Monetary Policy Report

Spring 2023

Czech National Bank —— Monetary Policy Report —— Spring 2023

CNB CZECH NATIONAL BANK

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This Monetary Policy Report was approved by the CNB Bank Board on 11 May 2023 and (with some exceptions) contains the information available as of 21 April 2023. 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 Bank Board is also consulted in the forecasting process. 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,

It is my pleasure to present the spring issue of the Monetary Policy Report. The Report is one of the main inputs to the Bank Board’s decision-making on CNB monetary policy.

At our May meeting, my Bank Board colleagues and I kept interest rates unchanged. The two-week repo rate remains at 7%, the highest level since 1999. Four members voted in favour of this decision, and three members voted for increasing rates by 0.25 percentage point. The Czech National Bank will continue to prevent excessive fluctuations of the koruna.

The CNB’s interest rates are at a level that is dampening domestic demand pressures. They are slowing growth in koruna bank loans to households and firms and hence also in the quantity of money in the economy. In the first three quarters of the year, the volume of pure new mortgages declined by 70% compared with the first quarter of last year. Taking into account the inflation outlook one year ahead, real interest rates are distinctly positive for the first time in many years. Monetary conditions have been tight in recent months, due partly to the koruna appreciating against the euro. The monetary conditions in our country are thus the tightest in twenty years.

The decision adopted is underpinned by a new macroeconomic forecast, which is presented in detail in this Report. The baseline scenario of the forecast implies stability of the 3M PRIBOR market interest rate initially, followed by a gradual decline from 2023 Q3 onwards. However, the Bank Board expects interest rates to stay at the current or a higher level for longer. This will ensure that inflation returns to levels close to the inflation target next year, even in the event of elevated inflation expectations, as shown in a scenario described in section IV of this Report.

Headline inflation in the Czech economy peaked in September 2022, when it reached 18%. In line with our expectations, a gradually downward trend in inflation started in February 2023. In March 2023, inflation stood at 15%. Core inflation has been coming down since October 2022. However, both headline and core inflation remain at unacceptable levels. The Bank Board thus confirms its determination to continue fighting inflation until it is fully under control, i.e. stabilised at the 2% target. Interest rates will therefore remain relatively high for some time.

The Bank Board assures the public that the CNB’s actions will be sufficient to restore price stability in accordance with its statutory mandate. In addition, the Bank Board is ready to react appropriately to any materialisation of the risks of the forecast.

On behalf of the Czech National Bank

Aleš Michl

Governor

The decision, and the current outlook and its risks

At its May meeting, the Bank Board kept the two-week repo rate unchanged at 7%. The decision is based on the baseline scenario of the CNB's spring macroeconomic forecast. In the forecast, the central bank looks at a monetary policy horizon 12–18 months ahead. The horizon is thus currently formed by the second and third quarters of 2024. Consistent with the baseline scenario of the spring forecast is initially market interest rate stability at the current high level ensuring the fulfilment of the inflation target next year. With this in prospect, interest rates will be able to start coming down in the second half of this year according to the forecast. Domestic economic activity will remain subdued in early 2023, as Czech economic output will continue to be dampened by a sharp decline in the real income of households and sluggish growth in external demand. The economy will recover over the rest of the year. Domestic inflation will continue to decrease in spring and summer, dropping to single digits in the second half of 2023. Inflation will slow markedly further in 2024 and will be close to the CNB's 2% target at the monetary policy horizon. The Bank Board assessed the risks and uncertainties of the baseline scenario of the spring macroeconomic forecast as being significant and going in both directions. Besides the baseline scenario, the Bank Board discussed two additional forecasting scenarios. These assume that interest rates will be kept at the current level for longer, and one of them, in combination with elevated inflation expectations, points to a risk of overshooting of the inflation target at the monetary policy horizon.

The price pressures in the Czech economy are easing. This is being fostered by a decline in global inflation pressures amid subdued external and domestic demand, which reflects the CNB's tightened monetary policy. The inflationary effect of energy import prices, which were a significant cost factor last year, is fading quickly, supported by a strengthening koruna. By contrast, the continued growth in consumer prices is being driven more strongly by domestic costs. Their growth remains elevated due to buoyant wage growth.

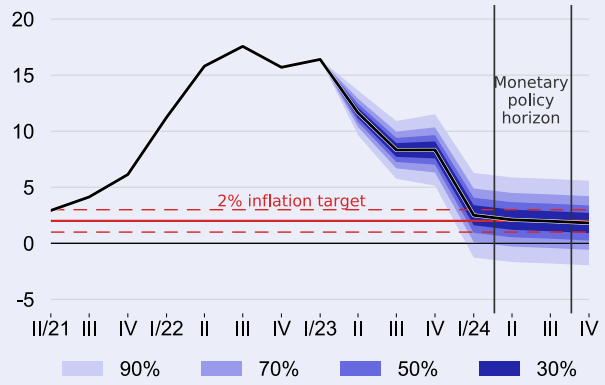
Consumer price inflation started to decline in February, following a temporary increase at the start of this year related to a marked rise in administered price inflation.

Year-on-year growth in prices will continue to slow visibly during spring and summer. With each passing month, inflation will be more than one percentage point lower than in the previous month. It will thus be in single digits by the second half of the year. This trend will be interrupted briefly in Q4 owing to last year's exceptional low base caused by the temporary effect of the government's energy savings tariff. Once this effect drops out, inflation will fall sharply further at the start of 2024. It will thus return to the CNB's 2% target at the monetary policy horizon, i.e. in 2024 Q2 and Q3, with all its components contributing. Core inflation continued to come down in 2023 Q1, and a further decrease will be fostered by falling foreign producer price inflation and cooling domestic demand. The contribution of imputed rent is still shrinking rapidly, reflecting a slowdown in construction prices and stabilisation of new residential property prices due to higher interest rates. Declining global agricultural commodity prices and domestic agricultural producer prices will foster a further slowdown in food price inflation. In March, fuel prices switched to a sharp year-on-year decline, which will continue until the end of this year owing to the high base caused by the start of the war in Ukraine last year. Administered price inflation will be high and volatile this year but will tend to decline gradually, as natural gas and electricity prices for households have started to fall below the government price caps thanks to a decrease in prices of these commodities on energy exchanges. Administered price inflation will drop sharply in 2024.

The Czech economy will expand slightly overall this year. The downturn seen in the second half of 2022 will linger into the first half of this year, mainly due to a continued fall in household consumption expenditure. Czech households are still facing a deep decline in real income, which is being only partly offset by government support. This, together with negative sentiment and a higher saving rate, is reflected in a continued decline in their consumption. Fixed investment will return to growth, driven by a still good financial condition of firms and later also recovering external demand. In addition, export activity will be supported by the fading out of problems in supplies of materials and components for production. The downturn in domestic demand will cause import growth to lag well behind export growth this year. The contribution of net exports to economic growth will

Inflation will continue to fall rapidly this spring and summer and return close to the 2% target in early 2024

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



Following modest growth this year, the economy will recover significantly next year

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

	2022	2023	2024
Headline inflation (%)	**15.1** (0.0)	**11.2** (0.4)	**2.1** (0.0)
GDP	**2.5** (-0.1)	**0.5** (0.8)	**3.0** (0.8)
Average nominal wage	**6.5** (-0.1)	**8.8** (0.4)	**7.9** (0.9)
3M PRIBOR (%)	**6.3** (0.0)	**6.8** (-0.2)	**4.6** (-0.2)
Exchange rate (CZK/EUR)	**24.6** (0.0)	**23.7** (-0.8)	**24.3** (-0.2)

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.

thus be strongly positive. It will continue to support GDP growth slightly in 2024.

Fiscal policy will have a neutral effect on GDP growth this year, despite the fading out of part of last year's support expenditure. This is because the effect of the ongoing government measures linked with the fight against high energy prices and the addition of a child-raising bonus to pensions will act in the opposite direction. In 2024, fiscal policy will dampen economic growth due to the termination of the support measures and an only slow start to the absorption of investment from EU funds in the new programme period.

The Czech economy is below its potential output level. The output gap will stay negative until around mid-2024. The labour market also cooled slightly further in late 2022 and early 2023 but will start to tighten gradually again. Employment and unemployment will be broadly flat this year. Therefore, the long-standing excess demand for labour will not decrease significantly further. Nominal wage growth rose at the start of this year and will remain high throughout 2023. The bargaining position of employees is still strong. Firms' still good financial condition will also foster buoyant wage growth. Wages will thus partly catch up with the previous inflation. The wage bill will not increase markedly in real terms until next year.

The koruna has been appreciating for the most part in recent months. The only major exception was a short episode during March, when it weakened temporarily due to higher risk aversion on global financial markets caused by problems in the US and Swiss banking sectors. Better market sentiment associated with the fading negative foreign trade situation and the CNB's readiness to prevent excessive exchange rate fluctuations fostered appreciation of the koruna. The koruna will weaken slightly in the second half of 2023 and in 2024, mainly as a result of a narrowing interest rate differential vis-à-vis the euro area. The latter will reflect continued tightening of ECB monetary policy, including a reduction of its balance sheet.

Consistent with the forecast is market interest rate stability initially, followed by a gradual decline from the second half of this year onwards. High interest rates at the start of the forecast will lead to the fulfilment of the 2% inflation target at the monetary policy horizon. CNB interest rates will be able to start coming down towards the policy-neutral level in the second half of this year.

A number of substantial risks and uncertainties are associated with the forecast. Still expansionary fiscal policy is having an inflationary effect. The threat of inflation expectations becoming unanchored and the related risk of a wage-price spiral also remain significant risks in the same direction. By contrast, a stronger-than-forecasted downturn in domestic consumer and investment demand is a downside risk. The general uncertainties of the outlook include the future course of the war in Ukraine, the availability and prices of energy, and the future monetary policy stance abroad.

I. ECONOMIC DEVELOPMENTS ABROAD

The euro area economy has proven resilient to the energy crisis. In contrast to the original pessimistic outlooks, it contracted only slightly in quarter-on-quarter terms in late 2022. The expectations for the start of this year are also more optimistic, so the effective euro area is likely to avoid a technical recession. The favourable situation was aided by a mild winter, which limited the use of gas from European storage facilities. Coupled with savings in energy consumption, this led to a significant drop in prices of natural gas and electricity on commodity exchanges. The cheaper energy and fading supply chain problems fostered diminishing inflation pressures in the euro area in early 2023. Those pressures will continue to weaken due to slowing global demand, falling real household income and tightened monetary conditions.

Despite a slight improvement in the economic situation early this year, global economic growth will be subdued in 2023, due in part to the tightened monetary policies of major central banks

Annual GDP growth in large world economies slowed further at the close of last year. Its outlook for this year has improved slightly despite monetary policy tightening by most central banks and strong growth in living costs. With the exception of China, however, it remains weak (see Table I.1). According to the PMI leading indicators, the global economy started to improve during 2023 Q1. This was due mainly to the performance of services, where strong demand and wage inflation pressures persist. The recovery in manufacturing is still fragile. Weak demand and falling energy prices have helped suppress industrial inflation, and the supply chain pressure has also eased substantially (see Chart I.1). Firms are gradually exhausting their stocks of existing orders. In a situation of subdued inflows of new orders, many companies will eventually cut production, inventories and employment. Although the immediate risk of recession has decreased in many countries, persisting high inflation in services and monetary policy tightening will continue to dampen demand and hence global growth for some time.

The inflation pressures stemming from high energy prices, especially in Europe, have eased considerably. However, energy commodity prices are not very likely to drop further in the foreseeable future (see Chart I.2). Prices of non-energy commodities, especially food commodities, remain high. Industrial metals prices are expected to rise gradually owing to growing demand from Chinese industry after the lifting of anti-epidemic measures in China. Together with rising wage pressures, metals prices will be the main global cost inflation factor this year.

Economic growth in the USA is proving resilient to the rapid growth in the US central bank's policy rates, the problems in the domestic banking sector and the weak

Table I.1

Economic growth in large world economies except China will be weak this year and the next

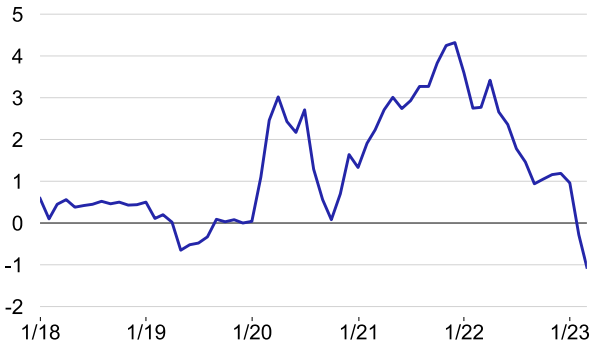
real GDP; y-o-y changes in %; source Refinitiv, CF

	2021	2022	2022	2022	2023	2024
		Q3	Q4			
Euro area	5.3	2.4	1.8	3.5	0.7	1.0
USA	5.9	1.9	0.9	2.1	1.1	0.7
China	8.3	3.6	2.6	3.0	5.5	5.1
United Kingdom	7.6	2.0	0.6	4.1	-0.2	0.8

Chart I.1

The global supply chain pressure eased substantially at the start of this year

Global Supply Chain Pressure Index; y-axis: standard deviations from long-term average; zero represents long-term average; source: Federal Reserve Bank of New York (Liberty Street Economics)



Note: The Global Supply Chain Pressure Index is compiled by the New York Fed on a monthly basis. It uses data on sea and air transport costs, the Purchasing Managers' Index (PMI) and the ISM manufacturing index for seven economies (the euro area, China, Japan, South Korea, Taiwan, the UK and the USA) corrected for demand effects.

external demand. It is being driven primarily by the service sector, which, however, is also fostering higher inflation. The labour market remains tight. This will probably soon force the Fed to tighten further.

The lifting of anti-epidemic measures in China led to strong growth in the service sector there. The impact on industrial production has been limited so far, owing to weak demand from abroad. However, there is strong optimism regarding the future in both sectors.

The effective euro area economy will grow much more slowly this year due to a downswing in global demand and a decline in real household income

Annual GDP growth in the effective euro area slowed further to 1.5% in 2022 Q4 (see Chart I.3). In quarter-on-quarter terms, economic activity in the effective euro area even fell slightly. Net exports and government consumption rose, while household consumption and investment declined. Overall, however, the economy proved resilient to the energy crisis, aided largely by a mild winter and savings in consumption. These factors limited the use of gas from storage facilities during the heating season and fostered a drop in gas prices on exchanges. As regards the large euro area countries, Spain and France fared relatively well, while the German economy contracted quarter on quarter.

The effective euro area economy also performed better than expected during 2023 Q1. This was due partly to an easing of pressure on the European natural gas and electricity markets, accompanied by a further decrease in prices. The economy is thus likely to avoid a technical recession,[1] as the observed data on industrial production and exports in the first months of this year point to fairly solid growth. At the same time, the labour market was characterised by a low and stable unemployment rate, and the economic sentiment of consumers also improved. However, households became more cautious, as the high inflation caused their real income to decline. Real retail sales went down. According to leading indicators, industry started to face a drop in orders. According to the European Commission's March survey, sentiment worsened in manufacturing, retail and construction. In response to the recent shocks to the financial sector, the ZEW index of business sentiment in Germany fell sharply in March and April, owing to more restrictive credit conditions expected in the months ahead. According to the forecast, quarterly GDP growth in the effective euro area was insubstantial in early 2023.[2] It

Chart I.2

Energy commodity prices are ceasing to be the main driver of the high inflation

prices of selected commodities; index: February 2022 = 100; source Bloomberg, CNB calculation

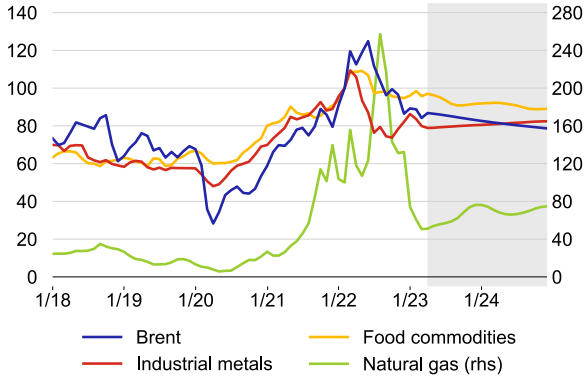
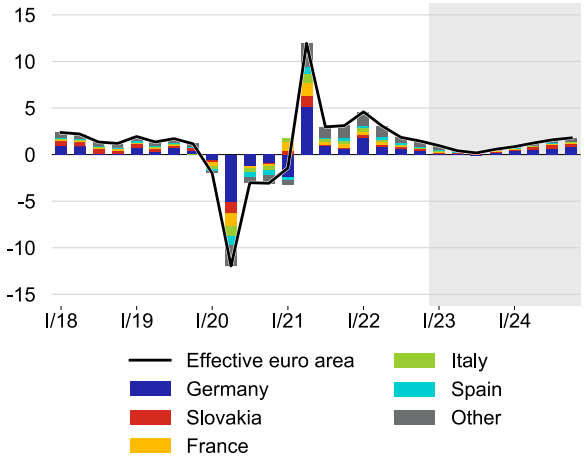


Chart I.3

A stagnation in effective euro area GDP will be fostered by a slowdown in global demand growth amid tightened monetary conditions

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



1 A technical recession is defined as quarter-on-quarter decline in seasonally adjusted real quarterly GDP in at least two successive quarters.

2 According to Eurostat's flash estimate, GDP in the effective euro area increased by 0.1% quarter on quarter and 0.8% year on year in 2023 Q1. This figure is not included in the forecast, as it was released on 28 April, i.e. after its closing date.

will be depressed mainly by Germany's weakening economic performance.

This year, economic activity will be pushed down chiefly by an expected slowdown in global demand growth amid tightening monetary conditions and a real decline in households' income. The deterioration in the demand situation will no longer be cushioned by accumulated pending orders and spending of pandemic savings. Conversely, the problems in global supply chains will fade out completely in the first half of the year. Government support measures will largely offset the adverse demand situation. Markedly lower energy prices will enable energy-intensive sectors to return to full production. No repeat of the difficult situation on the natural gas market is expected in the next heating season. GDP in the effective euro area will grow by 0.5% overall this year and accelerate to 1.4% next year. The output gap will turn negative in the second quarter of this year and stay negative until the end of the forecast horizon.

Inflation in the production sector fell rapidly due to a sharp decrease in natural gas and electricity prices

The Brent crude oil price plunged in mid-March on fears that the problems in the US and European banking sectors would affect global growth. It then erased some of its losses owing to a reduction in sell-offs on commodity markets. Still, OPEC+ unexpectedly declared in early April that it would further cut its production quotas from May until the end of 2023. The oil price responded by quickly returning to its previous level. The oil price outlook remains slightly falling towards USD 75 a barrel at the end of 2024. The natural gas price in Europe was flat at around EUR 40/MWh from early March onwards, well below the ceilings set by European governments. The filling rates of storage facilities are above average (at approximately 58% of total capacity at the end of April) at the end of the heating season, and gas consumption remains reduced despite a slight increase in industry.

The dramatic energy price growth last year was reflected in producer prices in the effective euro area, especially their energy component (see Chart I.4). However, the prices pressures linked to the energy crisis eased substantially in 2022 Q4, and annual industrial producer price inflation also dropped further in the first two months of this year. The energy component slowed in particular, as, to a lesser extent, did the core component at the start of this year. A further decrease in the market outlooks for natural gas and electricity prices pushed prices down. The price growth associated with overloaded supply chains is also gradually decreasing in intensity. This is fostering a reduction in the pressure on core inflation.

Price expectations in industry have decreased markedly according to the European Commission

Chart I.4

Industrial producer prices in the effective euro area will switch to a year-on-year decline this year

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

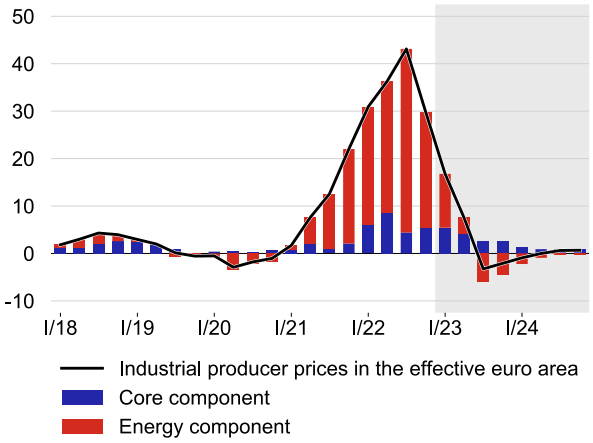
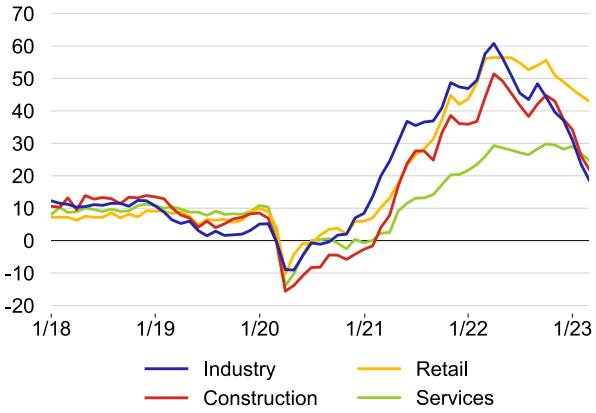


Chart I.5

The European Commission survey indicates an easing of inflation expectations in the euro area across sectors

expectations regarding selling prices in euro area over next three months; balance of answers; source European Commission



The market view of the ECB's conventional monetary policy can be monitored using the 3M EURIBOR. *As a rule, the rates announced by the ECB form the floor for euro area market rates, the difference being made up of the term, risk and liquidity premia. The ECB uses three key rates: the deposit facility rate, the main refinancing operations rate (repo rate) and the marginal lending facility rate (see Chart I.6). The deposit facility rate is the lowest and is the one at which banks can place their deposits with the ECB. The 3M EURIBOR is usually above it and below the main refinancing operations rate. From June 2014 to July 2022, the deposit facility rate was the only negative key rate; it was cut to -0.5% in September 2019. The importance of the deposit facility rate was increased by the use of unconventional quantitative easing instruments (APP, PEPP) and the provision of additional liquidity to the banking system in targeted longer-term refinancing operations (TLTRO I, II and III).*

survey (see Chart I.5). Industrial producer price inflation in the effective euro area will slow to 4.2% on aggregate this year (from 35% last year). In 2024, industrial prices in the effective euro area will stagnate on average.

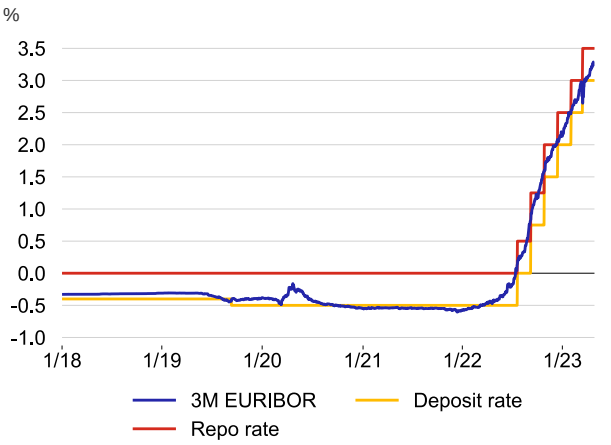
Consumer price inflation in the effective euro area also peaked in 2022 Q4. It slowed to 9.4% in 2023 Q1 and will gradually converge to the 2% target at the close of next year. Year-on-year growth in energy prices fell sharply from 17.9% in February to 3.5% in March. Core inflation remains elevated, standing at 6.5% in February and March. The momentum of core inflation was also flat. Year-on-year growth in services prices went up, and growth in goods prices was also high despite easing gradually.

