

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. Two major uncertainties in the current baseline forecast centre on the upcoming wage negotiations and the global economic outlook.

Given how tight the labour market is, the possibility cannot be excluded that negotiated wage rises will be larger than is assumed in the baseline forecast. The potential implications of this for the domestic economy are described in an alternative scenario.

Global GDP growth forecasts have repeatedly been revised downwards since Russia invaded Ukraine in February. The outlook has deteriorated still further, yet even so, the Bank's baseline forecast could turn out overly optimistic if European countries must resort to widespread energy rationing. The potential impact of this on the domestic economy are described in another alternative scenario.

Finally, this Box discusses a number of other uncertainties that could affect the GDP growth and inflation outlook in Iceland over the coming three years.

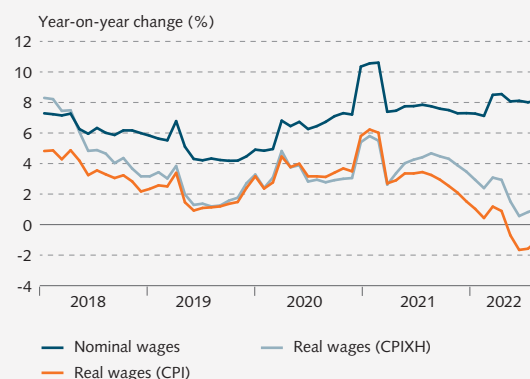
Alternative scenario: Wage agreements provide for larger pay rises than is currently assumed

Wages and incomes have risen steeply in recent years

In the past twelve months, nominal wages have risen by 8.1%, according to Statistics Iceland's general wage index, and the year-on-year increase has ranged between 7% and 8½% since early 2021 (Chart 1). Real wages have also risen steeply over this period, albeit at a considerably slower pace in recent months, owing to the surge in inflation. Since this summer, real wages have fallen year-on-year in terms of the CPI, but in terms of the CPI excluding housing they have kept rising between years.

As Chart 2 indicates, real wages have soared in recent years: they increased by an average of nearly 6% per year between 2015 and 2018, and just over 2% in the past four years. As the chart illustrates, real disposable income (which accounts for labour and all after-tax income) has surged as well, although Statistics Iceland's most recent measurement indicates that real per capita disposable income began to contract year-on-year in Q2/2022. But this contraction must

Chart 1
Nominal and real wages¹
January 2018 - September 2022



1. Year-on-year increase in Statistics Iceland general wage index and real wages in terms of the CPI including and excluding housing (CPIXH).
Sources: Statistics Iceland, Central Bank of Iceland.

be considered in the context of the earlier sharp increase: on average, real per capita disposable income rose by 4.2% per year in 2015-2022 (real wages increased 4.4% over the same period).

This surge far outpaces labour productivity growth, as well as exceeding the wage growth seen in other OECD countries (for further discussion, see Box 1 in *Monetary Bulletin* 2022/2). In part, wage growth in Iceland is due to the strength of the domestic economy throughout much of the period in question. This is reflected in a persistent output gap and an unemployment rate that remained below its natural rate until the pandemic-related economic contraction hit.

Furthermore, improved terms of trade can cause wages to rise temporarily in excess of domestic productivity growth. Iceland's terms of trade improved by 17% from early 2014 through mid-2017, and then by another 10% from mid-2020 through mid-2022. In part, the wage increases of recent years reflect this improvement.

In addition, the labour movement's strong bargaining position can enable it to press for wage rises regardless of the business cycle position. For example, the prevalence of union membership in Iceland is noteworthy, as is the fact that membership has not declined in recent decades, as it has in the Nordic region and in other OECD countries (Chart 3). Centralisation of labour negotiations has also declined significantly in these countries, and government involvement in the process has fallen off steeply. Because of all of these factors, workers' bargaining position is probably stronger in Iceland than is commonly the case in the rest of the OECD.¹

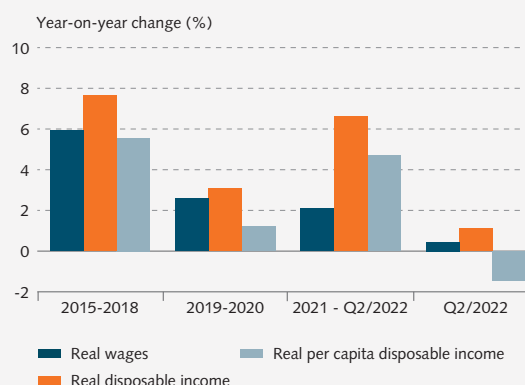
Inflation could prove more persistent and the economic recovery weaker if wages rise in excess of the baseline forecast

The current wage agreements have delivered significant benefits for workers. Real wages have risen by 7.2% since the contracts were signed in spring 2019 (i.e., from March 2019 through September 2022), and real per capita disposable income is up 13% (from Q1/2019 through Q2/2022).

