

***INSTITUTE OF ECONOMIC RESEARCH
Slovak Academy of Sciences***

***Economic Development of Slovakia
in 2022***

*Focused on:
Economy in the Grip of Extraordinary Threats*

Karol Morvay et al.

Bratislava 2023

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INTRODUCTION

Since 1993, the Institute of Economics Research of the Slovak Academy of Sciences has been preparing annual assessments of the economic development of the Slovak economy. Just like the independent Slovak economy, our series of publications is 30 years of jubilee. This is an ideal moment for news: starting with this edition, we are expanding our publication to include quantitative forecasting and an additional "bonus" chapter, which will focus on a selected specific problem (not treated in the regular chapters) each year.

We continuously observe the transformations of the economy in different situations. And in this respect, the last period has brought us a particularly "attractive" situation: the confluence of many unique threats. We are not evil-doers; it is attractive for research, not for the life of the majority of the population. Forgive the economist-researchers, but unlike most people, their work is more attractive when various shocks occur.

It is the response of the Slovak economy to an unprecedented mix of shocks and threats that is the central theme of this publication. In 2022, although the pandemic crisis was already waning, the threat of an energy crisis, a security and geopolitical crisis (due to the war in Ukraine) or an internal political crisis was added. After more than twenty years, the price shock was recalled, the shortage of exploitable workforce was deepening, and through it all, the pressure of the climate crisis was still at effect. This is a unique test for the economy and for political elites. The confluence of these shocks has been a factor affecting almost every area analysed in this publication.

The sequence in this analysis starts from an initial overall view, moves through a series of more detailed views of sub-issues to expected changes in the near future and to forecasts. "The 'bonus' chapter, which will focus on a different issue each year (outside the regular areas of analysis), this time addresses the problem of the replacement of the workforce. This is part of the problem of the labour force shortage- one of the threats to economic development.

1. OVERALL ECONOMIC TRENDS

In the introductory chapter, we provide a summary view of several specific features of the development of the Slovak economy that were characteristic for 2022. It is not our intention to comprehensively analyse all aspects of macroeconomic developments. Rather, it is a "bird's eye view", which should highlight a few unmissable moments. A series of more detailed insights and assessments are provided in the following chapters.

We concluded last year's assessment of the development of the Slovak economy with expectations of an extremely turbulent development, with a unique concentration of several shocks. We can now conclude that the concentration of these shocks did not cause a recession or a breakdown in the stability of the economy in 2022. But the growth of the economy has been weak and both macroeconomic stability and socio-economic parameters have weakened.

Among the specific macroeconomic phenomena in 2022, the following stand out:

- slowdown in economic growth and lack of catching up with advanced economies;
- surprising growth in household consumption despite extremely high inflation rates and falling real wages;
- a return of the labour market to a pre-pandemic state – even with relatively weak economic growth;
- disruption of macroeconomic balance, mainly reflected in the volatility of the price level and amplification of risks to the sustainability of public finances.

These problem areas are the focus of the chapter.

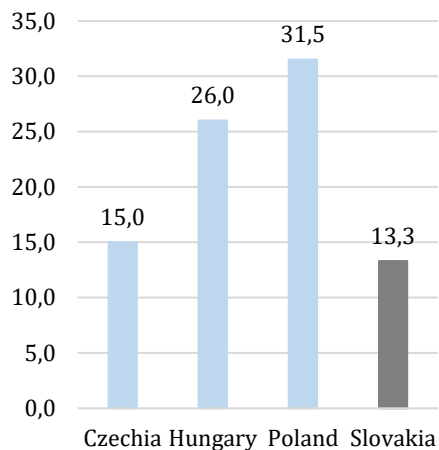
Weak Economic Growth... for Too Long

We saw the recovery in economic growth in 2021, which was still limited by pandemic restrictions, as very fragile. Paradoxically, the post-pandemic year 2022 brought even more fragile economic growth (of only 1.7% in real terms). The pace of economic growth is already relatively weak at

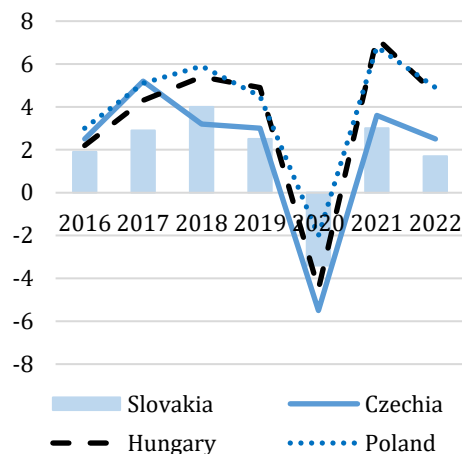
least in the medium term: cumulative real GDP growth in the post-2015 period in Slovakia was the weakest in the V4 group. Of the seven observations in this period, the SR's performance was the weakest in five of them (Figure 1.1a, b). This translates into further failures of the Slovak economy in catching up with the economic performance level of more advanced economies. We have been drawing attention to the lack of progress in catching up with advanced economies in the pages of this series of analyses for about a decade. In the current period, this topic has gained more social attention. This may be due to the fact that this has been a long-term phenomenon (it has been going on for about a decade), and due to the anniversary of the independent Slovak Republic, more attention has been paid to the assessment of the position and performance of the Slovak economy (including its international comparison). The non-improvement of the position of the Slovak economy has thus attracted more attention.

Figure 1.1
Economic Growth Parameters

a) Cumulative Growth of Real GDP in Period 2015 – 2022 (%)



b) Year-on -Year Change of Real GDP in V4 Countries (%)



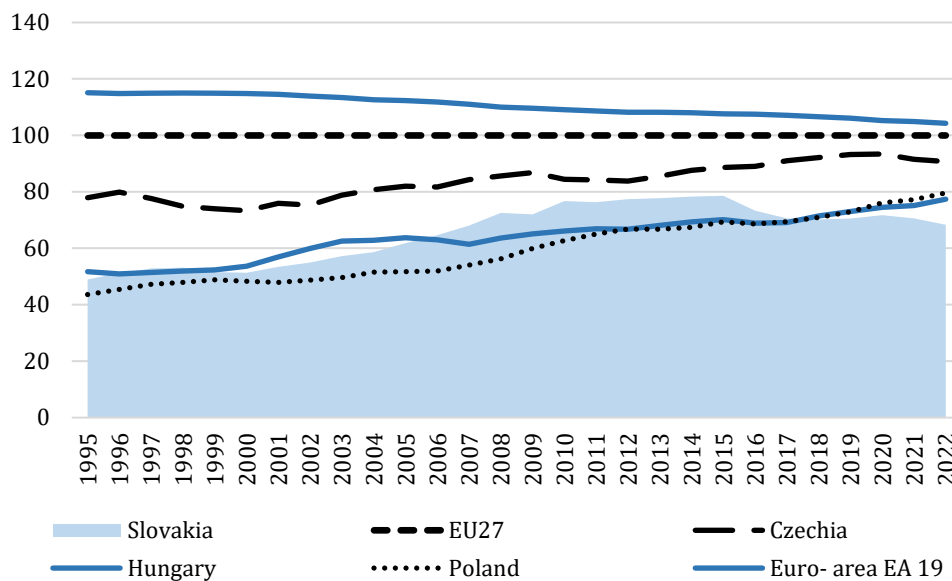
Source: Based on Eurostat data.

The failure to catch up with advanced economies, as measured by GDP per capita in purchasing power standards, has been relativised by analytical units in the Slovak Republic in view of the reported inaccuracies in

the reporting of purchasing power standards (see Dujava and Žúdel, 2023). In Figure 1.2, the lagging level of the Slovak economy after 2015 is well visible. It acts as a picture of divergence instead of the desired convergence. Such a tendency would be a fundamental failure in achieving the strategic goal of the SR. We respect the objections of domestic analytical services (such as NBS, IFP) to the reporting of purchasing power and focus our attention on the comparison of economic levels using GDP per capita in "current euros" (Figure 1.3). We get a less dramatic but still unsatisfactory picture. There is no widening of the gap between the level of the Slovak economy and that of the EU27, but we still note a very slow (almost no catching up in recent years) of the more advanced ones. Slovakia's position within the V4 group is also deteriorating. This is further evidence of the evaporation of the previous growth drivers and the so-called growth model (which was based on the adoption of foreign technologies, foreign investment, imitation).¹

Figure 1.2

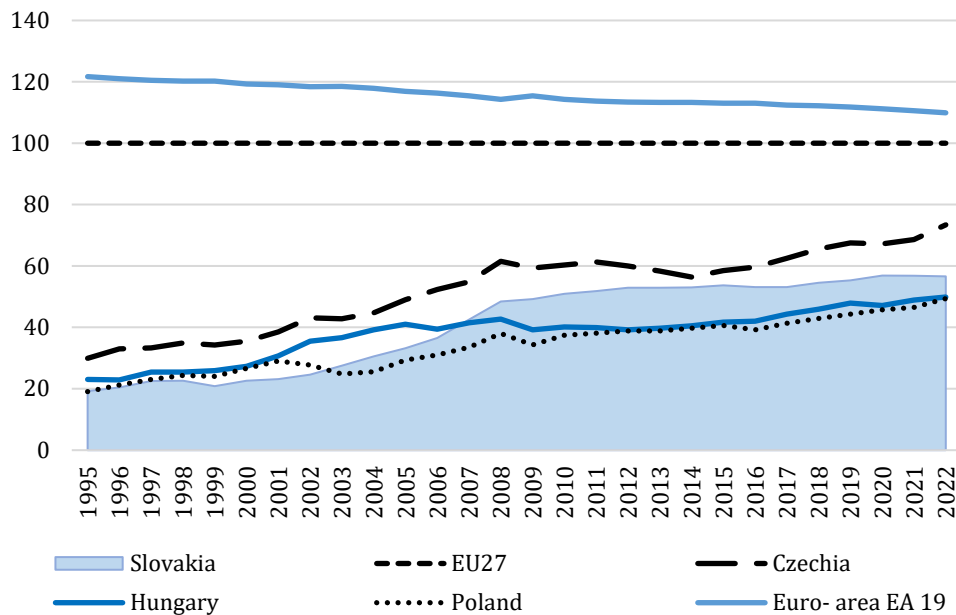
GDP per capita (in purchasing power standard), Ratio to EU27 Level
(EU27 = 100)



Source: Based on Eurostat data.

¹ See European Commission (2019) or Žuk et al. (2018).

Figure 1.3
GDP per capita (in EUR), Ratio to EU27 Level
 (EU27 level = 100)

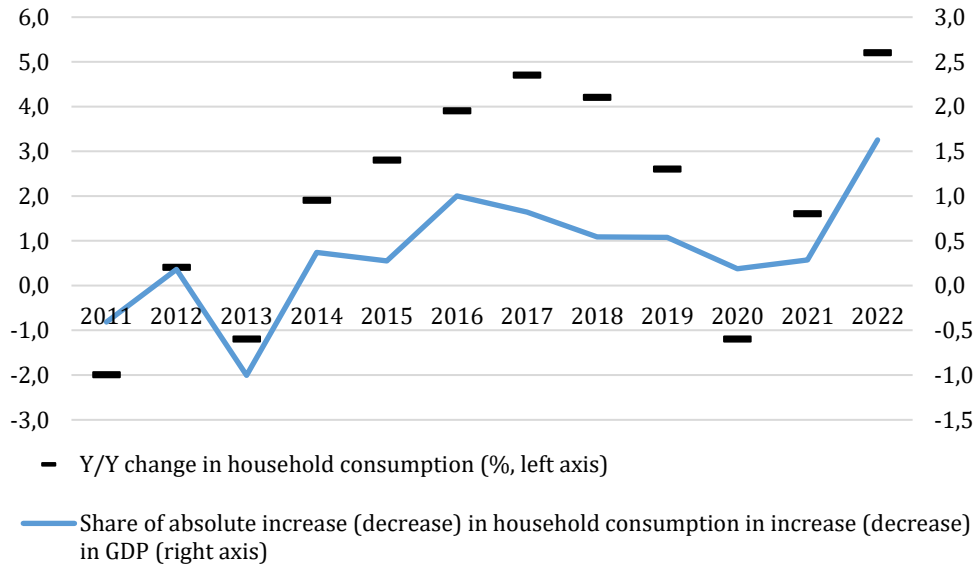


Source: Based on Eurostat data.

Growing Consumption and Employment – Despite Adverse Circumstances

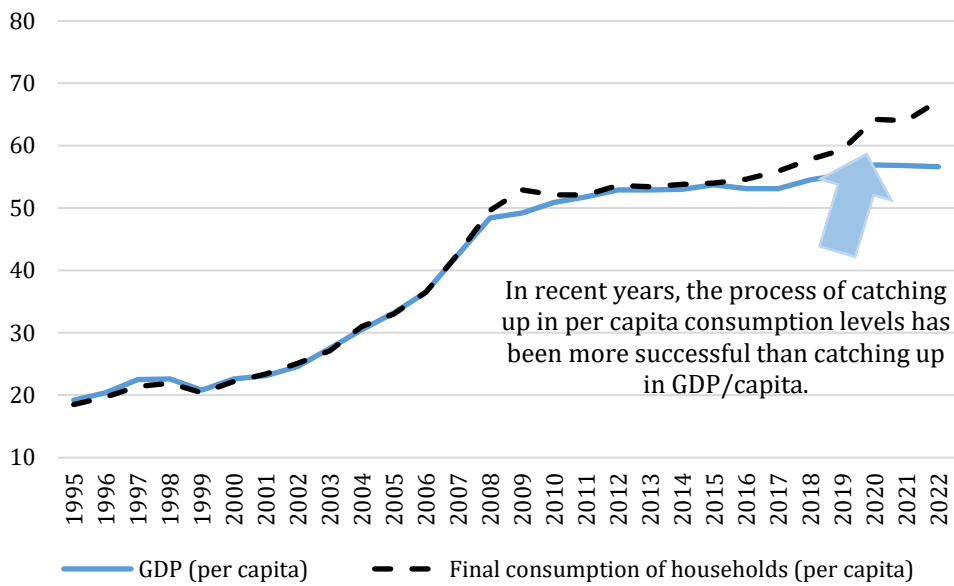
An interesting feature of economic growth in 2022 was its unusually strong dependence on household consumption. Such strong growth in household consumption (5.7% at constant prices) was last seen in the expansion years before the 2009 global recession. The increase in household consumption (as a component of GDP use) was significantly larger than the increase in total GDP (Figure 1.4). The expansion in household consumption is all the more interesting because it came at a time of exceptionally strong inflation, falling real wages and heightened social tensions related to the confluence of several negative shocks. Strengthened growth in household consumption at such a "multi-crisis" moment is not a phenomenon specific to the Slovak economy. At the same time, household consumption grew rapidly across the crisis-ridden European Union. One of the few exceptions was the Czech Republic.

Figure 1.4
Final Consumption of Households Dynamics



Source: Based on Eurostat data.

Figure 1.5
Catching Up with the Level of Household Final Consumption (per capita) and GDP (per capita) of the EU27
 (EU27 level = 100, calculated from data in EUR)



Source: Based on Eurostat data.

To this it can be added that for about a decade consumption in the Slovak Republic has had solid growth (only a short weak decline in the recession). There is a long-term tendency towards a preference for high consumption, albeit at the cost of household debt. This is also reflected in the fact that the catch-up of consumption levels (per capita) of advanced economies has been progressing faster than the catch-up of their performance and productivity in the recent period (Figure 1.5).

The unusual consumption growth (the strongest in 14 years) has several possible partial explanations:

- The state has massively compensated for the increased cost of living caused by the inflation shock and assured the population that it would "cover" a substantial part of the incoming cost shock. This may have changed households' strategy; they were willing to undertake more spending even in an adverse period. In other circumstances, in a difficult period, with negative expectations, the 'precautionary motive' would probably have prevailed and households would have saved more in anticipation of a possible threat. In the current situation, they even increased consumption at the expense of debt.
- Households may have been motivated to consume more to compensate for deferred, subdued consumption from the recent pandemic recession. As pandemic restrictions receded, it was possible to resume using services affected by earlier bans. This effect of offsetting deferred consumption is possible even though household consumption in Slovakia fell only modestly during the pandemic (as showed in last year's edition of this analysis series). However, demand for some services has fallen substantially and this is where the need for compensation may arise.
- Inflationary expectations or fears of a widening military conflict may also have played a role. If, when inflation occurs, consumers expect a longer-term and escalating rise in prices, this may motivate them to accelerate purchases (for fear of further price rises). It is therefore very important not to underestimate the shaping of expectations and the impact of mass-psychological factors. Also, fears following the outbreak of war in Ukraine may have led to temporary stockpiling and thus increased purchases in the short term (especially in the eastern part of Slovakia).

- The strong growth in consumption has occurred against a background of a sharp rise in the inflation rate and a fall in real wages. This may give the impression of a paradox – household consumption growth when real wages have fallen. However, it should be taken into account that although real wages have fallen, the number of wage earners has risen significantly. Therefore, the total amount of wages paid out in one year has risen by almost EUR 3 billion. In 2022, 161,000 more working hours were worked in the economy than in the year before. The number of employed persons increased by 42 thousand (data according to the national accounts, we do not take into account those working abroad), which is quite a significant increase by the terms of the economy of the Slovak Republic. Such increases are usually not achieved even in a better economic climate. Part of the reason for this is the return to pre-pandemic employment levels. Household consumption growth and employment growth can be mutually supportive: household consumption is the component of GDP with the most favourable impact on employment. And rising employment has a significant impact on household consumption, there is a two-way relationship.

The sharp increase in the number of hours worked and the number of persons employed after the pandemic recession was overcome is also made possible by the fact that these parameters fell particularly sharply in Slovakia during the pandemic. Figure 1.6 presents a combination of changes in the volume of hours worked in the economies of European countries and changes in the number of persons in employment during the pandemic period (2020 – 2021). It shows that the volume of hours worked (which is a measure of the amount of work done) has fallen particularly sharply in the Slovak Republic.

Thanks to the new approach of employment policy (labour cost sharing and a decline in the average number of hours worked per worker, the so-called 'Kurzarbeit'), this decline in the quantity of work has only partly been reflected in a decline in the number of employed persons. The Slovak Republic was one of the countries in which this policy reduced the average number of hours worked per worker quite significantly (see comparison in Figure 1.7). But even so, the decline in the number of employed was quite significant in international comparison.

