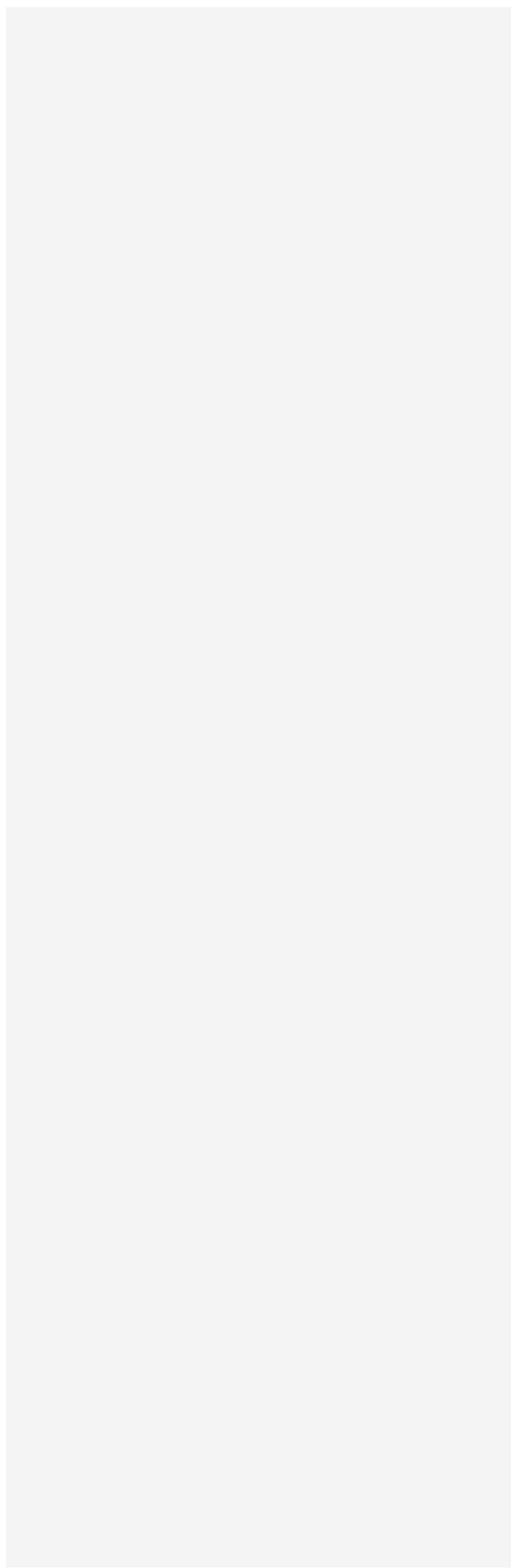
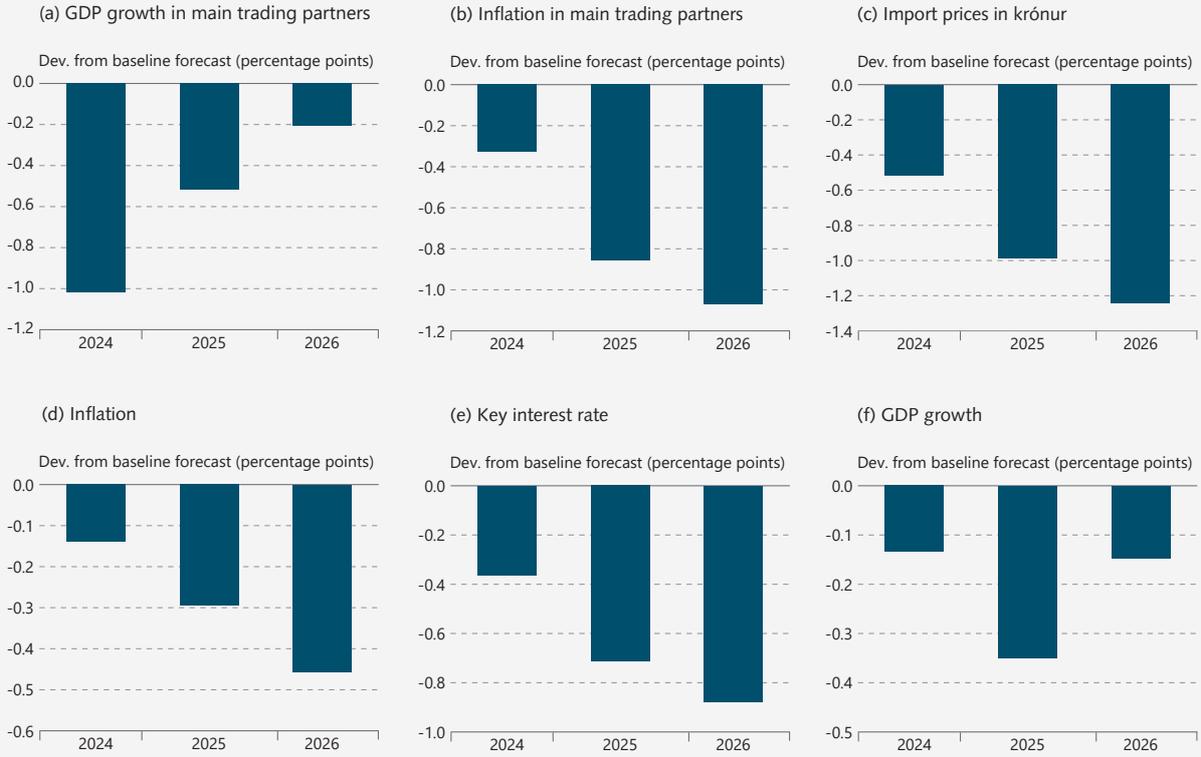


Chart 2

Alternative scenario: Inflation falls faster than in the baseline forecast



Source: Central Bank of Iceland.

Offsetting the contractionary effects of weaker global economic activity, global interest rates fall more rapidly and, from 2024 onwards, are a full 1 percentage point lower, on average, in trading partner countries.

... which would accelerate disinflation in Iceland

These global effects are run in QMM to assess the potential impact of weaker trading partner activity on the domestic economic outlook. As Chart 2c shows, lower oil and commodity prices and more rapid disinflation in trading partner countries would cause import prices in krónur to rise by ½ a percentage point less than in the baseline forecast in 2024, and by about 1 percentage point less per year in 2025 and 2026.

Domestic inflation would therefore fall faster than in the baseline and would be 0.3 percentage points lower in 2025 and 0.5 percentage points lower in 2026 (Chart 2d). More favourable developments in inflation also make it possible to relax the monetary stance more quickly than is assumed in the baseline forecast. Based on the monetary policy rule in the model, the Bank’s key interest rate would be, on average, ½ a percentage point lower than in the baseline in 2024 and nearly 1 percentage point lower in the latter half of the forecast horizon (Chart 2e).

Weaker growth in economic activity among trading partners would also cause Iceland's exports to grow more slowly than in the baseline forecast. This would be offset by the impact of lower interest rates on domestic demand. GDP growth in Iceland would therefore be broadly in line with the baseline forecast in 2024 but almost ½ a percentage point lower in 2025 (Chart 2f).

Finally, Chart 3 shows a comparison between the inflation outlook in the alternative scenario and the probability distribution in the baseline forecast. As can be seen, inflation in the alternative scenario is ½ a percentage point below the baseline forecast from the beginning of 2024 onwards and has aligned with the target about half a year earlier than in the baseline. The forecast in the alternative scenario lies well within the 50% confidence interval of the baseline forecast for the entire forecast horizon, however.

Alternative scenario: Inflation falls more slowly than in the baseline forecast

More weakly anchored inflation expectations could lead to a change in inflation dynamics ...

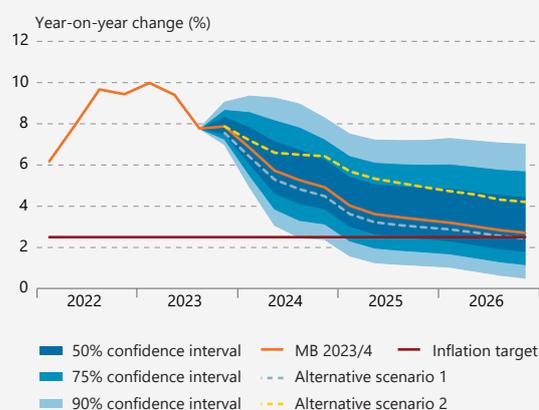
Inflation has been well above the Central Bank's inflation target for three years. The risk exists that such a protracted deviation of expectations from target will erode the credibility of the target and cause inflation expectations to be more weakly anchored to it (see, for instance, Box 2 in *Monetary Bulletin 2022/4*). As is discussed in Box 6, there are signs that more weakly anchored expectations have changed the characteristics of the inflation process and that the effects of cost-push shocks are now stronger and more persistent than in the 2010s, when inflation was more firmly anchored to the target.

The Bank's models are estimated over periods including this episode of low and stable inflation and may therefore underestimate the increased persistence of inflation. As a result, inflation could fall more slowly than in the baseline, even though the premises in the baseline forecast concerning its underlying drivers may be borne out.

... and cause supply shocks to have stronger and more protracted effects than they would otherwise ...

Greater inflation persistence could develop because increasingly more households and businesses formulate their inflation expectations based on recent developments; i.e., by simply assuming that inflation will remain at the current level. This phenomenon is commonly referred to as backward-looking (as opposed to forward-looking) expect-

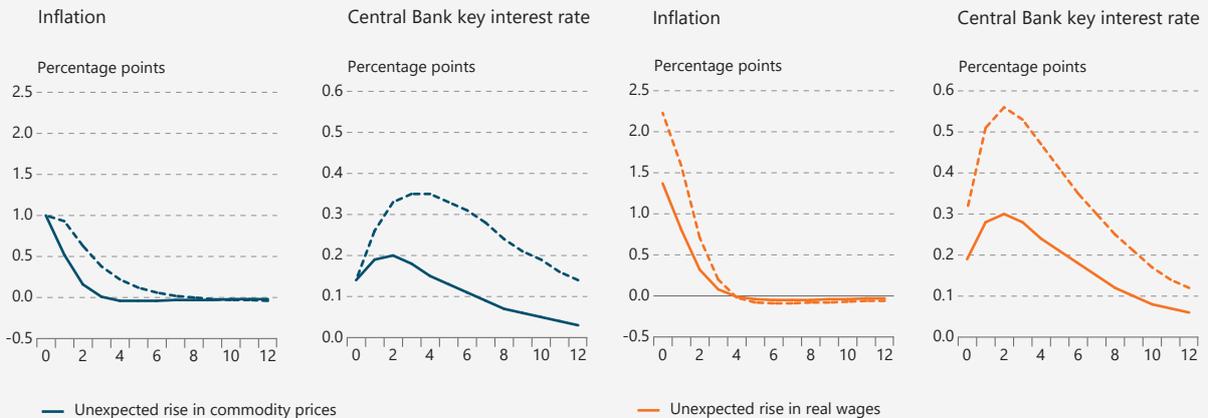
Chart 3
Inflation forecast and alternative scenarios¹
Q1/2022 – Q4/2026



1. In Alternative Scenario 1, inflation falls faster than in the baseline, and in Alternative Scenario 2 it proves more persistent (see the discussion in the main text).
Sources: Statistics Iceland, Central Bank of Iceland.

Chart 4

Effects of supply shocks on variously forward-looking inflation expectations¹



1. The effects of an unexpected increase in commodity prices and real wages over a twelve-quarter period in terms of a dynamic stochastic general equilibrium (DSGE) model, where households and businesses are either forward-looking and base their inflation expectations on forecasts (solid lines) or, to a degree, use a simple rule-of-thumb and base their inflation expectations on recent inflation (broken lines). A more detailed description of the model and the outcome can be found in Chapter 2 (especially Charts 2.10 and 2.5.3) of the International Monetary Fund's World Economic Outlook.

Source: International Monetary Fund, *World Economic Outlook*, Chapter 2, October 2023.

tations. When expectations are forward-looking, they are shaped by forecasts of future developments in economic activity and inflation, which tend to partly look through the temporary effects of supply shocks.² As inflation expectations become more weakly anchored and more backward-looking, inflation becomes more entrenched and the effects of cost-push shocks grow stronger and longer-lasting.

This can be seen in Chart 4, which compares the effects of two supply shocks on the economy, depending on how forward-looking inflation expectations are. The shocks in question are an unforeseen increase in global commodity prices and an unforeseen increase in real wages. In the former case, all households and businesses are perfectly forward-looking, while in the latter, a fourth of households and businesses rely on a simple rule of thumb according to which inflation expectations are determined by recent inflation.³

As can be seen, the effects of supply shocks on inflation vary directly with the share of households and businesses that formulate their inflation expectations solely on the basis of recent inflation. The initial impact on inflation is

2. Forward-looking households form their expectations using the full model of the economy according to the standard rational, model-consistent expectations, assumptions.
3. The chart is from the International Monetary Fund's (IMF) most recent analysis as depicted in the October 2023 issue of *World Economic Outlook* (Chapter 2). It shows, on the one hand, the effects of a temporary supply shock that increases annualised quarterly inflation by 1 percentage point, and on the other, the effects of a temporary real wage shock that increases real wages by 1 percentage point over and above productivity. A standard DSGE model is used but has been expanded so that households and businesses use statistical rules to learn about developments in the economy and update their own inflation expectations.

therefore greater in the wake of an unexpected wage shock, and in both instances inflation subsides more slowly than when expectations are fully forward-looking, as forward-looking households and businesses take account of the fact that the supply shock is temporary and are therefore able to look through it to some degree. However, the backward-looking households and businesses see inflation increase and assume that it will remain high. In that instance, the supply shocks require a stronger monetary policy response: interest rates rise higher and remain higher for a longer period than when households and businesses are more forward-looking and inflation expectations are more firmly anchored (see also Box 2 in *Monetary Bulletin* 2022/4).

Less firmly anchored inflation expectations could cause cost-push shocks to pass through more quickly to the price level or cause them to pass through more than corresponding price reductions do. Furthermore, firms could be more likely to pass cost hikes through to prices when costs are rising overall, as it is easier to pass them through to prices when cost increases are large than when they are more moderate. This appears to be in line with international experience over the past three decades: it appears, in general, that the impact of large oil price hikes on consumer prices is relatively stronger than the impact of smaller ones (Chart 5).⁴

... which would cause inflation to fall more slowly than in the baseline forecast

To illustrate the potential impact on the domestic economy of more weakly anchored inflation expectations and underestimated effects of supply shocks (such as wage rises), it is assumed that the public's confidence in the inflation target has been eroded. In addition, it is assumed that agents have become more backward-looking. Finally, it is assumed that the direct inflationary impact of wage costs is underestimated in the baseline forecast. The Bank's QMM model is used to estimate the effects of this on the economic and inflation outlook. This is done by adding an additional supply shock to the inflation equation in the model. These effects are derived by assuming that the direct impact of wage rises on inflation has increased from its average level in the latter half of the 2010s to the level seen in the past year (see Box 5). Chart 6 illustrates the potential impact on the economy.

4. The chart is from the International Monetary Fund's (IMF) most recent analysis as depicted in the October 2023 issue of *World Economic Outlook* (Chapter 1). Comparable results can be seen in the case of rising global food prices. This is also in line with the findings from other studies, as is discussed in Box 2 in *Monetary Bulletin* 2022/4.

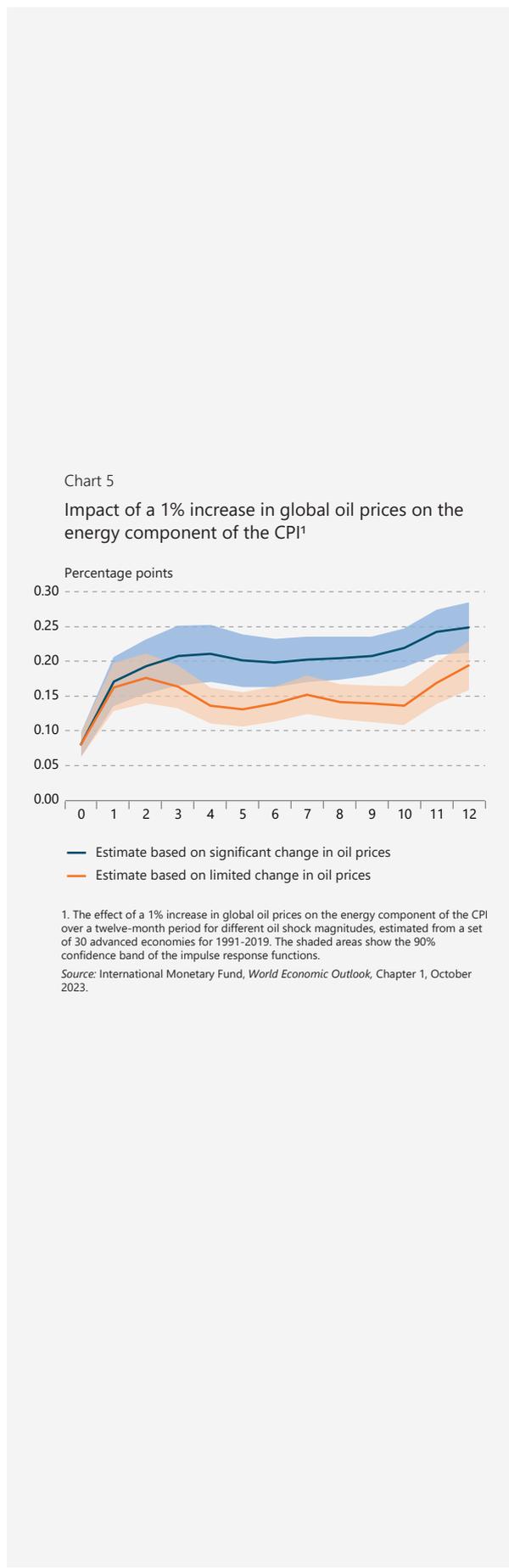
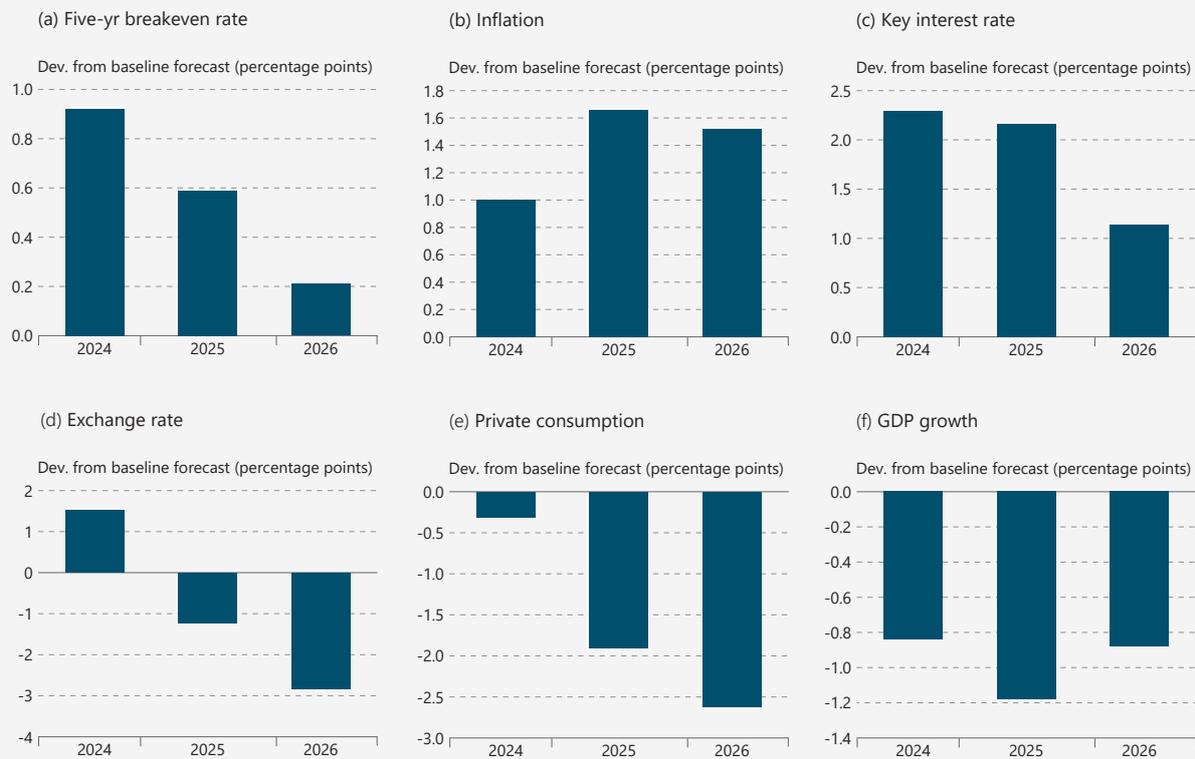


Chart 6

Alternative scenario: Inflation falls more slowly than in the baseline



Source: Central Bank of Iceland.

