Economic and Monetary Developments

Autumn 2022

NÁRODNÁ BANKA SLOVENSKA
EUROSYSTÉM

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Abbreviations

bp	basis point(s)
CPI	Consumer Price Index
EA	euro area
ECB	European Central Bank
EC	European Commission
EONIA	euro overnight index average
ESA 2010	European System of Accounts 2010
ESCB	European System of Central Banks
ESI	(the European Commission's) Economic Sentiment Indicator
EU	European Union
EUR	euro
EURIBOR	euro interbank offered rate
Eurostat	statistical office of the European Union
GDP	gross domestic product
HICP	Harmonised Index of Consumer Prices
IMF	International Monetary Fund
MF SR	Ministry of Finance of the Slovak Republic
NACE	Statistical Classification of Economic Activities in the European Community (Rev. 2)
NARKS	Slovak National Association of Real Estate Agencies / Národná asociácia realitných kancelárií Slovenska
NBS	Národná banka Slovenska
NEER	nominal effective exchange rate
NFC	non-financial corporation
OECD	Organisation for Economic Co-operation and Development
p.a.	per annum
pp	percentage point(s)
PMI	Purchasing Managers' Index
PPI	producer price index
REER	real effective exchange rate
RRF	(the European Union's) Recovery and Resilience Facility
rrp	(Slovakia's) recovery and resilience plan
SMEs	small and medium-sized enterprises
SO SR	Statistical Office of the Slovak Republic
ÚPSVR SR	Office of Labour, Social Affairs and Family of the Slovak Republic / Ústredie práce, sociálnych vecí a rodiny Slovenskej republiky
USD	US dollar
VAT	value-added tax

Symbols used in the tables
. – Data are not yet available.
- – Data do not exist / data are not applicable.
(p) – Preliminary data

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1 Summary

Europe is facing a serious energy crisis as a result of the war in Ukraine, and governments are seeking to mitigate its impact on their economies. The effect of the crisis in European economies is seen mainly in price effects, with firms and households having to struggle with sizeable cost increases.

Europe performed better than expected in the first half of this year, but worse times are set to follow, expected to stem not only from elevated inflation, but also from a cooling of the global economy.

High inflation will probably be with us for some time. With the impact of elevated energy spot prices having been revised, our forecast for inflation over the next three years is now significantly higher compared with the summer 2022 forecast. Energy prices represent an increasingly large cost item for firms and are being passed on to selling prices. Throughout the first half of this year, we relied on market information in assuming that high energy prices would be temporary. Recent developments, however, have shown that prices cannot be expected to make a rapid return to pre-war levels. Hence the price trends for almost all components of the consumption basket have been revised up. Administered energy prices represent a major risk, and in this regard we continue to examine media reports of government measures concerning gas and electricity prices.

Falling consumer demand will hold back the economic recovery. During the recent difficult times when firms have been faced with component shortages, private consumption has been the driver of economic growth. However, elevated inflation will erode household incomes, and purchasing power is expected to slump. Households will be confronted with temporarily worse times, compounded not only by a decline in their real income, but also by housing unaffordability and higher loan repayments.

Private investment is likely to remain weak. Uncertainty caused the opaque situation and firms' inability to plan for the longer term will result in the postponement of investment decisions.

Government investment and foreign demand should at least partially offset the impact of declining private consumption. Now, as in 2015, the absorption of EU funds allocated during the previous programming period is expected to enter its final phase, and this time there will be additional funds from the EU's Recovery and Resilience Facility (RRF) through the implementation of Slovakia's recovery and resilience plan (RRP).

The deterioration in domestic demand will take a toll in the form of job losses. Lower use of services will lead to layoffs in the economy's services sectors. Firms' costs will rise, leading not only to investment deferral, but also to a reduction in employment. Moreover, the availability of labour is expected to worsen owing to population ageing.

The current forecast is more than usual surrounded by risks arising from a number of unknowns. The biggest risk is the evolution of energy prices, not only spot prices but especially administered prices for households. Overall price growth may therefore be higher or lower depending on public policies. If these serve to dampen the effects of energy price increases, then inflation will be lower and less of a constraint on consumer demand, with the result that the economy will be less likely to fall into recession next year. Other government compensatory measures are expected to have a similar impact. There is, however, also the risk that the energy crisis will deepen, leaving Europe without sufficient energy and placing production constraints on swathes of the economy in Europe and Slovakia. In this case, the Slovak economy is projected to contract by 4.3%.

Slovakia's fiscal deficit for 2022 is projected to be 3.6% of GDP. The current high inflation rate is generating resources to cover expenditure growth; however, this positive effect will be outweighed in coming years owing to the impact of newly adopted legislative measures and the full pass-through of inflation to social spending. In 2024 the deficit is projected to deteriorate to over 5% of GDP. Public debt is expected to fall significantly below 60% of GDP by the end of 2023. A deteriorating fiscal performance will gradually reverse this trend in 2024, when the debt is projected to rise again.

Table 1 Key economic indicators

	Actual data	Autumn 2022 forecast			Difference vis-à-vis the summer 2022 forecast		
	2021	2022	2023	2024	2022	2023	2024
GDP (annual percentage change)	3.0	1.8	-1.0	3.5	0.4	-2.9	0.0
HICP (annual percentage change)	2.8	11.7	18.3	5.0	1.3	7.2	2.7
Average nominal wage (annual percentage change)	5.9	8.2	11.6	9.0	0.1	2.0	3.4
Average real wage (annual percentage change)	2.7	-3.8	-3.9	4.3	-1.3	-3.6	1.2
Employment (annual percentage change; ESA 2010)	-0.6	1.8	-0.1	-0.4	0.3	-0.8	-0.2
Unemployment rate (percentage; Labour Force Survey)	6.8	6.2	6.7	6.8	-0.3	0.2	0.3

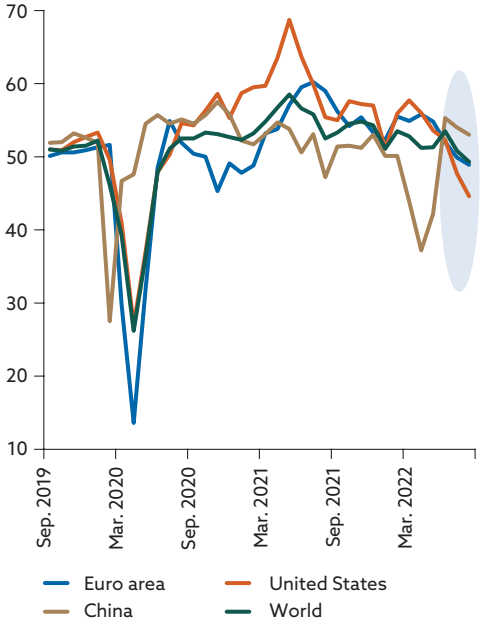
Source: NBS calculations.

2 Current macroeconomic developments in the external environment and Slovakia

2.1 External environment

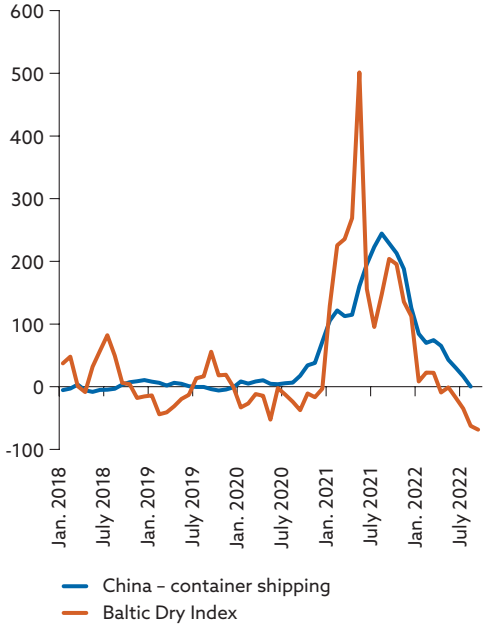
While still recovering from the pandemic crisis, the global economy was hit by Russia's invasion of Ukraine in early 2022. Amid fears and high uncertainty, prices of virtually all commodities increased following the outbreak of war, further amplifying inflationary pressures and interrupting the apparent economic recovery. In China, economic activity has weakened significantly due to a property market crisis and the imposition of pandemic lockdowns, with the result that the economy contracted in the second quarter. In the United States, the economy shrank in the second quarter for a second successive quarter, though several extraordinary factors were at play in this case. Talk of a recession is probably premature at this stage, but the slowdown in private consumption and investment does point to an economic cooling.

Chart 1
Composite Purchasing Managers' Index (PMI)



Source: Macrobond.

Chart 2
Shipping prices (annual percentage changes)



Source: Macrobond.

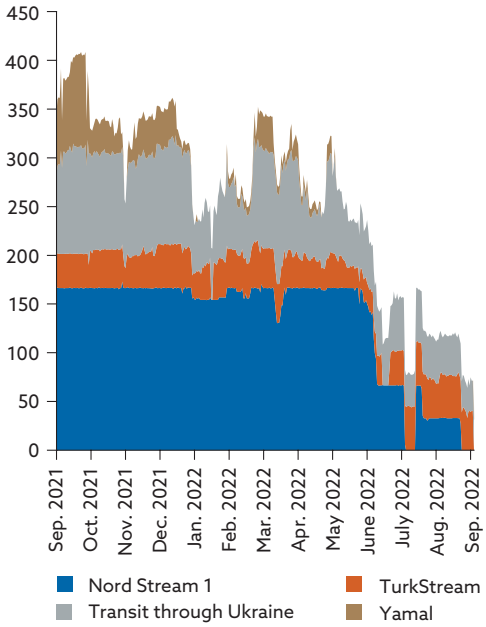
Recent months have seen an easing of supply chain tensions. Besides the receding of the pandemic and the measures taken to limit its spread,

another factor behind this development has been the moderating of (expectations for) global economic growth. A cooling of the global economy is also indicated by a number of leading indicators (Chart 1). Prices of several commodities that rose sharply at the start of the war have also declined. This is the case with metals prices, as well as with food commodity prices and oil prices. Waterborne transport has also become cheaper (Chart 2).

European countries are experiencing a strong supply shock. They are being hit particularly hard by the fallout from the war in Ukraine. Natural gas flows from Russia have been gradually reduced in response to the imposition of sanctions, and in the case of Nord Stream 1, they have been completely cut off (Chart 3). Concerns about energy being in short supply as winter approaches have led to a significant increase in gas prices and consequently also electricity prices. This dynamic is further accelerating headline inflation and weighing on the performance of several European economies. We are already seeing the curtailment of some, particularly energy-intensive, production.

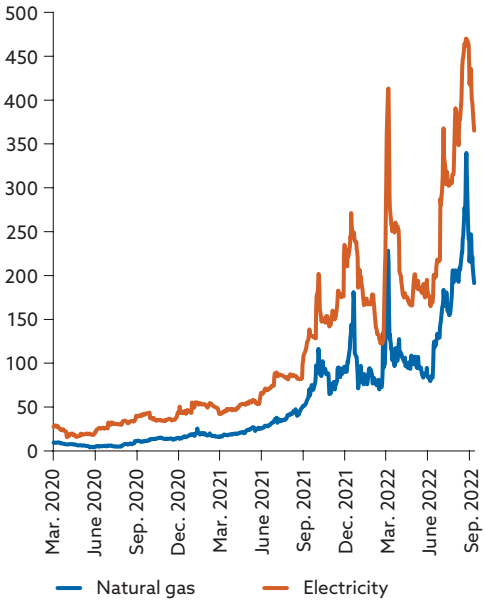
An EU-level initiative adopted in response to the tight energy market may significantly help to contain price increases and the economic impact. After the EU started publishing details of measures to mitigate the energy crisis (including consumption reduction measures, capping the revenues of non-gas power generators currently enjoying windfall profits, transfers to vulnerable consumers), there was a correction of the uptrend in gas and electricity prices, which nevertheless remain at high levels (Chart 4).

Chart 3
Gas flows to Europe (million cubic metres)



Source: Macrobond.

Chart 4
Germany: Futures (1st position) for prices of gas and electricity (EUR/MWh)



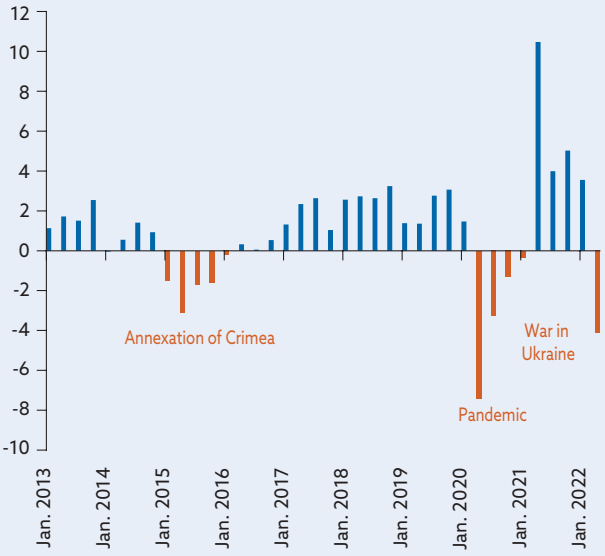
Source: Macrobond.

Box 1
The Russian economy and sanctions

The war in Ukraine is starting to have gradual repercussions on the Russian economy. Although the Russian economy has so far proved more resilient than initially assumed, it has fallen into recession. The sanctions imposed on Russia are affecting both its domestic demand and foreign trade. Higher import prices are having an upward impact on consumer price inflation and shortages of component and technology imports from advanced countries are disrupting the smooth functioning of the economy.

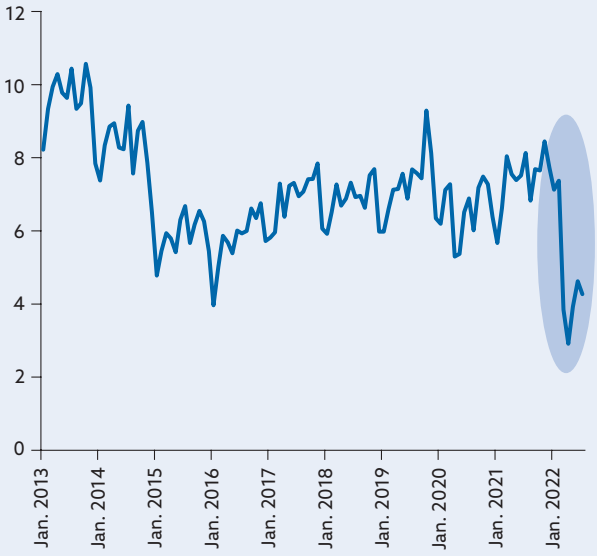
The Russian economy contracted by more than 4%, year-on-year, in the second quarter of 2022. The downturn would have been far more severe but for the rerouting of oil exports to Asian markets and high world oil prices. The introduction of capital controls and a sharp hike in interest rates at the start of the war also helped stabilise the economy. Moreover, Russia has increased social spending to support households and provided incentives for lending to sanction-hit sectors of the economy. Even so, the economic contraction in the second quarter was relatively large (Chart A).

Chart A
Russia: GDP (annual percentage changes)



Source: Macrobond.

Chart B
EU27: Goods exports to Russia (EUR billions)



Source: Macrobond.

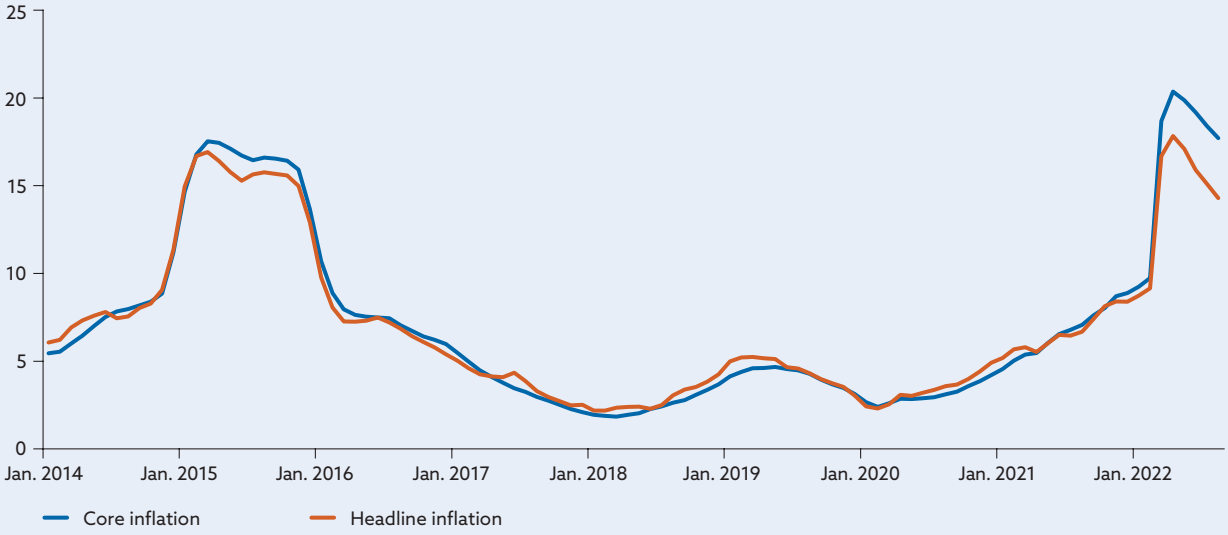
As a result of the sanctions, Russian imports from advanced economies have fallen sharply. The imports affected include, for example, aircraft parts, microchips and other sophisticated products. Goods imports from the European Union alone have slumped by more than 40% from their average volume in 2021 (Chart B). Import shortages will, over time, translate into shortages of spare parts for machinery imported from Western countries or of needed soft-

ware upgrades. Facing a shortfall in imports, Russian firms will have to reorganise their supply chains. At the same time, investment projects will be at risk without necessary imports from advanced economies.

Following the war's outbreak, consumer price inflation in Russia increased sharply. Although the exchange rate correction has helped ease price pressures, inflation remains elevated. Core inflation, i.e. inflation excluding energy and food prices, reached almost 18% in August. The rapid price growth is probably due also to the increase in demand for goods that are expected to become unavailable. Core inflation has even been outpacing headline inflation (Chart C), on which slowing fuel price growth in particular has been acting as a drag. Inflation, though moderating, remains high and living costs are rising, which is expected to weigh on consumer demand.