Figure 1.6

Combinations of Changes in Total Volume of Hours Worked and Changes in the Number of Employed Persons during the COVID-19 Pandemic
(Cumulative changes for the period 2020 – 2021, in %)



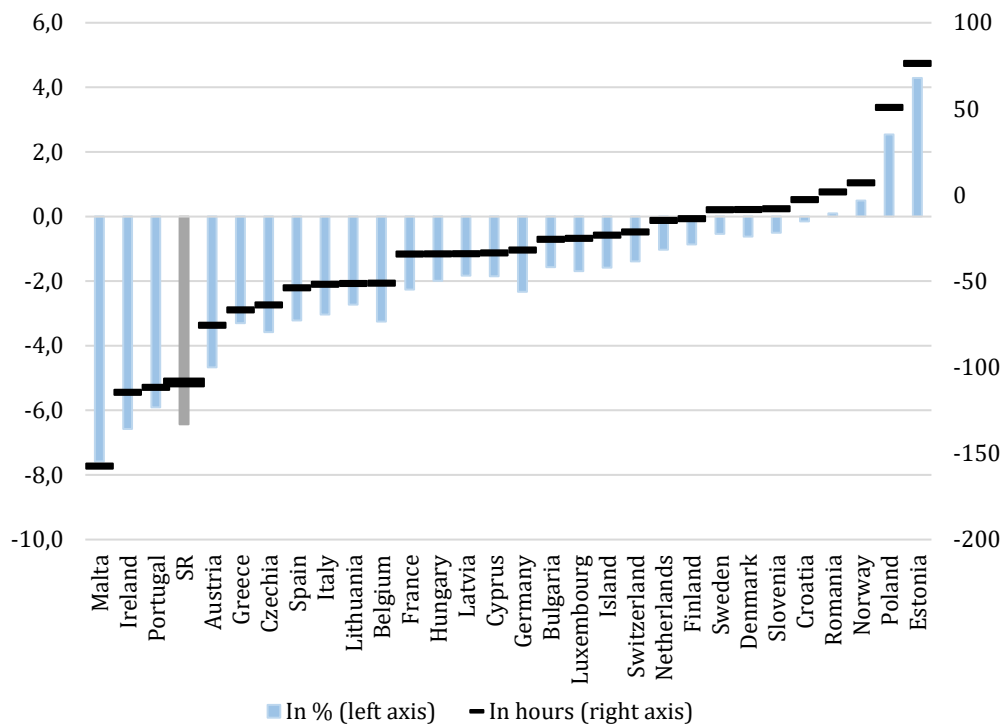
Source: Based on Eurostat data.

This suggests that the impact of the pandemic on the labour market has not been as mild as an initial look at changes in employment or unemployment would indicate. The employment support policies implemented have been a significant positive change in the sense that the pandemic recession has not caused the same labour market problems as previous recessions (hours worked have fallen, but the number of employed has fallen relatively slightly and unemployment has risen only modestly). However, in European comparison, the negative impact of the pandemic recession on the labour market in the Slovak Republic has been among

the most pronounced. This, however, further suggested the possibility of a more significant year-on-year improvement in the parameters after the pandemic period had passed. With conditions returning to "normal", labour market parameters could thus improve quite significantly in 2022, which could also have a stimulating effect on the year-on-year increase in household consumption.

Figure 1.7

Changing the Average Number of Hours Worked per Worker – Applying a New Approach to Employment Policy during a Pandemic
(The 2021 level compared to the 2019 pre-pandemic value)



Source: Based on Eurostat data.

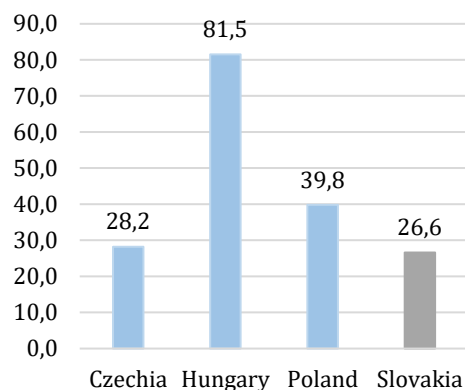
We have observed relatively strong yet stable household consumption (with only a slight negative fluctuation during the pandemic recession and a sharp recovery afterwards), which contrasts with the characteristics of capital formation. Household consumption has for some time had a much more favourable trend than fixed capital formation. This is a problematic trend in terms of the options for further growth in output and productivity.

Gross fixed capital formation in the Slovak Republic has weaker dynamics than in other V4 economies in the longer term (Figure 1.8a); the lag in GFCF dynamics is particularly pronounced after 2016 (Figure 1.8b); and the investment rate is already clearly lagging behind (Figure 1.8c).

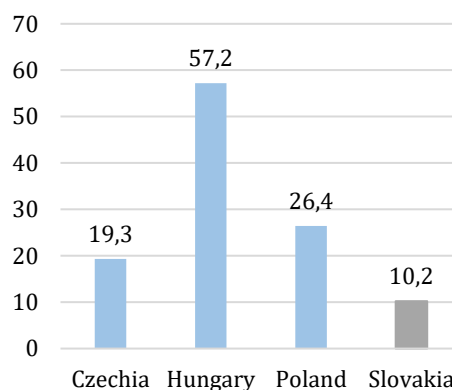
Figure 1.8

Gross Fixed Capital Formation (GFCF) Parameters

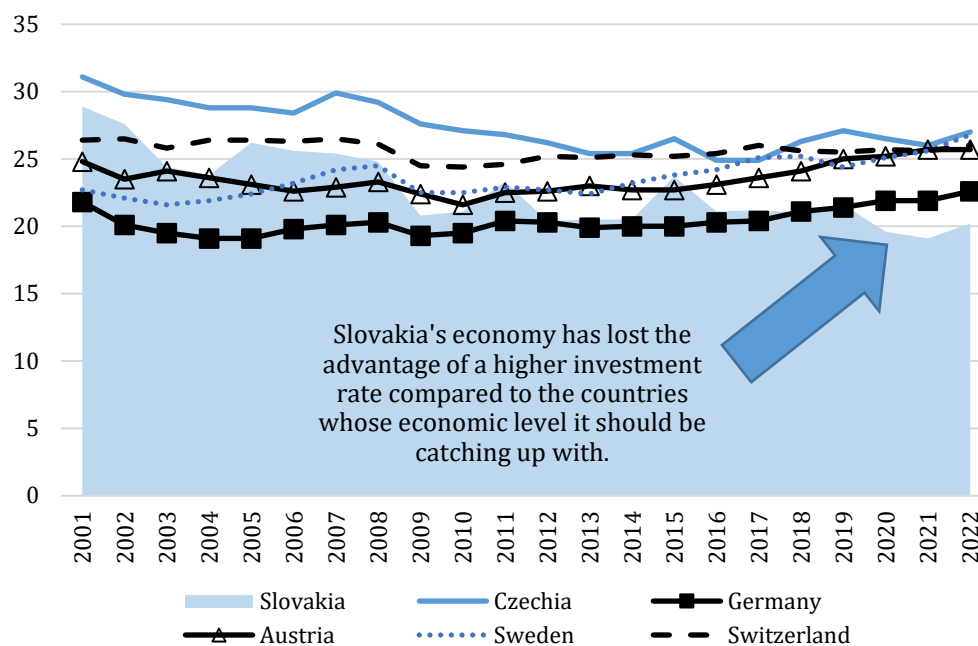
a) Cumulative Change 2012 - 2022 in % (in real terms)



b) Cumulative Change 2016 - 2022 in % (in real terms)



c) Investment Rate (GFCF/GDP), in %



Source: Based on Eurostat data.

Although fixed capital formation in the Slovak Republic recovered in 2022, this was also the case in other economies, and thus the investment rate in the Slovak Republic continued to lag behind. The lagging investment rate raises questions about the possibility of catching up with the level of more advanced economies (lagging economies should have higher investment rates than more advanced ones). In addition to the low dynamics of investment in fixed capital, investment in the Slovak Republic is also highly volatile over time. The volatility of capital formation in the Slovak Republic is much more pronounced than in advanced economies, but also in comparison with other V4 countries. The parameters of average and standard deviations (which show the stability or instability of values) are at least twice as high in Slovakia compared to the sample of advanced economies (Table 1.1).

In last year's edition of this analysis, we noted that during the pandemic, economic policy in the Slovak Republic was much more successful in protecting consumption levels than investment levels (household consumption declined modestly, but capital formation declined exceptionally by EU terms). Based on the other findings presented here, the low dynamics of fixed capital formation looks like a longer-term problem and a serious challenge for economic policy.

Table 1.1

(Non-) Stability of Gross Fixed Capital Formation

(Indicators of deviations in the rate of change of GFCF at constant prices)

	Average deviation	Standard deviation
Slovakia	9.94	14.09
Czechia	7.12	9.19
Hungary	6.78	9.45
Poland	8.74	10.57
Germany	4.84	7.01
Austria	4.07	5.27
Sweden	5.93	7.96
Switzerland	3.99	5.15

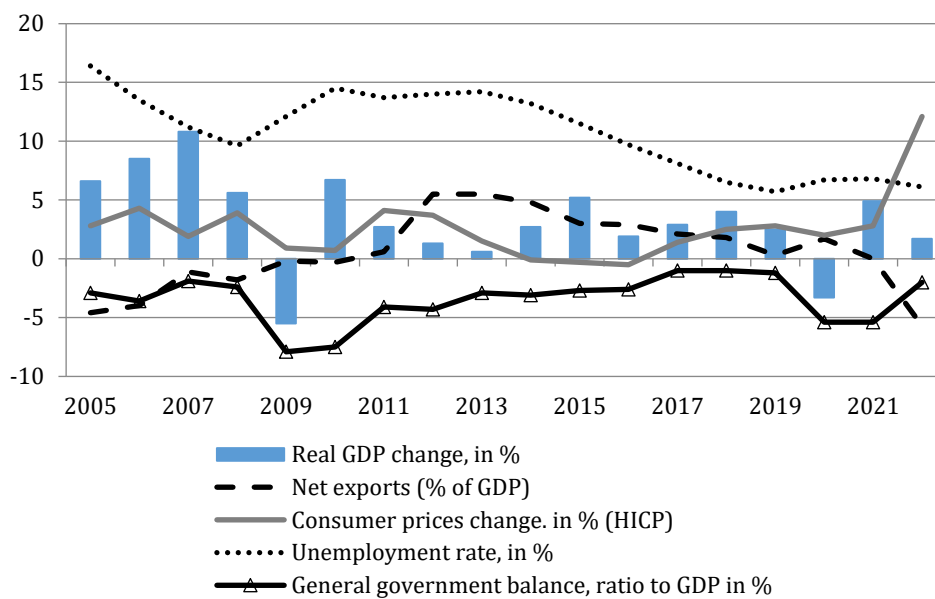
Source: Based on Eurostat data.

Macroeconomic Stability Disrupted as It Has Not Been for a Long Time

After a prolonged period of macroeconomic consolidation, the first signs of disruption have emerged during the pandemic recession. However, once the recession is over, it is not the restoration of the stability that comes, but rather a further disturbance (Figure 1.9 provides only a simple view of the stability parameters; these are assessed in more detail in the following chapters).

Figure 1.9

Main Indicators of Performance and Macroeconomic Balance



Note: Unemployment rate by labour force survey. Net exports (exports of goods and services less imports/GDP) calculated from data in current prices.

Source: Based on Eurostat and ŠÚ SR data.

The most striking manifestation of destabilisation is the sharp rise in the price level. In the background of this shock is a confluence of several unique factors, such as the energy crisis, geopolitical uncertainty, scarcity of productive inputs (due to the breakdown of global production chains during pandemic constraints), climatic impacts (on the agri-food sector) and years of expansionary monetary policy (pumping 'cheap money' into European economies), among others.

Although there is a tendency to associate the inflation shock automatically with the war in Ukraine, inflationary pressures started before it. Price shocks in food commodities, as well as energy prices and the price of missing components and materials, started already in 2021. However, the war multiplied the inflationary effects. After two decades of mild inflation, even deflation (2014 – 2016), the inflation shock was perceived with extreme sensitivity and was understandably the most prominent political agenda. A detailed look at the problems of the inflation shock is provided in the chapter on price developments.

An unfavourable trend is present in both the general government balance and the external trade balance:

- The stability of public finances has already been undermined by the pandemic recession. Extensive compensatory measures, state transfers to businesses and households, together with the economic contraction, widened the public deficit (but not to the extent of the 2009 recession). After the pandemic receded, there was pressure for further compensation, linked to the rise in price levels. These were compensations for the increased cost of living of the population or for the high prices of energy inputs in enterprises. This increased public expenditure and made it impossible to consolidate public finances. The result of the general government balance in 2022 may appear surprisingly favourable in Figure 1.9 (a deficit of "only" -2% of GDP), but this does not give reason for optimistic assessments. Indeed, this result has also been affected by the extraordinary inflationary tax revenue. Moreover, the measures triggering a massive increase in future spending have not yet been reflected in the 2022 figures (see the chapters on public finances and economic policy measures for more details).

- For the first time in a long time, the balance of exports and imports of goods and services was also quite significantly negative (-5.7% of GDP, using current prices). The price factor also contributed to a large extent: the prices of imported commodities rose significantly more than those of exported commodities (Table 1.2). This implies a negative evolution of the so-called terms of trade and a limitation of the benefits of foreign trade: It is possible to buy less imports per unit of exports from the Slovak Republic

(see more on the issue of exchange rates in the chapter on price development). Even with the contribution of rising export and import prices, the shares of both these variables in relation to GDP rose to record levels: imports of goods and services were greater than GDP at current prices for the first time in history (Figure 1.10). This implies a further sharp increase in the openness of the economy (the ratio of exports and imports to GDP) and hence in the sensitivity of the economy to external impulses.

Table 1.2

Comparison of Price Changes for Exports and Imports of Goods and Services
(y/y changes in %)

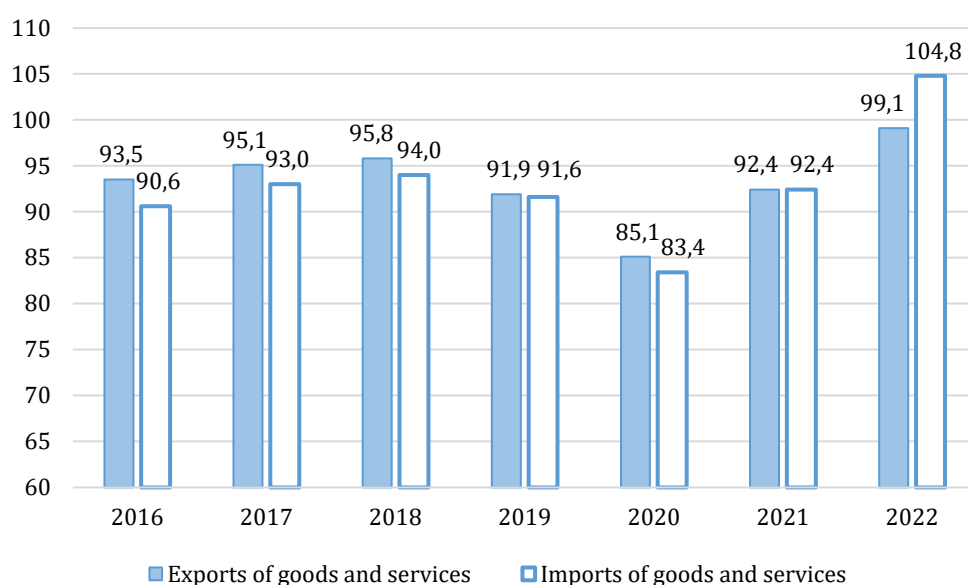
	2016	2017	2018	2019	2020	2021	2022
Export prices	-1.5	2.2	1.8	0.0	-2.2	5.1	14.6
Import prices	-1.1	2.8	2.4	0.2	-1.9	6.0	19.3

Note: Ratio of changes in current and constant prices (price deflator).

Source: Based on Eurostat data.

Figure 1.10

Ratio of Exports and Imports of Goods and Services to GDP (in %)
(Export performance and import intensity)



Note: Calculated from data in current prices.

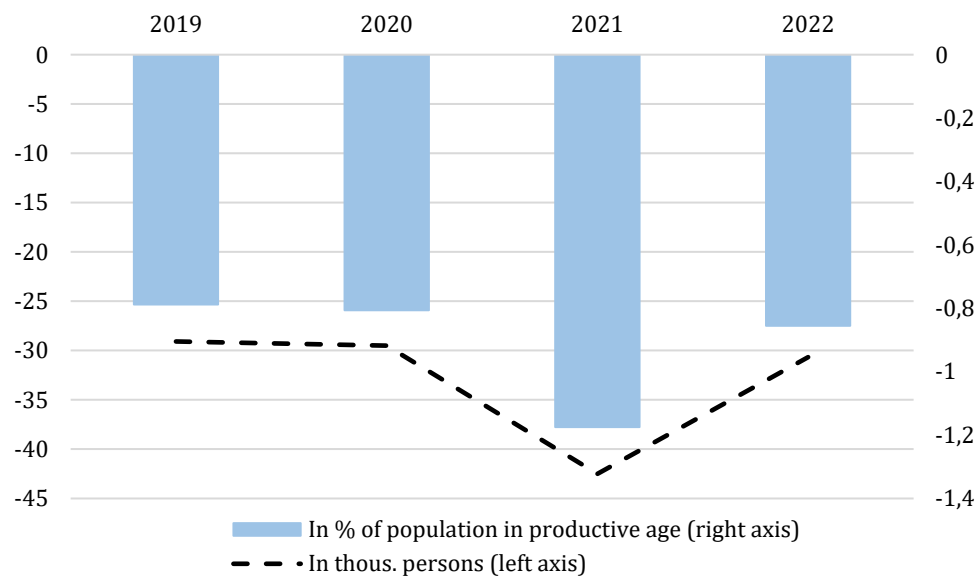
Source: Based on Eurostat data.

The equilibrium parameter, which had a favourable direction even in the turbulence of 2022, was the unemployment rate. It moved towards its pre-pandemic level and, at 6.1%, reached the second lowest value in the country's history (the lowest was in 2019 at 5.7%). This low level (by Slovak standards) was due not only to the aforementioned new approaches to employment policy and the post-pandemic return to normal labour market functioning, but also to the persistently declining number of working-age persons (Figure 1.11).

Without a recognition of this demographic phenomenon, it is not possible to explain the relatively favourable unemployment parameters with shocks burdening the economy from 2020 onwards. The number of working-age population (the base for labour supply) has fallen by between 30,000 and 42,000 persons each year over this period. This factor is an acute constraint on the growth of the unemployment rate, but in the long run it may be a drag on the growth of the economy.

Figure 1.11

Decrease in the Number of Working-Age Persons
(Decline in the labour supply base in the labour market)



Note: The decrease in the number of persons (in thousands) is shown on the left axis. The decline as a percentage of the working age population is shown on the right axis.

Source: Based on ŠÚ SR data.