As Chart 6a indicates, medium-term inflation expectations (as measured by the five-year breakeven inflation rate in the bond market) are nearly 1 percentage point higher than in the baseline forecast in 2024, although the difference narrows as the forecast horizon advances. Inflation therefore falls more slowly and, by 2025-2026, is about 1½ percentage points higher than in the baseline (Chart 6b).

A tighter monetary stance is needed to respond to more persistent inflation, and the Central Bank’s key interest rate is more than 2 percentage points higher in 2024 than in the baseline forecast, according to the monetary policy rule in the model (Chart 6c). A tighter monetary stance also pushes the exchange rate of the króna above the level in the baseline forecast in 2024, but over time, the adverse effects of more persistent inflation weigh heavier (Chart 6d).

More persistent inflation and higher interest rates also cause households’ real disposable income to fall more than in the baseline, cutting into private consumption growth (Chart 6e). Weaker growth in domestic demand causes the GDP growth outlook to deteriorate relative to the baseline forecast. In addition, a higher exchange rate will have a negative impact on external trade. GDP growth

is weaker than in the baseline example by $\frac{3}{4}$ of a percentage point this year and 1 percentage point per year in the latter half of the forecast horizon (Chart 6f).

Chart 3 compares the inflation path in this alternative scenario with that in the baseline forecast. As can be seen, inflation declines much more slowly in the alternative scenario: it is above 5% until late 2025 and remains above 4% at the end of the forecast horizon. However, the forecast in the alternative scenario lies for the most part within the 50% confidence interval of the baseline forecast.

Other uncertainties

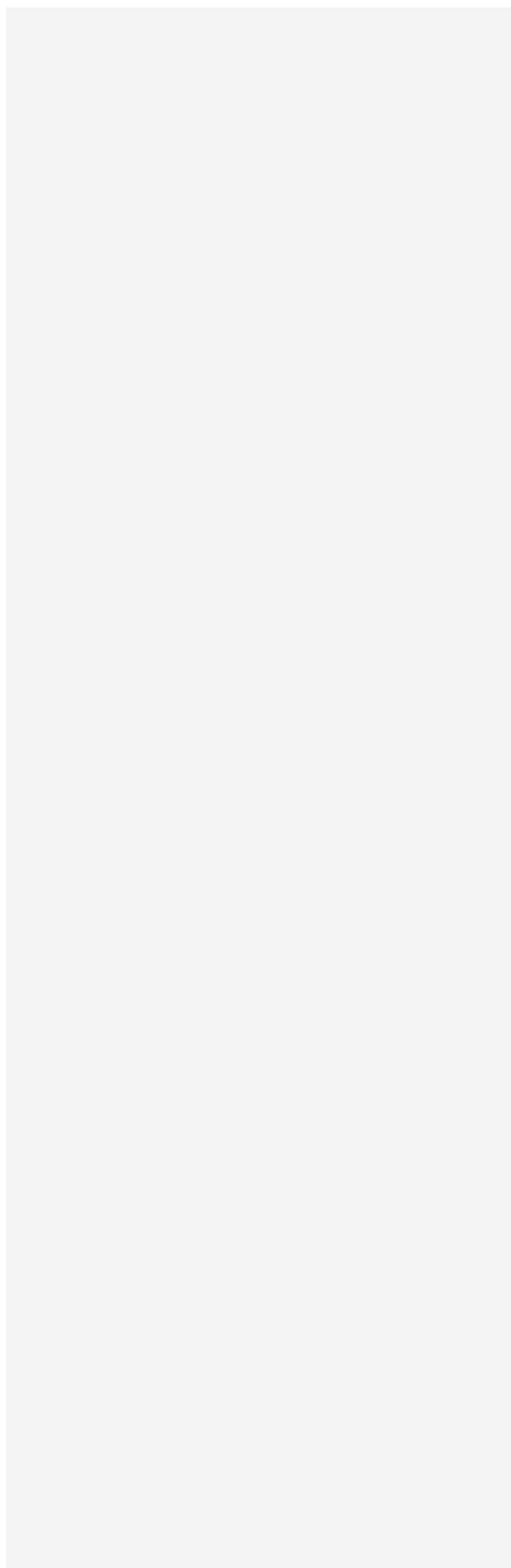
The inflation outlook remains highly uncertain ...

More weakly anchored inflation expectations and a change in inflation dynamics could therefore lead to more persistent inflation than is provided for in the baseline forecast. The escalation of war in Ukraine or the Middle East could also cause oil prices to move higher and push food and commodity prices upwards once again – for instance, if supply chain problems re-emerge. Failed harvests due to greater weather extremes could result in higher food and commodity prices as well.

Inflation in Iceland could also turn out higher than is currently projected if domestic demand pressures ease more slowly than forecast; for example, if the fiscal stance is more accommodative than is currently assumed (see Box 1 in *Monetary Bulletin 2023/2*) or if households draw down their pandemic-era savings more quickly (see Box 2 in this report and Box 1 in *Monetary Bulletin 2021/4*). In addition, the Bank's forecast of tourist arrivals in coming years could be overly cautious (see Box 1 in *Monetary Bulletin 2023/2*). More poorly anchored inflation expectations could also have impeded the monetary policy transmission mechanism and made it more difficult for monetary policy to curtail domestic demand and thereby lighten inflationary pressures.

The premises underlying the baseline exchange rate forecast could prove overly optimistic as well, given the recent depreciation following the seismic activity in the Reykjanes area. Also, there is a continued high level of global economic uncertainty,^w and terms of trade have deteriorated.

The principal risk to the domestic inflation outlook continues to centre on the upcoming private sector wage negotiations, however. Although the baseline forecast assumes relatively generous pay rises in coming years, the experience gained from the last wage agreements indicates



that even larger pay hikes are not out of the question. Inflation could therefore turn out higher and more persistent than in the baseline (Chart 7), particularly if wage pass-through has increased, as has been discussed previously. This would require a more restrictive monetary stance. Companies could also respond to higher wage costs by reducing their demand for labour, but the risk of a persistent wage-price spiral varies directly with the pass-through of cost-push shocks to domestic prices (see also Box 1 in *Monetary Bulletin 2022/4*).

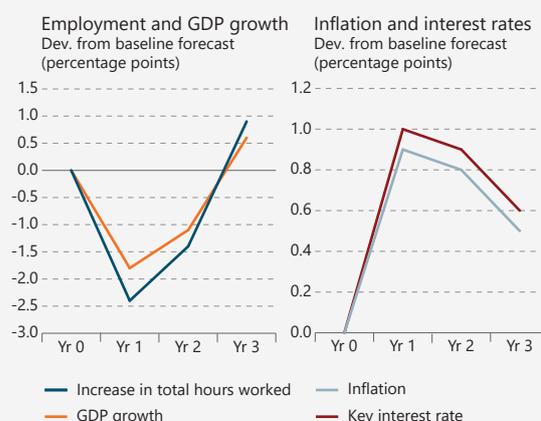
The Bank's inflation forecast could also be overly pessimistic; for instance, if global inflation falls faster than projected, as is discussed earlier in this Box. Furthermore, the forecast could underestimate how quickly domestic economic activity is subsiding – in view of the swift rise in the Central Bank's interest rates, for example, and the upcoming interest rate reviews on many of the household mortgages taken when interest rates were far lower. Moreover, the exchange rate forecast could prove excessively pessimistic.

... but on the whole, the baseline forecast is likelier to turn out overly optimistic

Overall, 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.

Chart 7

Potential effect of larger wage rises than in the baseline forecast¹



1. Alternative scenario showing the effects of a pay rise of 5 percentage points more per year. For further discussion, see Box 1 in *Monetary Bulletin 2022/4*.
Source: Central Bank of Iceland.

Households' accumulated pandemic-era savings

The pandemic that struck in early 2020 and the measures enacted to contain the spread of the disease strongly affected the economy in Iceland and all over the world. Economic activity receded markedly, and households cut their spending in response to the contraction and the elevated uncertainty about the economic and employment outlook. Broad-based public health measures also limited households' consumption options, and border closures forced a steep drop in international travel. Consumption spending therefore declined markedly, while incomes generally remained intact despite a worsening employment situation.

Households therefore accumulated sizeable "excess savings" during the pandemic, which have fuelled strong private consumption growth and supported the economic recovery in its aftermath. This Box reviews these developments and assesses both how much excess savings households accumulated while the pandemic was ongoing and how large a share remains. As has been covered in previous issues of *Monetary Bulletin*, macroeconomic and inflation developments have been affected significantly by the pace at which households have drawn down those supplemental savings.

Private consumption slowed markedly in the wake of the pandemic ...

The COVID-19 pandemic and the public health measures put in place by the authorities strongly affected households' consumption options and hindered access to various services that they would otherwise have purchased.¹ Consumption of contact-intensive services was affected the most, and spending on these services was extremely limited while the most stringent public health measures remained in effect. Spending in categories that could easily be postponed – including many consumer durables and semi-durables – suffered as well. Spending on necessities such as food and beverages increased, however, partly because of a shift in spending from the above-mentioned services. Furthermore, purchases of electronic equipment increased, owing in part to an increase in working from home and time spent at home.

Households' spending decisions were also affected by the pandemic and related public health measures via

1. See, for example, Box 1 in *Monetary Bulletin* 2020/2 and Box 2 in *Monetary Bulletin* 2020/4.

their impact on the labour market. Many firms suffered substantial losses of revenue, particularly those in the tourism and retail sectors, as their operations were either severely cut back or simply halted temporarily. Unemployment soared as a result. Increased uncertainty about the economic and labour market outlook also affected consumers' appetite for spending and prompted greater caution in spending decisions.

All of the above factors caused private consumption to shrink by about 9% year-on-year in Q2/2020 (Chart 1), the biggest contraction since the 2008 financial crisis. Although private consumption recovered to an extent in Q3/2020, in tandem with the relaxation of public health measures, it did not return to pre-pandemic levels until autumn 2021.

... but households' disposable income held its ground ...

In spite of the pandemic-related economic shock and rise in unemployment, households' disposable income was unimpaired overall. Instead of contracting, it is estimated to have increased in real terms by close to 3% year-on-year in 2020 and an additional 4% in 2021.² This is due largely to Government support measures undertaken to cushion against the effects of the pandemic and the public health measures on households and businesses.

... and household saving grew markedly during the pandemic

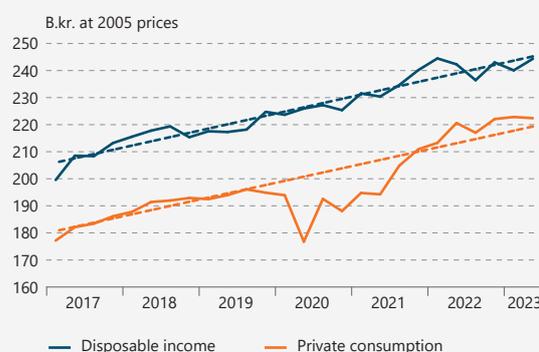
Owing to the contraction in private consumption concurrent with the rise in disposable income, new household savings – i.e., the difference between disposable income and private consumption at any given time – rose steeply during the pandemic. It increased from 198 b.kr. in 2019 to 307 b.kr. in 2020 and measured 279 b.kr. in 2021 (Chart 2). Despite strong growth in private consumption in 2022, driven partly by pent-up pandemic-era demand, households saved 211 b.kr. that year and another 98 b.kr. in H1/2023.

In part, this increased saving could be seen in household deposits, which grew by nearly 115 b.kr. in 2020, nearly double the increase in 2019 (Chart 3). Furthermore, households' banking system deposits have increased by 463 b.kr. since year-end 2019, or an average of 1.2 m.kr. per capita.³ A portion of the increased savings was allocated to real

2. Based on Central Bank estimates of households' disposable income. Statistics Iceland's sector accounts also indicate that households' disposable income increased in real terms, by 1.4% year-on-year in 2020 and another 6.9% in 2021.

3. In addition, a portion of household deposit growth during this period can be attributed to increased lending from the commercial banks, as the issuance of a new loan creates a new bank deposit in the same amount.

Chart 1
Households' disposable income and private consumption¹
Q1/2017 - Q2/2023



1. Disposable income is the sum of wage income, investment income, transfer income, and calculated operating surpluses due to asset ownership (including residential housing), net of investment and transfer expense (including mortgage interest expense), income and property taxes, and other expenses. Disposable income according to Central Bank estimate. Seasonally adjusted data. Broken lines show linear trends based on data for 2017-2019.

Sources: Statistics Iceland, Central Bank of Iceland.

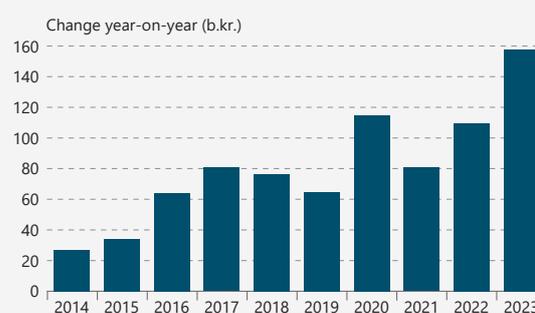
Chart 2
New household savings 2004-2022¹



1. Difference between households' disposable income and private consumption each year. Disposable income according to Central Bank estimate.

Sources: Statistics Iceland, Central Bank of Iceland.

Chart 3
Households deposits 2014-2022¹



1. Change in households' year-end deposit balance in the banking system. Change in 2023 based on end-September balance.

Source: Central Bank of Iceland.

estate purchases, contributing to the surge in house prices in 2021-2022. Households also allocated their savings to home maintenance and construction, securities purchases, and debt deleveraging.

The saving rate has begun to fall again ...

Another way to examine developments in household saving is to consider the ratio of saving to disposable income, generally called the saving rate. The saving rate indicates how large a share of disposable income households retain rather than spending, thereby giving perhaps a clearer view of households' proclivity to save. It can also be compared easily between periods, as it is a unitless variable.

As Chart 4 shows, the saving rate increased gradually as the economy recovered from the 2008 financial crisis, and in the years just before the pandemic, households were saving 9½-13½% of their disposable income. The saving rate shot up to 22½% of disposable income in Q2/2020, however, when pandemic-related closures and lockdowns were at their most stringent. It then subsided gradually but remained above its pre-pandemic average until 2022, by which time virtually all of the public health measures had been lifted, uncertainty relating to the pandemic had eased significantly, and private consumption was growing apace. The saving rate has fallen still further since then, to an average of about 8½% in H1/2023.

... but the stock of excess savings still appears to be sizeable

Uncertainty about post-pandemic economic activity has centred largely on uncertainty about households' saving and spending behaviour, including how quickly they would draw down their savings. Because the saving rate declined more in 2022 and early 2023 than was previously projected, private consumption and overall economic activity turned out stronger than forecast, and inflation was higher (see Boxes 5 and 6).

In order to estimate future developments in the saving rate and economic activity, it can be useful to estimate the extent to which savings exceed the level that would have been seen in the absence of the pandemic. This refers to the so-called "excess savings" that households still own from the time of the pandemic, enabling them to maintain a higher consumption rate than they could otherwise afford.

In this context, the term "excess savings" is defined as all household savings over and above "conventional" or underlying savings; i.e., all of the money households saved in excess of the amount they would have chosen to save if

Chart 4
Household saving rate¹
Q1/2010 - Q2/2023



1. The saving rate represents the ratio of household disposable income that is saved rather than allocated to private consumption. The saving rate is calculated based on the Central Bank's disposable income estimates. Seasonally adjusted data.

