Monetary Policy Report
Spring 2022

Czech National Bank —— Monetary Policy Report —— Spring 2022

CNB CZECH NATIONAL BANK

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This Monetary Policy Report was approved by the CNB Bank Board on 12 May 2022 and (with some exceptions) contains the information available as of 22 April 2022. By means of this document, the CNB fulfils its statutory duty to regularly inform constitutional officials and the public about monetary developments. Unless stated otherwise, the sources of the data are the CZSO or the CNB. All the reports published to date, along with the underlying data, are available on our website. A large part of the data we evaluate in our monetary policy decision-making can be found in the Chartbook, which is a parallel publication to the Monetary Policy Report.

Contents

— We maintain price stability

Under the Constitution of the Czech Republic and in accordance with primary EU law, the primary objective of the Czech National Bank is to maintain price stability. The central bank contributes to sustainable economic growth by maintaining a low-inflation environment. We have been pursuing price stability in an inflation targeting regime since 1998.

— We are transparent

Our monetary policy is based on a publicly announced inflation target of 2% and open communication with the public. We believe that by being transparent and predictable, the central bank assists households and companies in their economic decision-making.

— We look to the future

A decision made by the CNB Bank Board today will affect inflation 12–18 months ahead. The CNB's forecast describes the most likely future path of the economy as seen by our Monetary Department's economists. The forecast is produced four times a year and, along with a discussion of related risks and uncertainties, is the key, but not the only, input to the CNB Bank Board's monetary policy decisions.

— We decide on rates

The CNB's main monetary policy instrument is the two-week repo rate. The decision on the level of this rate sends an impulse through the financial market to the whole economy, ultimately affecting inflation in such a way as to keep it close to the target. The Bank Board meets eight times a year to discuss monetary policy issues. When making rate decisions, the members of the Bank Board discuss the current forecast and assess the newly available information and the risks and uncertainties of the forecast.

Governor’s foreword

Dear Readers,

The economy finally began to look up at the start of this year thanks to the retreat of the coronavirus pandemic. Prices of commodities, energy and products soared, but the tightening of our monetary policy was expected to return the high inflation to the CNB’s inflation target in the first half of 2023. Global value chain disruptions were mostly expected to weaken and disappear during this year. Optimism was returning after two years of pandemic suffering.

However, Russia’s invasion of Ukraine put an end to the promising recovery and fundamentally rewrote all the outlooks. The high prices of many goods and commodities rose significantly further. Even prices of items that had remained muted before the war also began to increase. Not only did the disruptions to international transport and logistics fail to resolve, but the unprecedented economic sanctions imposed on Russia and the serious damage done to the Ukrainian economy created new bottlenecks in commodity and component supplies. As if it were not enough that the pandemic left a sharp rise in public debt in its wake, the budgets of countries close to the war were faced with new expenditure requirements to cope with the wave of refugees. As a result of the war, the economic outlook thus darkened from one day to the next, and no one can tell what grave consequences the conflict will bring.

At the start of the year, inflation in the Czech Republic stood at levels hard to imagine until recently. Unfortunately, we will see nightmarish price growth of 15% in the next few months. Inflation will remain broad-based. It will be driven not only by strong cost pressures from abroad, but also by persisting unsatisfied domestic demand linked with the overheating labour market. Inflation will return to our target much later than we thought until recently.

Our main effort will be to prevent inflation expectations from becoming unanchored and the high inflation from getting entrenched in the decisions of economic agents. We will try to avert that by raising interest rates further. Monetary policy plays a vital role in ensuring price stability, all the more so as inflation deviates further from our target. There are no other miraculous or painless ways of overcoming this difficult period of high inflation.

Dear readers, I address you here today for the last time as central bank governor. My wish is that you will cope as well as possible with the high inflation – which I believe is only temporary – and maintain a favourable view of the Czech National Bank in the future.

On behalf of the Czech National Bank

Jiří Rusnok

Governor

The decision, and the current outlook and its risks

At its May meeting, the Bank Board increased the two-week repo rate to 5.75%. The decision is based on the CNB's spring macroeconomic forecast and responds to the long-term inflation pressures, which are increasing further due to the outbreak of war in Ukraine. Inflation will rise to 15% in the months ahead and remain in double figures for the rest of this year. This will reflect continued growth in gas and electricity prices for households, a further acceleration in food price inflation and persisting high core inflation. Inflation will decline below 10% in early 2023 owing to an easing of the current exceptional price pressures and to the previous tightening of domestic monetary conditions. This will foster a further decrease in inflation, which will fall close to the 2% target in the second half of 2023. Consistent with the baseline scenario of the forecast, in which the central bank sets interest rates in order to achieve the 2% target at the standard monetary policy horizon regardless of the origin of inflation pressures, is a further sharp rise in market interest rates until the middle of this year, followed by a gradual decline from autumn 2022. The Bank Board assessed the uncertainties and risks of the baseline scenario of the spring forecast as being significant and going in both directions. When making its decision, the Bank Board assessed the sources of the currently increasing inflation pressures, which stem largely from strong exogenous price shocks. The Bank Board therefore decided to tighten monetary policy more moderately compared with the baseline scenario of the forecast. It took into account, among other things, the message of a simulation featuring a more distant monetary policy horizon than the standard one used in the CNB's forecasting system.

The Czech economy is facing a combination of exceptionally strong inflation pressures causing escalating and broad-based price growth. Inflation is hitting new long-term highs in rapid succession. Consumer prices are being pushed up mainly by rising costs of domestic firms. The impact of the cost pressures is being intensified by growth in the profit margins of producers, retailers and service providers. The still solid domestic demand and the persisting good income situation and purchasing power of Czech households is allowing firms to increase their margins.

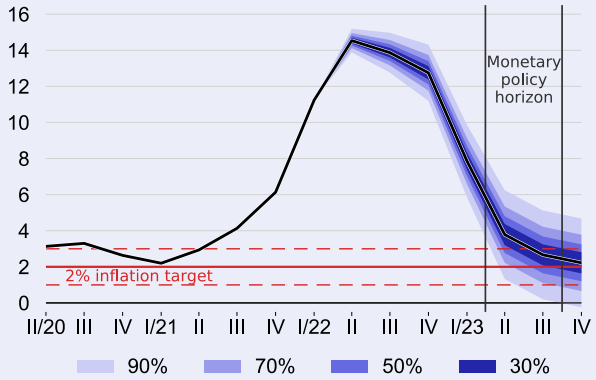
The upswing in inflation in early 2022 was due primarily to faster growth in administered prices and rising core inflation. Moreover, fuel prices increased wildly at times, as did food prices to a lesser extent. After having surged at the start of this year, administered prices will keep rising apace, owing mainly to continued growth in prices of electricity, gas and heat for households. The increase in energy prices on exchanges to record highs was also fostered by Russia's invasion of Ukraine. Core inflation will also pick up in the months ahead, driven by strong growth in the cost of commodities and materials, including energy, and with a significant contribution from imputed rent. Continued marked growth in food prices across categories will be caused mainly by rising global agricultural commodity prices, which have also gone up as a result of the war in Ukraine, one of the world's leading grain exporters. Growth in oil prices, which induced a more than 50% year-on-year increase in fuel prices in March, was also linked with the war. Year-on-year oil price growth will remain high throughout 2022, although it will decline gradually. Further increases in excise duty on tobacco will also foster higher headline inflation this year and the next.

As a result of the above factors, inflation will peak at nearly 15% in late spring and early summer 2022. It will then start to fall as growth in import prices and production costs slackens and the global inflation pressures gradually ease. In addition, the stabilising effect of the previous monetary policy tightening will begin to manifest itself increasingly through domestic demand. Price growth will therefore slow in all segments of the consumer basket in the second half of this year. The statistical effect of last year's high base will also foster a decline in inflation in late 2022. Inflation will fall back into single figures in early 2023 and return close to the 2% target at the year-end.

For some time now, Czech firms have faced strengthening growth in production costs, driven by global supply chain problems, rising foreign industrial producer prices and a surge in prices of imported inputs. This was joined in the autumn by a sharp rise in energy prices, exacerbated in late February by the adverse economic impacts of Russia's aggression against Ukraine. However, the strong inflationary effect of import prices is now peaking and the subsequent easing of their growth will start to dampen the rise in total costs in the consumer sector. Their growth will fade rapidly due to a stabilisation and

Inflation will climb as high as 15% in Q2 and then start to fall, returning close to the 2% inflation target at the close of next year

headline inflation; y-o-y in %; confidence intervals in colours



The monetary policy horizon is 12–18 months ahead. This is the period when the Bank Board's current decision has the greatest impact on inflation.

Growth in domestic economic activity will slow sharply this year and pick up visibly next year

y-o-y changes in % (unless otherwise indicated); changes in pp compared to previous forecast in brackets

	2021	2022	2023
Headline inflation (%)	**3.8**	**13.1**	**4.1**
	(0.0)	(4.6)	(1.8)
GDP	**3.3**	**0.8**	**3.6**
	(0.2)	(-2.1)	(0.2)
Average nominal wage	**6.1**	**4.6**	**5.1**
	(0.0)	(-2.0)	(-0.2)
3M PRIBOR (%)	**1.1**	**7.0**	**5.1**
	(0.0)	(2.7)	(1.8)
Exchange rate (CZK/EUR)	**25.6**	**24.2**	**24.3**
	(0.0)	(0.1)	(0.4)

Green indicates a shift of the forecast to higher levels, or to a weaker koruna exchange rate, compared with the previous forecast. Red indicates a shift in the opposite direction.

subsequent slight drop in energy prices and a fall in foreign industrial producer price inflation.

The growth in Czech firms' costs was also due in large measure to domestic factors, which stayed inflationary in early 2022. Wage growth remained more than solid. The Czech labour market cooled only partially during the pandemic and got even tighter after the economy reopened last spring. The unemployment rate edged down further in early 2022, and the steady growth in labour demand came up against labour shortages. Even in such conditions, however, wage growth has not been able to keep pace with the escalating inflation this year. Firms are under pressure from growth in other costs, so there is very limited scope for sharp growth in wages. Real wages will thus drop markedly this year, greatly limiting household consumption, which will essentially stop rising in whole-year terms.

The Czech economy will be hampered throughout 2022 by persisting disruptions to global logistics and supplies of production materials and components, all exacerbated by the war in Ukraine. Domestic fiscal policy will dampen economic growth slightly this year as Covid support programmes are phased out. By contrast, higher government spending on helping Ukrainian refugees and their integration into Czech life will have the opposite effect. Many of the refugees will gradually enter the domestic labour market, contributing to a slight decrease in its tightness.

Economic growth will weaken considerably this year, due to sharply rising prices, slowing external demand growth and worsening general sentiment against the backdrop of the war in Ukraine. The deep decline in real wages will also drag down households' purchasing power, even though their nominal income will be boosted by further income tax cuts, pension increases and expanded housing-related and other benefits. However, family budgets will be faced with broad and sizeable price growth. Therefore, many households will use the rest of the forced savings they accumulated during the pandemic to maintain their living standards. Spending of income and savings, due to concerns of a loss of purchasing power, will be slowed by continued growth in interest rates and lower consumer appetite. In a similar vein, negative business sentiment and subdued demand will result in a drop in fixed investment, despite continuing efforts by firms to automate and robotise production. By contrast, government investment will rise steadily, supported by absorption of EU funds. Stocks of unfinished products will remain elevated due to global logistics problems. For the same reason, the export performance of the Czech economy will be low until mid-2023. Owing to subdued imports, the contribution of net exports to GDP growth will be slightly positive this year. As the war de-escalates and the problems in global supply chains subside, the contribution of net exports will become much larger. Growth in household consumption and fixed investment will also recover next year. Together with continued solid growth in government consumption, this will lead to an increase in total economic activity of more than 3%.

As a result of this year's economic slowdown, the current overheating of the domestic economy will fade relatively soon and the labour market will become less tight. Continued forceful monetary policy tightening by the CNB, commenced already in the second half of last year, will also help reduce the domestic cost and demand inflation pressures. Consistent with the baseline scenario of the forecast, in which the central bank continues to set interest rates in order to achieve the 2% target at the standard monetary policy horizon, is a further sharp rise in interest rates. Together with

the exchange rate appreciating close to CZK 24 to the euro, this will limit the pass-through of the current exceptional inflation pressures to prices in the longer term and help anchor inflation expectations. As a result, the current double-digit inflation will fall close to the 2% target in the second half of next year. The appreciation of the koruna will be due to a further widening of the interest rate differential vis-à-vis the euro area and a fading of the negative effect of global sentiment after Russia's attack on Ukraine. Aided by short-term CNB interventions in the foreign exchange market, the koruna soon withstood the war-related depreciation pressure thanks to long-standing solid domestic economic fundamentals and coherent monetary policy. At the end of this year, the koruna will stabilise slightly above CZK 24 to the euro owing to an expected tightening of monetary policy abroad. In a context of receding inflation pressures, and with the prospect of inflation returning close to the target in the second half of 2023, domestic interest rates will be able to start falling gradually from autumn 2022.

The upside risks of the return of inflation to the target outlined above include higher-than-forecasted energy and commodity prices, a threat of inflation expectations becoming unanchored from the CNB's 2% target and a related risk of higher growth in prices and wages in the medium term. Stronger-than-forecasted negative demand impacts of the war in Ukraine are a downside risk to inflation. The uncertainties include the future course of the war in Ukraine, the future monetary policy stance abroad and the duration of the disruptions to global value chains.

When making its decision, the Bank Board assessed the sources of the currently increasing inflation pressures, which stem largely from strong exogenous price shocks. The flexibility of inflation targeting also allows the central bank to take into account the current extreme uncertainties surrounding the forecast and adjust its response accordingly.

The Bank Board therefore decided to tighten monetary policy more moderately compared with the baseline scenario of the forecast. In the context of significant risks and uncertainties in both directions, it took into account, among other things, the message of a simulation featuring a more distant monetary policy horizon than the standard one used in the CNB's forecasting system. This simulation assumes that the central bank abstracts from inflation developments roughly 12–18 months ahead, when inflation remains significantly affected by external price shocks. It also assumes that monetary policy maintains full credibility and inflation expectations remain anchored to the target, thus helping inflation return to the 2% target despite the more restrained monetary policy response. The market interest rate path in this simulation is lower than in the baseline scenario, especially this year. However, inflation in this simulation falls to single-digit levels next year, although the return to the 2% target is postponed until 2024.

I. ECONOMIC DEVELOPMENTS ABROAD

Russia's invasion of Ukraine is leading to a slowdown in global economic growth and greatly increasing the risks of an even deeper downturn. The outlook for economic activity in the effective euro area, which is now additionally facing high producer and consumer price inflation, has also worsened. Energy prices are rising strongly on the back of a sharp increase in the Brent crude oil price and further growth in prices of natural gas and electricity from high levels. Moreover, high prices of other industrial commodities and food prices will foster further growth in inflation. Persisting supply chain disruptions, exacerbated by the war in Ukraine and another wave of the pandemic in Asia, are putting continued upward pressure on core inflation. According to the market outlook, the ECB will react to the rising prices by tightening its monetary policy.

Russia's invasion of Ukraine has slowed the growth of the global economy, which will moreover face strong inflation pressures – driven mainly by a sharp rise in commodity prices – for longer

The war – and partly also new measures to counter the spread of the coronavirus in Asia – has thwarted the prospects of a global economic upswing. These prospects were associated with only mild impacts of the Omicron variant of the coronavirus, the onset of which slowed the global economy only briefly during the winter months. Although price pressures remained elevated due to persisting supply-side constraints and rising energy prices, business confidence surged as the winter ended. Economic growth strengthened in the services sector as coronavirus restrictions were lifted. Industry meanwhile continued to face labour shortages and supply chain bottlenecks.

The global economic growth outlook for this year and the next has been revised down significantly as a result of Russia's invasion of Ukraine (see Table I.1).[1] High commodity prices (see Chart I.1) will slow economic growth in all countries except the oil-exporting nations of the Middle East and North Africa. China's GDP growth will be adversely affected by weaker exports and also by strict measures introduced to combat another wave of the coronavirus pandemic there.

The J.P.Morgan PMI index also indicates a slowdown in global manufacturing growth. Its March level was the lowest in 18 months. Among the major economies, only the USA, the UK and some euro area countries (Ireland, Austria, the Netherlands, Germany and Italy) are maintaining strong growth. By contrast, a deterioration

Table I.1

Global growth will slow

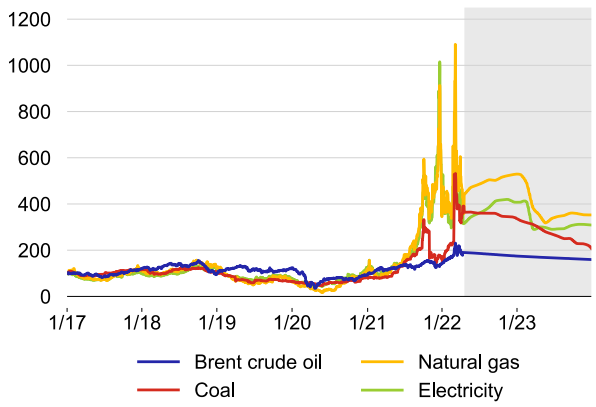
real GDP; y-o-y changes in %; source CF

	2020	2021 Q3	2021 Q4	2021	2022	2023
Euro area	-6.5	4.0	4.6	5.3	2.8	2.3
USA	-3.4	4.9	5.6	5.7	3.2	2.2
China	2.2	4.9	4.0	8.1	4.9	5.1
United Kingdom	-9.4	7.0	6.5	7.5	3.9	1.4

Chart I.1

According to market expectations, energy commodity prices will remain high until the start of 2023

energy commodity prices; index: January 2017 = 100; source Bloomberg, CNB calculation



1 For example, S&P Global has lowered its global economic growth outlook for this year by 0.8 pp to 3.3% because of the war in Ukraine. Of this figure, 0.3 pp is due to a deep recession in Russia and Ukraine and another 0.3 pp to a slowdown in Western Europe, which will be hit hardest by the sharp increase in energy commodity prices. The euro area GDP forecast for 2022 has been lowered by 1.3 pp to 2.4%. By contrast, the estimate for average global consumer price inflation has been raised by 1.8 pp to 6.4%.

can be seen in Asian and South American countries. The figures for Russia are naturally the worst among the large countries, owing to the sanctions imposed on it.

The war in Ukraine is adversely affecting the economic recovery in the euro area and significantly contributing to a marked rise in producer and consumer price inflation

Annual economic growth in the effective euro area slowed at the close of last year (see Chart I.2). High energy prices meanwhile weighed on household sentiment. Compared with the previous quarter, growth in consumption expenditure slowed at the close of the year, even dropping in absolute quarter-on-quarter terms in Germany. This was a result of targeted shutdowns in some services sectors. Owing to global supply chain problems, economic growth slowed overall in 2021 Q4 in industry-oriented Germany. In Slovakia, it was flat. The southern euro area countries recorded a pick-up in year-on-year growth as a result of the larger share of the now almost unrestricted services sector in economic activity there.

In February, the economic recovery linked with the gradual lifting of anti-pandemic measures was interrupted by Russia's military attack on Ukraine. The invasion and the subsequent sanctions against Russia caused energy, industrial and food commodity prices to rise sharply. At the same time, the war exacerbated the already considerable shortage of materials and components (see Chart I.3). The supply chain disruptions, which are currently the most severe ever, will thus probably drag on until 2023, albeit to a lesser extent. Following a stagnation at the close of 2021, quarterly GDP growth in the effective euro area will recover slightly in 2022 Q1.[2] However, the high economic uncertainty is reflected in household and business sentiment. Production expectations in the business sector have worsened. This has been accompanied by expected further growth in sales prices because of rising costs (see Chart I.4).

The forecast expects the effective euro area economy to contract slightly in quarter-on-quarter terms in 2022 Q2, as even the favourable developments in services and retail will be unable to make up for the shortfall in new orders in industry (especially from abroad). The situation will be better in services-oriented countries (France and Spain).

Besides a drop in direct trade with Russia and Ukraine, euro area countries will be affected throughout 2022 by losses incurred by the financial sector due to the relatively large exposures of many European banks to Russia. The positive output gap will narrow this year as

Chart I.2

GDP growth in the effective euro area will slow this year, due mainly to the war in Ukraine

annual GDP growth in %; contributions in pp; seasonally adjusted

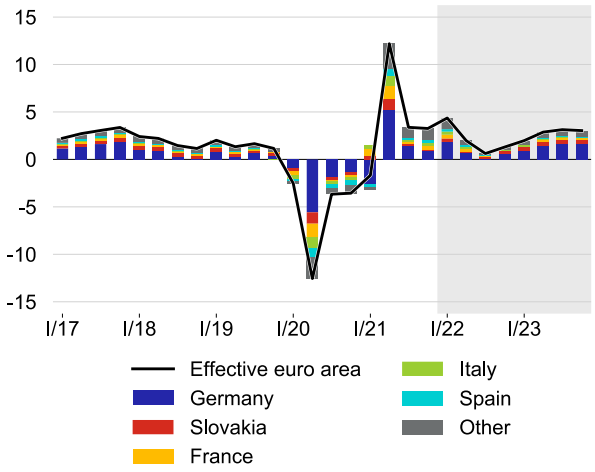


Chart I.3

Shortages of material and equipment are currently the main barrier to production in the euro area

balance of answers; source European Commission Business and Consumer Survey

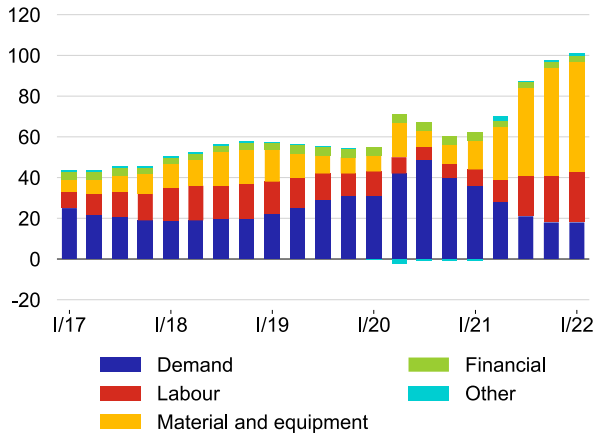
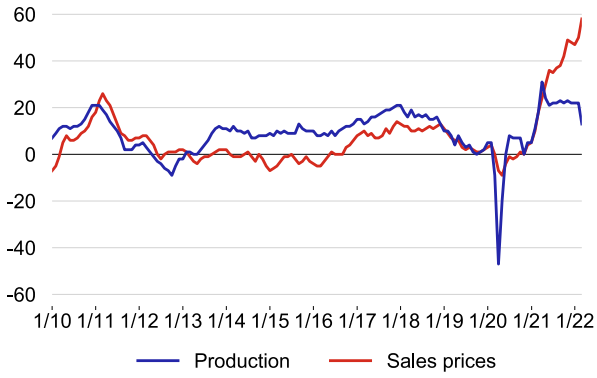


Chart I.4

Firms' production expectations have deteriorated, while the expected upward pressure on sales prices has increased

balance of answers; source European Commission Business and Consumer Survey



2 According to Eurostat's flash estimate, GDP in the effective euro area rose by 0.4% quarter on quarter and by 4.7% year on year in 2022 Q1. This figure is not included in the forecast, as it was released after the closing date of the latter.

a result of the war in Ukraine. Household expenditure will be significantly affected by sharp growth in energy prices, despite the provision of government support to vulnerable groups of the population. Effective euro area GDP will grow by 2% overall this year, recovering appreciably in the second half of the year.[3] It will accelerate further next year. The effective euro area as a whole will exceed the pre-Covid level of economic activity in mid-2022.

The inflation pressures in the production sector rose sharply, mainly due to further growth in energy commodity prices

The inflation pressures in the industrial production sector had already strengthened sharply in the second half of 2021 and intensified in early 2022 as a result of the war in Ukraine (see Chart I.5). The shock to natural gas and electricity prices, which rose further from already historically high levels, had a particularly strong inflationary effect, as, newly, did a marked increase in Brent crude oil prices (see Chart I.1). Europe's dependence on imports of energy commodities from Russia is discussed in Box 1 at the end of this section. However, growth in prices of other industrial commodities and persisting stress in global supply chains, which is visible in core producer price inflation, are also passing through to inflation.