Chart C

Russia: Consumer price inflation (annual percentage changes)



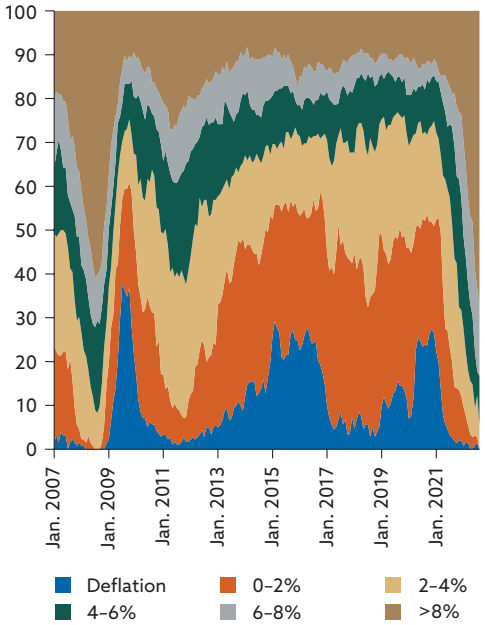
Source: Macrobond.

The sanctions are therefore starting to have a gradual impact on the economy. Imports are rising in price and many goods are becoming scarce. Sophisticated technologies, as well as spare parts, are increasingly difficult to acquire. The maintenance of machinery and production equipment will become more complicated, thereby placing constraints on production, as well as on investment, and affecting the economy's productivity. In the International Monetary Fund's July 2022 World Economic Outlook Update, the Russian economy is projected to contract by 6% in 2022 and by 3.5% in 2023.

The acceleration of inflation around the world, and in the United States and Europe in particular, is not only due to commodity price developments. In an increasing number of countries, inflation is reaching high lev-

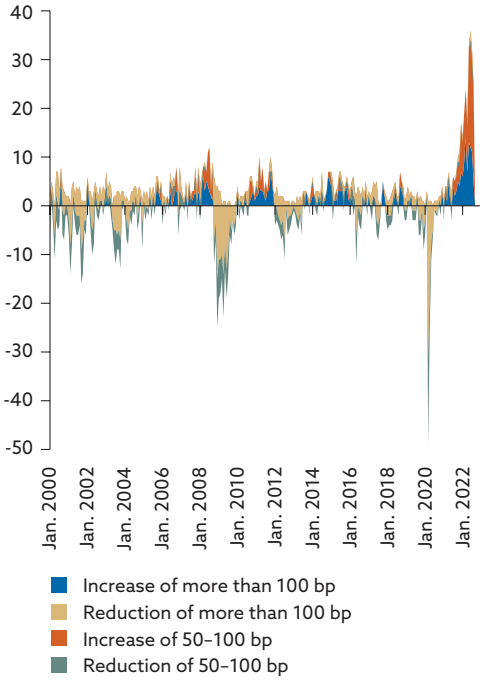
els (Chart 5), and this is naturally leading to a global cycle of monetary policy tightening. Several central banks have been reining in monetary policy quite sharply, with base rate increases of 100 basis points or more not being exceptional (Chart 6). The significant tightening of monetary policy in the United States, together with an increase in uncertainty, has contributed to the dollar's appreciation against currencies across the world. The euro, for example, has fallen below parity with the dollar. For a number of countries whose currencies have weakened against the US dollar, the result has been an increase in prices of imports denominated in US dollars, in particular oil and other commodities.

Chart 5
Share of countries within specific inflation bands (percentages)



Source: Macrobond.
Note: Covering 187 countries.

Chart 6
Central bank decisions on key interest rates (number)



Source: Macrobond.
Note: Covering 115 central banks.

2.2 Slovakia

2.2.1 Consumer prices

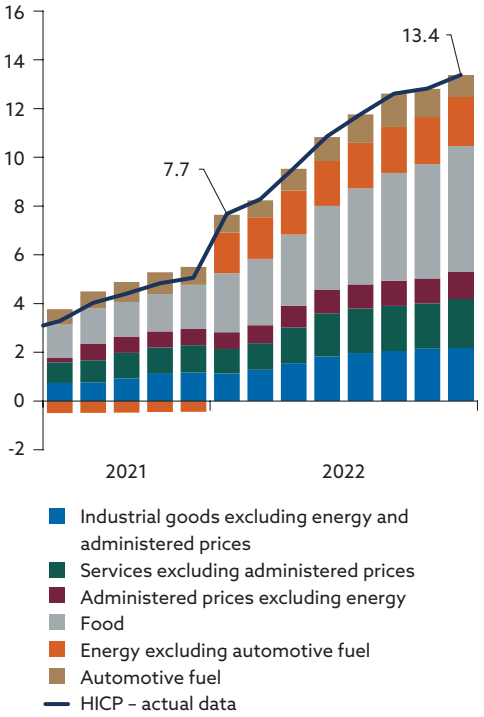
Upward pressures on prices continue to flow from the external environment, while indirect effects stemming from rising input prices and, to a lesser extent, domestic demand pressures, are also intensifying. Headline inflation stood at 13.4% in August (Chart 7), its highest level since 2000. A number of factors are building up and their effects are likely to be present for an extended period. Besides input price pass-through, other factors

playing a key role in price formation are trade linkages and the energy intensity of economies.

Cost factors such as commodities, energy and wages are gradually being reflected throughout the supply chain. Firms are adjusting selling prices to rising costs (Chart 8), and so far, after looking at corporate profit margins through the lens of both macrodata and microdata, we are not seeing excessive profits. Firms' markups remained roughly constant during the first half of this year (Box 2).

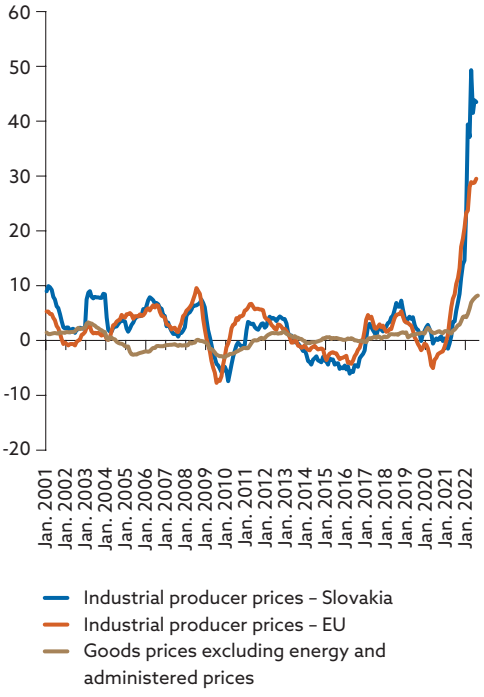
Food prices are rising fastest and making the largest contribution to inflation. Despite a partial decline in global food commodity prices after an agreement was reached on commodity exports from Ukraine, there are massive upward pressures on food prices. These pressures are being stoked by prices of inputs such as fertilisers, automotive fuels and energy, and also by weather effects.

Chart 7
HICP inflation and its components (annual percentage changes; percentage point contributions)



Sources: SO SR, and NBS calculations.

Chart 8
Producer prices and consumer goods prices (percentages)



Sources: SO SR, and NBS calculations.

Box 2
Firms' profits and profitability and their pricing

What is driving inflation in Slovakia to such unprecedented heights? Is it possible that firms are, so to speak, abusing the situation and increasing their profitability over what the rise in costs would justify? Analysis at both the macro and micro level indicates that this is not the case.

- At the macro level, looking at Slovak national accounts data, we see that the evolution of firm profitability over the past four quarters (Q3 2021 to Q2 2022) has not driven price growth beyond the observed increases in costs, but, on the contrary, has had something of a dampening effect.
- Upward pressure on prices is coming from the self-employed sector.[1]
- From a micro-level perspective – to complete the overall picture and make our findings more robust – we present an estimation of sectoral markups using firm-level data. The results show that despite turbulent times, there has been no significant change in the price-setting power of firms, i.e. markups have remained constant and the evolution of prices has mirrored that of marginal costs. This confirms our contention that firms are not raising their prices over the increase in their costs.

Macro view of firm profitability

From a macro perspective, we can view firm profitability through a decomposition of the GDP deflator on the income side, where the price level in the economy at period t is defined as the sum of labour income, corporate sector income,[2] and taxes relative to GDP[3]:

$$GDP\ deflator_{\ t} = \frac{Labour\ income_{\ t}}{Number\ of\ workers_{\ t}} \frac{1}{Labour\ productivity_t} + \frac{Corporate\ income_{\ t}}{Real\ GDP_{\ t}} + \frac{Self-employed\ income_{\ t}}{Real\ GDP_{\ t}} + \frac{Taxes_{\ t}}{Real\ GDP_{\ t}}.$$

Chart A shows the percentage point contributions to annual GDP growth of each summand in this definitional relationship.

---

1 The self-employed income item also includes income of non-profit organisations and imputed domestic production. At the national accounts level, these items cannot be disaggregated. Since in their cases, by definition, we cannot speak about price pressures, we attribute the contribution to the GDP deflator increase to growth in self-employed income.

2 Gross operating surplus (including gross mixed income). In addition to corporate income, this item includes self-employed income, income of non-profit organisations, and imputed income from households' domestic production.

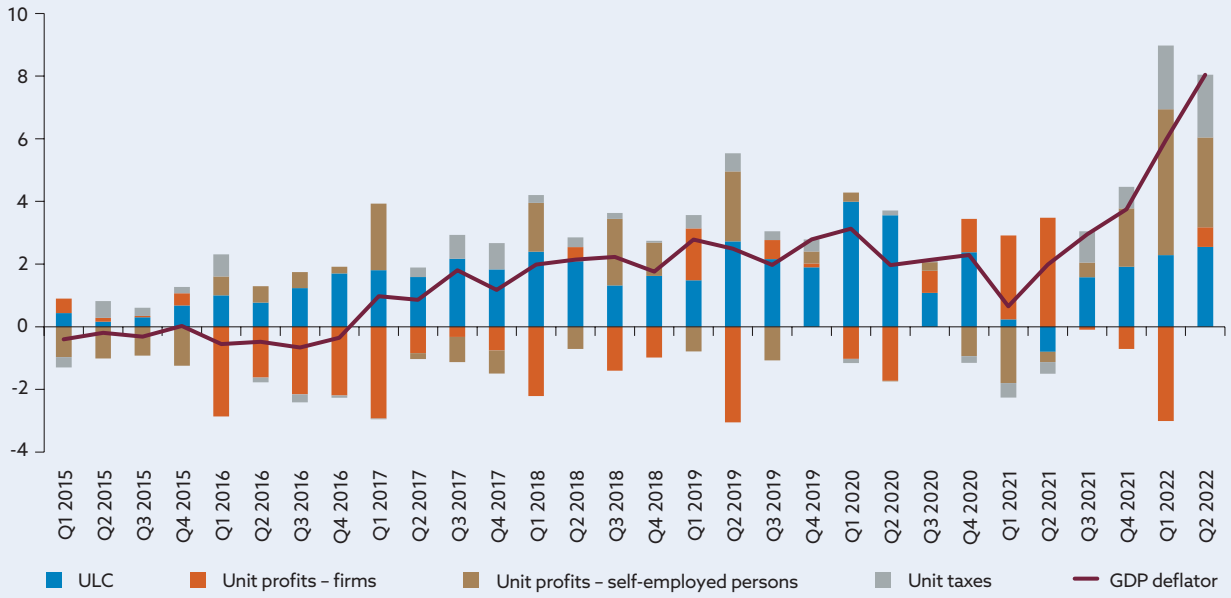
3 For statistical purposes, the sum is augmented by a residuum, but since its contribution is irrelevant to our calculations, we omit it for simplicity.

In recent quarters, the contribution of firm profits has been negative or very small and that of prices has been at historical averages, but the contribution of self-employed income has been above average.

Large firms' profitability is therefore not supporting price increases, but rather it is curbing them, and firms are not abusing the situation. The same, however, cannot be said of profits in the self-employed sector. The post-pandemic recovery of the labour market in Slovakia has been partly driven by an increase in the number of self-employed persons, yet also in per capita terms, income in this sector has risen sharply.

Chart A

Domestic price pressures in terms of the GDP deflator composition (annual percentage point changes)



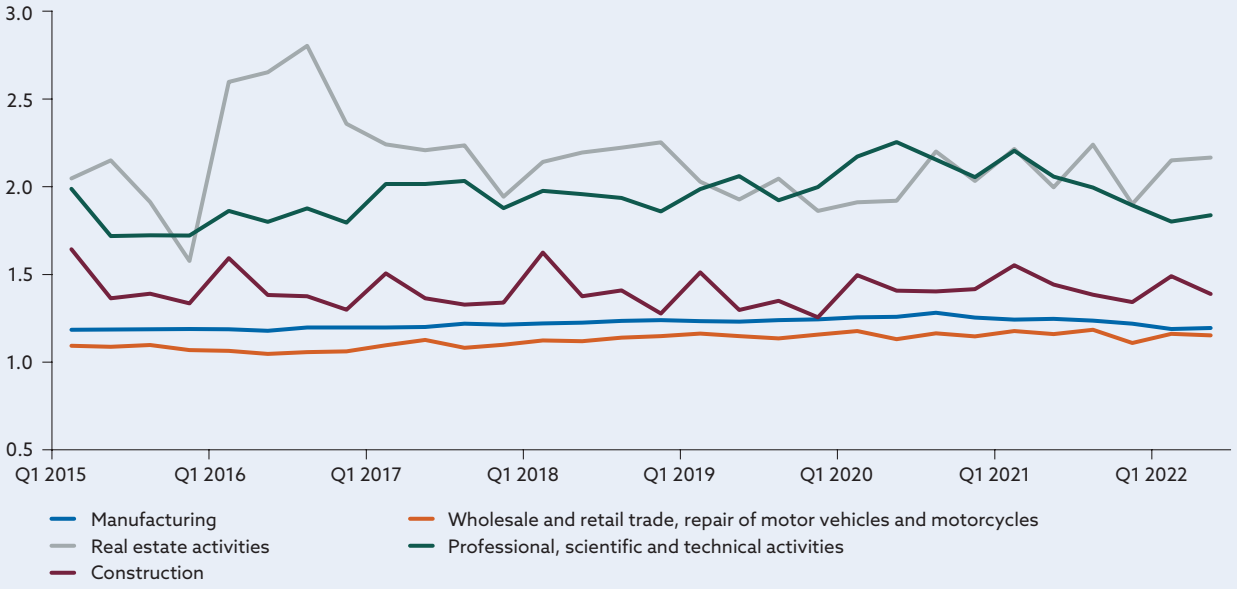
Source: NBS calculations.
Note: ULC – unit labour costs.

Evolution of markups over time

Firm-level markups are estimated on a database of large firms (with more than 20 employees). An increase in markups over time would indicate that firms are raising prices more than the increase in costs would justify, thus adding to the upward pressure on the price level. On the other hand, a fall in markups would indicate that firms are compressing their own profit margin to contain the rise in prices.

The key takeaway from our estimation result is that there has been no change in the price-setting power and dynamics of firms, with the evolution of prices mirroring that of marginal costs. Chart B presents the dynamic of markups over time. Their development does not show any surprising evolution, even in the second quarter of 2022. Our results imply that large firms are not raising their prices over the increase in production costs, possibly due to some competitive pressure.

Chart B
Average sectoral markup – selected sectors



Source: NBS calculations.

Services prices are being driven up by surging prices of energy, food and commodities, as well as the continuing uptrend in wage costs in an environment of labour shortages. But although services inflation is high, the main driver of net inflation acceleration since the economy's post-pandemic reopening in the second quarter of 2021 continues to be developments in non-energy industrial goods prices. Imports of these goods are increasingly expensive for two reasons. The first is the persisting shortages of components and materials and the second is high domestic energy prices and their pass-through to the manufacture of finished products. The transmission of these factors to final prices has up to now also been supported by consumer demand.

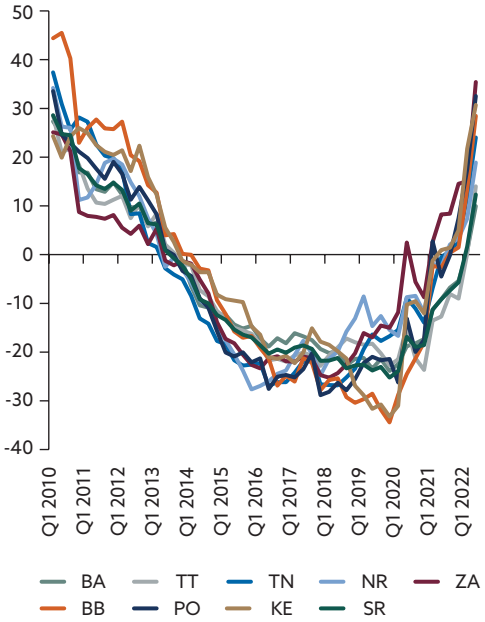
2.2.2 Residential property prices

Surging housing prices have reduced housing affordability, and our composite index suggests that weakening demand in the real estate market may result in a correction. Housing asking prices were 6.4%[4] higher in the

[4] From the first quarter of 2022, housing prices are being calculated using data from the United Classifieds database. For better interpretability, we have therefore revised the 2021 data on the basis of the new data. All the year-on-year and quarter-on-quarter rates of change are already calculated using the revised data.

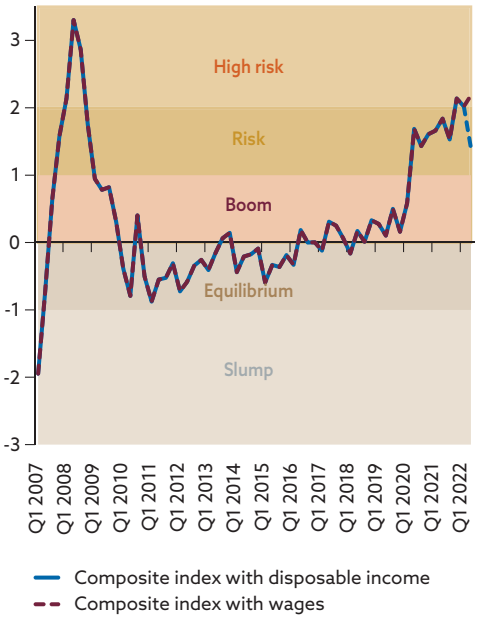
second quarter of 2022 than in the previous quarter, and the year-on-year price growth was 25.5%.