* * *

Although the Slovak economy was in the grip of extraordinary threats in 2022, its results do not point to a clear decline. On the one hand, macro-economic phenomena in the form of high inflation rates, the absence of significant catching-up with advanced economies or the disruption of the balance of public finances are problematic. But on the other side are things like the persistence of at least moderate real GDP growth (recessionary fears were also present), employment growth and falling unemployment rates, as well as strong consumption growth. The picture has thus been quite jagged, and this is an acceptable state of affairs given the series of shocks suffered, but with ongoing risks. In the following chapters, we discuss individual phenomena in more detail, focusing on narrower insights.

2. PRICES AND INFLATION

Price development was probably the most discussed topic in society in 2022. A combination of several factors such as rising food prices, energy prices, and general economic uncertainty caused the country to record the second-highest inflation rate in its history at 12.8% as measured by the national CPI methodology.² When measured in HICP terms, the headline inflation rate climbed to 12.1%.³ Thus, the inflation rate moved significantly away from the target for the first time in many years, decreasing the purchasing power of the population.

Development We Have Not Seen for a Long Time

In the composition of the consumer basket, we do not find any category that has experienced a decline or stagnation in development. The only difference between categories is whether they grew at a single- or double-digit rate. However, without attempting to exhaust all the factors that have been influencing price level growth, we can identify the following as the main ones:

- *Record food price rises* – food prices rose by a record 18.6% year-on-year. The rise was driven by an almost perfect storm of inflationary factors, created first by the rise in agri-commodities on world markets, which were later compounded by rising producer costs (rising energy prices, raw material prices themselves, and, upward pressure on workers' wages). Therefore, the impact on the low-income population was enormous.

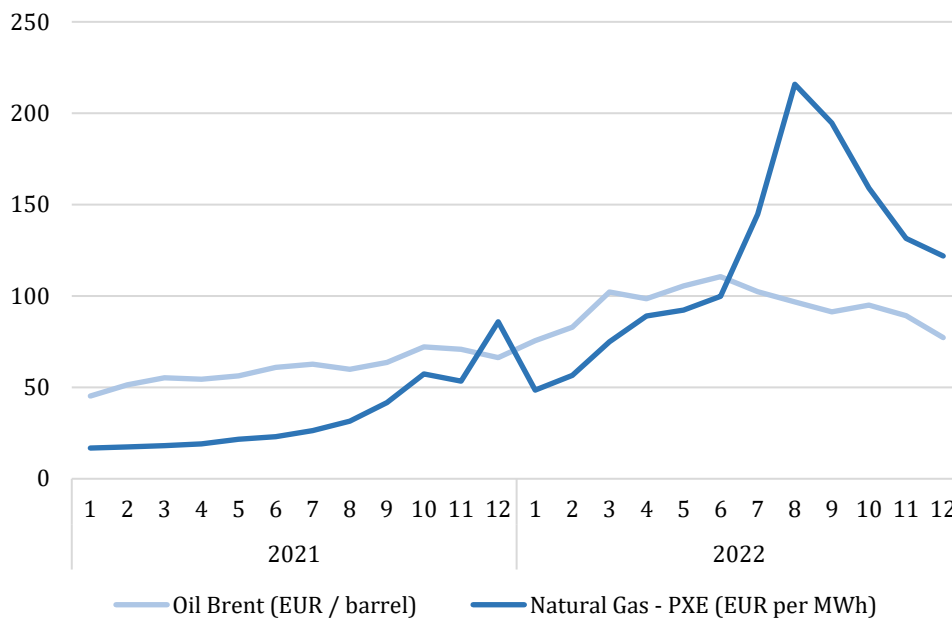
- *Energy commodity price panics (both fuel and gas)* – energy commodity prices have been a significant contributor to rising inflation, as they serve as an essential input to almost all production. In the case of oil, the price more than doubled in 18 months (from January 2021 to June 2022); even more ominous was the trajectory of natural gas prices on the Prague

² A higher inflation rate was recorded in the Slovak Republic only in 1994, when it was still 0.6 p.p. higher.

³ We discussed the difference in the growth rates of inflation measured by the CPI and the HICP in last year's edition of this publication.

PXE, where, on monthly averages, the price of gas increased more than twelvefold from the beginning of 2021 to an absolute peak in August 2022. A positive sign has been the gradual price decline in both commodities since the third quarter, but a return to values before the inflationary pressures began is out of the question. At the end of the year, the price of oil was still more than half as expensive as at the beginning of the year, and even two and a half times more expensive for gas.

Figure 2.1
Oil and Gas Price Development
 (monthly averages, in EUR per barrel and MWh)



Source: kurzy.cz (2023).

- *Regulated prices rise at the beginning of the year* – even before the full-blown panic in energy commodity markets in the summer of 2022, regulated energy prices contributed to the overall inflation rate at the start of the year, with gas, electricity and heat prices rising by 20%, 12%, and 11% respectively. Thus, at the very beginning of the year, already running inflation received an additional boost, increasing it by almost 2 p.p. month-on-month.

- *Prices of construction materials* – prices of construction materials continued to rise this year, directly affecting the contribution of the *housing, water, electricity, gas, and other fuels* category. This was done through the imputed rent item, which we covered in last year's edition of this publication. Still, the positive news is that most households that have not renovated or built new housing have experienced a lower inflation rate than the officially measured by CPI. Rather, it more closely resembled the values measured through the HICP methodology.

Accelerated Inflation Has become a Global Phenomenon

The year 2022 will go down in economic history as the year when the rate of inflation rose significantly in the vast majority of the world's countries.⁴ The high inflation rate has affected countries that are part of the euro area as well as those that are not. The three Baltic countries have the highest inflation rates in the EU, followed by the three V4 countries with their own monetary policies (Czech Republic, Hungary, and Poland). Thus, the length of the transmission mechanism of individual monetary policies in Central Europe has not allowed prompt interest rate hikes at the first signs of rising inflation to take effect and has had only a limited impact so far.

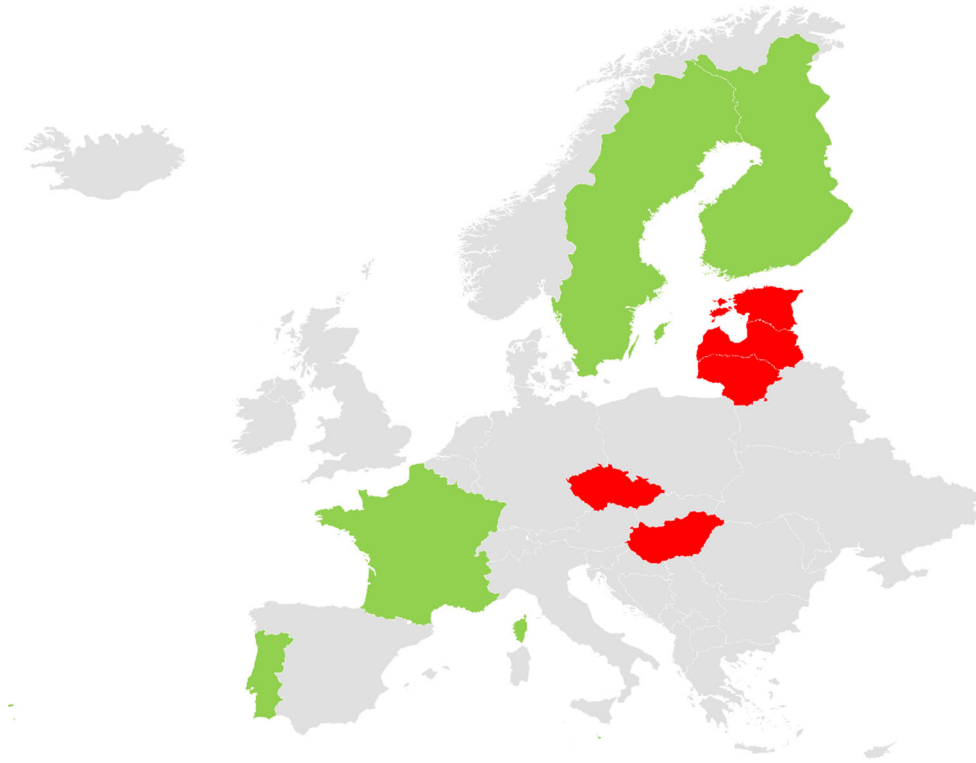
Returning to the level of headline inflation in the EU, France (5.9%) has the lowest level in 2022, followed by Malta (6.1%) and Finland (7.2%). These figures already show the seriousness of the inflation development issue, as even the countries with the lowest year-on-year price level change in the EU were very far from the inflation target.

While accelerating inflation has affected the whole EU, the impact cannot be said to be the same across countries. Central and Eastern European countries in particular have been hit the hardest, with the top nine countries (a third of EU members) with the highest inflation rates consisting of members that only joined the EU in 2004 and later. However, despite the very high rates, Slovakia had the lowest annual inflation rate in the V4 group.

⁴ Among the economically strongest countries (G20), only China, Japan and Saudi Arabia have achieved inflation rates of up to 3%.

Image 2.1

TOP 5 Countries in the EU with the Highest (red) and Lowest (green) Inflation Rates in 2022 (HICP)



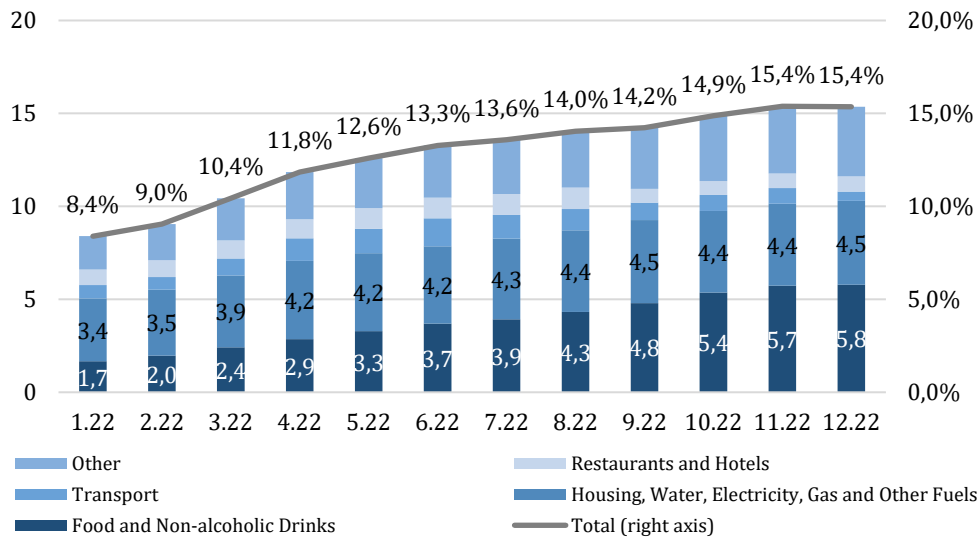
Source: Based on Eurostat data (2023).

In the consumer basket, the situation from the previous year has repeated and there was a consistent development in all categories. None of the categories showed negative developments and all of them contributed to the gradually accelerating inflation. The inflation was mainly driven by the categories *food and non-alcoholic beverages*, together with *housing, water, electricity, gas, and other energy*, which together account for almost half of the weights of the total consumption basket (47%). Thus, two-thirds of the total year-on-year change in the price level in each month can be attributed to these two categories. In the first half of the year, the contribution of the *transport* category, which peaked in the summer, gradually increased under the influence of rising fuel prices. However, its contribution decreased with the gradual reversal of oil prices on world markets. On average, prices in this category still rose by 15.7% year-on-year. Rapidly

rising food prices for both inputs and energy and upward pressure on employee wages also forced prices up for products in the *restaurants and hotels* category, which rose by 16.2% on average. The cumulative impact of the above-mentioned categories thus accounted for three-quarters of the overall inflation rate in Slovakia.

Figure 2.2

Annual Headline Inflation by Month and Contribution of Selected Consumer Basket Categories to Headline Inflation (in p.p. and %, 2022)



Source: Based on Macroeconomic Database NBS (2022).

Thus, it can be concluded that in 2022, several factors that have made inflation the number one macroeconomic issue have materialised. The very first inflationary impulse at the beginning of the year was caused by administered prices, to which was added an unprecedented rise in food and fuel prices. The development supported by global uncertainty and the proximity of the military conflict amplified inflationary pressures, which caused that although nominal wages in the economy grew by 7.7%, real wages fell at the second fastest pace in the history of Slovakia (by 4.3% year-on-year). A deeper fall in real wages was recorded in Slovakia only in 2000.⁵

⁵ For a more detailed description of wage developments in the economy, see the chapter on the labour market.

Table 2.1

Overview of the Main Price Indexes in Slovakia (in %)

	2019	2020	2021	2022
<i>Inflation rate (HICP):</i>				
Euro area	1.2	0.3	2.6	8.4
Slovakia	2.8	2.0	2.8	12.1
Czech Republic	2.6	3.3	3.3	14.8
Hungary	3.4	3.4	5.2	15.3
Poland	2.1	3.7	5.2	13.2
<i>Industrial prices:</i>				
Industrial producers' prices – total	1.9	-0.4	6.8	29.3
Industrial producers' prices – domestic	2.5	0.8	5.5	43.3
- of which: Manufacturing	0.7	-1.9	5.8	18.1
Industrial producers' prices – export	1.5	-1.1	7.6	20.5
Construction work prices	3.9	2.9	3.8	18.3
Construction material prices	1.8	-0.8	11.6	22.9
Agricultural products prices	1.8	0.5	12.3	36.5
Real estate prices – apartment – average	8.5	9.6	15.4	22.4
Real estate prices – house – average	5.1	8.1	29.6	15.2
<i>Deflators:</i>				
GDP deflator	2.5	2.4	2.4	7.8
Government consumption deflator	5.6	6.5	3.9	10.1
Private consumption deflator	2.7	2.2	3.3	13.2
Fixed investments deflator	1.2	0.7	2.2	10.3
Export deflator of goods and services	0.0	-2.2	5.1	16.1
Import deflator of goods and services	0.2	-1.9	6.0	21.5
Terms of trade	-0.2	-0.4	-0.9	-5.4

Source: Eurostat (2023); Macroeconomic Forecast MF SR (February 2023); Datacube database ŠÚ SR (2023) and Macroeconomic Database NBS (2023).

Producer Prices Pulled Up by Electricity and Gas Supply

A higher rate of price growth in the economy has already been recorded by industrial producers in 2021, but even compared to this year, the development in 2022 seems inconceivable.

A look at the price structure of industrial producers shows that their prices rose by almost 30% y-o-y on average (prices of industrial products for export grew slower than in aggregate, rising by more than 20% y-o-y).

However, the prices of industrial producers producing for the domestic market grew more than twice as much as those of exporters, by up to 43.3% y-o-y. The main contributor to this extreme growth was the price development in the *electricity, gas, and cold air supply* category, where prices rose by more than 87% year-on-year. In the more detailed structure of this sector, prices rose the most in *electricity generation, transmission, and distribution* by more than 105%, followed by *gas generation: piped gas distribution*, where prices rose by almost 60%. Among the manufacturing sectors, the fastest price increases were in the *manufacturing of coke and refined petroleum products* (up 70.4%) and in the *manufacturing of chemicals and chemical products* (up 50.5%).⁶

Prices of construction materials continued the trend of the previous year and increased by almost 23%, which was also reflected in the contribution to the overall inflation rate through imputed rent. This is the highest increase on record since measurement began in 2003. The same is true for the evolution of construction work prices, which rose by 18% year-on-year.

Prices of agricultural products produced in the domestic economy have increased sharply, rising by an average of 36.8%. The price development was mainly driven by the rising prices of crop products, which increased by almost 45% year-on-year. Prices of livestock products also rose by 21.3% and accelerated again after stagnation last year. The development of the agri-commodity market has had a major impact on price developments, with wheat, maize, and other crop commodities hitting new price records during the year. However, these have been reduced in the meantime, so that a correction of the unprecedented prices in this sector can also be expected in the near future.

In terms of deflators, the government consumption deflator was again above average, although it lagged behind the growth of the private consumption deflator by 3 percentage points (10.1% vs. 13.2%). The private consumption deflator thus grew even faster than the inflation rate measured by the national methodology. The GDP deflator grew at a rate of 7.8%, indicating that a significant part of overall inflation does not originate

⁶ In the second part of this chapter we will look in more detail at the management of producers in the light of their rising prices.

in the domestic economy but is imported by rising import prices. This confirms the evolution of the export and import deflators, as prices in Slovak foreign trade achieved significant growth. Thus, it is precisely small, relatively highly specialised, and foreign-trade dependent economies such as Slovakia that are in the unfavourable position of importing inflation to a large extent and lacking effective instruments to control it. Import prices rose by as much as 21.5% year-on-year, while prices of products for export rose at a slightly slower rate of 16.1%. It has long been the case in Slovakia that import and export prices have not developed favourably, but 2022 was also an exceptional year in this area. Terms of trade have fallen the most since Slovakia joined the euro area (by 5.4%). For the same amount of exports, it was again possible to import a smaller amount of imports.

While the first part of the chapter was rather factual, the second part deals more with qualitative economic analysis, which focuses on selected topics that have attracted attention for their development or their impact on headline inflation. In particular, we discuss the pressing problem of electricity price regulation for households and vulnerable consumers, how inflation affects the economy of enterprises, and how import-intensive the Slovak economy is for food imports.

When a Well-intentioned Regulatory Adjustment Backfires

The method of regulating electricity prices for households and vulnerable customers has historically been enacted in Slovakia on an annual frequency with new prices effective from January of a given calendar year. However, as recently as 2021, the Ministry of Economy was considering the idea of gradually liberalising electricity prices for households by 2026, and Slovakia would be one of the last EU countries to move away from the central setting of a maximum price for households. However, this changed abruptly with the onset of electricity price rises in the second half of 2021, when the centralised method of regulation at a frequency of once a year did a good job of protecting households from increasingly expensive electricity traded on the market.

Therefore, the regulated price itself for the coming year is based on a regulatory formula that normally considers the price development in the previous period. In the case of electricity, this is the arithmetic average of daily electricity prices on the Power Exchange Central Europe (PXE) for the period from 1 January to 30 June, the so-called decision period (DP). Suppliers then submit price proposals, which the Regulatory Office for Network Industries (RONI) assesses and decides on the maximum price for the coming year. Electricity prices for households and vulnerable customers for 2023 would thus be based on 2022 prices. However, as electricity prices on the PXE started to rise to previously unprecedented levels (especially in the second half of 2021 – prices rose by more than 77% in half a year (May-November 2021)), the RONI decided in good faith to adjust the regulatory formula towards the end of 2021.