Sources: Statistics Iceland, Central Bank of Iceland.

the effects of the pandemic had not been felt.⁴ Because the amount households would otherwise have chosen to save is uncertain, it must somehow be estimated. In order to highlight the uncertainty that exists, it is estimated with three different methods: on the one hand, by using two statistical measures – the Hamilton filter and the Hodrick-Prescott (HP) filter – to estimate underlying trends in household saving, or on the other hand, by simply assuming that households would have elected to maintain a saving rate equal to the average from the years prior to the pandemic. In order to prevent factors that cause temporary changes in household saving behaviour over a limited period of time from being assigned excessive importance, the average saving rate from 2015-2019 is used here as a guideline. This five-year period is also short enough to reduce the likelihood that system-wide changes in household savings took place during those years, as apparently happened in the wake of the 2008 financial crisis.

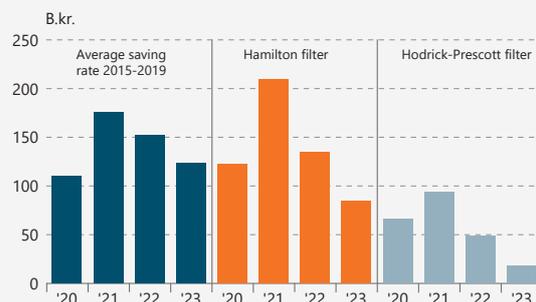
Chart 5 shows estimates of households' accumulated excess savings from the pandemic era according to these three methods. As can be seen, the estimates vary significantly, lying in a range from 94 b.kr. to 209 b.kr. in 2020 and 2021 combined. Although the methods all suggest that households have significantly drawn down their excess savings in the recent term, a sizeable sum remains, or 18-123 b.kr., the equivalent of ½-3% of GDP (Chart 6).⁵

Developments in Iceland similar to those abroad

In general, developments in excess savings in Iceland are similar to those in other advanced economies (Chart 7). Saving behaviour seems to have accelerated more in Iceland after the pandemic struck, however, and was considerably stronger in 2021 than in most of the comparison countries. On the other hand, Icelandic households tapped their savings more, and more quickly, in 2022, and they appear to have continued in this vein thus far in 2023, as can be seen in private consumption and disposable income, both of which have grown far more rapidly in Iceland than the average in other advanced economies. Consumers in the US have depleted their excess pandemic-era savings even faster, however, as economic activity has been robust there, partly because of generous government stimulus measures. In other European countries, excess savings grew

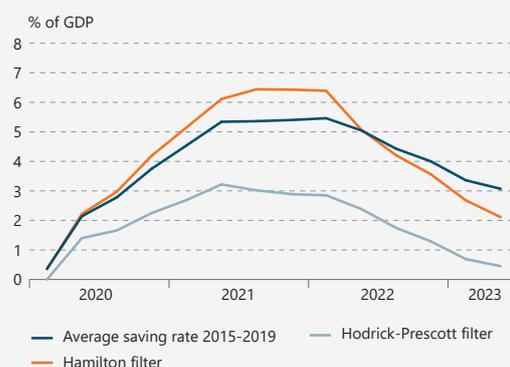
4. Excess saving is therefore the difference between underlying saving and measured saving. It can also be measured as the difference between the measured saving rate and households' underlying propensity to save, multiplied by disposable income.
5. The estimate of excess savings is based on the Central Bank's estimate of households' disposable income. Estimated excess savings would be even greater if annual disposable income figures from Statistics Iceland's sector accounts were used.

Chart 5
Excess household savings in the wake of the pandemic¹



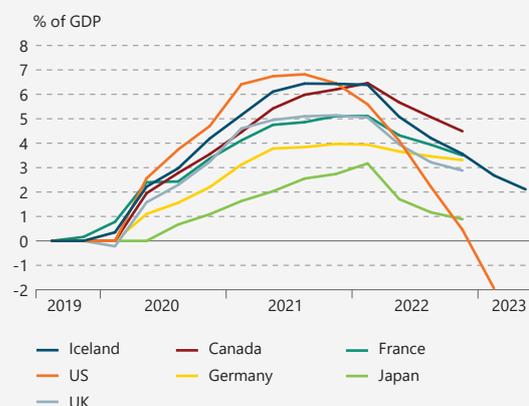
1. Excess savings according to different estimates of households' underlying propensity to save. Year-2023 figures are the estimated stock of excess savings at the end of H1/2023.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart 6
Excess household savings in the wake of the pandemic¹
Q1/2020 - Q2/2023



1. Excess savings according to different estimates of households' underlying propensity to save.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart 7
Excess household savings in selected advanced economies in the wake of the pandemic¹
Q3/2019 - Q2/2023



1. Excess savings are calculated as the deviation from the estimated underlying saving rate using a Hamilton filter.
Sources: F. de Soyres, D. Moore, and J. L. Ortiz (2023), "Accumulated savings during the pandemic: an international comparison with historical perspective", FEDS Notes, Statistics Iceland, Central Bank of Iceland.

less and have subsided more slowly, probably owing in part to an increase in precautionary saving due to elevated uncertainty about energy supplies in 2022.

Summary

Economic developments in the wake of the pandemic have been highly uncertain. One major uncertainty centres on how much the extra savings accumulated during the pandemic exceeded the amount households would otherwise have put aside, and now much and how fast households would draw down those savings as the effects of the pandemic tapered off. This excess savings is estimated to have peaked at 3-6½% of GDP in 2021. Even though Icelanders have tapped these funds quickly in 2022 and 2023 to date, the stock of excess savings remaining at mid-year is estimated at 18-123 b.kr., or ½-3% of GDP.

Although households still hold significant excess savings, it is not a given that they will continue to tap them in the coming term. An important factor, for instance, is which groups of households own the savings, as those with higher incomes generally allocate a smaller share of supplemental income to consumption spending (in other words, their marginal propensity to consume is lower) than lower-income households do. Although it is highly likely that all income groups stepped up their saving during the pandemic, a large share of the remaining stock of excess savings is probably held by higher-income households, which are less likely to deplete them in full. The form of the savings matters as well: whether the funds are held in liquid assets that are readily accessible or in illiquid assets such as real estate. The rise in deposit interest rates in the banking system concurrent with the Central Bank's recent policy rate hikes also gives households a stronger incentive to step up their saving and cut back on spending. Similarly, the rise in lending rates discourages households from borrowing, including withdrawing equity from their real estate. Economic uncertainty and interest rate reviews on variable-rate mortgages could also prompt households to add to their precautionary saving.

According to the Bank's baseline forecast of developments in private consumption and disposable income, the outlook is for households' excess savings from the pandemic era to keep declining but not be fully depleted by the end of the forecast horizon. As before, however, this is subject to considerable uncertainty.

Corporate profits and the recent surge in inflation

Inflation has surged worldwide in the past two years (see Box 6). At the same time, there has been an increase in corporate profits by various measures, and both in Iceland and abroad, questions have arisen about firms' role in inflation. Terms such as "greedflation" and "profit-led inflation" have gained currency in public discourse, implying that firms' greed or profit has been the main cause of the high inflation. Some have expressed concerns that companies' market power has perhaps grown and economic welfare receded accordingly.

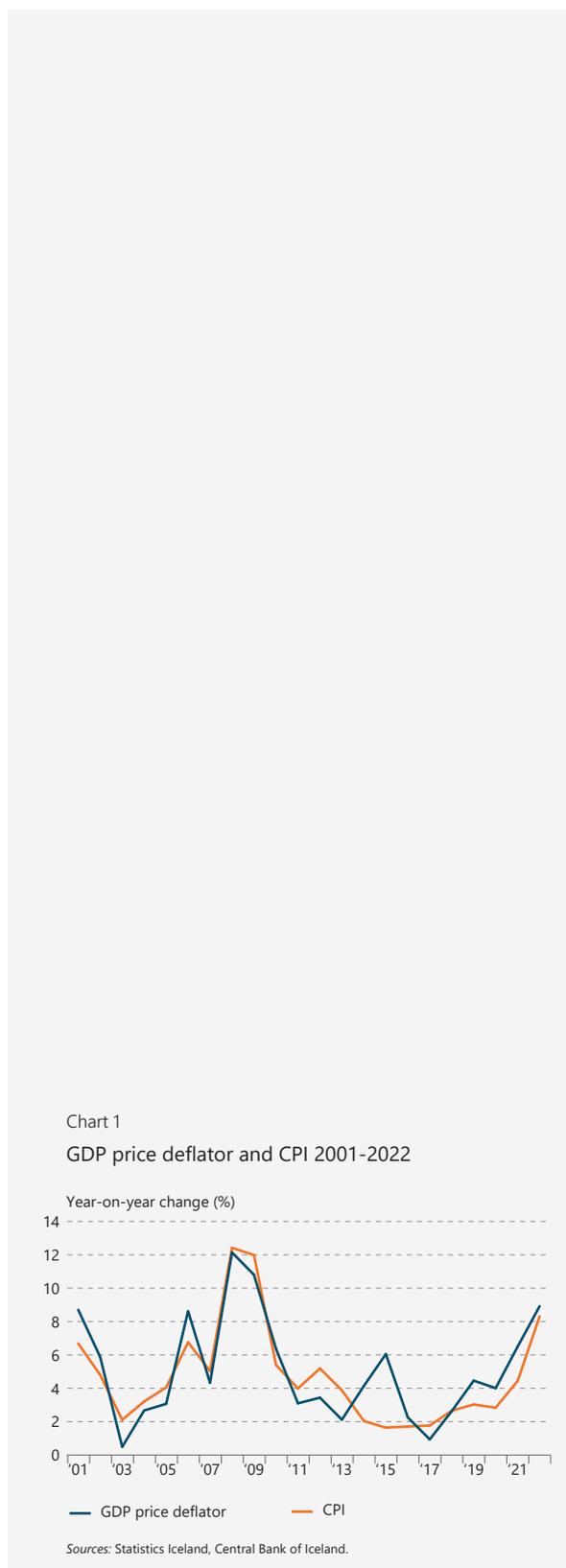
The Box focuses on developments in domestic companies' profits as they are recorded in Statistics Iceland's national accounts. It also attempts to shed light on the extent to which these profits may explain inflation developments since the onset of the pandemic.

Inflation has been high in terms of both consumer prices and prices of domestic output ...

In public discussion, inflation is generally expressed in terms of developments in the consumer price index (CPI), which is the measure on which the Central Bank's inflation target is based. Even so, the CPI cannot readily be used to identify the roles of capital and labour in inflation developments, but the GDP price deflator can be used for this purpose. In general, these two measures tend to move together, but they can diverge during wide fluctuations in terms of trade, such as those occurring in the mid-2010s (Chart 1). This occurs because the CPI includes the price of imported consumer goods while excluding the price of exports; however, the reverse is by and large true of the GDP price deflator, which excludes the price of all imports but does include export prices. The former measure is designed to capture price movements from the consumer's perspective, while the latter measures movements in the price of domestic output. As Chart 1 shows, inflation has risen swiftly by both measures in the past two years.

... and the contribution of profits to last year's inflation appears similar to the contribution of wage costs ...

Following national accounting principles, the income from production activities can be broadly divided among labour, the public sector, and capital; i.e., nominal GDP comprises wages and related expenses (wage costs), taxes in excess of subsidies, and gross operating surpluses. The last of these



is calculated as a residual; that is, it is the remainder of nominal GDP once wages and public levies net of subsidies have been paid. Furthermore, it is generally viewed as an approximation of compensation to the owners of the capital stock – in short, profit.¹

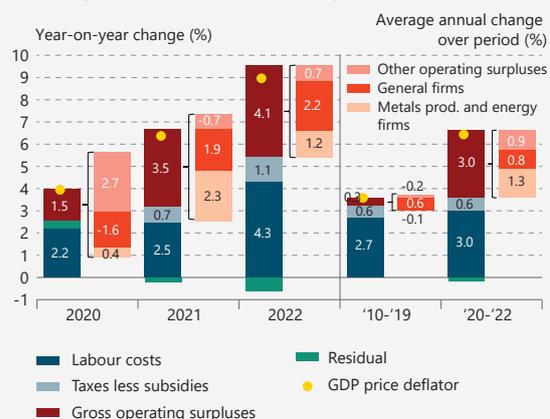
Changes in the GDP price deflator can therefore be divided into the contribution from wage costs, net taxes, and gross operating surpluses. Chart 2 shows this decomposition for the past three years, together with the average for that three-year period, and compares it to the average for the preceding ten-year period. The GDP deflator rose by 4% in 2020, by 6.5% in 2021, and by nearly 9% in 2022. Over the same period, the contribution from gross operating surpluses increased from 1.5 percentage points in 2020 to 4.1 percentage points in 2022, slightly outpacing the contribution from wage costs, which rose from 2.2 to 4.3 percentage points.

Both last year and for the average of the past three years, the contribution from gross operating surpluses has been similar to the contribution from wage costs. The contribution of operating surpluses has, however, risen by more than wage costs when compared to the period 2010-2019.

... but the contribution of domestic corporate profits is in fact smaller

Gross operating surpluses include a number of components that are not considered part of firms' profits, however. First, they include the gross operating surpluses of all domestic sectors – not just companies, but also the public sector, non-governmental organisations, financial institutions, and households, the largest owners of residential real estate, which comprises nearly half of the capital stock. As a result, it is logical to select the subsector that best reflects companies in Iceland in the sectoral accounts; i.e., non-financial domestic firms. Second, gross operating surpluses include depreciation of capital assets, which is more appropriately considered among the costs of keeping the business running than as part of the profits of the firm in question.² As a result, Chart 2 also gives a more detailed breakdown of gross operating surpluses, which include an item called "Other operating surpluses". This category captures items that reflect components other than net operating surpluses of domestic non-financial firms.

Chart 2
GDP price deflator and subcomponents¹



1. The contribution of wage costs, taxes net of subsidies, gross operating surpluses (all items per unit of output) and a residual (due to chain-linking) to the increase in the GDP price deflator according to sectoral accounts. Gross operating surpluses are further divided into contributions from metals and energy companies (firms engaged in the manufacture of basic metals and in electricity, gas, steam, and air conditioning supply), surpluses of general non-financial firms, and other operating surpluses (operating surpluses of financial institutions, the government, NGOs, and households, as well as capital depreciation for general non-financial firms).

Sources: Statistics Iceland, Central Bank of Iceland.

1. It is worth noting that decomposition based on accounting relationships can illustrate developments in individual items and their contribution to the total, but it does not necessarily indicate a causal relationship.

2. See, for example, Haskel (2023). Although depreciation represents a small share of the capital stock, it can be a large share of operating surpluses.

As has been discussed previously in *Monetary Bulletin*, international energy and commodity prices skyrocketed during the pandemic recovery and even further following Russia's invasion of Ukraine. In Iceland, these effects emerged partly as a sharp rise in profits for metals manufacturers due to steep increases in metals prices and, to a degree, the price charged to energy companies, as energy prices are in some cases linked to developments in metals prices. Net unit profits in these sectors show this clearly, as they were at a historical high in 2022, measuring more than twice the 2010-2019 average and a full 900% more than in 2019 (Chart 3). Because metals prices are set in the global market, developments in prices and profits in these sectors reflect domestic conditions only to a limited degree. In analysing the relationship between firms' profits and inflation, it is therefore appropriate to exclude metals and energy companies' operating surpluses as well.

What remains is the contribution from the net operating surpluses of non-financial corporations apart from metals and energy companies. This should represent the portion of operating surpluses that best measures the contribution of domestic companies' profits to inflation in recent years. According to the more detailed breakdown of operating surpluses in Chart 2, these companies recorded weaker profits in 2020, followed by a pickup in profits in the two years thereafter. The contribution of increased profits to domestic inflation was almost 2 percentage points each year, exceeding the 2010-2019 average of 0.6 percentage points. However, it remains markedly below the contribution of wage costs over the same period, particularly in 2022, when wage costs contribute almost twice as much to inflation as unit profits.³ It can also be seen that when looking at the 2020-2022 period as a whole, that the contribution of unit profits was broadly the same as in the preceding decade.

The contribution of profits to inflation also appears to have already started to subside

The discussion above extends only until 2022 and does not include developments in 2023. This is because Statistics Iceland's production and sectoral accounts are published annually, but with a time lag, as year-2022 production accounts figures were first published in spring 2023, while sectoral accounts for 2022 were not published until this autumn.

3. The contribution of wage costs in Chart 2 includes metals and energy companies, but their contribution is negligible. If these companies are excluded, the contribution from wage costs is 0.2 percentage points less in 2022, unchanged for the 2010-2019 average, but 0.1 percentage points less for the 2020-2022 average.

Chart 3
Net unit profits of metals production and energy firms 2000-2022¹



1. The chart shows net operating surpluses of firms engaged in the manufacture of basic metals and in electricity, gas, steam, and air conditioning supply per unit produced. The net operating surplus is the gross operating surplus net of depreciation of capital.

Sources: Statistics Iceland, Central Bank of Iceland.

On the other hand, it is possible to estimate developments in 2023 to date based on Statistics Iceland's quarterly expenditure accounts, public sector finances, and disposable income in the household sector. This estimate suggests that the contribution from gross operating surpluses to inflation shrank in late 2022 and has remained below 2022 levels year-to-date (Chart 4). Furthermore, it has once again fallen below the contribution from wage costs. Global metals prices could weigh heavily in this context, as the steep rise in aluminium prices from late 2020 to mid-2022 has reversed to a great extent in 2022 and 2023.

Increased corporate profits need not reflect larger markups ...

In general, firms determine their product prices in terms of a markup over marginal costs; i.e., the cost of producing one additional unit. As a result, an increase in output prices can reflect a rise in markups or an increase in marginal costs. There is a direct relationship between inflation and markups, but the relationship between inflation and changes in profits is more complex.

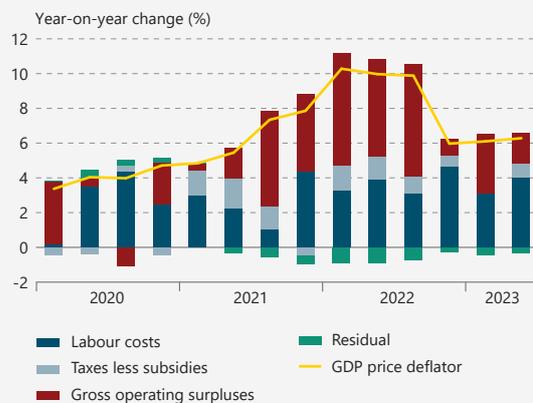
Until now, we have examined developments in corporate profits (as measured in terms of operating surpluses according to the national accounts) and their contribution to the elevated inflation of the past few years. As is discussed in Colonna *et al.* (2023), however, there need not be an obvious link between profits and markups. This is particularly relevant in the current climate, where costs of input material have risen steeply and well in excess of wage costs (chart 5). The reason is that markups are calculated on top of firms' marginal costs, which include not only wage expense but other input costs as well. If the price of other inputs rises in excess of wages, unchanged markups will nevertheless deliver greater profits, all else being equal.⁴

A stylised representation of this effect can be seen in Chart 6, which gives three examples of how a higher cost of materials can affect firms' markups and profits (see Spange and Weissert, 2023). At the outset, the firm's revenues are 200 kr. and its materials cost 100 kr. This leaves a remainder of 100 kr., which is split between labour (60 kr.) and the company's owners (40 kr.). The markup is therefore 25% (i.e., the ratio of profit (40 kr.) to production cost (60+100 kr.)).