Chart 9
Housing affordability index (HAI) value as a ratio of its historical average (percentages)



Sources: NBS, NARKS, SO SR, and United Classifieds.
BA – Bratislava Region; TT – Trnava Region; TN – Trenčín Region; NR – Nitra Region; ZA – Žilina Region; BB – Banská Bystrica Region; PO – Prešov Region; KE – Košice Region.

Chart 10
Composite index to assess housing price developments



Sources: NBS, NARKS, SO SR, and United Classifieds.

The housing affordability index (HAI)[5] has reached its worst level since 2011 (Chart 9). The main factor in this regard has been interest rates on new housing loans, which in the first quarter of 2022 averaged 1.04% and in the second quarter were already up to 1.6%. On average for the whole of Slovakia, the HAI deteriorated by 10.6 points over the same period. If the average interest rate in the second quarter had been the same as in the first quarter, the HAI's increase would have been half as large (4.8 points).

Housing affordability as measured by the HAI is worst in Žilina, Prešov and Košice regions. In relative terms, housing in the Bratislava and Trnava regions appears to be the most affordable, owing mainly to the level of wages in these regions.

[5] The HAI calculation is based on a so-called adequate income derived from the current average cost of mortgage loan servicing (taking into account current housing prices and interest rates). The adequate income is compared with the wage level on a region-by-region basis. The final ratio is then interpreted in relation to the long-run average.

Assessments of the consistency of housing price trends with broader economic developments (by means of our composite index[6]) are now more than ever dependent on the choice of income indicator (Chart 10). Given the relatively strong growth in disposable income, driven mainly by growth in the income of self-employed persons, our standard indicator (in particular its price-to-income component) would point to a declining risk of price correction. If, however, we look at housing affordability more from the perspective of people living on wages (i.e. the method on which the HAI is based), that risk actually increases. Another component behind the composite index's increase is the ratio of residential construction to total GDP. Rents have increased faster than at any time since 2017, so the price-to-rent ratio is having a negative impact on the index.

Residential construction was 22% higher in the second quarter of 2022 than in the same period of the previous year. As regards flats, the number of dwellings started and completed was slightly lower year-on-year. On the other hand, the number of flats currently under construction continued its annual uptrend, as did the number of building permits issued. Residential construction continues to indicate a property market upswing.

Lending activity continued to support the property market during the first half of the year. The net flow of housing loans was well above average. Households were still seeking to take advantage of low interest rates and were taking out housing loans in significant volumes. The strong demand for property is expected to moderate amid rising interest rates, the downward impact of high inflation on real incomes, and the cooling of economic activity.

2.2.3 Economic growth

The Slovak economy grew more than expected in the second quarter of 2022, by 0.5% compared with the previous quarter. The economy coped better than projected with the war-related uncertainty, and the adverse effects on industry envisaged in the summer forecast only partly came to pass (Chart 11). Although households have helped the economy rebound towards its pre-pandemic level, it is still around 0.3% shy of that target (Chart 12). As estimated from current data, the probability of a recession is close to zero, but the risks of an economic downturn in the period ahead are increasing amid the inflow of negative information (Box 3).

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[6] In order to assess the impact of housing prices on financial and economic stability, we compare their evolution with the evolution of their underlying theoretical fundamentals. We do so using a composite index based on ratio indicators (the real housing price; price/income; price/rent; housing loans/households' gross disposable income; amount of residential construction/GDP). Further information on the composite index's compilation is provided in Cár, M. and Vrbovský, R., 'Composite index to assess housing price development in Slovakia', Biatec, Vol. 27, No 3, Národná banka Slovenska, Bratislava, 2019.

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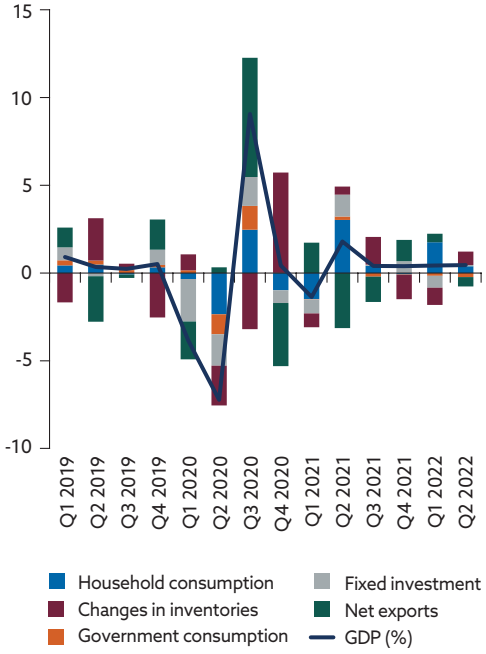
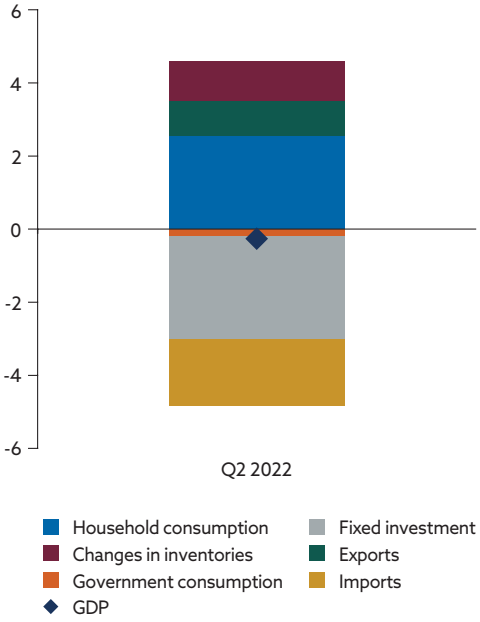
Chart 11
GDP (quarter-on-quarter percentage changes; percentage point contributions)



Sources: SO SR, and NBS calculations.

Chart 12
GDP components (difference vis-à-vis Q4 2019 in percentages)



Sources: SO SR, and NBS calculations.
Note: Imports are expressed with an opposite sign as they reduce GDP. They are, however, actually above the Q4 2019 level.

Box 3
Monitoring recession probabilities in Slovakia

Several economic indicators are now pointing to a weakening of activity. It is therefore important to monitor and regularly assess the possibility of being in a recession, which is roughly defined as a broad and significant decline in real economic activity. To evaluate it, we use a parametric approach along the lines of Chauvet and Piger (2008),[7] whose model closely captures the notion of recession as used by the leading recession dating institutions, that is the National Bureau of Economic Research (NBER) in the United States and the Centre for Economic Policy Research (CEPR) in Europe.[8]

The model we use to monitor recession probability includes four monthly indicators of real economic activity (industrial production, employees, turnover, and wages). This vector of

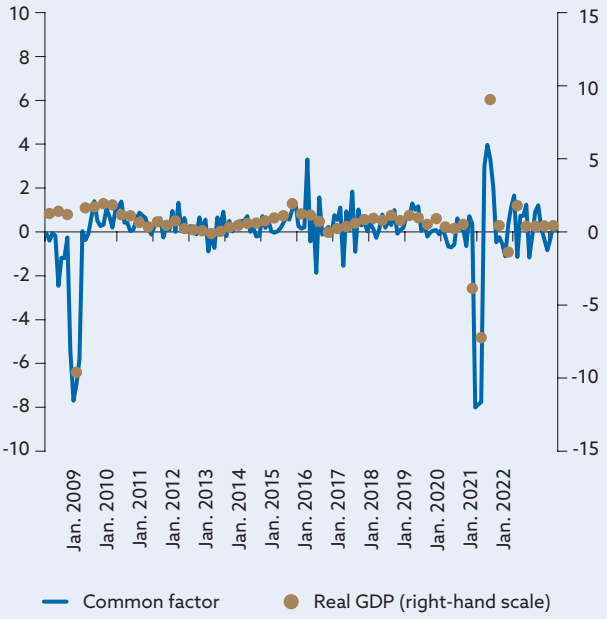
[7] Chauvet, M. and Piger, J., "A Comparison of the Real-Time Performance of Business Cycle Dating Methods", *Journal of Business and Economic Statistics*, Vol. 26, 2008, pp. 42-49.

[8] Previous efforts in this direction using Slovak data can be found in Tóth, P., "Kedy sme v recesii?" (When are we in recession?), *Discussion Note*, No 46, Národná banka Slovenska, 24 October 2017 (in Slovak only), and Tóth, P., "Are we in a √-shaped or a W-shaped recession?", *Discussion Note*, No 98, Národná banka Slovenska, 21 January 2021.

macro variables is governed by a dynamic common factor. Chart A shows how our estimated monthly common factor closely follows the behaviour of real GDP, which suggests that our four monthly indicators provide an accurate proxy of output developments.

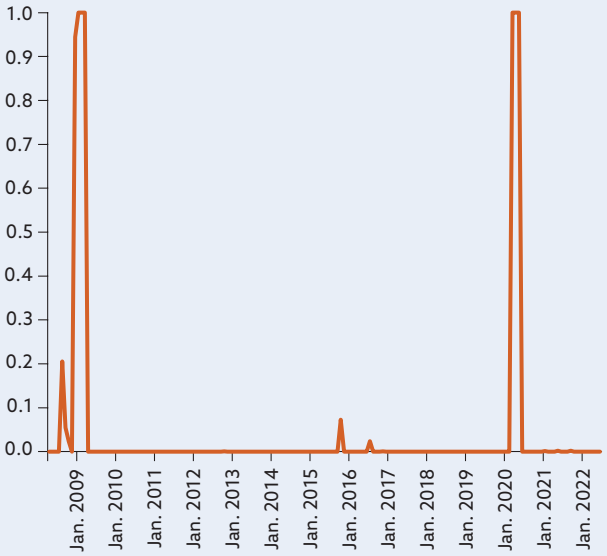
The model uses a regime-switching approach, consistent with the idea that the economy can be in expansion or recession. This allows us to estimate the probability of being in a recession each month (Chart B).

Chart A
Common factor of economic activity vs real GDP (quarter-on-quarter percentage changes)



Sources: SO SR, and NBS calculations.

Chart B
Probability of being in a recession



Source: NBS calculations.

Chart B shows that, according to our model, the probability of being in a recession in Slovakia during the first half of 2022 is about zero, even though some economic indicators show slightly negative behaviours during these first months of the year (Table A). As pointed out by the NBER and the CEPR, the identification of a recession requires simultaneous and deep adverse developments in several indicators over an extended period. The model finds two recessions in the period since April 2008. The first, from late 2008 through the early months of 2009, corresponds to the broad decline in economic activity observed during the Great Recession. The second recession appears at the start of the pandemic, from March to May 2020. These recession dates look rather reasonable taking into consideration the significant declining behaviour experienced by several macroeconomic variables during these two periods.

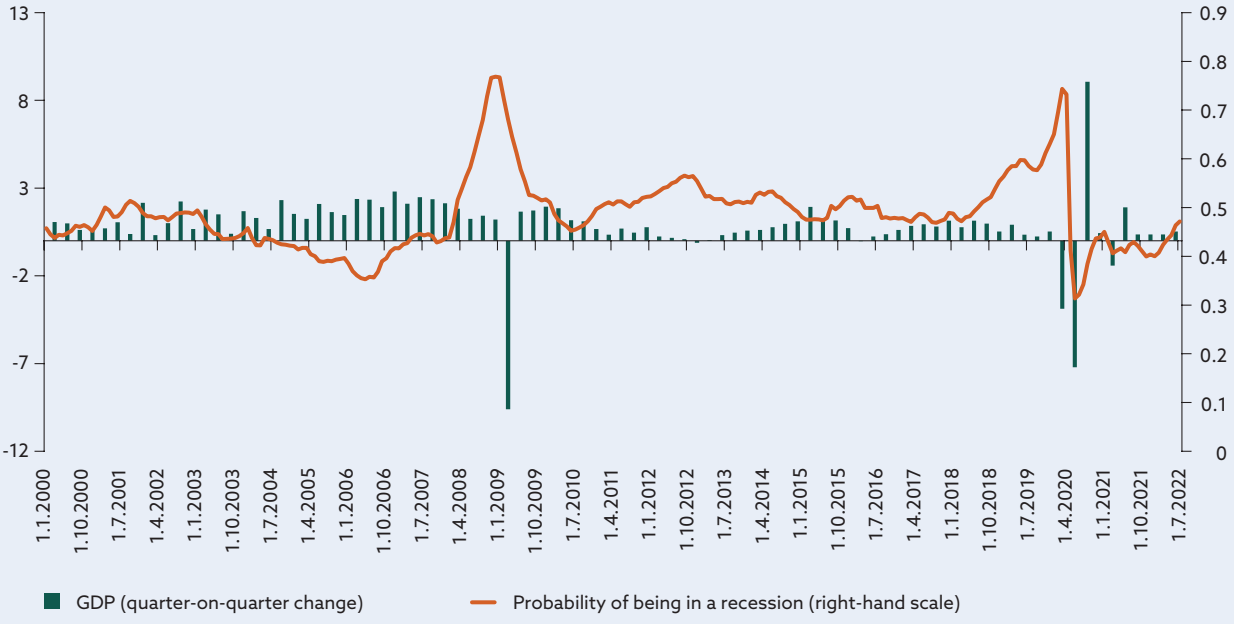
Table A Average behaviour of monthly indicators during recessions and in 2022 (average quarter-on-quarter percentage changes)

	Employees	Industrial production	Turnover	Wages	Exports	Retail trade	Unemployment rate	Sentiment (ESI)
Recession[1)]								
Recession 1: Dec. 2008 – Mar. 2009	-3.8	-6.9	-11.9	-0.4	-11.5	-7.6	14.7	-18.6
Recession 2: Mar. 2020 – May 2020	-2.8	-28.4	-21.4	-5.8	-31.5	-11.2	26.6	-30.7
Recent developments								
January – June 2022	0.3	-1.3	0.2	-2.4	-0.8	0.9	-4.5	-0.3
April – June 2022	0.3	-0.6	0.0	-2.6	-1.4	0.4	-6.3	-0.4

Sources: SO SR, and NBS calculations.
1) Recessions correspond to those months in which the probability of being in a recession according our Markov-switching model is higher than 80%.

The low probability of being in a recession is also confirmed by the updated estimates of the model used in Tóth (2021).[9] However, the gradually increasing probability since the start of this year indicates a rising risk of a future economic downturn (Chart C).

Chart C
Probability of being in a recession in Slovakia (percentages)

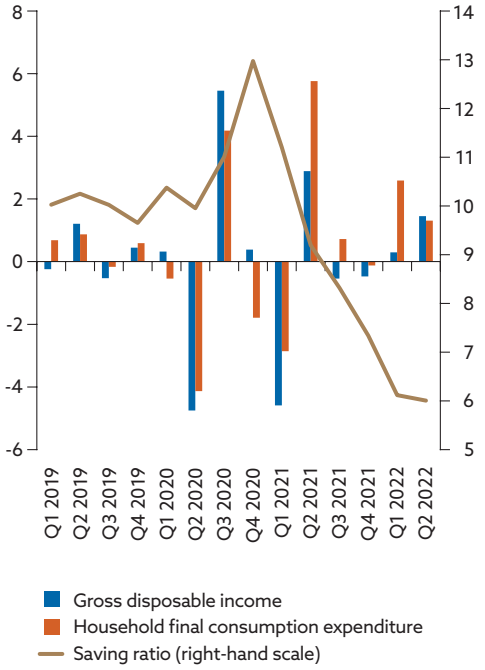


Sources: SO SR, and NBS calculations.

[9] Tóth (2021) uses the model of Leiva-Leon, D., Perez-Quiros, G. and Rots, E., "Real-time weakness of the global economy: a first assessment of the coronavirus crisis", *Working Paper Series*, No 2381, ECB, Frankfurt am Main, March 2020.

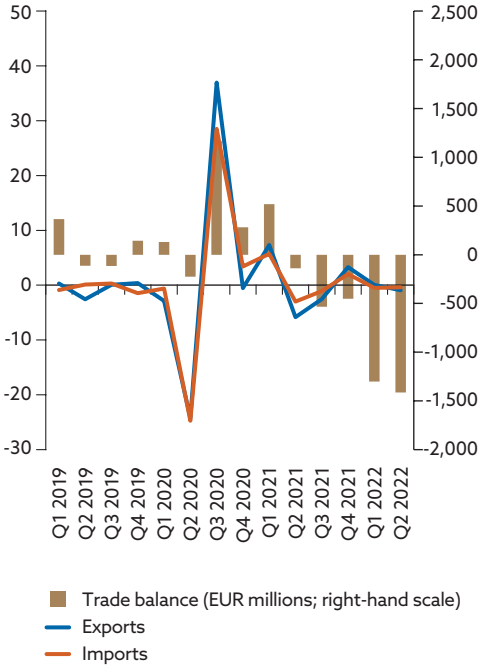
Despite rising inflation, households have continued to increase their consumption moderately. With the onset of spring and the fading of the pandemic, tourism picked up and the use of services continued to increase. Although further eroded by inflation, household income growth has been supported by an uptrend in sole traders' incomes as well as by a one-off benefit to compensate targeted beneficiaries for the impact of high inflation. Although households have not had to draw on their savings to any significant extent, the saving ratio has remained at low levels (Chart 13).

Chart 13
Household income and consumption (constant prices; quarter-on-quarter changes)



Sources: SO SR, and NBS calculations.

Chart 14
Trade balance (constant prices; quarter-on-quarter percentage; balance at current prices)



Sources: SO SR, and NBS calculations.

Exports fell only slightly in the second quarter, despite negative expectations. Existing supply problems were exacerbated by the war in Ukraine and pandemic-related lockdowns in China. Firms managed to adapt to this situation relatively quickly, and by the end of the quarter they were already recouping some of their losses from the early period of the war (Chart 14). In some sectors, however, output is being heavily affected by high input prices that are forcing firms to curb energy-intensive production. The uncertainty surrounding the future evolution of prices and the signs of declining demand suggest that exports will remain low in the near term.