However, as is noted above, real wages have sagged in the recent term and are likely to have risen less than was anticipated when the contracts were signed, as inflation has far outpaced forecasts. Recent statements made by union leaders appear, among other things, to centre on recouping the shortfall. Against the backdrop of a tight labour market and less firmly anchored inflation expectations (see Box 2),

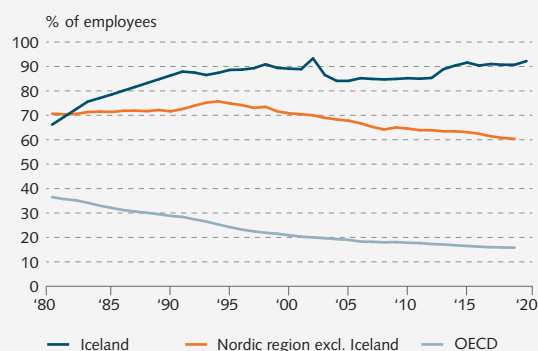
¹ See, for example, Bank for International Settlements (2022), "Inflation: A look under the hood." Bank of International Settlements, *BIS Annual Economic Report*, June 2022.

Chart 2
Real wages and real disposable income¹



1. The chart shows the average of year-on-year changes in real wages and real disposable income according to Statistics Iceland's Sector accounts (in terms of the CPI) for various periods of time. Statistics Iceland's most recent measurement of disposable income is for Q2/2022.
Source: Statistics Iceland.

Chart 3
Labour union membership 1980-2020¹



1. A linear interpolation is used for Iceland for several years in the 1980s for which data were unavailable. The Nordic countries excluding Iceland are represented by a simple average of Denmark, Finland, Norway, and Sweden.
Sources: OECD, Central Bank of Iceland.

wages could therefore rise more over the forecast horizon than is reflected in the current baseline forecast.

The Bank's DYNIMO model is used to explore the possible impact of this. Nominal wages are assumed to rise by just over 5 percentage points more in 2023, in an attempt to recover the real wage level seen at the beginning of 2022, before inflation began to erode purchasing power (Chart 4a). This entails an increase of 11% between annual averages in 2023 instead of the 6% provided for in the baseline, and a total of nearly 24% over the next three years instead of the baseline forecast of 18%. Businesses' marginal costs therefore rise considerably more than in the baseline, prompting firms both to absorb the cost increases themselves through lower profit margins and to streamline to compensate, including by cutting employees' working hours or laying off staff. But even this does not suffice according to the model, and firms therefore respond by raising product prices as well.

As can be seen in Chart 4b, total hours worked increase by 2½ percentage points less in 2023 than is depicted in the baseline scenario, and by the end of the forecast horizon they are 3% lower than in the baseline. Larger nominal pay rises are offset by a poorer employment outlook, compounded by the negative impact of higher interest rates and inflation (see

Chart 4

Alternative scenario: Wage agreements provide for larger pay rises than in the baseline forecast