Despite the financial market tensions, the ECB and the Fed both raised their key interest rates in March

The ECB and the Fed continued to raise their key interest rates in March, doing so by 0.5 pp and 0.25 pp respectively. The central banks thus made it clear that their priority is to lower inflation to the 2% target despite the recent stress in the banking sector. According to ECB President Christine Lagarde, there is no trade-off between monetary policy and financial stability. The ECB raised its rates (see Chart I.6) on the basis of an outlook for high inflation exceeding the target for longer. Although the financial market turmoil in March led to a correction of the market rate outlook, the latter is now back to the levels seen at the start of 2023. The future path of the 3M EURIBOR rate thus reflects the 0.25 pp hike in euro area rates announced at the ECB's monetary policy meeting in May and another increase of the same size expected in June (see Chart I.7). The shadow rate estimate is above the 3M EURIBOR market rate, due to the launch of the ECB's plan to gradually reduce its balance sheet. The Fed's key interest rate was increased to the range of 5.00%–5.25% at the May meeting. The euro firmed against the dollar, and its expected pace of appreciation remained unchanged.

Chart I.6

The 3M EURIBOR reacted to the increases in the ECB's key rates

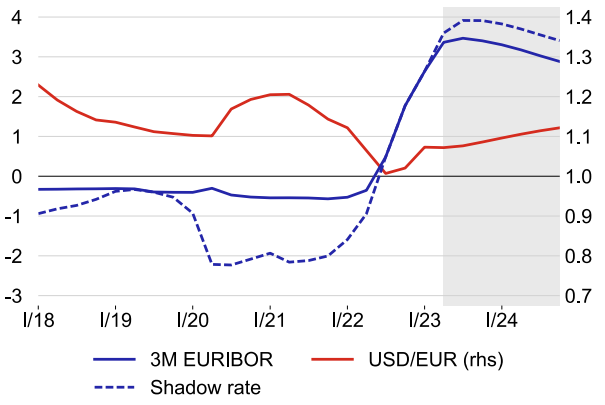


The ECB's unconventional monetary policy tools enter the CNB forecast via the shadow foreign interest rate. *This rate is based on the market outlook for the 3M EURIBOR and additionally reflects the expected amount of net asset purchases by the ECB on financial markets. These tools have recently mainly included the Pandemic Emergency Purchase Programme (PEPP) and the Asset Purchase Programme (APP). The relationship between the purchase amount and the shadow rate is derived from a model simulation of the impact on the euro area economy as described in the* Focus *article in the October 2015 issue of* Global Economic Outlook*. This approach is also being applied symmetrically during the current reduction of the ECB's balance sheet. Since spring 2023, the maturing assets have not been reinvested in full (initially at a pace of EUR 15 billion a month, later EUR 30 billion). In the outlook, this leads to the shadow rate being around 0.5 pp higher than the 3M EURIBOR.*

Chart I.7

The interest rate outlook reflects market expectations of further tightening by the ECB, including a reduction of its balance sheet

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



COMPARISON WITH THE PREVIOUS FORECAST: Economic developments abroad

		2022	2023	2024	
GDP (in the effective EA)	y-o-y changes in % pp	**2.7** (0.0)	**0.5** (0.1)	**1.4** (0.1)	The effective euro area growth outlook has increased slightly for both this year and the next.
Consumer prices (in the effective EA)	y-o-y changes in % pp	**9.2** (0.0)	**6.8** (0.6)	**2.6** (0.4)	The inflation outlook has shifted higher, due chiefly to higher food prices, counteracted by a decline in energy prices.
Producer prices (in the effective EA)	y-o-y changes in % pp	**35.0** (0.0)	**4.2** (4.9)	**0.1** (1.4)	Industrial producer prices have been revised upwards due to lower pass-through of the decline in market prices of natural gas and electricity (especially in Slovakia).
Brent crude oil price	USD/barrel	**98.9** (0.0)	**80.6** (-0.1)	**75.8** (-0.6)	The falling outlook for oil prices is virtually unchanged.
3M EURIBOR	% pp	**0.3** (0.0)	**3.2** (0.0)	**3.1** (0.0)	The market interest rate outlook remains stable.
Exchange rate	USD/EUR	**1.05** (0.00)	**1.08** (0.03)	**1.11** (0.04)	The expected euro-dollar exchange rate has shifted towards a slightly stronger euro, as US economic activity is expected to weaken.

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)

II. THE REAL ECONOMY AND THE LABOUR MARKET

The Czech economy will emerge from a mild recession and return to quarter-on-quarter growth in the first half of this year. This will be due predominantly to the contribution of net exports, linked mainly with receding supply chain problems. Private consumption and total investment activity will rebound this year. In the near future, household spending will still be held back by negative sentiment and related higher saving. Consumption will recover on the back of renewed growth in real income, i.e. higher growth in nominal wages amid slowing inflation. Overall, firms have withstood the recession in solid shape and have been generating profits despite falling real consumption and sharply rising costs. They will subsequently use this space to pay rising wages and to invest in automation, robotisation and digitalisation and in renewable energy sources and energy savings. Firms' investment appetite will be aided by a recovery in external demand next year. In whole-year terms, the Czech economy will grow slightly this year but will still operate below its potential. The labour market will not cool markedly further but rather will start to overheat again. The unemployment rate will go up only slightly, amid broadly stable employment. Nominal wage growth will pick up and significantly exceed inflation at the start of next year.

Domestic economic activity is beginning to show signs of recovery but will not accelerate markedly until next year, when household consumption will rebound

The problems in global supply chains are receding, despite some temporary supply issues at the start of the year which led to the cancellation of shifts in some car companies. For the rest of the year, material shortages in industry will no longer drag significantly on the Czech economy (see Chart I.1), so the contribution of net exports will remain positive. The financial situation of households will begin to improve in mid-2023, resulting in a recovery in real consumer demand growth. Firms' profitability will remain solid despite narrowing margins. Overall economic activity will thus start to rise again in quarter-on-quarter terms but will be broadly flat year on year in the first half of 2023 (see Chart II.2). In whole-year terms, GDP will grow by 0.5% this year.[3] Growth in economic activity will rise to 3% in 2024.

Household consumption will begin to increase at the end of this year on the back of renewed growth in real income, but the recovery will be held back by high saving

Household consumption[4] will fall for most of the year in year-on-year terms (see Chart II.3) but will return to

Chart II.1

The global supply chain problems are lessening but are still weighing on the economy

share of domestic industrial firms in % reporting shortages of materials or equipment as factor limiting production; smoothed by HP filter (lambda = 1); source CZSO business survey

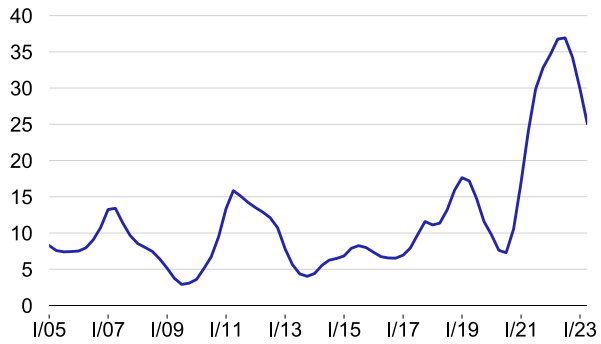
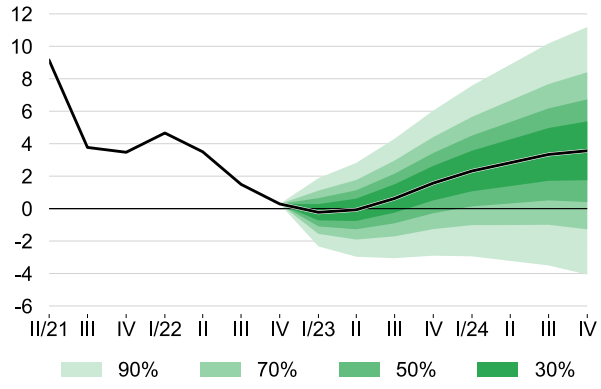


Chart II.2

Economic activity will be broadly flat year on year in the first half of 2023 and return to growth in the second half of the year

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



3 According to a preliminary CZSO estimate, Czech GDP increased by 0.1% quarter on quarter and declined by 0.2% year on year in 2023 Q1. This is in line with the CNB forecast. This figure was published on 2 May 2023.

4 Since 2022 Q4, the expenditure of Ukrainian nationals has been treated as household consumption. However, this methodological change has not had any effect in terms of constant prices, as the household consumption deflator has been increased accordingly. We estimate that the expenditure

quarter-on-quarter growth in the spring. The energy savings tariff was terminated at the start of this year. Together with the still adverse purchasing appetite[5] and falling real purchasing power of households, this led to a further drop in household consumption. Fiscal policy partly offset this fall (see Chart II.4). As the high inflation gradually decreases, growth in households' purchasing power will start to recover gradually this year, mainly as a result of real wage growth. This will trigger a slight recovery in year-on-year real private consumption growth at the year-end. Nonetheless, household consumption will decrease by around 2.5% in whole-year terms this year.

Real household income will continue to rise next year. Together with a decline in the saving rate, this will result in brisk growth in real consumption, which will thus increase by more than 4% for the year as a whole.

Growth in households' nominal gross disposable income will be driven over the entire forecast horizon primarily by a broadly stable contribution of wages and salaries (see Chart II.5), which will reflect a still tight labour market. Gross disposable income will continue to grow at a pace of around 10% in the first half of this year. It will then slow considerably, mainly because of a decline in the contribution of entrepreneurs' income from last year's historical highs, partly reflecting a decrease in their margins. Other current transfers and social benefits, including repeated pension increases, and some other fiscal support measures will weaken gradually over the outlook horizon. Property income will fall slightly.

The saving rate will remain above the long-term average this year and most of next year

The saving rate surprisingly increased further in 2022 Q4. This was caused by a further deterioration in consumer sentiment and by precautionary saving connected with rapid growth in the cost of living. Falling demand for more expensive loans and saving motivated by higher deposit interest rates had the same effect. These effects will gradually diminish in the quarters ahead.

Despite the recovery in household consumption, the saving rate will remain elevated for longer. It will not return to its long-term average until the end of 2024.

Exports will record solid growth as the problems with component and material

Chart II.3

Household consumption will continue to decline in year-on-year terms for most of this year; growth in general government consumption will fluctuate

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

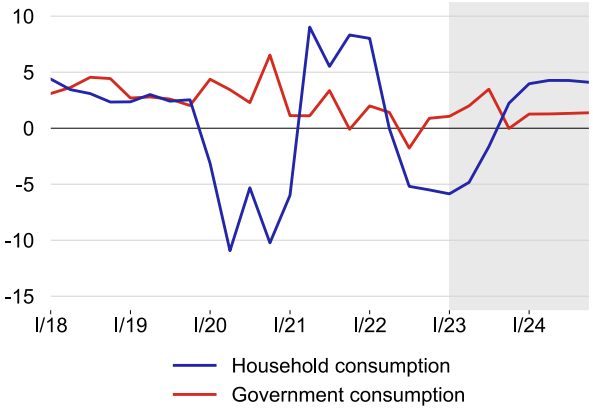
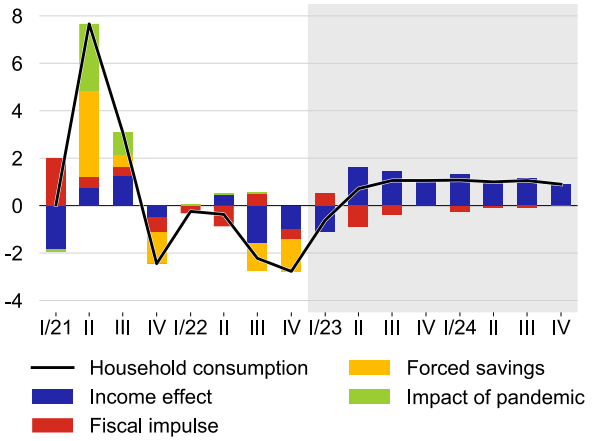


Chart II.4

Household consumption will start to rise again along with real income; it will not be affected much by fiscal policy overall this year

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.

—

of Ukrainian nationals was around CZK 7.5 billion at current prices at the end of last year. This is equivalent to approximately 1% of nominal household consumption.

5 According to the April business cycle survey data, consumer and business sentiment improved appreciably. However, they both remain below their long-term average.

shortages recede and external demand recovers gradually

The export-oriented part of the domestic economy (especially the automotive industry) still faces input supply problems in some cases (see Chart II.1). However, these problems are gradually lessening and will therefore soon cease to have a major effect on industrial production. Growth in external demand will recover slightly in quarter-on-quarter terms this year. This will be reflected in an upswing in Czech exports (see Chart II.6). Slower growth in energy costs, which constrained production in energy-intensive export-oriented industrial sectors throughout 2022, will have the same effect.

Together with a recovery in import-intensive fixed investment, import growth will be supported by a gradual return to growth in household consumption. However, year-on-year growth of imports will be lower than that of exports, so net exports will make a significant positive contribution to GDP growth throughout 2023. Next year, the difference between growth in exports and imports of goods and services will shrink, but the contribution of net exports will remain positive (see Chart II.6).

Following a slight quarter-on-quarter decline in late 2022 and early 2023, fixed investment will return to growth, driven by a still good financial condition of firms and recovering external demand

Despite the recent extreme rise in energy prices, the financial condition of firms remains solid overall, as evidenced by increasing profit rates for most of last year. Firms will therefore continue to invest in the renewal and expansion of production and in renewable energy sources and energy savings, which will offer them protection against potential negative impacts next winter. In the course of the year, investment activity will be supported further by the fade-out of problems in value chains. By contrast, high domestic and gradually rising foreign interest rates will dampen the investment appetite of firms for some time. Overall, private fixed investment growth will be distinctly positive this year (see Chart II.7). General government investment will also contribute significantly to total fixed capital formation, as it will be supported by the absorption of EU funds and a one-off purchase of military helicopters.[6]

Growth in private fixed investment will pick up pace next year as external demand recovers, while general government investment will decrease due to a slow start to EU funding in the new programme period coupled with base effects. Total fixed investment will

Chart II.5

Growth in nominal disposable income will gradually slow this year due mainly to lower contributions of entrepreneurs' income and property income, while wages and salaries will grow at a broadly steady rate

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

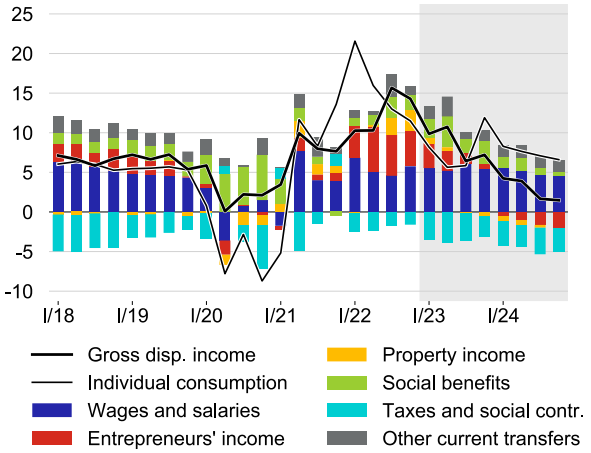
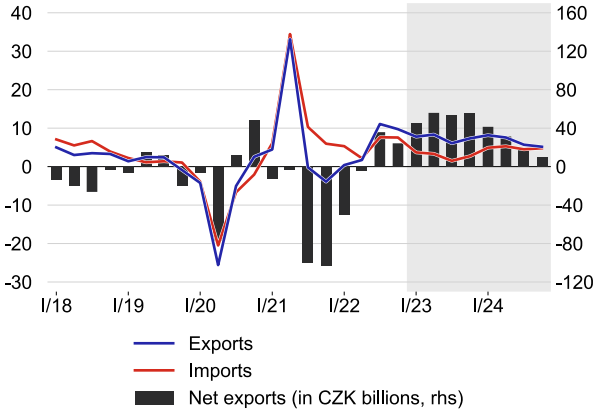


Chart II.6

Imports and above all exports will achieve solid growth rates due to the unwinding of supply chain problems and later a recovery in external demand, and in the case of imports also domestic demand

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



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

grow by around 3% in 2023 and pick up to almost 5% in 2024.

Additions to inventories will remain above their long-term level until mid-2023, amid weakening problems on the supply side of the economy (see Chart II.8). Firms will later be able to complete their forced stocks of unfinished products, as the supply disruptions are expected to fade out in the second half of 2023. Total gross capital formation growth will thus stay negative this year due to declining additions to inventories. Total investment will also decrease in the first half of next year, due mainly to the high base for change in inventories in 2023.

Fiscal policy will make a roughly neutral contribution to GDP growth this year and dampen it slightly next year

Real government consumption growth will increase above 1.5% this year in whole-year terms (see Chart II.3). This will be due to both an increase in public expenditure mainly in health care and education, linked with the arrival of Ukrainian nationals, and a rise in the total amount of housing benefits paid. Moreover, growth in nominal general government consumption will reflect the expected increase in wages and salaries in the non-market sector.

Fiscal policy will have a roughly neutral effect on GDP growth this year (see Chart II.9). The fade-out of some of last year's support measures is offset by the continuation of some of the measures adopted on both the revenue and expenditure sides of public budgets relating to the rise in inflation and the help with high energy prices. These measures include an extended reduction in excise duty on diesel, an increase in the VAT registration threshold and the payment of a child-raising bonus on top of an extra increase in pensions.[7] The discontinuation of the energy savings tariff, the phasing out of measures to support Ukrainian nationals and a reduction of the extraordinary increase in pensions in June 2023[8] will have the opposite effect. The definitive termination of support measures, a fall in absorption of EU funds due to a slow start to the new programme period and a decrease in pension expenditure stemming from the reduction of the extraordinary increase in pensions this year will significantly dampen GDP growth in 2024.

The Czech economy fell below its potential at the end of last year and will remain there until the beginning of next year

The shallow recession caused the domestic economy to fall below its potential in the second half of last year.

Chart II.7

Growth in total gross investment will be affected predominantly by additions to inventories

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

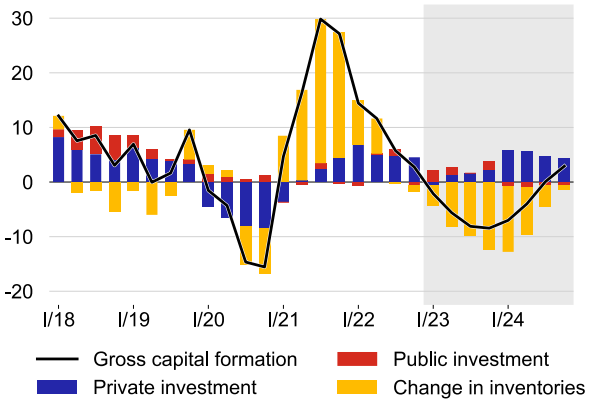


Chart II.8

Change in inventories will fall sharply this year and will be close to pre-pandemic levels in 2024

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

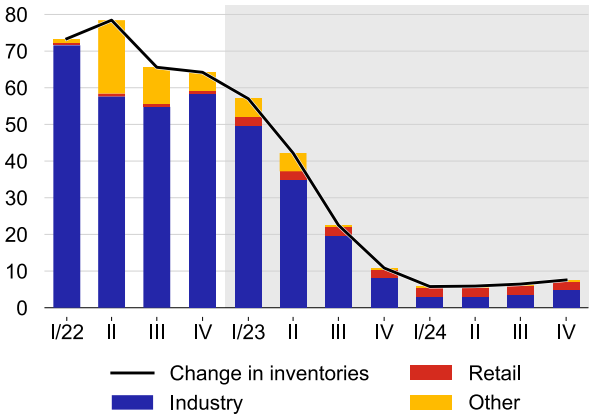
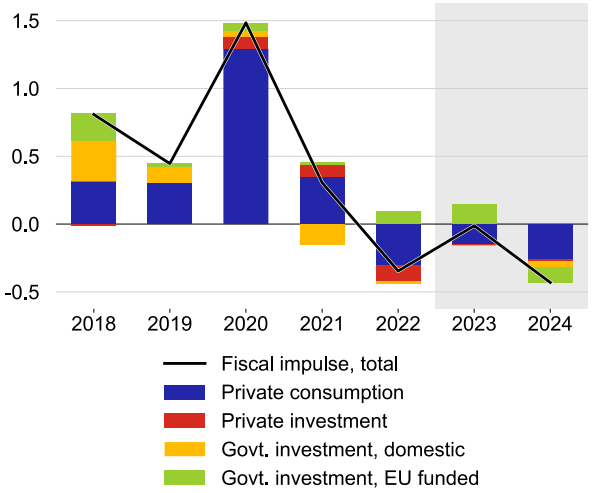


Chart II.9

Fiscal policy will have a roughly neutral effect on growth in GDP and its components this year and will dampen growth next year after the measures to help with the high energy prices fade out

fiscal impulse; contributions to GDP growth in pp



7 As well as the regular January increase, pensions will see an extraordinary inflation-linked increase again in June this year.

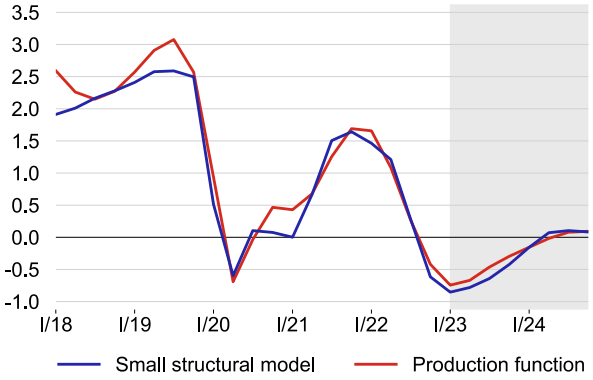
8 The average old age pension will increase by CZK 760 instead of the CZK 1,770 implied by the original indexation scheme.

It will remain there throughout this year (see Chart II.10). This will be reflected on the labour market, where the unemployment rate will rise slightly further. Potential output will meanwhile be held back this year by gradually diminishing supply constraints, and its growth will not start to return to its medium-term rate until the second half of the year. Potential output will grow at a steady pace throughout 2024 and the negative output gap will close in the first half of the year.

Chart II.10

The economy will be below its potential this year; the negative output gap will close in the first half of next year

output gap in % of potential output



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

		2022	2023	2024	
GDP	y-o-y changes in % pp	**2.5** (-0.1)	**0.5** (0.8)	**3.0** (0.8)	GDP growth is higher this year due to higher gross fixed capital formation and a larger contribution of net exports, joined next year by a stronger recovery in household consumption.
Household consumption	y-o-y changes in % pp	**-0.9** (-0.6)	**-2.6** (-0.4)	**4.1** (1.0)	The forecast for household consumption is lower this year due to a deeper fall at the end of last year; the outlook for 2024 is conversely higher, mainly due to faster real wage growth.
Government consumption	y-o-y changes in % pp	**0.6** (0.3)	**1.6** (0.3)	**1.3** (0.1)	The government consumption forecast has been revised upwards slightly this year due to higher non-wage expenditure; it remains almost unchanged next year.
Gross fixed capital formation	y-o-y changes in % pp	**6.2** (1.1)	**2.9** (2.0)	**4.8** (0.1)	The faster total investment growth this year is due to firms' better financial condition and to higher observed data at the end of 2022.
Net exports	contr. to GDP growth pp	**0.2** (-0.4)	**3.4** (0.3)	**1.5** (0.2)	The contribution of net exports is slightly higher this year and the next than previously forecasted, due to slightly stronger external demand.
Employment	y-o-y changes in % pp	**1.6** (0.1)	**0.1** (0.5)	**0.1** (0.3)	The faster growth in employment mainly reflects the better economic situation and higher observed data at the end of 2022.
Unemployment (ILO)	% pp	**2.4** (0.0)	**2.5** (-0.2)	**2.8** (-0.5)	The outlook for the general unemployment rate is lower due to its lower-than-expected increase and to an earlier and stronger economic recovery this year.
Average monthly nominal wage	y-o-y changes in % pp	**6.5** (-0.1)	**8.8** (0.4)	**7.9** (0.9)	The higher wage growth reflects accelerated wage growth in late 2022 and early 2023, a better-than-expected condition of firms and an earlier renewal of growth in demand for labour.

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

The labour market will not get any slacker but rather will start to overheat again

The labour market had been cooling in past quarters. This trend halted at the end of last year (see Chart II.11). The previous decline in total employment was almost fully offset by a renewed increase in 2022 Q4. The unemployment rate also stayed low despite the difficulties caused by the energy crisis. It will start to rise gradually but will remain low from a historical perspective. Total employment will be broadly flat despite a gradual increase in demand for labour. Wage growth in market sectors, which surged last year, will continue to rise in the short term and then decline only slowly.