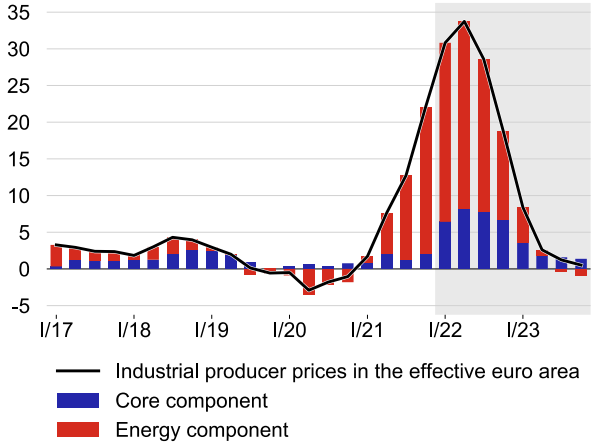
The forecast assumes that the pressure on core and energy production prices will ease next year. An expected partial correction of energy commodity prices and the fade-out of the supply chain stress will have an anti-inflationary effect. The price of Brent crude oil will fall from its current high level to below USD 90 a barrel at the end of 2023. Despite the expected correction, prices of natural gas and electricity will still be about six times higher next year than at the start of 2020. Prices of industrial metals will be elevated until the end of the forecast horizon at almost double the pre-Covid level. Food commodity prices will fall only gradually. Industrial producer price inflation in the effective euro area will thus be almost 30% on average in 2022. It will drop considerably in 2023.

The high energy prices are also being reflected in growth in consumer prices in the effective euro area. They already significantly affected the March inflation figure, which rose sharply to 7.9% year on year amid growth in energy prices of 42% compared with a year earlier. In addition to energy, higher food price inflation and core inflation are contributing to the high headline inflation, mainly as a result of supply chain disruptions and the pass-through of the high energy prices to other price categories. Inflation will peak in the middle of this

Chart I.5

The current extraordinary price growth in industry abroad is being driven mainly by energy prices

annual industrial producer price inflation in effective euro area in %; contributions in pp



Note: Besides oil, the energy component also includes gas and electricity from 2021 Q3 onwards.

*Russia generates about 3% of global GDP (at purchasing power parity). Its economy is geared heavily towards the production and export of energy commodities, so its trade with most of its trading partners is also asymmetric. Energy commodities account for a large part of **Russia's exports to the EU**, while the EU mainly supplies machinery and transport equipment to the Russian market. In 2021, Russia was the fifth-largest export market for goods from the EU (4.1%) and the third-largest exporter to the EU (7.5%). The balance of trade with Russia has long been negative for European economies.*

***Trade between the EU and Ukraine** is more balanced. Ukraine accounts for 1.3% of the EU's goods exports and 1.1% of its total imports. Ukraine's main exports to the EU are commodities and raw materials (such as iron ore, metals and grain) and certain industrial components. The EU mostly exports machinery and transport equipment, other industrial goods and chemicals to Ukraine. The EU's balance of trade with Ukraine has long been positive.*

3 However, if the sanctions were broadened to include a ban on imports of Russian oil and gas to the EU, the Central European countries and Italy would record markedly worse economic developments in 2022 and probably also in 2023 (for details, see section IV).

year and then come down gradually. Average inflation in the effective euro area will be 7.8% this year and slow to 2.9% in 2023.

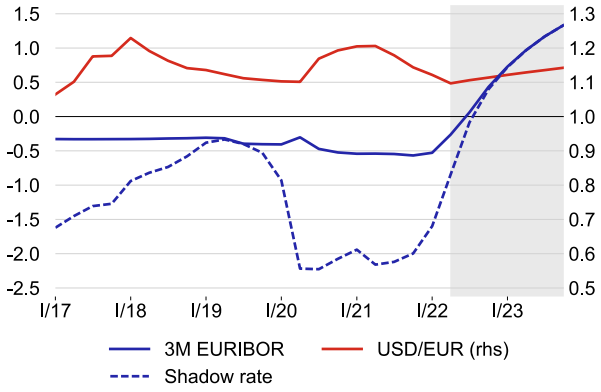
The ECB's monetary policy is shifting towards an expected sharper interest rate hike

The 3M EURIBOR market outlook has moved higher, especially for 2023 (see Chart I.6). Government bond yields in the euro area countries are also rising. Markets are keenly aware of the elevated current and expected inflation and expect the ECB to react by tightening its so far extremely accommodative monetary policy. At its April meeting, the ECB repeated that net asset purchases under the asset purchase programme (APP) should be terminated in 2022 Q3. In this context, the shadow interest rate will converge to the 3M EURIBOR market rate in late 2022. Key interest rates will be raised some time after the asset purchases end. Markets mostly expect the first hike to come in the autumn of this year and a series of further hikes to follow in 2023. The euro-dollar exchange rate has weakened somewhat due to the war in Ukraine and tighter Fed monetary policy. However, the outlook is for slight appreciation of the euro.

Chart I.6

The market outlook for rising interest rates reflects the ECB's expected reaction to the increasing inflation pressures

3M EURIBOR and shadow rate in %; USD/EUR nominal exchange rate



COMPARISON WITH THE PREVIOUS FORECAST: Economic developments abroad

		2021	2022	2023	
GDP (in the effective EA)	y-o-y changes in % pp	**4.1** (0.0)	**2.0** (-1.9)	**2.8** (-0.3)	The economic growth outlook has been revised down for both years, this year mainly because of longer-lasting supply chain problems along with the impacts of the war in Ukraine.
Consumer prices (in the effective EA)	y-o-y changes in % pp	**2.9** (0.0)	**7.8** (4.6)	**2.9** (1.2)	The consumer price inflation outlook is higher, especially for this year, because of further growth in energy prices and longer-lasting stress in global distribution chains.
Producer prices (in the effective EA)	y-o-y changes in % pp	**11.0** (0.5)	**27.6** (15.2)	**3.1** (1.4)	The marked increase in the producer price outlook reflects a jump in prices of most commodities coupled with supply chain problems newly aggravated by the war.
Brent crude oil price	USD/barrel	**70.8** (0.0)	**100.4** (23.4)	**92.5** (20.6)	The markedly higher Brent crude oil outlook is subject to exceptional uncertainty and is associated predominantly with the impact of the war.
3M EURIBOR	% pp	**-0.5** (0.0)	**-0.1** (0.4)	**1.1** (1.1)	The expected 3M EURIBOR market interest rate has shifted higher due to the ECB's expected reaction to the higher inflation outlook.
Exchange rate	USD/EUR	**1.18** (0.00)	**1.11** (-0.03)	**1.13** (-0.03)	The forecast for the euro-dollar exchange rate is slightly weaker owing to a larger-than-expected impact of the war on Europe and stronger tightening of US monetary policy.

Note: Changes compared to the previous forecast in brackets (a green label indicates an increase in value or a shift to a weaker dollar, while a red label indicates a decrease in value or a shift to a stronger dollar)

BOX 1 Europe's dependence on imports of energy commodities from Russia in the context of Russia's invasion of Ukraine

In the context of Russia's invasion of Ukraine, the possible economic impacts of the sanctions imposed by the EU and potential retaliatory sanctions by Russia are currently being discussed. The energy situation and energy security of European countries is among the most important aspects. This box sums up the main facts essential to these considerations.

As regards fossil energy commodities, the EU has long been most dependent (over 90%) on imports of oil and oil products (see Chart 1). Their share in the EU energy mix was 34.5% in 2020. Natural gas ranks second (23.7%).[1] The share of gas imports in total gross energy consumption has been rising apace since 2014, driven by growing consumption and falling production in Europe. Only in the case of coal do the EU's imports account for less than half of its consumption.

In 2021, Russia was the EU's fourth-largest trading partner in terms of EU exports (with a share of 4.5%, worth EUR 89.5 billion). As regards imports to the EU, Russia was the third-largest partner (with a share of 7.9%, worth EUR 158 billion). Energy accounted for almost 63% of total Russian exports to the EU. Table 1 shows Europe's dependence on energy commodity imports from Russia. Oil and oil products transported by pipeline or sea tanker have the largest share in imports of energy commodities from Russia to the EU (see Table 2). The share of natural gas, which is transported mainly by pipeline, is also significant, but tanker imports in liquefied form (LNG) are not negligible either. Coal accounts for the smallest share of energy imports from Russia. Chart 2 illustrates the importance of fossil fuel imports from Russia to the EU.

If Russian energy supplies were restricted or completely switched off (at the behest of either party), it will be crucial what alternatives there are for securing energy commodity supplies to Europe.

In the case of oil, oil products, coal and LNG, existing trade flows in the global market would probably be redirected to a larger extent. Transport and logistics costs would of course go up as a result. Although no sanctions have been imposed on oil exports from Russia yet, many large Western companies are already voluntarily avoiding new purchases of Russian commodities (for reasons of reputation or financial caution). Russian oil is therefore currently being sold at a considerable discount to Brent (even exceeding USD 25 a barrel), so part of it is likely to find other buyers, from Asia in particular, in the medium term. The IEA has said that supplies of Russian oil and oil products based on long-term contracts and pre-invasion trades were being delivered to the global market in March. In April, however, Russian exports were expected to fall by 1.5 million barrels a day (mb/d), down from a total of 8 mb/d. A drop of as much as 3 mb/d is expected from May.[2] Capacity sufficient to compensate for a shortfall of Russian oil of that magnitude is currently available in Saudi Arabia and the United Arab Emirates, and possibly Iran (if the nuclear treaty with Western countries is renewed and Iran gains access to world markets). Industrial stocks of oil and oil products in OECD countries are falling further and

Chart 1

The EU is dependent on imports for more than half of its energy consumption

share of imports in total gross energy consumption in EU in %; source Eurostat

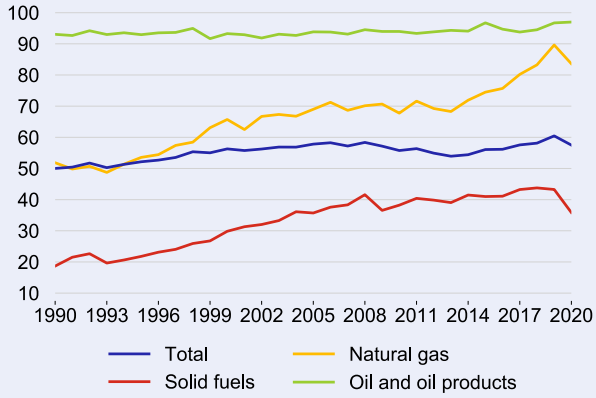


Table 1

More than a third of the oil consumed in the EU is from Russia; for gas the share is even higher

share of exports from Russia in total energy consumption in EU in %; source Eurostat (for EU) and Vox EU (for Germany)

	EU (2020)	Germany (2021)
Oil and oil products	37	34
Natural gas	41	55
Coal	19	26

Table 2

Oil accounted for almost half of Russian exports of energy commodities to the EU in 2020

structure of Russian energy commodity exports to EU; EUR billions and %; source Eurostat

	EUR bn	Share in %
Oil	48.5	48.9
Oil products	22.4	22.7
Natural gas (pipeline)	12.9	13.1
Natural gas (liquefied)	4.9	4.9
Coal	5.4	5.5
Other	5.9	4.9

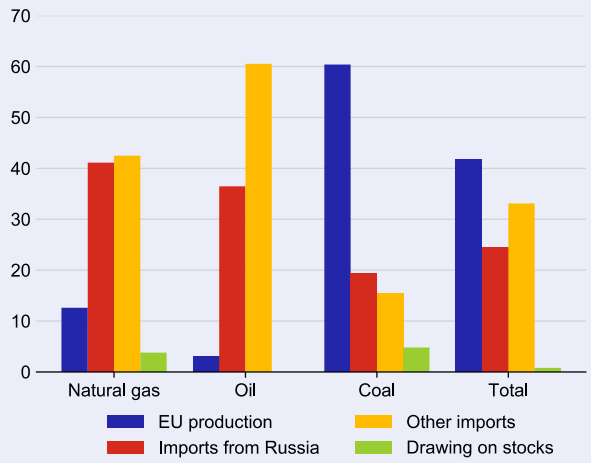
in January were at their lowest level since April 2014. They would cover around 57 days of expected future consumption, a figure which can be generalised for European countries. The IEA has responded to the decline in Russian oil supplies to world markets by repeatedly releasing stocks from OECD countries' strategic reserves. This has temporarily eased the upward pressure on prices.

The situation is worse for natural gas exports from Russia to the EU. Restrictions on supplies of Russian gas,[3,4] which is transported to Europe mainly by pipeline, would lead to a corresponding decrease in the amount of natural gas on the global market. There is no way, even in the medium term, of redirecting Russian natural gas exports to, say, China (the gas field is geographically remote and there are no pipelines) or of making it available as LNG to other customers by sea (Russia's liquefaction plants have insufficient capacity).

Chart 2

Coal is the energy source for which the EU is most self-sufficient

share of total EU consumption in %; data for 2020; source Eurostat



Europe has more or less sufficient LNG import terminal capacity, but whether the existing pipeline network would allow gas to be redistributed from terminals in the south and west of Europe to Central and Northwest Europe is an open question. However, it is almost certain that Europe would have to "compete" for higher LNG supplies with countries such as Japan, South Korea and China, which are also dependent on LNG imports and mostly use long-term contracts with Australia, Qatar and the USA. These countries could increase their current LNG purchases under their contracts and redirect the excess to Europe (under intergovernmental agreements, for instance). However, this would lead to a corresponding decrease in the amount of natural gas available on spot markets and – especially in the event of bad weather – drive the already high prices of gas up even further.[5]

Europe is critically dependent on natural gas.[6] This is mainly due to a reduction in electricity production at coal and nuclear power plants and the large-scale phase-in of generation from renewable sources, the output of which is highly weather-dependent. Gas power plants are currently practically the only way of smoothing swings in output sufficiently.[7] The announced reduction of the EU's dependence on natural gas will be very difficult to implement, partly because gas is used not only to generate electricity, but also to produce heat in industry and for households. Replacing gas would lead to a huge increase in electricity consumption and a waste of funds previously invested in gas infrastructure.[8] In the short run, natural gas consumption in the chemical industry, where gas is an input commodity (for the production of ammonia and nitrogen fertilisers, for example) can only be reduced if production is lowered commensurately. The decline in natural gas storage in the EU halted in March 2022 at slightly below 30 billion cubic metres, close to the lower bound of the range observed in 2015–2020. Less than one-third of gas storage capacity is thus filled on average. Refilling should start in April as the heating season ends. Thanks to the mild winter this year the catastrophic scenarios did not materialise, but replenishing storage will be difficult due to high gas prices, which are being signalled for the summer as well.[9]

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1 The energy mix also consists of renewable sources and biofuels (17.4%), nuclear energy (12.7%) and solid fossil fuels (10.2%).

2 J.P.Morgan analysts estimated that of its total production of 11.05 mb/d in February, Russia exported around 6.5 mb/d (4.5 mb/d as crude oil and 2.0 mb/d as oil products), i.e. roughly 7% of global production. Around 3.6 mb/d went to the European market (1.6 mb/d via the Druzhba pipeline and 2 mb/d by sea tanker), covering roughly 30% of consumption there. The study also says that the situation in Ukraine could lead to a drop in Russian supplies of 1–2 mb/d in the short term, which Europe will find hard to replace. The EU may thus face escalating supply chain problems and higher energy commodity price inflation.

3 In their study of early March 2022, J.P.Morgan analysts considered three scenarios for gas supplies from Russia to the EU and their impacts on natural gas prices:

- *No sanctions are imposed on Russian gas exports.* Exports based on long-term contracts continue at almost the 2021 level. The average spot price (TTF) is 81 EUR/MWh in 2022. However, it includes a higher geopolitical risk premium and attracts more imported LNG into Europe.
- *Russian gas exports fall by about 30% due to longer-lasting damage to the infrastructure in Ukraine.* The average spot price of natural gas immediately rises to 180 EUR/MWh (the level recorded last December). This attracts enough LNG and causes the price to drop. However, the price stays above 110 EUR/MWh. This reduces demand from Asia, where gas is replaced by oil.
- *Russian gas exports to Europe halt completely (due to EU sanctions or Russian retaliatory sanctions).* The price soars well above 200 EUR/MWh, but the supply of LNG on the global market is unable to make up the shortfall. Europe does not even have enough regasification and redistribution capacity to accept such volumes of LNG. This would mean a sizeable restriction of consumption in industry and later also household consumption, low stocks before the next heating season and many other problems.

4 The restriction of supplies became a reality at the end of April. On 27 April, Russia's Gazprom announced that it was halting supplies of gas to Poland and Bulgaria.

5 See also the box *What is driving the record-high growth in gas and electricity prices in Europe?* in MPR – Winter 2022.

6 As estimated by Corbeau (2022), the share of imports from Russia in total natural gas imports to the EU was 45% in 2021 and Russian gas accounted for around 40% of total consumption. Approximately 91% was pipeline gas and the rest LNG. Supplies to the EU have recently declined in favour of supplies to Turkey.

7 The price of electricity from gas power plants strongly affects the price of electricity on energy exchanges, in line with the marginal cost concept. Given the recent growth in the price of gas (coupled with a rise in prices of emission allowances), this has caused electricity prices to rocket.

8 Although gas accounted for just 8% of electricity generation in 2019, its share in total EU primary energy consumption was 21%. Oil and oil products had the largest share of primary energy consumption (41%). Electricity from non-fossil sources also accounted for 21%.

9 Traders (mostly commercial firms), who traditionally buy gas stocks over the summer (at the usually lower summer prices) to cover higher demand during the winter (especially for heating), are not motivated to fill their storage tanks before the next winter under the current market conditions, as they face a risk of financial losses. This is another challenge for the European administration, which, besides working to make Europe less dependent on Russian gas, is trying to secure the minimum necessary gas stock in Europe.

II. THE REAL ECONOMY AND THE LABOUR MARKET

GDP growth will slow considerably this year, with economic activity even slightly contracting year on year in the second half of the year. This will be due largely to falling household consumption, as households' real income has been declining this year, owing to rapid growth in living costs, and their sentiment has simultaneously worsened. Firms will rein in investment because of subdued demand and a deterioration in their financial situation, which is being affected by surging prices of energy and other commodities and materials. Growth in external demand is being adversely affected by the war in Ukraine, which, moreover, is exacerbating the problems in global value chains. Exports will thus remain temporarily subdued and firms will be forced to make increased additions to inventories until mid-2023. However, the contribution of net exports to economic growth will be slightly positive this year due to a noticeable cooling of domestic demand. The overheating of the domestic economy will subside quickly this year. The labour market tightness will ease somewhat because of subdued growth in domestic economic activity and the integration of Ukrainian refugees into the labour force. The unemployment rate will rise slightly in the coming quarters but remain very low. Wage growth will be volatile in both market and non-market sectors in the coming quarters, while fundamental wage growth will later pick up slightly following this year's slowdown.

Economic growth will be dampened again this year by problems in global value chains, exacerbated by the war in Ukraine and by worse sentiment of Czech firms and households

The problems in global value chains persist and will be felt strongly in the industry-oriented Czech economy. Moreover, they have been exacerbated by the war in Ukraine, the introduction of significant economic sanctions against Russia and the severing of many trade links. Material shortages – mostly in industrial production – will hold back the economy this year, too (see Chart II.1). We assume that the problems in global value chains will ease gradually amid a gradual de-escalation of the conflict, but will not disappear entirely until mid-2023.

GDP growth will slow significantly to below 1% this year in whole-year terms (see Chart II.2).[4] In 2023, it will pick up to more than 3%.

Growth in household consumption will halt this year due to a sharp decline in real household income and increased interest rates

Household consumption growth was still very high in year-on-year terms at the start of this year. However, the causes lie mainly in last winter's pandemic lockdowns, which greatly limited business in retail and services and hence created a low base for comparison (see Chart II.3). However, household consumption will

Chart II.1

Material and component shortages are increasingly limiting domestic industrial production

share of domestic industrial firms in % reporting shortages of material or equipment as factor limiting production; smoothed by HP filter (lambda = 1); source CZSO Business cycle surveys

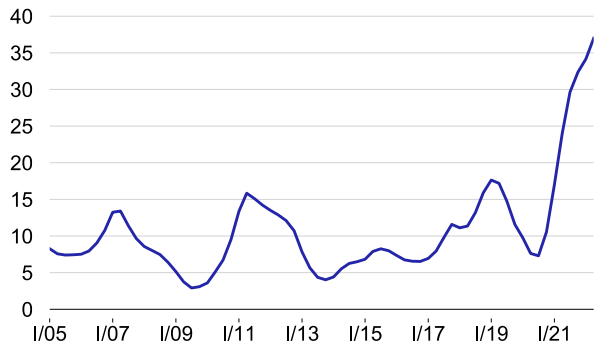
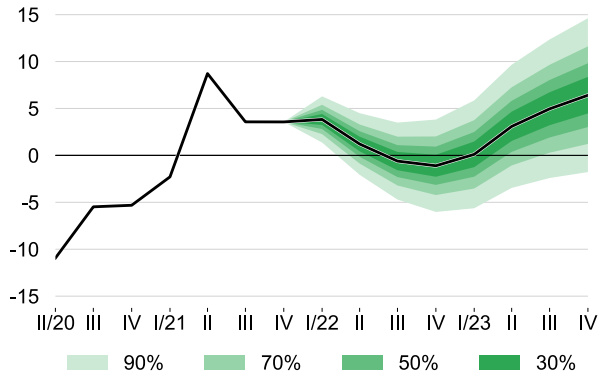


Chart II.2

The economy will contract briefly this year and start to expand again next year

y-o-y changes in %; seasonally adjusted; confidence interval



4 According to a preliminary CZSO estimate, Czech GDP increased by 4.6% year on year in 2022 Q1. This is 0.8 pp above the CNB forecast. This figure was published on 29 April 2022 and is not part of the forecast due to the earlier closing date of the latter.

start to fall in year-on-year terms as this statistical effect drops out in the coming quarters. Consumer appetite will be suppressed by a further increase in inflation, which will exacerbate the fall in households' purchasing power. Fast-growing housing-related expenditure (especially on energy), which is essential by nature, will meanwhile drain another large part of the forced savings created by households during the pandemic (see Chart II.4). Households spent most of these savings last year. They will turn the rest into expenditure in the first half of this year to make up partially for the fall in their real income (see Chart II.5). Consumer sentiment will not be favourable this year, either. In addition, household spending will be dampened by growth in market interest rates. Ultimately, household consumption will thus be broadly flat this year in whole-year terms.

Growth in nominal gross disposable income will be driven this year by the contributions of wages and salaries (see Chart II.6), which reflect still strong demand on the labour market. Together with another valorisation of pensions, this will lead to a continued brisk pace of growth in households' nominal disposable income, despite the termination of many fiscal support measures. However, this will be far from enough to keep up with the rapid rise in prices.

As inflation falls and wage growth picks up next year, the income situation of households will improve and their real consumption will start to rise again. It will grow by almost 2% in whole-year terms and converge to the pre-pandemic level at the end of 2023.

The saving rate will quickly fall close to its pre-pandemic level

The improvement in consumer sentiment seen in 2021 due to the post-Covid opening of the economy led to a gradual decline in the saving rate. Spending of the rest of households' forced savings – partly on higher energy bills – will foster a continued decline in the saving rate, which will thus decrease close to its pre-Covid level during 2022. Next year, it will go up slightly due to an improvement in the income situation of households and an increase in real interest rates.

A slowdown in external demand and persisting, war-exacerbated shortages of components and materials will be reflected in subdued export growth and a high level of inventories this year

The export-oriented part of the domestic economy (especially the automotive industry) is facing increased problems with supplies of production inputs (see Chart II.1). These issues were exacerbated at the start of this year by the outbreak of the war in Ukraine, which resulted in the introduction of economic sanctions against Russia and the severing of many of the trade links between the EU and Russia. In the case of goods, Russia and Ukraine account for around 3% of Czech exports, so the expected fall should not be significant.

Chart II.3

Growth in household consumption will halt this year and resume next year; government consumption will rise steadily further

household and government consumption; y-o-y changes in %; constant prices; seasonally adjusted

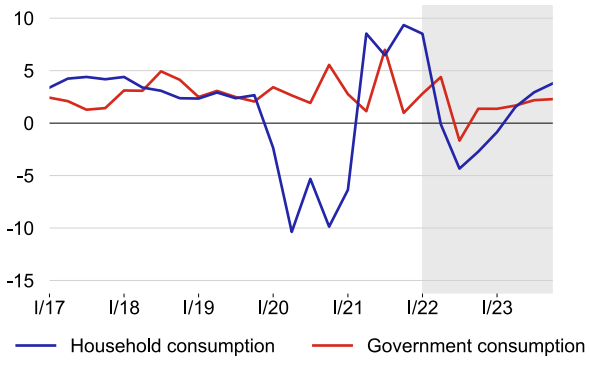
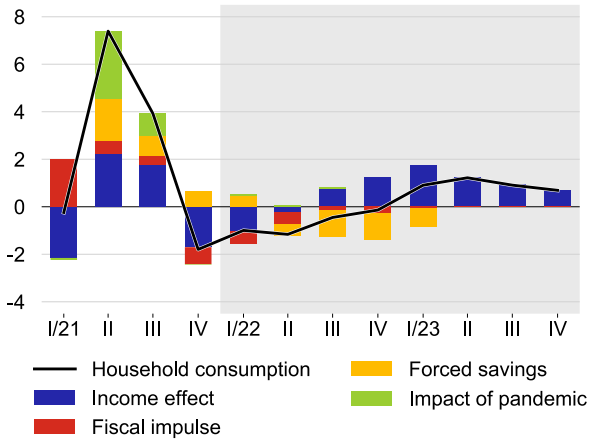


Chart II.4

Household consumption will be adversely affected this year by a sharp fall in households' real income and by depletion of the forced savings created during the pandemic

household consumption; q-o-q changes in %; contributions in pp; constant prices; seasonally adjusted



Note: "Income effect" reflects real income (including wages and salaries) and energy commodity prices. "Impact of pandemic" embodies the effect of shutdowns and the subsequent reopening of the economy and the return to normal consumer behaviour, for example in terms of how often people go to the cinema, eat out and so on.