Chart 4a Nominal wages

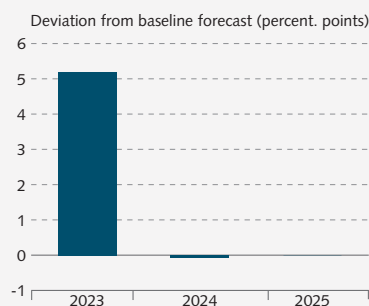


Chart 4b Total hours worked

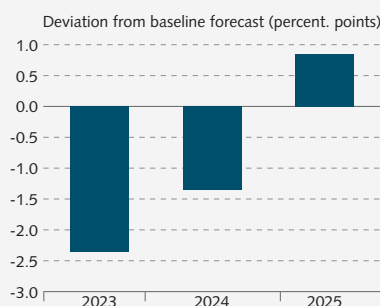


Chart 4c Private consumption

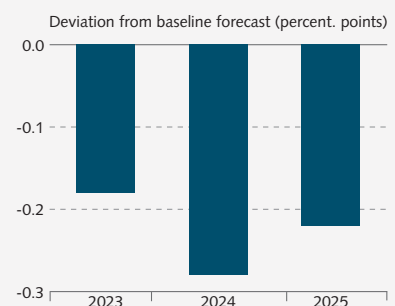


Chart 4d GDP growth

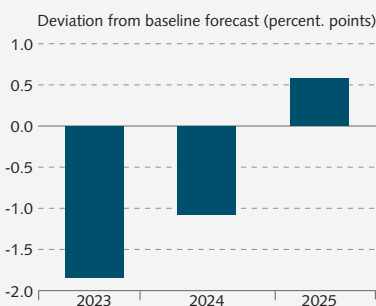


Chart 4e Inflation

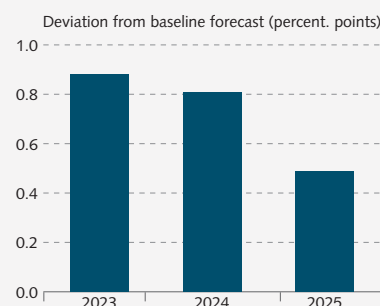
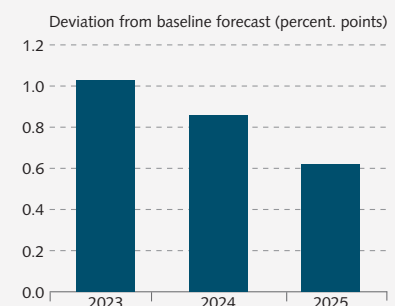


Chart 4f Key interest rate



Source: Central Bank of Iceland.

below). Private consumption therefore grows more slowly over the entire forecast horizon and is $\frac{3}{4}\%$ below the baseline by the end of the period (Chart 4c). Furthermore, higher interest rates slow down investment and push the exchange rate of the króna upwards, dampening export growth and shifting a share of domestic demand towards imports. The GDP growth outlook therefore deteriorates relative to the baseline forecast: GDP growth is $1\frac{3}{4}$ percentage points less in 2023 than in the baseline, which would mean that a large portion of forecasted output growth would disappear (Chart 4d). If that case, GDP growth in Iceland would be its weakest since 2002, excluding the contractions brought on by the financial crisis and the pandemic. The GDP growth outlook for 2024 would deteriorate as well, and GDP would be $2\frac{1}{3}\%$ below the baseline level at the end of the forecast horizon.

Despite the poorer outlook for output growth, inflation is higher over the forecast horizon than is provided for in the baseline forecast. It is nearly 1 percentage point higher in 2023 and $\frac{3}{4}$ of a percentage point higher in both 2024 and 2025 (Chart 4e). Central Bank interest rates are also higher, in order to ensure that inflation returns to target over the medium term. According to the monetary policy rule in the model, the Bank's key rate will be an average of 1 percentage point higher in 2023 and 2024 and $\frac{1}{2}$ a percentage point higher in 2025 (Chart 4f).

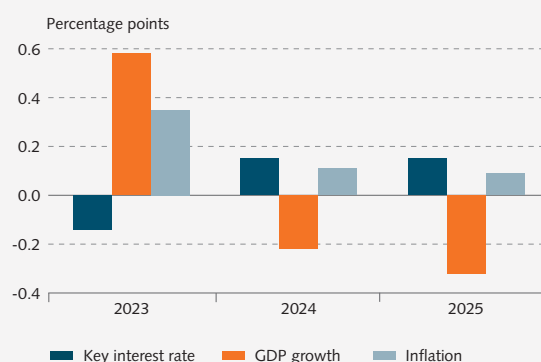
It could be envisaged that monetary policy might respond more slowly to increased inflationary pressures than is assumed in the monetary policy rule in the model. In that case, as Chart 5 shows, the adverse effects of the pay rise on GDP growth would be less pronounced early on. But inflation would be higher and more persistent, calling for higher interest rates over a longer period of time, all else being equal, and this would cut into GDP growth during the latter half of the forecast horizon.

Alternative scenario: The European energy crisis deepens further

The global economic outlook has deteriorated markedly in the wake of the war in Ukraine ...