Real income fell sharply last year and will continue to do so to a lesser extent this year

Nominal wage growth in the market sector surged in year-on-year terms during 2022 (see Chart II.12). All sectors contributed to the surge in the second half of the year. The increasing wage growth was made possible, among other things, by a very good financial condition of firms, which have been able to generate relatively high profits even in an environment of higher costs. Companies on average thus had, and still have, scope to raise wages. The upward pressure on nominal wages is also being increased by the pass-through of the high inflation and by employees' demands for compensation for the drop in their real income in 2022 and 2023. The Czech and Moravian Confederation of Trade Unions' previous recommendation to negotiate wage growth of 9%–10% for 2023 is evidently starting to be reflected on the labour market, with some major employers already having announced double-digit pay increases. Wage growth will also be fostered by gradually increasing economic activity. Wage growth is analysed in detail in Box 1 at the end of this section. The potential risk of a wage-price spiral in the Czech economy is then described in detail in Box 2.

The real wage will decline sharply this year, but the loss in the purchasing power of employees' income will be much smaller than last year, and real wages will be broadly flat around zero in year-on-year terms in the second half of this year due to lower inflation. A dive in inflation from the start of 2024 onwards amid only gradually slowing nominal wage growth will foster marked growth in real wages.

Wages will also grow in non-market sectors, albeit at a more modest pace than in the market sector. The state budget expects the pay of the majority of state administration employees to increase this year. The effect of the extraordinary increase in the wages of selected lowest-income occupation categories last September will simultaneously fade. In 2024, the forecasts assumes indexation of teachers' wages at a coefficient of 1.3 relative to the average wage in the economy, as planned.

Chart II.11

From the perspective of the LUCI, the labour market will not cool any further, rather the opposite

LUCI; vertical axis shows standard deviations

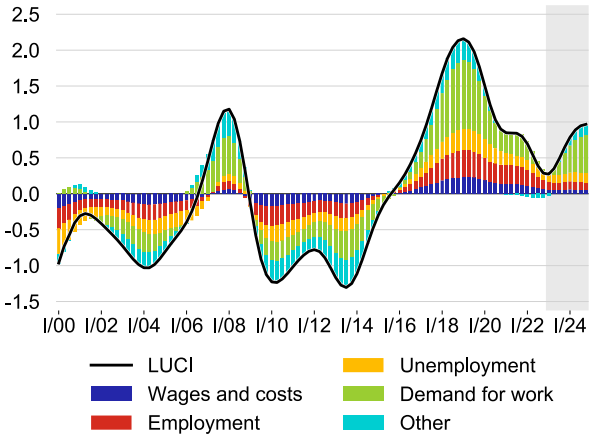
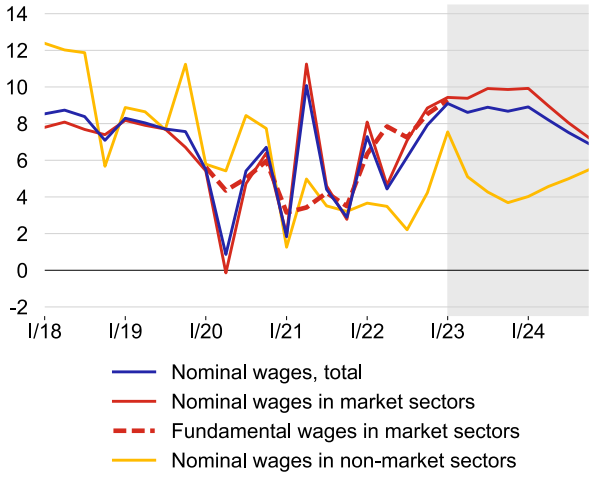


Chart II.12

Nominal wage growth will continue to pick up this year, mitigating the decline in wages in real terms; the subsequent slowdown will be gradual

nominal wages; y-o-y changes; seasonally adjusted; %



Note: Until 2019 Q4 and again from 2023 Q2, the fundamental wage coincides with the officially reported wage in market sectors.

Growth in the wage bill is also being affected predominantly by the increased average wage growth observed and expected last year and at the start of this year. To a lesser extent, growth in the total wage bill will be fostered by a rise in the number of employees in terms of the full-time equivalent. In real terms, the wage bill dropped sharply in 2022 (see Chart II.13). This was due to nominal wage growth lagging well behind inflation. The real purchasing power in the economy will start to grow again noticeably at the start of next year, mainly on the back of sharply slowing inflation and persistent nominal wage growth amid recovering economic growth.

The decline in demand for labour has halted

Employment remained broadly unchanged in the second half of last year (see Chart II.14). The number of employed persons will remain flat or rise only very slowly in the period ahead, due mainly to renewed corporate demand for labour. The European Commission's survey, along with some high-frequency and leading indicators,[9] suggest that corporate recruitment, which was still signalling a further cooling of the labour market in late 2022 and early 2023, picked up in line with economic activity in Q2. From the structural perspective, migration from the category of employees to entrepreneurs will continue amid broadly stable employment. This migration will be due to an improving economic situation and a return to the pre-Covid situation.

The general unemployment rate switched to slight growth at the end of 2022 and will continue to rise this year. The forecast also expects a similar trend in the share of unemployed persons.

Chart II.13

Growth in the real wage bill will be negative over the next few quarters due to high inflation; it will then turn positive again and help growth in household consumption to recover

wage bill; y-o-y changes in %

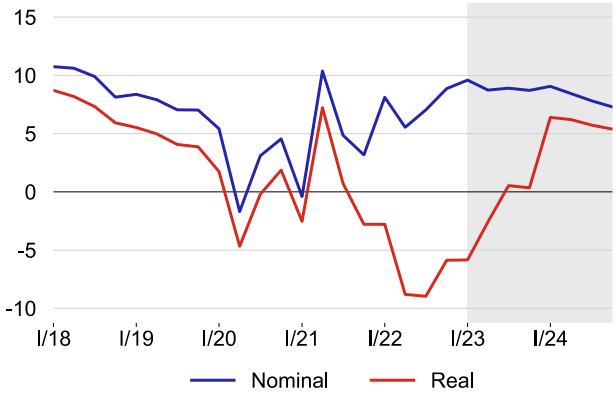
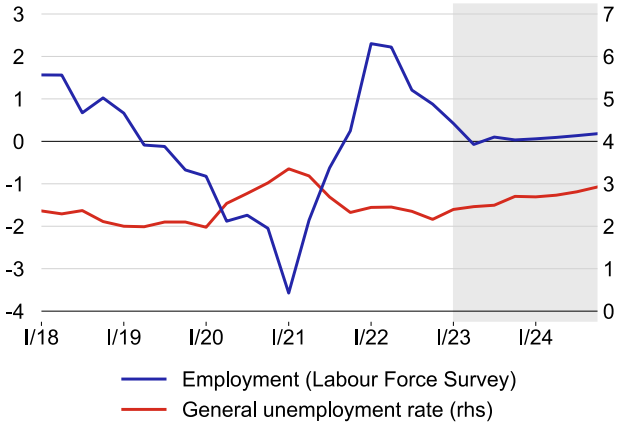


Chart II.14

Employment will remain broadly flat and unemployment will increase only modestly

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



9 The ManpowerGroup index of expected employment is signalling a slight decline for 2023 Q1 and a marked rise for Q2. The Google Trends scores for "unemployment" and "unemployment benefit" have remained relatively low in recent weeks.

BOX 1 Analysis of wage growth in the Czech Republic

Nominal wage growth has surged along with the high inflation in the Czech Republic in recent months, despite firms' increased costs associated with the energy crisis. Real wage growth has meanwhile fallen sharply and remains highly negative. This box examines nominal wage growth in the Czech Republic in terms of its distribution and persistence, aiming to analyse in detail the current situation and any future implications.

Year-on-year wage growth has been increasing almost continuously since the end of the Covid pandemic, i.e. since 2021 Q4, and has been doing so to a similar extent in firms across the entire domestic economy. The broad surge in wage growth is evident from a shift of the entire wage growth distribution to higher levels (see Chart 1), particularly between 2021 and 2022.[1] The broad nature of this growth indicates persisting demand for labour among firms, which are in quite good financial shape. Although companies are not fully compensating households for the loss in real purchasing power caused by the high inflation, they are at least partly ceding to their employees' demands. Firms' behaviour does not differ substantially according to their size.

The broad nature of the wage growth is also evidenced by the contributions of individual sectors to the total wage growth (see Chart 2). This perspective shows that wage growth has returned to its pre-pandemic pace in terms of both level and structure, with all the main sectors contributing. Market services and industry are making the largest contributions due to their weight in the economy. According to the latest information on wage growth in industry and construction dating from the start of this year, nominal wage growth can be expected to stay high.[2]

Continued high wage growth is suggested by reports on the results of collective bargaining in large car companies and retail chains. The sustained high – albeit recently significantly declining – number of job vacancies and the related efforts of firms to fill these positions even at the cost of rising personnel costs speak in favour of higher wage growth. These labour market conditions are strengthening employees' bargaining position.[3]

The high persistence of wage growth is evidenced by an analysis of structural breaks in the time series of year-on-year wage growth in market sectors (see Chart 3).[4] While the global financial crisis of 2008–2009 caused wage growth to slow significantly, the subsequent switch of the labour market to an overheated state in 2016 was again accompanied by faster wage growth. The Covid pandemic caused only short-term volatility due largely to statistical

Chart 1

The wage growth distribution in firms is shifting to higher levels

x-axis: year-on-year nominal wage growth in market sectors in %; y-axis: probability density; source: statement P2-04 (CZSO); CNB calculation

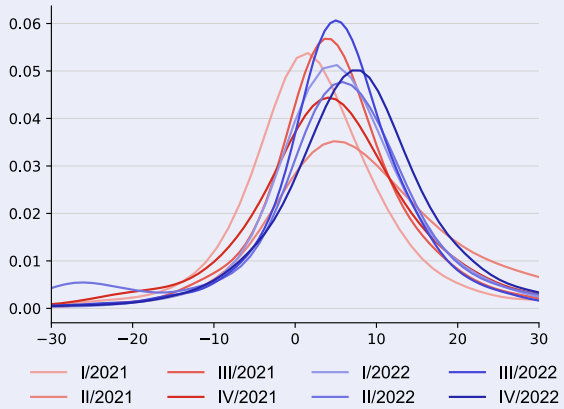


Chart 2

The post-pandemic wage growth recovery is being driven by high-weight market services and industry, but the growth is broad-based

year-on-year nominal wage growth in %; contributions in pp

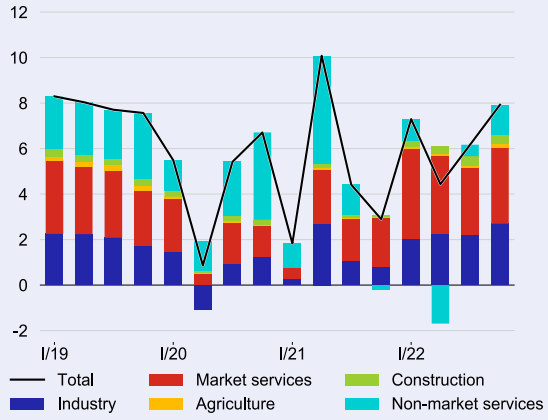
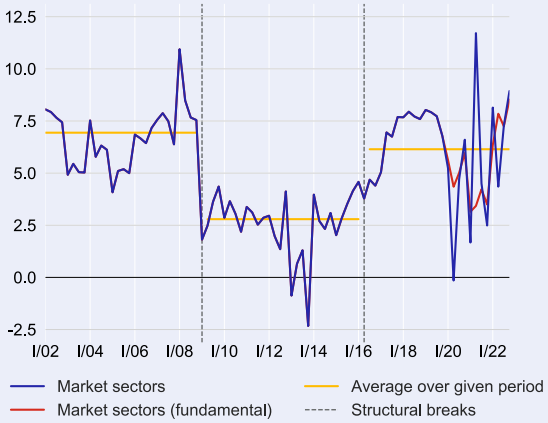


Chart 3

Neither the pandemic nor the subsequent stagflation caused a major break in wage growth

year-on-year nominal wage growth in %



effects, but it did not cool wage growth. Nor did wage growth slacken in the period of high inflation and subdued economic growth last year.

Continued wage growth is suggested by employers' willingness to raise employees' wages, as expressed by the share of firms making quarter on-quarter wage increases (see Chart 4).[5] This reveals that firms raised their employees' pay even in the midst of the energy crisis. The said share is now equal to the historical high recorded in 2016–2018. From the sectoral perspective, the situation in industry differs little from that in market services. Lower levels of this indicator were observed for a long time after the Global Financial Crisis. This also corresponds to the periods of structural breaks in wage growth.

The hypothesis of significant wage persistence is supported by a breakdown of wage growth using the wage Phillips curve (see Chart 5). It shows that past wage growth has a dominant effect on the current and future level of wages.[6] The role of households' inflation expectations intensifies at times of high inflation. Judging from this breakdown, the high inflation in the recent past seems to have been a very significant factor boosting year-on-year wage growth during 2022.

Another view of the current wage growth is provided by the annual moving average of the quarter-on-quarter changes in wages, which proxies for the persistent component of wage growth. If we relate the annual moving average in a given quarter to the annual moving average in the same quarter of the previous year, we obtain an indicator of wage growth momentum. From this perspective, too, last year's wage growth is at historical highs (see Chart 6) (abstracting from the volatility in 2014, which was caused by statistical factors[7]).

A risk of pronounced growth in future wage pressures is also indicated by the current trend-cycle decomposition of the real wage (see Chart 7). The historical deviations from the steady-state level of real wage growth match the overall picture of the labour market and inflation. The pre-Covid period of an overheating economy, with real wages rising substantially faster than labour productivity, is clearly visible. The real wage is currently declining sharply. The identification of this decline as cyclical in nature indicates that, in the future, the real wage will return to its steady-state level either through a decline in inflation or through a further increase in nominal wage growth, or a combination of the two. This would offset the currently significant positive gap between labour productivity growth and real wage growth. An increase in the real volume of wages would simultaneously boost household consumption.

Chart 4

Willingness to raise wages is at pre-Covid levels

proportion of firms raising wages quarter on quarter; weighted by size of firm according to number of employees; source: statements P3-04 and P2-04 (CZSO); CNB calculation (seasonally adjusted)

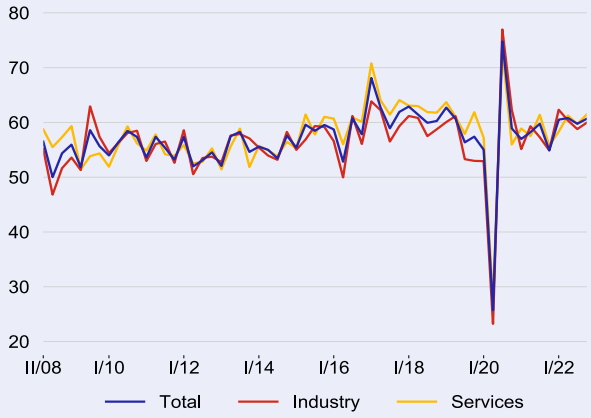


Chart 5

The resilience and persistence of wage growth have long been high

annual nominal wage growth in %; contributions in pp

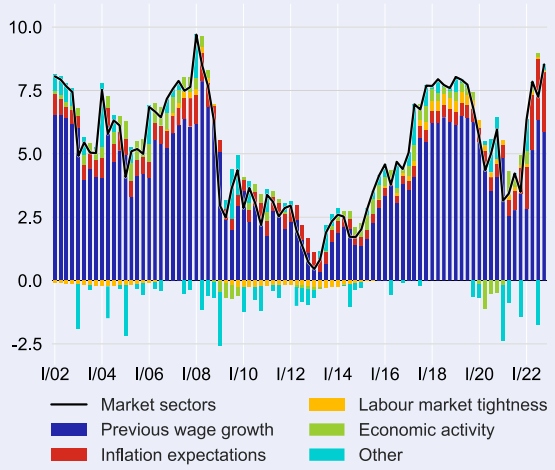
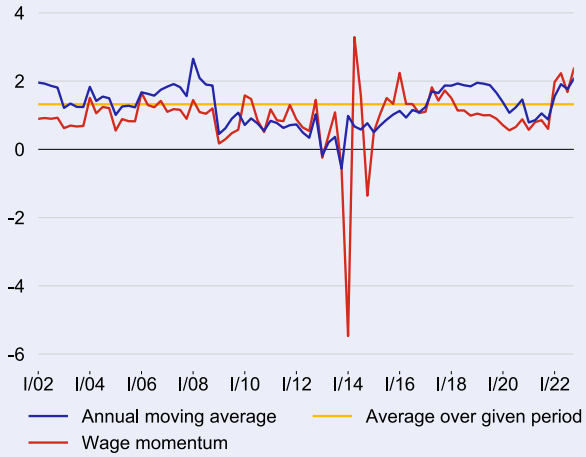


Chart 6

Wage momentum is currently high

quarterly growth in %; market sectors

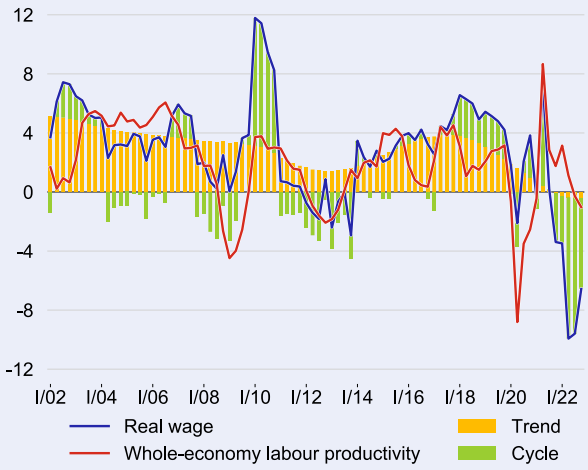


To conclude, the labour market has long been overheated and did not cool down sufficiently either during the pandemic or in the subsequent stagflation episode. Our analysis reveals that the current wage growth is broad-based and relatively persistent. A quick and significant moderation in the near future is therefore unlikely, as other (non-wage) costs will decline due to the gradual stabilisation of the energy, commodities and materials markets.

Chart 7

The trend is reversing after a sharp fall in the real wage

year-on-year growth in %; contributions in pp



1 According to statement P2-04, in 2021 Q4, wage growth in market sectors averaged 6.1% with a standard deviation of 18.9%. In 2022 Q4, it averaged 8.3% with a standard deviation of 13.7%.

2 Year-on-year wage growth of 11.9% and 10.8% in industry and 14.9% and 14.1% in construction was reported in January and February 2023 respectively.

3 Collective bargaining is decentralised in the Czech Republic and the coverage of employees by collective agreements is low relative to other EU countries at around 30%. For details, see Moving with the times: Emerging practices and provisions in collective bargaining, Ricardo Rodriguez Contreras, Oscar Molina (2022), Eurofound.

4 Structural breaks were identified and tested using the Chow test.

5 Data for non-financial private corporations with 50 or more employees. The chosen methodology was used, for example, in the blog post Recent trends in individual wage growth, Maximiliano A. Dvorkin, Maggie Isaacson (2022), Federal Reserve Bank of St. Louis.

6 The effect of persistence is probably higher in the Czech Republic than in the USA. See, for example, Wage growth when inflation is high, Oscar Jorda, Celeste Liu, Fernanda Nechio, Fabián Rivera-Reyes (2022), Federal Reserve Bank of San Francisco.

7 Significant changes in the wage trajectory caused probably by tax changes in 2013.

BOX 2 Measuring the risk of a wage-price spiral

A wage-price spiral is most often defined as rapid, simultaneous growth in nominal wages and prices over several successive quarters.[1] It involves a process of interaction between the two variables: growth in prices leads to growth in wages, which in turn causes prices to rise, and so on. Given the generally higher rigidity of wages, the direct transmission between wages and prices tends to be dampened and the situation does not usually turn into a perfectly escalating spiral of ever-increasing wages and prices. Even so, it leads to an undesirable long-lasting rise in inflation.

The risk of a wage-price spiral can be analysed using an index measuring joint growth in wages and prices. Its elevated level in the Czech Republic over the last year implies concurrent high growth in wages and prices (see Chart 1). The level of the index does not, in itself, tell us much about the risk of a wage-price spiral. For this purpose, the conditional 95th percentile of the distribution of the index outlook[2] at the policy-relevant one-year horizon is estimated by quantile regression. The percentile is conditional on the previous observed realisation of the index (its persistence), on macroeconomic variables and also on monetary policy.[3] An index value exceeding the 95th percentile indicates materialisation of the risk of high growth in wages and prices.

Growth in the upper end of the index distribution, represented by the 95th percentile, implies an increase in the risk of high index values, i.e. a higher probability of a wage-price spiral. This is significant mainly in a situation where this percentile is above its "neutral" level. The neutral level is an index that is consistent with the 2% target and productivity growth plus two historically observed standard deviations.[4]

Both the value of the index and the upper bound of its distribution reached historical highs last year (see Chart 2). The calculated index of the risk of a wage-price spiral was above the estimate of the conditional 95th percentile in the course of 2022. Last year, this percentile also moved above the neutral level consistent with the 2% inflation target. Both suggest a major risk of a wage-price spiral, and the calculated index exceeding the 95th percentile was indicating the materialisation of this risk.

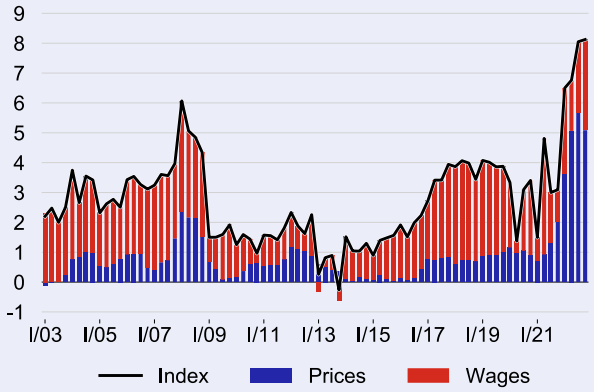
The breakdown of the contributions of the individual variables to the value of the 95th percentile (see Chart 3) reveals a strong effect of persistence (the lagged index values). The quantile regression results also show that the persistence of the upper percentiles is higher than that of the lower percentiles. This means that *ceteris paribus* the risk of a wage-price spiral remains elevated for longer than, for example, the mean of index outlook.

The decomposition of the upper end of the index distribution also shows the effect of the business cycle, or rather the labour market situation. A positive output gap indicates inflation pressures (an overheating labour market) and leads to an increase in the 95th percentile. Similarly, depreciation of the real exchange rate implies inflation pressures via higher import prices and higher economic activity (exports in particular),

Chart 1

The wage-price spiral index is at a historical high

index in %; contributions in pp

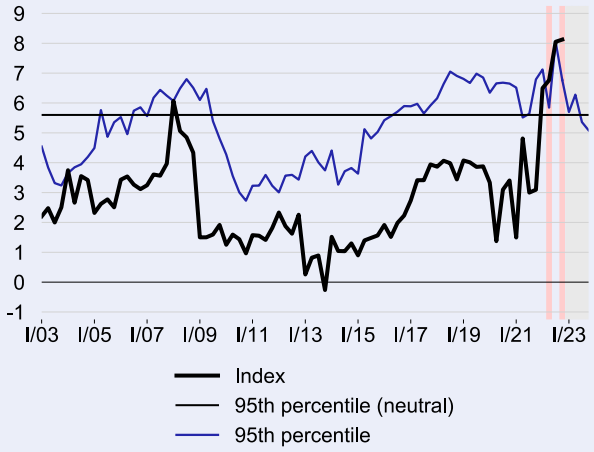


Note: The index is defined as a weighted average of year-on-year growth in the average nominal wage and the CPI index. Historical standard deviations are used as weights.

Chart 2

The risk of a wage-price spiral rose last year

index and conditional 95th percentile in %



Note: The grey area (2023) is the one-year-ahead forecast for the 95th percentile estimated on the basis of the observed historical data. The light red areas denote the periods in which the ex-post calculated index exceeded the 95th percentile, which was simultaneously above the neutral level.