In the first example, the firm responds to an increase in the cost of materials to 150 kr. by lowering its markup to 19%, so that the company's profit remains unchanged. The firm fully absorbs the cost increase, and the wage and profit shares therefore remain unchanged. If the company

4. The ratio of marginal costs to average costs is important as well, as it can be viewed as a measure of economies of scale.

Chart 4
GDP price deflator and subcomponents¹
Q1/2020 - Q2/2023



1. Quarterly figures are projected based on national accounts using the expenditure approach (GDP price deflator, GDP volume), but using the income approach for the household sector (labour costs), and figures for general government revenue and expenditure (taxes net of subsidies). The gross operating surplus is the difference between nominal GDP and the sum of labour costs and taxes net of subsidies. The residual is due to chain-linking in the national accounts.

Sources: Statistics Iceland, Central Bank of Iceland.

Chart 5
The ratio of intermediate consumption costs to wage costs 2000-2022¹



1. The chart shows the year-on-year change in the ratio of intermediate consumption costs to wage costs according to national accounts figures.

Sources: Statistics Iceland, Central Bank of Iceland.

Chart 6
Possible effect of an increase in materials costs on markups and profits



Source: Spange and Weissert (2023).

keeps its markup unchanged, however, as in Example 2, its profit will increase. It can be seen here that the rise in input costs can trigger a series of events resembling a temporary wage-price spiral. When firms keep their markups constant, the relative allocation of value added changes, making it likely that the employees will try to reclaim their share of the gains on production if the labour market is sufficiently tight. If markups are held constant, however, this will also increase profits, as the markup is calculated on higher wages and the wage share therefore declines again. This can continue until a new equilibrium is achieved, with the original wage and profit shares and the same markup, but at a price level higher than the original rise in the cost of materials alone called for.

Finally, Example 3 shows that firms could potentially reduce their markups while still increasing their profits. It can be seen from these examples that it is difficult to predict firms' conduct based on profit analysis when other input costs rise more than wages do. Therefore, an increase in corporate profits as measured according to the national accounts need not mean that firms have increased their markups and are driving higher inflation.

... and higher markups do not necessarily mean that companies' market power has increased

Markups and profits can increase without boosting the pricing power of the firms concerned or causing other problems on the supply side of the economy. Stronger demand, for instance, can cause prices, markups, profits, and production to increase simultaneously.⁵ In this case, price increases not only raise profits, but also serve the purpose of realigning supply and demand so that excess demand does not develop. Although the relationship between increased demand and markups is not fixed, a sudden and unexpected surge in demand (such as the one that came in the wake of the pandemic) can lead temporarily to higher markups and profits if marginal cost (i.e., due to recently signed wage agreements) are slower to respond. If the impact of the surge in demand persists long enough, however, marginal cost will ultimately rise as well. This accords well with what can be seen in Chart 2: the contribution from profits increases first, and the contribution from wage costs follows suit. Furthermore, forward-looking pricing can cause markups to rise temporarily. As is discussed in Glover *et al.* (2023), a foreseeable increase in marginal cost can cause

5. See, for example, Glover *et al.* (2023), which summarises the effects of various shocks (such as a surge in demand) on monopolists' pricing decisions. A comparable discussion of monopolistic competition can be found in Spange and Weissert (2023).

firms' markups to rise temporarily and then contract again when the increase in marginal cost takes effect.

Further analysis suggests that domestic firms' markups are not a major contributor to the recent surge in inflation

The discussion above should make it clear that determining the cause of recent inflation based on the simple accounting relationships in the national accounts is problematic. One way to ascertain whether domestic firms' rising markups have contributed to inflation over the past few years is to use structural models to analyse which shocks have been the main drivers of inflation in recent years. The Bank's DSGE model, DYNIMO, is useful for this purpose, and changes in firms' markups are one of the shocks examined (see Thórarinnsson, 2020).

With the model, it is possible to put developments in CPI inflation into the context of other economic variables and assess domestic companies' markups at the same time. This makes it possible to estimate how large a share of the recent inflation surprises can be attributed to changes in domestic firms' markups. Chart 7 shows the results of such an estimate for the past three years. As can be seen, domestic companies' markups appear to have offset the rise in inflation in 2021, while making a very small positive contribution to it in 2020 and 2022. On the whole, companies' markups do not appear to have been a major driver of inflation over this three-year period.

Summary

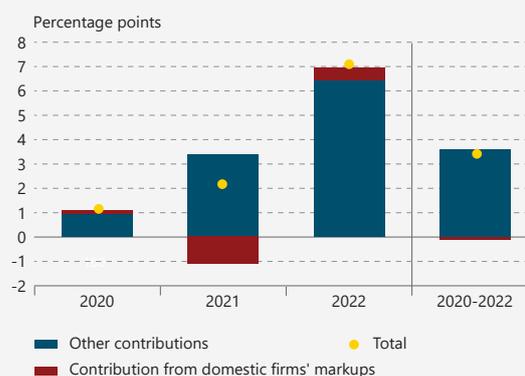
Inflation has been high recently. Corporate profits as measured in the national accounts have risen at the same time, and their contribution to inflation appears to have risen. It is smaller, however, than the contribution of wage costs over this period – which, for example, was almost twice as high in 2022. Furthermore, over the entire post-pandemic period, the contribution of profits to inflation is also close to the average of the preceding decade.

As is discussed in this Box, the relationship between firms' profits and their markups is complex; however, further analysis of the contribution of markups to inflation in recent years suggests that changes in markups have made only a minor contribution to inflation in the past three years.⁶ As has been reported previously in *Monetary*

6. These results are broadly in line with those from other central banks, both in the Nordic region and in major advanced economies, most of which have concluded that firms' markups are not an important contributor to the inflation episode of the past few years. See, for example, Spange and Weissert (2023), Norges Bank (2023), Haskel (2023), Glover *et al.* (2023), and Bouras *et al.* (2023).

Chart 7

Contribution of domestic firms' markups to inflation 2020-2022¹



1. Contribution of domestic firms' markups on products sold domestically and other structural shocks to unexpected inflation in 2020-2022 based on DYNIMO, the Central Bank's DSGE model.
Source: Central Bank of Iceland.

Bulletin, the recent surge in inflation is much rather due to excess domestic demand, which, for instance, enables firms to maintain their markups despite rising costs of materials and therefore leads to larger profits followed by steep wage rises. In order to bring inflation back down, conventional policy measures must be applied to curb demand.

If markups have not risen to a degree that affects the inflation outlook, it cannot be assumed that there is scope to reduce them to compensate for further rises in marginal cost such as those stemming from upcoming wage negotiations. The labour market and the economy as a whole remain tight. In such an environment, there is greater risk that firms will preserve their markups and pass cost increases through to prices and that workers will try to regain their previous wage share, as has been discussed previously. A tighter monetary policy stance counters this pattern by curtailing demand, which makes it harder for firms to pass cost increases through to prices and forces them to absorb cost increases through lower markups. At the same time, reduced demand eases wage pressures. In this way, monetary policy channels the cost shock through the real economy to a greater extent by giving firms no other option than to recoup their margins by streamlining and boosting productivity.

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Fiscal budget proposal for 2024

The fiscal budget proposal for 2024 was introduced before Parliament in September. According to the proposal, Treasury revenues will total 1,348.5 b.kr. in 2024, while total expenditures will equal 1,394.8 b.kr., resulting in a deficit of 46.3 b.kr. The Treasury primary balance is expected to show a surplus of 28 b.kr. in 2024, whereas the interest balance is expected to be in deficit by 74.4 b.kr.

In comparison with the year-2023 National Budget, the overall deficit according to the fiscal budget proposal for 2024 amounts to 73.3 b.kr. The deficit on year-2023 operations looks set to be considerably smaller than the National Budget provided for. According to the budget proposal, the Treasury primary surplus will be 19 b.kr. smaller than in the updated estimates for this year. This is offset by a smaller deficit on the interest balance; therefore, the overall deficit for 2024 will be 5.2 b.kr. larger than is

Table 1 Summary of fiscal outcome: 2023 Budget and 2024 budget proposal

National accounts basis	B.kr.			Change from prev. year's budget
	Budget 2023	Estimate 2023	Budget proposal 2024	
Primary income	1,122.5	1,223.9	1,312.3	189.8
Primary expenditures	1,172.8	1,177.0	1,284.1	111.3
Primary balance	-50.3	47.0	28.1	78.4
Interest income	25.4	36.0	36.3	10.9
Interest expense	94.7	124.1	110.7	16.0
Interest balance	-69.3	-88.1	-74.4	-5.2
Total revenues	1,147.9	1,259.9	1,348.5	200.6
Total expenditures	1,267.5	1,301.0	1,394.8	127.3
Overall balance	-119.6	-41.1	-46.3	73.3

National accounts basis	% of GDP			Change from prev. year's budget
	Budget 2023	Estimate 2023	Budget proposal 2024	
Primary income	28.4	29.2	29.0	0.6
Primary expenditures	29.7	28.1	28.4	-1.3
Primary balance	-1.3	1.1	0.6	1.9
Interest income	0.6	0.9	0.8	0.2
Interest expense	2.4	3.0	2.4	0.1
Interest balance	-1.8	-2.1	-1.6	0.1
Total revenues	29.0	30.1	29.8	0.7
Total expenditures	32.0	31.1	30.8	-1.3
Overall balance	-3.0	-1.0	-1.0	2.0

Source: Fiscal budget proposal 2024.

estimated for 2023. Next year's deficit is estimated at 1% of GDP (Table 1).

The macroeconomic assumptions in the budget proposal are based on Statistics Iceland's June 2023 forecast. Table 2 shows Statistics Iceland's forecast and the estimates in the budget proposal in comparison with the Central Bank forecast from roughly the same time (*Monetary Bulletin* 2023/2, published in May 2023). The GDP growth rate is in line with the Bank's new baseline forecast, but unemployment and inflation are lower.

Table 2 Macroeconomic assumptions in the 2024 fiscal budget proposal¹

	Statistics Iceland forecast (%)	MB 2023/2 (%)
Private consumption	2.2	1.7
Public consumption	2.0	2.0
Investment	3.4	5.7
Exports	3.3	3.5
Imports	2.8	3.7
Gross domestic product	2.6	2.6
Consumer price index	4.9	5.0
Unemployment	4.0	4.3
Trade-weighted exchange rate index	0.1	0.5
Wages	5.6	6.9

1. The table shows year-on-year changes except for unemployment, which is expressed as a share of the labour force.

Sources: Fiscal budget proposal 2024, Statistics Iceland, Central Bank of Iceland.

Price, wage, and exchange rate assumptions underlying the 2024 fiscal budget proposal

- *Wage assumptions:* Generally, wage assumptions are based on existing wage agreements. As was the case when the last fiscal budget was prepared, developments relating to next year's wage agreements are uncertain. Because of this, the same method is used: budgetary appropriations are not allocated to institutions; instead, an appropriation for wage rises is allocated to a general reserve fund, and the change is determined by the next year's inflation assumption. When the results of wage agreements have been ascertained, the budgetary appropriations are allocated to individual institutions. The impact of wage assumptions on year-2024 expenditures totals 28.1 b.kr.
- *Price assumptions:* The general rise in operating expenditures is based on Statistics Iceland's inflation forecast. Inflation is estimated at 8.7% for 2023, an increase of 3.1 percentage points relative to the assumptions underlying the 2023 fiscal budget, but it is projected to decline to 4.9% in 2024. Next year's expenditures

are estimated to increase by 7.6 b.kr. because of an underestimation of year-2023 inflation during the preparation of the 2023 National Budget. Next year's rise in expenditures due to price level increases is estimated at 12.1 b.kr. The aggregate effect on year-2024 expenditures is therefore 19.7 b.kr.

- *Exchange rate assumptions:* The fiscal budget proposal assumes an exchange rate equal to the June 2023 average, which entails a 2.9% year-on-year appreciation of the króna. This leads to a 2.4 b.kr. increase in expenditures, owing mainly to foreign policy expenses and drug costs.
- *Unemployment and social security benefits:* Social security benefits rise by 4.9% in 2024, in addition to the 2.5% increase in June 2023. Unemployment benefits rise in line with inflation, or 4.9%. The cost of this increase in benefits is estimated at 17.7 b.kr.

In all, the above-specified changes to budgetary authorisations in the 2024 budget proposal – changes in wages, benefits, prices, and exchange rates, as well as increased unemployment and social security benefits – amount to just over 67.9 b.kr. (see Table 3).

Table 3 Changes in wages, benefits, prices, and exchange rate in 2024

Accrual basis	Effect on expenditures, b.kr.
Wage increases in 2023 in excess of budgetary assumptions	8.6
Projected wage rises 2024	19.5
Total wage increases	28.1
Unemployment and social security benefits	17.7
General price level assumptions	19.7
Exchange rate assumptions	2.4
Changes in wages, benefits, prices, and exchange rate	67.9

Source: Fiscal budget proposal 2024.

Expenditure sources in the fiscal budget proposal

The year-on-year increase in budgetary framework appropriations over and above price adjustments totals 35.2 b.kr. This reflects greater scope for spending due to new and expanded projects and growth in committed expenditures, on the one hand, versus fiscal consolidation and the expiry of temporary expenditures, on the other. Among committed expenditure items are the construction of the new Landspítali hospital and spending due to increased refugee numbers. Expanded and new projects include transferring support for energy switching from the revenues side to

the expenditures side and increasing contributions to the housing system. Included with temporary measures set to expire are expenditures relating to the 2021-2023 investment initiative. Finally, an estimated 17 b.kr. will be saved via general and targeted consolidation measures (table 4).

Table 4 Changes in expenditures by source

Expenditure sources	Changes from previous budgetary appropriations b.kr.
Increased scope for expenditure in budget proposal	50.3
Committed expenditures	42.5
Expiry of temporary measures	-40.6
Consolidation measures	-17.0
Wage and price updates	67.9
Total	103.1

Source: Fiscal budget proposal 2024.

Changes on the revenues side

It is assumed that statutory tax reforms will increase Treasury revenues by 9.1 b.kr. in 2024, mainly because of the reduction of the value-added tax (VAT) refund ratio from 60% to 35%. Non-statutory changes deliver increased revenues in the amount of 14.2 b.kr., mainly due to a revision of taxation on motor vehicles and fuel. In all, the changes will deliver 23.3 b.kr. in additional revenues in 2023 (Table 5).

Table 5 Impact of tax changes on Treasury revenues in 2024

Accrual basis	Revenues, b.kr.
Statutory changes	
VAT reimbursement reduced from 60% to 35%	6.0
Alternate airport fee	1.6
Temporary suspension of bed-night tax expires	1.5
Total	9.1
Non-statutory changes	
Reform of taxation on motor vehicles and fuel	7.5
Levy of tourism fees	2.7
Change in value fee for sea-farmed fish	0.6
Increase in unit levies by 3.5%	3.4
Total	14.2
Total changes, statutory and non-statutory	23.3

Source: Fiscal budget proposal 2024.

Revision of year-2023 estimated outcome

The estimated outcome for 2023 has changed markedly relative to the National Budget for the year. The Treasury outcome is expected to show a deficit of 41 b.kr. this year, with a sizeable interest balance deficit offsetting a 47 b.kr. primary surplus. The deficit, which is 78.5 b.kr. smaller than that provided for in the National Budget, represents a 97 b.kr. change in the estimated primary balance. Treasury

revenues are expected to exceed budgetary estimates by 112 b.kr., largely because of stronger economic activity and higher inflation than previously expected. Estimates of Treasury primary expenditures are broadly as provided for in the Budget, changing by just over 4 b.kr., whereas interest expenditure is expected to be 29.4 b.kr. more than in the Budget.

The change in the estimated year-2023 outcome is much smaller in comparison with the fiscal strategy plan for 2024-2028, approved last summer, than in comparison with the 2023 National Budget, as stronger economic activity early in 2023 suggested that tax revenues would exceed budgetary assumptions. Chapter III contains a more detailed discussion of the cyclically adjusted Treasury outcome, which measures the fiscal stance at any given time.

2024 outcome broadly the same as in the previous year, but its composition is set to change

As has been noted, the Treasury outcome is projected to be negative by just over 46 b.kr., or 1% of GDP, in 2024, the same percentage as in the new estimate for 2023 (Chart 1). Its composition will change, however, as the primary surplus will shrink year-on-year, while the deficit on the interest balance has also narrowed. This shift in the primary balance is due in part to the fact that corporate income tax revenues will be unusually high this year, owing to Landsvirkjun's sale of Landsnet to the Treasury. In addition, the effects of underpredicted year-2023 inflation on expenditures will not show fully in price level updates for various expenditure items until 2024, while inflationary effects will show in increased revenues in 2023.

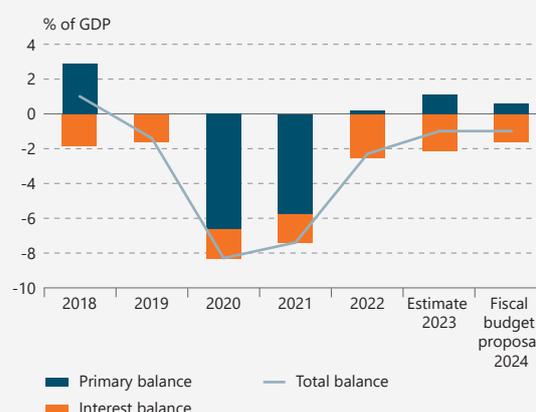
The outcome according to the fiscal budget proposal is similar to that provided for in the fiscal strategy plan from this past summer, which assumed that the 2024 deficit would equal just over 48 b.kr., or 1.1% of GDP. According to the budget proposal, the primary surplus will be about 0.3% of GDP larger than in the fiscal strategy plan, whereas the deficit on the interest account will also be larger.