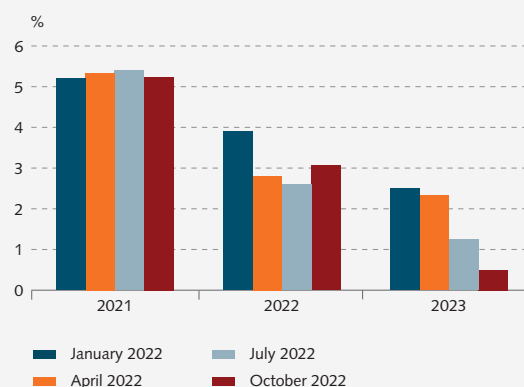
After contracting sharply in the wake of the pandemic, global GDP grew by 6% year-on-year in 2021, and in early 2022 the outlook was for solid growth both in 2022 and in the years thereafter. But the situation reversed after Russia invaded Ukraine in late February. The International Monetary Fund (IMF), for instance, projects that global GDP growth will measure 3.2% this year, well below its January forecast of 4.5%. For 2023, the Fund has revised its GDP growth forecast downwards from 3.8% to only 2.7% (see Chapter I). The outlook has deteriorated especially for Europe, where the impact of the

Chart 5
Impact of delayed monetary policy response to increased inflation¹



1. The chart shows the impact of a slower monetary policy response to the additional pay rises depicted in the alternative scenario in Chart 4.
Source: Central Bank of Iceland.

Chart 6
IMF forecast of euro area GDP growth



Source: International Monetary Fund, *World Economic Outlook*, various publications.

energy crisis is most severe. In January, the IMF forecast that eurozone GDP growth would measure 4% this year and 2.5% next year, but now the Fund projects growth rates of 3% and a mere 0.5%, respectively, for 2022 and 2023 (Chart 6).

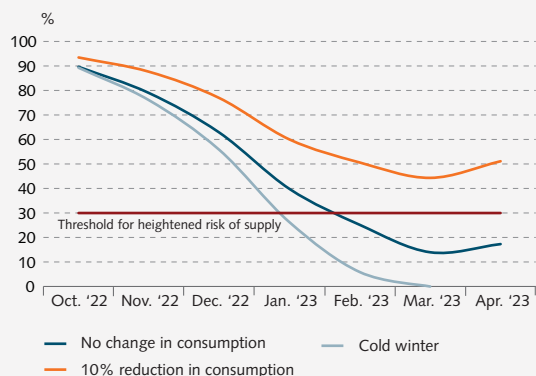
... and could worsen still further if Europe must resort to widespread energy rationing ...

Natural gas imports from Russia to Europe are now only one-fifth of pre-invasion levels and are expected to keep falling as the forecast horizon advances. Nevertheless, it is not assumed that Europeans will be forced to instate widespread energy rationing this winter, as imports from other countries have increased and inventory levels are favourable. Furthermore, use of other energy sources has increased, and European consumers are expected to seek ways to cut back on energy consumption.

Concerns about the months to come and the possibility of energy shortages have mounted, however. It is not impossible that natural gas imports from Russia will cease entirely before the end of this year and that substituting other energy sources will prove more difficult than is assumed in the baseline. Moreover, a cold winter could prompt customers to use more energy than in a normal season. According to an analysis from the Organisation for Economic Co-operation and Development (OECD), if this does happen, inventories could be drawn down very quickly to a point requiring widespread natural gas rationing as early as the turn of the year (Chart 7). This could lead to severe supply chain bottlenecks, particularly in countries with few other energy resources, including Germany and a number of countries in Central Europe. It could prove necessary to halt production in energy-intensive sectors such as heavy industry and pharmaceuticals. The price of natural gas and electricity would then rise even higher, deepening the energy crisis still further. The economic outlook would be more uncertain, and pressures on production factors and prices would be greater than they would otherwise. By the same token, higher inflation would call for further interest rate hikes, which would deepen the economic crisis even more.