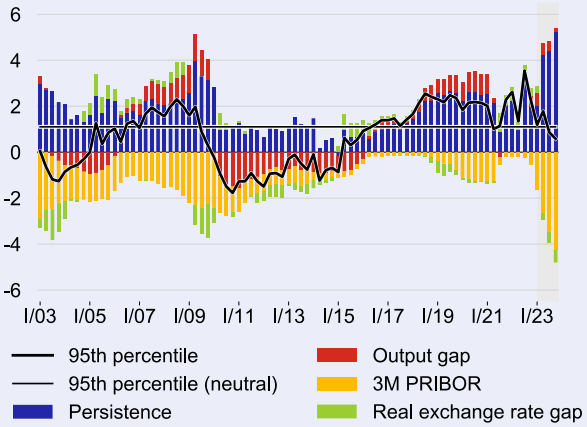
hence this percentile increases. By contrast, an economic contraction or appreciation of the real exchange rate fosters a decrease in this percentile. Moreover, the historical relationship between monetary policy and the upper end of the index distribution suggests that monetary policy can significantly reduce the risk of a wage-price spiral. Last year, interest rates fostered a decline in the risk of a wage-price spiral.

The construction of the 95th percentile allows us to use the observed data to create a forecast for 2023 (the grey areas in Chart 2 and Chart 3). The forecast shows an increased risk of a wage-price spiral for the whole of 2023. The forecast for the percentile remains above its neutral level in the first half of the year, before falling slightly below it. The decline in the index is connected with restrictive monetary policy and, to a lesser extent, with appreciation of the real exchange rate. This will outweigh the effects of persistence and the previously positive output gap.

Chart 3

The real economy and monetary policy affect the risk of a wage-price spiral, but the persistence of the index is also a major factor

percentile in %; contributions in pp



Note: The grey area (2023) is the one-year-ahead forecast for the 95th percentile estimated on the basis of the observed historical data.

1 The literature uses various definitions of a wage-price spiral. Examples include simultaneous growth in prices and wages in three out of four consecutive quarters (Wage-price spirals: What is the historical evidence? Jorge A. Alvarez, John C. Bluedorn, Niels-Jakob H. Hansen, Youyou Huang, Evgenia Pugacheva, Alexandre Sollaci, IMF Working Paper 2022/221) and nominal wage increases exceeding price increases (Are major advanced economies on the verge of a wage-price spiral? Frederic Boissay, Fiorella De Fiore, Deniz Igan, Albert Pierres-Tejada, Daniel Rees, BIS Bulletin 2022/53). This situation is often associated with major economic shocks and hence also large simultaneous changes in prices and wages. Theoretical models of wage-price spirals can be found in The wage price spiral, Olivier J. Blanchard, Quarterly Journal of Economics, 1986/101(3), and Wage price spirals, Guido Lorenzoni, Iván Werning, 2023.

2 Quantile regression estimates the linear relationship between the explanatory macroeconomic variables and a percentile of the distribution of the response variable. The 95th conditional percentile shows how high an index value can be expected for given observed macroeconomic variables if we only consider the highest 5% of its possible future values. In other words, this percentile describes the risk of significant and concurrent increases in prices and wages for a given macroeconomic situation over a four-quarter outlook.

3 The motivation for the choice of macroeconomic variables on which the 95th percentile is conditional is the standard specification of the wage and price versions of the Phillips curve. The selected variables are the output gap and the gap in the real exchange rate against the effective euro area. The output gap is taken from the CNB forecast in the Winter 2023 MPR and the real exchange rate gap is calculated using the HP filter. Monetary policy is proxied by the 3M PRIBOR nominal interest rate.

4 The distance of two historically observed standard deviations is due to the fact that 95% of the observed values for a normally distributed variable (the neutral level of prices and wages) lie within a distance of less than two standard deviations.

III. INFLATION

Inflation started to decrease in February following a temporary increase in January linked mainly with rising electricity prices. This trend will continue with greater intensity in the months ahead, with all the main items of the consumer basket contributing. Consumer price inflation will fall to single digits in the summer. Growth in market prices will decline due to rapidly decreasing cost pressures from abroad and a simultaneous further easing of price pressures from the domestic economy. At the same time, the currently peaking profit margins of domestic producers, retailers and service providers will undergo a gradual correction. The downward trend in inflation will halt temporarily in 2023 Q4 on account of base effects due to last year's drop in electricity prices caused by the government's energy savings tariff. Once this effect fades out, both headline and monetary policy-relevant inflation will decline sharply to close to the CNB's 2% target at the start of 2024, aided by tightened monetary policy, and will stay there until the end of the forecast horizon.

The overall cost pressures eased further at the start of the year and will continue to weaken gradually over the forecast horizon

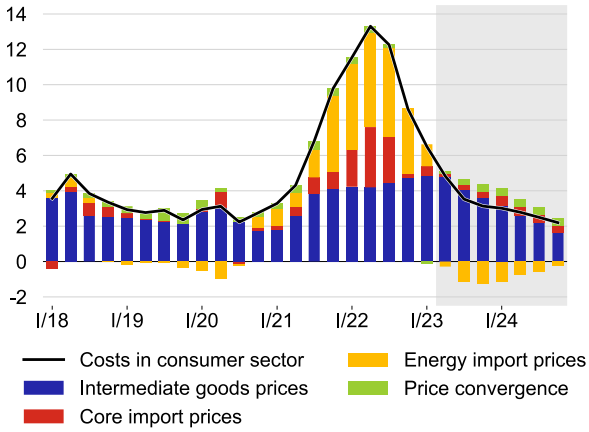
Growth of total costs in the consumer sector was driven in 2023 Q1 largely by moderately rising growth in prices of domestic intermediate goods. However, the growth in costs as a whole slowed further, due mainly to a falling contribution of energy import prices (see Chart III.1). This contribution will gradually turn negative as the already observed drop in the energy component of foreign producer prices passes through to a decline in prices of imported energy with a slight lag caused by price rigidities. By contrast, the positive contribution of core import prices to the growth in total costs increased slightly. The koruna firmed markedly at the start of the year, but the quarter-on-quarter growth in the core component of foreign industrial producer prices rose at an even faster rate, outweighing the appreciation.

The overall cost pressures will continue to ease for the rest of this year. This will be due in large part to an expected drop in energy import prices. This drop will mainly reflect a marked fall in the energy component of foreign producer prices linked with the correction of gas and electricity prices on commodity exchanges. Following a temporary slight increase in Q2, the contribution of prices of domestic intermediate goods will also decrease. This will be due to a fall in the currently elevated profit margins in the intermediate goods sector and later also to a gradual slowdown in quarter-on-quarter wage growth. The slight positive contribution of core import prices to growth in costs will reflect continued modest growth in core foreign producer prices amid a slight weakening of the koruna. Growth in total costs will slow further next year and will be close to its steady-state level by the end of 2024. This will be due mainly to a decreasing contribution of prices of domestic intermediate goods, reflecting a continued slowdown in quarter-on-quarter wage growth.

Chart III.1

The cost pressures will continue to ease, due mainly to a drop in energy import prices and a decrease in the contributions of the domestic economy

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



The domestic cost pressures will strengthen temporarily in the spring and start to ease gradually in the second half of this year, but will remain elevated

The faster growth in domestic costs (see Chart III.2) at the start of this year was due predominantly to accelerating wage growth. The contribution of the price of capital to the growth in costs was positive due to a modest recovery in economic activity during the winter. Labour efficiency meanwhile improved. This, conversely, reduced the domestic cost pressures.

The domestic cost pressures will strengthen temporarily in 2023 Q2. They will be driven mainly by wage growth, which will pick up slightly in quarter-on-quarter terms. This will reflect persisting labour market tightness and households' efforts to make up at least partly for last year's drop in real income. Wage growth will start to slow gradually in the second half of this year. Growth in economic activity will accelerate gradually over the rest of this year. The positive contribution of the price of capital to domestic costs will thus increase. A simultaneous improvement in labour efficiency will have an anti-inflationary effect and roughly offset the growth in the price of capital.

The positive contribution of the price of capital to growth in domestic costs will rise further in 2024 as economic growth continues to recover. By contrast, the anti-inflationary effect of labour efficiency will strengthen. Gradual compensation for the previous decreases in real household income in an environment of falling inflation will lead to a continued slowdown in wage growth next year. Domestic cost pressures will thus decrease further. However, they will not reach their steady-state level even by the end of 2024.

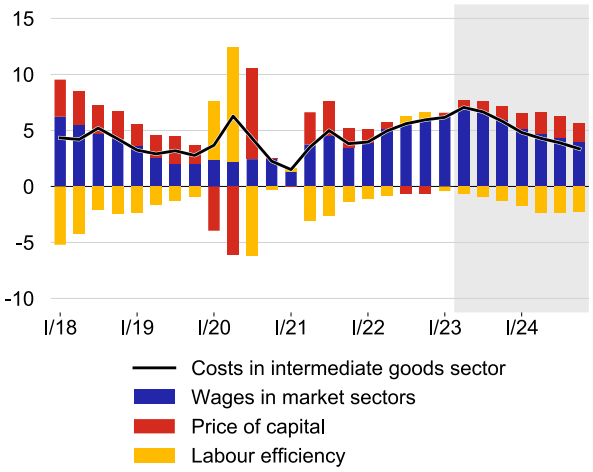
The positive gap in mark-ups in the consumer sector will close gradually amid subdued domestic demand affected by tightened monetary policy

The previously strongly positive gap in mark-ups reflects growth in prices far outpacing growth in the costs of domestic producers, retailers and providers of goods and services to households. This gap will start to close slowly in the second half of this year (see Chart III.3). The overall cost pressures will meanwhile fade steadily and the currently very subdued household consumption will recover only gradually. This growth will continue to be dampened by households' weaker purchasing power and the previous tightening of monetary policy. As a result, the room for increasing prices faster than costs will start to disappear and profit margins will start to normalise. This will foster a slowdown in inflation. Repricing of goods and services at the start of next year will be lower than in the recent past, but will slow the above closure of the positive gap in mark-ups in the short term. Given the broad-based nature of the current increased

Chart III.2

After an initial increase, the domestic cost pressures will ease gradually

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

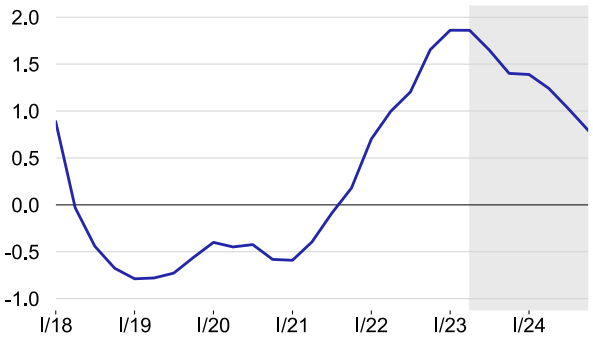


Mark-ups in the consumer sector *represent the difference between the prices and marginal unit costs of producers of final consumer goods. The gap in mark-ups shows the deviation of current mark-ups from their steady-state level. A positive gap in mark-ups thus implies a higher-than-usual "profit margin", 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.3

The highly positive gap in mark-ups will close only gradually as domestic demand cools, aided by the previous monetary policy tightening

gap in mark-ups on consumer goods in %



profitability of domestic firms, the forecast also expects a similar trend in the gap in mark-ups (as that for consumer goods) in the domestic intermediate goods sector.

Inflation will slow distinctly in 2023 Q2 and drop to single digits in the summer

Overall, annual consumer price inflation will decrease significantly in 2023 Q2, dropping below 12% on average (see Chart III.4). Inflation will fall below 10% in roughly the middle of this year. All its components will contribute to the decline (see Chart III.5). The contributions of core inflation, food prices and, to a small extent, administered prices will fall sharply. The contribution of fuel prices will be negative for the rest of the year. The downward trend in inflation will halt temporarily in 2023 Q4 on account of the base effect of last year's drop in electricity prices caused by the government's energy savings tariff. Inflation will fall significantly again at the start of next year, when the high administered price inflation will fall and the traditional January repricing of goods and services will be lower than in the last two years.

Administered price inflation will remain high this year but will fall sharply at the start of next year

Annual administered price inflation will decrease in the course of this year but will remain high. Consumer prices of energy will decrease below the government price caps this year due to the current sharp fall in energy prices on wholesale markets. The slowdown in administered price inflation will be due, among other factors, to the base effect caused by the growth in energy bills for households seen throughout 2022. Annual administered price inflation will increase sharply for a short time in Q4. This will be due almost solely to the contribution of electricity prices, reflecting the effect of an extraordinary decrease in the comparison base at the end of last year following the introduction of the energy savings tariff, which led to a temporary drop in electricity prices from October to December.

Administered price inflation will fall sharply at the start of next year and remain at around 1% throughout 2024 (see Chart III.6). Consumer prices of gas and electricity prices (excluding fees) will fall further due to movements in commodity prices on exchanges and to energy prices, which started to fall below the government price caps this year. However, this will be counteracted within electricity prices by the reintroduction of the fee for renewable energy sources in January next year.[10]

10 The waiver of the fee for renewable energy sources approved by the Czech government is in effect from October 2022 until December 2023.

Chart III.4

Inflation will start to fall quickly in 2023 Q2 and return close to the 2% target at the start of 2024

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

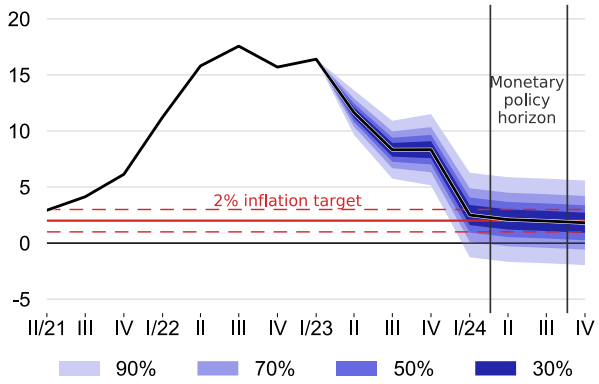


Chart III.5

Consumer price inflation will slow sharply for most of 2023 and at the start of 2024, with all components contributing

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

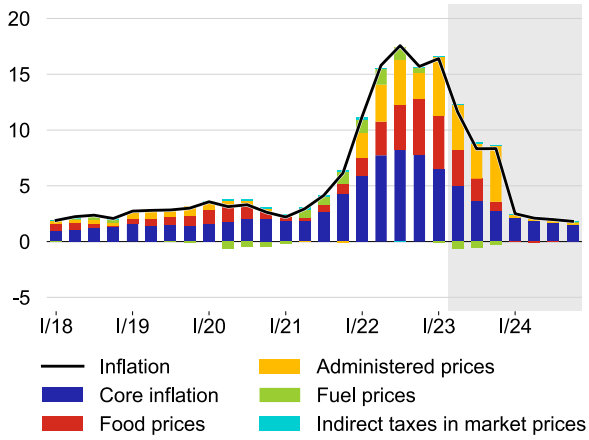
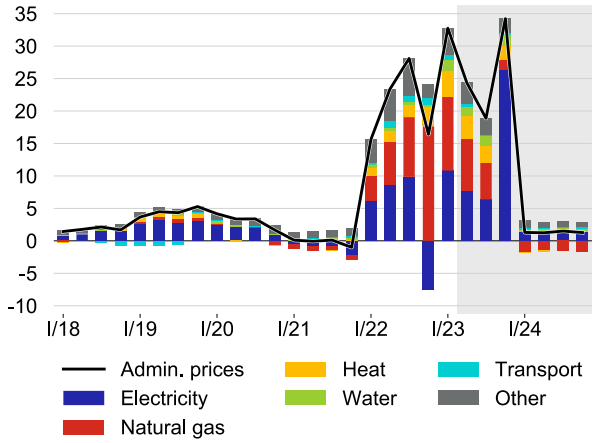


Chart III.6

Administered price inflation will initially decline; it will rise temporarily at the end of this year and will not fall sharply until next year

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



Within core inflation, growth in prices of goods and services will slow further

Core inflation decreased gradually in Q1 on account of slowing growth in prices of both tradables and non-tradables. It will slow significantly further in Q2, reaching single digits. This will be due to relatively quickly slowing growth in foreign industrial producer prices, which is spilling over into domestic industrial and consumer prices. Base effects will also play an important role in the marked drop in core inflation. The falling core inflation will also be linked with a continued decline in the contribution of imputed rent (see Chart III.7). This decline reflects a combination of stabilising prices of new properties and falling growth in construction prices (of both work and materials). The falling goods price inflation will strongly reflect the drop in import prices this year, which will mirror a decline in foreign producer prices in addition to appreciation of the koruna. Core inflation will thus continue to come down throughout 2023, aided by tighter domestic monetary conditions.

Food price inflation will fall further in the spring

Food price inflation declined only gradually at the start of this year. Growth in food prices exceeded that in the other components of market prices but will decrease quite sharply in the spring (see Chart III.5). This will be due to falling world agricultural commodity prices and domestic agricultural producer prices and to base effects amid a general decline in profit margins in the economy. Food price inflation will slow markedly further in the second half of this year. Food prices will start to fall year on year in absolute terms at the start of 2024.

Annual fuel price inflation will be deeply negative this year

Year-on-year growth in prices at filling stations turned deeply negative at the end of 2023 Q1, due mainly to base effects. Aided by a strong koruna, fuel prices will decrease in year-on-year terms throughout 2023, albeit with diminishing intensity.

Headline inflation will be above monetary policy-relevant inflation over the entire outlook

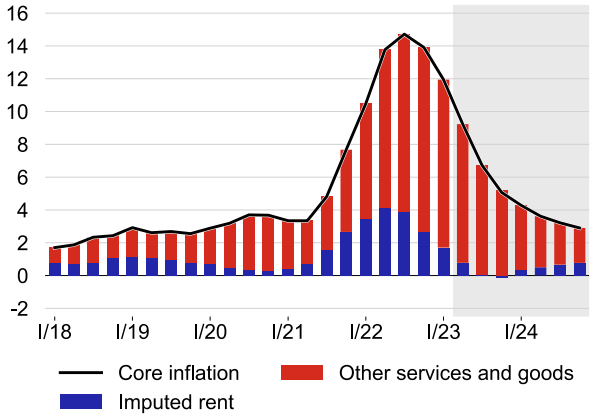
Changes to indirect taxes will affect consumer price inflation in opposite directions. A reduction in excise duty on fuel of CZK 1.50 a litre in June last year led to a slightly negative contribution of changes to indirect taxes to inflation (see Chart III.8). In the case of diesel, the reduction in excise duty was extended until the end of 2023,[11] when the rate of duty will return to its original level. This is the only increase in indirect taxes in 2024

11 Excise duty on petrol returned to its original level in October 2022.

Chart III.7

Core inflation will slow due to a further drop in the contribution of imputed rent and a decline in overall inflation pressures and to base effects

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

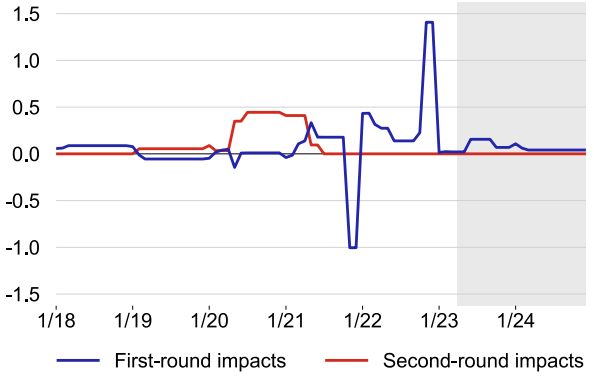


*We distinguish two types of price effects in relation to **changes to indirect taxes** – first-round and second-round. The first-round effects are the calculated price changes due to the indirect tax changes implied by full (accounting) pass-through of the tax changes to prices of the relevant items 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.*

Chart III.8

The first-round effects of changes to indirect taxes will reflect changes in excise duty on tobacco and fuel

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



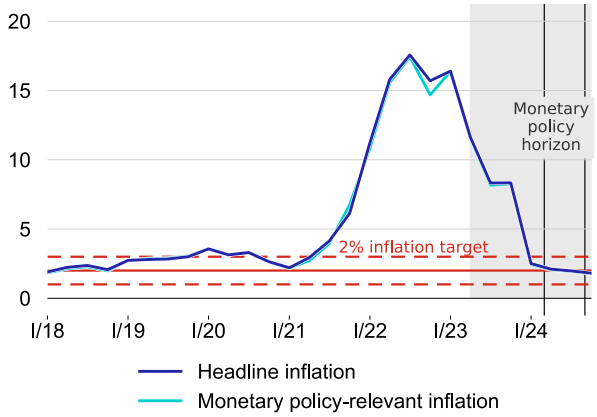
considered in the forecast. Excise duty on cigarettes was increased again (by 5%) in January this year. Overall, these changes to indirect taxes will lift consumer price inflation slightly over the entire outlook horizon. They do not affect monetary policy-relevant inflation, so the CNB does not respond 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 disregards 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 to close to the inflation target over the monetary policy horizon (i.e. in 2024 Q2 and Q3), due in part to the previous tightening of monetary policy (see Chart III.9).

Chart III.9

Monetary policy-relevant inflation will fall to close to the 2% target at the monetary policy horizon; headline inflation will be slightly above it

headline and monetary policy-relevant inflation; in %



COMPARISON WITH THE PREVIOUS FORECAST: Price developments

		2022	2023	2024	
Consumer prices	y-o-y changes in % pp	**15.1** (0.0)	**11.2** (0.4)	**2.1** (0.0)	The upward revision of the inflation forecast this year is due mainly to higher food price inflation and, to a lesser extent, core inflation.
Administered prices	y-o-y changes in % pp	**20.9** (0.0)	**27.6** (-2.3)	**1.3** (-4.0)	The administered price outlook for this year and especially next year is lower due to a drop in household energy prices below the government price caps, which has already begun.
Core inflation	% pp	**13.2** (0.0)	**8.2** (0.5)	**3.5** (0.7)	The upward revision of the core inflation forecast is due to a slower-than-expected decline in foreign industrial producer prices and greater inflation pressures from the labour market.
Food prices (incl. alc. bev. and tobacco)	y-o-y changes in % pp	**12.9** (0.0)	**10.3** (2.0)	**-0.2** (0.6)	The food price forecast for this year is higher due to higher observations at the start of this year amid increased margins of producers and retailers.
Fuel prices	y-o-y changes in % pp	**33.6** (0.0)	**-12.5** (2.4)	**0.9** (2.5)	Fuel prices will decrease less than in the previous forecast this year due to the currently higher outlook for exchange prices of petrol.

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

IV. MONETARY POLICY

At its May monetary policy meeting, the CNB Bank Board kept the two-week repo rate at 7%, the discount rate at 6% and the Lombard rate at 8%. The Bank Board assessed the risks and uncertainties of the new forecast as being significant and going in both directions. Consistent with the baseline scenario of the spring forecast is market interest rate stability initially, followed by a gradual decline from the second half of this year onwards. This interest rate path reflects fading strong foreign cost pressures and subdued domestic demand this year. Overall, this leads to inflation stabilising close to the target next year. However, there are numerous substantial risks and uncertainties associated with the forecast. Still expansionary fiscal policy is having an inflationary effect. The threat of inflation expectations becoming unanchored and the related risk of a wage-price spiral also remain significant risks in the same direction. By contrast, a stronger-than-forecasted downturn in domestic consumer and investment demand is a downside risk. The general uncertainties of the outlook include the future course of the war in Ukraine, the availability and prices of energy, and the future monetary policy stance abroad. The monetary policy considerations include a simulation of interest rates being held at the current level for longer and a scenario of rates being kept unchanged for longer amid elevated inflation expectations.