However, Czech exporters cannot expect any major redirection of their activities to other export territories this year, as growth in external demand will slow markedly. In addition, the fragile recovery of tourism (exports of services) will slow. This will be yet another blow to the industry after the impacts of the pandemic.

Under the national accounts methodology, export growth will also be boosted this year by spending by Ukrainian refugees, as they are deemed non-residents (de facto tourists) for these purposes. Their consumption in the Czech Republic is thus recorded as a Czech export, not as household consumption (as is the case with residents). The forecast assumes that their spending on a quarterly basis will peak in summer 2022 (at almost CZK 11 billion) and will manifest itself to this extent over the entire forecast horizon.

Exports will recover quickly next year, assuming that the war gradually de-escalates this year (see Chart II.7). This recovery will also be fostered by the fade-out of the problems in global supply and production chains, which will further accelerate growth in external demand. Exports will grow by almost 10% in 2023.

Despite the decline in exports, the contribution of net exports to GDP growth will be slightly positive this year. Domestic demand will cool significantly. This will reduce imports, due to a fall in import-intensive investment and low household consumption. The fall in imports will exceed that in exports. Next year, the contribution of net exports to growth will be strongly positive, owing to the aforesaid recovery in the export performance of the economy (see Chart II.7).

Fixed investment will be broadly flat this year due to a deterioration in firms' financial situation and sentiment together with slower growth in external demand and continuing problems in global value chains

The room for corporate investment to grow has been shrinking since last autumn due to rising input prices (of energy in particular). Fixed investment growth was only modest at the year-end, amid an almost flat gross operating surplus in year-on-year terms.[5]

The financial situation of firms will worsen in the first half of this year, again due mainly to rapidly rising energy prices. Investment in renewing and expanding production will be postponed on concerns of a distinct slowdown in external demand growth and increased uncertainty linked with the ongoing war. Persisting value chain disruptions will also have an adverse effect, but it will gradually fade. Conversely, full order books in many firms and a long-standing need for automation, robotisation and digitalisation will initially

5 Compared with the pre-Covid level (46.5% in 2019), the profit rate of non-financial corporations (defined as the ratio of gross operating surplus to gross value added) deteriorated only slightly to 45.4% in 2021. The EU average was around 40%.

Chart II.5

The rest of the forced savings created during the pandemic, regarded as deferred consumer spending, will be used up quickly this year

households' consumption expenditure in CZK billions; constant prices; columns correspond to forced savings in Chart II.4

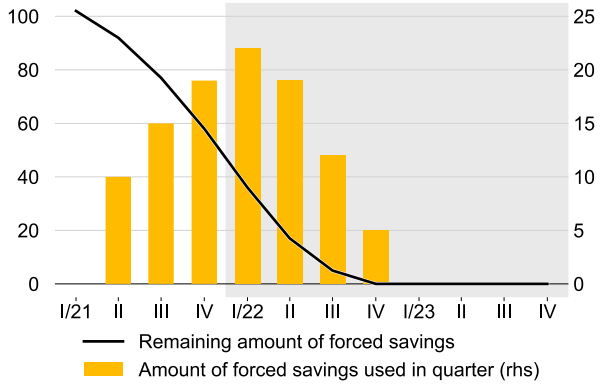


Chart II.6

Disposable income growth will slow this year, mainly due to reduced contributions of wages and salaries and entrepreneurs' income

household consumption and gross disposable income; y-o-y changes in %; contributions in pp; current prices; seasonally unadjusted

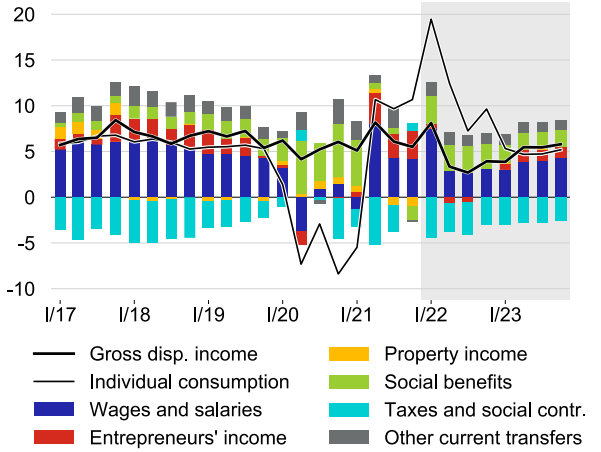
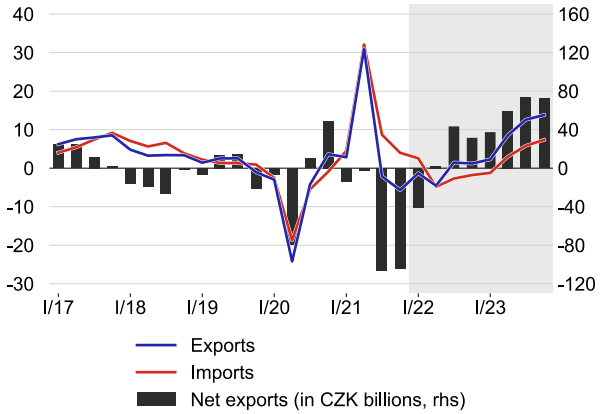


Chart II.7

Exports will be dampened this year by continued supply disruptions and by the war in Ukraine, and will start to grow again as these issues fade out

real exports and imports; y-o-y changes in % and CZK billions; seasonally adjusted



stimulate investment activity. However, private fixed investment will decline overall this year. By contrast, government investment will continue to increase with financial support from EU funds and NGEU programmes (see Chart II.8).

Growth in private fixed investment will increase significantly next year as the difficulties in global production chains fade away and external demand picks up. Government investment will rise further, supported by absorption of EU funds and a planned purchase of army helicopters.[6] Total fixed investment will thus grow by more than 5% next year.

Additions to inventories will remain above their long-term level until mid-2023, amid continued supply-side bottlenecks, and will fall only gradually (see Chart II.9). Firms will be able to complete and export their forced stocks of unfinished products as the supply disruptions fade. Total gross capital formation growth will thus stay negative in 2022 and 2023 due to the release of accumulated inventories.

Fiscal policy will dampen GDP growth slightly this year as Covid programmes are phased out; expenditure linked with the arrival of Ukrainian refugees will have the opposite effect

Real government consumption growth slowed only slightly last year (see Chart II.3). This was due to continued high pandemic-related spending, especially in health care. A large part of this expenditure will be ended this year, leading to another – this time pronounced – slowdown in government consumption. This will be accompanied by a wage freeze for government employees whose pay is regulated under the state budget or by government decree.[7] Rising health and education expenditure linked with the arrival of Ukrainian refugees will have the opposite effect.

The fiscal impulse will slightly dampen GDP growth this year (see Chart II.10). This will be due to the termination of many of the support programmes that supported the economic recovery for most of last year. However, the restrictive effect associated with the phasing out of these programmes this year will be partly offset by other measures on both the revenue and expenditure sides of public budgets.[8] According to

Chart II.8

Persisting uncertainty and problems in value chains this year will lead to still high additions to inventories and a decline in private investment; government investment spending will keep rising

investment activity; y-o-y changes in %; contributions in pp; constant prices; seasonally adjusted

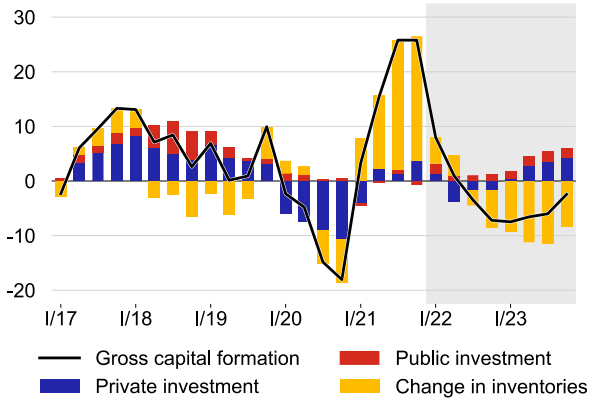


Chart II.9

Additions to inventories will remain close to last year's extreme levels until mid-2022 and then fall only gradually

change in inventories; CZK billions; constant prices; seasonally adjusted

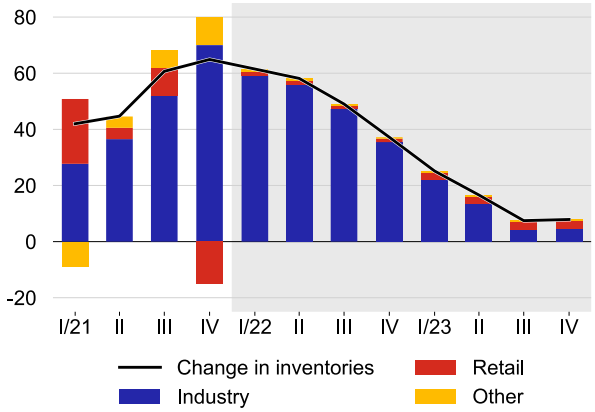
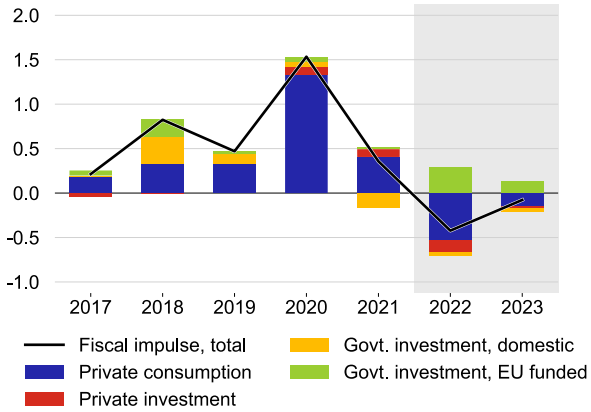


Chart II.10

Fiscal policy will dampen GDP growth slightly this year, due to the phasing out of most Covid support programmes

fiscal impulse; contributions to GDP growth in pp



6 The investment will amount to CZK 14 billion, distributed evenly across the whole of 2023.

7 In light of the current evolution of inflation, the government will most probably open talks with unions on reviewing its plan to freeze the pay of the majority of state administration employees this year.

8 These include a further increase in the personal income tax deductible bonus, an above-average increase in pensions in January, an increase in subsidies for renewable resources, faster absorption of EU funds, expenditure on assistance for Ukrainian refugees, a temporary decrease in excise duty on diesel and petrol and a reduction in road tax to the minimum allowed by EU regulations due to rising fuel prices. After the closing date of the forecast, the government approved a "family assistance package". It introduces a one-off benefit

the forecast, the contribution of the fiscal impulse to GDP growth will be broadly neutral next year.

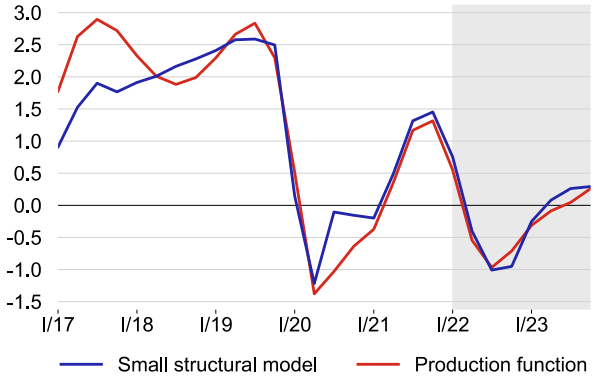
The previous overheating of the Czech economy will fade away quickly this year

The economic slowdown this year will lead to rapid closure of the positive output gap, and the economy will then fall temporarily below its potential (see Chart II.11). All this will go on amid continued supply constraints, which will slow potential output growth this year. At the start of next year, after inflation drops sharply and domestic demand recovers, the economy will return to growth at a pace exceeding potential output growth as the problems in global and supply chains abate. The output gap will thus close from below during 2023.

Chart II.11

The previous overheating of the economy will subside quickly this year and the economy will temporarily operate below its potential

output gap in % of potential output



COMPARISON WITH THE PREVIOUS FORECAST: The real economy and the labour market

		2021	2022	2023	
GDP	y-o-y changes in % pp	**3.3** (0.2)	**0.8** (-2.1)	**3.6** (0.2)	The GDP growth outlook for this year is substantially lower, due mainly to a greater-than-expected cooling of domestic demand; GDP growth will conversely recover rather faster next year.
Household consumption	y-o-y changes in % pp	**4.3** (-0.7)	**0.1** (-5.9)	**1.8** (-0.6)	The household consumption growth outlook is significantly lower, due to a deeper decline in real wages and salaries, a larger increase in interest rates and a war-related drop in sentiment.
Government consumption	y-o-y changes in % pp	**3.0** (-0.3)	**1.7** (0.4)	**1.9** (-0.1)	The forecast for government consumption is slightly higher for this year, as it includes assistance for Ukrainian refugees; it is almost unchanged for 2023.
Gross fixed capital formation	y-o-y changes in % pp	**0.6** (-0.3)	**-0.2** (-6.0)	**4.5** (0.6)	This year's growth in investment activity will be lower than in the previous outlook because of weaker external demand, the outbreak of the war in Ukraine and higher interest rates.
Net exports	contr. to GDP growth pp	**-3.8** (-0.4)	**0.6** (0.3)	**4.1** (1.9)	Despite a larger fall in exports, the contribution of net exports to GDP growth will rise slightly this year due to a bigger drop in domestic demand; next year it will increase more significantly.
Employment	y-o-y changes in % pp	**-0.4** (0.0)	**2.5** (1.2)	**1.2** (0.6)	Employment will increase more substantially, mainly due to the arrival of war refugees, some of whom will join the labour force.
Unemployment (ILO)	% pp	**2.9** (-0.1)	**2.4** (0.0)	**2.7** (0.2)	The outlook for the unemployment rate has moved slightly upwards for next year, due mainly to lower economic activity.
Average monthly nominal wage	y-o-y changes in % pp	**6.1** (0.0)	**4.6** (-2.0)	**5.1** (-0.2)	Wage growth is lower mainly for this year, due to weaker economic activity amid high production costs, with employment of refugees also playing a role.

Note: Changes compared to the previous forecast in brackets (a green label indicates an increase in value and a red label a decrease)

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payment of CZK 5,000 for children in households with an annual income of less than CZK 1 million, faster payment of family allowance and support for part-time work and children's groups. Expenditure on the one-off benefit for households will amount to around CZK 10 billion.

The labour market will cool slightly further in the first half of this year

From the perspective of the LUCI, the labour market remains tight, despite cooling gradually. It is currently slightly above its steady-state-level, primarily in its real part (see Chart II.12). It will cool slightly further this year, as firms will not be able to increase wages significantly owing to the problems in supply and production chains and high growth in energy prices and other expenses. The arrival of Ukrainian refugees and their gradual integration into the labour force is another major factor easing the tightness in the Czech labour market. This will reduce the excess demand for labour. The position of Ukrainian nationals on the Czech labour market is discussed in Box 2 at the end of this section.

Despite the high inflation, wage growth will slacken owing to the economic slowdown

Wage growth in market sectors will continue to be affected by one-off factors and base effects,[9] which will make year-on-year wage growth volatile until mid-2022. In terms of the economic interpretation of wage growth, it thus makes more sense to monitor estimated fundamental wage growth (see Chart II.13).

Inflation will not be significantly reflected in wage growth in the first half of this year, despite still strong demand for labour, as firms are facing much higher costs during the energy crisis and also problems in value chains, which have been exacerbated by the war since the end of February. This will weaken the (until recently probably strong) bargaining position of employees in numerous sectors. The arrival of a large number of refugees will also foster lower wage growth. Ukrainian nationals entering the labour market will reduce the average wage mainly through the composition effect, i.e. by taking jobs with mostly below-average pay.[10] Moreover, despite the large number of current vacancies, the higher labour supply due to refugees will increase competition. Wage growth will not start to rise until 2023, when this year's drop in

Chart II.12

From the perspective of the LUCI, the labour market will cool slightly further this year, but will remain quite tight

LUCI; vertical axis shows standard deviations

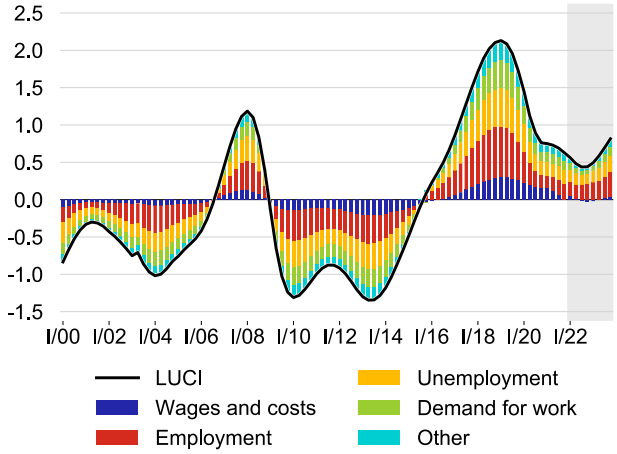
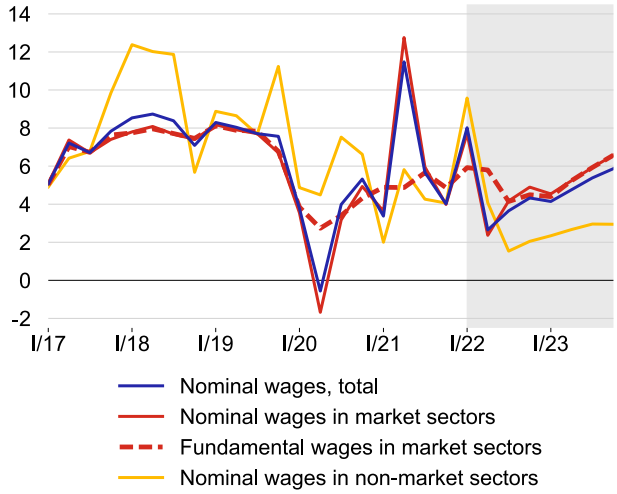


Chart II.13

Fundamental wage growth will slow in the second half of 2022; wage growth in non-market sectors will also weaken, due to a wage freeze in most public sector occupations

nominal wages; y-o-y changes in %



***The fundamental market wage** is obtained from the officially reported wage adjusted for certain one-off pandemic-linked statistical effects (attendance allowance, quarantine and partial wage compensation) and for extraordinary bonuses in health care and social services.*

9 These include in particular the statistical effects of a drop in the wages of employees drawing attendance allowance or wage compensation in the event of quarantine in 2021. Employees who did not work as a result of pandemic-related obstacles to work also saw a partial drop in wages, and some of them received only partial wage compensation. In addition, extraordinary "Covid" bonuses were paid in the health care sector in spring 2021 (similarly as at the end of 2020 and 2021). These effects were visible mainly in 2021 Q2, when year-on-year wage growth in market sectors as recorded in the statistics surged due to the unwinding of negative statistical effects from 2020 combined with the payment of the aforementioned extraordinary bonuses in health care.

10 The forecast assumes the arrival of 300,000 refugees, around half of whom will have gradually integrated into the labour market by the end of 2022 Q3. We consider that Ukrainians will be paid less than the average wage and on average will work part-time more than is usual in the Czech Republic.

employees' real income will be partially "made up" as economic growth starts to recover again.

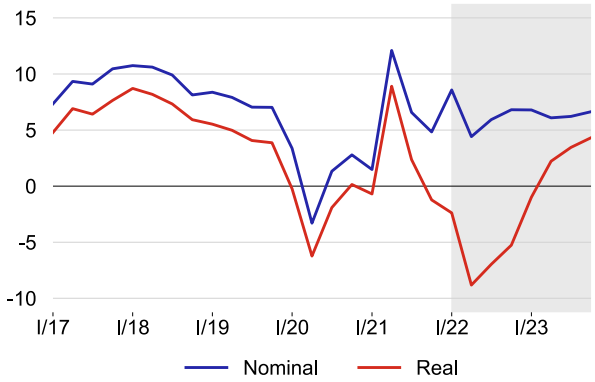
Wages in non-market sectors will grow at a lower pace in the years ahead than they did before the pandemic. According to the state budget, salaries of teachers will rise by 2% and wages of employees of integrated rescue system units and social services workers will go up by a flat amount of CZK 700 in 2022. Wages of all other government employees will be frozen this year. As in market sectors, official wage growth in non-market sectors also be volatile.

Growth in the volume of wages and salaries will also be affected by the arrival of Ukrainian nationals, as it will be pushed up by an increase in the full-time equivalent number of employees.[11] In real terms, the volume of wages and salaries will drop sharply in 2022 (see Chart II.14). This will be due to nominal wage growth lagging well behind inflation. The real wage volume will start to rise again as inflation falls in the first half of next year and the value chain problems disappear. This will boost household consumption.

Chart II.14

Growth in the real volume of wages and salaries will be deeply negative due to high inflation and will thus lead to subdued growth in household consumption

volume of wages and salaries; y-o-y changes in %



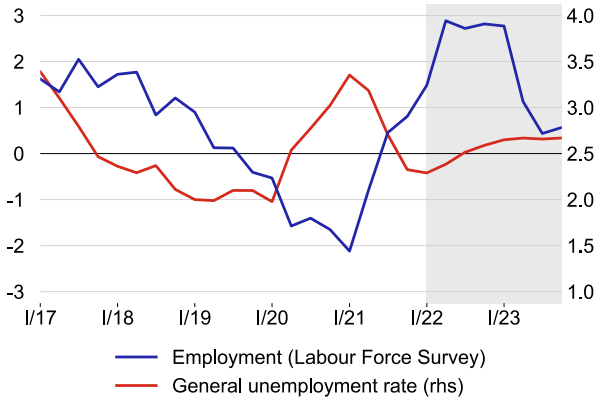
Employment will continue to rise on the back of strong demand for labour among Czech firms and higher labour supply due to workers arriving from Ukraine

Employment growth will pick up considerably this year, amid continued solid demand for labour (see Chart II.15). In terms of structure, the growth in total employment will be driven mainly by a rising number of employees, although the number of entrepreneurs will also go up gradually. The arrival of refugees, who will partly fill vacancies, will also have a major impact in the first half of this year.[12] The refugee wave will be reflected in growth in the labour force, which shrank significantly due to the pandemic. Some high-frequency and leading indicators[13] and the European Commission survey are also indicating a rise in employment in the coming months. In the second half of the year, though, job creation will start to slow and firms will begin to lay off workers due to the previous economic downturn. As a result, the jobless total will edge up, but it will remain close to a historical low. The general unemployment rate will thus rise slightly, especially in the second half of the year,[14] but will stay relatively low. After the factors that are slowing economic growth this year

Chart II.15

Migration from Ukraine will boost employment growth significantly, but unemployment will rise moderately over time due to weaker economic growth this year

employment, y-o-y changes in %; general unemployment rate in %; seasonally adjusted



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11 The above-mentioned effect of a lower average wage of Ukrainian workers will conversely have a dampening effect.

12 The method and nature of the Labour Force Survey (LFS) imply sizeable uncertainty regarding the statistical capture of the integration of Ukrainian nationals into the labour market. The forecast currently assumes almost full statistical capture.

13 The Google Trends scores for "unemployment" and "unemployment benefit" are relatively low. The ManpowerGroup Index does not expect layoffs either.

14 As well as increasing the labour force and employment, refugees will contribute to growth in unemployment, due to their worse starting position on the labour market compared with Czech nationals.

subside, the general unemployment rate will be broadly flat next year. The forecast expects a similar trend in the share of unemployed persons.

BOX 2 Ukrainian nationals on the Czech labour market

One of the consequences of Russia's invasion of Ukraine is a massive inflow of refugees into many countries, including the Czech Republic. Most of them are of working age and thus represent – if they stay for an extended period – a potential labour force for the long tight Czech labour market. This box describes the position of Ukrainian nationals on the local labour market up to now, and then presents the structure of the Ukrainians arriving in the current refugee wave and indicates how they might integrate into the labour market in the future.