Treasury debt-to-GDP ratio to fall in 2024

Treasury debt according to the debt rule in the Act on Public Finances increased from 21.8% of GDP in 2019 to a peak of 33.2% in 2021.¹ The ratio declined marginally in 2022, and this year it is expected to fall by one percentage point, to 32.1%. According to the budget proposal, it will fall by 1.2 percentage points next year (Chart 2). In compari-

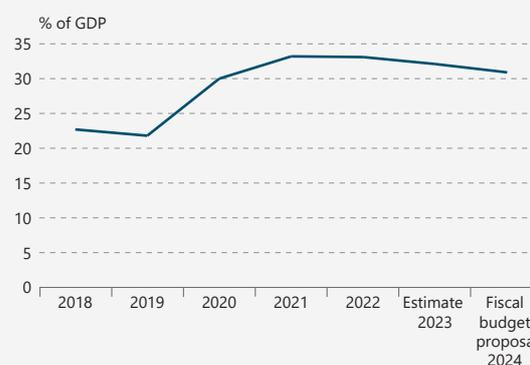
1. This assumes that total public sector debt net of pension obligations and accounts payable, and net of cash balances and bank deposits, will be less than 30% of GDP.

Chart 1
Treasury balance 2018-2024¹



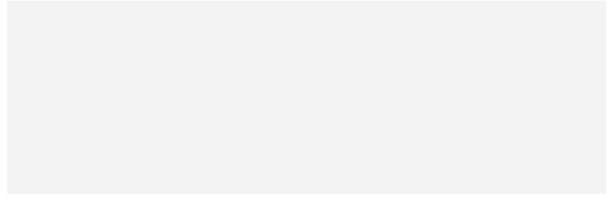
1. Part A1 Treasury balance.
Sources: Fiscal budget proposal for 2024, Fiscal Policy Statement 2024-2028.

Chart 2
Treasury debt 2018-2024¹



1. Part A1 Treasury debt according to the debt rule is total debt less pension obligations, accounts payable, cash balances, and bank deposits.
Sources: Fiscal budget proposal for 2024, Fiscal Plan 2024-2028.

son with the current fiscal strategy plan, the debt-to-GDP ratio is now expected to decline less this year but fall more in 2024. For these two years together, the debt ratio is now expected to be marginally higher in 2024 than in the fiscal strategy plan, or 30.9% of GDP.



The Central Bank's macroeconomic forecasts in 2022

As in previous years, the November issue of *Monetary Bulletin* includes a summary of the Bank's macroeconomic forecasts and forecasting record over the previous calendar year. This helps the Bank to shed light on the main causes of forecasting errors, so that it can learn from them and use them to improve its models and forecast preparation.

Global economy hit by multiple shocks in 2022

In 2022, the COVID-19 pandemic finally started to recede and economic activity to normalise after a two-year period of severe disruption in people's daily lives. Although the end of the pandemic was in sight, supply chains were still impaired and significant bottlenecks remained. As a consequence, it proved difficult to satisfy growing household demand, shortages of various inputs developed, and the price of inputs and consumer durables soared.

A number of other supply shocks struck the global economy over this period. Chief among them was Russia's invasion of Ukraine in early 2022, which led to even further supply chain disruptions and a surge in the price of energy and various foods and commodities. This was followed by the highest inflation seen in advanced economies in four decades (see also Box 6).

Changes in GDP growth forecasts were driven largely by fluctuations in the export outlook

Early on, the Bank's COVID-related forecasts – when the pandemic would end, and how quickly exports (tourism in particular) would recover after the COVID-generated contraction – were highly uncertain. In the May 2021 issue of *Monetary Bulletin*, it was assumed that tourism would rebound strongly in 2022 and would be the main driver of the projected 5.2% GDP growth for the year (Chart 1). By autumn 2021, however, the 2022 GDP growth outlook had deteriorated and the forecast was revised downwards. The poorer outlook for exports was the main factor in the revised forecast, which reflected base effects from an improved outlook for tourism in 2021 together with a bleaker outlook for marine product exports in 2022. By the time of the Bank's November 2021 forecast, however, the outlook for exports had improved again, and GDP growth for the year was revised upwards to just over 5%.

The outlook for exports worsened once again in H1/2022. In the Bank's first forecast of the year, published

Chart 1
GDP growth forecasts for 2022¹



1. Forecasts of year-2022 GDP growth as presented in MB 2021/2-2021/4 and 2022/1-2022/4, plus the most recent estimate from Statistics Iceland. The chart also shows the forecast from MB 2023/1, which is the Bank's last forecast before the publication of Statistics Iceland's first estimates of year-2022 GDP growth.

Sources: Statistics Iceland, Central Bank of Iceland.

in the February 2022 issue of *Monetary Bulletin*, the poorer outlook for exports contributed to the downward revision of the GDP growth forecast, while stronger growth in investment pulled in the opposite direction, with the result that output growth was lowered by only 0.3 percentage points. By the time of the August 2022 forecast, however, the situation had changed markedly, particularly for domestic demand, which was projected to grow much more strongly during the year. The outlook was for somewhat stronger growth in business investment, and the private consumption growth forecast was more than doubled. It also became clear that there was keen appetite for travel, and the recovery of tourism during the summer had been even swifter than anticipated. The GDP growth forecast was revised upwards to 5.9% as a result. The Bank's February 2023 forecast was the last issued before Statistics Iceland's publication of the year-2022 national accounts. GDP growth for 2022 had been estimated at 7.1%, as it was clear that private consumption was growing even more strongly than previously projected and the outlook for exports had improved still further (see below). When Statistics Iceland published preliminary figures for 2022 shortly thereafter, it estimated GDP growth at 6.4%, but since then it has revised that figure upwards to 7.2%.

Growth in tourism outpaced forecasts despite global shocks ...

Soon after the pandemic began, it was assumed that international travel would continue to be affected in 2022. In the May 2020 issue of *Monetary Bulletin*, the first released after the pandemic reached Iceland, it was forecast that foreign travellers' visits to Iceland would be one-third fewer in 2022 than in 2019. By spring 2021, however, the outlook had improved, and tourist arrivals were projected to approach 1.5 million during the year, or one-fourth below the pre-pandemic level. In the August 2021 edition of *Monetary Bulletin*, the forecast of year-2022 tourist arrivals was broadly unchanged; however, year-on-year growth was revised downwards, as relaxation of travel restrictions had resulted in stronger-than-expected tourist numbers in summer 2021. Because of these base effects, the Bank's export forecast for 2022 was revised downwards, contributing strongly to the reduction in GDP growth forecasts for the year.

The forecast of 2022 tourist arrivals was not revised significantly until autumn 2022, by which time it was clear that tourist numbers would be markedly higher, or close to 1.7 million. In the spring, there had been concerns that various global economic indicators – such as high fuel prices, the resulting spike in airfares, and reduced purchasing power – would affect appetite for travel. In the end, COVID

case numbers declined, restrictions on travel to the US were eased, and increased flight offerings caused visitor numbers to rise even higher than expected. The challenges that dominated the economic situation over this period – war, interest rate hikes, higher inflation, supply chain disruptions, and rising commodity prices – appear to have had less impact on appetite for travel than had been expected. What came to the fore instead was significant pent-up demand for travel, supported by the savings households had accumulated during the pandemic (see Box 2).

... while forces of nature played a larger role in exports

It was expected that global economic developments would shape forecasts for goods exports, but in the end, forces of nature played a more central role. Reduced 2021-2022 season catch quotas for various marine products, cod in particular, affected the Bank's bleaker forecast for exports in August 2021. When the Bank's November forecast was issued, however, the outlook was for a considerably larger increase in the capelin quota for the coming fishing year, weighing against a contraction in other quotas. A difficult fishing season and poor weather conditions caused setbacks, however, and fisheries were unable to catch the entire issued quota. As a result, marine product exports grew by only 1% over the year as a whole, despite the largest capelin quota since the 2011-2012 season.

In addition, it proved necessary to restrict energy supplies to manufacturers in the energy-intensive industry because of low water levels in the Landsvirkjun reservoir. Reduced exports of aluminium products and silicon metal were offset, however, by other industrial exports. In the end, exports grew by 22.3% year-on-year, broadly in line with the Bank's last forecast prior to the release of Statistics Iceland's preliminary figures for the full year, and somewhat more than previously projected (Chart 2). This growth in exports was offset by robust import growth, and ultimately the contribution of net trade to output growth measured only ½ a percentage point.

Deviations in the Bank's export forecasts are also affected by changes in Statistics Iceland's methodology

Another explanation for the deviation between the Bank's services export forecasts and Statistics Iceland's final figures is that when the national accounts were published in late February 2023, trade in intellectual property was no longer included with external trade. As a result, growth in services exports was 1.2 percentage points weaker in 2022 than previously estimated, and the contribution from net trade marginally smaller.

Chart 2
Export forecasts for 2022¹



1. Forecasts of year-2022 growth in goods and services exports as published in MB 2021/2-2021/4 and 2022/1-2022/4, together with the most recent estimate from Statistics Iceland. The chart also shows the forecast from MB 2023/1, the Bank's last forecast before Statistics Iceland published its first estimate of year-2022 export growth.

Sources: Statistics Iceland, Central Bank of Iceland.

At the same time, Statistics Iceland reclassified aircraft leasing agreements in external trade under services trade rather than investment. With this change, the treatment of these contracts was aligned with the method used prior to the publication of the national accounts in August 2021. These changes in methodology had some impact on the year-2022 current account balance but a minor impact on GDP. Investment was strongly affected, however, as is explained below.

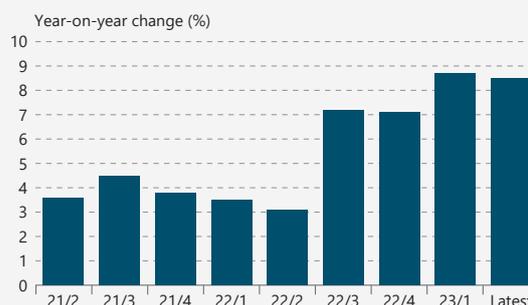
Private consumption forecasts proved overly pessimistic

The main driver of GDP growth in 2022 was private consumption, which grew by 8.5% during the year, its strongest since 2005. Initially, though, forecasts suggested more modest growth. The Bank's forecast in *Monetary Bulletin* 2021/2 assumed, for instance, that it would grow by 3.6% that year, and the forecasts that followed were similar (Chart 3). By May 2022, however, indicators began to show that Icelanders' spending abroad had started rising sharply. This could be seen, for instance, in increased payment card turnover at travel agencies and in Gallup's index of planned overseas travel. There was also a jump in new motor vehicle registrations. Despite clear indications of stronger consumption spending and greater consumer optimism, private consumption growth was projected to be weaker than in the previous forecast. This was due in part to base effects stemming from stronger consumption growth in the prior year, but in addition, the outlook for the remainder of the year was considered poorer because of rising costs and elevated uncertainty in the wake of the invasion of Ukraine.

Over the course of 2022, however, it became clear that the strong financial position of most households and their sizeable accumulated savings affected their consumption behaviour more than caution due to global uncertainty did. As a result, the August forecast, in *Monetary Bulletin* 2022/3, provided for 7.2% year-on-year growth in private consumption. The upward revision was driven largely by data indicating increased overseas travel, but a surge in domestic consumption spending could be discerned as well, including new car purchases.

This robust private consumption growth in 2022 was driven in part by a jump in real disposable income, which grew 3% year-on-year in 2022 (Chart 4), on the heels of an average increase of 4% over the previous five years. Households therefore appear to have drawn down their accumulated savings more rapidly than anticipated. Furthermore, the labour market situation was good during the year, and job growth was stronger than previously assumed (Chart 5).

Chart 3
Private consumption forecasts for 2022¹



1. Forecasts of year-2022 growth in private consumption as published in MB 2021/2-2021/4 and 2022/1-2022/4, together with the most recent estimate from Statistics Iceland. The chart also shows the forecast from MB 2023/1, the Bank's last forecast before Statistics Iceland published its first estimate of year-2022 GDP growth.

Sources: Statistics Iceland, Central Bank of Iceland.

Chart 4
Disposable income forecasts for 2022¹



1. Forecasts of year-2022 growth in disposable income as published in MB 2021/2-2021/4 and 2022/1-2022/1, together with the most recent estimate from Statistics Iceland.

Sources: Statistics Iceland, Central Bank of Iceland.

Chart 5
Forecasts of total hours worked in 2022¹

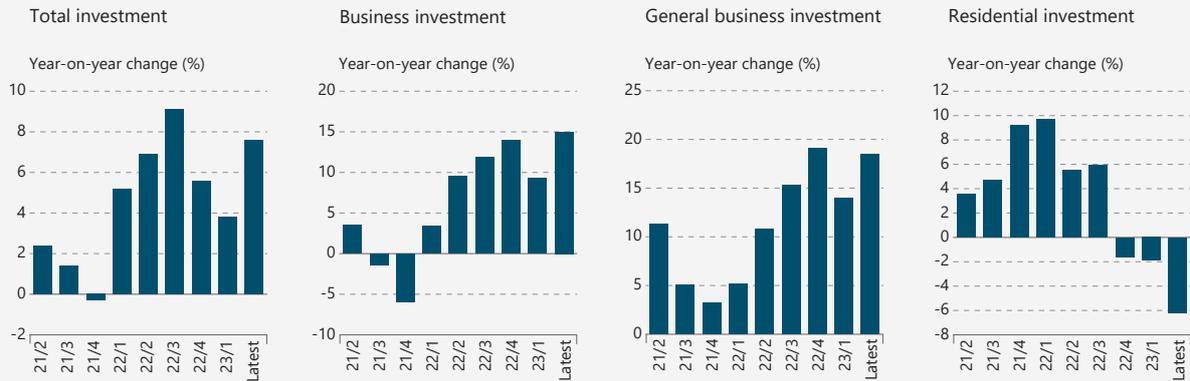


1. Forecasts of year-2022 growth in total hours worked as published in MB 2021/2-2021/4 and 2022/1-2022/4, together with the final results for the year.

Sources: Statistics Iceland, Central Bank of Iceland.

Chart 6

Investment forecasts for 2022¹



1. Forecasts of year-2022 growth in investment as published in MB 2021/2-2021/4 and 2022/1-2022/4, together with the most recent estimate from Statistics Iceland. The chart also shows the forecast from MB 2023/1, the Bank's last forecast before Statistics Iceland published its first estimate of year-2022 investment growth. Sources: Statistics Iceland, Central Bank of Iceland.

Methodology changes a major factor in errors in business investment forecasts

As has been noted previously, Statistics Iceland announced in August 2021 that it had changed its national accounts treatment of aircraft leasing agreements so that leased operational assets would in certain instances be recognised as the lessees' investments. Because of this change, investment in aircraft measured much stronger in 2021 than previously estimated, with the result that the forecast in the November 2021 *Monetary Bulletin* provided for a contraction in business investment in 2022, even though the outlook for that year had actually improved (Chart 6).

Delays in delivery of some of the aircraft falling under this treatment in the national accounts caused a large share of year-2021 investment to shift to 2022 in the Bank's February 2022 forecast. By that time, information had been received on the delivery in 2022 of even more aircraft that would be subject to the same national accounts handling. When Statistics Iceland published the 2022 national accounts results later that month, however, it was announced that the treatment of aircraft leasing agreements in external trade had been changed back, so that the contracts were once again recognised under services trade rather than investment, as had been done prior to the August 2021 national accounts publication. After the last change, Statistics Iceland estimated that investment in ships and aircraft had shrunk by 4.3% in 2022, a much smaller contraction than had been projected in the February 2023 *Monetary Bulletin*. These repeated methodology changes from Statistics Iceland therefore contributed strongly to the deviations in the Bank's business investment forecasts in 2022, but because comparable changes were made to goods imports, the effect on GDP growth was limited.

General business investment was repeatedly under-forecast ...

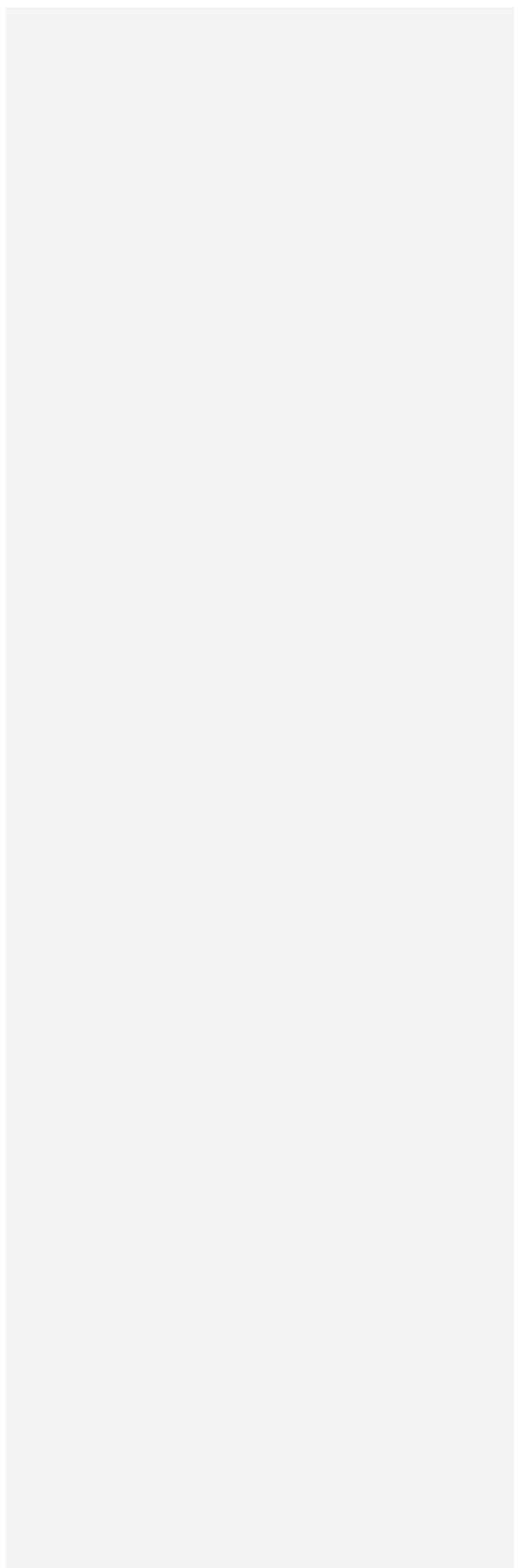
Business investment began to increase again in 2021 after contracting steeply in 2020 and was driven mainly by general business investment (i.e., excluding investment in energy-intensive industry and ships and aircraft). In each of the Bank's forecasts from 2021, investment was forecast to grow more strongly during that year; however, because of base effects, expectations of year-2022 growth fell accordingly. As 2022 advanced, though, it became clear that momentum in general business investment was still quite strong. The high-frequency indicators on which the Bank's short-term forecasts are based captured this trend, resulting in forecasts one quarter ahead that were quite accurate overall.