Private firms' investment activity remained minimal in the second quarter of 2022, while government investment has not yet taken off. Given the uncertainty about future developments in prices and demand, firms

cannot plan future activities, whether in production or in the area of investment. Construction production has been subdued for a long time and, given current prices in the construction sector, is not expected to pick up significantly. Public investment has been flat since early 2022[10] and its level is similar to that of a year ago. A decline in own resource spending is being offset by higher EU funding. At the local government level, however, there has been a slight increase in investment ahead of local elections.

The nominal uptake of funds from the EU budget increased in the second quarter by 5% year-on-year (Chart 15). Financing of environmental projects and teacher training contributed to this upturn. Economy-related spending, accounting for around half of total spending, contributed negatively to growth in EU funds absorption for a fourth successive quarter. This area includes high-cost infrastructure investments, which traditionally absorb the bulk of EU structural assistance. While projects under the Trans-European Transport Network (TEN-T) have progressed quite rapidly at the aggregate level, other spending on expressways and regional roads and on the modernisation of rolling stock and urban public transport has stagnated, hence the negative contribution to the growth in EU funds absorption.

Projects related to the financing of COVID-19 pandemic measures also contributed to the uptake of EU funds during the second quarter. These included an extraordinary payment to social services staff and support for institutional capacities aimed at fighting the pandemic. Without the pandemic-related projects, the uptake of EU funds in the second quarter would have been similar to that in the same period of the previous year.

The rising price level has had an impact on the uptake of EU funds in real terms. At constant prices, EU fund disbursements fell by 3% in the second quarter. So, although the volume of funds absorbed increased year-on-year, less activity is likely to have taken place given the effect of rising input prices.

[10] The lower investment this year is due, inter alia, to the donation of military equipment to Ukraine, as well as to a year-on-year reduction in spending at ZSSK, whose purchases of rolling stock were more significant last year.

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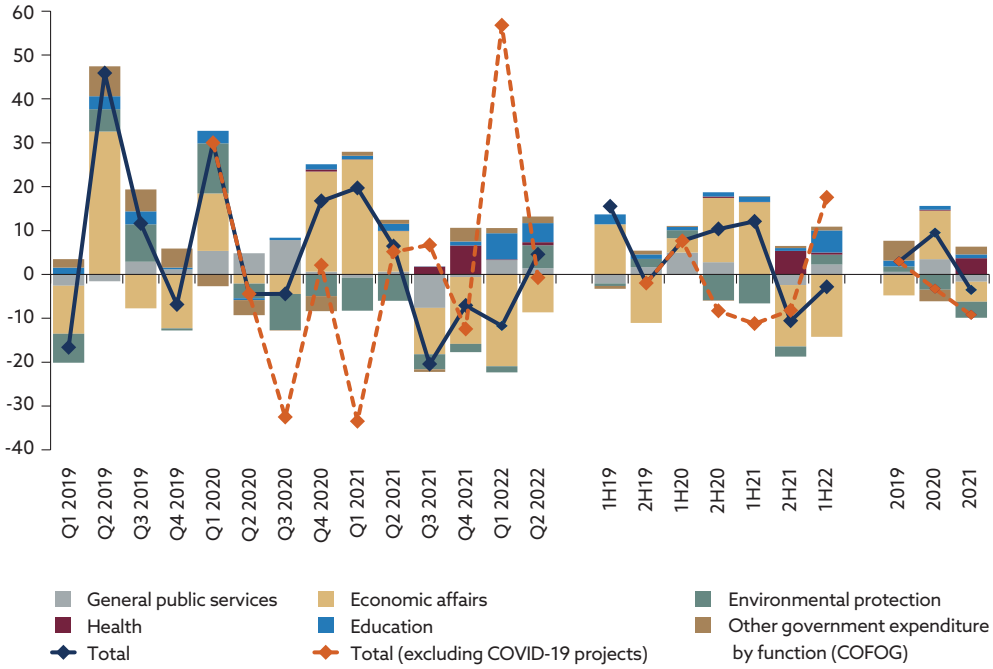
Chart 15

EU-funded expenditure[1] in Slovakia (current prices, annual percentage changes)



Sources: State Treasury of the Slovak Republic, IMTS 2014+, and NBS calculations.
1) Adjusted for transfers to financial instruments.

High corporate settlements and higher VAT on consumer goods are driving growth in cash tax revenues. Aggregate data for deferred tax returns for June confirmed the favourable trend in corporate income tax in 2021, where returns are filed on an accrual basis. It is expected to record significant year-on-year growth of more than 20%. VAT receipts are also surprising on the upside, as rising prices of goods and services resulted in their significant year-on-year increase in the second quarter, most notably in sectors such as wholesale trade, retail trade and energy supply.

Government consumption continued growing in the second quarter, owing mainly to higher spending on goods, services and health care. At the same time, high energy prices are taking a toll in the public sector. The first half of the year saw significant increases in energy spending by healthcare institutions, the state-owned railway infrastructure operator (ŽSR), the state-owned rail passenger transport company (ZSSK), public universities, and municipalities. Spending on materials also increased, and while, as expected, wage expenditure rose moderately in the first half of the year, the collective bargaining agreement will have a notable upward impact on wage growth in the second half of the year.

Box 4
Qualitative assessment of cyclical conditions

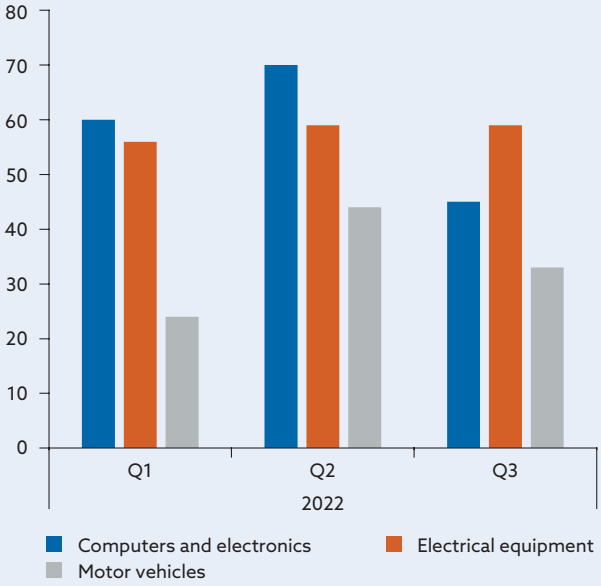
Business sentiment in Slovakia is deteriorating. Since the outbreak of war in Ukraine, confidence has been falling in all surveyed business sectors. It is clear from their survey responses that leading Slovak employers continue to face not only supply chain bottlenecks, high input prices and increasing shortages of skilled labour, but also, even more concerningly, cost pressures due to soaring energy prices.

Industry confidence is being undermined by uncertainty. Many manufacturing companies, depending on the sector, are still dealing with the adverse effects of the pandemic crisis. This is particularly the case with firms dependent on imports of commodity and material inputs (Chart A) that are still in short supply due to supply chain disruptions. They are facing not only longer delivery times, but also problems related to the maintenance or roll-out of new technology and the dragging-out of investment projects in this area. Some firms have responded to supply flow uncertainties by frontloading, but that in turn is increasing their transportation and storage costs while tying up significant financial resources. Input shortages are now not expected to abate until late 2023 or 2024. In addition to shortages and rising prices of materials, firms are also confronted with surging energy prices.

High prices and shortages of fossil fuels are jeopardising manufacturing. Some firms have partly managed to pass on energy prices increases to selling prices. In the case of contracted orders, where there is no leeway to respond to price changes, many firms are producing at a loss. A full pass-through of costs to product prices could, however, lead to a decline in demand and competitiveness, not only domestically but also in foreign markets. Firms are therefore introducing measures to save on energy costs, but often they can do so only at the expense of production, with a potentially adverse impact on employment as well as on external suppliers. Skilled labour shortages are another factor limiting production, with demand being particularly high for workers with specific skills. Firms are trying to poach such employees from rivals.

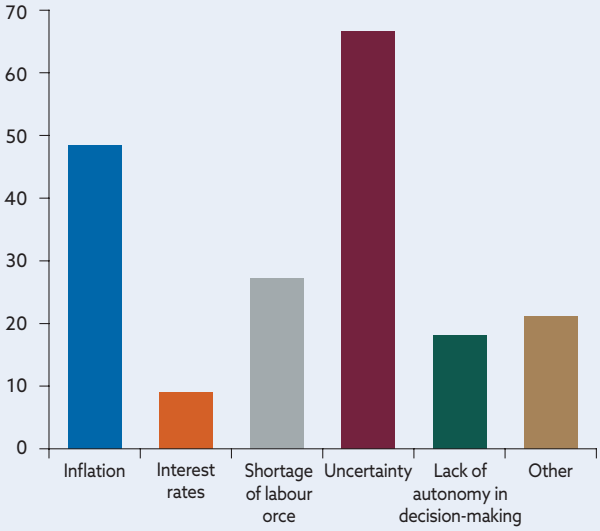
Although uncertainty about future developments is weighing on corporate investment plans (Chart B), some firms are pressing ahead with investment projects, usually in order to expand production capacity or modernise technology. The pandemic crisis and current situation in the energy market are accelerating the green transition and digitalisation process, which include possibilities to obtain financial support under specific government programmes.

Chart A
Shortage of material and/or equipment as a factor limiting production among producers using electronic components (percentage of respondents)



Source: European Commission.

Chart B
Factors affecting investment (percentage of respondents)



Source: NBS survey.

Optimism in the services sector moderated with the arrival of summer. After falling at the start of the year, services confidence rose in the second quarter to above its pre-pandemic level, but then weakened in the summer months. The downward impact of inflation on households' purchasing power contributed significantly to the drop in confidence, and firms are expecting demand to soften. Moreover, the provision of services is being hindered by acute labour shortages, exacerbated by job reallocation in the wake of the pandemic crisis.

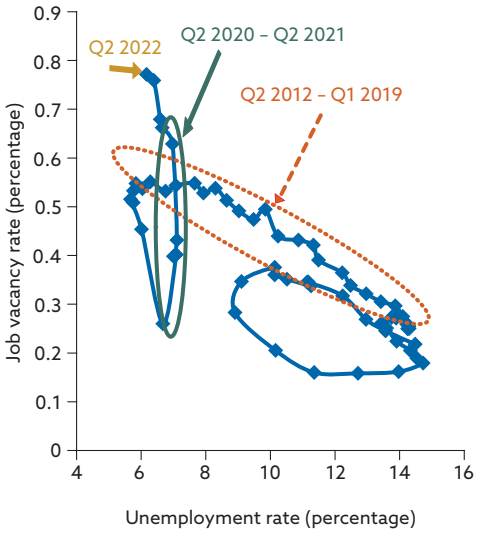
The pandemic period has been followed by a period of high inflation and uncertainty. The uncertainty is making it difficult for firms to make plans and set prices. Many respondents from all sectors agreed that cost pressures related to extremely high and unpredictable energy prices represented an existential risk to their business. They therefore consider it essential for the government to provide support to sustain their activities as well as to improve the business environment and competitiveness.

2.2.4 Labour market

The labour market situation in Slovakia, as in other countries, remains favourable and shows signs of overheating. Although employment is not yet back to its pre-pandemic level, there is still a high vacancy rate for open job positions and firms are relatively optimistic about the future.

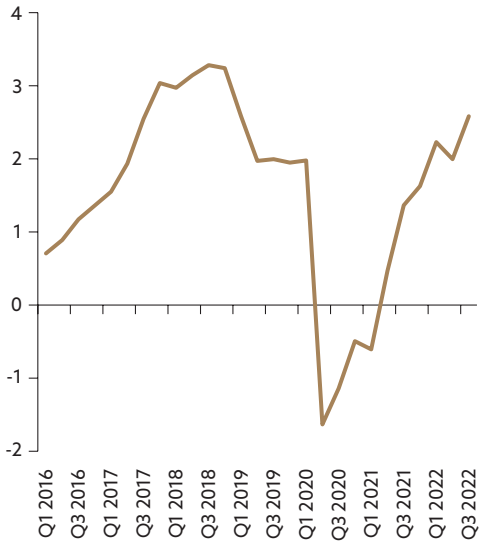
Indicators in the second quarter signalled a continuation of labour market tightness. The unemployment rate was slowly approaching pre-pandemic levels, and the job vacancy rate reached a historical high (Chart 16). At the same time, managers' survey responses show that 'shortage of labour force' is one of the main factors limiting production and is constraining further expansion. The labour market tightness indicator (Chart 17) is at high, almost pre-pandemic, levels.

Chart 16
Beveridge curve



Sources: SO SR, www.profesia.sk (online job portal), NBS calculations.
Note: The Beveridge explains the relationship between the unemployment rate and the job vacancy rate.

Chart 17
Labour market tightness indicator



Sources: SO SR, and NBS calculations.

Around sixteen thousand people found employment in the second quarter of 2022 (Chart 18). Approximately half of that number were refugees from Ukraine (Chart 19) filling vacancies that had been open for a long time. With demand increasing following the unwinding of pandemic containment measures, recruitment in the trade and services sectors made the largest contribution to overall employment growth.

Favourable labour market developments also resulted in an increase in the economically active population, with the people returning to employment from inactivity comprising mainly workers who had been discouraged or who had opted to stay at home for family reasons. As a result, the number of economically active people rose above the pre-pandemic level.

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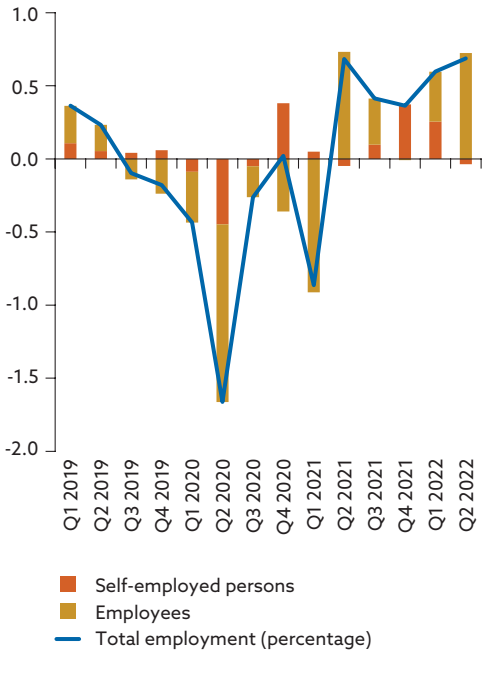
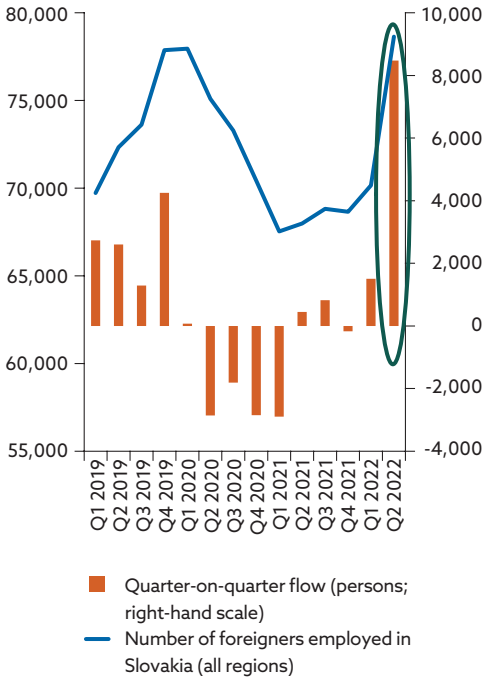
Chart 18
Employment (quarter-on-quarter percentage changes; percentage point contributions)



Sources: SO SR, and NBS calculations.

Chart 19
Number of foreigners employed (persons)



Sources: ÚPSVR, and NBS calculations.

Annual wage growth slowed slightly in the second quarter of 2022, and real wages declined quite sharply. In some sectors in which labour demand has been growing over the past year, wage growth is in double digits (Chart 20). These sectors include trade, accommodation services, transportation, and recreation and culture. In the public sector, the wage increases negotiated for this year are very low and therefore wage growth has been slight. As a result, high inflation has significantly reduced the purchasing power of public sector employees (Chart 21). Their situation is expected to improve next year, with the government having agreed to a higher indexation of their wages in that period.

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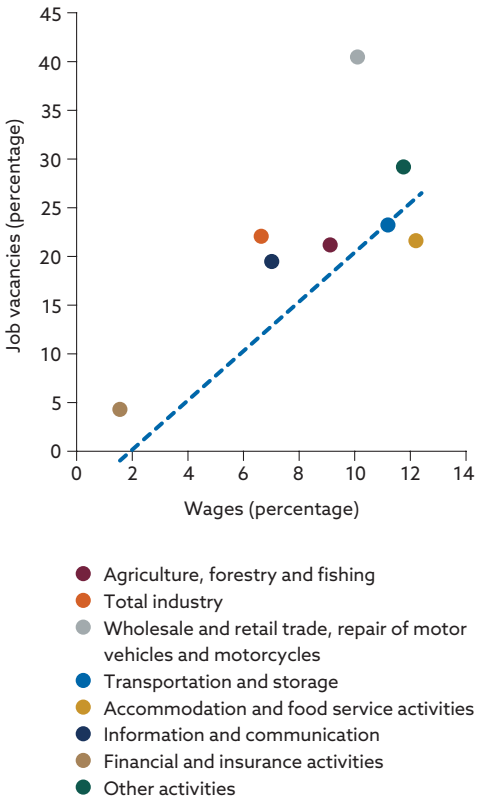
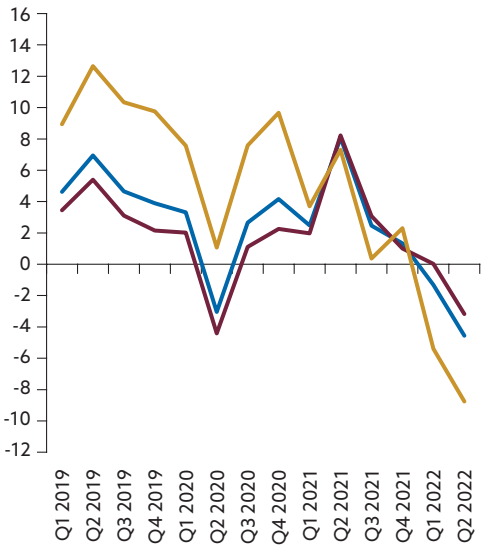
Chart 20
Wages and the number of job vacancies (annual percentage changes)



- Agriculture, forestry and fishing
- Total industry
- Wholesale and retail trade, repair of motor vehicles and motorcycles
- Transportation and storage
- Accommodation and food service activities
- Information and communication
- Financial and insurance activities
- Other activities

Sources: SO SR, and NBS calculations.