Ukrainians currently make up a large proportion of the foreign workers in the Czech Republic (32% of all job seekers registered at labour offices). Their number can be expected to rise significantly further due to the war. In March 2022, labour offices registered around 240,000 Ukrainians (see Chart 1), 57% of whom were men and 43% were women. A marked rise in the number of women can be seen in the March data compared with February. This is the first manifestation of growth in the number of war refugees in the domestic statistics. Almost half of the Ukrainians do not need a permit to work in the Czech Republic,[1] while the rest apply for an employee card (a long-term residence and work permit) or a work permit (a permit to work for a maximum of two years). So far, there have been almost no blue cards, that is, cards issued to foreigners who provide evidence of high skills (at least a three-year university education), among the permits granted to Ukrainians.

Chart 1

Almost half of the Ukrainians registered as job seekers at labour offices do not need a permit to work in the Czech Republic

total number and type of work permits; source MLSA

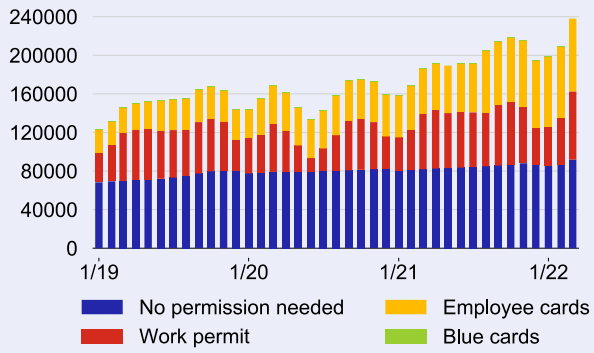
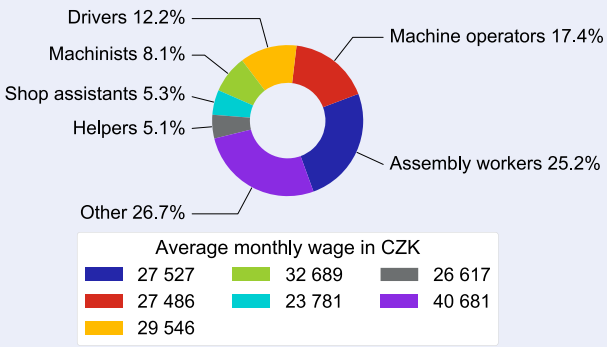


Chart 2

Workers from Ukraine mostly hold less skilled and lower-paid positions in the Czech Republic

shares of occupation categories in Ukrainians' employment in % and Ukrainians' earnings; data for 2021; source AEIS (MLSA)



Up to now, Ukrainians in the Czech Republic have mostly been doing less skilled, physically demanding work (see Chart 2). Half of them work as machine operators or in other blue-collar jobs. Around a quarter of the Ukrainians working in the Czech Republic are scattered across a wide range of occupations, some of which are more skilled; this is reflected in a higher-than-average wage in this group. The occupation and skills range of Ukrainian workers and the correspondingly lower wage levels in the positions they hold mean that they earn a lower wage on average compared with other nationals (see Chart 3) and the Czech average.

The labour market situation will change somewhat (and not just for Ukrainians) with the arrival of war refugees.[2] This is due to the different structure of the newcomers compared with the Ukrainians already registered at labour offices (see Chart 4). The new Ukrainian immigrants are mostly women (66%). Almost two-thirds of the newcomers are of working age (15–64 years old) and thus represent a potential labour force. The preponderance of women in this age group is even stronger, with men accounting for only a quarter. Even so, the current arrivals of men from Ukraine are hypothetically increasing the labour force in the Czech Republic by around 1% in absolute terms.

The Ukrainian newcomers are likely to initially seek similar jobs as their compatriots already registered here. However, given the newcomers' different skills structure, the average skills level of the Ukrainians integrated into the

Czech labour market, and hence their average wage, should gradually increase. As mentioned above, the skills range of Ukrainians is broad. It is reasonable to assume that if Ukrainians held the same mix of positions as those which are available on average in the Czech Republic, their wages would be very similar to those of Czech workers. The effect on the average wage would be almost negligible, as a comparison of the average wages in these positions[3] reveals that Ukrainian workers' wages are not systematically over- or underestimated on the Czech labour market (see Chart 5). The average difference in the wages of Czechs and Ukrainians in a particular position (across all positions) is less than 4%, which is on the border of statistical error.

Even so, the arrival of large numbers of Ukrainians in the Czech Republic will affect the wage statistics. First, it can be expected (for the above reasons) to have a pure composition effect, as Ukrainians will, at least initially, probably take positions at the lower end of the wage spectrum. Higher labour supply in the Czech Republic, and hence higher competition on the labour market and downward pressure on the currently high labour market tightness, will also have a downward effect on future wage growth.[4] The Labour Force Survey (LFS) statistics are likely to undergo significant changes. These will stem from a marked increase in the total labour force and gradually also in the number of persons employed, and also from the assumption that Ukrainians will find it more difficult than Czechs to find jobs and will thus raise total unemployment (more than proportionately). However, the nature of the survey[5] implies relatively high uncertainty regarding the capture of the effect of Ukrainian workers.

Chart 3

Ukrainians in the Czech Republic earn less on average than workers from other countries and Czechs, as they work in lower-paid occupations

average wage in Czech Republic by citizenship; data for 2021; source AEIS (MLSA)

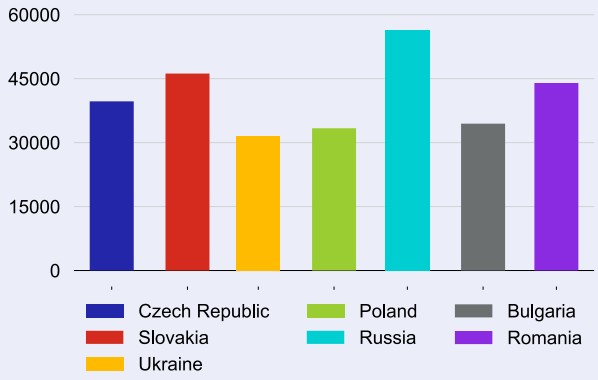


Chart 4

The structure of the Ukrainian refugees is dominated by women due to the war

absolute numbers as of 29 April 2022; source Czech Ministry of Interior

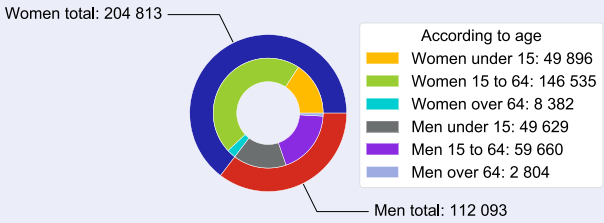
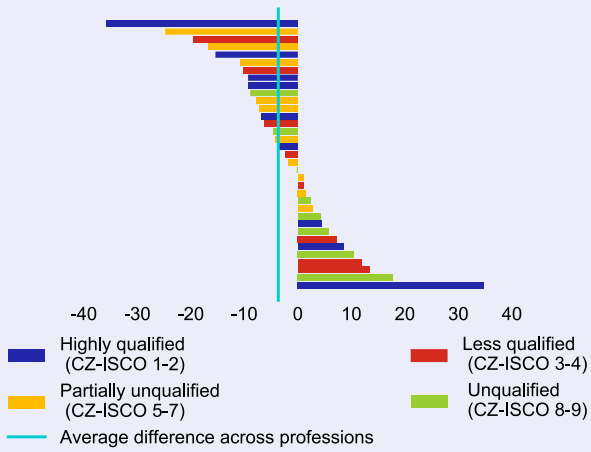


Chart 5

Wages in occupations held by Ukrainian workers are not systematically under- or overestimated

average difference in wages of Ukrainian workers in individual positions in Czech Republic compared to Czech average; in %; each horizontal column represents group of positions in given CZ-ISCO category; positions at same skills level are indicated in same colour; data for 2021; source AEIS (MLSA)



Note: Highly skilled positions (CZ-ISCO 1 and 2) include, for example, corporate CEOs and IT specialists. CZ-ISCO 3 and 4 positions include, for example, experts and officials. CZ-ISCO 5–7 groups include, for example, craft workers, metal workers, sales workers and care workers. CZ-ISCO 8 and 9 groups include assemblers, drivers, stationary plant operators and persons employed in elementary occupations.

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1 Foreigners do not need a work permit if, for example, they have permanent residence in the Czech Republic, have been posted in the Czech Republic by an employer under a long-term contract or have graduated from a secondary school, a post-secondary technical school or a university here (see, for example, an overview of rules at the website of the Association for Integration and Migration).

2 The increases in refugees gradually declined from an initial more than 10,000 a day after the outbreak of the war, stabilising at 2,000–3,000 a day in early April. The CNB's forecast expects a total of 300,000 immigrants to have relocated from Ukraine to the Czech Republic by 2022 Q3 in the current refugee wave, about half of whom will enter the labour market. It does not expect the refugees to leave before the end of the forecast horizon (i.e. before the end of 2023).

3 The occupations are aggregated using the CZ-ISCO classification.

4 However, the effect of direct competition will be lower because of the large number of job vacancies in the Czech Republic. Initially, therefore, it is likely that only a small proportion of the newcomers will act as competition. After they overcome the initial barriers (language, administration, accommodation, etc.), Ukrainians will probably compete at all skills levels.

5 The LFS is conducted in the form of interviews in households and at other accommodation facilities. The frequency of contact with foreign respondents is much lower than that with Czech ones.

III. INFLATION

Inflation will rise further in 2022 Q2, reaching almost 15%, with all its components contributing to the increase. Core inflation will continue to reflect both strong producer price inflation at home and abroad and fading substantial domestic cost and demand pressures. Rapidly rising housing-related energy bills will be reflected in a further significant increase in administered price inflation. Strong growth in agricultural commodity prices will cause food prices to accelerate further. The record-high cost pressures, driven by both import prices and the domestic economy, peaked at the start of this year. They will diminish during the year due to a decline in the currently high growth in import prices and to subdued wage growth. Next year, the cost pressures will ease further as import prices stabilise and subsequently come down slightly. This year's double-digit inflation will thus fall quickly in the first half of next year. The previous rapid increase in interest rates will also contribute substantially to the drop. Headline inflation will be slightly above monetary policy-relevant inflation, owing to a rise in excise duties.

The record-high overall cost pressures peaked at the start of this year; they will gradually ease as the rapid growth in import prices fades out

Growth of total costs in the consumer sector rose significantly at the start of the year. This was due mainly to import prices, later joined by the consequences of the war in Ukraine (see Chart III.1). The rapidly strengthening contribution of energy import prices reflected a further rise in oil, gas and electricity prices on international exchanges. The increasing contribution of core import prices was driven by accelerating growth in core foreign industrial producer prices. Its pace mirrored the persisting problems in global value chains. The domestic economy also continued to contribute substantially to the very brisk growth in costs early this year.

The exceptionally strong cost pressures will start to ease this year. This will be due mainly to slower growth in energy prices and also to lower growth in prices of domestic intermediate goods, reflecting subdued wage growth. The cost pressures will decrease even further in 2023. Their growth will start to be dampened by a negative contribution of energy import prices linked with an expected partial correction of the high prices on commodity exchanges. In addition, the contribution of core import prices will also decline steadily as the global supply chain disruptions gradually abate. The growth rate of total costs will converge to 2% from above in late 2023, despite a renewed modest increase in the contribution of the domestic economy.

Domestic cost pressures will remain elevated this year, despite easing somewhat

Growth in domestic costs gradually slowed at the turn of the year (see Chart III.2). Falling wage growth made a significant contribution to this slowdown. The contribution of the price of capital turned slightly negative at the year-end, while a decline in labour

Chart III.1

The strong growth in cost pressures at the turn of the year was driven mainly by energy import prices; the growth in costs will gradually slow this year, with most components contributing to the slowdown

costs in consumer sector; q-o-q changes in %; contributions in pp; current prices; annualised

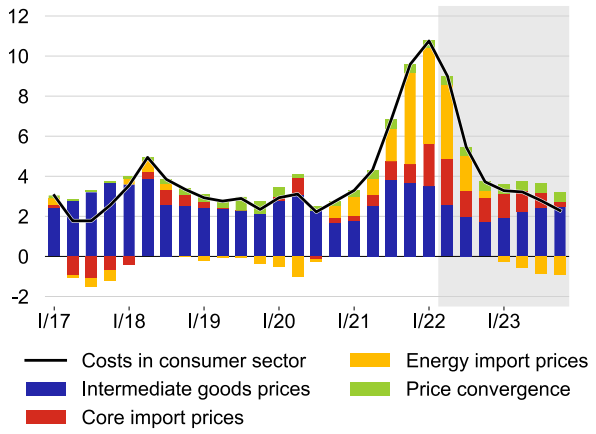
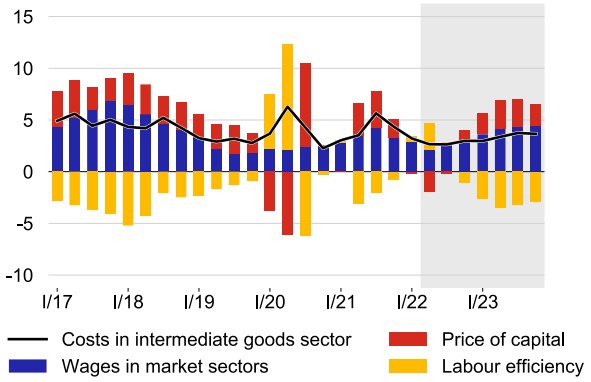


Chart III.2

Domestic cost pressures will ease this year; they will strengthen in 2023, due mainly to accelerating wage growth

costs in intermediate consumption sector; q-o-q changes in %; contributions in pp; current prices; annualised



efficiency had an inflationary effect. This was due to constraints on production in industry caused by overloaded global supply chains and the related cooling of economic activity.

Domestic cost pressures will ease somewhat in 2022 Q2, as the contribution of wages will decrease further. This will reflect a weakening of the previously quite strong bargaining position of employees, who will have to take companies' high costs into account. For this reason, most wages will be only partly indexed to the high inflation. The composition effect associated with the integration of many Ukrainian refugees into the domestic labour market (see Box 2 "Ukrainian nationals on the Czech labour market" in section II) will influence growth in wage costs in the same way to a small extent. The negative contribution of the price of capital will meanwhile increase further in the spring due to a marked quarter-on-quarter decline in economic activity caused by the economic impacts of the war in Ukraine. However, this will be counteracted by the inflationary effect of a drop in labour efficiency, which, in addition to the swing in economic activity, will reflect only gradual onboarding of refugees and their integration into new positions.

The contribution of wages to growth in domestic costs will start to strengthen gradually this summer due to efforts to make up at least partly for the high inflation. This effect will intensify even further next year. The contribution of capital will turn inflationary again at the year-end, amid renewed economic growth and an improving situation in industry, and will increase until mid-2023. Growth in labour efficiency will also resume and start to offset the cost pressures again.

The inflationary effect of domestic demand will fade out in the autumn due to the previous monetary policy tightening

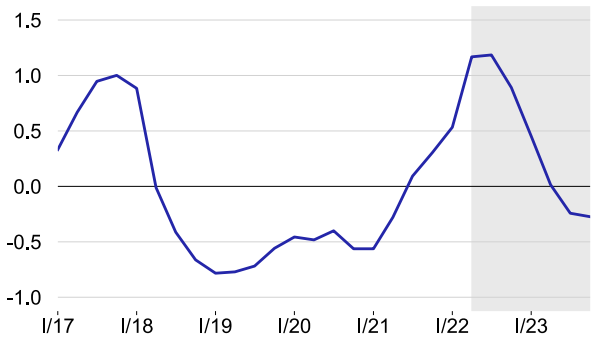
Domestic producers, retailers and service providers have recently been raising their prices at a rate in excess of the growth in their costs. The still solid domestic demand and the persisting good income situation and purchasing power of Czech households is allowing them to do so. The corresponding growth in the positive gap in mark-ups will increase even further in the short run (see Chart III.3). At the end of this year, however, the demand pressures will begin to diminish and the gap in mark-ups will start to close. This will be due to a considerable cooling of consumption, which will reflect high inflation and the previous tightening of monetary policy. The increased domestic interest rates will suppress consumer appetite, and retailers will have to gradually lower their profit margins back to the usual level amid lower demand. This will help slow inflation.

Inflation will accelerate significantly further in 2022 Q2 and be in double figures for the rest of the year

Chart III.3

The positive gap in mark-ups will start to close quickly owing to a cooling of domestic demand, which will be aided by the previous tightening of monetary policy

gap in mark-ups on consumer goods in %

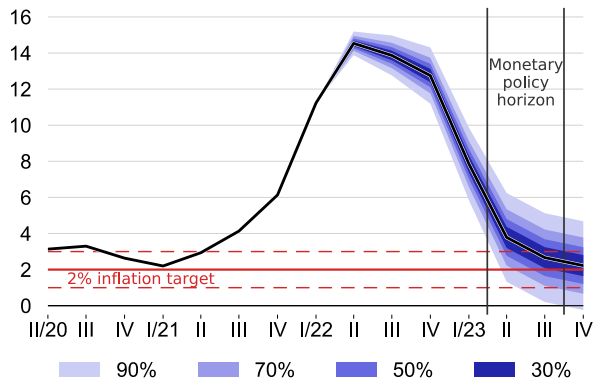


***Mark-ups in the consumer sector** represent the difference between the prices and marginal unit costs of producers of final consumer goods. The gap in mark-ups shows the deviation of current mark-ups from their steady-state level. A positive gap in mark-ups thus implies a higher-than-usual "profit margin", while a negative gap represents a lower-than-usual one. If the gap increases (decreases) over time, it gives rise to an additional inflationary (anti-inflationary) effect, i.e. upward (downward) pressure on consumer prices going beyond the increase (decrease) in costs.*

Chart III.4

Inflation will climb to 15% in 2022 Q2 and then start to fall, returning close to the 2% target by the end of next year

headline inflation; y-o-y in %; confidence interval



Besides further growth in core inflation, strengthening growth in administered prices and food prices will foster growth in headline inflation (see Chart III.4). The growth in fuel prices will meanwhile subside only gradually. Headline inflation will thus increase to 15% in early summer (see Chart III.5).

Fuel prices[15] increased by more than 50% year on year in March due to growth in oil prices related to the war in Ukraine. Their growth will remain high through this year but will start to fall. Besides a drop in global oil prices, this will be due to the abolition of the requirement to add biofuel to fuel.[16] Prices at filling stations will decrease year on year in mid-2023.

Within core inflation, prices of both tradables and non-tradables are rising sharply, with imputed rent still playing a big role

Core inflation rose sharply in Q1, owing to rising growth in prices of goods and services. It will accelerate further in Q2 (see Chart III.5), as this segment of inflation, too, will reflect the strong growth in costs, including energy costs.

The constantly growing contribution of imputed rent (see Chart III.6), which has a relatively high weight in the national consumer price index, is an important item of the accelerating core inflation. The growth in imputed rent reflects continuing sharp growth in prices of new properties (of more than 25% in 2021 Q4) and high growth in prices of construction work and construction materials. Growth in construction work prices exceeded 10% in March. This is due in large part to the global supply chain difficulties, which are giving rise to shortages of building materials and subsequent growth in their prices. This growth reached almost 23% in March. According to the latest available data, these cost pressures, combined with strong demand for construction output, led to high growth in housing prices (prices of new and existing apartments and houses, including land) of almost 26% in 2021 Q4.[17] The strong growth in industrial producer prices abroad, which is spilling over noticeably into domestic industrial and consumer prices, will continue to be reflected in high core inflation, due, among other factors, to the war in Ukraine. All these effects will keep core inflation very high throughout this year. As they fade, core inflation will start to decline gradually this year and return to 2% in the second half of 2023, aided by a considerable tightening of domestic monetary conditions in 2021 and 2022.

Chart III.5

The escalating price growth will continue to be dominated by core inflation, but growing contributions of administered prices and a marked rise in food prices will also play a significant role

structure of inflation; y-o-y changes in %; contributions in pp

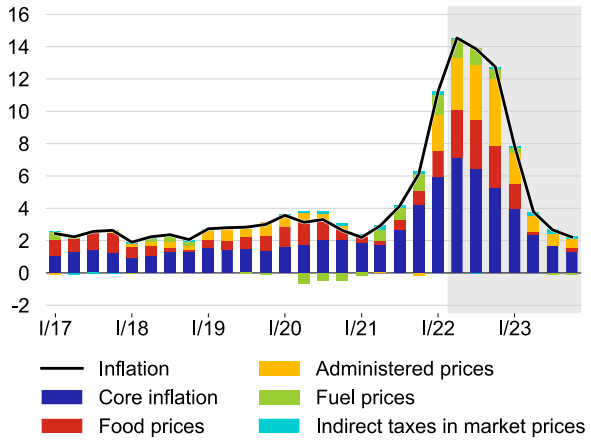


Chart III.6

The already massive contribution of imputed rent will increase further in Q2 but start to decrease gradually in the second half of the year

y-o-y changes in %; contributions in pp

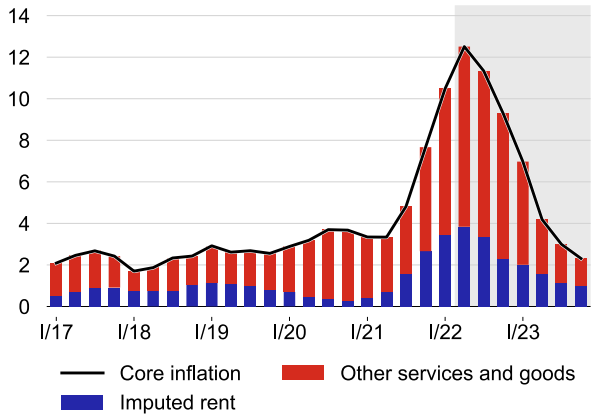
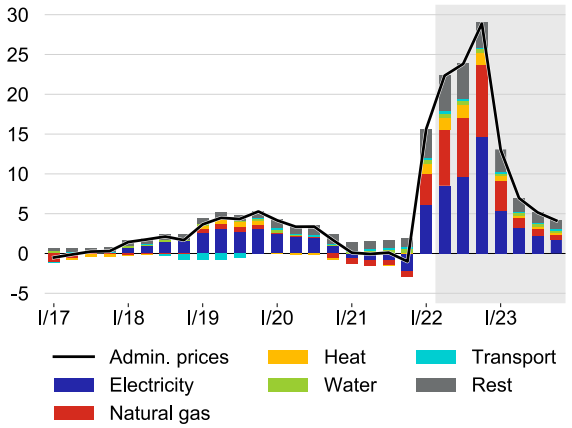


Chart III.7

Administered price inflation will be extremely high throughout this year; it will fall sharply next year but remain elevated

administered prices; y-o-y changes in %; contributions in pp; including taxes



15 Adjusted for a temporary decrease in excise duty, which is described below.

16 In the case of fuels, excise duty on fuel will decrease temporarily (as described below), but this will not affect fuel prices adjusted for the first-round effect of indirect taxes, which are described in this paragraph.

17 Measured by the CZSO House Price Index.

Administered price inflation will rise further due to continued growth in energy prices

Following a sharp rise early this year, administered prices will increase further (see Chart III.7). They will reflect high exchange prices of energy, whose growth to levels unseen until recently is also being fostered by Russia's invasion of Ukraine. In particular, housing-related energy (electricity, natural gas, heating) will continue to get more expensive in the domestic administered price segment. Overall, administered price inflation will exceed 20% in Q2 and peak at around 30% at the end of the year.[18] In 2023, it will slow but remain elevated due to the gradual pass-through of the previous growth in prices on energy exchanges.

Growth in food prices will intensify in the near future

The sharp growth in food prices is being driven mainly by growth in world agricultural commodity prices. Strong global demand, along with supply-side constraints, is being reflected mainly in high prices of crop products, particularly cereals and oilseed. This is also leading to growth in domestic agricultural and food producer prices. However, a significant rise in prices can be expected across all food categories in the months ahead. It will be fostered in part by the war in Ukraine, which is one of the leading grain exporters. The surging food price inflation will peak in mid-2022 (see Chart III.5). In 2023, it will slow distinctly, owing to an expected correction of world agricultural commodity prices and a decline in other cost pressures.