The new decree of the RONI for the Regulation of Prices in the Electricity Sector, has shifted the decision period for setting prices for 2023 to the second and third quarters instead of the first half of the year, as traditionally given. This allowed suppliers to wait to buy electricity on the exchange in the belief that after the turbulent times at the end of 2021, calm would come and the price on the market would come down. However, the opposite was true, and during the first quarter of 2022, the spot price of electricity rose by a further 65%.

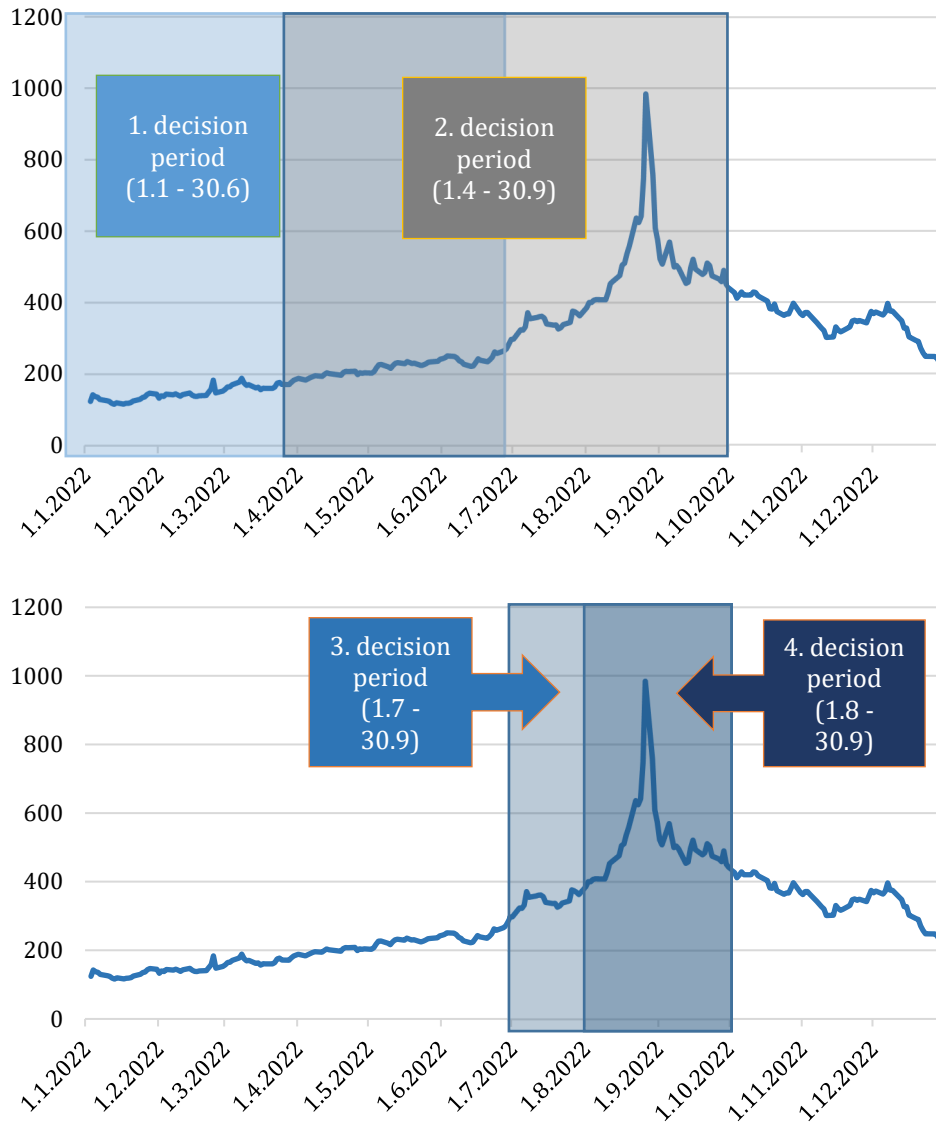
Thus, in its next decree, the RONI again postponed the decision period by another quarter, reducing the total period from six months to just three (only the third quarter of 2022). Due to a looming problem with the ability to enter into new electricity supply contracts, this decree also extended the list of vulnerable customers who are subject to price regulation by the RONI. However, the expected price decrease did not materialise in the second quarter, leading to the latest modification of the Decree of the RONI, which adjusted the DP only for a period of two months (August and September 2022).

The following figures present how the shift of decision periods has evolved against the background of the actual evolution of electricity prices on the exchange and it can be seen at a glance that the regulator has hit the least appropriate timeframe of all the options in determining the DP.

Electricity prices peaked in August, which would not have been taken into account in the original DP, but played the most important role in the most recent version of the DP.

Figure 2.3

Evolution of the Shift of Decision Period According to the Decree of the RONI with the Real Evolution of the Electricity Price per MWh on the PXE (in euros)



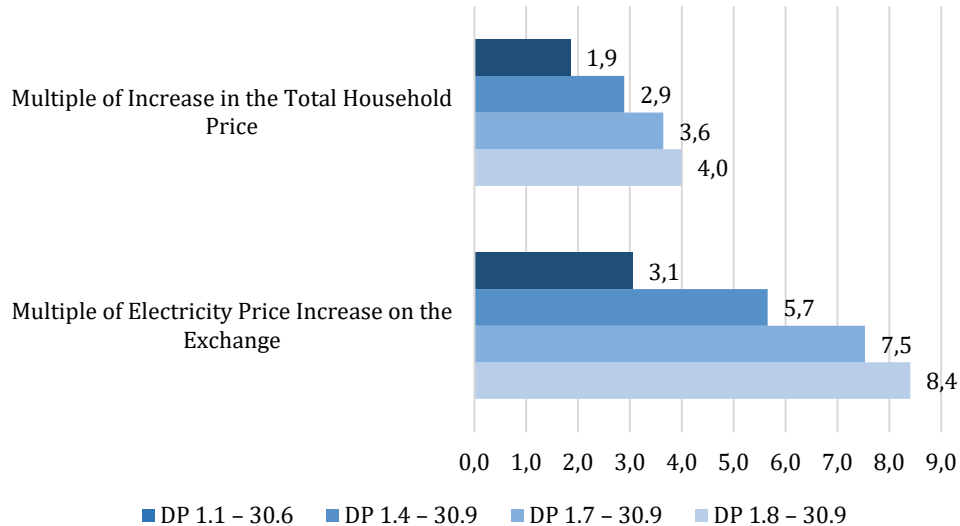
Source: Based on slov-lex.sk (2023) and pxe.cz (2023).

Of course, at the time of deciding on the DP determination, the RONI had no way of knowing that its postponement would make the whole situation even worse. The following figures show how the final price of electricity for households and vulnerable customers, as well as the price of electricity itself on the exchange (as an input to the regulatory formula), would evolve according to the different decision periods. If the original DP had been left unchanged, the price entering into the maximum price calculations would have been at 3.1 times the previous year's price. However, by shifting the DPs, what happened was that the price going into the pricing proceedings ended up being on average 8.4 times the previous year's price.

As the price of electricity for households is composed of several components, with power electricity alone accounting for an average of 40%, the total impact (assuming unchanged prices for the other components of the electricity price) would increase by a factor of 1.9 under an unchanged DP. However, by gradually shifting the DP, electricity prices would risk reaching up to four times the 2022 price.

Figure 2.4

Development of the Final Electricity Price for Households and the Reference Price for Regulatory Purposes by Decision Period in 2022

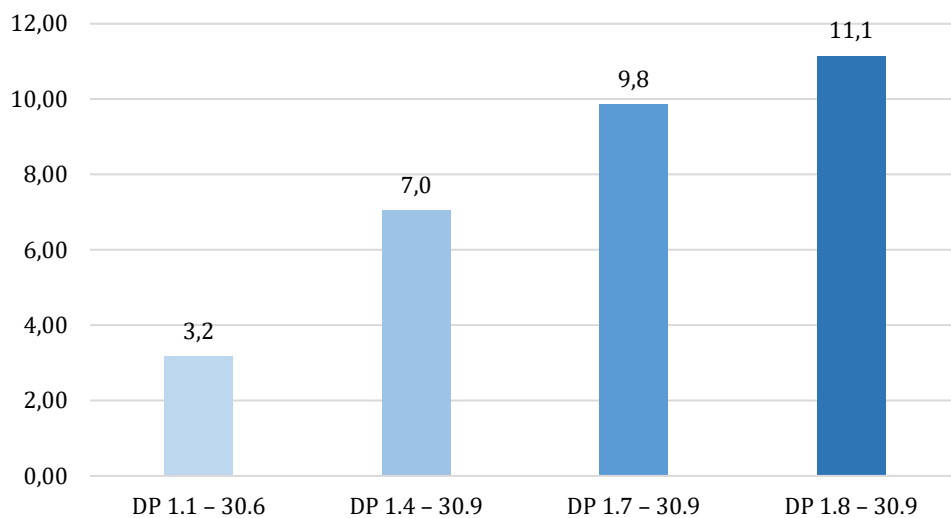


Source: Based on pxe.cz (2023).

This would represent a massive inflationary boost to the economy, contributing more than 11 percentage points to the headline inflation rate (see Figure 2.5). Thus, the inflation rate in January 2023 would not represent a 15.2% year-on-year increase, but as much as 26.3%. Just for comparison, if the DP period were unchanged, the overall inflation impulse would be 3.2 percentage points.

Figure 2.5

Potential Contribution to Headline Inflation Rate Due to Changes in Regulated Electricity Price for Households and Vulnerable Customers from January 2023 (in p.p.)



Source: Based on ŠÚ SR (2023).

Such a high potential increase in electricity prices eventually had to be reversed by a political decision, when the government declared a general economic interest in the supply of electricity to households and set the price of electricity at the same level as it was in 2022 (i.e. 61.2077 EUR/MWh). However, the general economic interest was not declared for the supply of electricity to small enterprises. Therefore, on the basis of the regulatory formula, which was modified several times, they received in January 2023 huge advance invoices for the supply of electricity, which were calculated on the basis of the DP shift. It created another problem for economic policymakers right at the beginning of 2023 when they had to

create new compensation mechanisms for high advance invoices, while the market price of electricity was trading at multiple times lower values. These are also the consequences of a well-intentioned regulatory adjustment that in the end only made the whole situation worse.⁷

Do Businesses Benefit from Inflation?

As already mentioned several times, inflationary pressures hit the whole economy in 2022, with manufacturing firms being the first to feel the price rises (especially for inputs). However, as the rate of inflation has gradually increased, claims and hypotheses have also begun to appear in public discourse that these enterprises are not only reflecting the increased prices of production inputs in their prices but they are also increasing the size of their profit margins, thereby further contributing to price increases and prolonging the period of elevated inflation.

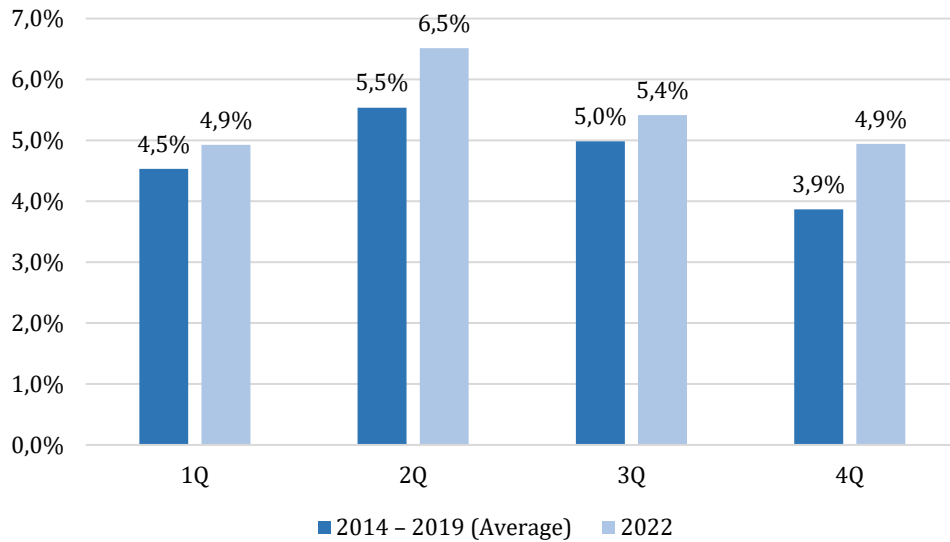
To verify this statement, we can use data published by the Statistical Office of the Slovak Republic, which on a quarterly basis surveys selected financial indicators of non-financial corporations with more than 20 employees. Thus, it is a smaller sample of producers in the economy, but sufficiently representative to test the hypothesis that corporations are increasing their margins under the cover of rising inflation. The name implies that the data does not include financial institutions or small businesses with up to 19 employees.

If the hypothesis were true, then it would have to be the case that the rate of cost growth to business is developing slower than the rate of growth of the pre-tax margin. Alternatively, the share of the margin in revenues should be higher than it has been in previous years. As these are seasonally affected data, the trend in growth rates across quarters is highly volatile. A better way to verify the claim of rising margins is to look at their share of company revenues and compare the development in 2022 with the average values in periods that have not yet been affected by the turbulent developments of recent years.

⁷ At the time of writing, the RONI has again shifted the 2023 DP for 2024 pricing from the first half of the year to the second and third quarters with a new decree. It remains to be hoped that this time it will have better results than the shifts that occurred in 2022.

Figure 2.6

Share of Pre-tax Margin in the Income of Non-financial Corporations over 20 Employees in Slovakia by Quarter (average 2014 – 2019 and 2022)



Source: Based on ŠÚ SR (2023).

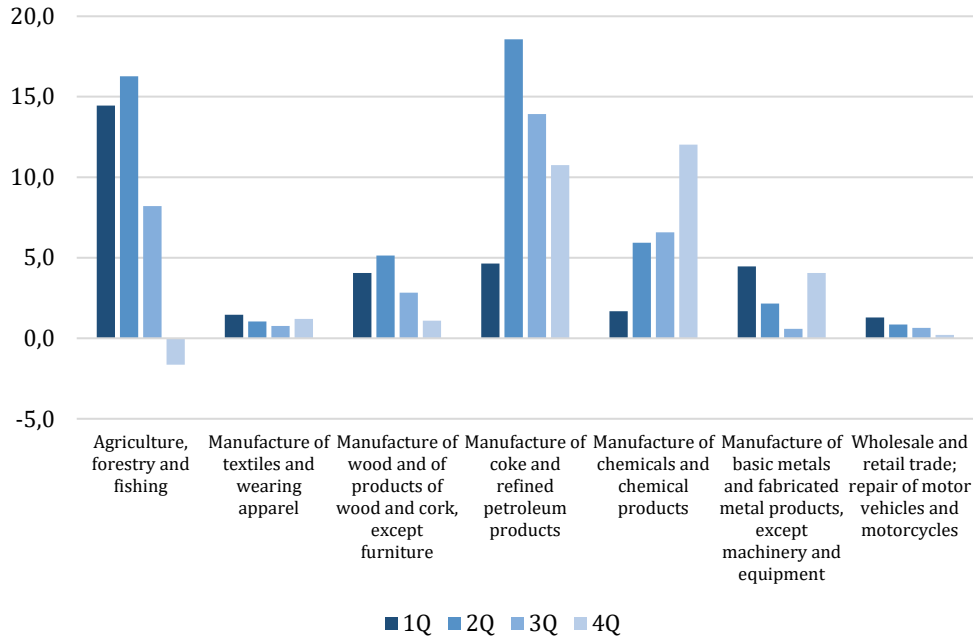
Figure 2.6 confirms that the average share of margins before tax margins will indeed increase slightly over 2022 compared to the average values of the period 2014 – 2019. This is an increase ranging from 0.4 p.p. to 1 p.p. With some degree of caution, the hypothesis is that, at an aggregate level, businesses have taken advantage of the market situation and, in addition to rising input prices, have implemented higher margins on their products. However, such cannot be generalised to the extent that all undertakings have done so. The demand for the products of some undertakings is more price sensitive than for others, and it is, therefore, desirable to look at the share of margins in the revenues of non-financial corporations at the sectoral level.

Indeed, the increase in revenue margins across sectors has not been uniform. The *coke and refined products sector* experienced the largest increase in the margin-to-revenue ratio. In particular, the second quarter of 2022 saw an increase of up to 18 p.p. compared to the 2014 – 2019 averages. This is a logical result, as the growth in the final price of the industry's products has risen much faster than the price of raw materials

(in particular Urals crude oil, which trades much cheaper compared to Brent). For this reason, a windfall tax was later imposed on the Slovak main producer.

Figure 2.7

Difference in Pre-tax Margin as a Percentage of Revenue by Industry between 2014 – 2019 Average and 2022



Source: Based on ŠÚ SR (2023).

However, the *agricultural sector* has also benefited from the overall rise in agri-commodity prices on world markets. They also improved their performance, particularly in the first half of the year, which in the past had regularly posted negative margins in the first half of the year in the 2014 – 2019 period, but managed to avoid them in 2022 and ended with a positive average margin. The margin-to-revenue ratio differential was close to 15 percentage points in the first half of the year.

Slightly lower (but still significantly positive) growth was recorded in the *chemicals and chemical products manufacturing sector*. It increased its margin gap over the year, while for the previous sectors, the margin gap gradually decreased. The remaining industries shown in Figure 2.7

did achieve an increase in their margin share of revenues, but only up to a maximum of 5 p.p. The often-mentioned wholesale and retail food stores, to which the initial claims of margin expansion were directed, also improved slightly, but their increase is insignificant compared with the results from other industries.

Thus, it can be confirmed that in 2022, in addition to a substantial increase in input prices for non-financial corporations, their share of margins on revenues also grew on average. Businesses thus benefited to some extent from high inflation, although it goes without saying that this increase was to some extent suppressed by the fall in demand for their products due to high prices. Nor can we speak of a uniform increase in the share of margins across the whole economy, since a clear increase can be confirmed for only seven sectors in the non-financial corporations sector.