Chart 21
Real wages (annual percentage changes)



- Economy as a whole
- Public sector
- Private sector

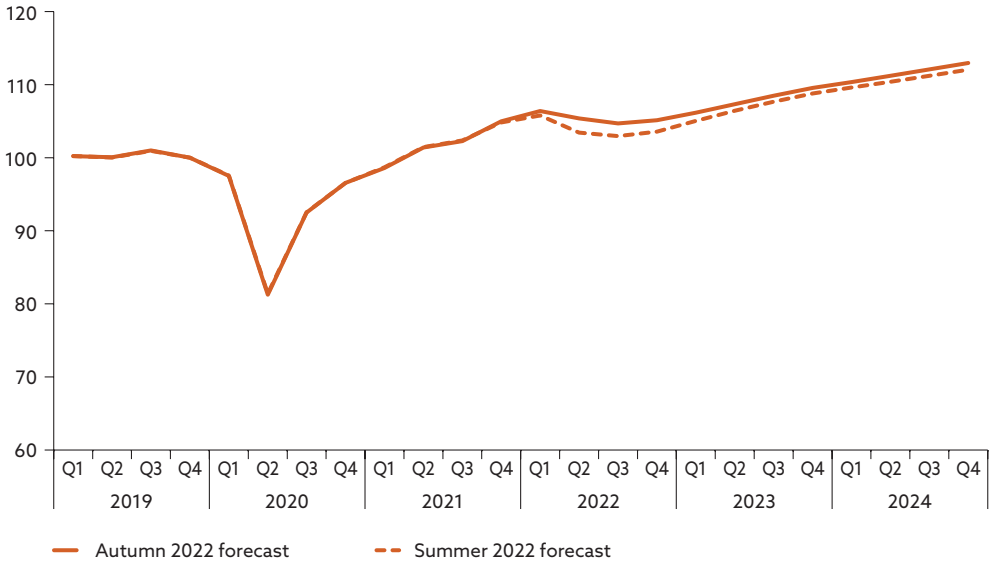
Source: SO SR.

3 Medium-term forecast

3.1 Global outlook and technical assumptions of the forecast[11]

Compared with our summer forecast, the outlook for foreign demand for Slovak products is improving, but we still expect a permanent decline in demand due to the war in Ukraine. Until the Russia-Ukraine war broke out, the foreign demand index (Chart 22) had been rising continuously since its pandemic-related slump in 2020, despite supply chain disruptions weighing on demand from Slovakia's trading partners. These disruptions did not, however, risk a permanent drop in foreign demand. By contrast, the war is having a permanent downward impact on the expected volume of Slovakia's foreign trade. This is mainly due to the loss of trade with Russia, which cannot be fully made up for elsewhere. The assumption for the level of foreign demand is 0.8% higher in this forecast than in the summer forecast, while it remains lower compared with the winter 2021 forecast, by almost 3%.

Chart 22
Foreign demand (index: Q4 2019 = 100)



Source: NBS calculations.

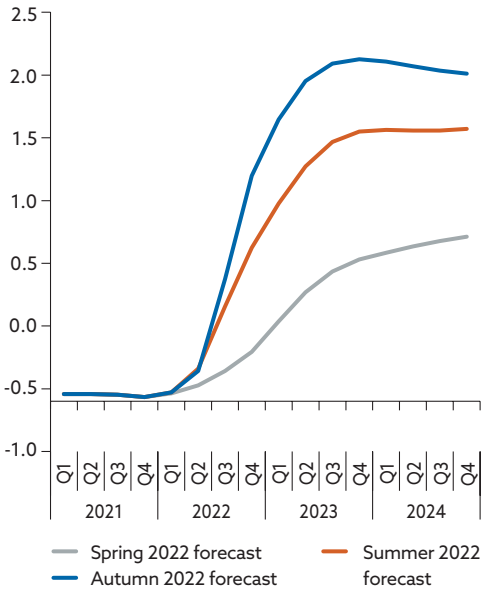
Compared with the previous forecast, the assumptions for oil prices in US dollars have been revised down, with prices expected to decline from the start of the third quarter of this year until the end of 2024. Given, however,

[11] The technical assumptions of this medium-term forecast are based on the September 2022 ECB staff macroeconomic projections for the euro area.

the weakening euro exchange rate, our assumptions for oil prices in euro have been revised up across the projection horizon.

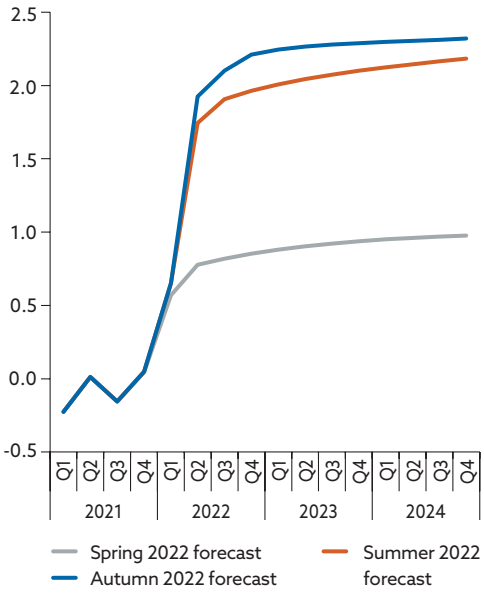
Monetary policy tightening in response to rising inflation and an upward revision of market expectations for interest rates have translated into a further increase in short-term and longer market interest rates (Charts 23 and 24).

Chart 23
Three-month EURIBOR



Sources: European Commission, and NBS calculations.

Chart 24
Ten-year Slovak government bond yield



Sources: SO SR, and NBS calculations.

Table 2 External environment and technical assumptions (annual percentage changes, unless otherwise indicated)

	Actual data	Autumn 2022 forecast			Difference vis-à-vis the summer 2022 forecast		
	2021	2022	2023	2024	2022	2023	2024
Slovakia's foreign demand	10.7	3.5	2.4	3.5	1.5	-0.6	-0.1
USD/EUR exchange rate [1), 2)] (level)	1.18	1.05	0.99	0.99	-2.3	-5.6	-5.6
Oil price in USD [1), 2)] (level)	71.1	105.5	90.5	82.9	-0.3	-3.1	-1.7
Oil price in USD [1)]	71.3	48.4	-14.2	-8.4	-0.4	-2.5	1.4
Oil price in EUR [1)]	65.7	67.6	-9.6	-8.4	3.2	0.4	1.4
Non-energy commodity prices	42.1	7.1	-9.8	-1.2	-7.2	-4.9	5.1
Three-month EURIBOR (percentage per annum)	-0.5	0.2	2.0	2.1	0.2	0.6	0.5
Ten-year Slovak government bond yield (percentage)	-0.1	1.7	2.3	2.3	0.2	0.2	0.2

Sources: ECB, SO SR, and NBS calculations.
Notes:
1) Annual percentage changes and changes vis-à-vis the previous forecast are calculated from unrounded figures.
2) Differences vis-à-vis the previous forecast are in percentages.

Since the geopolitical situation remains highly uncertain, it is important to point out our assumptions for how the situation will evolve, as follows:

- The war in Ukraine will continue; neither an early end to the conflict nor the lifting of sanctions is envisaged.
- In some areas of foreign trade that rely on supplies of raw materials or commodities from Russia, there will be supply chain disruptions. Embargoes on coal and oil imports are factored in.
- The winter weather is not expected to be so extremely cold that demand for gas would exceed past levels.
- Energy prices will come under strong upward pressure from supply-side factors, but they will eventually start falling again.

3.2 Macroeconomic forecast for Slovakia

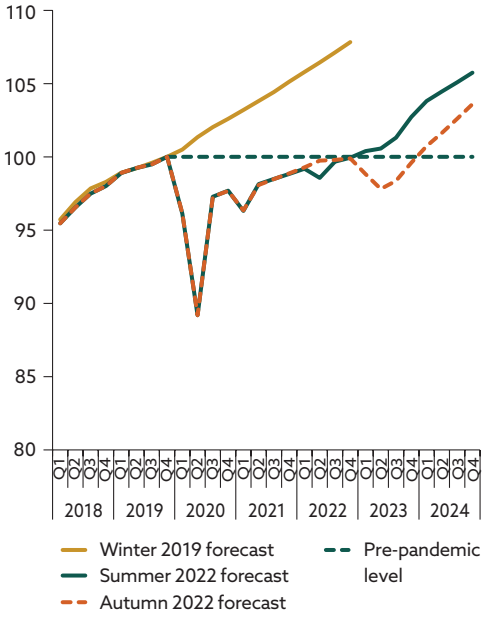
3.2.1 Economic growth

Compared with the summer forecast, our projections for the economic situation have deteriorated significantly owing to a revision of the inflation outlook (Chart 25). The risks of a larger and longer-lasting pass-through of high input prices to consumer prices are materialising, and the energy crisis is adding further impetus to inflation. The current high level of energy prices will spill over into administered energy prices for households from next January, with the overall price level potentially rising by more than 18% in 2023.

Falling private consumption will weigh on the economy in the near term (Chart 26). Exports will remain subdued owing to the energy crisis in Europe, the war in Ukraine, and component shortages, and they are not expected to pick up until next year. Adverse developments can only partly be compensated by EU-funded investment.

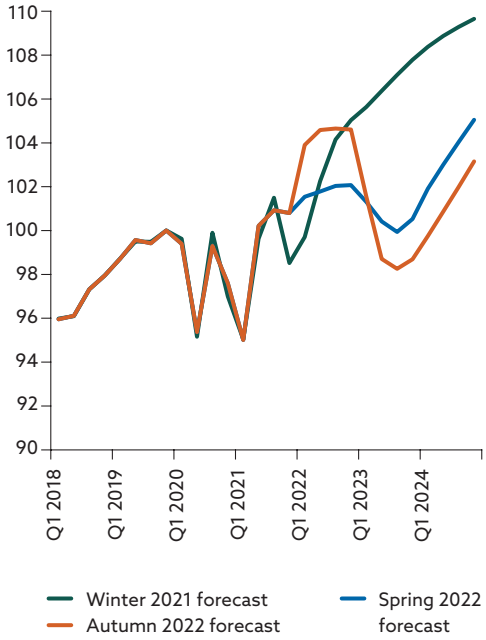
Rising inflation will erode households' purchasing power, causing consumer demand to decline and therefore dragging the economy into recession next year. While the first half of the year was still a time of consumer optimism, the economic outlook has worsened markedly because of the energy crisis. Accelerating inflation will have an increasing downward impact on household incomes. The cumulative decline in real incomes over 2022 and 2023 will reach more than 11%. Such an adverse evolution of incomes has never been seen before in Slovakia. Consumer demand is therefore expected to fall in the period ahead. The situation is expected to improve in 2024 as inflation recedes from its elevated level.

Chart 25
GDP projections (index: Q4 2019 = 100)



Source: NBS calculations.

Chart 26
Level of private consumption (index: Q4 2019 = 100)

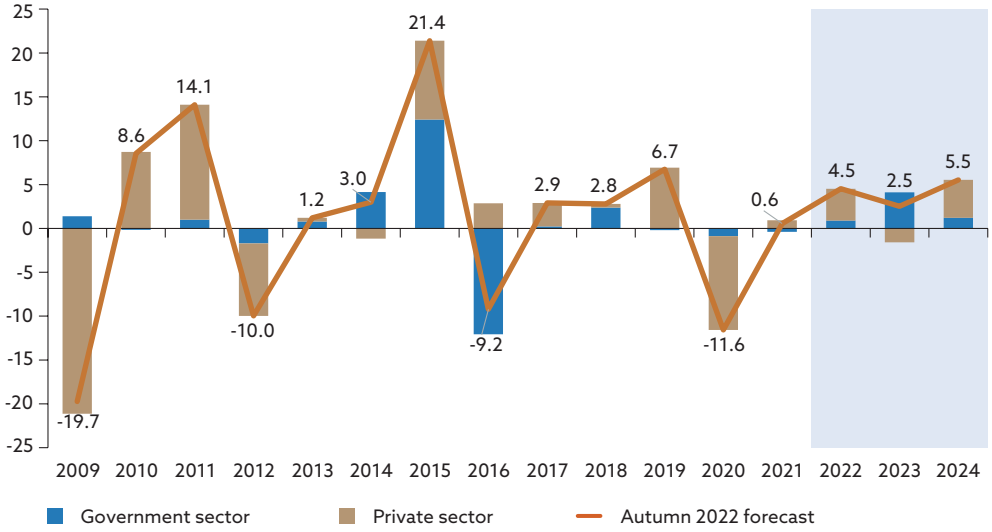


Source: NBS calculations.

Exports will in coming months be hit by a global slowdown in economic activity. Global demand is being constrained by the energy crisis, war in Ukraine and lockdowns in China. Component shortages remain a major obstacle for exporters, and a return to normal is not expected until next year. The Slovak economy is probably unable to recoup past market share losses. The energy crisis is expected to be limited, with industry shutdowns in Europe not envisaged. Foreign demand for Slovak products and services is therefore expected to pick up next year.

Persisting uncertainty will weigh on investment, the projections for which have been revised down. Investment is the only GDP component that remains below its pre-pandemic level and will not rise above that level until 2024 (Chart 27), largely doing so, however, on the basis of government investment. In the corporate sector, the current investment hesitancy will continue next year. Investment plans will be constrained by uncertainty, monetary policy tightening, and shortages of skilled labour. The long-awaited upsurge in the uptake of EU funds (Chart 28) should support investment activity in coming years, especially in 2023, the last year of spending in the 2014–2020 programming period.

Chart 27
Investment (annual percentage changes; percentage point contributions)



Sources: SO SR, and NBS calculations.

Slovakia's net financial position, i.e. its receipts from the EU budget net of contributions to that budget, is expected to peak in 2023 at 2.4% of GDP (Chart 28), owing to the uptake of the outstanding funds allocated to Slovakia under the 2014–2020 EU budget.

EU funds, comprising mainly 2014–2020 allocations, are expected to stimulate demand and support an economy weakened by high inflation. This year should see EU fund disbursements increase quite moderately, while next year they are projected to surge, year-on-year, by one percentage point of GDP, bringing the total annual uptake of EU funds to 3.6% of GDP. The main disbursement channel is expected to be general government investment in public infrastructure projects on the transportation and environmental fronts. EU fund disbursements are expected to decline in the last year of the projection period. Nevertheless, the level of both total and EU-funded capital expenditure should be kept above average by expected RRP investments financed by the EU's Recovery and Resilience Facility.

Under-absorption of undisbursed 2014–2020 EU fund allocations[12] increases the risk of missing the disbursement deadline for part of these allocations. It is now expected that 5% of the total 2014–2020 allocations will not be disbursed before the deadline[13] and will represent a permanent loss of EU funds for Slovakia.

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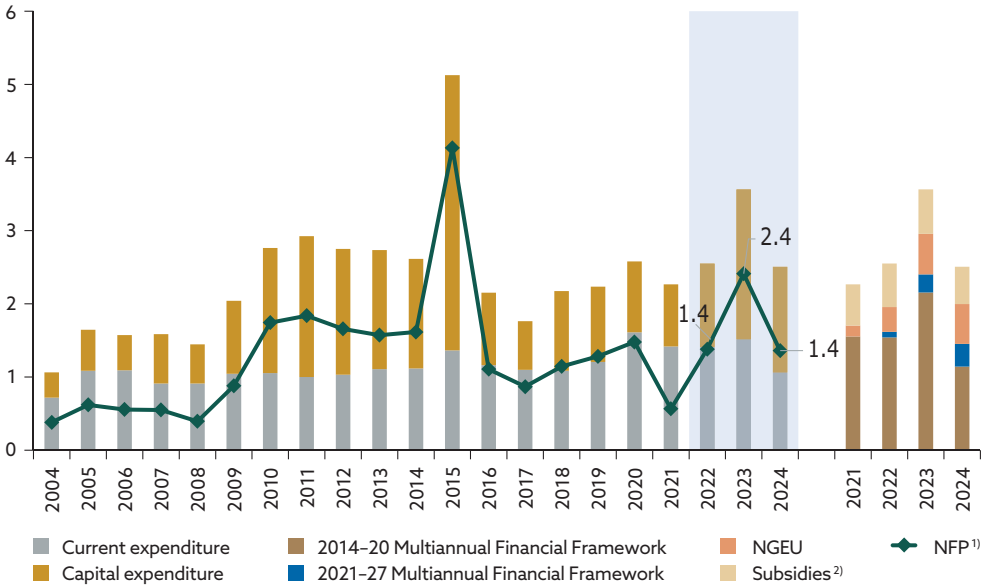
[12] At present 55% of the allocations have been disbursed and more than €6 billion remains to be disbursed by the deadline.

[13] This projection takes into account funds transferred to financial instruments to support small and medium-sized enterprises.