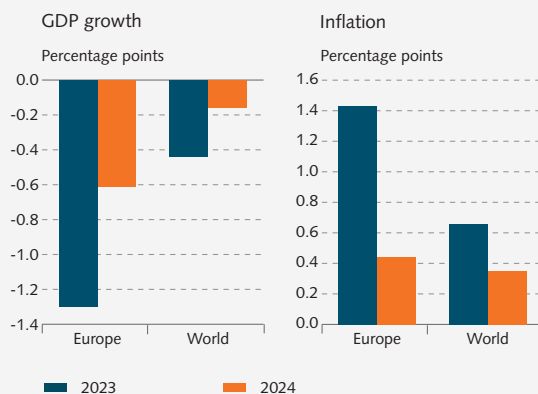
In order to assess the economic impact of such a scenario, the OECD assumes that natural gas prices rise by an additional 50% starting in 2023, causing fertiliser prices to rise by another 25%. This would spread to the global oil market, and pushing crude oil prices upwards by an additional 10%. The scenario assumes that the effects taper off over the course of 2023. Energy rationing in key economic sectors is estimated to cause potential output in European countries to contract by 3% in 2023. Furthermore, increased uncertainty about the economic outlook prompts European households

Chart 7
Natural gas inventories in EU and the UK¹



1. The scenarios assume that inventories are at 90% of storage capacity at the end of September. The assumptions are as follows: no more natural gas is imported from Russia, imports from other countries total 30 billion cm³ per month, and domestic production is in line with the 2019-2021 average. "No change" refers to a scenario with natural gas consumption equal to the 2017-2021 average. "10% reduction" refers to a scenario featuring 10% less consumption. "Cold winter" refers to a scenario with average natural gas consumption equal to the 2017-2021 peak.
Source: OECD, *Economic Outlook*, September 2022.

Chart 8
Impact of natural gas shortage in Europe on global GDP growth and inflation¹



1. Alternative scenario providing for a further increase in global commodity prices and declining production capacity due to energy rationing in Europe. In addition, it is assumed that the energy crisis causes even greater global economic uncertainty and more rapidly rising interest rates due to the worsening inflation outlook. The chart illustrates the impact on OECD countries in Europe and on the global economy as a whole.
Sources: OECD, *Economic Outlook*, September 2022.

to step up their saving, and risk premia on financial assets rise. Finally, interest rates are assumed to rise in response to stronger inflationary pressures.

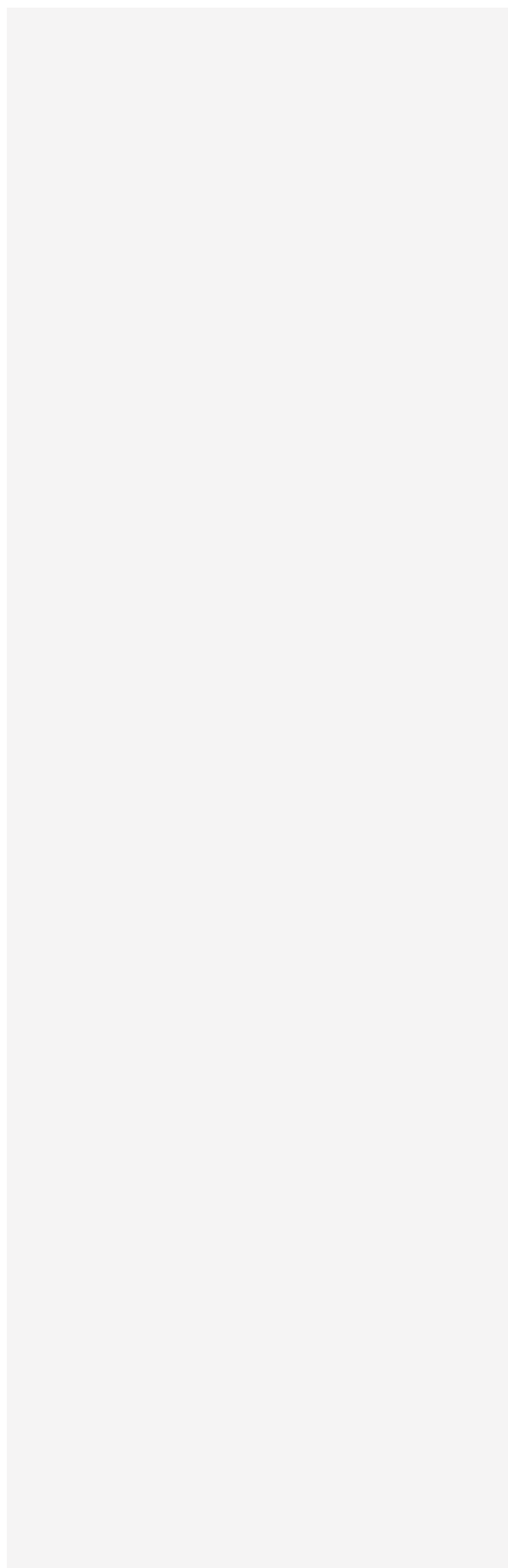
Chart 8 shows the OECD's estimate of the impact these shocks would have on the global GDP growth and inflation outlook. The deepening of the energy crisis could lower global GDP by $\frac{1}{2}$ a percentage point next year, and push inflation upwards by $\frac{3}{4}$ of a percentage point. These effects would be somewhat stronger in Europe. GDP growth could turn out weaker by $1\frac{1}{3}$ percentage points next year and $\frac{1}{2}$ a percentage point in 2024. The bleaker output growth outlook would then deteriorate still further, probably causing a contraction in many European economies. At the same time, the inflation outlook in Europe would worsen even more: inflation could turn out $1\frac{1}{2}$ percentage points higher in 2023 and $\frac{1}{2}$ a percentage point higher in 2024.