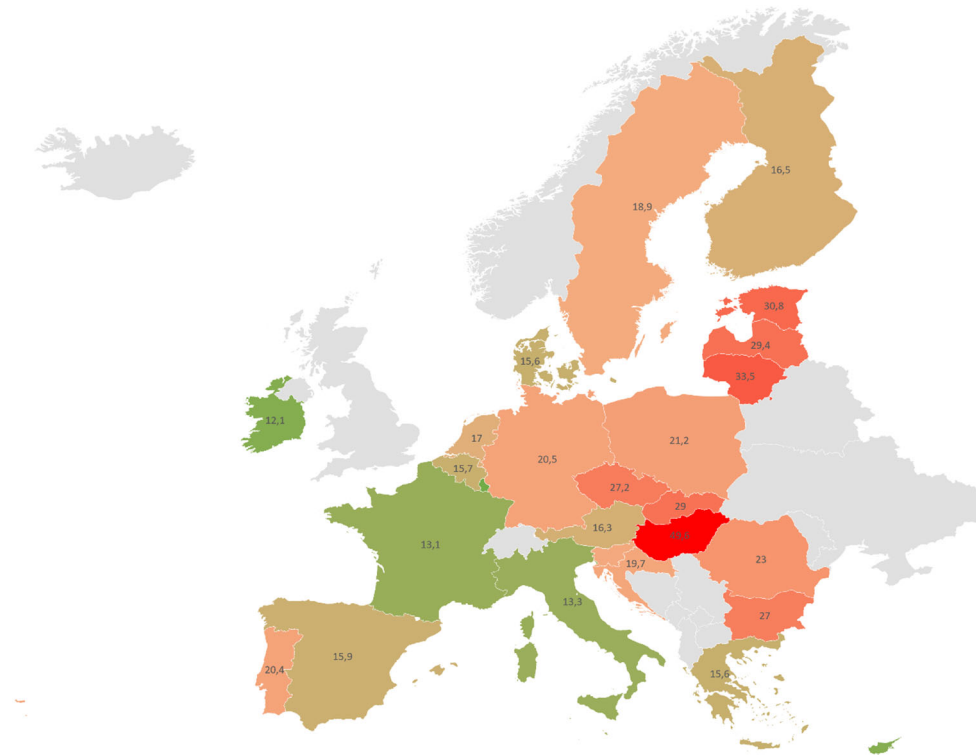
Food Inflation Has Set Us Back 20 Years

In the first part of the chapter, we discussed the unprecedented rise in food prices, which has directly affected all households and their living standards. Food was a major contributor to the overall inflation rate and, by the nature of its weight in the consumption basket, impacted primarily low-income households.

On a pan-European scale, food inflation in Slovakia reached the fifth highest value in December 2022, with only the Baltic countries and especially Hungary achieving higher growth. There, food and non-alcoholic beverage prices rose by a staggering 49.6% year-on-year in December 2022, driven by a combination of factors. These include a very poor harvest due to a dry summer, a substantial deterioration in the exchange rate making imports into the country more expensive, price regulation (price cap) limiting the willingness to import selected regulated products from abroad, or the imposition of a windfall tax on food retailers.

However, the rapid rise in food prices is a phenomenon that has been experienced in every European country. This is evidenced by the fact that not a single country in the EU has seen a single-digit year-on-year increase (see Image 2.2).

Image 2.2

Year-on-Year Change in Food Prices in December 2022 in the EU

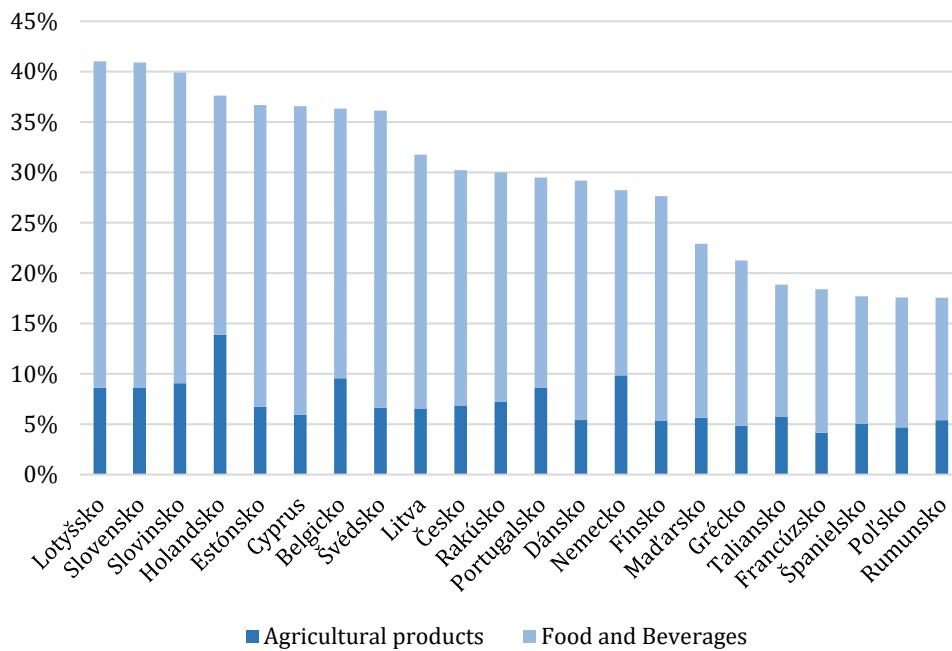
Source: Based on Eurostat (2023).

In the Slovak environment, however, apart from the poorer harvest, none of the above-mentioned factors can be identified as a factor influencing price increases in Hungary. However, it can be assumed that one of the main factors behind the rise in food prices is the import intensity of unprocessed agricultural raw materials and processed food. The Slovak agricultural and food sector was equally affected by the 2022 drought, but its share in agricultural and food supply plays a smaller role than in e.g. Hungary or Poland. To illustrate this point, statistics from the 2019 EU supply table (data available for 22 countries) confirm that Slovakia is one of the countries with the highest import intensity for both agricultural products and food. The price increases that were generated abroad have thus spilled over into product prices in Slovakia in the form of imports. Together with poor harvests and rising production costs (especially fertilisers and energy), this has created a combination of factors that have led

to historic increases. To some extent, the high food growth is thus due to the orientation and structure of the economy, which is more industrially oriented. However, this is only one of many factors that have contributed to overall growth. Countries such as Poland and Romania, which are at the opposite end of the spectrum of the EU's agricultural and food import intensity distribution, have also suffered from high food price increases.

Figure 2.8

Share of Imports in Total Agricultural Products and Food Supply in Selected EU Countries in 2019 (% , basic prices)



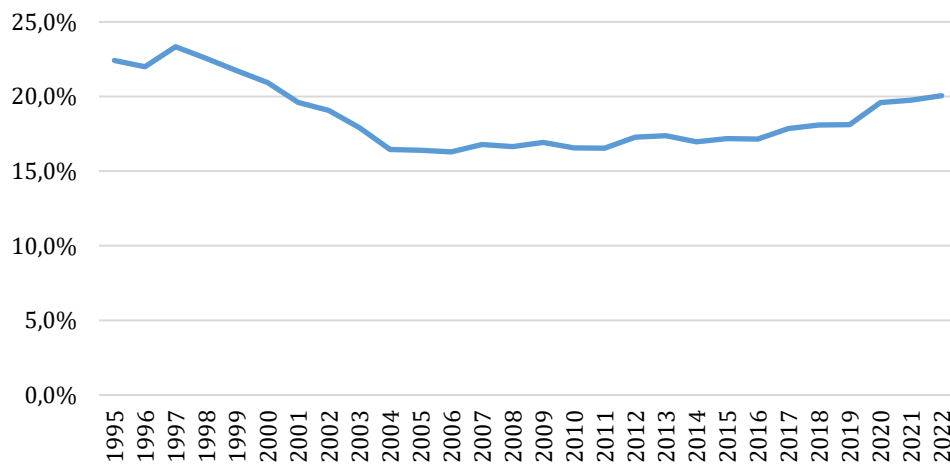
Source: Based on Eurostat (2023).

But what is the impact of these rising food prices on people's living standards? To help illustrate this point, let us use a well-known empirical rule in economics known as Engel's law. This states in its generalised form that the richer a country is, the smaller the share of its expenditure accounted for by food. When looking historically at the share of expenditure on food and non-alcoholic beverages in total expenditure, this statement is also true in Slovakia. Shortly after the establishment of the Slovak Republic, these expenditures accounted for more than 23%. Over time,

however, the country grew economically, which affected the standard of living of the population and was reflected in a change in the structure of consumption and a gradual decline in the share down to 16%. From there, the long-term trend has stabilised, oscillating for many years between 16% and 17%, without any significant trend. The reversal came with the outbreak of the global pandemic, when the population, for objective reasons, was unable to spend on other products (especially services) and therefore diverted a larger part of its consumption to food. However, at the end of the pandemic, the expected decline in the share did not occur to the previous values but instead continued to grow.

Figure 2.9

Household Expenditure on Food and Non-alcoholic Beverages as a Share in Total Household Expenditure (% , current prices of the year)



Source: Based on Macroeconomic Database NBS (2023).

In 2022, it is above 20% for the first time in twenty years. Thus, if we consider the indicator of the share of expenditure on food and non-alcoholic beverages to be an adequate indicator of the development of the economy, we can conclude that such a large share of total household expenditure on food was last seen at the beginning of the new millennium in 2001. The impact on people's standard of living is thus evident, and at the projected rate of development, it will take many more years before a reversal of the trend can be observed for this indicator as well.

High Inflation Will Ease, but Only Slowly

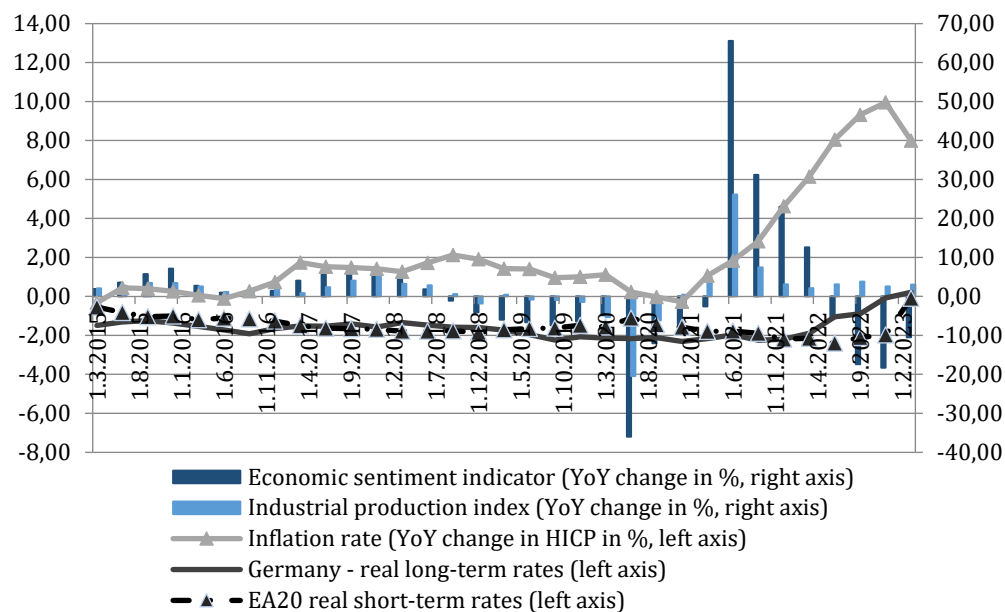
The statement we made at the beginning of the chapter that 2022 was certainly a year where inflation was the dominant theme holds true. However, from the current outlook, it looks like it will remain so for years to come. From the latest available data, we can already reason that inflation has already found its peak and is expected to fall further. However, the development of core inflation, which is still searching for its peak in Slovakia, remains problematic. This is also an argument for continued monetary tightening at European level, which will have further effects on lending and saving in Slovakia. With the household savings rate at an all-time low, household consumption is expected to stagnate, or even decline. That could help reduce inflationary pressures in the economy. Similarly, developments in the external environment suggest that the most dynamic inflation developments with large external influences are gone. However, a rapid retreat of high inflation and a convergence towards the inflation target is not yet expected. The inflation rate forecast for 2023 is set just below the double-digit threshold. And although the year-on-year rate of price increases has already stabilised, a decline toward standard values is only expected within two or three years. Thus, its development can be analogous to the fact that it has shot upwards like a rocket, but the return to the target value will be more like the fall of a bird's feather.

3. EUROPEAN CENTRAL BANK MONETARY POLICY AND CURRENT TRENDS IN THE SLOVAK BANKING SECTOR

On 1 January 2024, Slovakia will celebrate 15 years since the replacement of the Slovak koruna by the euro, and thus also since the adoption of the single monetary policy by the European Central Bank. The year 2022 was another in a series of important tests, not only for the implementation of the single monetary policy at the level of the euro area, but above all for dealing with the individual effects of the single monetary policy at the level of individual Member States, including Slovakia.

Around mid-2022, it started to become clear that the next period would represent a significant departure from the "unconventional" last decade, which was characterised by a peculiar combination of the "missing-inflation problem" and negative key policy rates, and thus an overall (perhaps insufficiently) accommodative monetary policy (Frank and Morvay et al., 2020).

Figure 3.1
Development of Key Economic Indicators



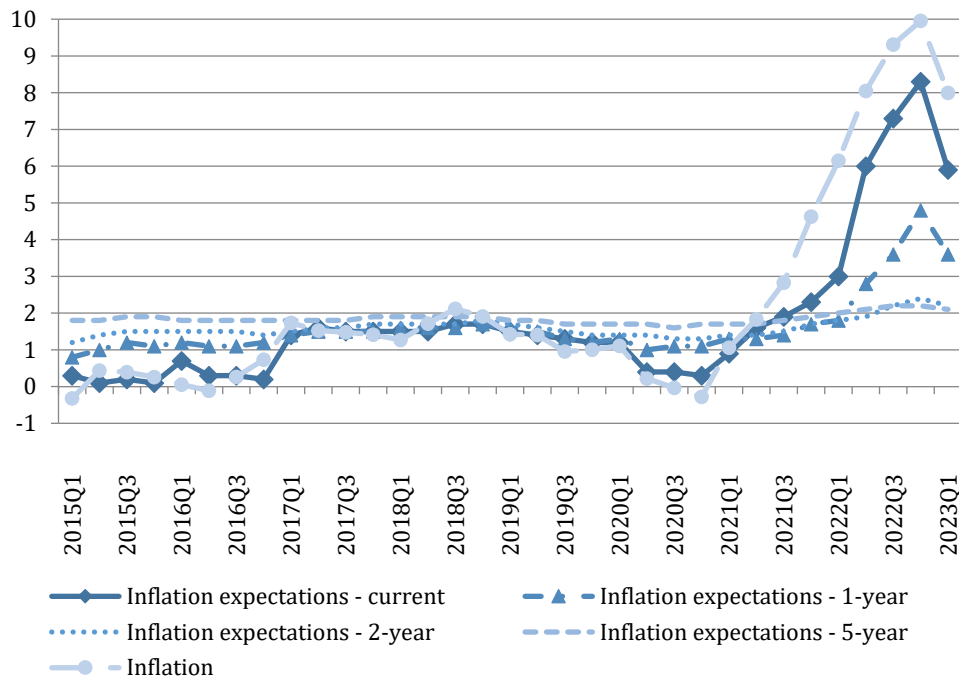
Note: Real long-term interest rates are calculated as the difference between the yield on 10-year German government bonds and 5-year inflation expectations of professionals. EA20 real short-term interest rates are calculated as the difference between 12-month money market rates and 1-year inflation expectations of professionals.

Source: ECB; Eurostat.

After a rebound in economic production accompanied by an even stronger rise in economic sentiment in 2021 (Figure 3.1), the positive post-COVID sentiment faded in early 2022 as a result of the war in Ukraine. However, as it can be seen from the Figure 3.1, the inflationary tendencies resumed in 2021 after some of the pent-up demand had been released, which in the presence of persistent supply-side constraints only continued to exert upward pressure on the overall price level in 2022. As inflation expectations remained anchored, the rise in real interest rates did not take place until mid-2022, when the ECB started to react to the strong trend in inflation. Currently, both short- and long-term real interest rates are in positive territory for the first time since 2011.

Figure 3.2

Evolution of Professionals' Inflation Expectations and Inflation Rates (%)



Source: ECB; Eurostat.

As late as 2021, it appeared at first sight that economic agents themselves perceived the rise in the price level as a rather transitory phenomenon. Although inflation expectations reacted almost immediately after

the initial rise in the price level, the divergence between the real rate of inflation and its perception by economic agents remained pronounced until early 2022 (Figure 3.2). The anchoring of long-term (5-year) inflation expectations, which are not only essential for the conduct of monetary policy but also indirectly test the perceived credibility of the central bank itself, remained almost unaffected, stabilising at just above 2% throughout the turbulent period of 2022. In early 2023, when a decline in headline inflation had already been observed, there was almost the same reaction in short-term inflation expectations.