Nevertheless, the Central Bank's forecasts for the full year, which were based in part on its surveys of firms' investment plans, were initially below the actual outcome. According to the Bank's first survey of planned investment for 2022, carried out in September 2021, investment would grow by 13.4% in nominal terms in 2022, whereas a comparable survey taken in September 2022 showed over 40% growth. The survey results therefore indicated continually increasing investment over time, and firms appear to have revised their estimates and scaled up their plans as economic activity gained steam.

... while residential investment was overforecast

Initially, forecasts of residential investment in 2022 were well above the actual outcome for the year. In the Bank's August 2021 forecast, it looked as though construction firms were focused more on completing residential projects already underway than on starting on new buildings. This was due to strong demand and buoyant sales of residential property in the wake of the Bank's interest rate cuts, as increased disposable income had enabled households to remain active in the housing market and pushed house prices higher. The Housing and Construction Authority's tallies of dwellings in construction indicated few housing starts, prompting forecasts of modest growth in residential investment in 2022 (Chart 6).

Tallies carried out later that autumn showed an increase in the number of projects in earlier stages of construction, however, and forecasts of residential investment growth were in turn revised upwards to just over 9% year-on-year. The increase in housing starts was attributed to strong demand for housing, which had enabled contractors to sell fully finished homes and obtain financing for new projects. The results of tallies continued to affect positive forecasts over the course of 2022, and in addition, efforts



to resolve the supply chain disruptions due to the war in Ukraine were more successful than originally feared. As a result, the Bank's August 2022 forecast still provided for a 6% increase in residential investment.

When Statistics Iceland's preliminary figures arrived shortly before the publication of the Bank's November 2022 forecast, however, it was revealed that residential investment had contracted markedly in H1, contrary to the indicators on which the Bank's forecast had been based. The forecast was therefore revised downwards to a contraction of 1.6%. Since then, revised figures from Statistics Iceland have shown that the 2022 contraction was even larger, or around 6%. That said, Statistics Iceland itself has pointed out that there is some uncertainty about the quality of the data on which its estimates were based. As a consequence, residential investment could have been stronger than Statistics Iceland's figures indicate.

Public investment was underpredicted for a short period of time

Forecasting public investment in 2022 proved challenging. The November 2022 forecast, for instance, provided for a contraction of 11%, whereas the previous forecast had assumed a growth rate of 4.2%. The reasons for this were primarily technical in nature, however, and investment as a whole was not affected. Before the publication of *Monetary Bulletin 2022/4*, Statistics Iceland had revised its figures for 2021 so that some real estate previously included with Part B of the Reykjanesbaer municipality's accounts was transferred to Part A. This shift meant that assets were transferred from business investment-related assets to public sector assets and were therefore classified in the national accounts as public investment. This resulted in negative base effects for public investment and positive base effects for general business investment.

By the time *Monetary Bulletin 2023/1* was published in February 2023, another transfer had taken place with the accounting recognition of the State's autumn 2022 purchase of a building on Austurbakki from Landsbankinn. The State's purchase therefore entailed a shift from business investment to public investment, which reduced the contraction in public investment to 6%. According to Statistics Iceland's most recent estimate, public investment is projected to have increased by 3.3% year-on-year, which is close to the forecast prepared before the changes were made.

Total investment was more buoyant than initially expected

Strong base effects due to the revision of investment in 2021 and Statistics Iceland's methodology changes caused

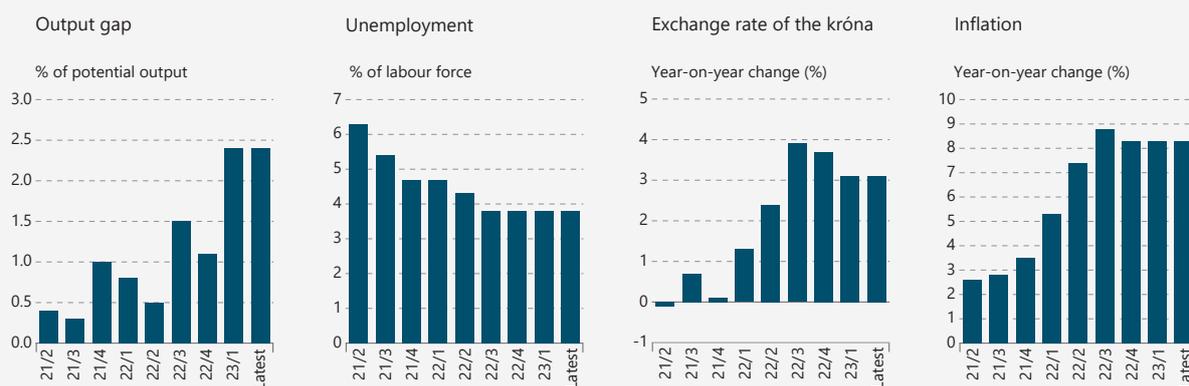
fluctuations in the Bank’s forecasts of total investment in 2022. This situation was compounded by increased uncertainty stemming from Russia’s invasion of Ukraine, owing to shortages of investment inputs from Eastern Europe and spiking prices. Ultimately, investment growth turned out considerably stronger in both years, at 10.8% in 2021 and 7.6% in 2022. This resilience gradually came to light as the forecast horizon advanced, prompting a major revision to the forecasts for both 2021 and 2022 (Chart 6).

Year-2022 inflation turned out well above forecasts

As has been discussed previously, the 2022 economic recovery proved stronger than originally forecast, the pandemic-related slack in the domestic economy closed more rapidly, and a far larger positive output gap opened up (Chart 7). Labour market scarring from the pandemic also proved more transitory than had been feared, and unemployment therefore fell faster than previously forecast.

In addition to the underestimation of domestic demand pressures was the unforeseen surge in global inflation, particularly in the wake of the invasion of Ukraine. Although domestic inflation was offset to a degree by a stronger króna, it ended up far outpacing previous forecasts, especially those from before the invasion. Further discussion of errors in the Bank’s inflation forecasts and their underlying causes can be found in Box 6.

Chart 7
Forecasts of drivers of year-2022 inflation¹



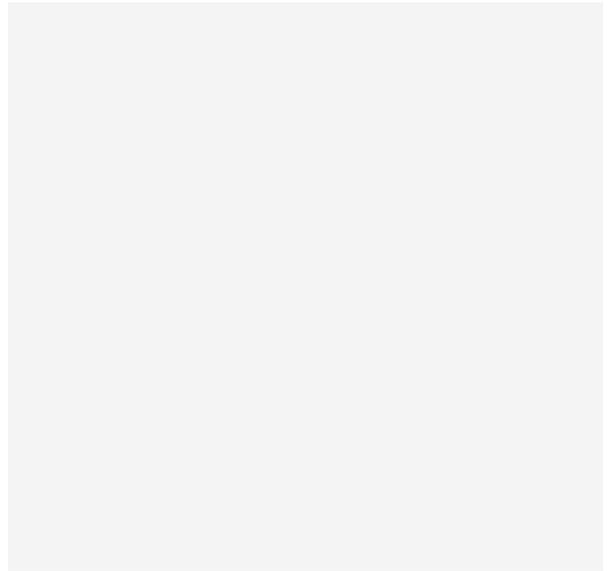
1. Forecasts of year-2022 developments in selected macroeconomic variables in 2022, as published in MB 2021/2 - 2023/1, together with the final outcome for the year. The chart shows unemployment according to the Statistics Iceland labour force survey.
Sources: Statistics Iceland, Central Bank of Iceland.

Summary

In recent years, forecasters in Iceland and abroad have faced unprecedented challenges in their attempts to project economic developments. The shock accompanying the onset of the pandemic in 2020 was followed by further global

economic shocks in the years thereafter, which affected forecasts for 2022. Although the impact of the pandemic tapered off steadily, it continued to affect forecasts, owing to new waves of contagion prompting repeated reinstatement of public health measures.

This complex situation was complicated still further by even more unforeseen shocks, including continued global supply chain disruptions and the onset of war in Ukraine. Added to this was uncertainty about how rapidly households would draw down the sizeable savings they had accumulated in the wake of the pandemic. When all was said and done, economic activity in 2022 proved to have been underestimated. Underlying inflationary pressures were underforecast as well, as is discussed more fully in Box 6.



Why has inflation repeatedly been underpredicted in the past two years?

Inflation has repeatedly been underpredicted in the past two years, both in the Central Bank's forecasts of domestic inflation and in other central banks' and international institutions' forecasts of inflation abroad. This Box attempts to analyse the reasons for these systematic underforecasts of inflation in Iceland.

Inflation has surged in the past two years ...

Inflation has risen swiftly and to very high levels all over the world in the past two years. In Q4/2022, the trading partner average was 8.6%, the highest single-quarter rate in over forty years (Chart 1). Since the beginning of 2022, trading partner inflation has averaged 6.8%, as opposed to only 1.5% in the preceding decade.

Inflation has also risen swiftly in Iceland, even though such inflation spurts are a more recent occurrence here than in trading partner countries. It peaked in Q1/2023 at around 10%, the highest level seen since 2009.

... and has repeatedly outpaced forecasts

Forecasters worldwide have been taken aback by how swiftly inflation has risen in the past two years and how persistent it has proven to be. This can be seen clearly in Charts 2 and 3, which show the inflation forecasts published in *Monetary Bulletin* in 2021-2022, together with the International Monetary Fund's (IMF) corresponding forecasts of average inflation among advanced economies over the same period. As is evident, inflation rose far more quickly than was initially forecast, both in Iceland and elsewhere. In particular, the inflation outlook changed radically in the wake of Russia's invasion of Ukraine in February 2022, as can be seen in revised outlook between *Monetary Bulletin* 2022/1 and 2022/2 and corresponding changes in IMF forecasts. The charts also show how it has repeatedly been necessary to revise inflation forecasts upwards in the wake of the invasion, and how the assumptions about a rapid subsequent decline in inflation have proven incorrect.

Extraordinary circumstances and multiple shocks in the global economy in recent years ...

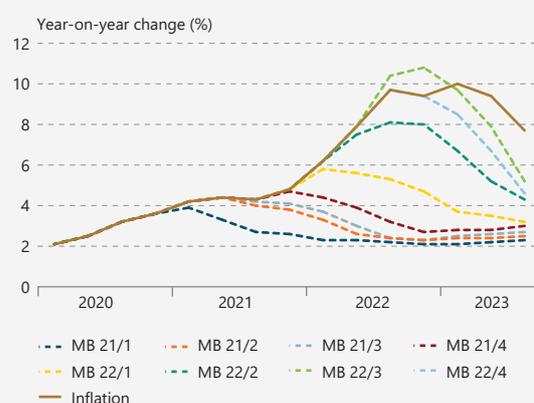
Charts 2 and 3 show that inflation had already begun to overtake forecasts before the invasion of Ukraine, not least because of the unprecedented economic conditions in the wake of the COVID-19 pandemic. The pandemic and the

Chart 1
Inflation in Iceland and main trading partners¹
Q1/1975 - Q3/2023



1. Inflation in Iceland averaged 38.2% in 1975-1990, with a low of 8.4% in Q4/1990 and a high of 93.8% in Q3/1983.
Sources: Refinitiv Datastream, Statistics Iceland, Central Bank of Iceland.

Chart 2
Monetary Bulletin inflation forecasts from 2021-2022
for the period until Q3/2023



Sources: Statistics Iceland, Central Bank of Iceland.

public health measures adopted in a bid to contain it threw global supply chains into disarray, giving rise to persistent shortages of important inputs, delays in shipping, and increasing difficulties in finding workers to fill jobs. Owing to repeated setbacks in the fight against the pandemic, as well as tighter public health measures, these supply chain bottlenecks proved persistent, and it took longer than expected to bring supply chains back to normal.

In addition, the authorities took a range of measures to protect jobs and household incomes at a time when public health measures greatly curtailed households' ability to spend that income – particularly their ability to purchase services. As a result, strong demand for durables accumulated, pushing product prices sharply higher when this surge in demand collided with impaired production capacity, which could not keep pace with households' increased desire to buy goods. This can be seen clearly in Chart 4, which compares a dynamic inflation forecast based on a simple forecasting model with a corresponding model that takes account of persistent global supply chain issues. As can be seen, it would have been easier to forecast the rise in inflation and how persistent it would be through much of 2021 if it had been known then how deep the post-COVID supply chain problems would prove to be.

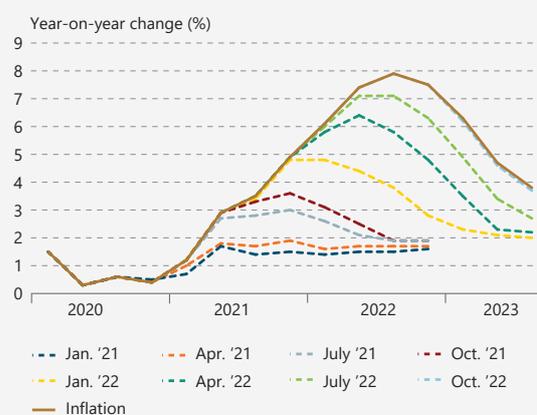
... have pushed global inflation much higher than previously anticipated

The extraordinary global economic conditions at the end of the pandemic made it unusually difficult to forecast inflation all over the world. Compounding this was the steep rise in commodity and food prices and even more severe supply chain problems and input price hikes following Russia's invasion of Ukraine. As a result, the increase in the price of trading partners' exports and Iceland's imports was significantly underestimated in the forecasts in *Monetary Bulletin*. At the beginning of 2021, for instance, trading partners' export prices were expected to rise by 1% per year in 2021-2022, but they actually jumped 11% in 2021 and more than 15% in 2022 (Chart 5a). In krónur terms, import prices rose 5% in 2021 and more than 16% in 2022 instead of the 2½-3% per year projected at the beginning of 2021 (Chart 5b).

Iceland's economic recovery also proved swifter and stronger than previously forecast ...

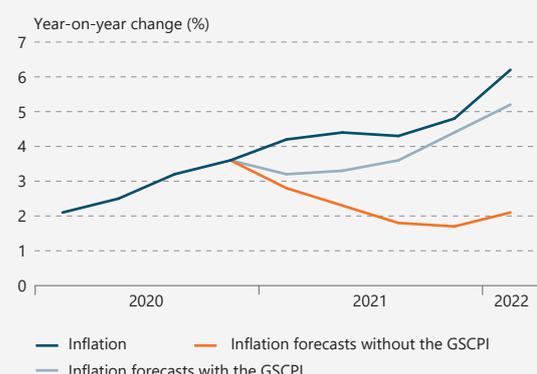
The repeated underestimations of inflation in the past two years are not due solely to unfavourable developments in imported inflation. Early on, it proved difficult to predict both the path the pandemic would take and the efficacy

Chart 3
IMF inflation forecasts for advanced economies until Q3/2023



Sources: International Monetary Fund, S&P Global.

Chart 4
Inflation forecast errors prior to the invasion of Ukraine¹
Q1/2020 - Q1/2022

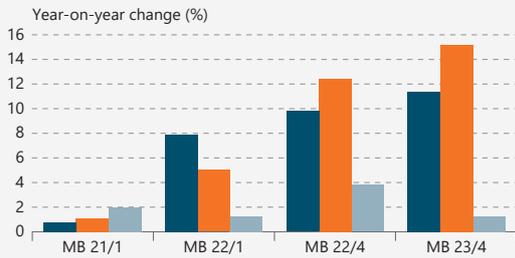


1. Dynamic forecast from Q1/2021 - Q2/2022 with a forward-looking Phillips-curve that includes the New York Federal Reserve's Global Supply Chain Pressure Index (GSCPI) $\pi_t = 0,75\pi_{t-1} + 0,25\pi_t^e + 0,20y_t + 0,06\pi_{t-1}^e + 0,36GSCPI_t$ where π_t is inflation, π_t^e is the 10-year breakeven inflation rate, y_t is the output gap and π_t^e is the real exchange rate of imports.
Source: Central Bank of Iceland.