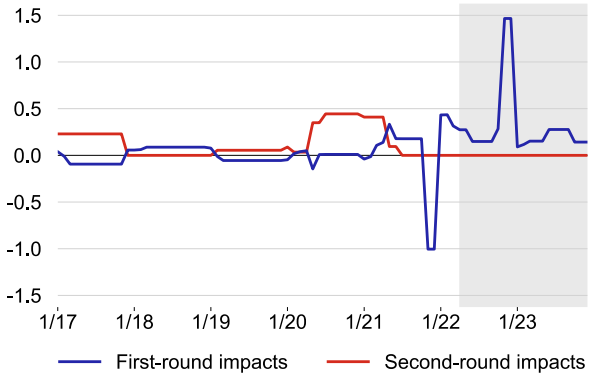
Monetary policy-relevant inflation will be below headline inflation over the entire forecast horizon

Minor changes to indirect taxes will affect consumer price inflation in both directions. Excise duty on cigarettes went up by 5% at the beginning of this year. According to the forecast, this increase will pass through fully to cigarette prices (see Chart III.8). At the same time, the temporary waiver of VAT on electricity and gas ended in January. This increased the overall effects of the changes to indirect taxes on inflation for the first half of this year to about 0.3 pp.[19] A temporary reduction in excise duty on petrol and diesel of CZK 1.50 a litre will have the opposite effect from June onwards.[20] Excise duty on tobacco will increase further (to the same extent as this year) at the start of 2023. These changes do not affect monetary policy-relevant

Chart III.8

The first-round effects of changes to indirect taxes reflect changes in excise duty on tobacco and fuel and the temporary waiver of VAT on energy at the end of 2021

first-round and second-round effects of tax changes; contributions to annual inflation in pp



*We distinguish two types of price effects in relation to **changes to indirect taxes** – first-round and second-round. The first-round effects are the calculated price changes due to the indirect tax changes implied by full (accounting) pass-through of the tax changes to prices of the relevant items of the consumer basket. The second-round effects capture the price changes due to indirect tax changes going beyond their first-round effects. The second-round effects may be positive or negative. In the case of an indirect tax increase (decrease), they are positive if the prices of the items concerned rise (fall) more (less) than implied by mechanistic pass-through of the tax changes. Conversely, they are negative if prices rise (fall) less (more) than the tax increase (decrease) would imply. The CNB applies escape clauses to the first-round effects of indirect tax changes.*

18 The contribution of administered prices to headline inflation will reach 4.1 pp at the end of this year.

19 The temporary waiver of VAT on electricity and gas in the last two months of 2021 will slightly widen the difference between headline and monetary policy-relevant inflation briefly at the end of this year, due to base effects.

20 The reduction in excise duty on petrol and diesel is currently planned to be in effect from June to September 2022. This measure will reduce consumer inflation by about 0.1 pp.

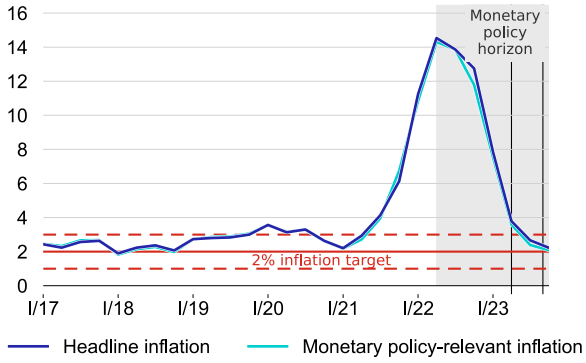
inflation, so the CNB does not respond to them. This is because they are one-off changes in the price level caused by the corresponding pass-through of changes to indirect taxes. The central bank usually ignores such changes, especially if, as in this case, they do not have clear long-term second-round effects on inflation.

Monetary policy-relevant inflation will fall close to the inflation target at the end of the monetary policy horizon, due in part to the previous tightening of monetary conditions (see Chart III.9).

Chart III.9

Monetary policy-relevant inflation will decrease close to the 2% inflation target at the end of the monetary policy horizon; headline inflation will be slightly above it over the entire outlook, due to changes in excise duties

headline and monetary policy-relevant inflation; in %



COMPARISON WITH THE PREVIOUS FORECAST: Price developments

		2021	2022	2023	
Consumer prices	y-o-y changes in % pp	**3.8** (0.0)	**13.1** (4.6)	**4.1** (1.8)	The marked upward revision of the inflation forecast in 2022 is due to all its components.
Administered prices	y-o-y changes in % pp	**-0.2** (0.0)	**22.7** (8.8)	**7.3** (3.6)	The further, extremely large rise in the administered price outlook for both 2022 and 2023 is due to higher energy price growth than expected in the previous forecast.
Core inflation	% pp	**4.8** (0.0)	**10.9** (1.8)	**4.1** (0.9)	Much faster growth in inflation abroad has moved the outlook for core inflation in the Czech Republic upwards considerably.
Food prices (incl. alc. bev. and tobacco)	y-o-y changes in % pp	**2.1** (0.0)	**9.5** (6.4)	**1.9** (1.8)	The food price forecast is significantly higher, due to higher growth in agricultural commodity prices, which is currently being driven mainly by the war in Ukraine.
Fuel prices	y-o-y changes in % pp	**16.8** (0.0)	**31.8** (21.4)	**0.9** (5.2)	Fuel price inflation is noticeably higher this year, due to an unexpected rise in oil prices in the first half of March related to the war in Ukraine.

Note: Changes compared to the previous forecast in brackets (a green label indicates an increase in value and a red label a decrease)

BOX 3 Assessment of the fulfilment of the inflation target over the last two years

The CNB's price stability mandate involves regularly assessing the fulfilment of the inflation target and determining the causes of any past deviations of actual inflation from the central bank's target. In the interests of making the CNB's monetary policy transparent to the public, this analysis has become an annual feature of the Monetary Policy Report.[1] Here, we assess the deviations of inflation from the 2% target in the period 2020 Q2–2022 Q1.

Inflation was above the CNB's 2% target over the entire period under assessment. It rose well above the target in the second half of last year and early this year (see Chart 1). Chart 2 presents the contributions of the individual factors, which were identified using the g3+ core projection model[2] and are described in more detail in the following paragraphs. This provides an insight into the origin of the inflation pressures faced by the Czech economy in the past.

Economic developments abroad had a strong anti-inflationary effect in 2020. Foreign producer prices had the largest impact. They were falling at the time, due to a drop in oil prices at the start of the first wave of the pandemic. Foreign economic activity, hit by the adverse effects of the coronavirus pandemic, acted in the same direction. However, the anti-inflationary effect of the foreign environment gradually decreased in intensity last year and that environment turned inflationary early this year. This was due to growth in foreign producer prices, which was at a historical high. It reflected second-round effects of the pandemic in the form of overloaded global value chains and a surge in energy commodity prices on international exchanges starting last autumn. The inflationary effect of foreign prices has been offset in recent quarters by accommodative ECB monetary policy, as the ECB's wait-and-see attitude to monetary policy has been exerting latent appreciation pressure on the koruna, and thus downward pressure on inflation, via a widening interest rate differential.

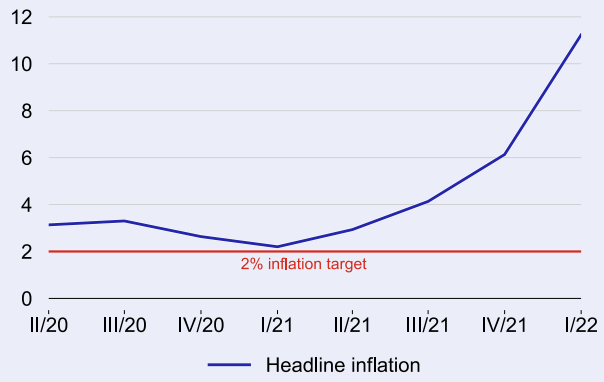
Overall, the domestic economy fostered a positive deviation of inflation from the target. In 2020, its inflationary effect reflected its initial significant overheating and the only gradual cooling of the Czech labour market due to the pandemic. Moreover, the first wave of the pandemic led to a temporary deterioration in labour efficiency, which outweighed the anti-inflationary effect of falling economic activity. However, the domestic economy turned temporarily anti-inflationary in late 2020 and early 2021 as a result of the government's strict anti-pandemic measures, which curbed household consumption.

The monetary policy rule in the g3+ model *sets interest rates taking into account the deviation of expected inflation from the 2% target at the monetary policy horizon. The inflation outlook takes on board the forecasts for all relevant macroeconomic variables. The emphasis on the monetary policy horizon reflects the gradual transmission of interest rates to future economic developments and in turn to inflation. By concentrating on inflation at this horizon, the central bank simultaneously abstracts from short-term inflation shocks. Their impact can be controlled by monetary policy to only a minimal extent. In addition, any efforts to mitigate them quickly would cause high interest rate volatility, which would destabilise the economy. The monetary policy rule also includes interest rate smoothing by the central bank. Nonetheless, active monetary policy stabilises inflation at the target in the medium run. This is usually accompanied by gradual movement of interest rates towards their neutral long-run level (3%).*

Chart 1

Inflation was above the upper boundary of the tolerance band around the target for most of the period under review, rising above 10% in early 2022

consumer prices in %



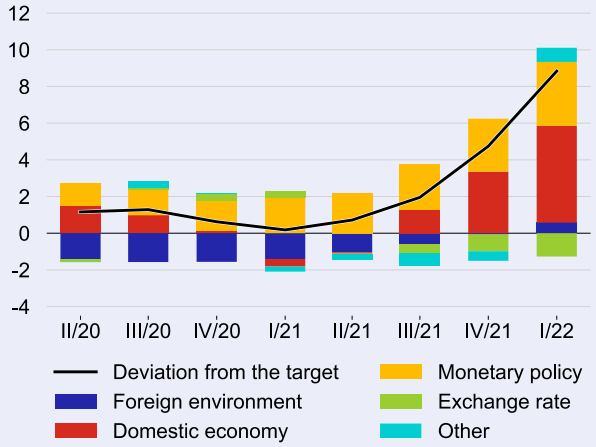
The effect of the domestic economy reversed again and became inflationary in mid-2021, when domestic demand recovered quickly and consumers willingly accepted rising prices in the post-Covid euphoria and thanks to the previous generous fiscal policy. This allowed firms to raise their prices further and make up for their previous loss of income by increasing their profit margins. In addition, the already strong domestic inflation pressures were joined early this year by a sizeable increase in administered prices caused by a surge in energy prices on international exchanges.

The CNB responded quickly to the anti-inflationary effects of the coronavirus pandemic by slashing interest rates. At its meetings in 2020, the Bank Board repeatedly assessed the uncertainties and risks of the macroeconomic forecasts at the time as being very substantial. The Bank Board considered the course of the pandemic and its economic and price effects to be the main risk. It also took into account other uncertainties relating to the domestic fiscal policy response, internal policy developments in the USA, the manner of the exit of the UK from the EU and the structure of the supply and demand factors underlying inflation. The exchange rate of the koruna, which was highly volatile, was also a significant uncertainty for the Bank Board.

Chart 2

The significant and increasing overshooting of the target in 2021 and early 2022 was due mainly to an overheating domestic economy and previous too accommodative monetary policy

deviation of monetary policy-relevant inflation from CNB's 2% target; contributions in pp



Monetary policy-relevant inflation *is inflation to which monetary policy reacts in the forecast. It is defined as headline inflation adjusted for the first-round effects of changes to indirect taxes.*

In 2021, the Bank Board continued to perceive the uncertainties and risks of the forecasts as substantial and related mainly to the reopening of the domestic and foreign economies in the context of a constantly changing epidemic situation. Closely related to this was uncertainty about the duration of the disruptions to global value chains and its pass-through to prices. The central bank therefore initially kept interest rates close to zero. However, the expected cooling of the economy did not materialise. This led to inflation staying above the target. From around mid-2021 onwards, the Bank Board communicated upside risks to inflation. At the same time, it identified a risk of weaker anchoring of inflation expectations in an environment of long-running overshooting of the inflation target. The upside risks were later joined by unprecedentedly high growth in energy prices and imputed rent and a weakened reaction of the koruna to the growth in domestic interest rates.

The CNB responded to the exceptionally strong across-the-board inflation pressures by raising interest rates from June 2021 onwards. The rate hikes gained in intensity during the autumn. The aim was to limit the pass-through of these pressures to prices in the longer term, ensure the return of inflation close to the 2% target at the monetary policy horizon and help anchor inflation expectations at the target so that the CNB fulfilled its price stability mandate. In 2021 as a whole, the CNB increased the 2W repo rate by a total of 350 basis points in five steps. It continued to raise interest rates in February and March this year, when the rates went up by a total of 125 basis points in two steps.

Inflation was above the 2% target over the entire period under assessment. From mid-2021 onwards, the inflationary effect of monetary policy was joined by the effect of the overheated domestic economy. It was counterbalanced to only a limited extent by the exchange rate and foreign factors. From this perspective, it can be said that monetary policy should have been much less accommodative in the past.[3]

—

1 The previous assessment of the fulfilment of the inflation target was presented in Box 4 in Monetary Policy Report – Spring 2021.

2 The g3+ core prediction model is used to prepare the CNB's macroeconomic forecasts. It is also used to assess the fulfilment of previous forecasts and to determine the sources of deviations of the actual figures from the forecasts under assessment and the inflation target. For details, see *The g3+ model: An upgrade of the Czech National Bank's core forecasting framework*, CNB WP 7/2020.

3 The Czech economy had already been strongly overheated for some time before it was hit by the coronavirus shock, which was identified ex post as a negative supply shock. As elsewhere in the advanced world, the government and the CNB responded to the related temporary economic downturn, decline in revenue and risk of a drying-up of liquidity and financial instability by deploying stabilising anti-crisis measures. However, this supportive policy inevitably led to demand stimulation after a time. Such extensive support for demand soon turned out to be strongly inflationary in an environment of economic recovery.

IV. MONETARY POLICY

At its May monetary policy meeting, the CNB Bank Board increased the two-week repo rate by 0.75 pp to 5.75%. At the same time, it increased the discount rate by the same amount to 4.75% and the Lombard rate to 6.75%. The Bank Board assessed the uncertainties and risks of the new forecast as being significant and going in both directions. The upside risks include higher-than-forecasted energy and commodity prices, a threat of inflation expectations becoming unanchored from the CNB's 2% target and a related risk of higher growth in prices and wages in the medium term. Stronger-than-forecasted negative demand impacts of the war in Ukraine are a downside risk to inflation. The uncertainties include the future course of the war in Ukraine, the future monetary policy stance abroad and the duration of the disruptions to global value chains. Consistent with the baseline scenario of the spring forecast, in which the central bank sets interest rates in order to achieve the 2% target at the standard monetary policy horizon regardless of the origin of inflation pressures, is a further sharp rise in market interest rates until mid-2022, followed by a gradual decline from autumn 2022. The Bank Board decided to tighten monetary policy more moderately compared with the baseline scenario of the forecast. In the context of significant risks and uncertainties in both directions, it took into account, among other things, the message of a simulation featuring a more distant monetary policy horizon than the standard one used in the CNB's forecasting system.

Consistent with the baseline scenario of the forecast, in which the central bank sets interest rates in order to achieve the 2% target at the standard monetary policy horizon regardless of the origin of inflation pressures, is a further sharp rise in market interest rates until the middle of the year, followed by a gradual decline

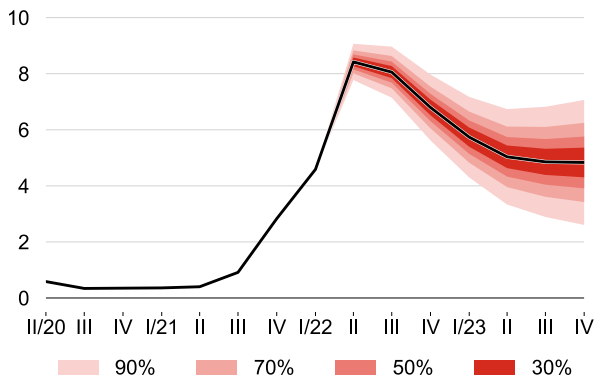
The Czech economy is facing a combination of exceptionally strong and persistent price pressures from abroad and persisting domestic inflation pressures, reflected in accelerating and broad-based price growth. Inflation is being strongly affected by growth in prices of all types of energy and other commodity and material inputs, which is significantly raising the costs of domestic firms. The still tight labour market is also contributing to fast growth in costs, albeit to a lesser extent. Moreover, the impact of the cost pressures is being amplified by growth in domestic firms' profit margins due to still solid domestic demand and persisting good purchasing power of Czech households. The still overheated property market is also having an inflationary effect, with rising house prices driving up imputed rent within core inflation.

Consistent with the baseline scenario of the forecast is thus a continued sharp increase in market interest rates until mid-2022 (see Chart IV.1). This rise in rates represents the monetary policy response consistent with the central bank's efforts to fulfil the 2% target at the standard monetary policy horizon, i.e. in 2023 Q2 and Q3. In this scenario, the central bank lowers inflation to the target regardless of the origin and

Chart IV.1

The continued surge in interest rates at the start of the forecast is a response to a combination of foreign and domestic price pressures

3M PRIBOR in %; confidence interval



***The confidence intervals of the forecasts** for key macroeconomic variables reflect the predictive power of past forecasts. They are symmetric and linearly widening. In the case of headline inflation, they widen only for the first five quarters and then stay constant. This is consistent with both the past predictive power and the stabilising role of monetary policy. For interest rates and the koruna exchange rate, the exchange rate commitment period is not included in the confidence interval calculation.*

characteristics of the factors pushing inflation above the target. It thus behaves as an inflation targeter in the spirit of "business as usual" even at this extraordinary time (of war). The sharp rise in domestic interest rates will therefore ensure that inflation quickly returns close to the target before the end of 2023, even at the cost of the tightening of monetary conditions cooling the Czech economy above and beyond the negative economic impacts of the war in Ukraine. The domestic monetary policy tightening will additionally reduce domestic demand and the transmission of the imported inflation pressures to domestic consumer prices. This will limit the pass-through of the current price pressures to inflation in the longer term and help anchor inflation expectations. Together with an easing of the current extreme foreign price pressures, this will lead to inflation falling close to the target in the second half of 2023. Interest rates will thus be able to start decreasing gradually in autumn 2022.

The koruna will initially firm slightly and then be broadly stable

The koruna appreciation trend induced by the growing interest rate differential halted in 2022 Q1. Growing tensions and the start of the military conflict in Ukraine resulted in a sharp depreciation of the koruna beyond CZK 25.5 to the euro at the end of February. Excessive exchange rate volatility and a further weakening of the koruna were prevented by CNB interventions in the foreign exchange market. The koruna gradually reversed its February weakening in March, returning to its previous level of around CZK 24.4 to the euro, where it remained in the first two weeks of April. The average exchange rate of the koruna in 2022 Q1 was CZK 24.6 to the euro.

According to the forecast, the koruna will strengthen close to CZK 24 to the euro in Q2, due to a further widening of the interest rate differential vis-à-vis the euro area. The koruna exchange rate will fluctuate in a wider range just above this level next year (see Chart IV.2). Stronger appreciation will be prevented by still fevered sentiment on global financial markets related to the war in Ukraine and continuing difficulties in international trade, which, coupled with high commodity prices, will be reflected in a sizeable current account deficit. This will be joined by a tightening of ECB monetary policy amid a gradual decline in domestic interest rates at the end of this year, which will also prevent the koruna from appreciating.

The market interest rate outlook is below the CNB's baseline forecast scenario throughout 2022; the exchange rate path expected by analysts differs little from the central bank's forecast

The market outlook for short-term FRA rates has moved significantly higher in recent weeks and months. The market has thus responded to the March increase

Chart IV.2

The koruna will initially appreciate slightly and then be broadly stable

CZK/EUR exchange rate; confidence interval

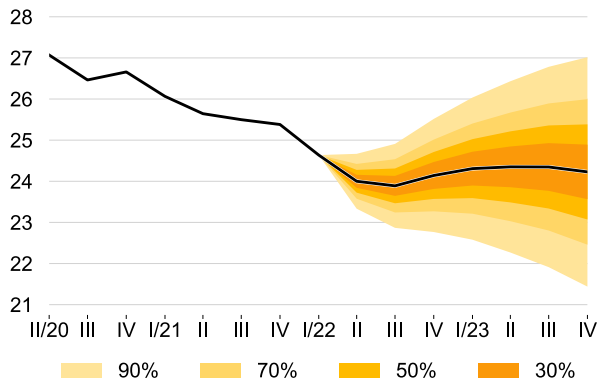
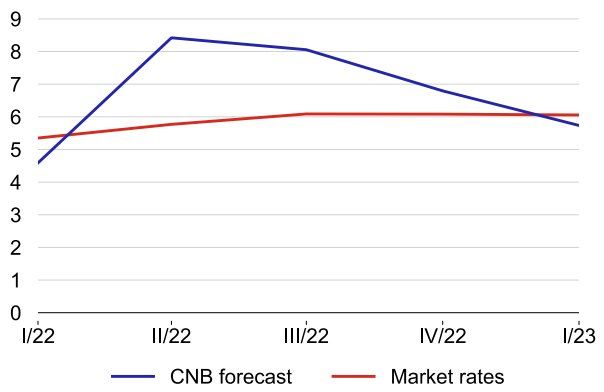


Chart IV.3

The market rate outlook is slightly rising and significantly lower than the CNB forecast

3M PRIBOR; FRA in %



Note: Market rates represent for 2022 Q1 the 3M PRIBOR and for 2022 Q2–2023 Q1 the average values of the FRA 1*4, 3*6, 6*9 and 9*12 rates for the last 10 trading days as of 29 April 2022.

in the 2W repo rate, the related communications by the CNB Bank Board and the published data on inflation. The market currently expects a further gradual rise in the 3M PRIBOR in the first half of the year (see Chart IV.3) and subsequent stability around 6%. This outlook is significantly lower than the CNB forecast until the end of this year. Analysts' short-term forecasts in the FMIE survey are similar. Most of them expected the 2W repo rate to be raised by 0.5 pp to 5.50% at the May monetary policy meeting. The analysts expect the CNB's key interest rate to be in quite a wide range of 4%–5.75% at the one-year horizon. On average, they expect the key rate to be at 4.9%.

On average, the analysts in the FMIE and FECF surveys expect the koruna exchange rate to be broadly stable (see Table IV.1). Their forecast thus differs little from the central bank's outlook. The analysts regard geopolitical factors as the main factor affecting the rate. If the military conflict in Ukraine calms, the koruna could return to a gradual appreciation trend, which will be supported by an expected longer period of higher domestic interest rates. On the other hand, according to the analysts, a further escalation of the geopolitical tensions would drag the koruna down again, although CNB interventions would probably prevent a major weakening. The range of the estimates of the koruna's future exchange rate, which was quite narrow until recently, has widened. The difference between the minimum and maximum expected rates against the euro at the one-year horizon is almost CZK 2.

The Bank Board members' communications indicated a further increase in rates

In recent weeks, most of the Bank Board members have been indicating a need to raise the CNB's key interest rates further at the May meeting. According to those members, the central bank's task is to prevent the external cost shocks from causing permanently elevated inflation in an environment of strong demand and elevated inflation expectations. In the view of those members, the interest rate increase is intended to support the return of inflation towards the target at the monetary policy horizon and to help anchor firms' and households' inflation expectations.