At first sight, therefore, it would appear that a certain "recalibration" in the perception of inflation by economic agents has taken place, both in terms of a shift in the horizon (activation of 1-year expectations) and in terms of a relative underestimation of the actual rate of inflation, both current and expected in the near future. On the other hand, the synchronisation of the evolution of inflation expectations with actual inflation, as well as the gradual decline in both variables in the first quarter of 2023, suggests that a return to lower (expected) inflation rates in the euro area can be expected as early as next year.⁸

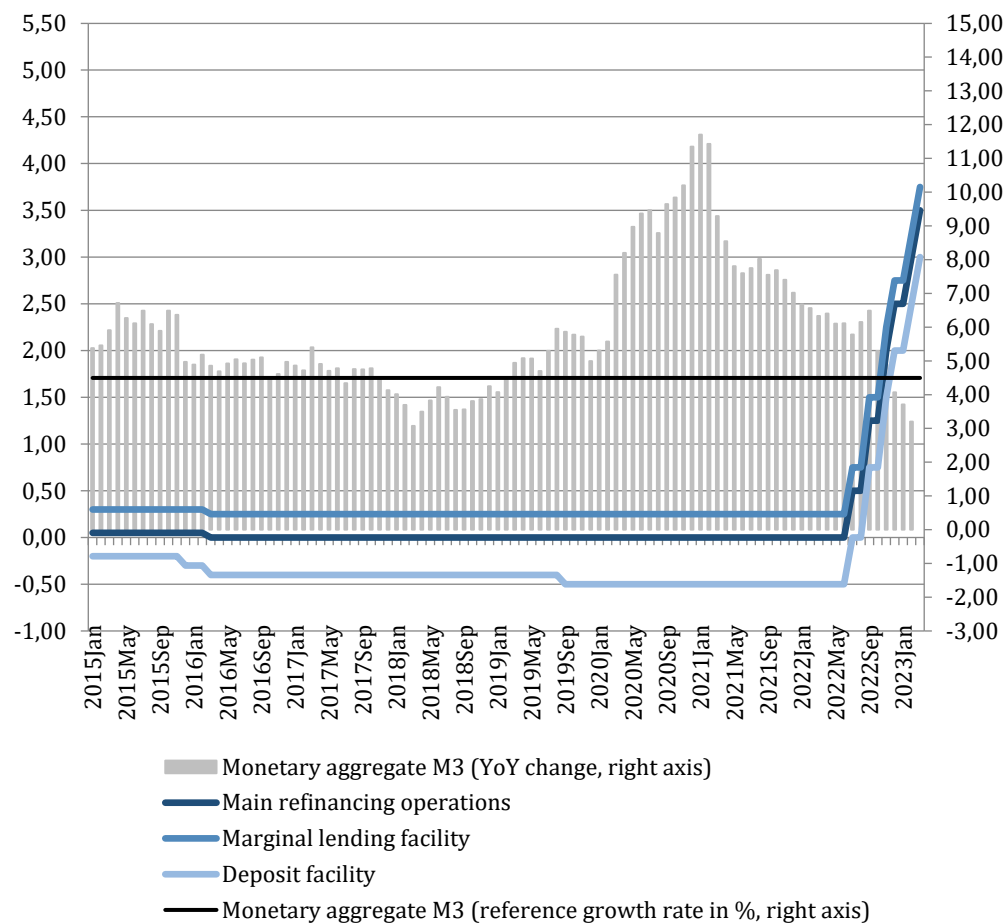
Unlike the decade of easy monetary policy, when even the extreme expansion of the central bank balance sheet itself did not translate into a significant increase in the volume of money in the euro area (Figure 3.3, aggregate M3), the COVID period, and in particular its ending phase, tells a somewhat different story. The mobilisation of quantitative monetary

⁸ As an interesting food for thought, we present information on the length of the inflation cycle in the euro area. While from the inception of the euro area until 2008 the inflation rate was anchored firmly at 2 per cent and with very little fluctuation around the ECB's target, since the turbulent year of 2008 it is possible to trace relatively regular inflation cycles. Measuring the distance between two minima, the first full cycle can be identified in the period 2009 – 2015, the second full cycle in the period 2015 – 2020. If these regular cyclical fluctuations are to be followed purely mechanically, a peak of this cycle is expected in 2023, followed by a minimum in 2025/2026. One possible explanation for the emergence of an inflationary cycle in the second decade of the euro area's existence, even if the anchoring of (long-term) inflation expectations remains stable around two per cent with only small fluctuations around the average, is linked to the impossibility of conducting standard monetary policy through the interest rate channel (the hitting of the so-called effective zero bound on interest rates). In this case, the cyclical development of actual inflation (not its trend) thus reflects the market mechanism without the counter-cyclical "smoothing" effect of standard monetary policy. According to the quantity theory of money, the trend component of the price level (inflation trend) should only reflect a steadily growing money supply responding to the demand of economic agents.

policy tools (the so-called pandemic emergency purchase programme, PEPP) and funding through long-term refinancing operations (the so-called pandemic emergency longer-term refinancing operations, PELTRO) were used by the banking sector to maintain the funding rate for non-financial corporations and households; with endogenous money creation at the peak in January 2021 even reaching pre-crisis 2008 levels for the first time. After reaching this peak, the situation stabilised and by the time inflation exceeded the 2% target (June 2021), the M3 aggregate had already been slowing its expansion for the last half a year.

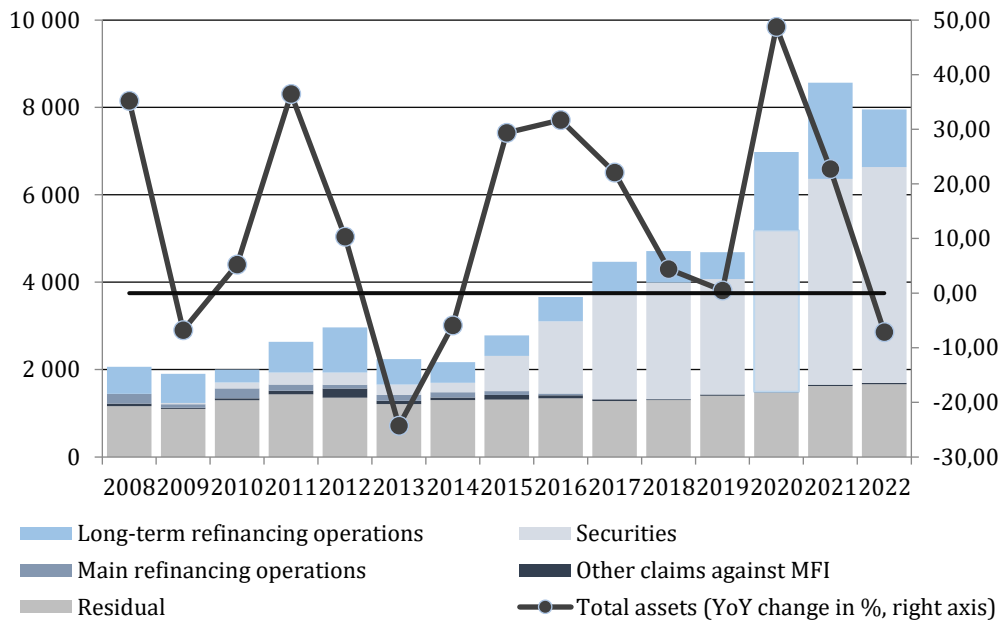
Figure 3.3

The Evolution of the ECB Key Interest Rates and the Growth of the M3 Aggregate (%)



Source: ECB.

Figure 3.4

Evolution of the Structure of the Eurosystem Balance Sheet (bn. EUR, %)

Source: ECB.

The ECB raised its key policy rate for the first time in 11 years in July 2022, when inflationary pressures were already gathering pace (8.87% year-on-year change in inflation) and it was expected that the central bank would react to these tendencies.⁹ The decision to raise the key policy rate was taken by the ECB as the last of the world's major central banks to do so, which in hindsight was perceived negatively by many due to the monetary authority's delay in acting against the recommendations of simple modelling approaches.¹⁰ From this point on, we see only a rapid rise

⁹ It should be noted here that, despite the existence of various now-casting methods, actual realised inflation figures are known to economic policymakers only with a certain delay, which also leads to a delay in decision-making.

¹⁰ The concept of the so-called behind-the-curve monetary policy decision, which denotes a delay in the increase in key policy rates relative to the increase in inflation and is often derived from the recommendation issued by a simple Taylor rule. In Frank and Morvay et al. (2021), we discussed in more detail the limitation of monetary policy decisions when supply-push inflation materialises. The debate in the euro area in the summer of 2022 centred on output (supply) constraints due to the war in Ukraine and energy shortages. Thus, combined with the ongoing disruptions in global value chains in 2022 (a new round of closures in China due to the next wave of COVID-19 disease), the supply channel emerged as an important factor and created pressure for delayed central bank action. At the same time, anchored inflation expectations indicated that agents themselves assumed that inflation would be a short-term phenomenon.

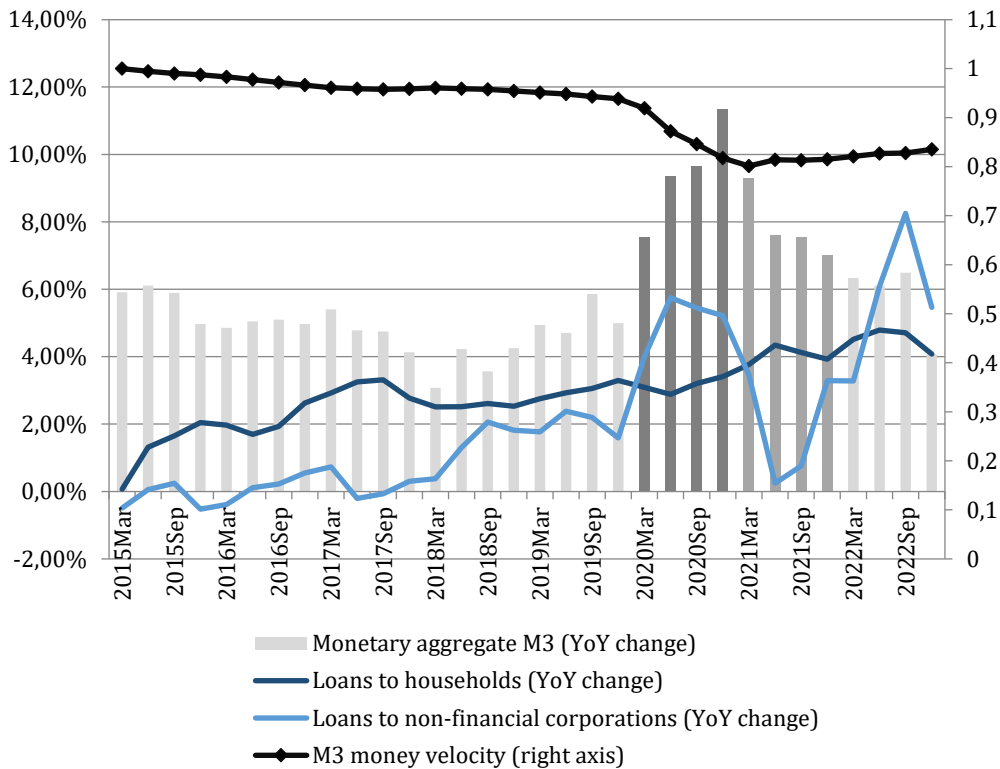
in the key policy rate accompanied by a continued slowdown in money creation (Figure 3.3).

In terms of the use of instruments on the Eurosystem's balance sheet, securities purchased under quantitative measures continue to dominate (Figure 3.4). A return to the balance sheet contraction, initiated in 2019 but interrupted by the pandemic, can already be observed at the end of 2022. The pace of the balance sheet contraction can be quite rapid, as was the case in 2013. In the case of the PELTROs (long-term refinancing operations), this is a time-limited instrument for a period of one year, with the last tranches allocated during 2021. Their termination therefore naturally led to a contraction of the balance sheet in 2022 followed by an expected contraction in 2023. Massive sales of securities from the ECB's portfolio would represent a significant tightening of monetary policy in the current situation, as it would lead to additional withdrawals of liquidity and consequent pressure on long-term interest rates. As can be seen, the ECB has decided to take advantage of the resurgence of inflation after more than a decade to make its main qualitative monetary policy instrument – the key policy rate – operational again.¹¹

The credit channel of monetary policy transmission was most effectively used in the non-financial corporations sector, where there was an intertemporal shift in funding between 2021 and 2020 (Figure 3.5). After the initial demand shock, which mainly affected the supply side of the economy, had dissipated (Frank and Morvay et al., 2021), the year 2022 was marked by a relatively euphoric increase in financing to this sector, until the tightening of monetary policy took place in the second half of 2022. The household sector, on the other hand, continued to increase its credit growth rate virtually unaffected by the situation, and in 2022 the growth rate reached its peak, last comparable to 2011. Nevertheless, the new peak (4.8%) is still less than half of the pre-crisis growth rate in 2006 (10.6%).

¹¹ The earnings from the reinvestment of the proceeds of the PEPP asset holdings was used to purchase bonds of selected countries that were experiencing excessive (fundamentally unjustified) pressure on their yields during a period of heightened risk (war in Ukraine). These purchases were justified on the basis of so-called bond market fragmentation, i.e., an increase in risk premium differential of EA countries during periods of uncertainty.

Figure 3.5
Evolution of Credit Aggregates, M3 and Money Velocity (bn. EUR, %)



Source: ECB.

The economic response in early 2023 thus essentially delivers a set of positive messages for the euro area's single monetary policy. The undisturbed anchoring of long-term inflation expectations around the 2% average target (Figure 3.2), the escape from the negative key policy rate trap and the creation of space for the use of this instrument in the future (Figure 3.3), the "exit" from quantitative monetary instruments and the expected reduction of the Eurosystem's balance sheet (Figure 3.4), the stable growth of credit aggregates signalling a strengthening of corporate sector financing as a prerequisite for the start-up of domestic investment (Figure 3.5), the natural evolution of endogenous money creation in the system in line with medium-term nominal economic growth (Figure 3.5), all these point to the real possibility of a gradual return even to the pre-crisis normal of the so-called Great Moderation at the turn of the millennium.¹²

From the Slovak perspective, however, this good news from the single monetary policy comes at a time when the inflation rate in Slovakia has peaked not only in terms of time but also in terms of geographical dispersion within the euro area (Chapter 2). This issue is therefore discussed in more detail in the next section of this chapter.

Structural Heterogeneity of Inflation in EA and Inflation Expectations

In the 2019 edition of *Economic Developments* (Frank and Morvay et al., 2020), we discussed the problem of low inflation in the euro area in the post-crisis years 2008+. However, the current (transitory) rise in inflation rates needs to be seen in its spatial context, taking into account the structural heterogeneity in the EA20.

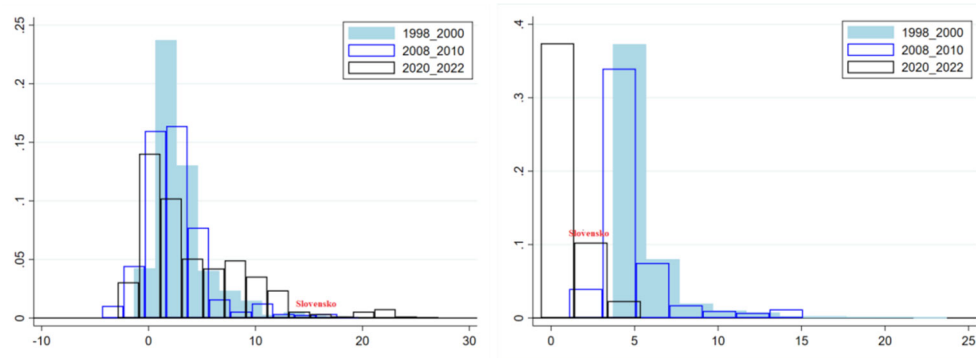
Figure 3.6 shows the distribution of consumer inflation rates in the countries comprising the current euro area (EA20) over three periods associated with significant shocks that occurred at the end of each decade. At the inception of the euro area, the distribution was highly concentrated around a low mean with relatively few observations above 10%. Around the financial crisis of 2009, there is still a relatively strong concentration around a mean almost identical to that of 1998 – 2000, but the dispersion around it has increased, now reaching to both the area of negative inflation (deflation) and the area above the 10% rate. The last period, falling within the period of the COVID pandemic and post-COVID inflation, is characterised not only by a subtle shift of the mean value towards zero (but still a relatively strong overlap with the previous means), but above all by an even greater dispersion of the values, mainly in the area above the 10%. Thus, over the last 25 years, the structural heterogeneity of the EA has been reflected in an increase in the dispersion of inflation rates in the presence of shocks. Accepting the hypothesis that the potential strength

¹² The "Great Moderation" period refers to the period around the turn of the millennium, which was characterised by low volatility in economic activity and stable inflation rates. This period was generally interpreted as the success of monetary policy in anchoring of inflation expectations (and hence inflation rates), while at the same time reducing the volatility of real output through countercyclical measures. In theoretical models, this was reflected in the occurrence of a so-called divine coincidence – see the discussion and reference in Frank and Morvay et al. (2021).

of shocks has also increased over time, the adverse effects associated with the war in Ukraine have only accentuated on an even larger scale the apparently still persistent structural heterogeneity across EA countries, which may pose a problem for the consistent conduct of monetary policy.¹³

Figure 3.6

Histogram of Annual Inflation Rates (left figure) and Long-term Nominal Government Bond Interest Rates (right figure) on a Monthly Basis for EA20 Countries (YoY, %)



Note: The y-axis describes the frequency of occurrence of inflation rates and interest rates within a given histogram interval. Each histogram captures a three-year period, with the realisation of the shock effects occurring in the middle of this three-year period (1999 – the establishment of the euro area, 2009 – the global financial crisis, 2021 – the COVID pandemic). Due to the unavailability of data for government bond interest rates for some countries in the period 1998 – 2000, these rates were approximated by short-term money market interest rates

Source: Eurostat.

These structural differences can largely be explained by persistent differences between national labour markets, their regulation and degree of flexibility, the structure of competition in the domestic goods market, as well as varying degrees of real convergence (Jaumotte and Morsy, 2012). Thus, the greater dispersion of inflation differentials across EA20 countries occurring during periods of large shocks (Figure 3.6) reflects the fact that, due to greater heterogeneity, higher flexibility leads to a faster adjustment of prices to external shocks in some countries, while in others prices react with a high degree of inertia. Much of the variance in headline

¹³ The Maastricht criteria, which every country joining the euro area must meet, require inflation and interest rates to converge towards those of the member countries with the lowest inflation rates. However, it is fundamentally different to meet this condition in times of crisis compared to relatively tranquil periods. As we illustrate, the widening of dispersion occurs around a significant shock, when existing structural heterogeneity materializes.

inflation in selected new EU Member States is also still determined by local factors, especially in the case of core inflation (Cepni and Clements, 2023).

Figure 3.6 also shows the change in the distribution of long-term nominal government bond yields. In this case, one can observe both a significant shift in the mean towards levels close to zero, and a significant reduction in the dispersion of rates as outliers above 5% disappear. Both trends are not surprising and have been addressed in the economic literature. The overall leftward shift in the distribution can be associated with a global decline in the natural real interest rate, reflecting ongoing structural changes (global increase in saving and simultaneous decline in investment, demographic changes, rise in income inequality, and others, see Borio et al., 2022). The ECB's own monetary policy measures aimed at lowering long-term interest rates through quantitative measures or anchoring long-term nominal interest rates through the policy of forward guidance have also emerged as a non-negligible factor.

The decline in nominal interest rates in the new EA countries (and periphery countries) was a phenomenon that was already expected at the inception of the euro area and was described in an influential paper by Blanchard and Giavazzi (2002). The reduction in the interest rate differential thus fundamentally stemmed from the removal of exchange rate risk, improved access to finance in intra-euro area capital flows, as well as a reduction in the countries' risk premium as a result of the regulatory framework (Basel I) and the implicit guarantees of the ECB's role as lender of last resort.¹⁴

The last in a series of instruments that, unlike the relatively universally compiled quantitative easing, allow for the direct targeting of interest

¹⁴ The implicit guarantee was made explicit in the summer of 2012 with the statement by then ECB Governor Mario Draghi that the ECB would do whatever it takes to preserve the existence of the single euro ("whatever it takes"). Philosophically, the group of implicit guarantees includes instruments aimed at reducing the interest differentials in the EA. These include the SMP (Securities Market Programme), which was discontinued in 2012 and replaced by the OMT programme (Outright Monetary Transactions), which has been in the ECB's toolbox since 2012 but has never been activated. Broadly speaking, it is the possibility of directly purchasing selected EA government bonds on the secondary market in order to protect the monetary policy transmission in individual EA countries. The selectivity of the OMT programme has been the subject of controversy, as it has been perceived as bordering on prohibited monetary financing of Member States' debts. For a discussion, see Bernoth et al. (2022).

rates on assets (bonds) issued by selected Member States, is the Transmission Protection Instrument (TPI) announced on 21 July 2022. However, its activation will only be conditional on a situation where there are "unwarranted market dynamics that pose a threat to the transmission mechanism" due to a "deterioration in financial conditions that does not reflect countries' individual economic fundamentals" (Bernoth et al., 2022); in this context, the end result will only be a further anchoring of the upper limit of the distribution visible in Figure 3.6.