Consistent with the baseline scenario of the spring forecast is stability of market interest rates at their current level initially, followed by a gradual decline from the second half of this year onwards

The spring forecast implies short-term market interest rates staying at their current level for a time (see Chart IV.1). This is in line with receding extraordinary inflation pressures from the external environment and with second-round effects of high inflation in the domestic economy in the form of elevated wage growth and an only gradually closing gap in the mark-ups of producers and retailers. A continued decline in the extreme foreign price pressures combined with the previous monetary policy tightening will result in inflation falling to close to the target at the monetary policy horizon, i.e. in 2024 Q2 and Q3. This will open up room for monetary policy to be eased gradually. Interest rates will thus be able to start coming down in the second half of this year. However, the anchoring of inflation expectations to the 2% target remains an important assumption of the baseline scenario of the forecast. This helps inflation return close to the target.

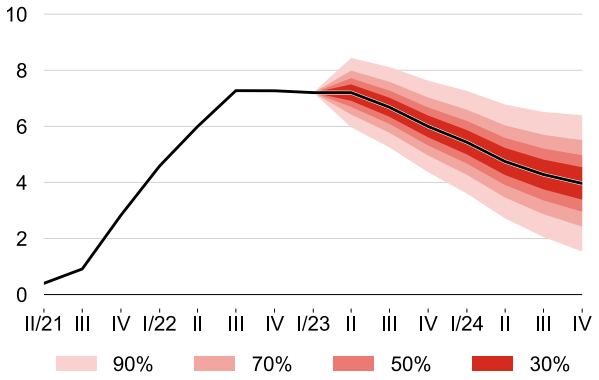
The koruna appreciated in Q1

The koruna firmed from around CZK 24 to CZK 23.5 to the euro during Q1. It was not far from this level during April either. The appreciation of the koruna was due to a relatively strong inflow of short-term foreign capital invested in koruna assets (a net inflow of more than CZK 70 billion in January and February) linked with a decrease in the risk premia of Central European countries. The strengthening of the koruna was also due to the fading of the sizeable external imbalance (high current account deficit) which the Czech Republic

Chart IV.1

Consistent with the forecast is market interest rate stability initially, followed by a gradual decline

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.*

was suffering from last year. The situation improved because of a sharp fall in prices of energy commodities, of which the Czech Republic is a net importer (especially in the case of natural gas), an improvement in the situation in the Czech automotive industry and the usual absence of dividend payments in this part of the year. The average exchange rate in 2023 Q1 was CZK 23.8 to the euro. This represented a year-on-year appreciation of 3.5%.

The koruna will weaken from a stronger initial level to more than CZK 24 to the euro

The forecast expects the koruna to average CZK 23.5 to the euro in 2023 Q2. The exchange rate will gradually weaken to above CZK 24 to the euro (see Chart IV.2). It will be affected by a gradual receding of the wave of positive sentiment and a narrowing interest rate differential vis-à-vis the euro area (see Chart IV.3), which will have a weakening effect. In the forecast, however, this effect is lessened by expert adjustments in the exchange rate equation. A more pronounced depreciation of the koruna will be prevented by a renewed trade surplus linked with the fade-out of the negative impacts of disrupted global value chains and the immediate economic and inflationary impacts of the war in Ukraine.

The market interest rate outlook is higher than the CNB forecast; like the central bank, the analysts expect the koruna to weaken

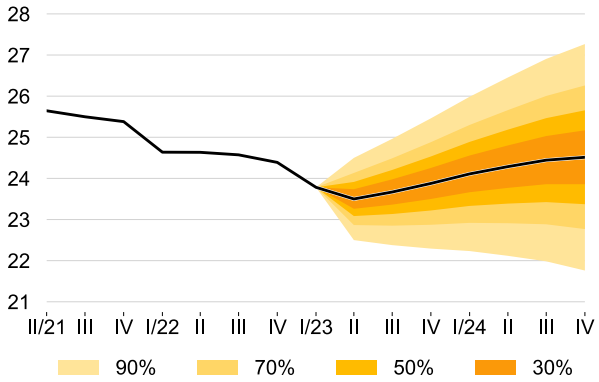
The market outlook for short-term FRA rates has been fluctuating slightly in recent weeks and months. The market currently expects the 3M PRIBOR to decline gradually at the one-year horizon (see Chart IV.4). This outlook is slightly above the interest rate path in the baseline scenario of the CNB forecast from mid-2023 onwards. All the respondents in the FMIE survey were expecting the 2W repo rate to be left at its current level at the monetary policy meeting in May. The analysts expect the CNB's key interest rate to be in the wide range of 4.5%–6.5% (5.6% on average) at the one-year horizon.

On average, the analysts in the FMIE and FECF surveys expect the koruna to weaken slightly from its current levels at the one-year horizon (see Table IV.1). The exchange rate level they expect is broadly the same as the central bank's outlook. The prevailing view is that the current level of around CZK 23.5 to the euro is not consistent with economic fundamentals and expected monetary policy in the Czech Republic and the euro area. From the long-term perspective, once the high inflation decreases, the analysts expect the koruna to return to a long-term gradual appreciation trend, which will be supported by an economic recovery and improved sentiment. The difference between the minimum and maximum expected exchange rate against the euro at the one-year horizon in the two surveys is CZK 2 and just under CZK 3 respectively.

Chart IV.2

The koruna will weaken slightly from a stronger initial level

CZK/EUR exchange rate; confidence interval

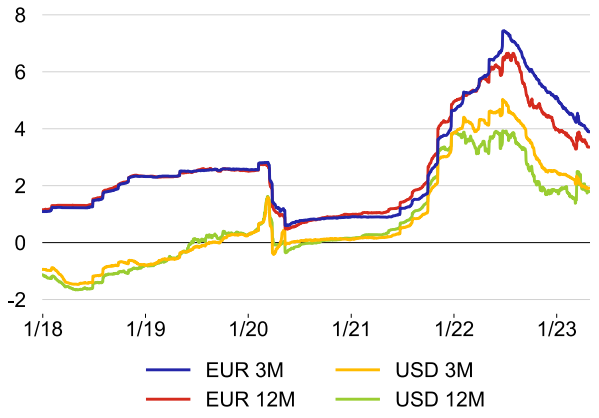


The monetary policy horizon *is the future time period which the CNB focuses on when making its monetary policy decisions and which reflects the lag in the transmission of monetary policy. By concentrating on inflation at this horizon, the central bank also abstracts from short-term inflation shocks, whose impact monetary policy can control to only a minimal extent.*

Chart IV.3

The interest rate differential vis-à-vis euro and dollar rates is gradually narrowing

pp; differential of Czech money market rates vis-à-vis EUR and USD rates



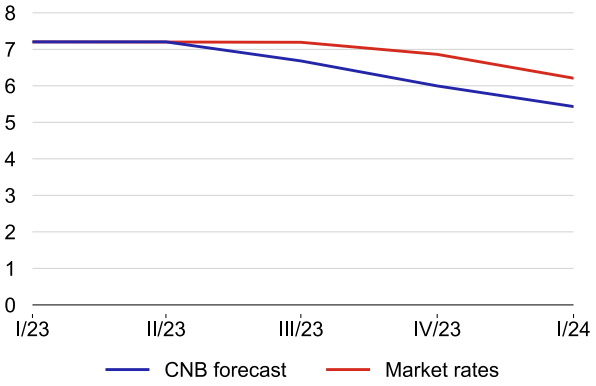
The Bank Board's communications have been indicating that interest rates will be kept higher for longer

Regarding the meeting in May, the Bank Board members have agreed that they will discuss either leaving interest rates unchanged or raising them. Most of the members have also noted that interest rates will have to be kept at a higher level in order to cool the economy sufficiently. In their opinion, core inflation, wage growth and fiscal policy will be the main determining factors in the interest rate decision. Two members have said that rates could go down in the second half of the year if the rate of disinflation is sufficiently favourable.

Chart IV.4

The market expected rates to be left unchanged at the May meeting; the market outlook is above the CNB forecast

3M PRIBOR; FRA in %



Note: Market rates represent for 2023 Q1 the 3M PRIBOR and for 2023 Q2–2024 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 28 April 2023.

*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. This difference has been 0.2 pp since the start of this year.*

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

Chart IV.5

The interest rate path is similar to that in the previous forecast

decomposition of changes in 3M PRIBOR forecast in pp

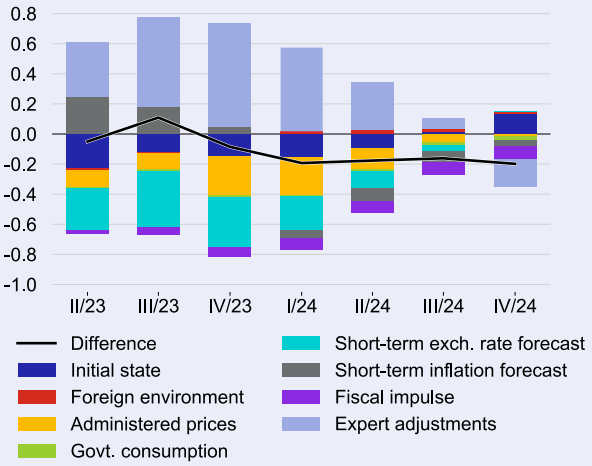
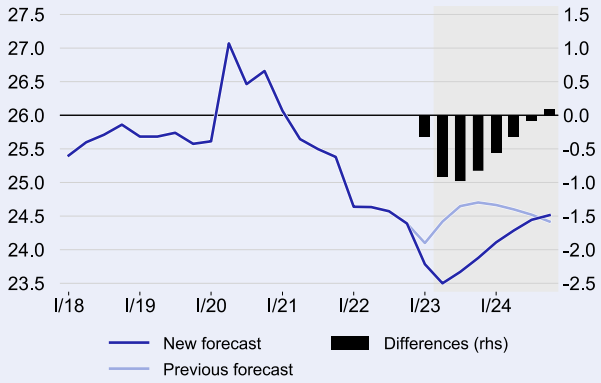


Chart IV.6

The koruna will be stronger than in the previous forecast, especially this year

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



Comparison of the interest rate path with the previous forecast (Chart IV.5)

- **The initial state** initially fosters lower rates. This is due to a lower initial rate level and to the smoothing effect in the reaction function. The effects of the other components of the initial state are broadly neutral overall. The effect of the stronger koruna exchange rate in early 2023 and higher labour efficiency is broadly offset by the impacts of the more moderate economic downturn and faster wage cost growth at the start of this year.
- **The short-term exchange rate forecast** for 2023 Q2 causes a downward revision of the interest rate path.
- The negative contributions of **administered prices** reflect a faster decline in energy prices below the government caps.
- The contributions of **government consumption** and **the fiscal impulse** foster slightly lower interest rates.
- **Expert adjustments** first foster higher rates. This is initially due to lower growth in labour efficiency in 2023 Q2. Subsequently, the expert incorporation of later and slower closure of the gap in mark-ups in the domestic intermediate goods sector and also faster wage growth in spring and summer act in the same direction. The entire outlook contains strengthened expert adjustments reducing the effect of the narrowing interest rate differential on the exchange rate, which foster lower rates. These adjustments, together with the fading of the expert adjustments to the gap in mark-ups, will prevail in the second half of next year and will be reflected in a slightly negative contribution of expert adjustments.
- **The short-term inflation forecast**, which mainly reflects higher food price inflation than expected in the previous forecast, fosters higher rates this year.
- The contribution of **the foreign environment** has a broadly neutral effect.

Comparison of the koruna exchange rate with the previous forecast (Chart IV.6)

- The shift in the exchange rate to stronger levels at the nearer end of the forecast horizon is due mainly to its **observed levels**. The assumption of a more gradual fade-out of the current wave of positive **sentiment coupled with the expected better outlook for the current account** and a reduction in the pass-through of the narrowing **interest rate differential** to the koruna exchange rate act in the same direction.

Long-term financing conditions remained unchanged

Money market interest rates have remained flat since the start of this year. Domestic rates with longer maturities were volatile due to movements in rates on foreign markets (see Chart IV.7). This was linked primarily with the collapse of US bank SVB and the problems of Swiss bank Credit Suisse. In this context, there was market uncertainty as to whether foreign central banks – despite the problems in the banking sector – would continue to tighten monetary conditions in an effort to tame inflation. However, the turmoil in global financial markets subsided relatively quickly and had only limited impacts on the domestic market.

Overall, IRS rates have dropped only slightly (by up to 0.4 pp) at individual maturities since the start of this year. Government bond yields have gone down by roughly the same amount.[12] Long-term financing conditions are little changed. The negative slope of the domestic IRS and government bond yield curves remained broadly unchanged (see Chart IV.8).

Client interest rates reflect the movements of domestic market rates

The rate on loans to non-financial corporations has been essentially unchanged since last autumn following a previous significant increase, standing at 9.1% in March (see Chart IV.9). Amid a decline in long-term market rates, the rate on genuinely new mortgages has decreased slightly to 5.9% (0.1 pp lower than at the start of this year). The rate on new loans for house purchase remains at around 5%, as it also includes, among other things, rates on refixed mortgages, which were negotiated well in advance at some banks. The interest rate on new deposits with agreed maturity was slightly above 6% in Q1. The rate on overnight deposits increased slightly as a result of growth in deposits on savings accounts. However, the overall rate on household deposits is low due to the still significant share of deposits on current accounts with low interest rates. Real interest rates taking into account inflation expected one year ahead moved further into positive territory, reaching 5.2% in the case of loans to corporations.

Growth in loans to corporations and households slowed further due to higher interest rates, weaker demand and tighter credit standards

Growth in corporate loans slackened, reaching 5.8% in March. This was due to a continued decline in koruna loans and a slowdown in the strong growth in foreign

12 The Ministry of Finance has issued CZK 137 billion of government bonds on the primary market since the start of this year. The Funding and Debt Management Strategy for 2023 assumes issues amounting to CZK 400–500 billion.

Chart IV.7

Interest rates with longer maturities declined in March due to problems in the banking sector abroad, but the turmoil subsided quickly

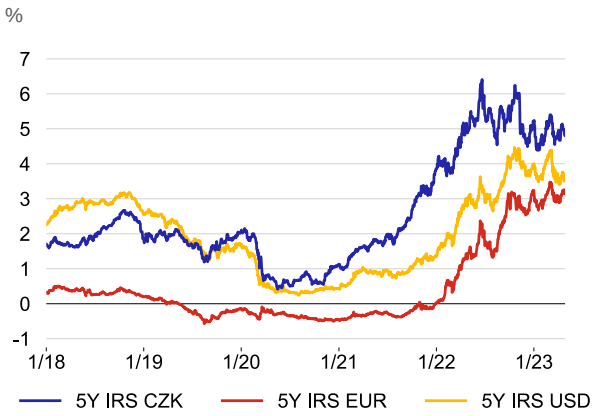


Chart IV.8

The level and slope of the Czech government bond yield curve are little changed

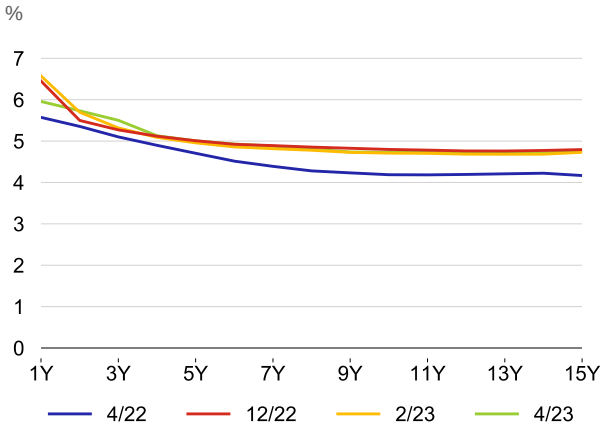
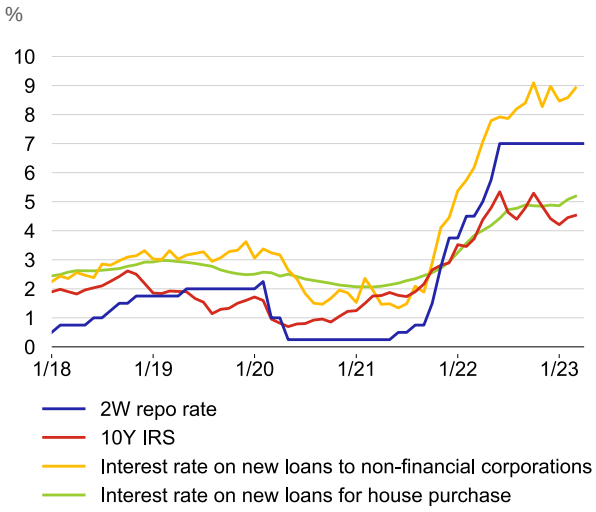


Chart IV.9

Interest rates on loans to corporations and loans for house purchase are elevated following the previous tightening of monetary conditions



currency loans. The share of foreign currency loans remains high (47%). However, its growth has lessened in intensity amid a decrease in the interest rate differential vis-à-vis the rest of the world and banks' tighter credit standards in this segment. Overall, banks perceived a decline in corporate demand for loans in Q1, mainly due to higher interest rates and a lower need to finance fixed investment. For the first time since the end of 2020, demand for short-term loans also went down, due to gradually slowing growth in input prices and firms' efforts to reduce their inventories. According to the forecast, growth in loans to firms will continue to slow in response to the high interest rates and cooler economic growth (see Chart IV.10).

Growth in loans to households also slowed further (to 5.4%), mainly as a result of slower growth in house purchase loans. Increased interest rates, high living costs and low consumer confidence contributed to the drop in demand for housing loans in Q1. However, the drop was less broad than in the previous period. Genuinely new mortgages declined by 59% year on year in March. Demand for consumer credit, in respect of which banks further tightened their credit standards, also cooled. The forecast expects growth in both categories of loans to continue to slow over the rest of this year (see Chart IV.10).

Growth in the quantity of money in the economy increased

M3 growth increased at the start of this year (see Chart IV.11). As regards the sources of money creation, the growth reflected a larger rise in government debt issuance. Banks increased their government bond holdings by CZK 90 billion between the start of this year and the end of March. On the other hand, growth in loans to the private sector slowed further. The contribution of net foreign assets increased slightly due to inflows of short-term capital and an improvement in the trade balance linked with energy prices. The higher interest rates continue to be reflected in a decrease in the highly liquid M1 and in migration of deposits to products with higher interest rates.

The risks and uncertainties of the forecast are significant and going in both directions

Given the protracted double-digit inflation, there is still a risk of inflation expectations being elevated above the CNB's 2% target. An unanchoring of inflation expectations would result in sustained upward pressure on prices and would thus complicate the return of inflation to the CNB's target. The evolution of the state budget this year is an uncertainty of the forecast.

On the domestic economy side, there are uncertainties regarding wage growth, consumption and the saving rate. The foreign uncertainties mainly involve

Chart IV.10

According to the forecast, growth in loans to households and firms will slow further

annual rates of growth in %

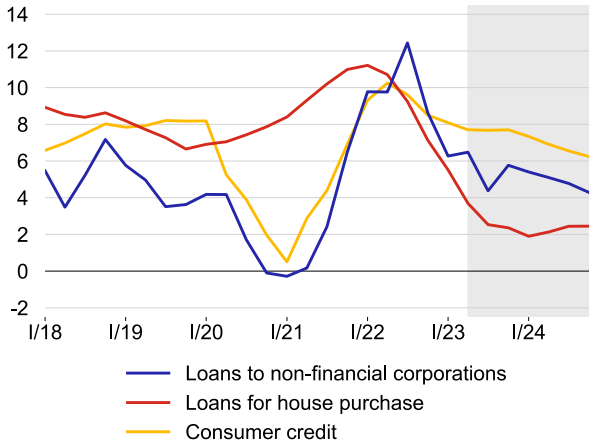


Chart IV.11

M3 growth increased

annual rates of growth in %

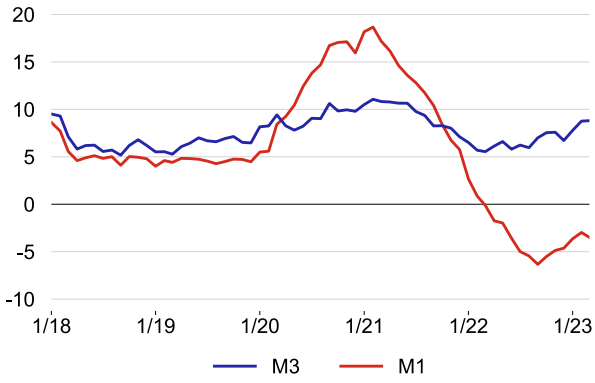
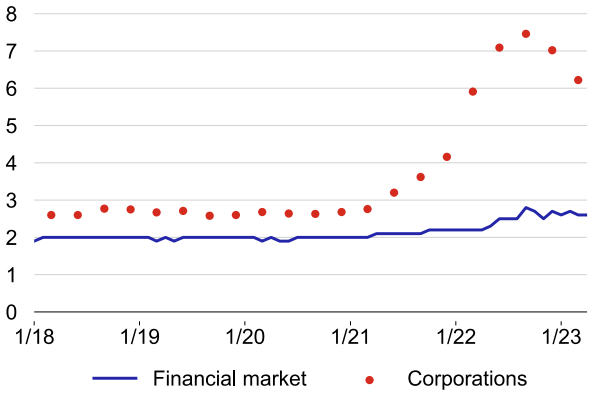


Chart IV.12

Inflation expectations declined further among non-financial corporations at the three-year horizon but remain well above the 2% target

sample of approximately 18 analysts and 150 corporations; %



tightening monetary policy abroad and commodity prices.

The possibility of a longer-lasting increase in inflation expectations above the CNB's 2% inflation target remains a significant inflationary risk to the forecast

The anchoring of inflation expectations in the medium term ensures that shocks to inflation tend to disappear relatively quickly. However, if inflation expectations are not sufficiently anchored to the inflation target, price shocks can cause a persistent increase in inflation and slow its decline. This risk is illustrated by a scenario of keeping interest rates unchanged for longer amid elevated inflation expectations (see below).

Inflation expectations have declined but remain well above the 2% target

The available indicators are signalling that there is still a risk of inflation expectations becoming unanchored, albeit to a lesser extent than before. According to a joint survey conducted by the Confederation of Industry and the CNB, the expectations of non-financial corporations one year ahead stood at almost 9% in March (see Table IV.1). Three years ahead, they fell to 6.2% but are still well above the CNB's 2% inflation target (see Chart IV.12). Firms are also asked about their producer prices one year ahead. This forward-looking indicator decreased to 8.1% in March. The European Commission's business survey also shows that the share of firms expecting the prices of their products and services to go up in the near term has dropped.

Concerns about rising prices among households are diminishing. The indicator of inflation perceived by households in the European Commission survey is close to an all-time high, but the indicator of the inflation rate expected one year ahead has been declining steadily over the past 12 months (see Chart IV.13). According to the CZSO's business survey, consumers remain pessimistic about the future economic situation. The outlook for their financial situation is also still worsened, due mainly to rapid growth in housing-related energy prices.

The analysts continue to project inflation well above the CNB's 2% target at the three-year horizon (in the April FMIE survey they were expecting 2.6% on average). This section of the public is very familiar with the central bank's monetary policy regime and therefore usually has great confidence in its ability to achieve the inflation target in the medium term.