*The **3M PRIBOR market interest rate** is a money market reference rate with a maturity of three months which is closely linked to the CNB's monetary policy rates. The CNB's key rate is the **two-week (2W) repo rate**, paid on commercial banks' excess liquidity as absorbed by the CNB in two-week repo operations. The difference between the 3M PRIBOR and the 2W repo rate fluctuates over time and reflects, among other things, expectations regarding the future path of monetary policy interest rates. After the March Bank Board meeting, the difference was 0.3 pp. It then rose to 0.4 pp in expectation of a rate increase at the May meeting.*

Table IV.1

Inflation expectations at the three-year horizon are slightly above the inflation target in the case of analysts and well above it in the case of firms

1Y horizon; y-o-y changes in % unless otherwise indicated

	12/21	1/22	2/22	3/22	4/22
FMIE:					
CPI	3.8	3.2	3.0	4.5	4.7
CPI, 3Y horizon	2.2	2.2	2.2	2.2	2.2
Real GDP in 2022	4.0	3.9	3.9	2.5	1.9
Real GDP in 2023		4.0	3.7	3.2	3.0
Nominal wages in 2022	5.6	5.5	6.0	6.5	6.5
Nominal wages in 2023		5.1	5.1	5.6	5.9
CZK/EUR exchange rate (level)	24.6	24.3	24.2	24.5	24.2
2W repo rate (%)	3.7	4.3	4.1	4.6	4.9
1Y PRIBOR (%)	3.9	4.3	4.2	4.6	5.1
Corporations:					
CPI	4.4			7.1	
CPI, 3Y horizon	4.2			5.9	
CF:					
Real GDP in 2022	4.3	4.2	4.1	2.4	2.0
Real GDP in 2023		3.9	3.7	3.2	3.1
Nominal wages in 2022	5.6	5.9	6.1	6.8	7.2
Nominal wages in 2023		5.2	5.2	6.1	7.0
CZK/EUR exchange rate (level)	24.8	24.8	24.4	24.8	24.5
3M PRIBOR (%)	3.5	4.0	4.0	4.4	5.1

COMPARISON WITH THE PREVIOUS FORECAST: Interest rates and the exchange rate

Chart IV.4

The interest rate path has shifted significantly higher

decomposition of changes in 3M PRIBOR forecast in pp

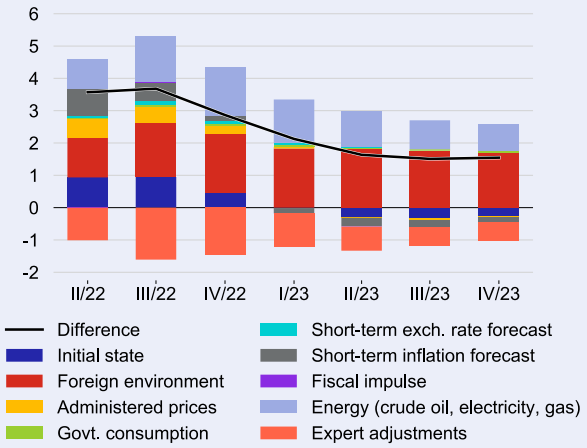
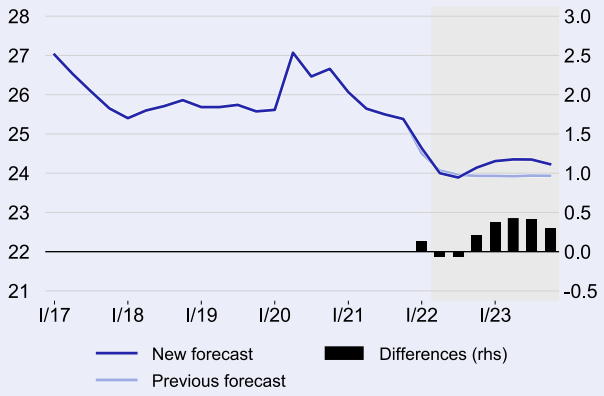


Chart IV.5

The koruna will be weaker than in the previous forecast over the entire outlook

change in CZK/EUR exchange rate forecast; differences in CZK – right-hand scale



- **The initial state** fosters higher rates in 2022, mainly reflecting faster growth in foreign producer prices at the start of the year.
- The higher rates are also due to **the short-term inflation forecast** and the outlook for faster growth in **administered prices** than in the previous forecast.
- **The foreign outlook** fosters higher rates over the entire forecast horizon, reflecting less accommodative ECB monetary policy and a stronger contribution of the core component of foreign industrial producer prices.
- The contribution of **the energy component of import prices**, which reflects a higher outlook for prices of oil, gas and electricity on commodity exchanges and which also moves the domestic interest rate path higher, is considered separately from the effect of the foreign outlook.
- **Expert adjustments** foster lower rates over the entire forecast horizon. They mainly reflect the easing of demand-driven inflation pressures in the economy, which will exert downward pressure on profit mark-ups in the consumer sector. Expert adjustments also capture the faster than usual fade-out of the currently high growth in prices (mostly of energy), in view of its temporary nature.

- **The exchange rate of the koruna** will attain similar levels this spring and summer as in the previous forecast.
- The revision of the future exchange rate path to slightly weaker levels is due largely to **the interest rate differential** vis-à-vis the euro area. It will close much faster at the end of this year and in the first half of next year than in the previous forecast (due to a steeper decline in domestic rates and stronger growth in the ECB's rates). A worse international trade situation and a wide current account deficit (due in part to rising prices of imported commodities) will also exert depreciation pressure on the koruna.

The increases in monetary policy interest rates in the first quarter passed through immediately to domestic market rates

Money market interest rates moved to a higher level in response to the February and March increases in key interest rates. Domestic interest rates with longer maturities also went up, most significantly at the start of the yield curve. The slope of the domestic IRS and government bond yield curves thus remains distinctly negative (see Chart IV.6). Interest rates on foreign markets have also generally increased since the start of this year, to about the same extent as those on the domestic market (see Chart IV.7).

The continued growth in market rates passed through to client interest rates, but credit growth remains relatively high

The rise in market interest rates in Q1 continued to be reflected most strongly in growth in corporate loan rates, which then transmitted to housing loans with a short lag (see Chart IV.8). Rates on savings deposits also continued to rise. A further increase in client rates can be expected in Q2. Growth in corporate loans meanwhile increased. Short-term loans for operations and inventories grew strongly, as, to a lesser extent, did long-term loans for investment. Nonetheless, according to the Bank Lending Survey, corporate demand for loans declined at the start of this year. This was due mainly to increased economic uncertainty and related deferral of fixed investment. With domestic interest rates rising, firms' demand for foreign currency loans went up. Such loans currently account for 36.4% of total corporate loans. The rise in interest rates, coupled with growth in property prices, fostered a fall in demand for housing loans. According to the forecast, this – combined with tighter credit conditions – will cause growth in housing loans to slow in 2022.

The risks and uncertainties of the baseline scenario of the forecast are seen as significant

Owing to the ongoing war in Ukraine, the risks and uncertainties surrounding the macroeconomic forecast are increasing greatly. As a result, all the forecast assumptions need to be viewed in the context of the war. There is an upside risk of even higher energy and commodity prices than assumed in the forecast. In the context of the current and expected rate of inflation, the possibility of inflation expectations becoming unanchored from the CNB's 2% target is a significant upside risk to inflation on the domestic economy side. Closely related to this is the risk of stronger-than-forecasted wage growth, which, even in conditions of subdued economic activity, may reflect the high observed and expected inflation to a greater extent than foreseen in the forecast. By contrast, stronger-than-expected negative demand impacts of the war may have an anti-inflationary effect.

Chart IV.6

The Czech government bond yield curve shifted upwards; it currently has a substantially negative slope

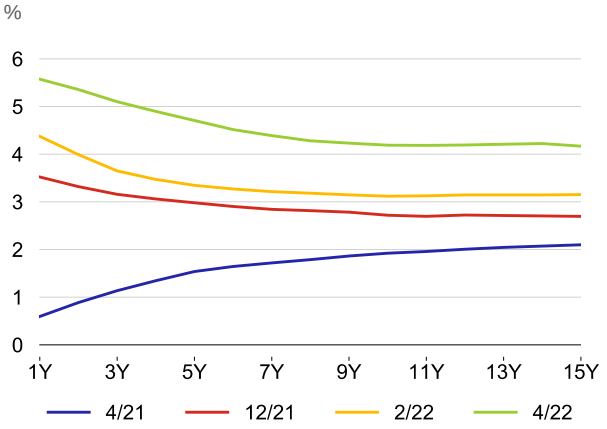


Chart IV.7

Domestic interest rates with longer maturities continued to increase; rates abroad are also rising

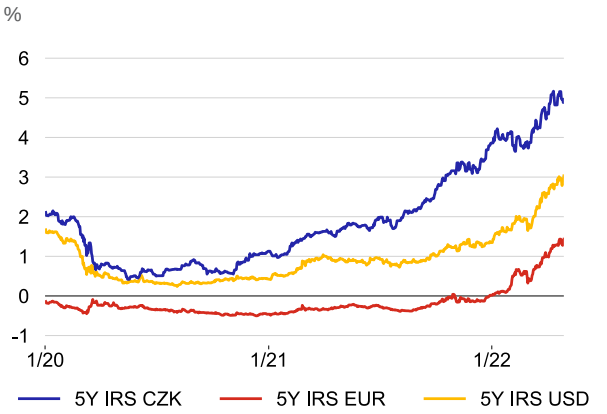
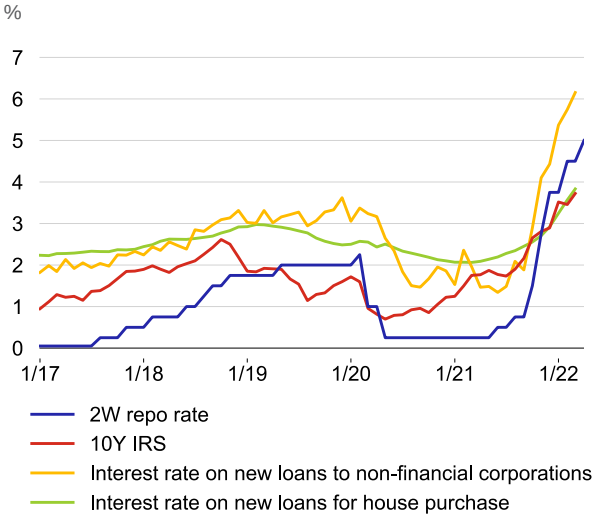


Chart IV.8

Rates on corporate loans continued to react most strongly to the rise in market interest rates; rates on house purchase loans also kept increasing



Besides the risks listed above, several areas of the forecast also contain significant uncertainties. The main one is the future course of the war in Ukraine.[21] In addition, uncertainty is associated specifically with domestic economic activity and the labour market as regards the number and integration of Ukrainian refugees and their impact in terms of cooling the Czech labour market and dampening wage growth. The wave of refugees and the integration of Ukrainians into the Czech labour market and local life in general may have an unpredictable effect on Czech government expenditure as well. There are also many unknowns surrounding the impact of the high energy prices and the decline in real incomes on household consumption.

Another question is how the ECB and the Fed will behave in the future. Both central banks have already announced that they will start to tighten in the near future.[22] A stronger/milder tightening could lead to a weaker/stronger koruna and hence to pressure for higher/lower domestic interest rates. The duration of the disruptions to global value chains is also an uncertainty, as their unblocking has been delayed by the events in Ukraine and anti-Covid measures in China.

The biggest risks and uncertainties of the forecast are associated with the impacts of the war in Ukraine on European economies

In the context of the events in Ukraine, the main risks are a larger rise in energy commodity prices and stronger negative impacts of the conflict on economic activity. The extreme case would be the interruption of energy commodity supplies from Russia to Europe, due either to a decision by Russia to halt exports to the EU, or to international sanctions on imports from Russia. Interrupted gas supplies would have the strongest impact on the European economy (see Box 1). The European Parliament estimates that only about two-thirds of such an outage could be replaced by other sources in the short term.[23] Resolving such an unprecedented situation would require a coordinated approach across the EU Member States and the introduction of non-market measures by individual countries.

It is not easy to quantify the effects of limited gas supplies. It is clear that a one-third reduction in gas supplies to Europe would bring energy-intensive production to a halt and necessitate savings on household heating. There would also probably be further growth in energy prices and therefore in the expense items of firms and households. Moreover,

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21 The forecast assumes a gradual de-escalation of the war in Ukraine in an unspecified form.

22 Some central banks in small open economies are continuing to tighten sharply (Hungary and Poland, for example).

23 See the conclusions of the March workshop at the EP https://s1.eestatic.com/2022/04/01/mundo/russian_oil_-1.pdf

Czech firms would be significantly affected by a cooling of external demand, which would exacerbate the decline in economic activity. In any event, the Czech economy would experience a discontinuity with stagflationary effects, i.e. opposite effects on inflation (upward) and economic activity (downward).

Growth in inflation expectations is an inflationary risk to the forecast

The high observed inflation may affect the inflation expectations of households and firms. The main risk is a general rise in inflation expectations in the longer term, which would complicate the return of inflation to the CNB's 2% target.

The available indicators are signalling that the relevance of this risk is still increasing. Inflation expectations are visibly growing among non-financial corporations, whose inflation expectations at the three-year horizon have risen sharply. According to the March survey conducted by the Confederation of Industry of the Czech Republic and the CNB, firms on average expect inflation at almost 6% at the three-year horizon (see Chart IV.9). The European Commission's business surveys show that the share of firms expecting the prices of their products and services to go up in the near term is growing substantially, with rising prices expected across all sectors (industry, construction, retail and services).

Concerns about rising prices are also growing among households. The indicator of inflation perceived by households in the European Commission survey has risen significantly further, as have households' expectations regarding inflation one year ahead (see Chart IV.10). According to the CZSO's business survey, two-thirds of consumers expect the overall price level to go up further in the coming months. Consumers also remain pessimistic about the future economic situation at the start of this year. The outlook for their financial situation has worsened in recent months, mainly due to rapid growth in housing-related energy prices.

The analysts expect inflation of 2.2%, i.e. slightly above the CNB's target, at the three-year horizon. This section of the public is very familiar with the CNB's monetary policy regime and its inflation target. It therefore has great confidence in the CNB's ability to achieve the inflation target in the medium term, even though it may not fully share its view on the monetary policy stance needed to achieve this.

A more detailed analysis of the inflation expectations of firms confirms a shift to higher levels

The results of the survey conducted by the Confederation of Industry of the Czech Republic and the CNB among managers of non-financial corporations show that despite the significant heterogeneity of the responses obtained, the share of

Chart IV.9

Inflation expectations have risen sharply among non-financial corporations at the three-year horizon

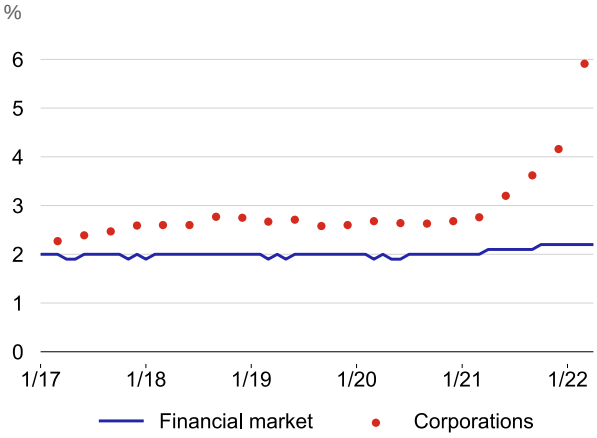
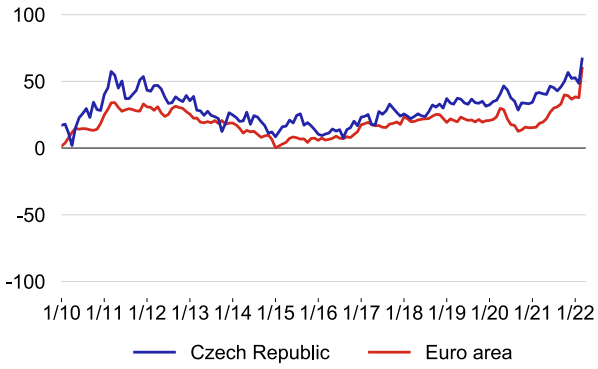


Chart IV.10

The inflation expectations of households in the Czech Republic and the euro area rose sharply in early 2022

households' inflation expectations in the next 12 months according to the European Commission Business and Consumer Survey; balance of answers



***The inflation expectations of households, firms and the financial markets** fundamentally affect their behaviour and decision-making, and hence also the overall economic situation and the resulting inflation rate. As expectations can be largely self-fulfilling, it is important that central banks monitor them and to try to keep them close to their inflation target.*

managers who expect inflation to be in the tolerance band around the CNB's target at the three-year horizon is declining (see Chart IV.11).

A cluster analysis of the responses identified three groups of managers. The first group (around 50%) comprises managers who have long expected inflation to be close to the CNB's target. The second consists of managers whose responses deviate significantly from the target but also inexplicably deviated in the past when the target was achieved. This group can thus be evaluated as persistently unreliable (perhaps because they misunderstand the question, for example the time horizon or the price category). Attention should be paid to the third group of managers (about 30%), whose inflation expectations were until recently anchored close to 2% but have recently risen to 5% on average. These figures cannot be associated with misunderstanding the question. The analysis thus shows that the risk of inflation expectations rising above the CNB's 2% target should not be underestimated.

In the event of elevated inflation expectations, a much larger increase in interest rates would be needed to return inflation to the target compared with the baseline scenario of the forecast, which assumes that expectations are anchored close to the 2% target

The inflation expectations of analysts and of a large section of managers of non-financial corporations are still not very far from the CNB's 2% target. This supports retaining the assumption of anchored inflation expectations in the baseline scenario of the forecast. If the assumption of anchored inflation expectations failed to materialise, even tighter monetary policy than implied by the baseline scenario would be needed to limit the propagation of the effects of increased inflation expectations to the economy.

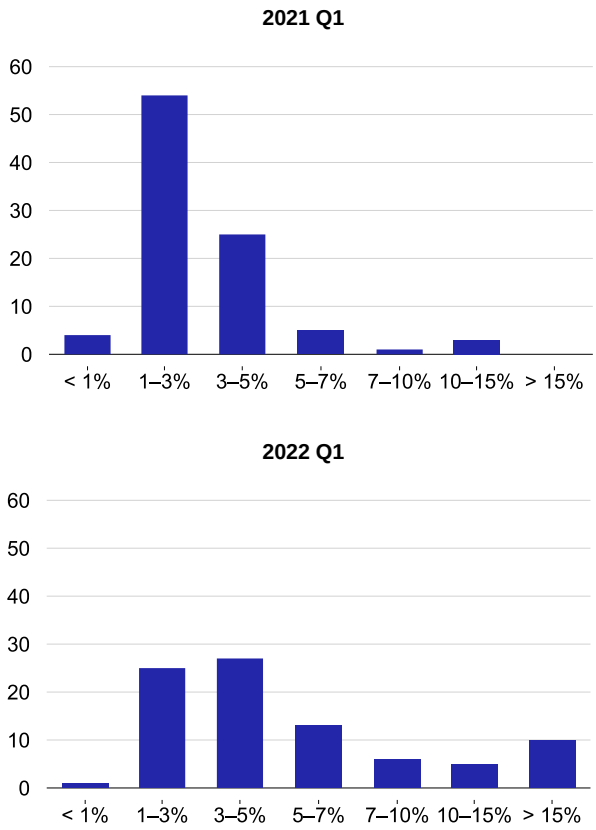
The baseline scenario of the forecast points to a clear need to tighten considerably

Under the baseline scenario, the central bank should respond to the strong growth in price pressures by raising interest rates sharply. This corresponds to the nature of the macroeconomic model, according to which the central bank seeks to achieve the inflation target at the standard monetary policy horizon. In doing so, it takes no special considerations for the potential negative impacts of fast and significant changes in interest rates on the real economy. The forecast should thus be seen as a useful guide to setting monetary policy rates at the appropriate level. However, this must be placed in the context of the surrounding events and potential risks and uncertainties, especially in times of unprecedented events such as we are facing at present.

Chart IV.11

The distribution of inflation expectations has moved higher over the last year

histograms of inflation responses expected at three-year horizon



It is clear that a further increase in interest rates is inevitable in order to rein in the escalating inflation. However, in the current environment of extreme risks and uncertainties, stemming mainly from the difficult geopolitical and related economic situation, it is appropriate to opt for a cautious approach and raise interest rates more gradually than implied by the forecast. This will allow the central bank to assess global and domestic economic developments and inflation pressures, which may be interrelated, on an ongoing basis. At the same time, the CNB will monitor the pass-through of its increased monetary policy interest rates to the domestic economy and the exchange rate, and adjust its next steps to the latest developments, new data and future forecasts.

In the current situation, it may be relevant to take into account the sources of the inflation pressures, which stem largely from strong exogenous price shocks

In normal times, the central bank sets interest rates in a forward-looking manner so as to achieve the inflation target at the standard monetary policy horizon, which is usually considered to be 12–18 months ahead. In a situation of acute risks or extreme uncertainties, the flexibility of inflation targeting allows the central bank to adjust its response accordingly. In view of the large external price shocks currently having a strong negative impact on the financial situation of firms and the purchasing power of households, a more flexible approach may now be considered. Under such an approach, the central bank abstracts to some extent from inflation, which is being directly affected by strong exogenous shocks. Inflation returns to the target more slowly, or later, as the smaller increase in domestic interest rates prevents the transmission of external shocks to domestic inflation to a lesser extent than it does in the baseline scenario. However, it is vital that the goal of achieving the inflation target is not abandoned. This approach is illustrated by a simulation featuring a more distant monetary policy horizon than the one normally considered in the CNB's forecasting system (see the next page). In the simulation, the central bank abstracts from inflation 12–18 months ahead, which is being directly affected by strong exogenous price shocks. The simulation shows that focusing on a more distant horizon leads to a slower decrease in inflation amid more moderate growth in rates and a weaker koruna. At the standard monetary policy horizon, inflation in this simulation overshoots the target by more than 2 pp (i.e. much more than in the baseline scenario) and does not return to the target until the end of 2024.

The standard monetary policy horizon *is the future time period which the CNB usually focuses on when making its monetary policy decisions and which reflects the lag in the transmission of monetary policy. This time period is roughly 12–18 months ahead.*

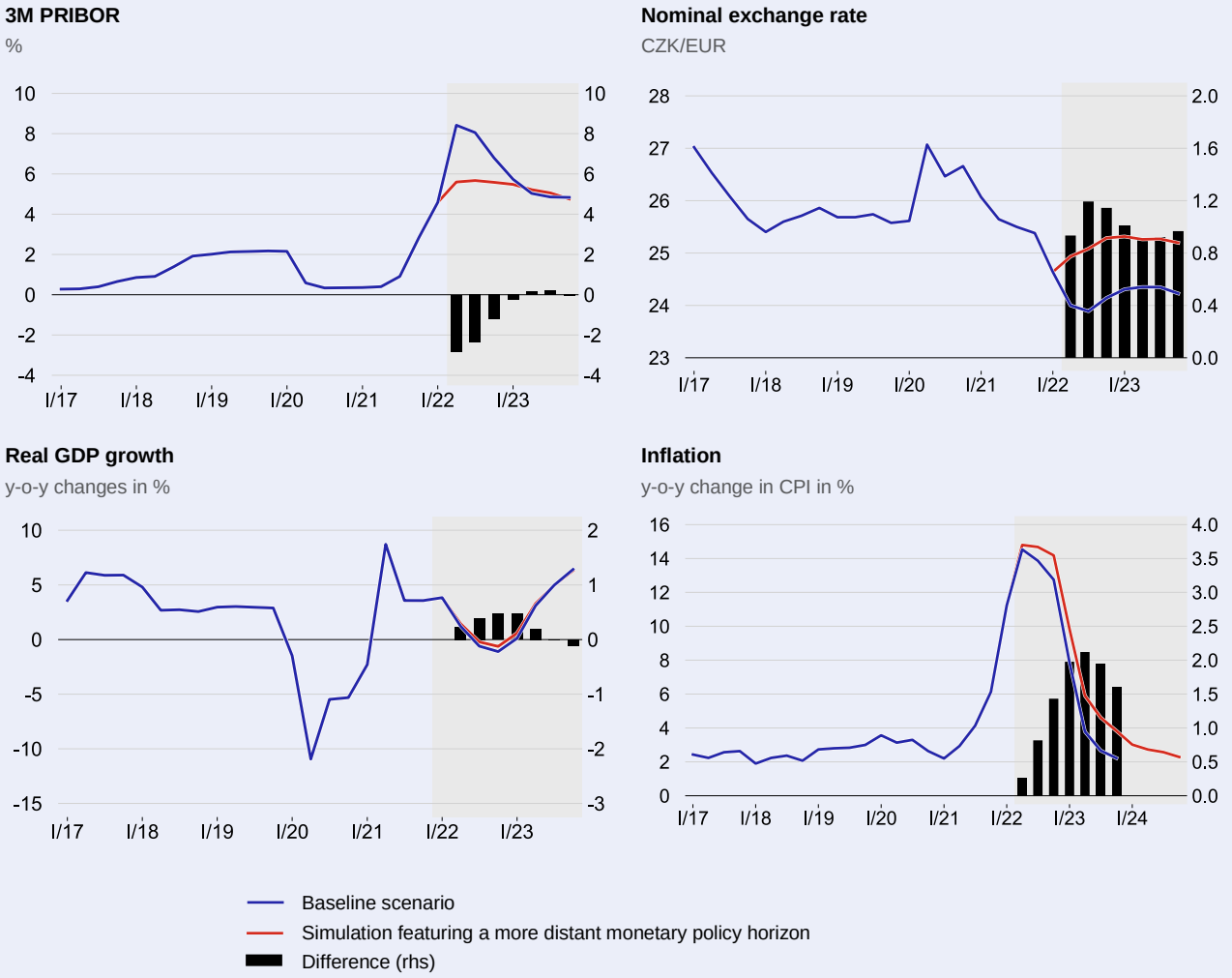
Simulation featuring a more distant monetary policy horizon than the standard one

In this simulation, the central bank abstracts from inflation, which is being directly affected by strong exogenous price shocks that will manifest themselves in inflation at a horizon of 12–18 months. Technically, this is done by moving the monetary policy horizon two quarters into the future. The simulation also assumes that monetary policy maintains full credibility and inflation expectations remain anchored to the target, thus helping inflation return to the 2% target despite the more restrained monetary policy response (see Chart IV.12).