Thus, the combination of both tendencies (the decline in the mean and narrower dispersion of nominal interest rates, the increase in the dispersion of realised inflation rates) is currently creating significant tensions within the single currency area, as the differential in real interest rates reflects the still present significant structural heterogeneities stemming from the different behaviour of inflation across the EA20 countries.¹⁵

As discussed in Frank and Morvay et al. (2020), modern monetary policy based on the new theoretical framework relies heavily on the inflation expectations of economic agents. In the case of setting the long-term real interest rate, expectations about the future path of inflation also need to be analysed. From this perspective, a crucial question is therefore how the experience of the combination of high inflation rates and their uneven distribution across the EA20 member countries will translate into future decisions of consumers and firms, and how this heterogeneity may amplify the uneven effects of a single monetary policy in the EA20.

The outlook is not very positive (for Slovakia). A number of research articles point out that the memory of an inflationary event remains anchored in the memory of individual economic agents for a long period of time and often influences their behaviour even with a long time lag of several decades (e.g. Malmendier and Nagel, 2016). Thus, in the EA20 setting, inflation expectations must already be highly heterogeneous within the new and old member countries themselves, as they reflect the experience of a part of the populations in the former Eastern Bloc countries of a transition

¹⁵ In Figure 3.6, Slovakia is located to the right of the distribution of inflation rates in year 2022, and at the same time its position is relatively stable in the second group of countries with slightly higher long-term interest rates compared to the majority of EA20 countries; however, the values for long-term interest rates are still significantly lower than in the two previous periods.

period characterised by years of hyperinflation. Meanwhile, in line with behavioural theories, it has been shown that inflation persists longer in the minds of consumers than deflation (D'Acunto et al., 2021).

In constructing their perception of inflation, consumers place much more weight on items that they purchase more frequently, such as food and energy, than on items that have a higher weight in the shopping basket (Georganas et al., 2014). This tends to push consumers' inflation estimates upward at times when there are significant increases in these items, even though average (and core) inflation may remain stable at relatively low levels (Coibion and Gorodnichenko, 2015). Moreover, if price increases in these items are driven mainly by supply shocks, the monetary policy response will be delayed and the inertia in inflation expectations will increase further.

These factors are therefore likely to contribute to the de-synchronisation of future inflation expectations across the EA20. A countervailing tendency will be the "import" of inflation expectations through a strong regional factor within the EA20 countries (Kose et al., 2019; Tura-Gawron et al., 2018). Thus, the issue of integration and convergence within the EA20 countries, driven by the foreign trade channel, will not lose relevance (Chapter 7), as it is also through these linkages that the inflation differential can be gradually mitigated.

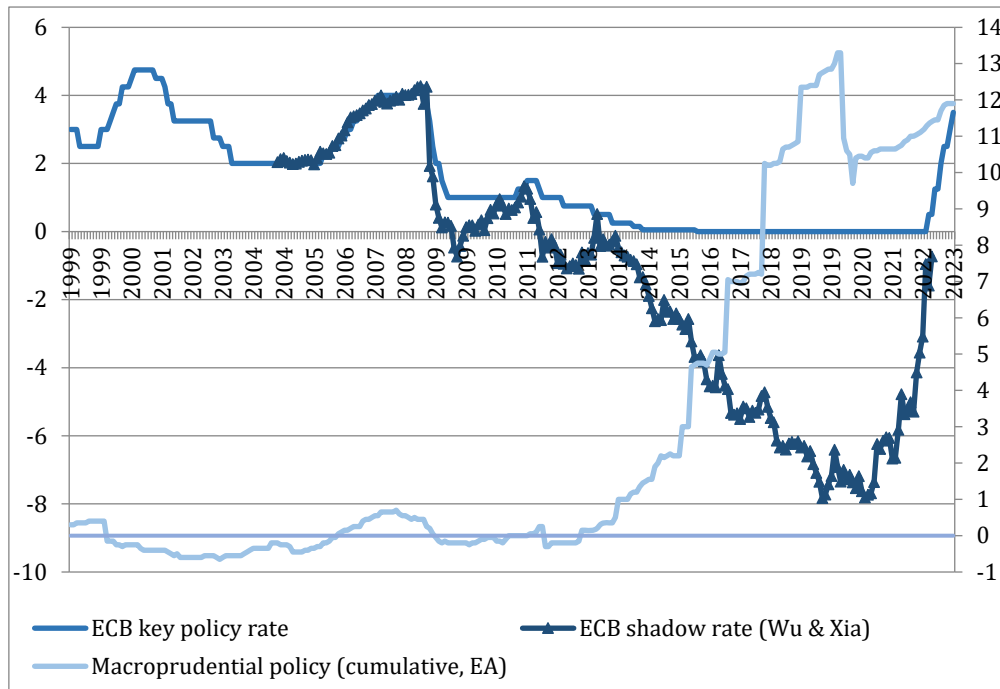
The Slovak Banking Sector and Countercyclical Macroprudential Policy

While the conduct of monetary policy is centralised at the ECB level, decisions on the tightening and easing of credit conditions in the banking market are left to the individual EA member countries. The main role of macro-prudential policy is to ensure the stability of the financial sector by counter-cyclical action against the development of the financial cycle. Given that the interest rate influenced by monetary policy is one of the important (but not the only) determinants in the credit, financial and real asset markets, the interaction between monetary policy and macro-prudential policy will be an important aspect of our discussion.

This dichotomy is illustrated in Figure 3.7, where the left x-axis shows the trend of significant monetary easing (ECB key rate, ECB shadow rate taking into account the ECB's unconventional policy) and the right x-axis shows the significant tightening of macroprudential policy observed since 2014. The significant increase in the macroprudential policy index until 2019 also reflects the creation of a macroprudential surveillance system at the level of the individual national authorities, which emerged in response to the global financial and debt crisis in the EA. The loosening of policy in the pandemic year 2020 is followed by a re-tightening of policy in order to slow down the financial cycle that has been set in motion.

Figure 3.7

Development of the ECB Key Interest Rate, ECB Shadow Rate (% , left y-axis) and the Macroprudential Policy Index on a Monthly Basis for EA20 Countries (index, right y-axis)



Note: The shadow interest rate is the ECB key interest rate adjusted for the impact of ECB quantitative measures (Wu and Xia, 2017; 2020). The macroprudential policy index is calculated as the sum of the periods of tightening (=1) and easing (=−1) of macroprudential measures across individual EA20 countries until 2021 from the IMF database. The years 2021 – 2023 are obtained from the ERSB database. The initial year from which the summation starts is 1998. The index is normalized to the number of EA20 countries.

Source: ECB; Wu a Xia (2017; 2020); ESRB; MMF.

In the presence of highly synchronised nominal interest rates virtually fixed at the upper limit of the distribution and a growing inflation differential within the EA20, the role of (individualised) macro-prudential policy becomes even more important, as it can counterbalance the excessive growth of the financial cycle partly triggered by negative real interest rates in individual Member States.

While the National Bank of Slovakia kept the countercyclical capital buffer at 1.00% during 2020 and 2021, thus helping to maintain bank funding during the pandemic years, macroprudential policy tightened in mid-2022. First, in June 2022, the Bank decided to increase the countercyclical capital buffer to 1.50%, and then, in late August, it tightened the lending limits for applicants over 40 years of age, with the requirement to cover the applicant's debt-to-income ratio gradually increasing with the applicant's age. This was justified by the widespread availability of funding, strong increases in real asset prices, commercial bank profits at pre-pandemic levels and rising inflation rates. Meanwhile, the macroprudential authority also pointed to possible signs of underestimation of credit risk by the banking sector itself as a result of mortgage lending with maturities extending into retirement age (NBS, 2022).

Indeed, the overall credit growth rate in 2022 exceeded the pre-pandemic level of 2019. Near-zero credit growth in the non-financial corporate sector in 2021 was already predicted in Frank and Morvay et al. (2021) due to the combination of the deferral request from 2020 and the last wave of lockdowns in 2021. Thus, 2022 was marked by a continued growth trend in household lending (dampened in the short term by the pandemic crisis) and an even stronger expansion in corporate financing. Developments in Slovakia, in lending in both sectors, are thus broadly in line with developments across the EA20 (Figure 3.5).

However, what turns out to be highly non-standard, not only in comparison with the EU28 but especially with the EA20 countries having the single monetary policy, is the evolution of the net saving rate of the population (see further discussion in Chapter 10). While the EA countries were characterised by significant increases in their saving rates in the pandemic years 2020 and 2021, which could then be subsequently released

for consumption carried forward to 2022, Slovak households ventured in the opposite direction. Saving rates in 2020 and 2021 increased only slightly and did not deviate from the usual behaviour in the pre-pandemic period, when saving rates had been on an upward trend since 2013. On the contrary, in 2022, the gross saving rates fell to an all-time low of 5.21 per cent, the lowest in Slovakia's entire history. Taking into account a number of other potential determinants, high inflation combined with low interest rates have certainly contributed significantly to this trend.

Table 3.1
Characteristics of the Banking Sector Balance Sheet and the Savings Rate of the Population (% , index)

	2018	2019	2020	2021	2022	2023*
Panel A: Loans to non-financial corporations						
Credit growth rate (YoY, %)	5.06	4.29	3.56	0.22	10.75	5.33
Bank rates - deposits (%)	0.17	0.15	0.07	0.00	0.33	1.79
Bank rates - loans (%)	2.40	2.39	2.31	2.29	2.56	3.97
Short-term loans/Long-term loans	1.19	1.15	1.10	1.04	1.08	1.12
Total deposits/Total loans (coverage)	0.69	0.69	0.72	0.74	0.73	0.77
Long-term loans/Long-term deposits	5.55	8.05	7.87	10.01	8.02	3.77
Panel B: Loans to households and NPISH						
Credit growth rate (YoY, %)	12.21	8.65	7.41	6.80	10.76	4.38
Bank rates - deposits (%)	0.86	0.78	0.71	0.61	0.61	0.90
Bank rates - loans (%)	3.56	3.13	2.71	2.35	2.20	2.40
Short-term loans/Long-term loans	0.07	0.06	0.05	0.04	0.04	0.04
Total deposits/Total loans (coverage)	1.03	1.02	1.02	1.03	0.95	0.90
Long-term loans/Long-term deposits	2.30	2.55	3.15	3.61	4.40	4.41

Note: *Position as the end of February 2023.

Source: Based on NBS; ECB; Eurostat.

The decline in the net savings of the population, coupled with a significant increase in lending, was also reflected in a change in the structure of the banking sector's overall balance sheet. In 2022, the coverage ratio of total loans to total deposits in the household sector fell below 1.00. The lower coverage of total loans by household deposits is not necessarily a significant factor of concern as long as the banking sector's resources on the liability side of the balance sheet are available (both in terms of volume and price). Combined with the coverage ratio of corporate loans at around 0.70, it is evident that the banking sector is offsetting the

coverage of loans from other sources. If part of the funding has so far come from the central bank (as the quantitative easing itself has implied), a tightening of monetary policy may imply an increase in the risk to the banking sector's funding, especially if this shortfall is not compensated by an increase in the population's deposits (savings). From this perspective, the ECB's decision to implement the exit strategy through a qualitative instrument (interest rate) rather than through balance sheet reduction was positive news for the Slovak banking sector, which had to cope with a decline in domestic savings.

At the same time, the ratio of time transformation of liabilities into assets (long-term loans/long-term deposits) is steadily increasing. This, in turn, increases the risk to the stability of the banking sector, as external funding through financial markets is predominantly short-term in nature and can be highly sensitive towards (international) liquidity crises. A shock at the individual country level (in this case, a decline in savings exclusively in Slovakia) can be well absorbed in the case of international capital market involvement. However, if systemic risk increases in the euro area as a whole, the current situation in Slovakia may worsen the absorption of this systemic shock.

It is interesting to take a closer look at the generation of profit through loan income, which is captured in the interest margin. In the case of the non-financial corporations sector, the stability of the interest margin has been an iron law in recent years (2.24%). However, strong competition in the mortgage market has systematically squeezed the interest margin in the household sector by almost half from 2.70% (2018) to 1.50% (2023). This puts pressure on the profitability of the banking sector and its overall business model – a tendency that we have already addressed in other publications (Frank and Morvay et al., 2020).

Capital buffers in the banking sector have been steadily built up and, together with the still relatively high level of capital adequacy, there is a relatively large margin to cover losses in the banking sector (NBS, 2022). From this perspective, it will be interesting to see in the near future to what extent the increased accumulation of potential risks will dissolve in these buffers, as a major test in the form of a financial crisis similar to 2008 has not yet occurred.

* * *

The year 2022 was marked by the strongest inflationary pressures in three decades. After some initial hesitation, the ECB responded with an unexpectedly rapid pace of key policy rate hikes and a tapering of its quantitative instruments. As a result, year 2023 can be expected to mark a turning point, both for monetary policy and for the rise in euro area headline inflation.

However, the structural heterogeneity across euro area countries has manifested itself in markedly different inflation dynamics, bringing a strong geographical element to the fore. For instance, consumers in individual Member States may objectively (and subjectively) experience significantly different inflation paths, which may have a longer-lasting impact on the formation of their inflation expectations. In the case of Slovakia, with its above-average and persistent inflation rates when compared to the euro area average, this factor will likely play a significant role in the future.

On the other hand, the tightening of macro-prudential policy has acted as a counterweights to the strong growth of the financial cycle. However, the combination of high inflation, low real interest rates and an extreme decline in the saving rates represents a problematic mix of factors in Slovakia that may contribute to undermining overall macroeconomic stability in the coming years.

4. QUALITATIVE FACTORS OF ECONOMIC DEVELOPMENT

The Slovak economy is constantly looking for qualitative factors of economic development. It is exposed to many challenges and threats, which at the same time present opportunities for intensifying transformation and strengthening the role of domestic research and development (R&D), innovation development and digitisation. The recent experience with the impact of the pandemic disease COVID-19, the scarcity of natural resources, the negative impact of economic activities on the environment and, in particular, the climate crisis have become permanent factors of economic activities as well as economic policies in Slovakia. New environmental technologies or eco-innovations are part of the solution to economic problems in the context of a threatened environment. The following chapter has two parts. In the first, we briefly analyse the development of R&D over the last period, paying attention to some structural characteristics of R&D funding. In the second part we focus on eco-innovations in Slovakia, analysing their status, development and some broader socio-economic context.

Research and Development in Slovakia – some Structural Features

Research and development in Slovakia according to the basic indicators (in Table 4.1) remains in the period 2017 – 2021 at values that do not create sufficient preconditions for domestic R&D to become a potential driver of economic development. The average R&D intensity over the last 5 years is 0.87% of GDP, which, as well as the value of 0.93% in 2021, is still below the target level of 1.2% to which Slovakia has committed itself in the strategic documents (*Partnership Agreement for Slovakia 2014 – 2020* or the *Draft Research and Innovation Strategy for Smart Specialisation of the Slovak Republic 2021 – 2027*). There is a certain positive aspect in the slowly changing structure of R&D expenditure. In 2021, moderate majority of the expenditure was invested in the business sector (56% of the total). Similarly, the business sector is the largest sectoral source (almost 46% share) of R&D expenditure.

Table 4.1
Selected R&D Indicators for 2017 – 2021

	2017	2018	2019	2020	2021
R&D intensity (% GDP):					
R&D intensity (% GDP):	0.88	0.84	0.82	0.90	0.93
Gross expenditures on R&D, of which:	0.18	0.18	0.16	0.18	0.17
Government R&D expenditure	0.48	0.45	0.45	0.49	0.52
Business R&D expenditure	0.22	0.20	0.21	0.24	0.24
R&D expenditures by performance (% of total):					
Government	20.8	21.2	20.0	19.7	18.5
Business	54.1	54.1	54.8	54.1	56.0
Universities	24.7	24.3	25.2	26.2	25.4
R&D expenditures by performance (% of total):					
Business	49.0	48.9	46.8	43.7	45.7
Government	35.5	38.0	40.5	39.6	37.9
Other domestic	1.7	1.9	2.1	2.4	2.5
Foreign	13.8	11.2	10.7	14.3	13.9

Source: Eurostat (2023).

Given the nature of the Slovak economy (small and open economy), a higher impact of cross-border sources is expected in the R&D funding. In this respect, Slovakia is one of the European economies with a higher share of resources from the European Commission, averaging almost 10% of all gross R&D expenditure in the period 2006 – 2020.¹⁶ As can be seen in Table 4.2, higher values are achieved by small economies that joined the EU later and have an underdeveloped R&D system. The second form of foreign resources are those of enterprises abroad, which are channelled into the domestic (national) economy. Here we can note a lower level of R&D internationalisation, Slovakia is among the European economies with a lower share of resources from enterprises abroad.

If we look at the evolution of both forms of R&D resources (Figure 4.1), we see a rather different picture. Between period 2006 – 2020, business resources from abroad had a relatively stable trajectory, never exceeding 10% (2006 – 2020 average). At the same time, this relatively low rank-value can also be read as a weak involvement of enterprises in Slovakia

¹⁶ The Structural Funds and the Cohesion Fund until 2014, and the European Investment and Structural Funds after 2014.

in international research (enterprise) networks and collaborations. On the other hand, the European Commission's resources have had a more volatile course. Given that these are essentially foreign public resources, their use is strongly conditioned, in particular by regulatory and administrative processes. We see a short-term surge in 2015, when the 2007 – 2014 programming period had to be topped up.