Chart 28

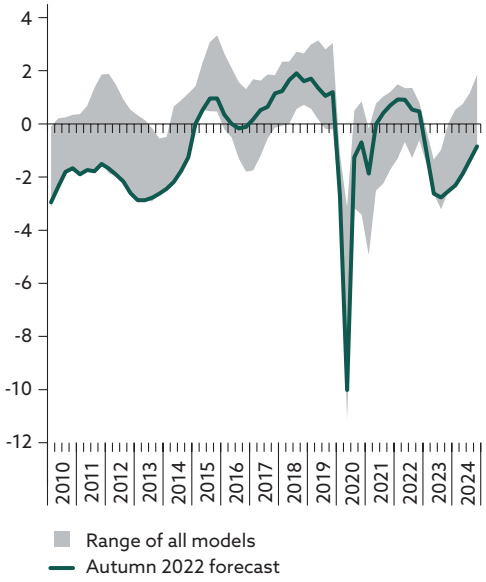
Slovakia's absorption of EU funds and net financial position (percentages of GDP)



Source: NBS.
1) Net financial position – net of own resources collection costs.
2) The subsidies comprise mainly agricultural funds under the 2014–20 and 2021–27 budgets.
Note: NFP – net financial position; NGEU – Next Generation EU instrument (the forecast envisages funding under the NGEU's Recovery and Resilience Facility, recovery assistance for cohesion and the territories of Europe (REACT-EU) programme, and Just Transition Fund).

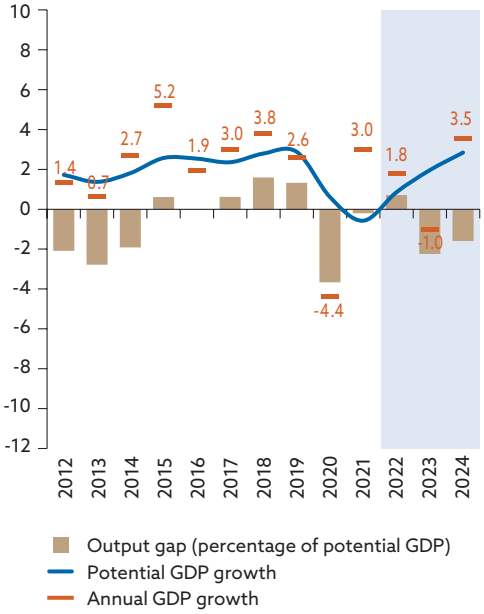
The Slovak economy showed signs of overheating during the first half of the year. Higher cost-push inflation was still not having a notable downward impact on consumer behaviour, with household consumption continuing to increase in the second quarter. Such consumption behaviour, supported by the labour market situation, was therefore putting upward pressure on demand-pull inflation. This trend is expected to reverse in the second half of 2022. At the same time, the anticipated acceleration of wages is not expected to keep pace with high inflation. Declining real incomes and deteriorating labour market outlooks are expected to dampen consumer demand, most markedly in 2023. This, together with the slowdown in the external economy, should lead to a reversal of the economy's cyclical position and to the economy operating below potential (Chart 29). With inflation expected to be elevated for an extended period, there should be limited scope for any noticeable pick-up in consumer sentiment over the longer term. The economy is not expected to return to equilibrium until the end of 2024 (Chart 30).

Chart 29
Output gap (percentages)



Source: NBS calculations.
Note: The grey shading represents the min-max range of results of a multi-model estimation, made using a Hodrick-Prescott filter, a Beveridge-Nelson filter, a band-pass filter, a modified Hamilton filter, an unobserved component model (Tóth, 2021), a mixed frequency Bayesian vector autoregression (up to Q3 2022) and a dynamic factor model.

Chart 30
GDP and the output gap (percentages)

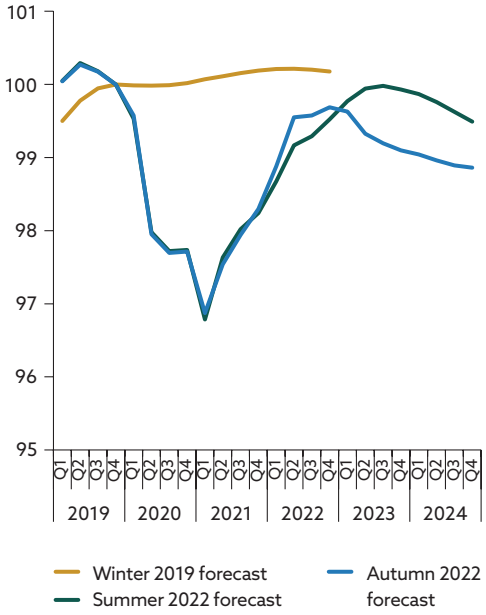


Sources: SO SR, and NBS calculations.

3.2.2 Labour market

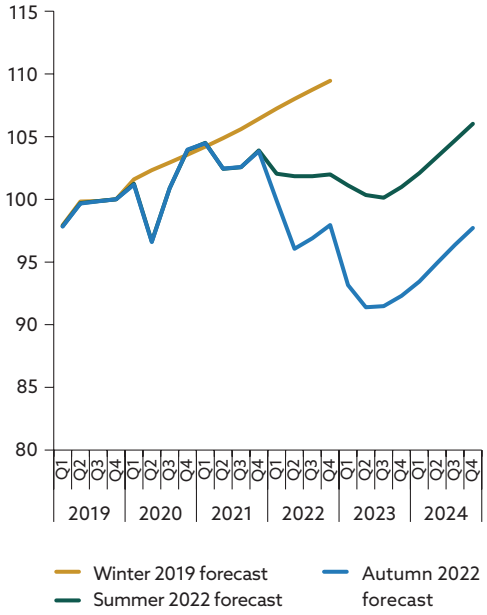
The worsening economic situation will have an adverse impact on employment. The number of unemployed is forecast to increase by around fifteen thousand over the projection horizon. Employment should start gradually declining from next year (Chart 31). The downturn in consumer demand will translate into lower demand for services and, consequently, into layoffs in services sectors. Moreover, skilled labour shortages in industry will become more pronounced. Population ageing will further exacerbate labour shortages. In the absence of managed migration, overall employment will therefore decline. An increase in the labour force participation rate should mitigate the adverse employment situation.

Chart 31
Employment (index: Q4 2019 = 100)



Sources: **SO SR, and NBS calculations.**

Chart 32
Real compensation per employee (index: Q4 2019 = 100)



Sources: SO SR, and NBS calculations.

3.2.3 Prices and labour costs

With the acceleration in nominal wage growth not expected to keep pace with inflation, households' purchasing power will fall more sharply next year. Besides rising input prices, firms and the public administration will also have to deal with increased wage demands. High inflation expectations and rising household living costs will stoke wage demands. For public sector employees, an increase in wage indexation has been agreed for next year; nevertheless, their real incomes are projected to decline. Private sector employees will fare better, though their real incomes will also drop. The period ahead will therefore see a downtrend in purchasing power. Real incomes are expected to begin rising again when inflation abates in 2024 (Chart 32), with indexation based on past inflation playing a major role.

Table 3 Wages (annual percentage changes)					
	2020	2021	2022	2023	2024
Nominal labour productivity	-0.2	6.1	7.7	13.3	7.8
Whole economy – nominal wages	3.8	5.9	8.2	11.6	9.0
Whole economy – real wages	1.8	2.7	-3.8	-3.9	4.3
Private sector – nominal wages	2.2	6.4	9.2	12.2	10.1
Private sector – real wages	0.3	3.1	-2.9	-3.4	5.3
Public administration, education and health care – nominal wages	8.9	4.3	5.1	9.5	5.4
Public administration, education and health care – real wages	6.8	1.1	-6.5	-5.7	0.8

Sources: SO SR, and NBS calculations.
Notes: Deflated by the CPI. Nominal labour productivity – GDP divided by persons in employment (ESA 2010).

Cost factors are still pushing up inflation (Chart 33). Compared with the summer forecast, the upward revisions to inflation projections over the forecast period cumulatively amount to 10%. Past forecasts significantly underestimated future price growth, as assumptions about the energy crisis were overly optimistic. It is now estimated that cost factors, in particular energy prices, will be having an upward impact on consumer prices for an even longer period. As contracts with more favourable energy prices come to an end, gradually more firms will be facing cost increases for some time ahead, and an inflationary environment will be created throughout the supply chain. Indeed, energy has become a more important component of firms' cost structures, and energy cost increases are being passed on to selling prices.

Energy spot prices are having a large upward impact on prices of goods and services (Chart 34). In services, we are seeing the direct effects of costlier food and energy increases and of rising wages. Goods prices are increasing on the back of an uptrend in domestic producer prices, and imports are becoming more expensive.

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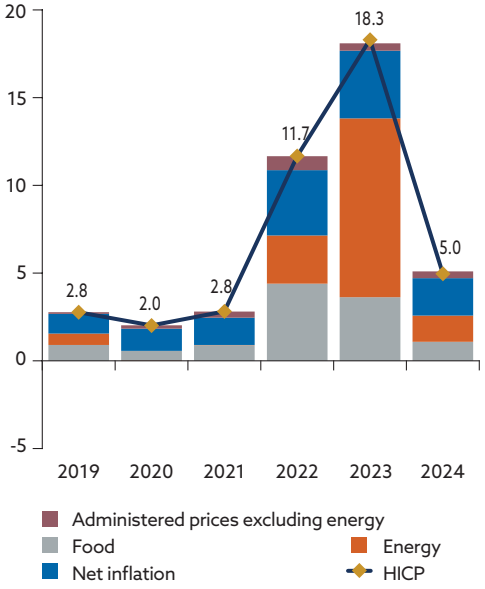
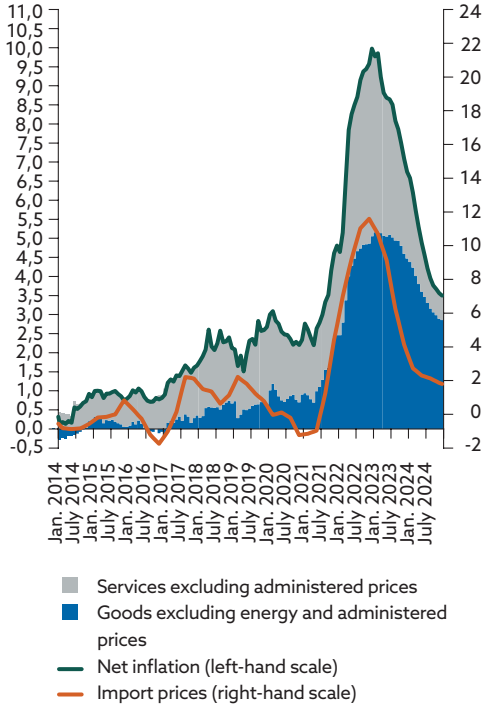
Chart 33
HICP inflation and its components (annual percentage changes; percentage point contributions)



Sources: SO SR, and NBS calculations.

Chart 34
Import prices and the composition of net inflation (annual percentage changes; percentage point contributions)



Sources: SO SR, and NBS calculations.

Box 5
How EU producer prices are passing through to industrial goods prices

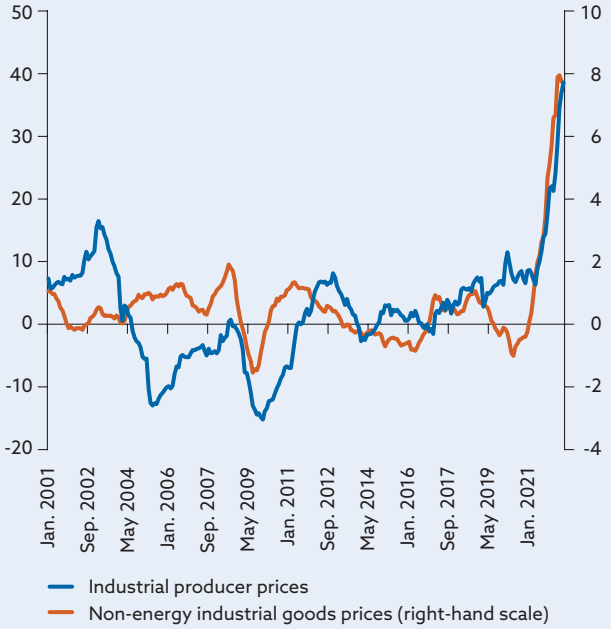
Energy prices and their impact on the overall price level have become the most important issue since the receding of the pandemic. In the recent period, across EU countries, producers' price decisions and subsequently consumer prices have been reflecting various factors: commodity and component shortages resulting from supply chain disruptions; pent-up and unsatisfied consumer demand; wage pressures; costs deferred and not covered by revenues during the pandemic; price increases across a swathe of commodities; and, last but not least, energy prices, which have been surging since back in late 2021.

Actual inflation has consistently overshot our recent forecasts. We have therefore decided to take an analytical look at any additional inflationary pressures that may have been neglected in our calculations by simply adopting technical assumptions about import prices.

During almost the whole of the first half of 2022 industrial producer prices, as well as non-energy industrial goods prices, were increasing at an unprecedented pace (Chart A). Our first control calculation was carried out at the end of 2021. In February, the additional increase in energy prices triggered by the war in Ukraine was included among the price pres-

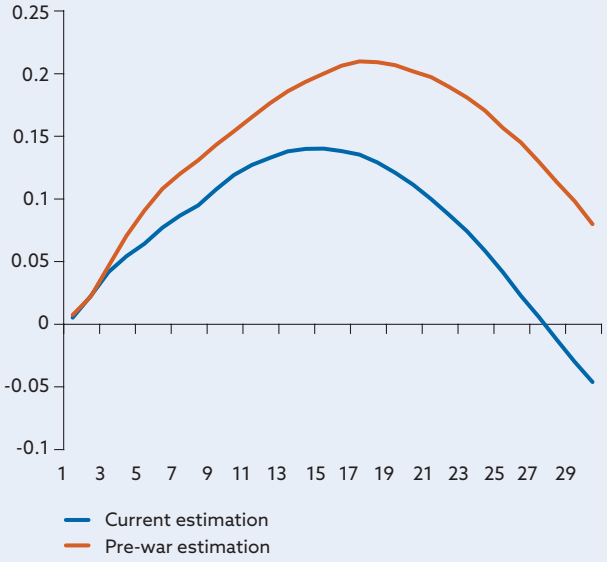
sures already present at that time. All values added for the first half of 2022 are outliers in historical terms. We therefore had an interesting opportunity to rerun the estimation with the data for the first two quarters and see how the results differed under the effect of the new data.

Chart A
Industrial producer prices and industrial goods prices (annual percentage changes)



Sources: Eurostat, and NBS calculations.

Chart B
Response of industrial goods prices to an external price shock

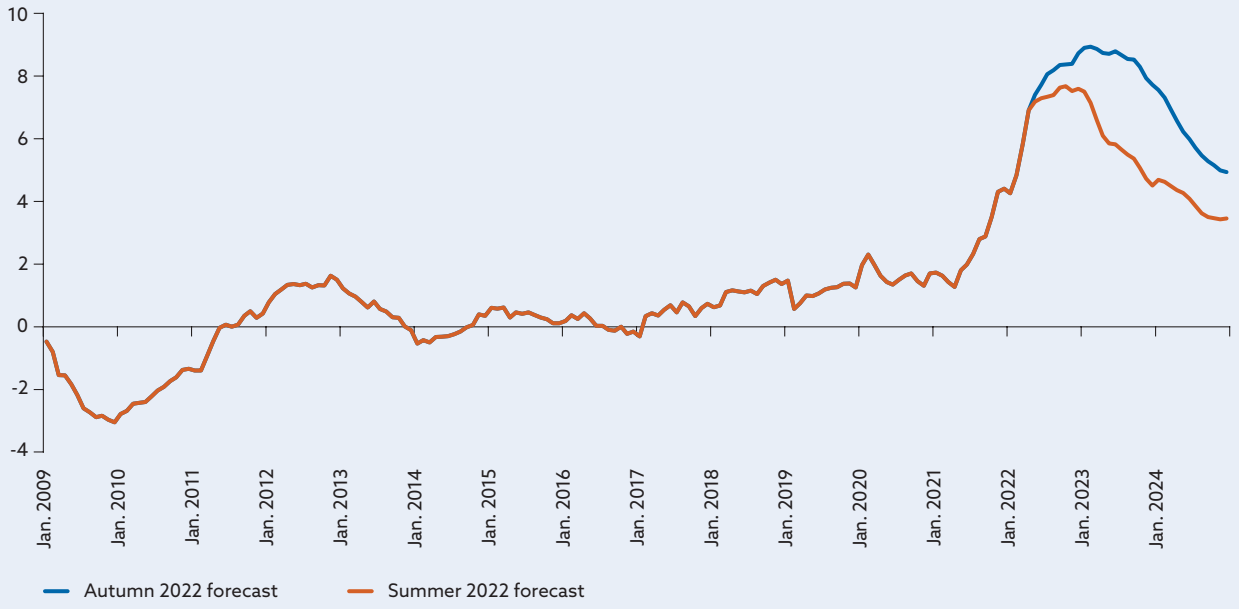


Source: NBS calculations.

The model estimation indicates that in the period ahead there is a risk of higher and more prolonged increases in industrial goods prices and, consequently, in consumer prices (Chart B). Considering that the external price shock began in around the autumn of 2021, industrial goods inflation would not peak until the spring of 2023 according to the pre-war estimation. More recent results suggest that input inflation may have an even stronger upward impact on goods inflation and that prices are likely to adjust over a longer period. Based on this estimation, we have revised up the projections for goods prices.

Chart C

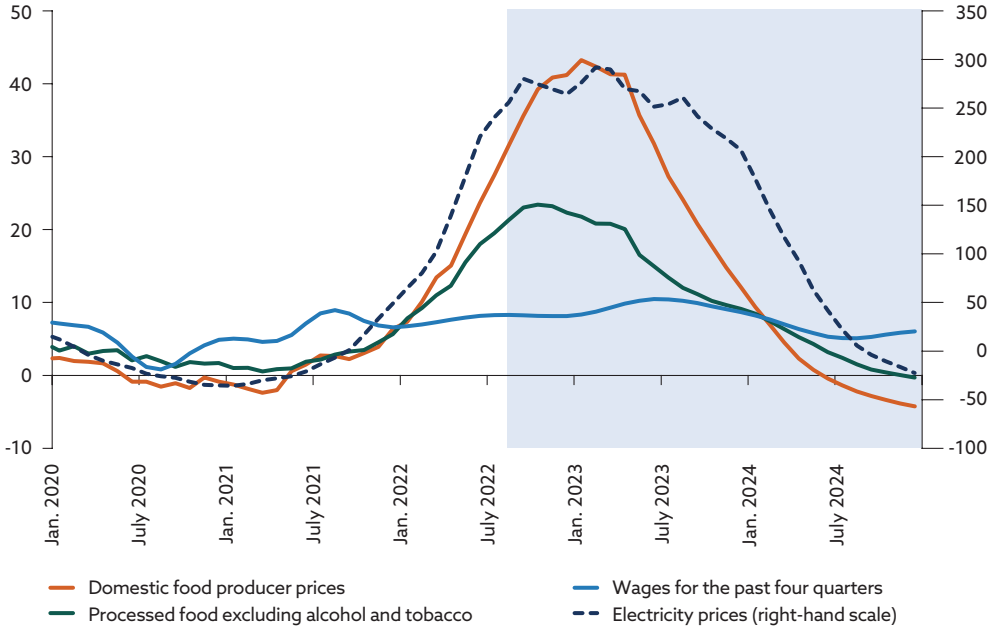
Difference between old and new projections for non-energy industrial goods prices (annual percentage changes)



Source: NBS calculations.