The evolution of the state budget is an uncertainty of the forecast

This year, there is uncertainty regarding the true impacts of the compensation paid as a result of the caps on energy prices and the impacts of the levy on excess profits (the windfall tax and the levy on energy

Table IV.1

Analysts' inflation expectations at the three-year horizon have long been above the inflation target, while those of firms exceed 6%

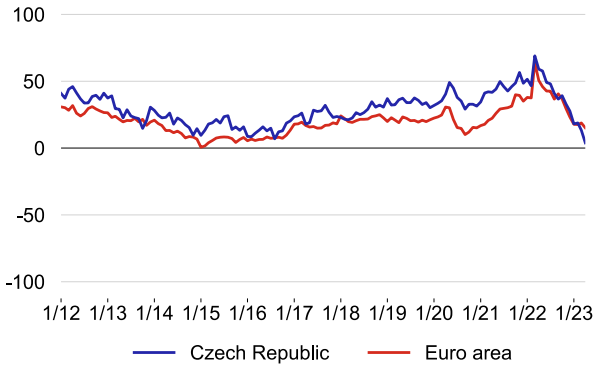
sample of approximately 18 analysts and 150 corporations; 1Y horizon; annual percentage changes unless otherwise indicated

	12/22	1/23	2/23	3/23	4/23
FMIE:					
CPI	7.0	4.8	3.8	3.7	3.5
CPI, 3Y horizon	2.7	2.6	2.7	2.6	2.6
Real GDP in 2023	0.0	0.0	0.2	0.2	0.1
Real GDP in 2024		2.4	2.6	2.7	2.6
Nominal wages in 2023	7.4	8.1	7.9	7.8	8.2
Nominal wages in 2024		5.5	5.9	6.0	6.0
CZK/EUR exchange rate (level)	24.7	24.4	24.3	24.2	24.1
2W repo rate (%)	6.0	5.9	5.8	5.6	5.6
1Y PRIBOR (%)	5.7	5.7	5.5	5.5	5.3
Corporations:					
CPI	10.2			8.9	
CPI, 3Y horizon	7.0			6.2	
CF:					
Real GDP in 2023	0.1	0.0	0.0	0.0	0.0
Real GDP in 2024		2.8	2.9	2.7	2.6
Nominal wages in 2023	7.6	7.5	7.7	8.1	8.4
Nominal wages in 2024		5.9	6.1	6.3	6.2
CZK/EUR exchange rate (level)	24.8	24.7	24.4	24.2	24.0
3M PRIBOR (%)	5.8	5.4	5.6	5.5	5.4

Chart IV.13

The inflation expectations of Czech and euro area households have been falling for 12 consecutive months

households' inflation expectations in next 12 months according to European Commission Business and Consumer Survey; sample of approximately 1,000 households; balance of answers; expectations can take values from -100 to 100



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 try to keep them close to their inflation target.*

producers' excess revenues) approved to finance this compensation. The possibility of the Constitutional Court annulling the reduction of the extra June increase in pensions is another uncertainty.

Domestic uncertainties relate to wage growth and the decline in margins, and also to household consumption and the saving rate

There is uncertainty in the domestic economy about the pace of wage growth going forward. Wage growth is currently elevated, reflecting persisting, albeit reduced, tightness on the labour market and the good financial condition of firms. They have been able to generate relatively high profits even in an environment of increased costs. According to the forecast, their increased margins will decline gradually. However, the rate of this decline is surrounded by some degree of uncertainty.

There is also uncertainty surrounding household consumption and the saving rate. Households' concerns of further growth in the cost of living fostered a large increase in the saving rate at the end of last year. The more favourable economic developments and the improvement in consumer sentiment will foster a decline in the saving rate. However, the pace of its return to the long-term average, which will pass through to the pace of the recovery in household consumption, is uncertain.

Developments abroad are also associated with a number of uncertainties

The financial market stress caused by the collapse of several banks in the USA in March was successfully calmed due to the rapid intervention of the regulators in the USA and Europe. The ECB and the Fed thus continued to raise their interest rates and made it clear that they were resolved to achieve the inflation target. However, there is uncertainty regarding the pace and intensity of further monetary policy tightening abroad.

Uncertainty also surrounds the future evolution of commodity prices, especially energy prices. The future course of the war in Ukraine remains a general uncertainty.

The domestic interest rate reduction phase may be postponed in a situation of still high inflation and rapid wage growth

Consistent with the baseline scenario of the spring forecast is market interest rate stability initially, followed by a decline from the second half of this year onwards. However, the central bank may delay lowering interest rates until it becomes apparent that the drop in inflation is lasting and robust.

To illustrate such a situation, a simulation of interest rates being kept unchanged at the current level for longer was created. This simulation retains the assumption of anchored inflation expectations, as in

the baseline scenario of the forecast. It shows that if the central bank were to start lowering interest rates later than in the baseline scenario due to concerns of a possible unanchoring of inflation expectations, but there was ultimately no increase in inflation expectations, this would lead to an undershooting of the inflation target at the forecast horizon.

Keeping rates unchanged for longer would partly offset the effect of elevated inflation expectations

Given the risk of inflation expectations becoming unanchored, a scenario of keeping rates unchanged for longer which abandons the assumption of anchored inflation expectations was also prepared (see the scenario of keeping interest rates unchanged for longer amid elevated inflation expectations below). Unlike similar past simulations, this scenario was generated by an adjusted core prediction model containing an endogenous rise in inflation expectations. To calibrate the adjusted model, a new technique was employed to quantify inflation expectations using a Common Inflation Expectations (CIE) index based on an approach developed at the Federal Reserve.

This scenario shows that putting off lowering interest rates only partly offsets the upward effects of elevated inflation expectations on consumer price inflation. The 2% inflation target is therefore not reached until beyond the monetary policy horizon (at the end of next year).

Simulation of keeping interest rates unchanged for longer

The simulation considers a situation where policy rates are expected to be kept unchanged until the end of this year. Like the baseline scenario of the forecast, this simulation assumes that monetary policy maintains full credibility and inflation expectations remain anchored to the CNB's 2% target.

The interest rate path is higher than in the baseline scenario until the start of next year (see Chart IV.14). This leads to a stronger koruna than in the baseline scenario over the entire forecast horizon. Both components of the monetary conditions are thus tighter than in the baseline scenario.

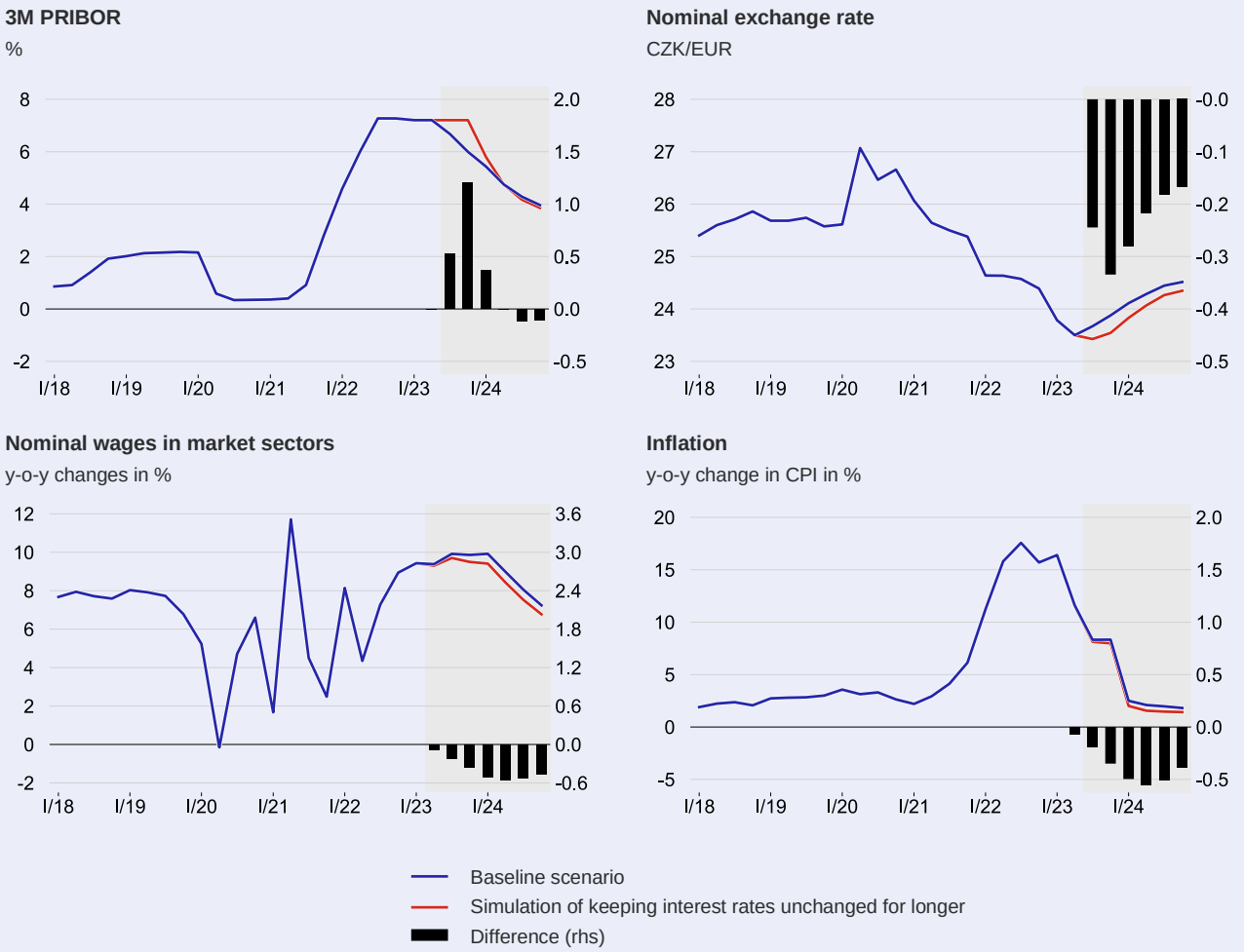
Inflation is thus lower both this year and the next and undershoots the 2% target at the monetary policy horizon, i.e. in 2024 Q2 and Q3. It is around 0.6 pp lower than in the baseline scenario of the forecast.

The impacts on other domestic variables foster slightly lower GDP and nominal wages.

Chart IV.14

Keeping rates unchanged for longer leads to a stronger koruna and lower inflation

comparison of baseline scenario with simulation of keeping rates unchanged for longer



Scenario of keeping rates unchanged for longer amid elevated inflation expectations

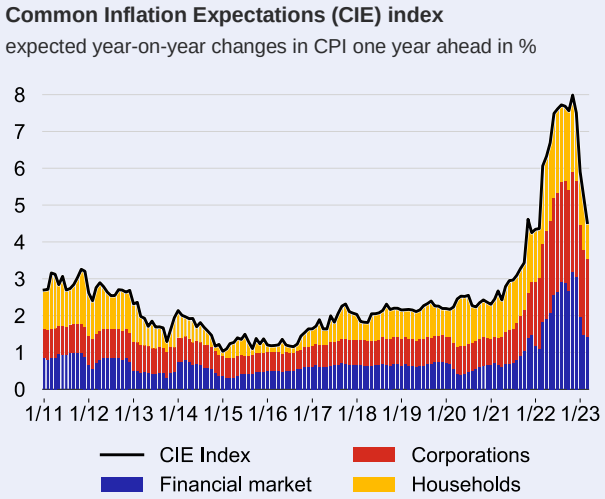
The updated approach to modelling elevated inflation expectations

The updated approach to modelling elevated inflation expectations uses a newly constructed Common Inflation Expectations (CIE) index which aggregates data on the expected change in inflation one year ahead taken from surveys of inflation expectations of the financial market (the FMIE survey), businesses and households.[13] The index thus provides a comprehensive overview of inflation expectations in the Czech economy. The evolution of the CIE index this year indicates quite a large decrease in inflation expectations from last year's unprecedentedly high levels, but still shows inflation expectations elevated well above the CNB's 2% target (see Chart IV.15).

The values of this index are used as a source of information for making adjustments to inflation expectations in the core forecasting model. The calibration of the adjusted model was chosen so that inflation expectations in the model approximate the course of the CIE index in 2022 and especially in 2023 Q1. The simulation additionally assumes that the deviation of inflation expectations from the 2% target is reflected in a deterioration in sentiment on the foreign exchange market, which increases the risk premium and exerts additional depreciation pressure on the koruna.

Chart IV.15

The updated approach to modelling elevated inflation expectations uses the CIE index



Simulation using the adjusted g3+ model

As in the simulation of keeping interest rates unchanged for longer, an expected 3M PRIBOR path at 7.2% until the end of this year is considered in this simulation. The main difference is the assumption of a different path of inflation expectations and their approximation to the CIE index. The simulation thus shows the effects of keeping interest rates unchanged for longer in the event of inflation tending to decline more gradually than considered in the baseline scenario due to elevated inflation expectations.

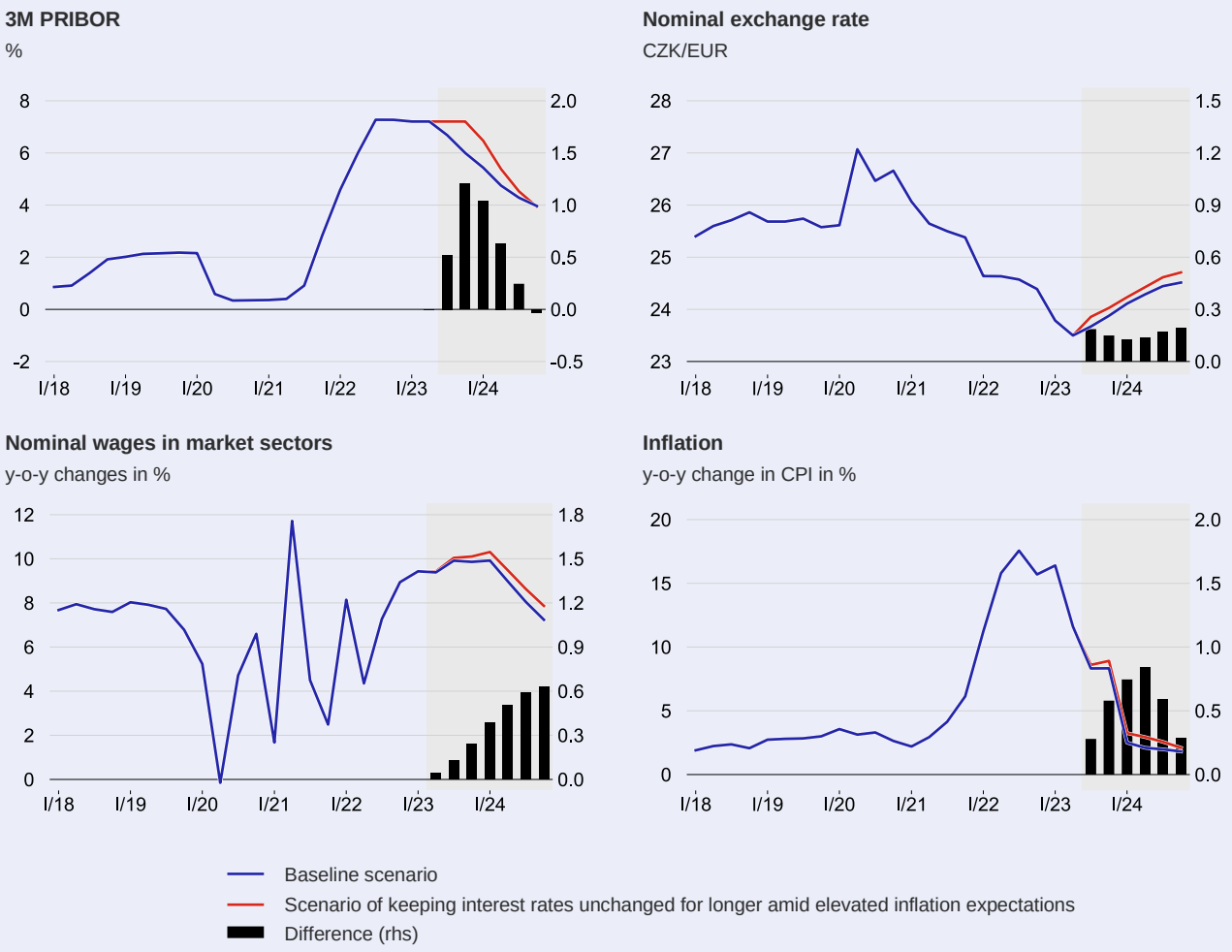
The elevated inflation expectations fundamentally affect economic agents' decisions, generating additional inflation pressures in the economy. The central bank leaves interest rates unchanged. However, this response is not sufficient to offset the effect of the elevated inflation expectations. This in turn manifests itself mainly in faster nominal wage growth and a higher inflation rate than in the baseline scenario. Additional depreciation pressure due to an increase in the risk premium leads to weaker levels of the koruna over the forecast horizon.

13 The calculation of the index is inspired by Index of Common Inflation Expectations, Hie Joo Ahn, Chad Fulton, FEDS Notes, 2020.

Chart IV.16

Amid elevated inflation expectations, even keeping interest rates unchanged for longer will not prevent higher inflation

comparison of baseline scenario with scenario of keeping interest rates unchanged for longer amid elevated inflation expectations



Manifestations of elevated inflation expectations may necessitate an interest rate increase

The scenario of keeping interest rates unchanged for longer amid elevated inflation expectations shows that in the event of elevated inflation expectations, even a policy of holding interest rates unchanged for longer may not be sufficiently tight to return inflation to the target over the monetary policy horizon.

There is still a risk (albeit a less intense one) of unanchored inflation expectations and related higher wage growth. In addition, the analysis presented in Box 2 (*Measuring the risk of a wage-price spiral*) shows that the risk of a wage-inflation spiral will probably be elevated throughout 2023. The central bank must therefore continue to carefully assess inflation, wages and other macroeconomic variables and analyse the signals coming from inflation expectations.

The CNB is ready to continue fighting inflation until it is fully under control, i.e. stabilised at the 2% target. The possibility of raising interest rates cannot be ruled out if new information indicates that the effects of inflation expectations are manifesting themselves and the desired robust decline in inflation is not occurring.

APPENDIX Assessment of the fulfilment of the 2021 forecasts

Retrospectively assessing the fulfilment of forecasts is part of the CNB's forecasting and analytical system. These analyses provide feedback on the functioning of the g3+ core forecasting model, which is the basic and unifying element used in preparing the CNB's macroeconomic forecasts. The conclusions of these analyses are used to verify the model's current settings and to consider potential adjustments to them.[1] This Monetary Policy Report continues in the tradition of publishing an annual summary of these analyses. This is consistent with the high transparency of the CNB's forecasting practice and monetary policy.

The CNB's macroeconomic forecast *serves as an important guide for the Bank Board when setting interest rates. The tool used to create the forecast is the g3+ core forecasting model. The forecast predicts 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[2] prepared in 2021, starting with a comparison of their assumptions (the exogenous factors of the forecast) and the observed developments. We then compare the forecasted paths of the main domestic variables with the data observed now. In the following part, we provide a hypothetical model simulation. This shows approximately what the forecast in the Autumn 2021 Monetary Policy Report would have looked like if what was subsequently observed, i.e. the future evolution of all the assumptions entering the forecast, had been known at the time of its preparation. The final, new section of the appendix is devoted to comparing the CNB's forecasts published in 2021 with the outputs of other analytical institutions.

Assessment of the fulfilment of the 2021 forecasts – assumptions

The main assumption of the CNB's macroeconomic forecast for the domestic economy is the outlook for the foreign environment.[3] The expectations of renewed growth in **economic activity in the effective euro area** in 2021 practically materialised.[4] The return of economic life abroad to normal after the lifting of anti-pandemic measures was in fact only slightly faster than the outlooks at the time had expected. In the second half of 2021 and in 2022, by contrast, GDP in the euro area grew more slowly than forecasted in 2021. This was due initially to stronger impacts of the disruption to global value chains (GVCs) constraining the production side of the economy, which was unable to satisfy the swiftly recovering demand supported by the spending of pandemic-induced forced savings and the related deferred consumption. This was later joined by the negative impacts of the energy crisis in Europe and the outbreak of the war in Ukraine, which exacerbated the energy market situation and shook consumer confidence.

The impact of the Covid waves was gradually revised in the CNB's 2021 forecasts in favour of greater effects on potential output growth (the supply side of the economy) amid an only limited decrease in the output gap (see Chart 1).[5] This was because supply was hit by restrictions imposed on firms during the various waves of the pandemic, later joined by disruption and overloading of GVCs. With the benefit of hindsight, however, we can say that the forecasts under assessment underestimated the demand pressures in the effective euro area. According to current estimates, the output gap in the effective euro area has been positive since the second half of 2020 and started to close from above at the end of 2022. By contrast, the 2021 forecasts expected the negative output gap to widen again at the start of 2021 and then gradually close from below, as demand (and hence the demand-driven inflation pressures) fell to only a limited extent, while the GVC disruptions led to distinctly stronger supply-side inflation pressures.

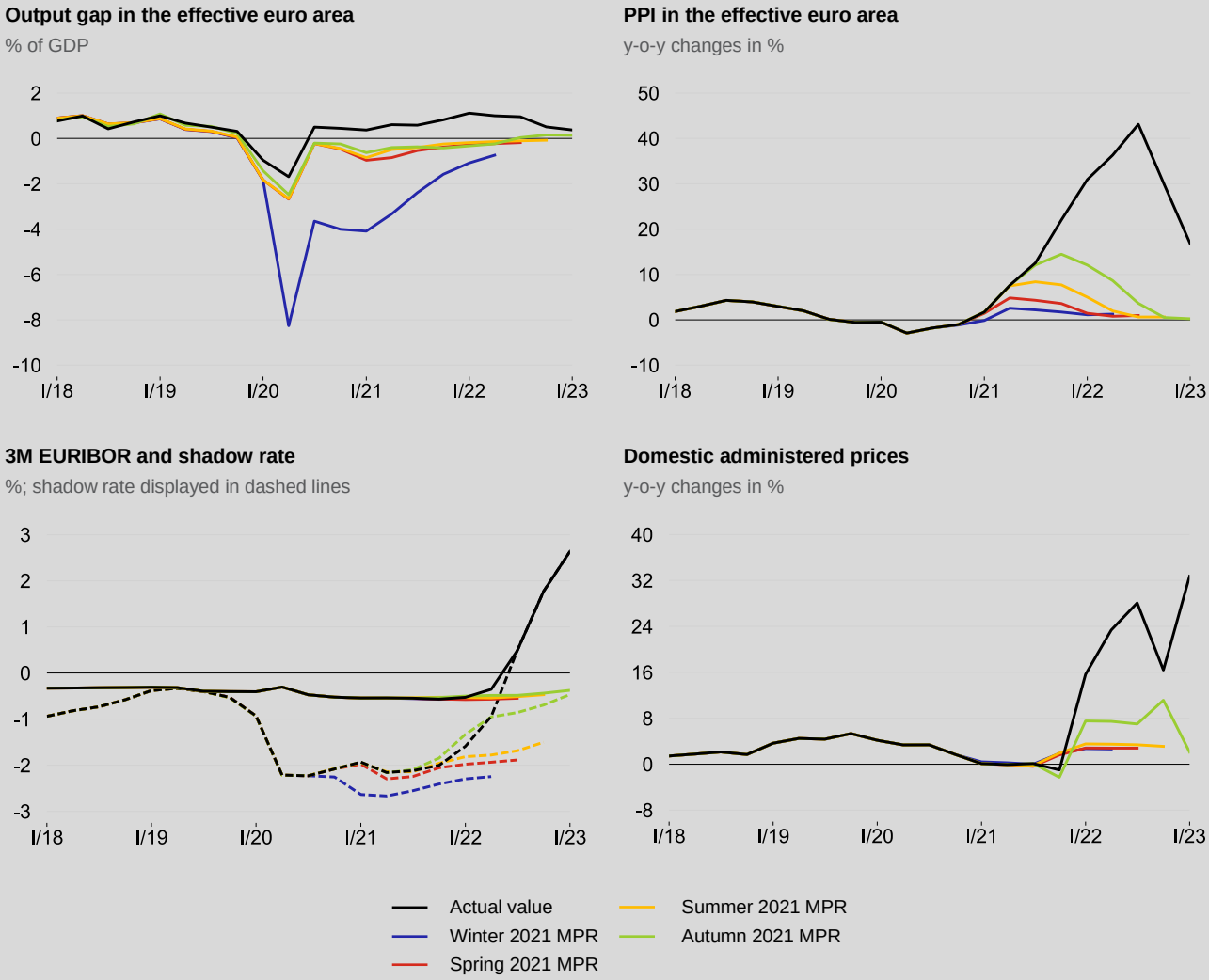
The unprecedented surge in **foreign producer price inflation** (see Chart 1) in 2021 and 2022, driven largely by an extreme jump in **energy prices**, was forecasted only partly, to the extent corresponding to the pass-through of energy commodity futures at the time. Low gas stocks in Europe before the approaching 2021/2022 winter, together with reduced energy commodity supplies from Russia, fostered a rapid rise in energy commodity prices on European markets in 2021. The situation deteriorated further after Russia's invasion of Ukraine in February 2022. European countries' efforts to fill their gas storage facilities ahead of the 2022/2023 winter, combined with increased demand for gas due to shortages of other sources of electricity[6] and a simultaneous shift away from Russia as an energy commodity supplier, caused gas prices to up further. **Core foreign producer prices** in the effective euro area also rose much faster than originally assumed, reflecting both stronger demand pressures in an environment of disrupted GVCs and the pass-through of the increased energy costs in the price vertical.