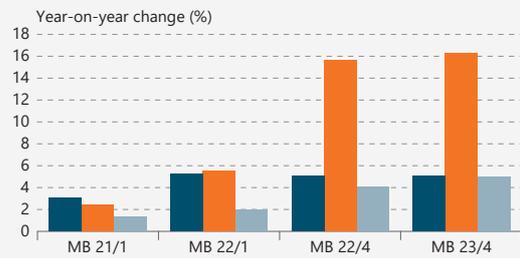
Chart 5

Monetary Bulletin macroeconomic forecasts for 2021-2023

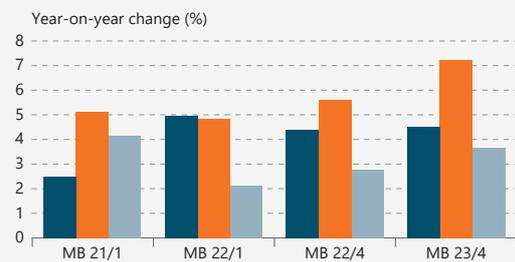
(a) Main trading partners' export prices



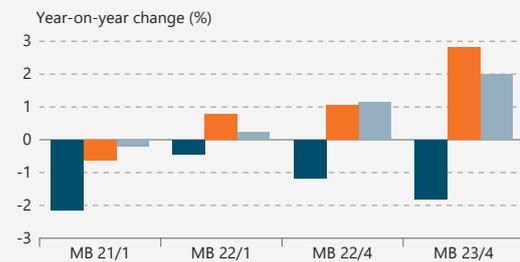
(b) Import prices in ISK



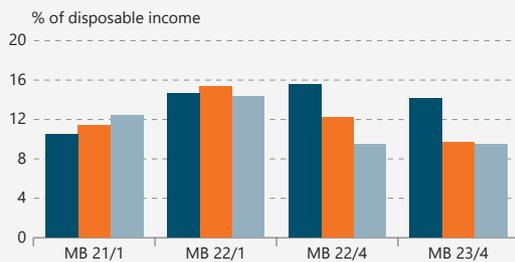
(c) GDP growth



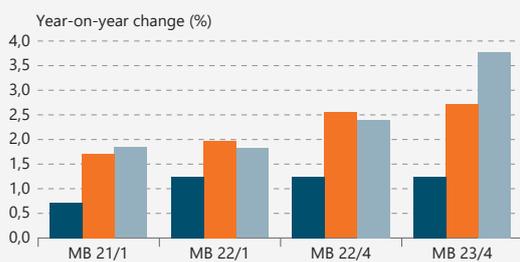
(d) Output gap



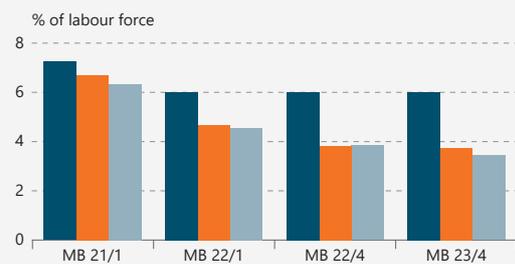
(e) Household savings



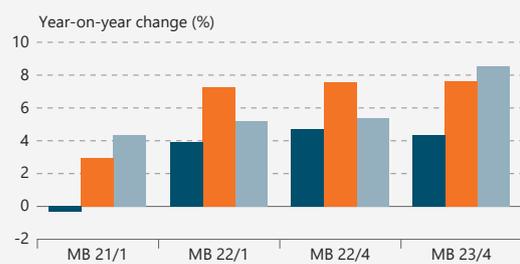
(f) Working-age population



(g) Unemployment



(h) Unit labour costs



■ Forecast 2021 ■ Forecast 2022 ■ Forecast 2023

Source: Central Bank of Iceland.

of the vaccines against it. Over time, it came to light that the economic recovery was far stronger than had been anticipated. This can be seen quite clearly in Chart 5c, which shows how the Bank's GDP growth forecasts changed over this period. Year-2021 GDP growth was nearly twice as strong as had been projected at the beginning of the year, and even though robust growth was forecast for 2022, the

actual outcome was even stronger (Chart 5d). The slack that developed in the economy in the wake of the pandemic therefore closed even faster than originally forecast: in early 2021, it was assumed that there would still be some slack in 2023, but now it has been established that a positive output gap had opened up as early as 2022 (see also Box 5).

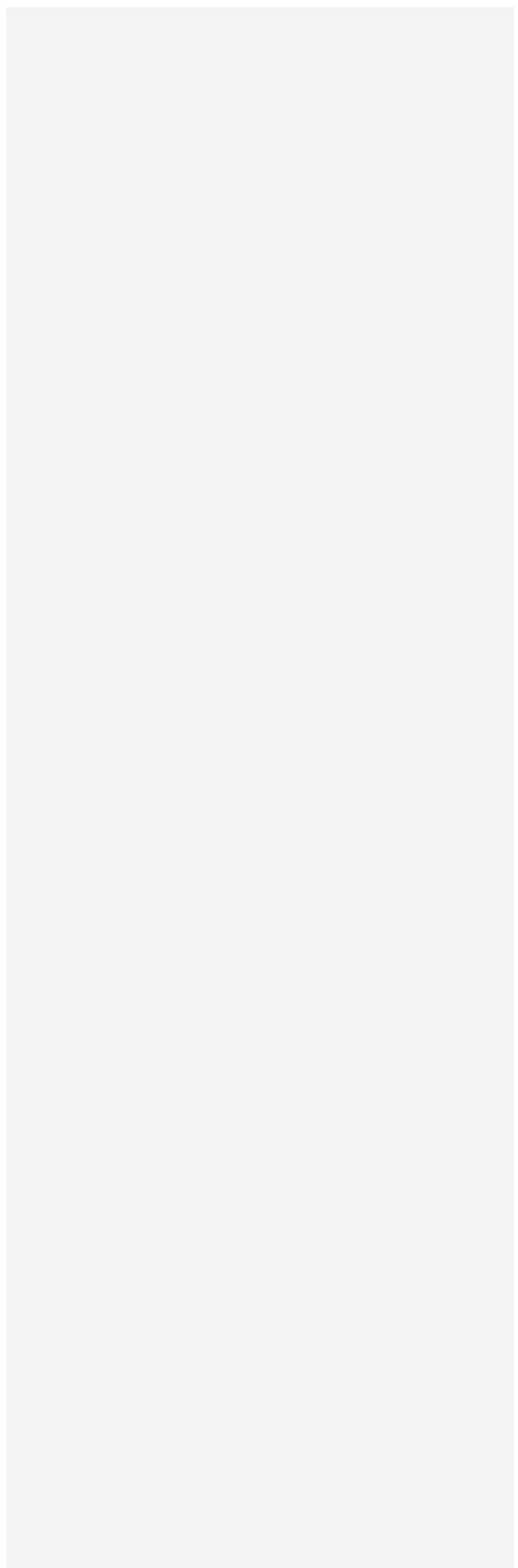
... partly because households were quicker to draw down the savings they had accumulated during the pandemic ...

Households built up considerable savings during the pandemic (see also Box 2). Broad-based public health measures plus uncertainty about the economic and employment outlook hindered households' access to various types of services they would otherwise have purchased. In addition, border closures made a significant dent in international travel. In view of this, consumption spending contracted sharply – declining even more than household incomes despite the worsening employment situation – as the Government took broad-based measures to protect jobs and household incomes at the same time. Given the highly unprecedented circumstances, there was considerable uncertainty about how households would allocate the savings they had accumulated (see, for instance, Box 1 in *Monetary Bulletin* 2020/4).

As Chart 5e indicates, the saving ratio in the wake of the pandemic was even higher than had initially been assumed, as Government support measures were broader and wage rises larger than previously forecast (see below). The saving ratio fell considerably more in 2022 than had previously been forecast, and it looks set to be below expectations in 2023 as well. This sharp decline in the saving ratio therefore plays a role in both the unexpected rapidity of the economic recovery and the underprediction of inflation (see, for example, the alternative scenario in Box 1 of *Monetary Bulletin* 2021/4).

... and because of strong population growth

Another reason GDP growth exceeded forecasts in recent years stems from strong population growth in 2021 and 2022, which is due mainly to immigration. This population boom has far exceeded the assumptions in the Bank's baseline forecasts, which were based mainly on population projections from Statistics Iceland. As Chart 5f illustrates, Iceland's working-age population grew by nearly 3% in 2022 and is expected to grow by almost 4% in 2023, whereas the population forecast from the beginning of 2021 assumed a growth rate of just under 2% per year over this period. This surge in population has put increased



pressure on domestic infrastructure and played a role in the substantial rise in house prices during the period, thereby fuelling higher inflation, even though it also increases the economy's potential output.

Labour market tightness was underforecast, as were pay rises

Unemployment surged during the pandemic, peaking at over 9% in spring 2021. Initially, inflation was expected to ease relatively slowly, as the outlook was for a gradual economic recovery. Furthermore, there were concerns that the pandemic would have a long-term impact on the matching of supply and demand in the labour market. But as is noted above, the economic recovery turned out stronger than projected. Moreover, labour market scarring proved far more short-lived than was initially feared, not least because of broad-based Government measures designed to protect jobs and maintain employment relationships between workers and employers. These measures ended up being both more extensive and more long-lasting than was initially assumed in the Bank's forecasts, contributing significantly to the overforecasting of unemployment in 2021 and 2022 (Chart 5g).

As a result, the labour market tightened more rapidly than the Bank had forecast, and wage pressures developed likewise. In addition, because of rapid job growth, labour productivity was weaker than previously forecast. Unit labour costs therefore rose more than had been forecast (Chart 5h): at the beginning of 2021, they were projected to remain unchanged, but they ultimately increased by a full 4% year-on-year. Unit labour costs also rose more than expected in 2022 and are projected to increase even further in 2023. This deviation is due primarily to the most recent wage agreements, which provided for far larger pay rises than had previously been assumed.

Inflation expectations have become less firmly anchored to the target ...

When inflation deviates widely from target over a protracted period of time, the inflation target can lose credibility and inflation expectations can become less firmly anchored to it. As is discussed in Box 2 of *Monetary Bulletin 2022/4*, there are indications that this has indeed happened. Both medium- and long-term inflation expectations have remained high, and temporary inflationary shocks appear to have a greater effect on long-term inflation expectations than they did when the anchor held more firmly.

Another sign of a weaker anchor can be seen when inflation becomes more broad-based instead of being

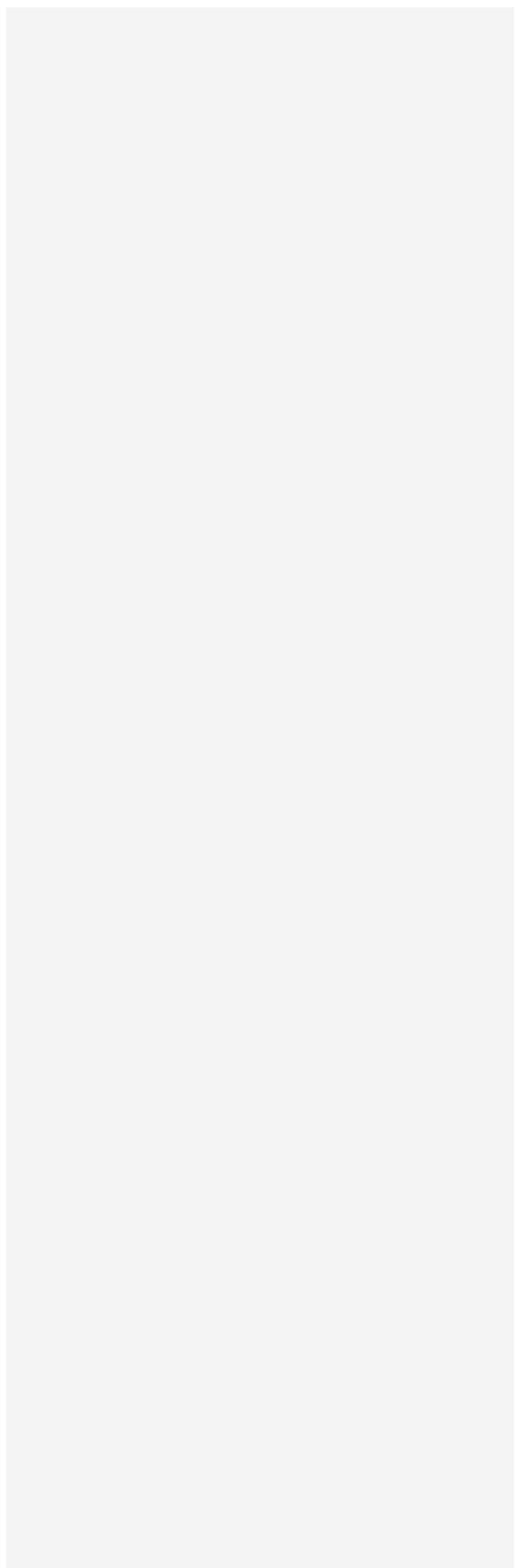
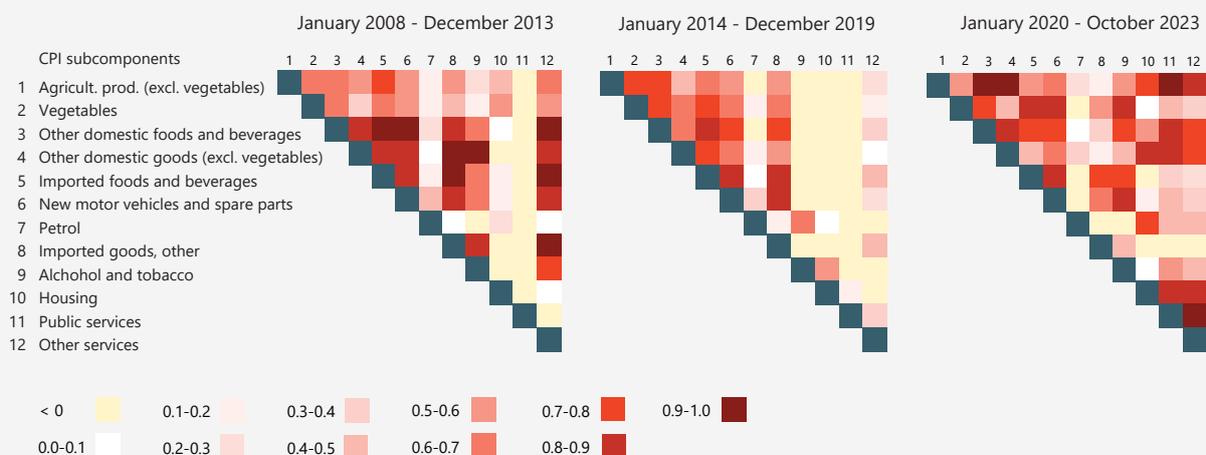


Chart 6

Correlation among year-on-year changes in CPI subcomponents¹



1. Correlation among year-on-year changes in twelve major CPI subcomponents over three different periods. Sources: Statistics Iceland, Central Bank of Iceland.

dominated by relative price fluctuations. This is shown in Chart 6, which illustrates the correlation among year-on-year changes in twelve major CPI subcomponents over three different periods: the six-year period following the 2008 financial crisis, the six-year period of relatively low and stable inflation from 2014-2019, and the period following the onset of the pandemic in 2020. As can be seen, there was a far weaker co-movement among CPI subcomponents when inflation was low and stable and inflation expectations more firmly anchored to the target. This has changed in recent years, and the correlation among price changes is now even stronger than during the post-crisis period, although average inflation is somewhat lower now than it was then.¹

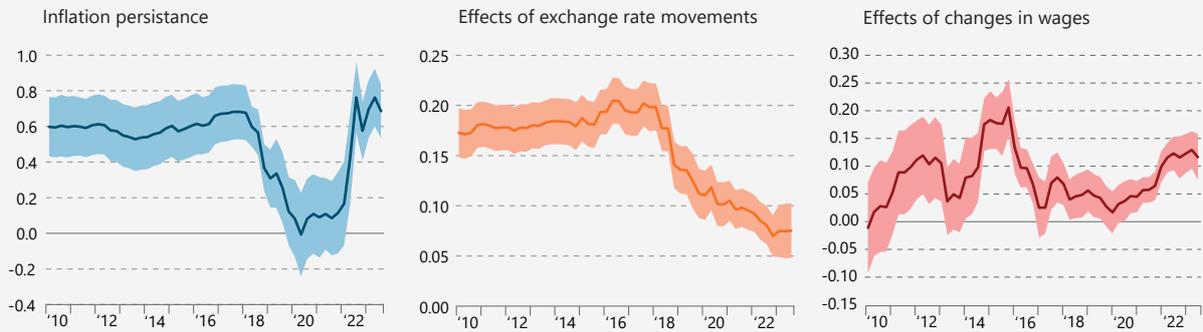
... which can have a broad impact on the characteristics of inflation

A weaker anchor of inflation expectations to the target can have a broad-based effect on the nature and characteristics of inflation, which can also explain recent systematic underforecasts. This is because the Bank's baseline forecast rests on the assumption that inflation will be firmly anchored to the target over time (the alternative scenario in Box 1 discusses the possible impact on the economy if the anchor weakens and the characteristics of inflation change).

1. The median correlation coefficient declines from 0.49 in 2008-2012 to 0.13 in 2014-2019 and then increases again to 0.54 during the final period. At the same time, average inflation declined from 7.2% during the post-crisis period to 2.1% in 2014-2019, before rising again to 5.9% since 2020.

Chart 7

Inflation persistence and the effect of cost price shocks on inflation¹
 Q1/2010 - Q3/2023



1. Estimation of inflation persistence and the impact of a change in the exchange rate of the króna and changes in wages on inflation. The estimation is based on a regression with a 10-year rolling window. More details on the regression can be found in the main text. Lines show the coefficient estimates and the shaded area shows the 68% confidence interval.
 Source: Central Bank of Iceland.

When the anchor is weak, for instance, transitory factors such as changes in relative prices can have a stronger and more persistent effect. An inflation shock that initially seems likely to be temporary could therefore end up far more stubborn.

One way to assess this is to examine so-called inflation persistence, which reflects the length of time it takes for a temporary inflation shock to subside. To determine whether inflation persistence has increased in recent years, the following time series model is estimated using quarterly data for the period 1985-2023 (statistically, the best results were achieved with two time lags):

$$(1) \quad \pi_t = \alpha + \beta\pi_{t-1} + \gamma\pi_{t-2} + \epsilon_t$$

where π_t is quarterly inflation (the annualised quarter-on-quarter change in the CPI) and ϵ_t is a residual. Inflation persistence is then defined as $\rho_\pi = \beta + \gamma$ (see, for instance, Fuhrer, 2011). The parameters of the model are allowed to change over time by estimating the model over a 10-year rolling window, and the estimation of inflation persistence for the period from 2010 onwards is shown in Chart 7.