Chart IV.12

The shift in the monetary policy horizon is associated with a smaller increase in interest rates, a weaker exchange rate and a larger overshooting of the target in 2023

comparison of baseline scenario with simulation featuring more distant monetary policy horizon



The market interest rate path is lower than in the baseline scenario, especially this year. The rates increase to almost 6%. The exchange rate of the koruna is significantly weaker, due to a substantially narrower interest rate differential. The lower interest rates, coupled with the weaker exchange rate, lead to distinctly higher inflation than in the baseline scenario. The inflation target is overshot by more than 2 pp at the standard monetary policy horizon. Inflation does not return to the 2% target until the end of 2024. It is thus visibly above the target even at the more distant monetary policy horizon.

APPENDIX Assessment of the fulfilment of the 2020 forecasts

Assessing the fulfilment of past forecasts is an integral part of the CNB's forecasting and analytical architecture. These quarterly analyses are an important element of forecasting practice and a prerequisite for constantly enhancing the projections. They provide feedback on the functioning of the core projection model, which is the basic and unifying element used in preparing CNB macroeconomic forecasts. The conclusions of these analyses are used to verify the model's current settings and as a source of inspiration for its further development.[1] Analysing the fulfilment of past forecasts has been a regular part of the CNB's internal processes since it started using structural models for forecasting. This is the first Monetary Policy Report[2] to present an extended assessment[3] of the fulfilment of past forecasts. The publication of the assessment further increases the CNB's already high degree of monetary policy transparency[4] and demonstrates the accountability the CNB as an institution feels towards the public.

The CNB's macroeconomic forecast *serves as an important guide for the Bank Board when setting interest rates. It is based on the core forecasting model (the g3+ model since 2019). The baseline scenario of the forecast describes the most probable future evolution of the domestic economy and the domestic interest rate path consistent with this which ensures the achievement of the CNB's inflation target at the monetary policy horizon.*

In this appendix, we first assess the fulfilment of the forecasts[5] prepared in 2020, starting with a comparison of their then assumptions (the exogenous factors of the forecast) and the observed developments. We then compare the forecasted paths of the main domestic variables with the now observed data. In the last part, we provide a hypothetical model simulation. This shows what the forecast in Inflation Report IV/2020 would have approximately looked like if what was subsequently actually observed, i.e. the future evolution of all the assumptions entering the forecast, had been known at the time of its preparation. Generally speaking, this simulation illustrates the predictive ability of the g3+ core model.

Assessment of the fulfilment of the 2020 forecasts – assumptions

The main assumption of the CNB's macroeconomic forecast for the domestic economy is the outlook for the foreign environment.[6] With the exception of the pre-pandemic forecast in IR I/2020, the assumptions about a decline in **economic activity in the effective euro area** in the first half of 2020 broadly materialised (see Chart 1). The immediate impacts of the pandemic and the related lockdowns were therefore correctly predicted. The return of economic life abroad to normal was in fact rather faster and more volatile than expected in the outlooks at the time. From the second half of 2020 onwards, foreign economic activity was largely higher than forecasted, due partly to the fiscal support measures adopted in most EU countries. The impact of the Covid waves, in the form of a significantly negative **output gap**, which captures the demand side of the economy, was gradually re-evaluated in the CNB's 2020 forecasts in favour of greater impacts on potential output (i.e. the supply side of the economy) amid an only limited decline of the output gap into negative territory. This was because supply was hit by restrictions imposed on firms and society as a whole during the various waves of the pandemic, later joined by longer-term impacts of the pandemic in the form of disruption and overloading of global value chains (GVCs).

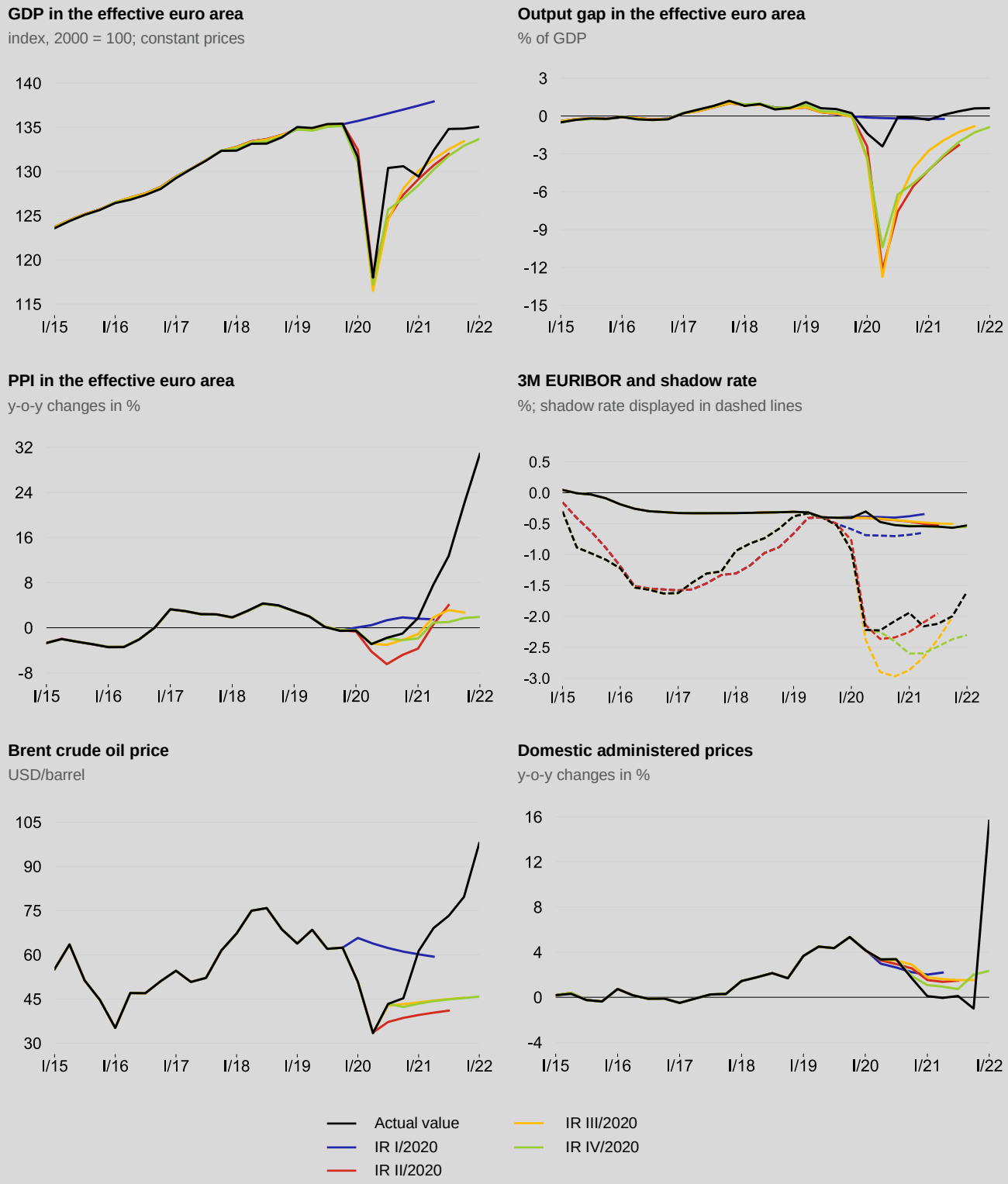
The forecasts therefore initially expected stronger and longer-lasting anti-inflationary pressures in the effective euro area due to a fall in demand related to the outbreak of the pandemic. However, demand fell only to a limited extent and shifted from services to miscellaneous manufactured articles. Conversely, the overloading and disruption of GVCs caused unexpectedly strong inflation pressures at the level of foreign industrial producer prices. The faster global economic recovery was also reflected in a rise in the **Brent crude oil price**, which, following a sharp decline in the first half of 2020, rose significantly higher than originally assumed. At the start of 2022, Russia's invasion of Ukraine – which could not, of course, have been foreseen by the 2020 forecasts – also affected the already high price of oil. The forecasts under assessment also did not contain an assumption of an unprecedented surge in **foreign producer price inflation** as occurred at the end of 2021, driven largely by an extreme jump in natural gas and electricity prices. The outlook assumed for the **3M EURIBOR** was roughly confirmed. In its **unconventional component**, the ECB's monetary policy was only slightly looser than in the assumptions of the forecasts under assessment.

The observed growth in **administered prices** in the domestic economy during 2021 was well below the assumptions of the forecasts under assessment (see Chart 1), due mainly to an unexpected decline in electricity and gas prices for households. The deviation from the previous forecasts widened further at the end of 2021 due to a temporary waiver of VAT on electricity and gas. At the start of 2022, the previous unexpectedly strong growth in energy prices

on international exchanges was reflected in administered prices, hence their growth far exceeded that assumed in the IR IV/2020 forecast. Growth in nominal **government consumption and the fiscal impulse**, another domestic assumption, was higher on average than in the forecasts under assessment, due to additional pandemic-related government spending, mainly on health care and the emergency services. Government measures in support of the economy were more pronounced and lasted longer than the forecasts had expected.[7]

Chart 1

Selected forecast assumptions

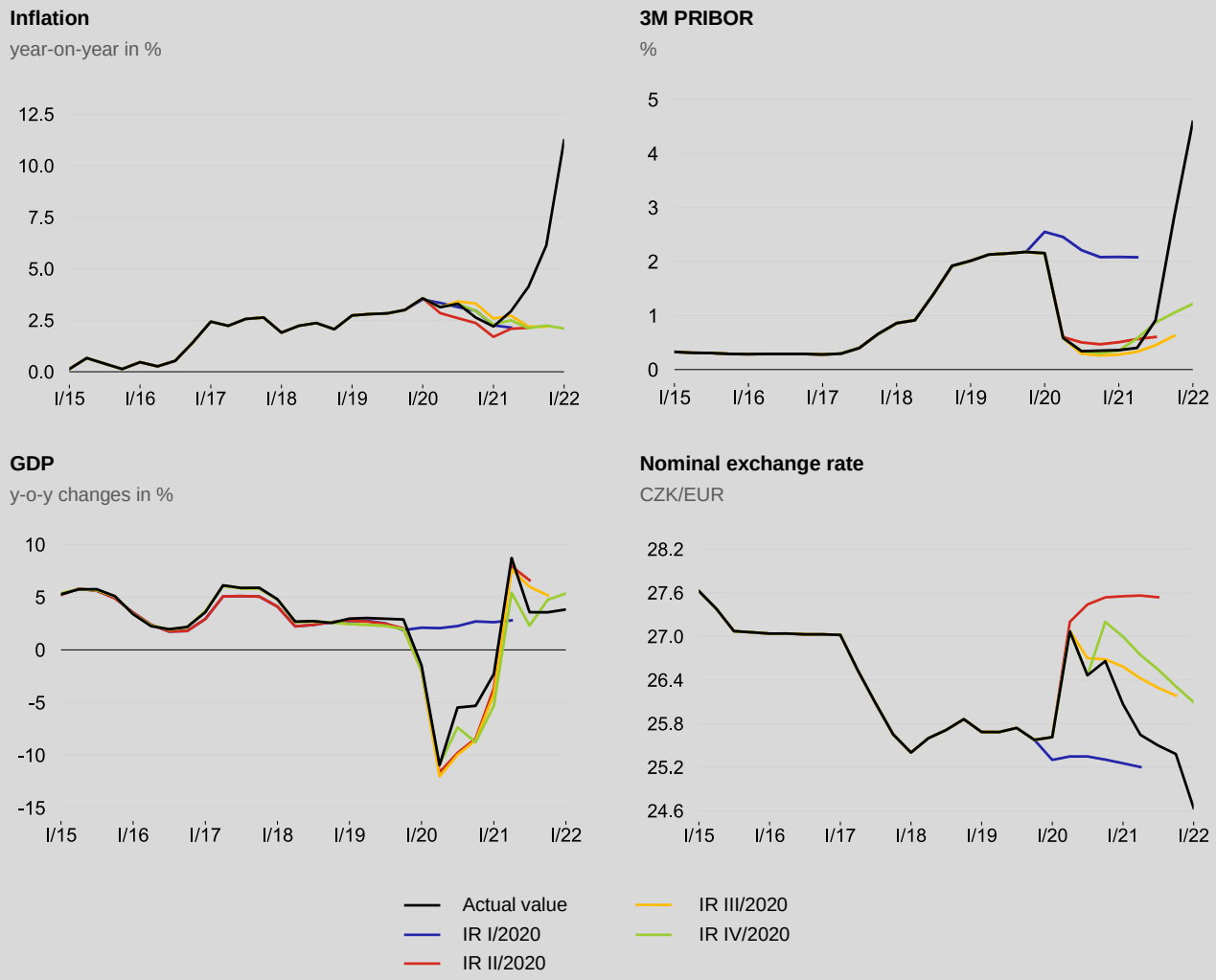


Assessment of the fulfilment of the 2020 forecasts – main domestic variables

Headline inflation was roughly in line with the forecasts under assessment until early 2021. The exception was the IR II/2020 forecast (see Chart 2), as the anti-inflationary effects assumed in this forecast did not materialise to the expected extent and inflation rose into the upper half of the tolerance band around the target. The subsequent surge in inflation in the second half of 2021 and early 2022 in particular came as a considerable surprise. This was caused by unexpectedly rapidly rising price pressures in both the foreign and domestic economies. In a situation where the activities of entire sectors of the economy, including services, had been severely limited or suspended, government fiscal stabilisation measures – in the form of subsidies and compensation for households and firms – fostered an overheating of the labour market and further accumulation of forced savings (withheld demand). This, coupled with a reduction in personal income tax under a government tax package, was reflected in solid consumer appetite and a willingness of households to tolerate increased inflation last year. Headline inflation also gained momentum due to a tight property market, which passed through to core inflation via imputed rent.

Chart 2

Forecasts of main domestic variables



The 3M PRIBOR market interest rate fell significantly with the outbreak of the pandemic. This was due mainly to a sharp reduction in the CNB's key interest rates in spring 2020 in anticipation of a decline in domestic demand and subdued inflation. The subsequent increase in market interest rates in the course of 2021 was initially roughly in line with the IR IV/2020 forecast.[8] However, in the second half of last year, the need arose to further respond to the combination of strong domestic and unprecedentedly escalating imported inflation pressures, so interest rates increased significantly more than the forecasts under assessment had foreseen.

The **koruna** reacted sharply to the various waves of the pandemic and the related measures, thus deviating from the forecasts under assessment. The pre-pandemic IR I/2020 forecast departed furthest from the observed path, as it did not yet incorporate the global impacts of the Covid-19 pandemic. By contrast, the following IR II/2020 forecast was too pessimistic and predicted a further depreciation of the koruna. In reality, however, after weakening in

connection with the onset of the spring and then autumn waves of the pandemic, the koruna appreciated in 2020. In 2021, the exchange rate of the koruna was markedly stronger than forecasted, mainly reflecting an improvement in financial market sentiment owing to the gradual vaccination of a significant proportion of the population in advanced countries. The strengthening of the koruna from the second half of last year onwards was also due initially to the CNB's communications and subsequently to its rapid raising of domestic interest rates in response to exceptionally strong inflation pressures. The appreciation was slowed temporarily at the end of the summer of 2021 by the onset of another wave of the pandemic.

Domestic economic activity was significantly affected by the pandemic in the last two years. The impacts of the pandemic were fully incorporated into the forecasts from the IR II/2020 forecast onwards. Overall, a faster recovery in external demand in 2020 and a stronger recovery in domestic demand in 2021 led to higher GDP growth relative to the forecasts under assessment. The more pronounced recovery of the domestic economy was due to stronger effects of government fiscal stabilisation measures and the use of the forced savings accumulated during lockdowns. Moreover, nominal wage growth in market sectors in 2021 exceeded the assumptions of the IR III/2020 and IR IV/2020 forecasts, which had expected a more substantial cooling of the labour market due to the pandemic.[9]

Hypothetical factors-known IR IV/2020 forecast

The factors-known simulation is a hypothetical version of the IR IV/2020 macroeconomic forecast which, in addition to current knowledge of the paths of the exogenous variables (the assumptions of the forecast), takes into account the revisions since made to the historical data. The simulation is not a fully fledged forecast, as perfect knowledge of the actual evolution of the forecast assumptions is unrealistic, and additional expert adjustments would probably be made even in this case. Such adjustments are an integral part of every forecast. However, the simulation can still reveal how the core forecasting model reacts to changes in the assumptions. Like the IR IV/2020 forecast, the simulation was created using the g3+ core forecasting model.

***A factors-known simulation** is a conditional simulation of the g3+ model representing a hypothetical version of the forecast incorporating knowledge of the actual evolution of the exogenous factors (assumptions) of the forecast. The simulation reflects the observed data (the ex-post known paths of foreign variables, domestic administered prices and government consumption). It thus tells us roughly what the forecast would have looked like if the subsequently observed evolution of its assumptions had been used in its preparation.*

We first compare the difference between the original forecast and the hypothetical factors-known simulation. We then assess the deviations of this simulation from the observed historical outcome. Overall, the factors-known simulation is close to the observed outcome, confirming that the g3+ modelling system is appropriately configured.[10]

Comparing the hypothetical factors-known simulation with the authentic IR IV/2020 forecast, headline inflation is slightly above the original forecast until mid-2021 (see Chart 3) and then gradually decreases towards the CNB's 2% target. The persistence of inflation above the target until mid-2021 is mainly due to the ex-post evaluated inflationary effect of the first wave of the pandemic, whose impacts in the direction of a contractionary phase of the business cycle were more modest than originally assumed, amid faster cost growth. In the factors-known simulation, inflation returns to the target at the start of 2022 due to a rapid rise in interest rates since the end of 2020, because in the hypothetical forecast, monetary policy reacts in a forward-looking manner to the strong inflation pressures from the foreign economy. Actual external developments foster tighter domestic monetary conditions, mainly due to overloading of GVCs and through a record increase in energy prices on international exchanges. However, this foreign inflationary effect is partly offset by the ECB's still accommodative foreign monetary policy. This exerts latent appreciation pressure on the koruna, which, other things being equal, would have anti-inflationary effects. As a result, in the hypothetical simulation, a further widening domestic interest rate differential vis-à-vis the euro area fosters greater appreciation of the koruna relative to the authentic forecast. The faster pace of appreciation driven by the significantly widening interest rate differential therefore contributes significantly to achieving the inflation target in the hypothetical simulation. The domestic economy initially grows faster on average in the factors-known simulation than in the autumn 2020 forecast. This reflects an initially smaller decline and a subsequently faster recovery in external demand. The effect of the tighter domestic monetary conditions in the simulation relative to the forecast under assessment prevails from the second half of 2021 onwards, so economic growth is conversely subsequently slower.

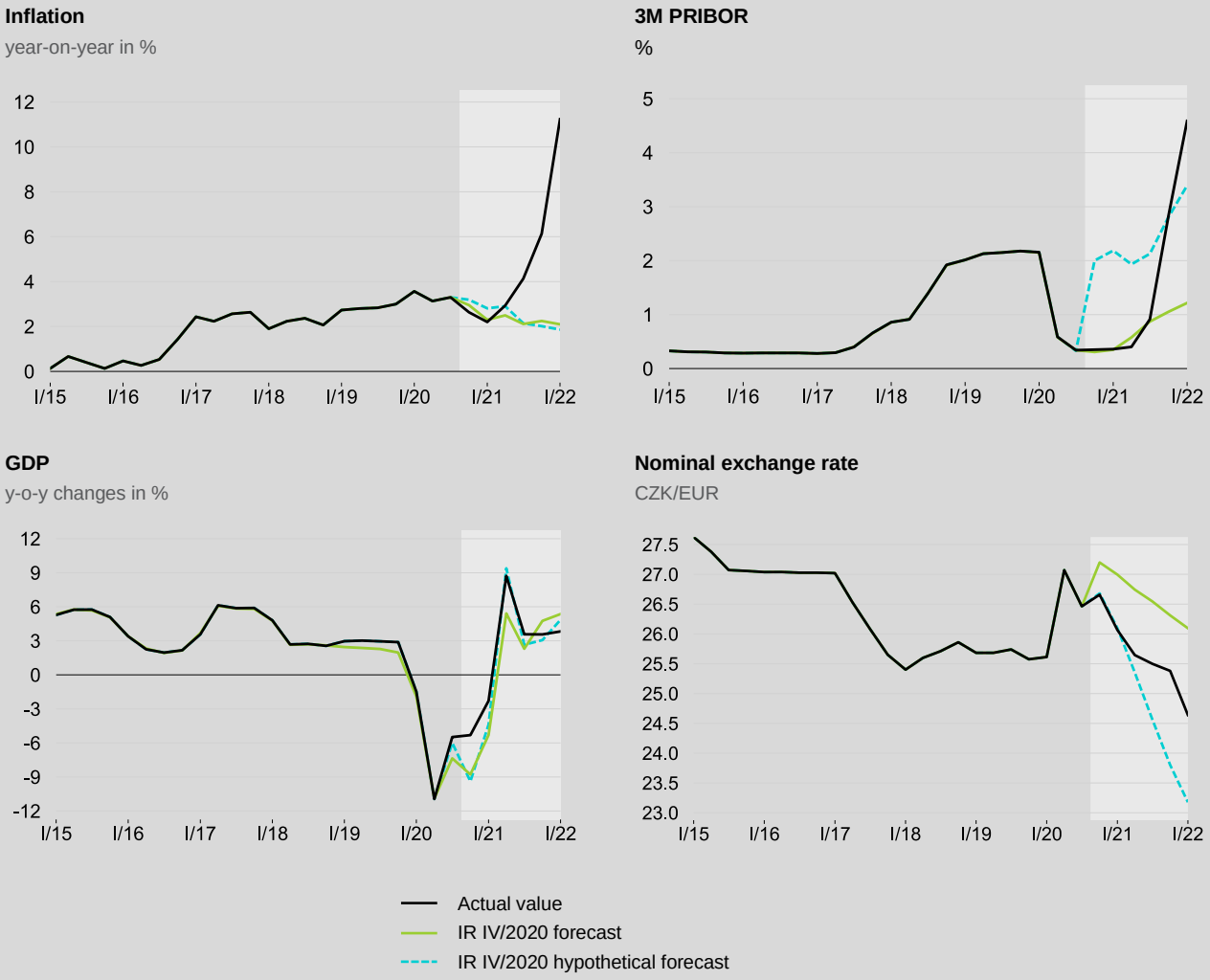
Comparing the hypothetical factors-known simulation with the historical outcome, observed inflation was below the simulation in late 2020 and early 2021. This is because the simulation does not capture the effects of the then lockdowns in retail and services in the domestic economy, which hindered the realisation of the strong latent consumer demand and led, among other things, to the postponement of the usual January repricing. When the

lockdowns ended, households were willing to accept higher prices of goods and services due to their accumulated forced savings. This made it possible for businesses to put up their prices and thus make up for their previous lockdown-related losses by increasing their profit margins. The resulting growth in prices, combined with accommodative monetary policy and an only partial pandemic-related cooling of the labour market, led to significantly higher actual inflation from mid-2021 onwards than in the hypothetical forecast. At that time, the central bank had not yet observed strong inflation pressures from abroad, so real interest rates were below the interest rate path in the factors-known simulation until autumn 2021. Subsequently, however, the observed interest rates even exceeded the rate path in the simulation, because the central bank started to respond forcefully to the rising inflation amid renewed overheating of the domestic economy, the labour market and the property market and accumulating significant foreign inflation pressures. The koruna's exchange rate initially evolved in line with the factors-known simulation. It later appreciated more slowly due to adverse sentiment on the financial markets associated with the spread of new variants of the coronavirus. After the impacts of the first wave of the pandemic subsided, GDP growth was higher than in the hypothetical simulation, because Czech industry benefited from the aforementioned shift of domestic and foreign consumer demand from services to goods. Subsequently, GDP growth is in line with the hypothetical simulation on average.

Chart 3

Comparison of the authentic IR IV/2020 forecast and the factors-known simulation (hypothetical forecast) with the observed data

light-grey area in charts shows IR IV/2020 forecast horizon



1 The forecast arises on the basis of debates involving many economists and monetary policymakers, whose views are incorporated into the forecast in the form of expert adjustments. The core model serves as a unifying framework ensuring the necessary macroeconomic consistency. However, the model still has to demonstrate a good predictive ability, and regular quality control is desirable.

2 The CNB's current main monetary policy publication is the quarterly Monetary Policy Report (MPR), which replaced the previous Inflation Report (IR) in 2021.

3 This type of analysis – albeit narrower (focusing on one forecast only) – was a regular part of the Inflation Report. However, the analysis was focused solely on comparing the forecast with the observed data. It has now been considerably extended to include a factors-known simulation, and, from a broader perspective, to assess multiple forecasts at the same time.