While the 2021 forecasts expected monetary policy in the euro area to remain largely unchanged, the ECB in fact started to raise its key interest rates gradually at the end of July 2022. The **3M EURIBOR** market rate thus gradually increased from negative levels to 3% at the start of 2023 (see Chart 1). The ECB's monetary policy was also less loose in its **unconventional component** on average than in the assumptions of the forecasts under assessment. The de facto constant volume of purchased assets in the ECB's balance sheet had a broadly neutral effect from the

second half of 2022 onwards. The war in Ukraine, together with a slower response of the ECB's monetary policy to the rising inflation pressures compared to the US Fed, resulted in a significantly weaker **exchange rate of the euro against the dollar** than expected in the forecasts under assessment.

Chart 1

Selected forecast assumptions



Except in 2021 Q4, when there was a temporary waiver of VAT on electricity and gas (in November and December), the observed growth in **administered prices** in the domestic economy was well above the assumptions of the forecasts under assessment over the entire horizon (see Chart 1). At the start of 2022, the previous unexpectedly strong growth in energy prices on international exchanges began to be reflected in administered prices, hence their growth also exceeded that assumed in the Autumn 2021 MPR forecast. Administered price inflation dipped at the end of 2022 due to the temporary introduction of an energy savings tariff by the government (which led to a fall in electricity prices). Even so, it remained much higher than originally assumed. After the energy savings tariff was ended at the start of 2023, administered price inflation surged again, reaching an all-time high.

Growth in nominal **government consumption and the fiscal impulse**, another domestic assumption, was roughly in line with the forecasts under assessment. At the start of 2022, government expenditure increased more significantly than forecasted owing to the support provided to Ukrainian refugees arriving into the country.

Assessment of the fulfilment of the 2021 forecasts – main domestic variables

In the course of 2021, **headline inflation** increasingly exceeded the forecasts at the time (see Chart 2). Unexpectedly rapidly rising price pressures in the foreign and domestic economies led to an initially gradual and later sharp rise in inflation. The higher-than-expected growth in prices was mainly due to supply-side, or cost, effects, especially the unexpected surge in energy prices and the stronger-than-forecasted effects of the disruption of GVCs. The substantial surge in growth in domestic firms' costs was not captured until the autumn 2021 forecast, and then only partially (see Chart 2). However, stronger demand pressures – among other things, a greater willingness by households to tolerate higher prices – also fostered higher inflation to some extent. This was mainly due to more reckless spending of pandemic savings than originally expected and to a better labour market situation amid continued excess demand for labour. Persisting labour market tightness thus reduced the effect of the rising cost of living on household consumption, mainly as a result of a still low unemployment rate. The rising inflation started to be reflected with a lag in wage growth as well. As with costs, in the case of the profit margins of domestic firms producing for domestic consumption, it was not until the autumn 2021 forecast that their increased profitability was partially identified (see Chart 2). In hindsight, however, the margins of domestic producers were much higher during 2022.

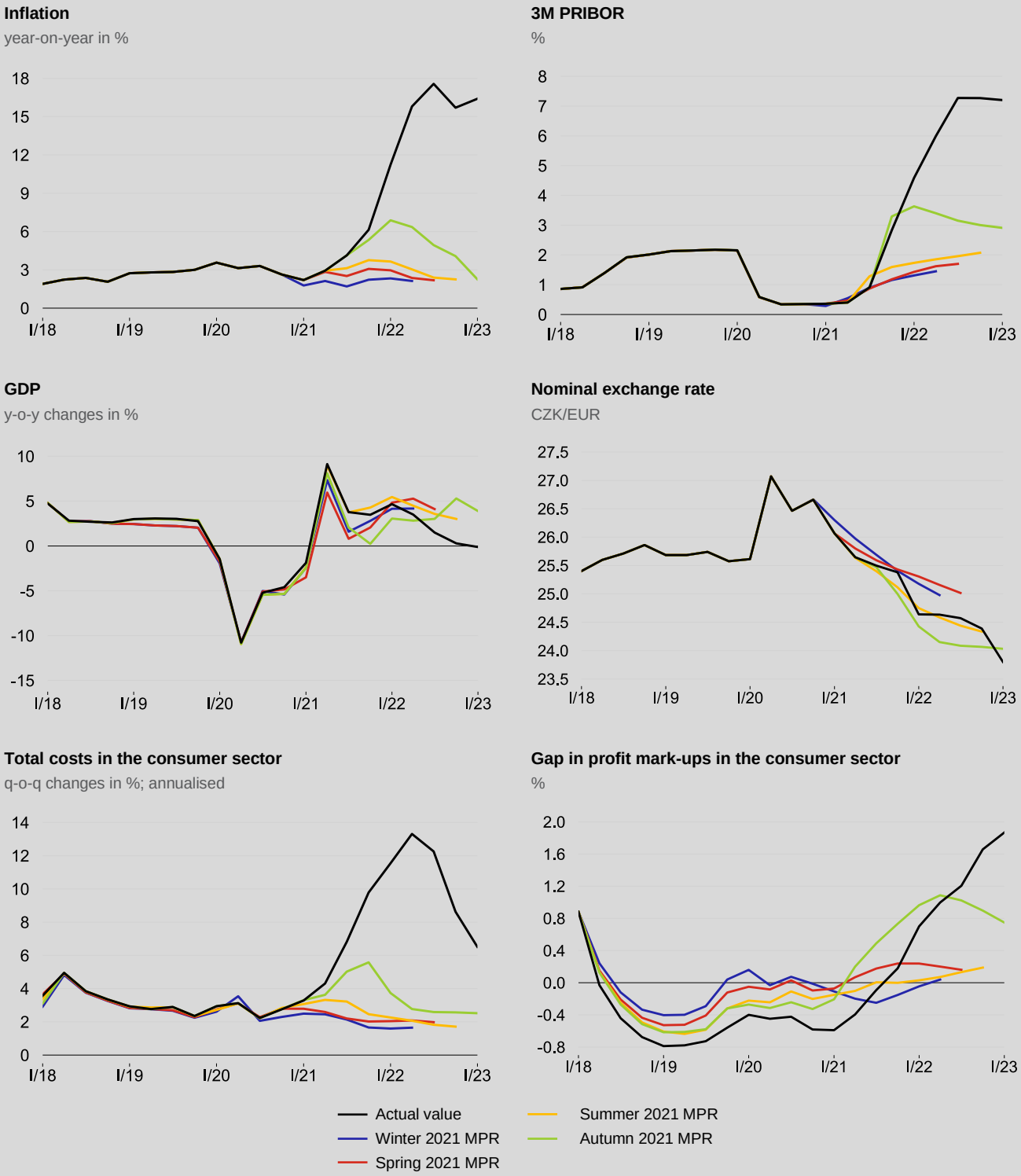
For most of 2021, the **3M PRIBOR market interest rate** was roughly in line with the forecasts at the time, which increasingly identified a need for strong monetary tightening (see Chart 2). In reality, domestic market interest rates continued to rise in the first half of 2022, while the 2021 forecasts had expected relatively stable rates in 2022, close to the policy-neutral level of 3%. The mostly energy crisis-related surge in inflation continued to grow during 2022. In addition to prices, wage growth exceeded the expectations of the forecasts under assessment.

Domestic economic activity was somewhat better than forecasted in 2021 (see Chart 2). Deferred consumption and the spending of forced savings created during the pandemic shutdowns were somewhat stronger than the forecasts under assessment had expected, despite higher inflation and greater problems in production due to the disruption of GVCs.[7] Conversely, real economic growth in 2022 mostly lagged behind the 2021 outlooks. Worsening consumer sentiment due to the war in Ukraine and the energy crisis, along with price impacts in the form of a real decline in wages, led to a sharp drop in real household consumption and hence also to lower overall domestic GDP growth in the course of 2022. Tighter monetary policy – in the shape of higher interest rates than implied by the forecasts under assessment – also ultimately contributed partially to the larger-than-forecasted GDP slowdown.

The **koruna exchange rate** was quite volatile in the period under review. In terms of the quarterly averages, however it strengthened continuously, broadly in line with the forecasts (see Chart 2). This was initially due to the gradual return of the economy to normal after the pandemic shutdowns and the related positive sentiment on foreign exchange markets. The latter was fostered from mid-2021 onwards by growth in domestic market interest rates, which made the koruna more attractive. In 2022, the exchange rate of the koruna against the euro was stabilised by occasional foreign exchange interventions by the CNB and by its communicated readiness to suppress excessive fluctuations of the koruna exchange rate. The need for the CNB to intervene was most apparent after Russia's invasion of Ukraine, when, in late February and early March 2022, the koruna depreciated from around CZK 24.5 to CZK 26 to the euro in just a few days. The CNB also occasionally intervened in favour of the koruna during the rest of 2022 (in fact until October). There was a wave of positive sentiment on foreign exchange markets in late 2022 and early 2023 due to the mild winter and the relatively well handled energy crisis in Europe, which helped all Central European currencies.

Chart 2

Forecasts of main domestic variables



Note: The actual values in the charts showing total costs and gaps in profit mark-ups are approximated by the current forecast in the Spring 2023 Monetary Policy Report, as these are unobserved variables from the perspective of the g3+ core forecasting model.

The hypothetical factors-known Autumn 2021 MPR forecast

The factors-known simulation is a hypothetical version of the Autumn 2021 MPR macroeconomic forecast. As with that forecast, the hypothetical simulations were created using the g3+ core forecasting model with the standard monetary policy horizon 12–18 months ahead.

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 the foreign environment, administered prices and government consumption). It thus tells us what the hypothetical forecast would have looked like if the observed evolution of its assumptions had been used in its preparation. The simulation is not a fully fledged forecast, as in this case, too, additional expert adjustments would probably be made which would significantly affect the simulation.*

However, in the course of 2022, the CNB decided (amid increased uncertainty after Russia's invasion of Ukraine) to exclude part of the inflation pressures caused by the extreme supply shocks and so disregard the direct effects of these shocks on inflation. A natural consequence of this step was a shift of the time period on which the monetary policy makers focus when making their decisions further into the future. The **monetary policy horizon** thus moved to a period in which the expected first-round effects of the supply shocks on inflation should have faded out and only longer-term secondary effects should have persisted in the economy.[8] The potential impacts of the alternative monetary policy horizon are illustrated by an auxiliary simulation involving an additional assumption of a monetary policy horizon 18–24 months ahead. In addition, this simulation considers the additional exemption of part of the supply shocks, which would imply a higher interest rate than the 7.3% actually attained.

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. At the end of this section, we then assess the implications of the more distant monetary policy horizon based on the auxiliary simulation. Overall, the factors-known simulation implies an ex-post need for considerably tighter monetary conditions than those actually set. In the case of this standard forward-looking response by the central bank, especially to the cost pressures which were actually faced by the domestic economy, the evolution of other economic variables would then also have been markedly different. The auxiliary simulation featuring a more distant monetary policy horizon, which more faithfully captures the CNB's behaviour at the time, is thus close to the paths that were actually observed.

Comparing the hypothetical factors-known simulation with the Autumn 2021 MPR forecast, headline inflation is above the original forecast over the entire forecast horizon (see Chart 3) and well above the CNB's 2% inflation target. This is due mainly to rapid growth in foreign producer prices and to the impacts of the energy crisis, which affects the domestic economy through two channels, first via import prices and the cost channel in domestic production and second via administered prices directly into households' consumer baskets (especially heat and electricity). In the simulation, the central bank reacts immediately to this outlook in a forward-looking manner. After a temporary increase, inflation thus returns to its 2% target in the hypothetical simulation. However, to achieve this consumer price inflation path, the need arises for a much larger interest rate hike (in double figures) in the hypothetical simulation than in the forecast under assessment. Again, this is mostly due to the external assumptions of the forecast, including higher foreign interest rates. However, a more inflationary effect of the domestic economy in 2021 also partially contributes to the difference. The leap in domestic interest rates at the end of 2021 and their further rise during 2022 leads to a substantially stronger koruna and also to significantly more subdued domestic economic activity overall in the hypothetical simulation. This is because the stronger koruna in the hypothetical simulation reduces domestic exporters' competitiveness and leads to a year-on-year decline in exports lasting until mid-2022. The labour market also subsequently responds to this with a slight drop in nominal wages in 2022, while the forecast under assessment expected roughly steady-state nominal wage growth. This drop would have fostered a deeper decline in household consumption, especially in 2022.

Comparing the hypothetical factors-known simulation with the historical outcome, observed inflation was well above the simulation over the entire forecast horizon. In reality, the extent of the energy crisis was not known in advance and the central bank reacted to new information gradually and with a lag. Therefore, the increase in interest rates and appreciation of the koruna were not as rapid and sharp in reality as the hypothetical simulation shows. Consequently, the necessary reduction in domestic economic activity and easing of labour market tightness were not delivered either. The domestic economy in reality thus remained inflationary and households were willing and able to accept higher inflation. Some firms took advantage of this, contributing to inflation by increasing their mark-ups. From the second half of 2022 onwards, escape clauses also play a significant role in the comparison of the interest rate path in the hypothetical simulation with the actually observed path. Model simulations created during 2022 using

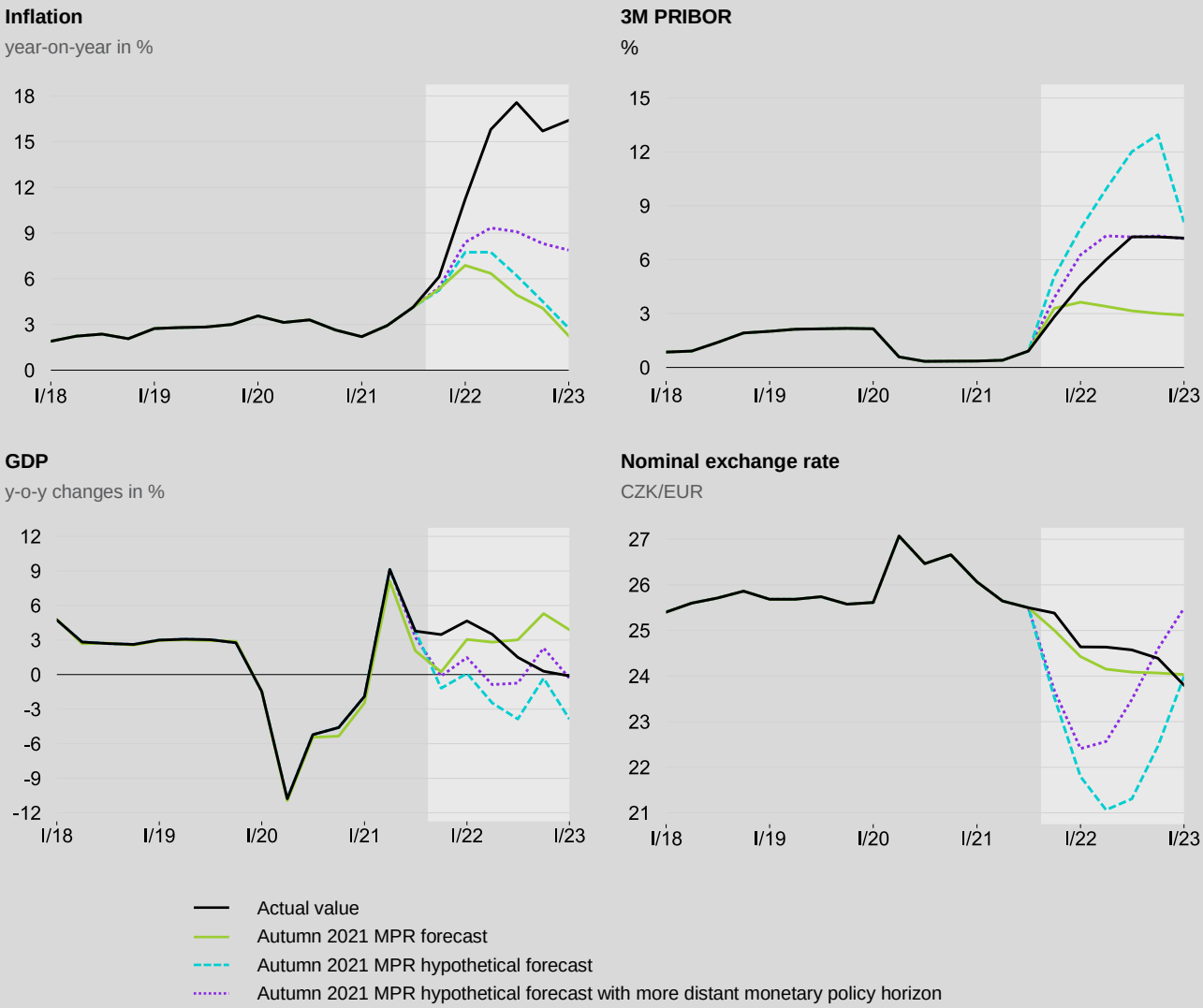
the core forecasting model with the standard monetary policy horizon, i.e. reacting to the expected inflation outlook 12–18 months ahead, indicated a need for a further rise in the 3M PRIBOR above 10%. In reality, however, it has remained just above 7% since the last increase in the CNB's policy rates in June 2022.

The auxiliary hypothetical simulation featuring a more distant monetary policy horizon (18–24 months ahead) initially implies a similarly rapid rise in interest rates as for the standard horizon. Even with this setting, the central bank is forced to react to the outlook for extreme growth in foreign producer prices and administered prices during 2022, and in particular to its second-round effects. After reaching the current level of 7.3%, domestic market 3M PRIBOR rates then remain at this level in the simulation until the end of the period under review. The path of the exchange rate is consistent with this – the rate does not appreciate as strongly and subsequently starts to depreciate earlier than in the baseline factors-known simulation. Domestic consumer price inflation therefore ultimately attains higher levels, in line with the logic of the shift of the monetary policy horizon, and recedes more slowly and later than with the standard horizon. Unlike in the simulation with the original monetary policy horizon, headline inflation does not fall into the tolerance band even at the end of the period under review. The decline in GDP in 2022 is noticeably shallower in the auxiliary simulation. The generally more accommodative monetary conditions manifest themselves mainly in a less pronounced drop in household consumption. The weaker exchange rate also supports net exports.

Chart 3

Comparison of the forecast and the factors-known simulation (hypothetical forecast) in the Autumn 2021 MPR with the observed data

light-grey area in charts shows Autumn 2021 MPR forecast horizon



The 2021 forecasts compared to other institutions

The final section offers a comparison of the CNB's 2021 forecasts with the contemporary outputs of other analytical institutions. Chart 4 shows the forecasted and subsequently observed main variables under review in whole-year terms for 2021 and 2022.

In the case of **consumer price inflation**, the institutions' 2021 and 2022 forecasts were initially anchored at the CNB's 2% inflation target. However, the uncertainty of the forecasts gradually increased during 2021. Information on surging producer price inflation in the effective euro area and significantly increasing gas and electricity prices gradually started to pass through to the forecasts. In summer 2021, the forecasts thus abandoned the assumption of achievement of the 2% target in 2021 and subsequently also in 2022.

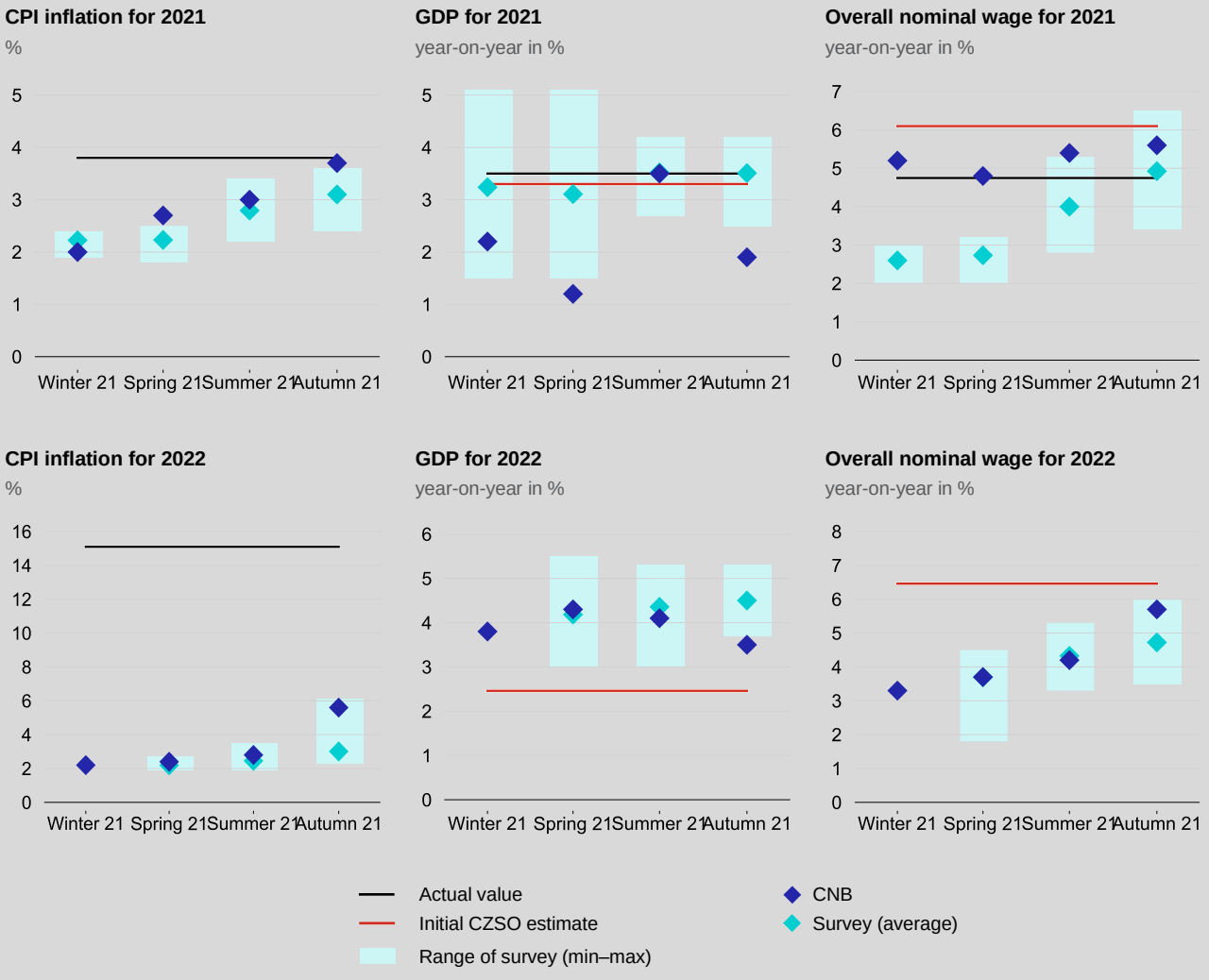
On average, the CNB's forecasts were generally higher than the estimates of other institutions and thus closer to what actually happened. The CNB's autumn 2021 forecast estimated the resulting inflation rate for 2021 most accurately and for 2022 also already gave quite a clear indication of the persistence of the surge in inflation into the future. However, the full scale of the inflation surge was not successfully predicted.

Chart 4

Comparison of the CNB's 2021 forecasts with those of other institutions (full-year data for 2021 and 2022)

The data sources are the CNB's forecasts and the Ministry of Finance (MoF) survey published in the 2021 *Macroeconomic Forecast of the Czech Republic*. The MoF survey is based on the publicly available forecasts of 13 institutions, eight of them domestic (CNB, Czech Banking Association, MLSA and domestic commercial banks) and the others foreign (e.g. European Commission, OECD, IMF). For the purposes of this document, the CNB's forecasts are excluded from the survey and the MoF's forecasts are included. In its winter forecast (and in the survey), the MoF did not publish data for 2022 in whole-year terms and hence the data are missing.

Example: the blue CNB dot corresponding to "spring 2021" in the "GDP for 2021" chart shows the full-year GDP growth estimate for 2021 from the forecast published in spring 2021 (i.e. the Spring 2021 MPR).