... with repercussions for the domestic economy

The Bank's QMM model is used to analyse the potential impact of this scenario on the domestic economic outlook. Trading partner GDP growth is projected to be an average of 1 percentage point below the baseline forecast in 2023 and $\frac{1}{2}$ a percentage point below it in 2024. Imports from these countries are estimated to decline accordingly. By the same token, trading partner inflation is estimated to be higher by $1\frac{1}{4}$ percentage points in 2023 and $\frac{1}{2}$ a percentage point in 2024. Moreover, further disruptions in global supply chains are projected, with commodity prices $11\frac{1}{2}\%$ above the baseline forecast in 2023. The effects taper off gradually, and commodity prices realign with the baseline by the end of the forecast horizon. Trading partners' export prices therefore rise by $1\frac{1}{2}$ percentage points more than in the baseline in 2023, and nearly 1 percentage point more in 2024.

In addition to this, aluminium prices are estimated to rise broadly in line with other commodity prices, yet marine product prices fall in accordance with the poorer economic outlook in trading partner countries. Owing to a larger contraction in real wages and increased precautionary saving among European households, fewer tourists visit Iceland, and demand for aluminium and marine products weakens. Risk premia on domestic financial assets is also pushed higher, as is the case abroad.

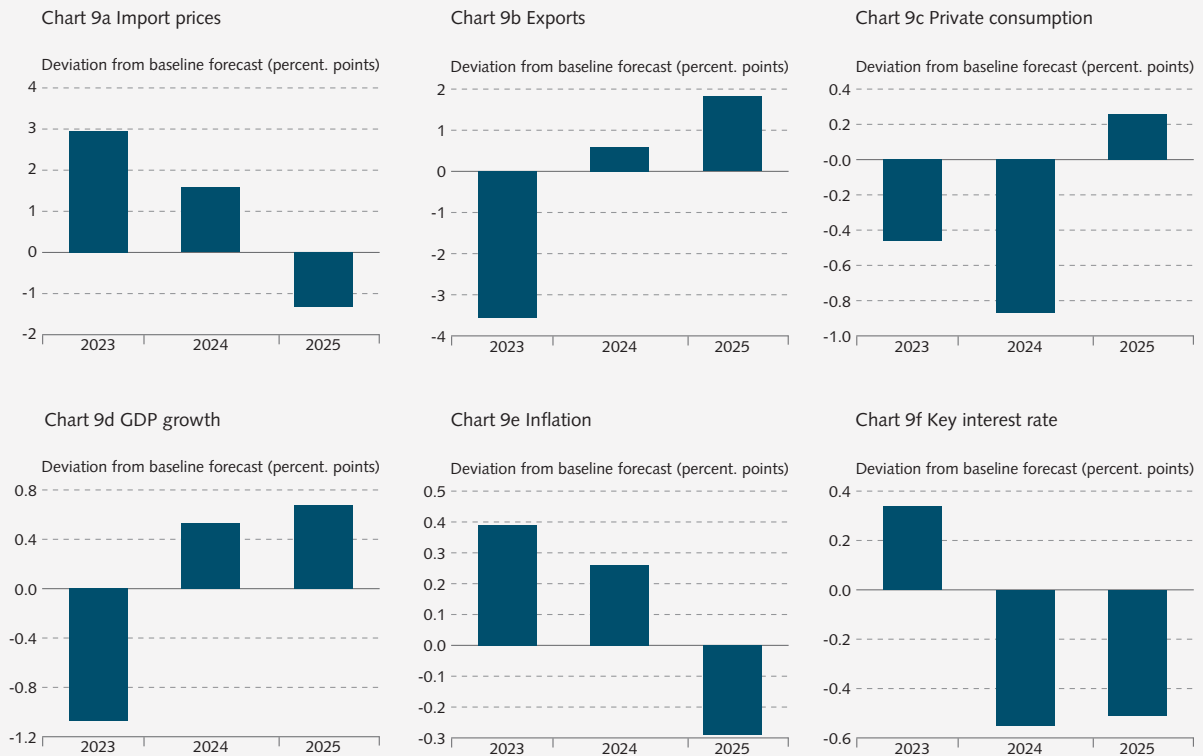
As Chart 9a shows, this would raise import prices upwards relative to the baseline forecast by an additional 3 percentage points in 2023 and $1\frac{1}{2}$ percentage points in 2024. This is due to the combined impact of larger hikes in trading partners' export prices and a weaker króna, as the exchange rate would be a full 3% below the baseline by the end of the forecast horizon.