Food inflation is expected to continue rising for a few more months (Chart 35). Agricultural commodity spot prices have decreased following the release of agricultural commodity exports from Ukraine; nevertheless, elevated input prices represent a significant cost that will be passed on to final consumer prices. Drought-hit harvests in Europe are adding further costs to farmers and processors.

Chart 35
Cost factors and processed food prices (annual percentage changes; percentage point contributions)



Sources: SO SR, and NBS calculations.
Note: The shaded area represents NBS projections.

The inflation outlook revisions stem largely from changes in assumptions about administered energy prices (Chart 36). Compared with the summer forecast, the projected increases in electricity and heat prices have been revised up, while the impact of these adjustments has been partly offset by a downward revision of projected gas price inflation. Because there remains great uncertainty about the final determination of administered energy prices and about the possible approval of government measures to prevent a jump in these prices, we have had to make certain assumptions for the coming years (Chart 37).

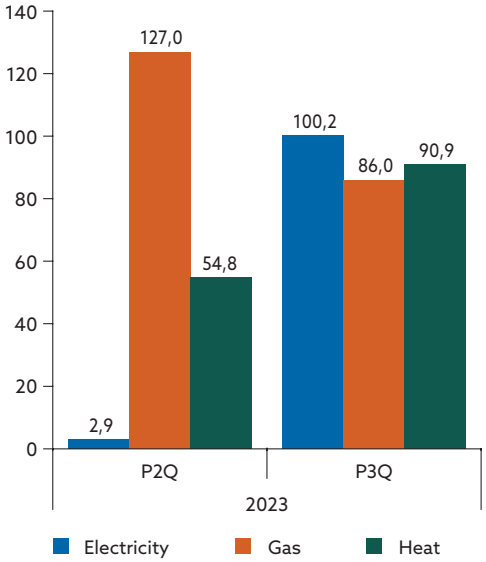
As regards gas prices, we took into account announced contracts (four-year or one-year) offered to households by the domestic gas utility company (SPP). Our estimation assumes that 40% of households will opt for the longer contracts; one-third, for the one-year contracts; and the rest, for spot market–based administered prices.

In the case of electricity prices, we factored in the Memorandum signed between the Slovak government and the domestic electricity generation company (Slovenské elektrárne) on a fixed price for the power component for next year. This, however, applies to only 85% of household electricity consumption; the remaining 15% is expected to be subject to a spot market–based power component price. Since electricity spot prices remain

high, other components of the final electricity price (making up around 60% of the total) are rising sharply.

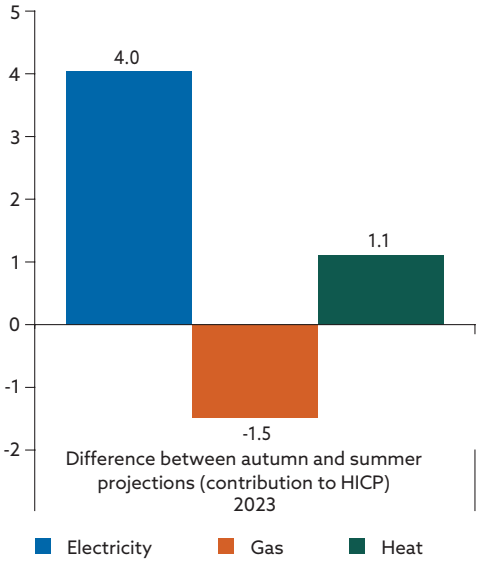
Heat prices are projected to almost double, given that natural gas accounts for around half of the fuel sources used in domestic heating plants.

Chart 36
Administered energy prices (annual percentage changes)



Source: NBS calculations.

Chart 37
Changes in administered energy prices (percentage points)



Source: NBS calculations.

Table 4 Components of HICP inflation (annual percentage changes)

	Average for 2004–08 (pre-crisis period)	Average for 2010–14 (post-crisis period with euro currency)	2020	2021	2022	2023	2024
HICP	**4.1**	**2.0**	**2.0**	**2.8**	**11.7**	**18.3**	**5.0**
Food	3.6	3.1	2.2	2.9	15.3	12.3	3.7
Non-energy industrial goods	0.2	0.3	1.7	2.4	6.8	8.0	5.6
Energy	8.3	2.3	0.0	0.1	18.2	67.4	9.9
Services	5.3	2.5	3.1	4.3	9.4	7.2	3.2
Net inflation	1.8	1.0	2.5	3.2	8.1	8.4	4.6

Sources: SO SR, and NBS calculations.

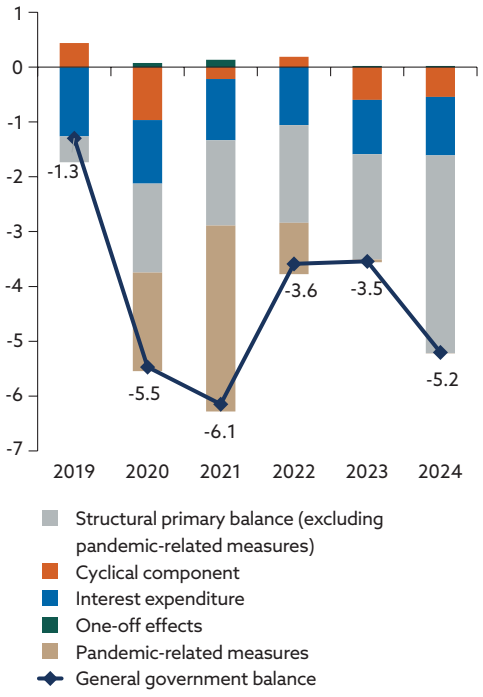
3.3 Public finance projections

Slovakia's general government deficit for 2022 is projected to be 3.6% of GDP, representing a year-on-year reduction of 2.5 percentage points of GDP (Chart 38). The deficit improvement is due mainly to a lessening need for pandemic-related expenditure and to an upturn in the economy's cyclical position. Higher inflation in 2022 will translate into an increase in con-

sumption tax revenue (mainly through VAT), while strong growth in wages and employment will push up tax and social contribution revenues. The impact of these favourable revenue trends is, however, offset by spending measures to support families, in particular higher child allowances, a tax bonus, and an allowance to support children's after-school activities (known as *krúžkovné* in Slovak).

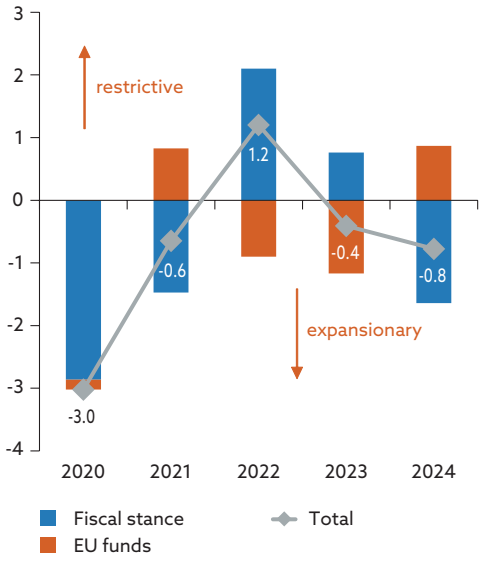
Expansionary fiscal measures, the effects of rising energy and commodity prices, and an increase in the indexation of public sector wages will have a gradual adverse impact on fiscal performance. High inflation will be reflected in the indexation of old-age pensions, as well as in expenditure on energy, goods, services, health care, and the necessary completion of ongoing and planned investment projects. Since, however, additional fiscal outlays are only partly offset by the continuing growth in tax revenues, the deficit is projected to deteriorate in 2024, to 5.2% of GDP (Chart 38).

Chart 38
Decomposition of the general government balance (percentages of GDP)



Sources: SO SR, and NBS calculations.
Note: One-off factors include non-cyclical effects that have a temporary impact on the general government balance and are supposed to be eliminated in the future.

Chart 39
Fiscal stance (percentage points of GDP)

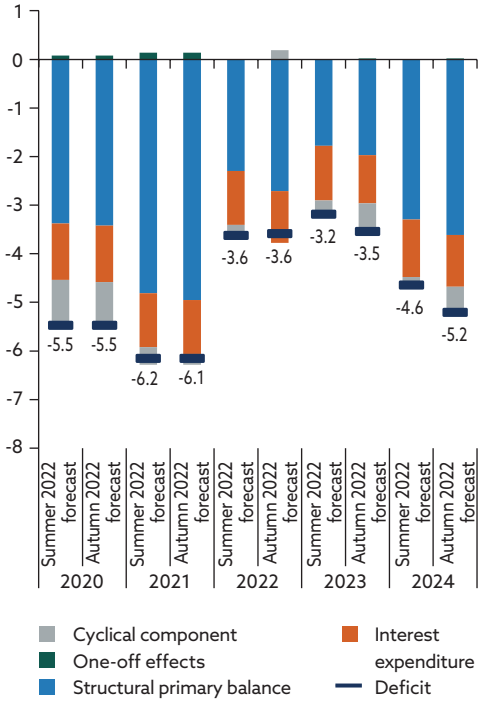


Sources: SO SR, and NBS calculations.
Note: Fiscal stance – annual rate of change in the cyclically adjusted primary balance.

The fiscal deficit projection for 2022 is unchanged from the summer forecast (Chart 40). While projected tax revenues (especially VAT) and dividend income of the state budget have been revised up and investment ex-

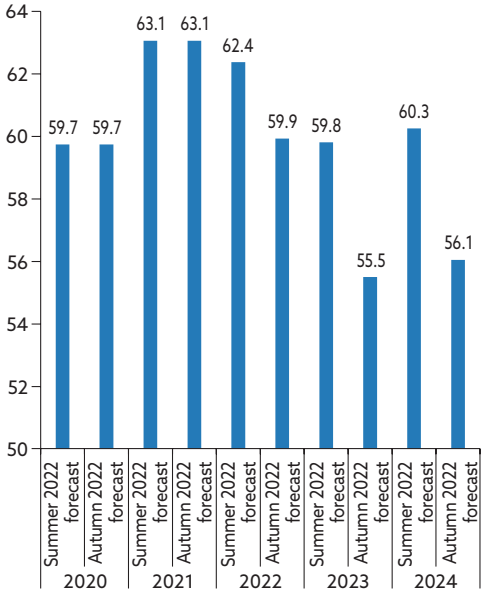
penditure has been revised down, the impact of these changes is offset by upward revisions to projected expenditure on family support (tax bonus), state-paid insurance premiums, public sector wages, and goods and services. The deterioration in the deficit projection for subsequent years is due mainly to the adoption of legislation and higher expected indexation of social expenditure. Their negative impact is partly offset by additional revenue from VAT and from labour taxes and social contributions.

Chart 40
The fiscal deficit and its decomposition (percentages of GDP; percentage point contributions)



Source: NBS calculations.

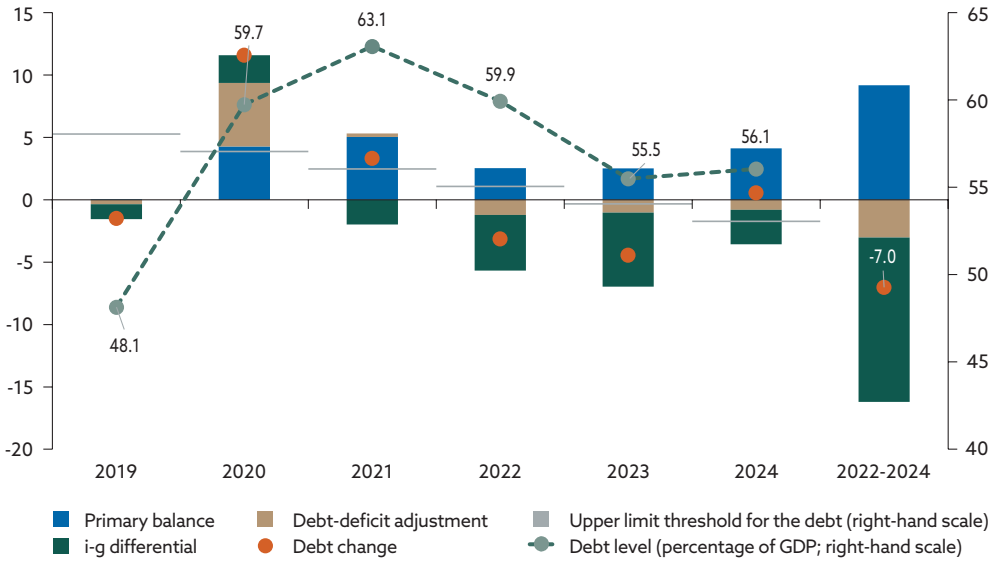
Chart 41
Public debt (percentages of GDP)



Source: NBS calculations.

Public debt is projected to fall gradually, and further than previously envisaged, below the 60% of GDP threshold (Chart 41). The fiscal deficit will continue contributing to public debt. In 2022 public debt is also expected to reflect an outflow of deposits held by non-public sector entities with the State Treasury. Such deposits contributed significantly to the increase in public debt in 2021. At the same time, however, nominal GDP growth pushed up by price developments is expected to have a downward impact on the debt. In 2023 the debt is projected to drop to 55.5% of GDP. The debt's gradual downtrend is expected to be interrupted by a more pronounced deterioration in fiscal performance (Chart 42).

Chart 42
Public debt (percentage points of GDP; percentages of GDP)



Sources: SO SR, and NBS calculations.
Notes: Debt-deficit adjustment – a factor of consistency between the fiscal deficit and the debt change. i-g differential – a factor taking into account the impact of interest costs and economic growth on the debt change.

3.4 Risks to the forecast

The risks to the GDP outlook are tilted to the downside. According to our model estimation,[14] there is a 78% probability of the Slovak economy falling into recession next year. The energy crisis has caused a spike in energy prices which is embedded in the baseline scenario. However, for foreign demand, as well as for the domestic economy, it will be important whether this price shock is also accompanied by energy commodity shortages and, consequently, a temporary shutdown of some parts of manufacturing industry (Box 6). This could happen if gas flows from Russia were cut off completely while at the same time the EU were unable to reduce part of its gas consumption and find alternative sources for gas.

[14] DSGE model PREMISE.

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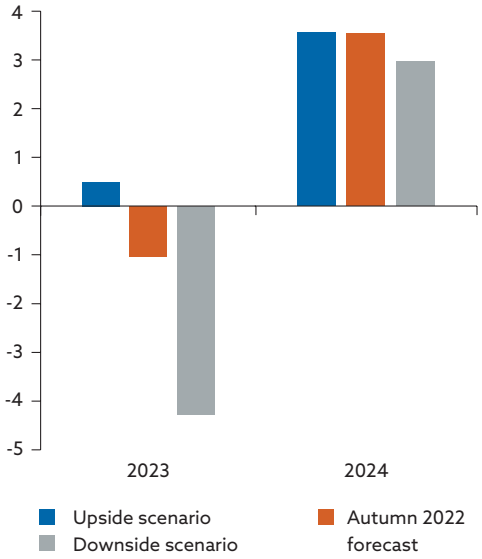
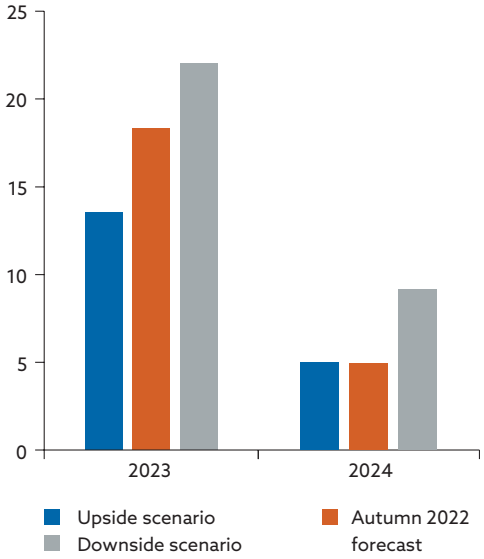
Chart 43
GDP (annual percentage changes)



Source: NBS calculations.

Chart 44
HICP inflation (annual percentage changes)



Source: NBS calculations.

A major risk to the forecast is whether the government adopts measures to prevent a sharp rise in energy prices for households and firms. If it does, 2023 will see lower inflation, a softer decline in real incomes, and less severe damage to consumer demand and the overall economy, compared with the baseline scenario projections.

On the theoretical assumption that the government managed to adopt measures and all administered prices of energy (gas, heat and electricity) for households increased by 50% next year, the economy would not slip into recession. With consumer demand falling more moderately as a result of lower price increases, recession would be averted.

Box 6
Downside scenario

Uncertainty stemming from the war in Ukraine, whether about the war per se or its repercussions, remains acute and represents a serious risk to the economic outlook for both Slovakia and the euro area as a whole. This risk includes the possible cut-off of natural gas supplies from Russia and further increases in commodity prices, in particular prices of electricity and natural gas. The downside scenario assumes the cessation of gas and oil supplies from Russia to the euro area and the disruption of gas supplies across Europe during the coming winter. Table A presents the downside scenario assumptions – envisaging a worsening of the war and its consequences – vis-à-vis the baseline scenario of our autumn 2022 forecast.