Institutions other than the CNB initially expected roughly steady-state 3% **domestic economic growth** for 2021. Later their estimates increased slightly. The wide ranges of the estimates reflected the increased uncertainty of the forecasts amid the gradually receding pandemic.[9] The dispersion of the GDP growth forecasts for 2021 only decreased significantly following the publication of the CZSO's initial estimates in the second half of 2021. The estimates for 2022 expected higher growth rates of around 4% connected with further catch-up after the pandemic contraction amid gradually fading problems in global value chains, but also amid continued significant uncertainty.

In its economic growth forecasts for 2021, the CNB was generally much more pessimistic than the other institutions. Its first three 2021 forecasts underestimated the scale of the household consumption recovery and also underestimated the downward effects of disrupted GVCs on export growth. The autumn 2021 forecast estimated household consumption and exports almost exactly. The resulting underestimation of GDP growth was due to smaller assumed growth in inventories. As for the estimated GDP growth for 2022, the CNB's forecasts were virtually in the middle of the range of the other institutions. Only the autumn 2021 forecast was slightly more pessimistic, but as a result it was the closest to the actual value, because domestic economic growth in 2022 was below all the 2021 estimates. This was due, among other things, to a sizeable decline in real wages and domestic demand amid high consumer price inflation, which the forecasts at the time did not expect to such an extent.

At the start of 2021, the institutions were predicting only moderate **growth in the average nominal wage**, whereas their subsequent forecasts already reflected the observed upswing in inflation and wage growth. The estimates for 2021 and 2022 thus gradually shifted to close to 5%.

The CNB's nominal wage growth estimates for 2021 were generally higher than those of the other institutions. They were expecting growth of about 5% throughout 2021. However, the CZSO's initial estimate exceeded 6% (the final estimate after revisions was almost 5%). Taking the estimates for 2022, the CNB's forecasts, with the exception of the last forecast under assessment, were close to the average of the other institutions' estimates. In line with the persistent inflation, the autumn 2021 forecast also expected persisting increased wage growth. It was thus one of the highest of the forecasts under comparison and simultaneously was closest to what was subsequently actually observed.

To sum up, the accuracy of the CNB's forecasts for domestic economic activity was comparable to that of the 2021 forecasts of other analytical institutions, although the estimates for 2021 were more pessimistic on average. In the case of consumer price inflation and nominal wage growth, the CNB's forecasts were generally among the more accurate of the outlooks under comparison.

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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 more than desirable.

2 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 Autumn 2021 MPR one.

3 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 (asset purchases). The domestic assumptions include the outlook for administered prices and nominal government consumption along with its deflator and the fiscal impulse.

4 The differences between the predicted effective euro area GDP paths and the observed outcomes stem mainly from revisions of the historical data.

5 The CNB analysed the nature of the economic shocks associated with the Covid-19 pandemic in, for example, Assessment of the nature of the pandemic shock: Implications for monetary policy, Oxana Babecká Kucharčuková, Jan Brůha, Petr Král, Martin Motl, Jaromír Tonner (2022), CNB RPN 1/2022.

6 Shutdowns of nuclear power stations in France and limited wind generation in Germany led to increased demand for electricity from gas power plants in 2022. The exchange price of gas thus peaked at more than ten times the pre-crisis highs in late summer 2022.

7 On the other hand, production and exports in the industrial sectors of the domestic economy, especially the automotive industry, were significantly reduced in 2021 and in the first half of 2022 by disruptions to material and component supplies as a result of overloaded global supply chains. This was reflected mainly in higher additions to inventories relative to the forecasts under assessment.

8 When setting monetary policy interest rates during the period under review, the CNB Bank Board first took into account a simulation featuring a more distant monetary policy horizon contained in the Spring 2022 MPR. This then became the baseline scenario in the subsequent summer forecast. A monetary policy horizon 18–24 months ahead, i.e. six months further into the future than the former one, was considered in both cases. The need for exemptions decreased as the situation on energy commodity exchanges started to calm in the autumn. The forecast in the Autumn 2022 MPR therefore employed a monetary policy horizon 15–21 months ahead. The Winter 2023 MPR forecast then returned to the original horizon 12–18 months ahead.

9 In addition to the precise timing of the lifting of pandemic restrictions, there was significant uncertainty surrounding the extent of the subsequent domestic demand recovery supported by the spending of forced savings and by deferred consumption. On top of that, the restart of the global economy in 2021 Q2 was complicated by disrupted GVCs. The still partially constrained production facilities were unable to react flexibly on the global scale to the sudden rise in demand. Complex manufacturing sectors such as the automotive industry were hit particularly hard by disruptions to key material and component supplies.

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

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
DEMAND AND SUPPLY												
Gross domestic product												
GDP (CZK bn, constant p. of 2015, seas. adjusted)	4290.8	4387.8	4627.4	4740.8	4994.2	5154.3	5307.2	5014.3	5189.6	5317.3	**5342.4**	**5503.4**
GDP (CZK bn, current p., seas. adjusted)	4141.9	4344.6	4627.4	4794.9	5116.8	5416.4	5793.9	5710.7	6107.0	6793.6	**7405.2**	**7834.9**
GDP (%, y-o-y, real terms, seas. adjusted)	0.0	2.3	5.5	2.5	5.3	3.2	3.0	-5.5	3.5	2.5	**0.5**	**3.0**
GDP (%, q-o-q, real terms, seas. adjusted)	-	-	-	-	-	-	-	-	-	-	**-**	**-**
Household consumption (%, y-o-y, real terms, seas. adjusted)	0.9	1.4	3.9	3.7	4.0	3.3	2.6	-7.4	4.1	-0.9	**-2.6**	**4.1**
Government consumption (%, y-o-y, real terms, seas. adjusted)	2.4	1.0	1.8	2.5	1.8	3.9	2.5	4.2	1.4	0.6	**1.6**	**1.3**
Gross capital formation (%, y-o-y, real terms, seas. adjusted)	-4.2	7.1	13.1	-3.9	6.5	7.7	4.5	-9.2	19.1	8.5	**-6.1**	**-2.1**
Gross fixed capital formation (%, y-o-y, real terms, seas. adjusted)	-2.2	3.3	9.8	-3.1	5.1	10.0	5.9	-6.0	0.8	6.2	**2.9**	**4.8**
Exports of goods and services (%, y-o-y, real terms, seas. adjusted)	0.3	8.7	6.2	4.1	7.6	3.7	1.3	-8.1	6.8	5.7	**7.4**	**6.6**
Imports of goods and services (%, y-o-y, real terms, seas. adjusted)	0.1	10.0	7.0	2.7	6.5	5.8	1.5	-8.2	13.2	5.7	**2.8**	**4.9**
Net exports (CZK bn, constant p. of 2015, seas. adjusted)	295.5	283.3	276.7	337.5	401.7	338.1	338.4	315.6	96.8	102.0	**312.8**	**413.7**
PRICES												
Main price indicators												
Consumer Price Index (%, y-o-y, average)	1.4	0.4	0.3	0.7	2.5	2.1	2.8	3.2	3.8	15.1	**11.2**	**2.1**
Administered prices (14.21%)* (%, y-o-y, average)	2.2	-3.0	0.0	0.2	0.0	1.8	4.4	3.1	-0.2	20.9	**27.6**	**1.3**
Food prices (incl. alcoholic beverages and tobacco) (26.50%)* (%, y-o-y, average)	3.1	1.8	0.1	0.2	3.6	1.6	2.6	4.2	2.1	12.9	**10.3**	**-0.2**
Core inflation (56.14%)* (%, y-o-y, average)	-0.5	0.5	1.2	1.2	2.4	2.1	2.7	3.4	4.8	13.2	**8.2**	**3.5**
Fuel prices (3.15%)* (%, y-o-y, average)	-2.1	0.2	-13.5	-8.5	6.7	6.3	-0.4	-11.4	16.7	33.6	**-12.5**	**0.9**
Monetary policy-relevant inflation (%, y-o-y, average)	0.6	0.2	0.2	0.5	2.5	2.1	2.9	3.2	3.9	14.6	**11.1**	**2.1**
Partial price indicators												
Industrial producer prices (%, y-o-y, average)	0.8	-0.8	-3.2	-3.3	1.8	2.0	2.6	0.1	7.1	24.3	**6.2**	**0.9**
Agricultural prices (%, y-o-y, average)	5.0	-3.7	-5.9	-5.8	7.4	-0.1	5.4	-3.8	7.4	31.8	**-0.2**	**-7.2**
LABOUR MARKET												
Average monthly wage (%, y-o-y, nominal terms)	-0.1	2.9	3.2	4.4	6.7	8.2	7.9	4.6	4.7	6.5	**8.8**	**7.9**
Average monthly wage in market sectors (%, y-o-y, nominal terms)	-0.3	3.0	3.2	4.3	6.7	7.7	7.6	4.1	5.1	7.2	**9.7**	**8.5**
Average monthly wage (%, y-o-y, real terms)	-1.6	2.6	2.8	3.8	4.3	6.0	5.0	1.5	0.9	-8.6	**-2.2**	**5.8**
Unit labour costs (%, y-o-y)	0.9	1.6	-0.4	3.1	3.9	6.2	4.7	5.9	2.2	6.5	**8.6**	**5.0**
Aggregate labour productivity (%, y-o-y)	-0.4	1.7	3.9	0.9	3.6	1.9	2.8	-3.8	3.1	0.7	**0.4**	**2.9**
ILO general unemployment rate (%, average, age 15–64, seas. adjusted)	7.0	6.2	5.1	4.0	2.9	2.3	2.0	2.6	2.9	2.4	**2.5**	**2.8**
Share of unemployed persons (MLSA) (%, average, seas. adjusted)	7.7	7.7	6.5	5.5	4.2	3.2	2.8	3.6	3.8	3.4	**3.7**	**4.2**
Employment (ILO) (%, y-o-y)	0.9	0.7	1.3	1.8	1.5	1.2	-0.1	-1.6	-1.5	1.6	**0.1**	**0.1**
Full-time employment (%, y-o-y)	-1.0	1.1	2.1	1.8	2.2	1.5	-0.3	-1.7	-0.3	0.9	**0.1**	**0.2**
PUBLIC FINANCE												
Government budget balance (ESA2010) (CZK bn, current prices)	-53.2	-90.2	-29.8	34.1	76.7	48.3	16.7	-329.2	-310.6	-247.5	**-286.0**	**-192.1**
Government budget balance/GDP** (%, nominal terms)	-1.3	-2.1	-0.6	0.7	1.5	0.9	0.3	-5.8	-5.1	-3.6	**-3.9**	**-2.5**
Government debt (ESA2010) (CZK bn, current prices)	1840.2	1818.9	1836.0	1754.7	1749.7	1734.6	1740.3	2149.8	2566.7	2997.1	**3259.0**	**3459.3**
Government debt/GDP** (%, nominal terms)	44.4	41.9	39.7	36.6	34.2	32.1	30.0	37.7	42.0	44.1	**44.0**	**44.2**
EXTERNAL RELATIONS												
Current account												
Trade balance (CZK bn, current prices)	167.0	220.0	187.7	258.5	259.3	200.9	239.8	280.3	69.0	-99.3	**214.8**	**318.5**
Trade balance/GDP (%, nominal terms)	4.0	5.1	4.1	5.4	5.1	3.7	4.1	4.9	1.1	-1.5	**2.9**	**4.1**
Balance of services (CZK bn, current prices)	70.4	55.7	86.6	106.6	124.6	120.0	106.0	103.5	105.0	89.9	**109.6**	**124.2**
Current account (CZK bn, current prices)	-21.8	7.9	20.7	85.2	79.1	24.1	19.2	113.7	-168.0	-415.3	**8.5**	**85.1**
Current account/GDP (%, nominal terms)	-0.5	0.2	0.4	1.8	1.5	0.4	0.3	2.0	-2.8	-6.1	**0.1**	**1.1**
Foreign direct investment												
Direct investment (CZK bn, current prices)	7.4	-80.4	49.7	-186.5	-45.9	-51.0	-137.1	-149.1	-28.5	-172.4	**-140.0**	**-140.0**
Exchange rates												
CZK/USD (average)	19.6	20.8	24.6	24.4	23.4	21.7	22.9	23.2	21.7	23.4	**22.0**	**21.9**
CZK/EUR (average)	26.0	27.5	27.3	27.0	26.3	25.6	25.7	26.5	25.6	24.6	**23.7**	**24.3**
MONEY AND INTEREST RATES												
M3 (%, y-o-y, average)	5.1	5.1	7.3	9.1	11.7	6.6	6.3	9.0	9.6	6.4	**8.8**	**11.5**
2W repo rate (%, average)	0.1	0.1	0.1	0.1	0.2	1.1	1.9	0.8	0.9	5.9	**6.6**	**4.4**
3M PRIBOR (%, average)	0.5	0.4	0.3	0.3	0.4	1.3	2.1	0.9	1.1	6.3	**6.8**	**4.6**
EXTERNAL ASSUMPTIONS												
Foreign GDP (%, y-o-y, seas. adjusted, effective)	0.3	1.9	2.0	2.0	2.8	1.8	1.5	-5.0	4.0	2.7	**0.5**	**1.4**
Foreign GDP (%, q-o-q, seas. adjusted, effective)	-	-	-	-	-	-	-	-	-	-	**-**	**-**
Foreign HICP (%, y-o-y, seas. adjusted, effective)	1.6	0.6	0.4	0.3	1.6	2.0	1.5	0.6	2.9	9.2	**6.8**	**2.6**
Foreign PPI (%, y-o-y, seas. adjusted, effective)	-0.1	-1.6	-2.5	-2.3	2.7	3.3	1.1	-1.6	11.0	35.0	**4.2**	**0.1**
Brent crude oil (in USD/barrel) (average)	108.8	99.5	53.6	45.0	54.8	71.5	64.2	43.2	70.8	98.9	**80.6**	**75.8**
3M EURIBOR (%, average)	0.2	0.2	0.0	-0.3	-0.3	-0.3	-0.4	-0.4	-0.5	0.3	**3.2**	**3.1**
USD/EUR (average)	1.3	1.3	1.1	1.1	1.1	1.2	1.1	1.1	1.2	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

	2022				2023				2024			
	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)	1329.6	1333.2	1329.6	1324.9	**1326.6**	**1332.2**	**1337.9**	**1345.7**	**1357.4**	**1369.8**	**1382.6**	**1393.6**
GDP (CZK bn, current p., seas. adjusted)	1639.3	1678.0	1741.5	1734.7	**1819.5**	**1831.5**	**1859.6**	**1894.7**	**1929.6**	**1954.7**	**1969.5**	**1981.1**
GDP (%, y-o-y, real terms, seas. adjusted)	4.7	3.5	1.5	0.3	**-0.2**	**-0.1**	**0.6**	**1.6**	**2.3**	**2.8**	**3.3**	**3.6**
GDP (%, q-o-q, real terms, seas. adjusted)	0.6	0.3	-0.3	-0.4	**0.1**	**0.4**	**0.4**	**0.6**	**0.9**	**0.9**	**0.9**	**0.8**
Household consumption (%, y-o-y, real terms, seas. adjusted)	8.0	0.0	-5.2	-5.5	**-5.9**	**-4.8**	**-1.6**	**2.2**	**4.0**	**4.3**	**4.3**	**4.1**
Government consumption (%, y-o-y, real terms, seas. adjusted)	2.0	1.4	-1.8	0.9	**1.1**	**2.0**	**3.5**	**0.0**	**1.3**	**1.3**	**1.3**	**1.4**
Gross capital formation (%, y-o-y, real terms, seas. adjusted)	14.4	11.6	5.8	2.7	**-2.1**	**-5.6**	**-8.1**	**-8.4**	**-7.0**	**-4.0**	**0.1**	**2.9**
Gross fixed capital formation (%, y-o-y, real terms, seas. adjusted)	7.1	6.0	7.2	4.6	**2.0**	**3.2**	**2.0**	**4.6**	**5.8**	**5.3**	**4.3**	**3.8**
Exports of goods and services (%, y-o-y, real terms, seas. adjusted)	0.4	1.7	11.1	9.7	**7.8**	**8.3**	**6.1**	**7.3**	**8.2**	**7.6**	**5.7**	**5.2**
Imports of goods and services (%, y-o-y, real terms, seas. adjusted)	5.3	2.2	7.6	7.6	**3.7**	**3.3**	**1.5**	**2.7**	**4.9**	**5.3**	**4.5**	**4.8**
Net exports (CZK bn, constant p. of 2015, seas. adjusted)	15.0	15.6	32.2	39.3	**60.5**	**71.5**	**86.1**	**94.7**	**101.9**	**102.9**	**104.7**	**104.3**
PRICES												
Main price indicators												
Consumer Price Index (%, y-o-y, average)	11.2	15.8	17.6	15.7	16.4	**11.6**	**8.3**	**8.3**	**2.5**	**2.1**	**2.0**	**1.8**
Administered prices (14.21%)* (%, y-o-y, average)	15.7	23.4	28.1	16.4	32.8	**24.4**	**18.9**	**34.2**	**1.3**	**1.2**	**1.5**	**1.3**
Food prices (incl. alcoholic beverages and tobacco) (26.50%)* (%, y-o-y, average)	6.2	11.4	15.2	18.8	18.2	**12.5**	**7.6**	**2.8**	**-0.2**	**-0.4**	**-0.2**	**0.0**
Core inflation (56.14%)* (%, y-o-y, average)	10.5	13.8	14.7	13.9	11.9	**9.2**	**6.7**	**5.1**	**4.3**	**3.6**	**3.2**	**2.9**
Fuel prices (3.15%)* (%, y-o-y, average)	36.9	46.3	36.1	15.1	-3.7	**-19.1**	**-17.7**	**-9.6**	**0.2**	**1.2**	**1.3**	**0.9**
Monetary policy-relevant inflation (%, y-o-y, average)	10.8	15.6	17.4	14.7	16.4	**11.6**	**8.2**	**8.3**	**2.4**	**2.1**	**1.9**	**1.8**
Partial price indicators												
Industrial producer prices (%, y-o-y, average)	21.8	27.7	25.9	21.8	15.0	**5.3**	**2.8**	**2.4**	**-0.1**	**1.1**	**1.1**	**1.4**
Agricultural prices (%, y-o-y, average)	23.3	38.8	37.1	27.9	19.6	**-4.7**	**-5.5**	**-7.4**	**-11.1**	**-7.0**	**-5.8**	**-4.7**
LABOUR MARKET												
Average monthly wage (%, y-o-y, nominal terms)	7.3	4.4	6.2	7.9	**9.1**	**8.6**	**8.9**	**8.7**	**8.9**	**8.2**	**7.5**	**6.9**
Average monthly wage in market sectors (%, y-o-y, nominal terms)	8.1	4.6	7.1	8.9	**9.4**	**9.4**	**9.9**	**9.9**	**9.9**	**9.0**	**8.0**	**7.2**
Average monthly wage (%, y-o-y, real terms)	-3.5	-9.8	-9.7	-6.7	**-6.3**	**-2.7**	**0.5**	**0.3**	**6.3**	**6.0**	**5.4**	**5.0**
Unit labour costs (%, y-o-y)	6.4	4.7	5.9	9.0	**9.2**	**8.3**	**9.7**	**7.2**	**6.5**	**5.5**	**4.3**	**3.6**
Aggregate labour productivity (%, y-o-y)	3.4	1.1	-0.1	-1.2	**-1.2**	**0.4**	**1.0**	**1.5**	**2.3**	**2.7**	**3.2**	**3.4**
ILO general unemployment rate (%, average, age 15–64, seas. adjusted)	2.4	2.5	2.4	2.2	**2.4**	**2.5**	**2.5**	**2.7**	**2.7**	**2.7**	**2.8**	**2.9**
Share of unemployed persons (MLSA) (%, average, seas. adjusted)	3.3	3.3	3.4	3.7	**3.6**	**3.6**	**3.7**	**3.9**	**4.0**	**4.1**	**4.2**	**4.3**
Employment (ILO) (%, y-o-y)	2.3	2.2	1.2	0.9	**0.4**	**-0.1**	**0.1**	**0.0**	**0.1**	**0.1**	**0.1**	**0.2**
Full-time employment (%, y-o-y)	0.8	1.1	0.8	0.9	**0.5**	**0.1**	**0.0**	**0.0**	**0.1**	**0.2**	**0.3**	**0.4**
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)	6.1	-38.1	-51.5	-15.9	**66.7**	**64.0**	**36.9**	**47.3**	**97.2**	**93.5**	**57.8**	**70.0**
Trade balance/GDP (%, nominal terms)	0.4	-2.2	-2.9	-0.9	**3.9**	**3.4**	**2.0**	**2.4**	**5.4**	**4.8**	**2.9**	**3.4**
Balance of services (CZK bn, current prices)	24.2	31.2	28.7	5.8	**17.5**	**36.8**	**33.2**	**22.1**	**34.2**	**32.5**	**28.7**	**28.9**
Current account (CZK bn, current prices)	-19.2	-85.2	-227.2	-83.6	**51.3**	**-3.5**	**-37.9**	**-1.4**	**93.9**	**9.6**	**-39.4**	**21.1**
Current account/GDP (%, nominal terms)	-1.2	-5.0	-12.9	-4.7	**3.0**	**-0.2**	**-2.0**	**-0.1**	**5.2**	**0.5**	**-2.0**	**1.0**
Foreign direct investment												
Direct investment (CZK bn, current prices)	-16.4	-32.2	-32.3	-91.5	**-35.0**	**-35.0**	**-35.0**	**-35.0**	**-35.0**	**-35.0**	**-35.0**	**-35.0**
Exchange rates												
CZK/USD (average)	22.0	23.1	24.4	23.9	22.2	**21.9**	**22.0**	**22.0**	**22.0**	**22.0**	**21.9**	**21.9**
CZK/EUR (average)	24.6	24.6	24.6	24.4	23.8	**23.5**	**23.7**	**23.9**	**24.1**	**24.3**	**24.4**	**24.5**
MONEY AND INTEREST RATES												
M3 (%, y-o-y, average)	6.0	6.2	6.4	7.3	8.5	**8.4**	**8.9**	**9.4**	**10.5**	**11.4**	**12.0**	**12.0**
2W repo rate (%, average)	4.2	5.6	7.0	7.0	7.0	**7.0**	**6.5**	**5.8**	**5.2**	**4.5**	**4.1**	**3.8**
3M PRIBOR (%, average)	4.6	6.0	7.3	7.3	7.2	**7.2**	**6.7**	**6.0**	**5.4**	**4.7**	**4.3**	**4.0**
EXTERNAL ASSUMPTIONS												
Foreign GDP (%, y-o-y, seas. adjusted, effective)	4.6	3.1	1.9	1.5	**1.0**	**0.4**	**0.2**	**0.6**	**0.9**	**1.2**	**1.6**	**1.8**
Foreign GDP (%, q-o-q, seas. adjusted, effective)	0.6	0.6	0.4	-0.1	**0.1**	**0.1**	**0.1**	**0.3**	**0.4**	**0.5**	**0.5**	**0.5**
Foreign HICP (%, y-o-y, seas. adjusted, effective)	6.6	8.8	10.2	11.2	**9.4**	**7.7**	**6.2**	**4.2**	**3.4**	**2.8**	**2.4**	**2.1**
Foreign PPI (%, y-o-y, seas. adjusted, effective)	30.9	36.3	43.1	29.8	**16.8**	**7.5**	**-3.3**	**-2.1**	**-0.9**	**0.0**	**0.6**	**0.7**
Brent crude oil (in USD/barrel) (average)	97.9	112.0	97.7	88.6	82.2	**81.3**	**80.1**	**78.6**	**77.4**	**76.3**	**75.3**	**74.3**
3M EURIBOR (%, average)	-0.5	-0.4	0.5	1.8	2.6	**3.4**	**3.5**	**3.4**	**3.3**	**3.2**	**3.0**	**2.9**
USD/EUR (average)	1.1	1.1	1.0	1.0	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

Issued by:
CZECH NATIONAL BANK
Na Příkopě 28
115 03 Praha 1
Czech Republic

Contact:
COMMUNICATIONS DIVISION
GENERAL SECRETARIAT
Tel.: 224 413 112
www.cnb.cz

ISSN 2695-1177 (Print)
ISSN 2695-1185 (Online)