Weaker economic activity among key trading partners together with the economic contraction in Europe would lower Iceland's export growth by 3½ percentage points relative to the baseline in 2023, although the situation would reverse in part during the two years afterwards (Chart 9b).

Increased uncertainty about the economic outlook and erosion of real wages due to higher imported goods and services prices prompt domestic households to pull back on consumption spending. Added to this is the impact of a higher domestic interest rate (see below). Private consumption thereby grows by ½ a percentage point less in 2023 and is 1% below the baseline by the end of the forecast horizon (Chart 9c). On top of this are the effects of more sluggish investment growth, and GDP growth is therefore 1 percentage point weaker in 2023 (Chart 9d). The situation reverses to a degree in 2024, as the weaker króna contributes to a recovery of exports, and a share of domestic demand shifts back into the local economy. At the end of the forecast horizon, GDP has therefore broadly realigned with the baseline forecast, although domestic demand remains weaker.

Chart 9
Alternative scenario: European energy crisis deepens further



Source: Central Bank of Iceland.

Even though economic activity is weaker, the domestic inflation outlook deteriorates relative to the baseline. Inflation would be $\frac{1}{2}$ a percentage point higher than in the baseline in 2023 and about $\frac{1}{3}$ of a percentage point higher in 2024 (Chart 9e). According to the monetary policy rule in the model, the Bank's key interest rate would have to be marginally higher in 2023, but over the course of the forecast horizon, a larger slack in the economy would result in lower inflation and interest rates than in the baseline (Chart 9f).

Other uncertainties

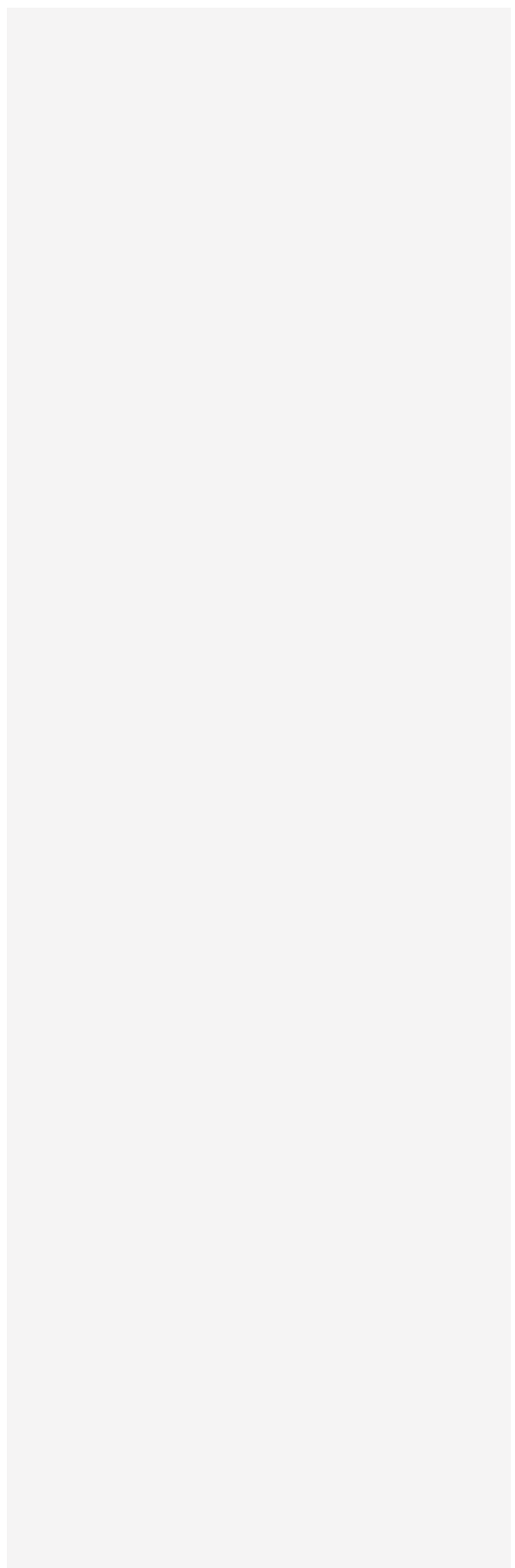
The global outlook is highly uncertain, and the baseline GDP growth forecast could prove overly optimistic