Table A Downside scenario definition

	Intensity of tensions	Trade	Commodity prices	Uncertainty	Financial
Downside scenario	• a longer and more intensive war extending into 2023	• greater disruption of trade links, including embargoes on Russian products	• **complete cessation of gas imports from Russia; no coordinated reduction of gas consumption, nor substitution from other sources, owing to weak EU-wide solidarity; gradual substitution from Q3 2023; harsh winter weather**	• heightened uncertainty in Slovakia and abroad in Q3 2022 (gas rationing, persisting war) and increasing financial market volatility	• an increase in bank lending rates due to higher uncertainty
	• sanction regimes kept in place until 2024	• considerable disruption of global supply chains	• **90% of Russian oil supplies to Europe cease from Q4 2022, with the remaining 10% delivered via non-sanctioning countries EU has large scope to substitute Russian oil with oil from other countries (20% of Russian oil will not be substitutable)**	• high financial market volatility weighs on confidence	• potential losses resulting from lower economic activity, hence banks see an increase in risk assessment costs and raise interest rates
	• large flow of Ukrainian refugees continues into 2023, and the rate of their return to Ukraine is lower	• **extensive constraints on industrial production due to decoupling from Russian energy imports**	• a decline in cereal exports and higher energy prices push cereal prices even higher		
	• no easing of geopolitical tensions until 2024				

Source: NBS.

Table B Downside scenario assumptions vis-à-vis the baseline scenario of the autumn 2022 forecast

	Downside scenario			Deviation from baseline		
	2022	2023	2024	2022	2023	2024
Foreign demand [1)]	3.4%	0.1%	2.2%	-0.2%	-2.3%	-1.3%
Oil price (USD/barrel)	120.0	139.4	113.0	13.8%	54.0%	36.4%
Gas price (EUR/MW) [2)]	41.7	177.3	149.8	25.2%	53.2%	53.2%
Agri-food price index [1)]	43.8%	24.4%	0.8%	6.3%	23.7%	2.6%

Source: NBS calculations.
1) Annual percentage change; the deviation from baseline is a simple difference between the rates of change.
2) Commodity price used to determine the administered price for households.

The first critical assumption of the downside scenario is that industrial production will be extensively constrained owing to the cessation of energy imports from Russia, in particular

imports of natural gas from the fourth quarter of 2022 onwards. The second key assumption is that there will be no substitution options in the near term (next four quarters), nor any coordinated response in the euro area and the EU. The downside scenario therefore assumes that it will not be possible to substitute Russian gas with gas from other sources until early in the fourth quarter of 2023.

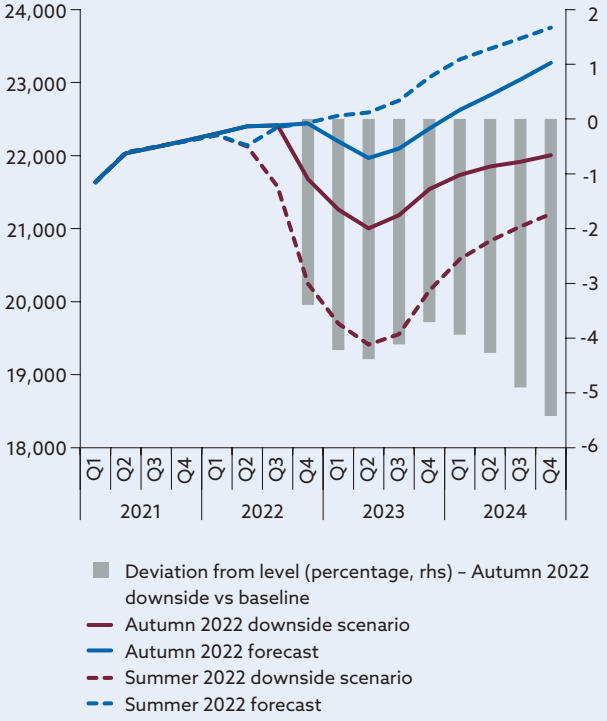
If Slovakia's gas imports from Russia are cut off completely, we expect that around one-quarter of domestic annual gas consumption will be subsidised under EU solidarity arrangements. Taking into account the level of Slovakia's gas stocks when we made our calculations (amounting to around 70% of average annual gas consumption between 2014 and 2021), we estimate that the direct negative impact of the gas shortfall on the GDP level will be a cumulative 2.9% over the four quarters beginning with the fourth quarter of 2022.[15] Because not all stored gas is available for use (some must be retained to maintain pressure), we conservatively assume that gas tanks must remain 20% full.

Our estimation of the gas shortfall's cumulative impact on GDP over the four quarters from the fourth quarter of 2022 (-2.9 pp) does not yet take into account the spillover effects of production losses on the economy, stemming from reduced demand for labour, higher unemployment, falling incomes, weaker consumption, and lower investment. With these factors included, we estimate that the production losses resulting from the cessation of Russian gas supplies will represent around 3.3% of GDP over the four quarters from the fourth quarter of 2022. It should be noted that this is the high-end estimate of losses and that with gas diversification efforts proceeding apace and with the functionality of intra-EU gas supplies being maintained, Slovakia could continue to be supplied with gas from other sources.

The GDP level by the end of 2024 is projected to be around 5.5 percentage points lower under the downside scenario than under the baseline scenario of the autumn 2022 forecast. The decline in GDP in the first half of 2023 is followed by an upturn, which, however, owing to higher inflation and its adverse impact on the economy, is more subdued than that envisaged in the baseline scenario.

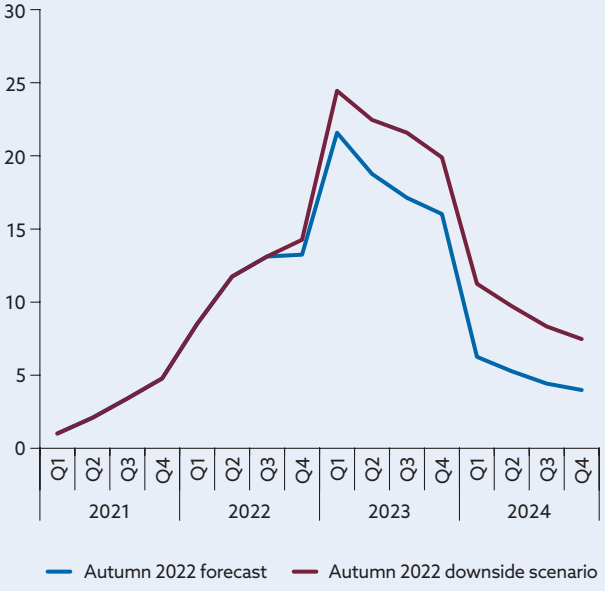
[15] The negative impact on GDP growth of a 75% drop in annual gas consumption is estimated to be a cumulative 10 percentage points over the four quarters from the fourth quarter of 2022 to the third quarter of 2023.

Chart A
GDP (EUR millions)



Source: NBS calculations.

Chart B
HICP inflation (annual percentage changes)



Source: NBS calculations.

In the downside scenario, inflation could jump to an average of 22% in 2023, when it is expected to peak.[16] The downside scenario envisages Slovakia experiencing a severe recession and high inflation. This will weigh on private consumption, as will income losses in an environment of rising unemployment in the years 2023 and 2024.

Table C Summer 2022 forecast vis-à-vis the downside scenario (annual percentage changes, unless otherwise stated)

	Autumn 2022 forecast			Downside scenario		
	2022	2023	2024	2022	2023	2024
GDP	1.8	-1.0	3.5	0.9	-4.3	3.0
Private consumption	5.2	-4.9	2.1	4.7	-6.6	0.5
Government consumption	-1.9	-4.4	1.6	-2.0	-4.5	0.3
Fixed investment	4.5	2.5	5.5	4.0	-1.5	4.9
Exports of goods and services	-1.1	3.5	6.7	-2.6	-1.8	8.4
Unemployment rate (percentage)	6.2	6.7	6.8	6.3	8.1	8.5
Wages	8.0	10.8	9.1	8.2	11.5	11.8
HICP inflation	11.7	18.3	5.0	11.9	22.0	9.2
Foreign demand	3.5	2.4	3.5	3.4	0.1	2.2

Source: NBS calculations.

[16] Like the baseline, the adverse scenario takes into account government measures to contain the increase in administered energy prices.

3.5 Comparison with other institutions

This forecast is somewhat less favourable compared with forecasts produced by other institutions. The main difference lies in the estimation of future price developments. Our inflation projection is the highest because it takes into account only publicised government measures to contain the increase in administered energy prices for households in 2023. At the same time, we expect inflation to be elevated for a longer time. The projected price developments will weigh on real incomes and consequently on consumer demand.

Table 5 Comparison with forecasts of other institutions (annual percentage changes, unless otherwise indicated; constant prices)

	2022					2023					2024				
	NBS	IFP	EC	IMF	OECD	NBS	IFP	EC	IMF	OECD	NBS	IFP	EC	IMF	OECD
Gross domestic product	1.8	1.9	1.9	2.6	2.3	-1.0	0.6	2.7	5.0	3.4	3.5	1.7	-	3.8	-
Private consumption	5.2	4.6	1.9	-	1.7	-4.9	-3.7	1.9	-	0.5	2.1	2.0	-	-	-
Government consumption	-1.9	-1.5	-1.7	-	-0.2	-4.4	-0.7	0.2	-	0.1	1.6	0.0	-	-	-
Gross fixed capital formation	4.5	5.4	10.8	-	13.9	2.5	16.3	13.4	-	15.0	5.5	-6.4	-	-	-
Exports of goods and services	-1.1	-1.6	2.9	2.6	1.0	3.5	1.7	7.4	5.5	4.3	6.7	7.6	-	5.3	-
Imports of goods and services	-0.3	-0.9	3.4	3.9	1.7	0.9	2.4	7.6	6.3	4.3	6.1	5.5	-	3.9	-
Harmonised Index of Consumer Prices [1)]	11.7	11.6	10.5	8.4	10.8	18.3	13.5	8.2	4.1	10.1	5.0	3.6	-	2.0	-
Employment (ESA 2010)	1.8	1.9	1.9	-	-	-0.1	0.2	0.6	-	-	-0.4	0.7	-	-	-
Unemployment rate (percentage)	6.2	6.1	6.7	6.4	6.7	6.7	6.1	6.3	6.2	6.4	6.8	5.6	-	5.9	-
Average nominal wage	8.2	8.3	-	-	-	11.6	10.4	-	-	-	9.0	7.5	-	-	-
Nominal compensation per employee	7.6	6.9	7.8	-	6.5	11.5	10.3	7.0	-	7.0	9.2	7.7	-	-	-
General government deficit (percentage of GDP)	-3.6	-5.1	-3.6	-5.4	-4.5	-3.5	-2.4	-2.6	-3.1	-2.4	-5.2	-2.3	-	-2.5	-
General government debt (percentage of GDP)	59.9	61.6	61.7	61.4	62.7	55.5	58.0	58.3	58.1	59.6	56.1	58.2	-	56.4	-
Balance of payments current account (percentage of GDP)	-7.9	-5.1	-4.3	-5.0	-4.7	-3.3	-4.7	-4.1	-4.8	-4.3	-2.5	-4.0	-	-3.4	-

Sources: NBS, Institute for Financial Policy (IFP), European Commission (EC), International Monetary Fund (IMF), Organisation for Economic Co-operation and Development (OECD).
1) In the IMF forecast, the consumer price index (CPI).
IFP – Macroeconomic Forecast (September 2022); the debt and deficit projections are from the Stability Programme of the Slovak Republic for 2021 to 2024;
EC – European Economic Forecast, Spring 2022 (May 2022), GDP and HICP Inflation, Summer 2022, (July 2022)
IMF – World Economic Outlook, April 2022
OECD – Economic Outlook No 111 (June 2022)

Table 6 Autumn 2022 medium-term forecast for key macroeconomic indicators

Indicator	Unit	Actual	MTF-2022Q3			Difference vis-à-vis MTF-2022Q2		
		2021	2022	2023	2024	2022	2023	2024
Prices								
HICP inflation	annual percentage change	2.8	11.7	18.3	5.0	1.3	7.2	2.7
CPI inflation	annual percentage change	3.2	12.3	16.1	4.6	1.5	6.3	2.2
GDP deflator	annual percentage change	2.4	7.7	14.3	3.8	1.7	8.4	1.5
Economic activity								
Gross domestic product	annual percentage change, constant prices	3.0	1.8	-1.0	3.5	0.4	-2.9	0.0
Private consumption	annual percentage change, constant prices	1.4	5.2	-4.9	2.1	2.6	-3.6	-0.8
General government final consumption	annual percentage change, constant prices	1.9	-1.9	-4.4	1.6	1.3	-4.7	-0.4
Gross fixed capital formation	annual percentage change, constant prices	0.6	4.5	2.5	5.5	-2.1	-4.4	1.7
Exports of goods and services	annual percentage change, constant prices	10.2	-1.1	3.5	6.7	-0.7	-1.7	0.0
Imports of goods and services	annual percentage change, constant prices	11.1	-0.3	0.9	6.1	-0.7	-2.2	0.0
Net exports	EUR millions at constant prices	2,154	1,471	3,664	4,453	21.2	398.0	424.6
Output gap	percentage of potential output	-0.2	0.7	-2.2	-1.6	1.4	-1.3	-1.1
Gross domestic product	EUR millions at current prices	97,123	106,440	120,425	129,383	1,993.5	7,644.6	9,973.5
Labour market								
Employment	thousands of persons, ESA 2010	2,385	2,428	2,425	2,416	6.5	-14.3	-18.1
Employment (rate of change)	annual percentage change, ESA 2010	-0.6	1.8	-0.1	-0.4	0.3	-0.8	-0.2
Number of unemployed	thousands of persons[1)]	188	174	187	189	-9.1	4.3	8.6
Unemployment rate	percentage	6.8	6.2	6.7	6.8	-0.3	0.2	0.3
NAIRU estimate [2)]	percentage	6.8	6.5	6.4	6.4	0.1	0.1	0.1
Labour productivity [3)]	annual percentage change	3.6	0.0	-0.9	3.9	0.1	-2.1	0.2
Nominal productivity [4)]	annual percentage change	6.1	7.7	13.3	7.8	1.8	6.1	1.7
Nominal compensation per employee	annual percentage change, ESA 2010	5.9	7.6	11.5	9.2	-0.4	1.9	3.5
Nominal wages [5)]	annual percentage change	5.9	8.2	11.6	9.0	0.1	2.0	3.4
Real wages [6)]	annual percentage change	2.7	-3.8	-3.9	4.3	-1.3	-3.6	1.2
Households and non-profit institutions serving households								
Disposable income	annual percentage change, constant prices	-1.2	1.3	-5.3	3.3	1.2	-3.9	0.3
Saving ratio [7)]	percentage of disposable income	8.8	5.7	5.3	6.4	-0.6	-0.8	0.2
General government sector [8)]								
Total revenue	percentage of GDP	40.7	40.7	40.2	38.9	-0.5	-1.8	-1.5
Total expenditure	percentage of GDP	46.8	44.3	43.7	44.1	-0.5	-1.4	-0.9
General government balance [9)]	percentage of GDP	-6.1	-3.6	-3.5	-5.2	0.0	-0.4	-0.6
Cyclical component	percentage of trend GDP	-0.2	0.2	-0.6	-0.5	0.4	-0.3	-0.4
Structural balance	percentage of trend GDP	-6.1	-3.8	-3.0	-4.7	-0.4	-0.1	-0.2
Cyclically adjusted primary balance	percentage of trend GDP	-4.8	-2.7	-2.0	-3.6	-0.4	-0.2	-0.3
Fiscal stance [10)]	annual percentage point change	-1.5	2.1	0.8	-1.6	-0.3	0.2	-0.1
General government gross debt	percentage of GDP	63.1	59.9	55.5	56.1	-2.5	-4.3	-4.2

Table 6 Autumn 2022 medium-term forecast for key macroeconomic indicators (continued)

Indicator	Unit	Actual	MTF-2022Q3			Difference vis-à-vis MTF-2022Q2		
		2021	2022	2023	2024	2022	2023	2024
Balance of Payments								
Goods balance	percentage of GDP	0.7	-5.4	-1.3	-0.3	-2.3	-1.2	-0.9
Current account	percentage of GDP	-2.0	-7.9	-3.3	-2.5	-2.4	-1.1	-0.8
External environment and technical assumptions								
Slovakia's foreign demand	annual percentage change	10.7	3.5	2.4	3.5	1.4	-0.5	-0.1
USD/EUR exchange [11), 12)]	level	1.18	1.05	0.99	0.99	-2.3	-5.6	-5.6
Oil price in USD [11), 12)]	level	71.1	105.5	90.5	82.9	-0.3	-3.1	-1.7
Oil price in USD [11)]	annual percentage change	71.3	48.4	-14.2	-8.4	-0.4	-2.5	1.4
Oil price in EUR [11)]	annual percentage change	65.2	67.8	-9.5	-8.4	3.4	0.5	1.4
Non-energy commodity prices in USD	annual percentage change	42.1	7.1	-9.8	-1.2	-7.3	-4.9	5.1
Three-month EURIBOR	percentage per annum	-0.5	0.2	2.0	2.1	0.2	0.7	0.5
Ten-year Slovak government bond yield	percentage	-0.1	1.7	2.3	2.3	0.1	0.2	0.1

Sources: NBS, ECB, and SO SR.
Notes:
1) Labour Force Survey.
2) Non-accelerating inflation rate of unemployment
3) GDP at constant prices / employment (ESA 2010).
4) Nominal GDP divided by persons in employment (according to SO SR quarterly statistical reporting).
5) Average monthly wages (ESA 2010).
6) Wages (ESA 2010) deflated by CPI inflation.
7) Saving ratio = gross savings / (gross disposable income + adjustments for any pension entitlement change) *100.
Gross savings = gross disposable income + adjustments for any pension entitlement change – private consumption.
8) Sector S.13.
9) B9n – Net lending (+) / net borrowing (-).
10) Year-on-year change in cyclically adjusted primary balance; a positive value denotes a restrictive stance.
11) Year-on-year percentage changes and changes vis-à-vis the previous forecast are calculated from unrounded figures.
12) Changes vis-à-vis the previous forecast (percentages).

More detailed time series of selected macroeconomic indicators can be found on the NBS website at:
https://nbs.sk/en/publications/economic-and-monetary-developments/