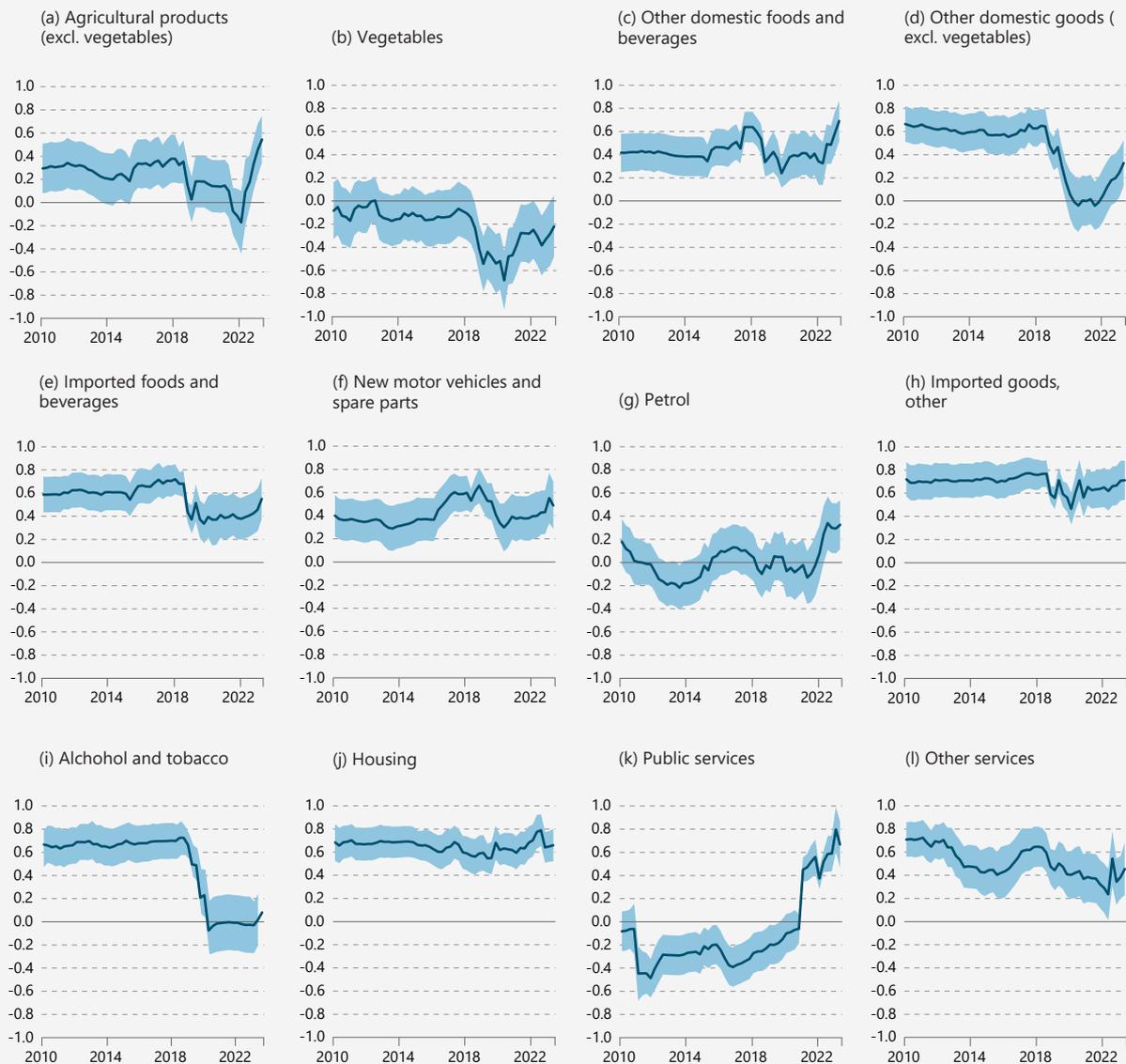
As can be seen, the estimation of ρ_π remained close to 0.6 through much of the last decade but then started to fall markedly from 2018 onwards. It then remained historically low until 2022, which accords well with better anchored inflation expectations, as is discussed in Box 2 of *Monetary Bulletin 2022/4*. Over the course of 2022, however, inflation persistence began to increase once again, alongside the rise in inflation expectations, and is now broadly at the level seen at the beginning of the 2010s. For comparison, it is worth noting that based on the most recent point estimation of just over 0.7, it takes two years

for 90% of a temporary inflation shock (an increase of ϵ_t for one quarter) to taper off, whereas based on the inflation persistence estimation of 0.14 in 2019-2021 it takes less than one year.

As Chart 8 indicates, the increased persistence of inflation seems to be due chiefly to domestic goods (Charts 8a-8d), but also to fuel prices (Chart 8g) and public services prices (Chart 8k), while for other subcomponents persistence appears more or less unchanged.

Furthermore, when inflation expectations are poorly anchored, unforeseen cost price shocks can have a stronger and longer-lasting impact on inflation than they would if

Chart 8
Inflation persistence in various CPI subcomponents¹



1. Inflation persistence estimated using a regression with a 10-year rolling window (see more detail in the text). Lines show the coefficient estimates and shaded area shows the 68% confidence interval.

Source: Central Bank of Iceland.

expectations were more firmly anchored. This applies to the effects of both exchange rate movements (see, for instance, Gagnon and Ihrig, 2004) and changes in wages (Bobeica *et al.*, 2021) on inflation.

To examine whether the relationship between exchange rate movements and inflation has changed in the same way as inflation persistence, the following model of inflation is estimated (see, for instance, Edwards, 2007):

$$(2) \quad \pi_t = \alpha + \beta\pi_{t-1} + \gamma\pi_{t-2} + \delta\Delta e_t + \phi\Delta e_{t-1} + \mu\pi^w + \theta g_{t-1} + \nu_t$$

where π_t is inflation (the annualised quarterly change in the CPI); Δe_t is the change in the exchange rate of the króna (the annualised quarterly change in the exchange rate index); π_t^w is global inflation (the annualised quarterly change in the CPI in major trading partner countries); g_t is the output gap; and ν_t is a residual. Short-term exchange rate pass-through is then expressed as $\rho_e = \delta + \phi$ and long-term pass-through is obtained with $\rho_e / (1 - \rho_\pi)$, where $\rho_\pi = \beta + \gamma$.

The model is estimated using quarterly data for the period 1993-2023, but as before, the parameters are allowed to change over time by estimating the model using a 10-year rolling window. Chart 7 shows the estimation of ρ_e . As in the case of inflation persistence, exchange rate pass-through appears to have diminished in 2018, which is consistent with the results of Edwards and Cabezas (2022). Unlike inflation persistence, however, appears not to have increased again in the past two years. On the other hand, increased inflation persistence amplifies short-term exchange rate pass-through and has caused long-term pass-through to be stronger than it was when inflation expectations were better anchored.

A comparable analysis can be made of the effects of wage changes on inflation, by estimating a model of inflation similar to that used by Borio *et al.* (2023):

$$(3) \quad \pi_t = \alpha + \beta\pi_{t-1} + \gamma\pi_{t-2} + \eta\Delta w_t + \lambda\Delta w_{t-1} + \mu\pi_t^m + \psi u_{t-1} + \eta_t$$

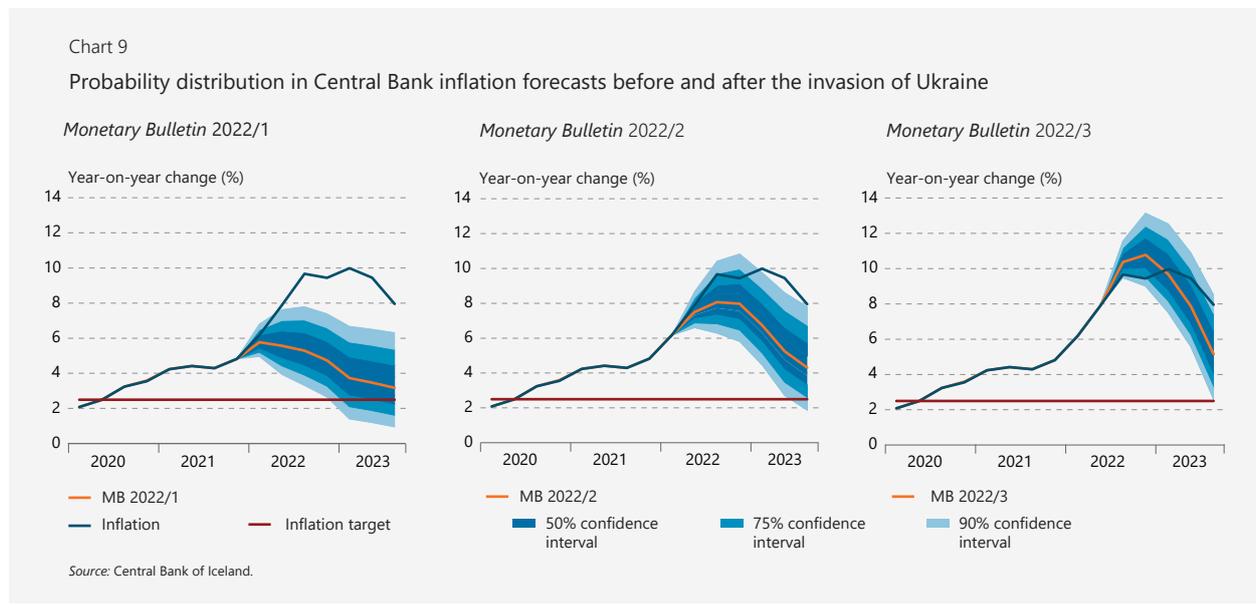
where π_t is inflation (the annualised quarterly change in the CPI); Δw_t is wage inflation (the annualised quarterly change in unit labour costs); π_t^m is the annualised quarterly change in the real exchange rate of imports; u_t is the unemployment gap (the deviation of unemployment from NAIRU); and η_t is a residual. The short-run impact of wage changes on inflation, or short-term wage pass-through, is then given as $\rho_w = \eta + \lambda$, while as before, long-term pass-through is given as $\rho_w / (1 - \rho_\pi)$, where $\rho_\pi = \beta + \gamma$.

The model is estimated using quarterly data for the period 1991-2023, but as before, the parameters are allowed to change over time by estimating the model using a 10-year rolling window. Chart 7 shows the estimation of ρ_w . As before, there are clear signs of a change in the relationship between wages and inflation later in the 2010s, as wage pass-through appears to weaken relative to the previous situation. Unlike exchange rate pass-through, short-term wage pass-through appears to be increasing again in the 2020s. When increased inflation persistence is added to the mix, it appears that both short- and long-term wage pass-through are stronger now than when inflation expectations were anchored more effectively.

The risk of higher and more persistent inflation is reflected to a degree in the risk profile of the inflation forecast

To the extent that the Bank’s baseline forecasts have not reflected these changes in the characteristics of inflation dynamics fully enough, it is likely that the forecasts have entailed an overly optimistic assessment of how lasting an impact temporary cost price shocks will have on inflation. This, in turn, could result in an underestimation of how high inflation would rise as a result and an overly optimistic assessment of how quickly it would fall thereafter.

Some of these effects have nevertheless been reflected in the risk profile of the forecast, as can be seen in the probability distribution and the discussion of different alternative scenarios. This can be seen clearly in Chart 9, which depicts the baseline forecast and its probability distribution during the run-up to and immediate aftermath of Russia’s invasion of Ukraine. As the chart shows, inflation deviated



sharply from the probability distribution of the early 2022 forecast, which was prepared shortly before the invasion. By August of that year, inflation was well within the probability distribution, however, even though the probability distribution implied that more rapid disinflation was likelier.

Summary

Inflation has repeatedly been underpredicted in the past two years, and the forecast errors have been both larger and more persistent than during the years prior to the pandemic.

It appears that both the post-pandemic slack in the economy and the duration of the pandemic's effects were overestimated. Furthermore, the post-pandemic economic recovery was stronger than anticipated, although it was partly because of the composition of the recovery that inflation rose faster than projected. In addition to this, global supply chain issues proved more severe and long-lasting than previously assumed. Russia's invasion of Ukraine also had a strong impact on the inflation outlook, with the result that imported inflation turned out higher than was forecast before the invasion took place. Growth in domestic economic activity and the associated underlying inflationary pressures also turned out to have been underforecast, partly because the adverse effects of the invasion on terms of trade turned out weaker than originally feared and because export sectors – tourism in particular – recovered more rapidly than forecast.

High and rapidly rising inflation have also weakened the anchor of inflation expectations to the Central Bank's target. As a consequence, there are signs that the characteristics of the inflation process have changed recently, that inflation is now more persistent, and that cost shocks – such as higher foreign commodity prices and domestic wages – have a stronger and more protracted impact on inflation than they did in the latter half of the 2010s, when inflation expectations were more firmly anchored. It is likely that these changes in the characteristics of inflation have contributed to its being higher and more persistent than has been assumed in the Bank's baseline forecasts, although they have been better reflected in the risk profile of the forecasts.

Finally, it should be noted that the Bank's forecasts are conditioned on developments in monetary and fiscal policy over the forecast horizon. In 2020-2022, the Bank's forecasts typically assumed a higher policy interest rate at the beginning of the forecast period than was subsequently decided. Moreover, the fiscal stance has been more accommodative than the Bank had projected, as the forecasts

assumed that fiscal support measures would be unwound more rapidly than they ultimately were.

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Appendix

Forecast tables

Table 1 GDP and its main components¹

	2022	2023	2024	2025	2026
Private consumption	8.5 (8.6)	1.8 (1.6)	2.0 (2.2)	2.5 (2.8)	2.2
Public consumption	2.2 (1.6)	1.6 (1.9)	1.8 (2.0)	1.7 (1.6)	2.0
Gross capital formation	7.6 (6.9)	-0.7 (1.6)	5.2 (6.5)	4.0 (3.4)	5.8
Business investment	15.0 (15.2)	-0.8 (1.6)	5.3 (7.1)	3.5 (2.9)	6.8
Residential investment	-6.2 (-6.3)	2.2 (4.5)	11.4 (11.4)	7.4 (7.2)	5.9
Public investment	3.3 (-0.9)	-4.2 (-1.7)	-3.1 (-2.1)	1.3 (-0.3)	2.3
National expenditure	6.6 (6.4)	1.2 (1.9)	2.3 (2.5)	2.6 (2.6)	3.0
Exports of goods and services	22.3 (20.6)	5.1 (4.7)	3.7 (4.0)	3.3 (3.1)	2.9
Imports of goods and services	19.9 (19.7)	-0.3 (1.2)	3.1 (3.8)	2.7 (2.9)	4.0
Gross domestic product (GDP)	7.2 (6.4)	3.7 (3.5)	2.6 (2.6)	2.9 (2.7)	2.5
GDP at current prices (ISK trillions)	3.80 (3.77)	4.19 (4.16)	4.52 (4.48)	4.83 (4.76)	5.12
Public sector demand ²	2.4 (1.3)	0.8 (1.4)	1.1 (1.5)	1.6 (1.4)	2.0
Total investment (% of GDP)	22.3 (22.4)	21.8 (22.8)	22.1 (23.5)	22.2 (23.7)	22.9

1. Year-on-year change (%) unless otherwise specified (figures in parentheses are from the forecast in MB 2023/3).

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 exports¹

	2022	2023	2024	2025	2026
Marine production for export	1.0 (0.6)	-8.3 (-5.3)	3.0 (3.1)	1.3 (1.3)	2.2
Aluminium production for export ²	2.3 (2.3)	1.7 (1.5)	0.6 (0.6)	1.1 (1.1)	1.0
Goods exports, total	1.5 (1.4)	-1.3 (0.0)	2.6 (2.5)	2.4 (2.4)	2.4
Services exports, total	58.3 (53.8)	13.6 (11.0)	4.9 (5.6)	4.2 (3.7)	3.3
Contribution of net trade to GDP growth (percentage points)	0.5 (-0.1)	2.5 (1.6)	0.3 (0.1)	0.3 (0.1)	-0.5
Terms of trade for goods and services	2.4 (3.0)	-4.4 (-4.1)	0.0 (0.1)	0.0 (-0.4)	0.3
Trade balance (% of GDP)	-0.4 (-0.7)	0.0 (-1.1)	0.2 (-0.9)	0.5 (-1.0)	0.2
Current account balance (% of GDP)	-2.0 (-1.6)	0.6 (-0.9)	0.7 (-1.1)	0.7 (-1.3)	0.0
Inflation in main trading partners ³	7.6 (7.6)	5.1 (5.0)	2.9 (2.7)	2.1 (2.1)	1.9
GDP growth in main trading partners ³	3.3 (3.2)	1.1 (1.1)	1.1 (1.1)	1.8 (2.0)	1.9

1. Year-on-year change (%) unless otherwise specified (figures in parentheses are from the forecast in MB 2023/3).

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 utilisation¹

	2022	2023	2024	2025	2026
Total hours worked ²	6.7 (6.7)	4.4 (4.3)	0.5 (1.0)	1.7 (1.9)	1.9
Unemployment (% of labour force) ²	3.8 (3.8)	3.4 (3.3)	4.8 (4.4)	4.4 (4.4)	4.0
GDP per hour worked ³	0.5 (-0.2)	-0.7 (-0.8)	2.0 (1.6)	1.2 (0.8)	0.6
Unit labour costs ⁴	7.6 (8.2)	8.6 (9.6)	4.9 (5.3)	4.1 (4.5)	3.4
Real disposable income ⁵	3.1 (2.5)	1.4 (0.8)	1.7 (2.8)	2.9 (3.9)	2.7
Output gap (% of potential output)	2.8 (2.4)	2.0 (1.5)	0.8 (0.5)	0.4 (-0.1)	0.3

1. Year-on-year change (%) unless otherwise specified (figures in parentheses are from the forecast in MB 2023/3).

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 inflation¹

	2022	2023	2024	2025	2026
Trade-weighted exchange rate index ²	3.1 (3.1)	-2.2 (-2.1)	-0.4 (0.4)	-0.7 (-0.7)	-1.0
Real exchange rate (relative consumer prices)	3.9 (3.9)	1.3 (1.3)	2.2 (2.3)	0.8 (0.4)	0.0
Inflation (consumer price index, CPI)	8.3 (8.3)	8.7 (8.6)	5.7 (4.6)	3.6 (3.3)	2.9

1. Year-on-year change (%) unless otherwise specified (figures in parentheses are from the forecast in MB 2023/3).

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 (%)¹

Quarter	Inflation (year-on-year change)	Inflation (annualised quarter-on-quarter change)
Measured value		
2022:4	9.4 (9.4)	5.0 (5.0)
2023:1	10.0 (10.0)	10.5 (10.5)
2023:2	9.4 (9.4)	11.4 (11.4)
2023:3	7.8 (7.7)	4.4 (4.2)
Forecasted value		
2023:4	7.9 (7.5)	5.5 (4.1)
2024:1	6.8 (5.8)	6.3 (3.7)
2024:2	5.7 (4.6)	6.8 (6.3)
2024:3	5.3 (4.1)	2.5 (2.3)
2024:4	4.9 (3.9)	4.1 (3.5)
2025:1	4.0 (3.5)	2.7 (2.1)
2025:2	3.6 (3.3)	5.1 (5.2)
2025:3	3.5 (3.2)	1.9 (2.1)
2025:4	3.3 (3.1)	3.6 (3.2)
2026:1	3.2 (3.0)	2.2 (1.7)
2026:2	3.0 (2.8)	4.4 (4.3)
2026:3	2.8 (2.6)	1.2 (1.3)
2026:4	2.7	3.0

1. Figures in parentheses are from the forecast in MB 2023/3.

Sources: Statistics Iceland, Central Bank of Iceland.