In addition to the uncertainties relating to the energy crisis, the global economic outlook will be determined by how long the war in Ukraine lasts and whether it spreads to other countries, with unforeseeable implications. The war has also profoundly affected global supply chains, and production bottlenecks could build up once again. Furthermore, the war could have a lasting impact on world trade and its structure, including the global allocation of resources that has provided the foundation for a vast improvement in living standards worldwide. However, households in major industrialised countries could scale back their saving more quickly and tap more into the savings they accumulated during the pandemic, and if they did so, it would mitigate the negative impact of other risk factors on demand and output growth.

But there are other factors that make the global economic outlook unusually fragile. Inflation is high worldwide, and rapidly rising interest rates and the surge in the US dollar have exacerbated the strain on the global financial system, not least in areas where dollar-denominated debt levels are high. Furthermore, GDP growth in China could soften significantly, and weaknesses in the Chinese real estate market could escalate, with broad-based repercussions for the global economy. Moreover, China is still dealing with the effects of the pandemic, and the authorities there have continued to impose stringent public health measures in a bid to reduce infection rates.

Inflation outlook highly uncertain, with risk tilted to the upside

The domestic inflation outlook will be determined in part by developments in the war in Ukraine and in global oil and commodity prices. But as is discussed earlier in this Box, it will be shaped no less by the outcome of the ongoing wage negotiations. If negotiated pay rises are larger than is provided for in the baseline forecast, the effects could spread to the housing market and slow down the decline in house price



inflation. On the other hand, the housing market could adjust to higher interest rates and tighter borrower-based measures more quickly than is currently assumed, and house prices could fall faster and farther.

As always, developments in the exchange rate over the forecast horizon are uncertain. If terms of trade are poorer and the current account deficit widens, the exchange rate assumptions in the baseline forecast could prove overly optimistic. The effects of global economic uncertainty on the exchange rate of the króna could also be underestimated. On the other hand, a more rapid economic expansion and a wider interest rate differential with abroad could lead to a higher exchange rate than is provided for in the baseline.

As has previously been discussed in *Monetary Bulletin*, it has been unusually difficult to estimate Iceland's potential output in the wake of the pandemic and the associated production disruptions and fluctuations in relative prices. This is compounded by even further supply shocks following Russia's invasion of Ukraine. As a result, potential output could have deteriorated even more than is assumed in the baseline forecast, and the output gap that has opened up in the domestic economy could therefore be underestimated. Furthermore, the output gap could widen more rapidly than is projected in the baseline if the household saving ratio falls faster than is currently forecast (see the alternative scenario in Box 1 of *Monetary Bulletin 2021/4*). The same applies if the fiscal stance is eased more rapidly than is assumed in the baseline.

As is discussed in Box 2, inflation expectations have become less firmly anchored to the Bank's inflation target in the past year. This exacerbates the risk that it will be more difficult to bring inflation down again; for instance, because of increased risk of a wage-price spiral. The inflation outlook depicted in the baseline forecast could therefore prove overly optimistic.

Although some of these factors could develop more favourably than is provided for in the baseline forecast, inflation appears likelier than not to be higher and more persistent than in the baseline.