4 In 2022, the CNB was named the winner of the prestigious Central Banking Transparency Award for its open and easy-to-understand communication with stakeholders and for its relentless commitment to further increasing its transparency. This is the second time the CNB has won the award. It did so for the first time in 2015.

5 The choice of forecasts included in this analysis is determined by the availability of observations, which must cover the monetary policy horizons of the forecasts under assessment. The last forecast which can be included in the analysis is the IR IV/2020 one.

6 The specific indicators considered are industrial producer prices in the effective euro area (broken down into their core and energy components), foreign economic activity (the GDP trend and the output gap in the effective euro area), the USD/EUR cross rate, the Brent crude oil price and the 3M EURIBOR interest rate and its shadow component capturing the ECB's unconventional monetary policy measures. The domestic assumptions include the outlook for administered prices and nominal government consumption along with its deflator and the fiscal impulse.

7 On the revenue side, the "super-gross wage" was abolished (on 1 January 2021) as part of a tax package. As the personal income tax rate was kept unchanged, this led de facto to a decline in labour taxation.

8 This caused uproar in the Czech and international analytical communities at the time of its publication, as it predicted that domestic interest rates would start to rise in around mid-2021. This seemed unthinkable to many during the tough autumn lockdown of the Czech economy.

9 On the other hand, production and exports in the industrial sectors of the domestic economy, especially the automotive industry, were significantly reduced in 2021 due to disruptions to material and component supplies as a result of overloaded global supply chains. In addition to higher additions to inventories (inputs and unfinished products), this led to lower export growth in the second half of 2021 relative to the forecasts under assessment.

10 However, this statement does not apply to the inflation forecast. In the factors-known simulation, monetary policy would indeed react to ensure price stability. Inflation would thus always return to the CNB's 2% target in this simulation. In this sense, the simulation does not try to be a backward prediction of reality, which was influenced by the fact that the CNB was unaware of the factors at that time.

Abbreviations

AEIS	Average Earnings Information System
BoE	Bank of England
BoJ	Bank of Japan
CF	Consensus Forecasts
CNB	Czech National Bank
CPI	consumer price index
CPIH	experimental consumer price index incorporating prices of older properties
CZK	Czech koruna
CZSO	Czech Statistical Office
DSTI	debt service-to-income
DTI	debt-to-income
ECB	European Central Bank
EEA	European Economic Area
EIA	US Energy Information Administration
EIA	Environmental Impact Assessment
EIU	Economist Intelligence Unit
ESA	European System of Accounts
ESCB	European System of Central Banks
ESI	Economic Sentiment Indicator
ESR	electronic sales registration
EU	European Union
EUR	euro
EURIBOR	Euro Interbank Offered Rate
FDI	foreign direct investment
FECF	Foreign Exchange Consensus Forecasts
Fed	US central bank
FMIE	Financial Market Inflation Expectations
FOMC	Federal Open Market Committee
FRA	forward rate agreement
GDP	gross domestic product
GNP	gross national product
GVA	gross value added
GVCs	global value chains
HP filter	Hodrick-Prescott filter
HPI	house price index
ICT	information and communications technology
IEA	International Energy Agency
Ifo	index of economic confidence in Germany
ILO	International Labour Organization
IMF	International Monetary Fund
IR	Inflation Report
IRI	Institute for Regional Information
IRS	interest rate swap
JPY	Japanese yen
LFS	Labour Force Survey
LIBOR	London Interbank Offered Rate
LTV	loan-to-value
LUCI	Labour Utilisation Composite Index
M1, M3	monetary aggregates
MFI	monetary financial institutions
MLSA	Ministry of Labour and Social Affairs
m-o-m	month-on-month
MPR	Monetary Policy Report
NAIRU	non-accelerating inflation rate of unemployment
NBS	National Bank of Slovakia
OECD	Organisation for Economic Co-operation and Development
OPEC+	The OPEC member countries and another ten oil-exporting countries (the most important being Russia, Mexico and Kazakhstan)
PMI	Purchasing Managers Index
pp	percentage points
PPI	producer price index
PRIBOR	Prague Interbank Offered Rate
q-o-q	quarter-on-quarter
repo rate	repurchase agreement rate
rhs	right-hand scale
USD	US dollar
VAT	value added tax
WTI	West Texas Intermediate
y-o-y	year-on-year

Key macroeconomic indicators

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
DEMAND AND SUPPLY												
Gross domestic product												
GDP (CZK bn, constant p. of 2015, seas. adjusted)	4292.5	4290.6	4387.6	4627.6	4740.5	4995.2	5154.1	5306.4	4998.1	5161.5	**5203.2**	**5392.6**
GDP (CZK bn, current p., seas. adjusted)	4087.7	4141.7	4344.5	4627.6	4794.6	5117.9	5416.2	5793.1	5696.5	6118.3	**6500.7**	**6970.8**
GDP (%, y-o-y, real terms, seas. adjusted)	-0.7	0.0	2.3	5.5	2.4	5.4	3.2	3.0	-5.8	3.3	**0.8**	**3.6**
GDP (%, q-o-q, real terms, seas. adjusted)	-	-	-	-	-	-	-	-	-	-	**-**	**-**
Household consumption (%, y-o-y, real terms, seas. adjusted)	-1.1	0.9	1.4	3.9	3.7	4.1	3.3	2.6	-7.0	4.3	**0.1**	**1.8**
Government consumption (%, y-o-y, real terms, seas. adjusted)	-1.9	2.4	1.0	1.8	2.5	1.8	3.8	2.5	3.4	3.0	**1.7**	**1.9**
Gross capital formation (%, y-o-y, real terms, seas. adjusted)	-4.1	-4.2	7.2	13.1	-4.0	6.6	7.6	4.4	-10.2	17.1	**-0.6**	**-5.7**
Gross fixed capital formation (%, y-o-y, real terms, seas. adjusted)	-3.3	-2.2	3.3	9.8	-3.1	5.1	10.0	5.9	-7.5	0.6	**-0.2**	**4.5**
Exports of goods and services (%, y-o-y, real terms, seas. adjusted)	4.4	0.3	8.7	6.2	4.1	7.6	3.7	1.4	-7.0	5.0	**-0.9**	**9.3**
Imports of goods and services (%, y-o-y, real terms, seas. adjusted)	2.7	0.1	10.0	6.9	2.7	6.5	5.8	1.5	-6.9	11.4	**-1.7**	**3.7**
Net exports (CZK bn, constant p. of 2015, seas. adjusted)	289.2	295.8	283.2	276.2	337.3	400.3	336.9	337.8	310.0	82.5	**118.9**	**361.2**
PRICES												
Main price indicators												
Consumer Price Index (%, y-o-y, average)	3.3	1.4	0.4	0.3	0.7	2.5	2.1	2.8	3.2	3.8	**13.1**	**4.1**
Administered prices (14.58%)* (%, y-o-y, average)	8.6	2.2	-3.0	0.0	0.2	0.0	1.8	4.4	3.1	-0.2	**22.7**	**7.3**
Food prices (incl. alcoholic beverages and tobacco) (26.41%)* (%, y-o-y, average)	2.9	3.1	1.8	0.1	0.2	3.6	1.6	2.6	4.2	2.1	**9.5**	**1.9**
Core inflation (55.61%)* (%, y-o-y, average)	-0.3	-0.5	0.5	1.2	1.2	2.4	2.1	2.7	3.4	4.8	**10.9**	**4.1**
Fuel prices (3.40%)* (%, y-o-y, average)	6.0	-2.1	0.2	-13.5	-8.5	6.7	6.3	-0.4	-11.4	16.8	**31.8**	**0.9**
Monetary policy-relevant inflation (%, y-o-y, average)	2.1	0.6	0.2	0.2	0.5	2.5	2.1	2.9	3.2	3.9	**12.7**	**3.9**
Partial price indicators												
Industrial producer prices (%, y-o-y, average)	2.1	0.8	-0.8	-3.2	-3.3	1.8	2.0	2.6	0.1	7.1	**24.9**	**4.8**
Agricultural prices (%, y-o-y, average)	3.3	-12.1	4.7	-6.2	-6.0	7.4	-0.2	5.7	-3.2	5.9	**29.9**	**4.3**
LABOUR MARKET												
Average monthly wage (%, y-o-y, nominal terms)	2.5	-0.1	2.9	3.2	4.4	6.7	8.2	7.9	3.2	6.1	**4.6**	**5.1**
Average monthly wage in market sectors (%, y-o-y, nominal terms)	2.6	-0.3	3.0	3.2	4.3	6.7	7.7	7.6	2.5	6.5	**4.7**	**5.6**
Average monthly wage (%, y-o-y, real terms)	-0.8	-1.6	2.6	2.8	3.8	4.3	6.0	5.0	0.0	2.2	**-8.5**	**1.0**
Unit labour costs (%, y-o-y)	3.6	0.9	1.6	-0.4	3.1	3.9	6.2	4.7	6.3	3.2	**5.6**	**2.2**
Aggregate labour productivity (%, y-o-y)	-1.2	-0.4	1.7	3.9	0.9	3.6	1.8	2.8	-4.2	3.2	**-1.5**	**2.5**
ILO general unemployment rate (%, average, age 15–64, seas. adjusted)	7.0	7.0	6.2	5.1	4.0	2.9	2.3	2.0	2.6	2.9	**2.4**	**2.7**
Share of unemployed persons (MLSA) (%, average, seas. adjusted)	6.8	7.7	7.7	6.5	5.5	4.2	3.2	2.8	3.6	3.8	**3.8**	**4.2**
Employment (ILO) (%, y-o-y)	0.4	1.0	0.8	1.4	1.9	1.6	1.4	0.2	-1.3	-0.4	**2.5**	**1.2**
Full-time employment (%, y-o-y)	0.0	-1.0	1.1	2.1	1.8	2.2	1.5	-0.3	-2.0	0.1	**1.7**	**1.3**
PUBLIC FINANCE												
Government budget balance (ESA2010) (CZK bn, current prices)	-159.3	-53.2	-90.2	-29.8	34.1	76.7	48.3	16.7	-329.2	-359.4	**-340.7**	**-316.9**
Government budget balance/GDP** (%, nominal terms)	-3.9	-1.3	-2.1	-0.6	0.7	1.5	0.9	0.3	-5.8	-5.9	**-5.2**	**-4.5**
Government debt (ESA2010) (CZK bn, current prices)	1805.3	1840.2	1818.9	1836.0	1754.7	1749.7	1734.6	1740.3	2149.3	2566.6	**2872.7**	**3206.9**
Government debt/GDP** (%, nominal terms)	44.2	44.4	41.9	39.7	36.6	34.2	32.1	30.1	37.7	41.9	**44.2**	**46.0**
EXTERNAL RELATIONS												
Current account												
Trade balance (CZK bn, current prices)	123.8	167.0	220.0	187.7	258.5	259.3	200.9	239.8	280.3	73.3	**-37.0**	**110.5**
Trade balance/GDP (%, nominal terms)	3.0	4.0	5.1	4.1	5.4	5.1	3.7	4.1	4.9	1.2	**-0.6**	**1.6**
Balance of services (CZK bn, current prices)	77.6	70.4	55.7	86.6	106.6	124.6	120.0	106.0	103.5	110.1	**134.6**	**167.0**
Current account (CZK bn, current prices)	-63.3	-21.8	7.9	20.7	85.2	79.1	24.1	19.2	113.7	-51.1	**-319.3**	**-158.4**
Current account/GDP (%, nominal terms)	-1.5	-0.5	0.2	0.4	1.8	1.5	0.4	0.3	2.0	-0.8	**-4.9**	**-2.3**
Foreign direct investment												
Direct investment (CZK bn, current prices)	-121.3	7.4	-80.4	49.7	-186.5	-45.9	-51.0	-137.1	-149.1	-4.8	**-50.0**	**-60.0**
Exchange rates												
CZK/USD (average)	19.6	19.6	20.8	24.6	24.4	23.4	21.7	22.9	23.2	21.7	**21.8**	**21.5**
CZK/EUR (average)	25.1	26.0	27.5	27.3	27.0	26.3	25.6	25.7	26.5	25.6	**24.2**	**24.3**
MONEY AND INTEREST RATES												
M3 (%, y-o-y, average)	5.1	5.1	5.1	7.3	9.1	11.7	6.6	6.3	9.0	9.6	**5.4**	**9.7**
2W repo rate (%, average)	0.53	0.05	0.05	0.05	0.05	0.17	1.06	1.92	0.77	0.88	**6.65**	**4.82**
3M PRIBOR (%, average)	1.0	0.5	0.4	0.3	0.3	0.4	1.3	2.1	0.9	1.1	**7.0**	**5.1**
EXTERNAL ASSUMPTIONS												
Foreign GDP (%, y-o-y, seas. adjusted, effective)	0.2	0.2	1.9	2.0	2.0	2.8	1.8	1.5	-5.6	4.1	**2.0**	**2.8**
Foreign GDP (%, q-o-q, seas. adjusted, effective)	-	-	-	-	-	-	-	-	-	-	**-**	**-**
Foreign HICP (%, y-o-y, seas. adjusted, effective)	2.6	1.6	0.6	0.4	0.3	1.6	2.0	1.5	0.6	2.9	**7.8**	**2.9**
Foreign PPI (%, y-o-y, seas. adjusted, effective)	2.1	-0.1	-1.6	-2.5	-2.3	2.7	3.3	1.1	-1.6	11.0	**27.6**	**3.1**
Brent crude oil (in USD/barrel) (average)	111.7	108.8	99.5	53.6	45.0	54.8	71.5	64.2	43.2	70.8	**100.4**	**92.5**
3M EURIBOR (%, average)	0.6	0.2	0.2	0.0	-0.3	-0.3	-0.3	-0.4	-0.4	-0.5	**-0.1**	**1.1**
USD/EUR (average)	1.3	1.3	1.3	1.1	1.1	1.1	1.2	1.1	1.1	1.2	**1.1**	**1.1**

* figures in brackets are constant weights in current consumer basket
** CNB calculation
- data not available/forecasted/released
data in bold = CNB forecast

	2021				2022				2023			
	QI	QII	QIII	QIV	QI	QII	QIII	QIV	QI	QII	QIII	QIV
DEMAND AND SUPPLY												
Gross domestic product												
GDP (CZK bn, constant p. of 2015, seas. adjusted)	1264.1	1281.5	1302.8	1313.2	**1312.5**	**1297.1**	**1294.9**	**1298.7**	**1314.0**	**1337.2**	**1359.2**	**1382.1**
GDP (CZK bn, current p., seas. adjusted)	1476.2	1521.0	1561.4	1559.7	**1593.0**	**1598.7**	**1634.7**	**1674.4**	**1697.5**	**1727.1**	**1755.7**	**1790.4**
GDP (%, y-o-y, real terms, seas. adjusted)	-2.3	8.7	3.6	3.6	**3.8**	**1.2**	**-0.6**	**-1.1**	**0.1**	**3.1**	**5.0**	**6.4**
GDP (%, q-o-q, real terms, seas. adjusted)	-0.3	1.4	1.7	0.8	**0.0**	**-1.2**	**-0.2**	**0.3**	**1.2**	**1.8**	**1.6**	**1.7**
Household consumption (%, y-o-y, real terms, seas. adjusted)	-6.4	8.5	6.5	9.3	**8.5**	**-0.1**	**-4.3**	**-2.7**	**-0.9**	**1.5**	**2.9**	**3.8**
Government consumption (%, y-o-y, real terms, seas. adjusted)	2.8	1.1	7.0	1.0	**2.8**	**4.4**	**-1.7**	**1.4**	**1.4**	**1.7**	**2.2**	**2.3**
Gross capital formation (%, y-o-y, real terms, seas. adjusted)	3.3	15.5	25.8	25.8	**8.0**	**1.0**	**-3.4**	**-7.2**	**-7.5**	**-6.6**	**-6.0**	**-2.4**
Gross fixed capital formation (%, y-o-y, real terms, seas. adjusted)	-4.5	2.0	2.0	3.0	**3.1**	**-2.8**	**-0.6**	**-0.4**	**1.9**	**4.6**	**5.5**	**6.0**
Exports of goods and services (%, y-o-y, real terms, seas. adjusted)	2.8	31.0	-2.1	-5.7	**-1.3**	**-4.5**	**1.5**	**1.2**	**2.3**	**8.6**	**12.6**	**13.8**
Imports of goods and services (%, y-o-y, real terms, seas. adjusted)	4.5	32.1	8.7	4.0	**2.6**	**-4.8**	**-2.7**	**-1.8**	**-1.2**	**3.0**	**5.8**	**7.4**
Net exports (CZK bn, constant p. of 2015, seas. adjusted)	62.5	17.7	-12.6	14.9	**21.6**	**20.1**	**30.8**	**46.5**	**59.0**	**79.3**	**103.8**	**119.0**
PRICES												
Main price indicators												
Consumer Price Index (%, y-o-y, average)	2.2	2.9	4.1	6.1	11.2	**14.5**	**13.9**	**12.7**	**7.9**	**3.8**	**2.7**	**2.2**
Administered prices (14.58%)* (%, y-o-y, average)	0.1	-0.1	0.1	-1.0	15.7	**22.3**	**23.8**	**28.9**	**13.0**	**7.0**	**5.2**	**4.1**
Food prices (incl. alcoholic beverages and tobacco) (26.41%)* (%, y-o-y, average)	1.6	1.0	2.4	3.4	6.2	**11.0**	**11.1**	**9.7**	**5.8**	**0.7**	**0.0**	**1.0**
Core inflation (55.61%)* (%, y-o-y, average)	3.3	3.3	4.8	7.7	10.5	**12.5**	**11.3**	**9.3**	**7.0**	**4.2**	**3.0**	**2.3**
Fuel prices (3.40%)* (%, y-o-y, average)	-5.7	21.1	20.8	31.1	36.9	**37.4**	**32.0**	**20.9**	**9.0**	**0.2**	**-2.5**	**-3.2**
Monetary policy-relevant inflation (%, y-o-y, average)	2.2	2.7	4.0	6.7	10.8	**14.3**	**13.9**	**11.8**	**7.6**	**3.6**	**2.4**	**2.1**
Partial price indicators												
Industrial producer prices (%, y-o-y, average)	1.5	5.3	9.0	12.8	21.8	**28.3**	**26.0**	**23.4**	**10.9**	**4.3**	**2.7**	**2.1**
Agricultural prices (%, y-o-y, average)	-1.3	3.8	7.5	15.8	23.9	**32.6**	**35.1**	**27.1**	**14.4**	**1.6**	**0.1**	**2.4**
LABOUR MARKET												
Average monthly wage (%, y-o-y, nominal terms)	3.4	11.5	5.7	4.0	**8.0**	**2.7**	**3.7**	**4.3**	**4.1**	**4.8**	**5.4**	**5.9**
Average monthly wage in market sectors (%, y-o-y, nominal terms)	3.6	12.8	6.0	4.0	**7.7**	**2.4**	**4.2**	**4.9**	**4.5**	**5.2**	**5.9**	**6.6**
Average monthly wage (%, y-o-y, real terms)	1.2	8.5	1.6	-2.1	**-3.2**	**-11.9**	**-10.2**	**-8.4**	**-3.7**	**1.0**	**2.7**	**3.6**
Unit labour costs (%, y-o-y)	1.0	4.6	4.1	3.1	**8.2**	**3.4**	**5.0**	**6.0**	**4.6**	**2.9**	**1.2**	**0.2**
Aggregate labour productivity (%, y-o-y)	-1.0	9.0	2.5	2.4	**2.5**	**-1.1**	**-3.3**	**-3.8**	**-2.6**	**1.9**	**4.5**	**5.8**
ILO general unemployment rate (%, average, age 15–64, seas. adjusted)	3.4	3.2	2.7	2.3	**2.3**	**2.4**	**2.5**	**2.6**	**2.6**	**2.7**	**2.7**	**2.7**
Share of unemployed persons (MLSA) (%, average, seas. adjusted)	4.0	4.0	3.7	3.5	**3.3**	**3.8**	**4.0**	**4.1**	**4.1**	**4.2**	**4.3**	**4.2**
Employment (ILO) (%, y-o-y)	-2.1	-0.8	0.5	0.8	**1.5**	**2.9**	**2.7**	**2.8**	**2.8**	**1.1**	**0.4**	**0.6**
Full-time employment (%, y-o-y)	-1.8	0.6	0.9	0.8	**0.5**	**1.7**	**2.2**	**2.4**	**2.5**	**1.3**	**0.8**	**0.7**
PUBLIC FINANCE												
Government budget balance (ESA2010) (CZK bn, current prices)	-	-	-	-	-	-	-	-	-	-	-	-
Government budget balance/GDP** (%, nominal terms)	-	-	-	-	-	-	-	-	-	-	-	-
Government debt (ESA2010) (CZK bn, current prices)	-	-	-	-	-	-	-	-	-	-	-	-
Government debt/GDP** (%, nominal terms)	-	-	-	-	-	-	-	-	-	-	-	-
EXTERNAL RELATIONS												
Current account												
Trade balance (CZK bn, current prices)	91.8	41.0	-31.6	-28.0	**11.6**	**-20.5**	**-21.6**	**-6.5**	**40.1**	**10.5**	**22.2**	**37.7**
Trade balance/GDP (%, nominal terms)	6.6	2.7	-2.0	-1.7	**0.8**	**-1.3**	**-1.3**	**-0.4**	**2.5**	**0.6**	**1.3**	**2.0**
Balance of services (CZK bn, current prices)	23.1	32.1	29.8	25.1	**41.2**	**43.8**	**39.6**	**10.0**	**42.4**	**46.8**	**41.0**	**36.8**
Current account (CZK bn, current prices)	66.6	19.9	-83.8	-53.7	**30.4**	**-110.7**	**-123.2**	**-115.9**	**29.8**	**-77.8**	**-72.6**	**-37.8**
Current account/GDP (%, nominal terms)	4.8	1.3	-5.3	-3.3	**2.0**	**-6.8**	**-7.5**	**-6.7**	**1.9**	**-4.4**	**-4.1**	**-2.0**
Foreign direct investment												
Direct investment (CZK bn, current prices)	33.8	-31.7	-11.3	4.3	**-12.5**	**-12.5**	**-12.5**	**-12.5**	**-15.0**	**-15.0**	**-15.0**	**-15.0**
Exchange rates												
CZK/USD (average)	21.6	21.3	21.6	22.2	22.0	**21.9**	**21.6**	**21.7**	**21.7**	**21.6**	**21.4**	**21.2**
CZK/EUR (average)	26.1	25.6	25.5	25.4	24.6	**24.0**	**23.9**	**24.1**	**24.3**	**24.4**	**24.3**	**24.2**
MONEY AND INTEREST RATES												
M3 (%, y-o-y, average)	10.8	10.7	9.1	7.8	5.9	**5.3**	**4.9**	**5.6**	**7.4**	**9.0**	**10.8**	**11.8**
2W repo rate (%, average)	0.25	0.27	0.65	2.34	4.21	**8.12**	**7.75**	**6.49**	**5.44**	**4.74**	**4.56**	**4.53**
3M PRIBOR (%, average)	0.4	0.4	0.9	2.8	4.6	**8.4**	**8.1**	**6.8**	**5.7**	**5.0**	**4.9**	**4.8**
EXTERNAL ASSUMPTIONS												
Foreign GDP (%, y-o-y, seas. adjusted, effective)	-1.7	12.2	3.4	3.3	**4.4**	**2.0**	**0.6**	**1.3**	**2.0**	**2.9**	**3.1**	**3.0**
Foreign GDP (%, q-o-q, seas. adjusted, effective)	-0.9	2.3	1.8	0.0	**0.2**	**-0.1**	**0.5**	**0.7**	**0.8**	**0.8**	**0.7**	**0.6**
Foreign HICP (%, y-o-y, seas. adjusted, effective)	1.3	2.0	3.2	5.1	**6.5**	**8.6**	**8.6**	**7.6**	**5.2**	**3.1**	**2.1**	**1.5**
Foreign PPI (%, y-o-y, seas. adjusted, effective)	1.7	7.6	12.7	22.1	**30.8**	**33.7**	**28.6**	**18.8**	**8.4**	**2.6**	**1.2**	**0.5**
Brent crude oil (in USD/barrel) (average)	61.3	69.1	73.2	79.7	97.9	**104.4**	**101.6**	**98.4**	**95.7**	**93.5**	**91.5**	**89.5**
3M EURIBOR (%, average)	-0.5	-0.5	-0.5	-0.6	-0.5	**-0.3**	**0.1**	**0.4**	**0.7**	**1.0**	**1.2**	**1.3**
USD/EUR (average)	1.2	1.2	1.2	1.1	1.1	**1.1**	**1.1**	**1.1**	**1.1**	**1.1**	**1.1**	**1.1**

* figures in brackets are constant weights in current consumer basket
** CNB calculation
- data not available/forecasted/released
data in bold = CNB forecast

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