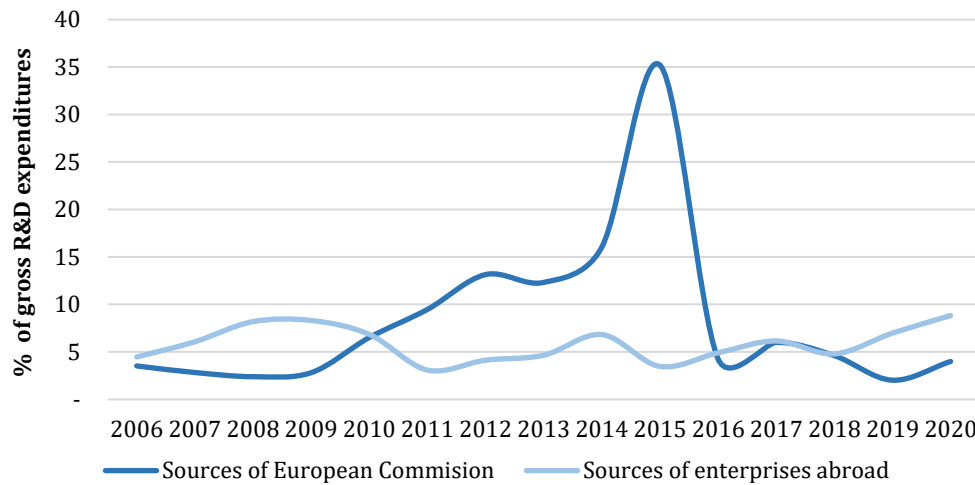
Table 4.2

Foreign Sources of Gross R&D Expenditures in EU Countries
(%, average 2006 – 2020)

	% of gross R&D expenditures	
	European Commission	European Commission
Belgium	2.6	8.7
Bulgaria	5.3	39.6
Czech Republic	8.4	14.0
Denmark	2.0	4.2
Germany	1.9	4.4
Estonia	7.1	3.0
Ireland	3.8	18.8
Greece	12.6	2.4
Spain	4.0	2.4
France	1.5	4.5
Croatia	3.4	7.9
Italy	2.7	5.9
Cyprus	16.8	0.6
Latvia	35.9	6.9
Lithuania	23.0	2.4
Luxembourg	1.6	1.4
Hungary	3.3	12.0
Malta	7.1	6.8
Netherlands	1.5	7.6
Austria	1.7	14.0
Poland	6.7	1.9
Portugal	3.6	1.3
Romania	7.3	2.4
Slovenia	4.2	4.9
Slovakia	9.9	5.8
Finland	2.8	7.0
Sweden	1.6	7.3
United Kingdom	2.5	11.6
V4 average	7.1	8.4

Source: Eurostat (2023) RD_E_GERDFUND.

Figure 4.1

Development of Foreign R&D Resources in Slovakia in 2006 – 2020

Source: Eurostat (2023) RD_E_GERDFUND.

Structuring the gross R&D expenditure by sector of funding and sector of performance allows to name and quantify some relationships in the Slovak R&D system. Only 0.2% of the total gross R&D expenditure flows from the business to the sector of universities (blue cell), which indicates very low commercialisation of the results of university research (intellectual property as a counter-value or contract research). Similarly, the flow from the government sector to the business sector (green cell) is low; this can take the form of government R&D grants to the business sector or public procurement of R&D results. Also, this value can be seen as the intensity of public R&D policies towards the business sector. The weak ability to generate sources for R&D in sector of universities is demonstrated by the grey boxes, universities are able to generate only 2% of the total gross R&D expenditure in Slovakia.

We suppose that R&D spending will increase in the coming years as the ESIF and the *Recovery and Resilience Plan for Slovakia* continue to be drawn down.¹⁷ Given the remaining risks and barriers on both the providers side (political cycle and administrative complexity of government processes) and on the beneficiary side (limited absorption capacity and

¹⁷ Respectively, the uptake of the programme in 2021 – 2022 will appear in the statistics.

administrative burden), we do not expect this growth to be significant or sustainable in the long term. Future growth in R&D expenditure is likely to be mainly in the public sector, with public expenditure being one-off capital investments. We believe that long-standing structural problems in the Slovak R&D sector, such as the persistent low quality of public research, its limited collaboration with the corporate sector and low commercialisation rates (patents), will have a limiting effect on the assessment of future R&D expenditure growth.

Table 4.3

Breakdown of Gross R&D Expenditure by Sector of Funding and Performance in Slovakia (% of total gross expenditure, 2020)

		Sector by performance			
		Business	Government	Universities	Total
Sector by funding	Business	43.0	0.7	0.2	43.9
	Government	1.9	16.4	21.4	39.8
	Universities	0.0	0.0	2.0	2.0
	Abroad	9.4	2.4	2.5	14.3
	Total	54.3	19.6	26.1	100.0

Source: Eurostat (2023) RD_E_GERDFUND.

Ecological Innovation in Slovakia

At European and supranational level, environmental protection and sustainability are key and strategic agendas.¹⁸ This is reflected in the setting of environmental targets and the adoption of a number of legislative measures that significantly and often to a large extent influence the behaviour of all economic actors. For example, in the context of the climate crisis, Slovakia has committed to reduce emissions in the ETS sector by 43% by 2030, outside the ETS sector (transport, buildings) by 12% in the area of decarbonisation, to increase the share of renewable energy sources to 19.2% (MŽP SR, 2020). in the area of waste management to increase the recycling rate of municipal waste to 60% by 2030, and to reduce the rate of landfilling to less than 25% by 2035. On the one hand,

¹⁸ For example, achieving carbon neutrality in the EU by 2050. The 17 Sustainable Development Goals of the 2030 Agenda provide a similar strategic framework.

environmental regulatory measures increase costs for almost all economic actors; on the other hand, they create new markets and industries for innovation.

Concerns about the state of the environment are also reflected in the content of science, technology and innovation policies. This nexus is theoretically conceptualised in the form of eco-innovation. Eco-innovation is defined by Rennings (2000) as "the efforts of relevant actors who introduce, develop and apply new ideas, behaviours, products and processes and contribute to the reduction of environmental burdens or ecologically specified sustainability goals".¹⁹ Within the socio-economic context of eco-innovation, we consider it important to mention a number of problematic areas in the Slovak economy. The search for such bottlenecks allows to identify potential areas (sectors or markets) where eco-innovations could or should be implemented.

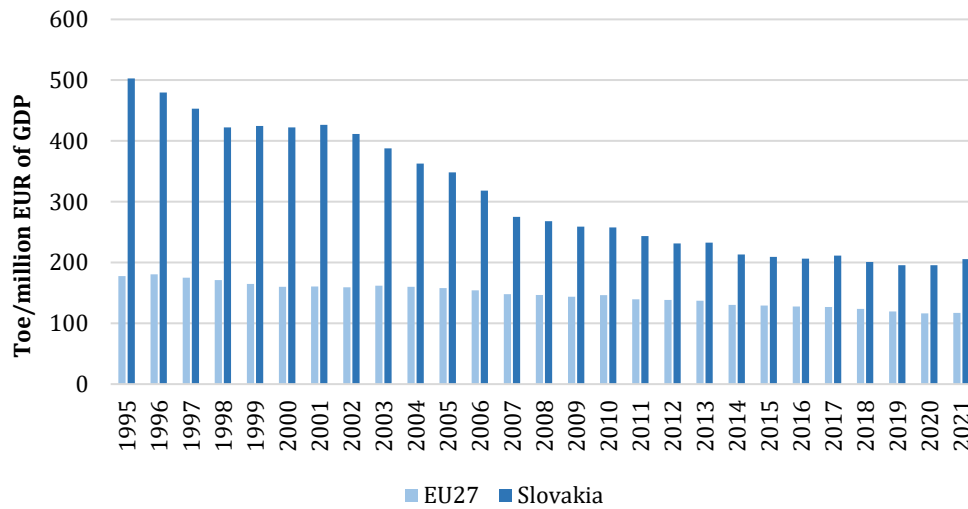
Energy intensity (or energy efficiency) shows how much energy (expressed in 1 tonne of oil equivalent) an economy needs to produce a unit of output, in our case 1 million EUR of GDP. In Figure 4.2 we show the evolution of the energy efficiency of the Slovak economy from 1996 to 2021. In the first half of the period, we see a relatively steady decline in the amount of energy needed to produce GDP. We attribute this to systemic and structural changes during the transition period, when uncompetitive and often energy-intensive businesses were closed. After 2000, especially in the zero decade, with the inflow of FDI, there has been a re-industrialisation, which is associated with the import of modern and more energy-efficient technologies as well as organisational innovations. After about 2014, we see a loss of momentum in energy efficiency and a decline towards the European average. Energy intensity in Slovakia is around 200 toe/million euros, while compared to the EU27 it is below even 60%.

If we compare the energy efficiency of individual EU27 economies, we see (Figure 4.3) a fairly predictable picture. Slovakia is in the group of post-transition Central and Eastern European economies with low energy efficiency.

¹⁹ Terms as green, sustainable or environmental innovations or new environmental technologies can also be found in the literature.

Figure 4.2

Energy Intensity of the Slovak Economy and the EU28 (toe*/million euro GDP)

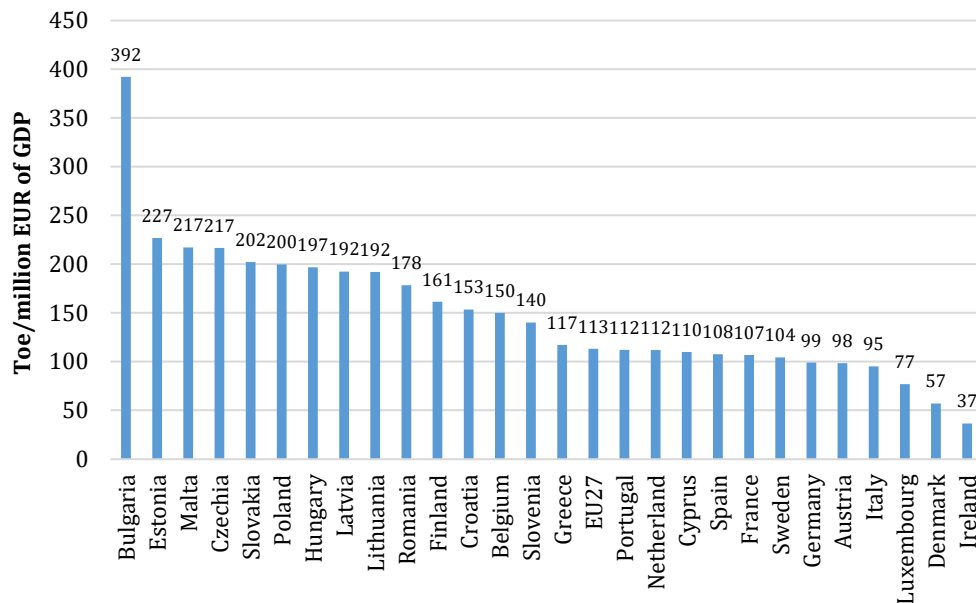


Note: * - Toe: equivalent of a tonne of oil.

Source: Eurostat (2023) NAMA_10_GDP; NRG_BAL_C.

Figure 4.3

Energy Intensity of the EU27 Economies (toe*/million GDP) in 2021



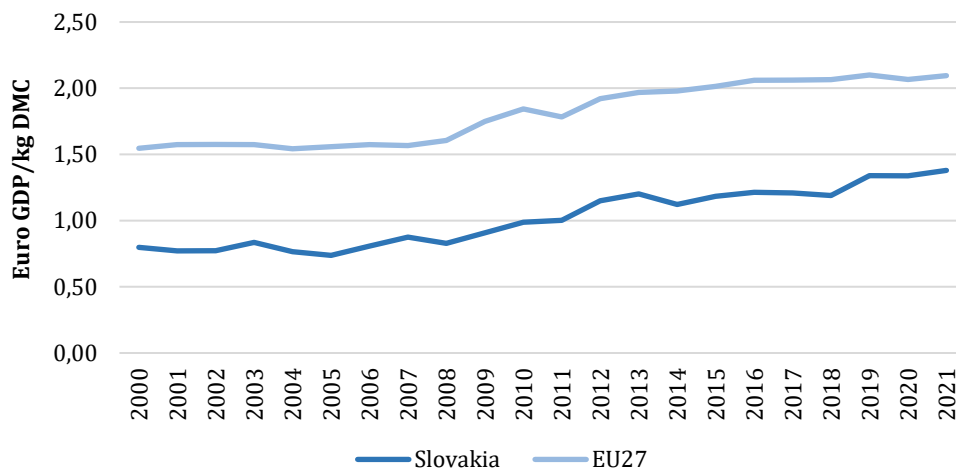
Note: * - Toe: equivalent of a tonne of oil.

Source: Eurostat (2023) NAMA_10_GDP; NRG_BAL_C.

As a second contextual indicator, we chose the material intensity of the economy.²⁰ It is the share of GDP and domestic material consumption (DMC). In Figure 4.4 we show the evolution of material intensity in Slovakia and the EU27 between 2000 and 2021; the Slovak economy was able to produce 1.38 euros of GDP per 1 kg of materials in 2021, which is lower material efficiency than the EU27 achieved (2.09 kg per 1 euro of GDP). We can observe a similar gradual increase in material efficiency, but Slovakia's gap with the EU27 in this indicator has been relatively stable over the whole period.

Figure 4.4

Material Efficiency of the Slovak and EU27 (euro/kg)



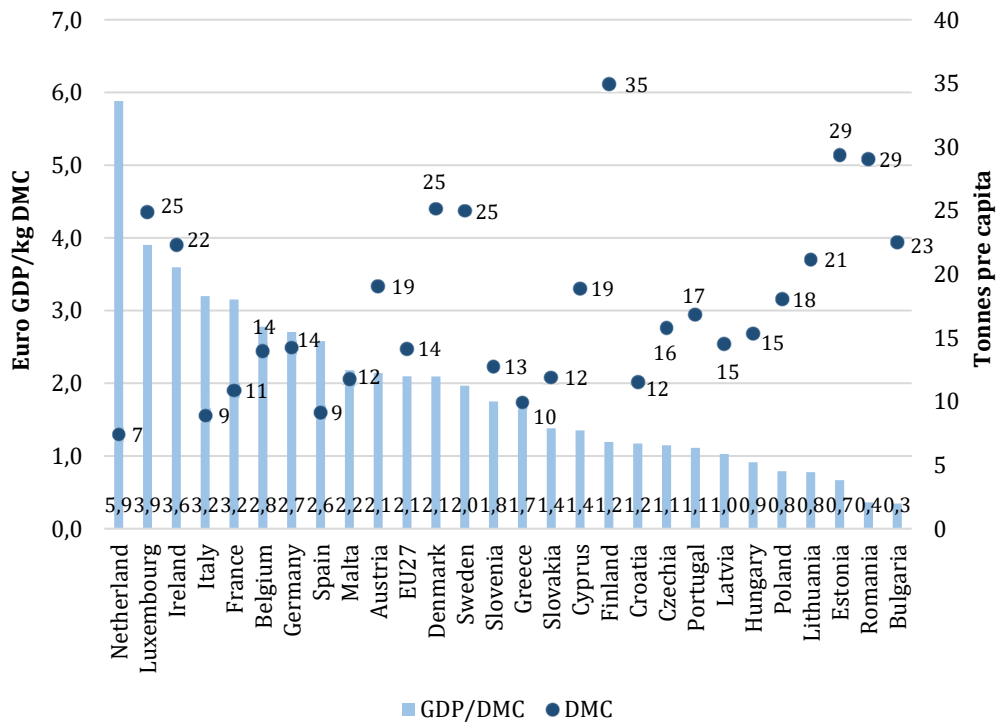
Note: DMC – Domestic material consumption.

Source: Eurostat (2023) [SDG_12_20]; Chain linked volumes (2015).

As an alternative proxy for material intensity, we consider per capita DMC in Figure 4.5. Compared to European economies, Slovakia is in the group of countries with a medium level in terms of material intensity (left axis), but shows relatively positive values in terms of material consumption per capita (left axis) (12 tonnes per capita), which is better than the EU27 (14 tonnes per capita).

²⁰ Domestic material consumption measures the total amount of materials directly used in the economy. It is the annual quantity of raw materials extracted within the domestic economy plus all physical imports minus all physical exports.

Figure 4.5
Material Intensity in the EU27 in 2021



Note: DMC – Domestic material consumption.

Source: Eurostat (2023) [SDG_12_20]; Chain linked volumes (2015).

Enterprises are drivers of change in any economy. Their innovative activities are key to achieving environmental goals. In the field of eco-innovation, the survey on business innovation activities carried out in the EU Member States (most recently in 2020) provides information. According to this survey, there are more innovating enterprises in Slovakia that have introduced an innovation with an environmental benefit than in the EU (Table 4.4). The largest difference (5.7 pp) is for the effects of 'recycling waste, water or materials for own use or sale within the enterprise', which can also be considered as an indicator of the currently popular concept of circular economy. We attribute this favourable situation to the high share of foreign-controlled enterprises in the corporate sphere in Slovakia. We see a less clearly favourable picture when comparing it with 2014. In Slovakia, the share of innovating enterprises that have introduced an

innovation with a benefit for reducing the consumption of materials, water, energy, air, water, soil pollution or noise reduction has decreased. In the case of the decline in the share of enterprises investing in reducing energy consumption, we see some correlation with the stagnation of energy efficiency, as we presented it in Figure 4.2.

Table 4.4

Percentage of Innovating Enterprises that Have Introduced an Innovation with a Benefit for Environment (%)

Effects	SK 2020	SK 2014	Average EÚ 2020	Difference SK 2020 a SK 2014 (p. p.)	Difference SK 2020 a EÚ 2020 (p. p.)
Reducing material or water consumption per unit of production within the enterprise	10.9	18.5	9.9	-7.6	1.0
Reducing energy consumption or reducing total CO ₂ emissions within the enterprise	15.3	18.9	14.5	-3.6	0.8
Reducing air, water, soil pollution or noise within the enterprise	14.4	18	10.4	-3.6	4.0
Total or partial substitution of materials with less polluting or less hazardous materials within the enterprise	11.9	10	9.7	1.9	2.2
Total or partial substitution of energy of fossil fuels with energy from renewable sources within the company	7.6	4.4	7.2	3.2	0.4
Recycling waste, water or materials for your own use or for sale within the company	17.5	17.5	11.8	0.0	5.7

Source: Eurostat (2023) INN_CIS12_ENVE; ŠÚ SR (2020) and ŠÚ SR (2023) [vt1805rs].

It is interesting to look at the factors that have influenced the introduction of eco-innovations and to which innovating enterprises in Slovakia attach a high degree of importance (Table 4.5). The first three factors (current or expected environmental regulations or taxes) can be described as government regulatory measures (indirect instruments). The factor 'existing environmental regulations' has a relatively high representation in Slovakia (19%), either compared to 2014 or to the EU average. Environmental regulatory measures (e.g. on material consumption, emissions, waste, protection of different components of nature, etc.) can be a strong driver of innovation, especially in economies with a higher share of manufacturing industries.

Table 4.5

Percentage of Innovating Enterprises Reporting a High Degree of Importance of Factors Influencing the Introduction of an Innovation with an Environmental Benefit (%)

Factors	SK 2020	SK 2014	Average EÚ 2020	Difference SK 2020 a SK 2014 (p. p.)	Difference SK 2020 a EÚ 2020 (p. p.)
Existing environmental regulations	19.1	13.7	11.5	5.4	7.6
Existing environmental taxes and charges	13.6	9.0	7.7	4.6	5.9
Environmental regulations or taxes expected in the future	14.6	7.7	8.8	6.9	5.8
Government grants, subsidies or other financial incentives for environmental innovation	5.2	4.0	6.0	1.2	-0.8
Current or expected market demand for environmental innovations	9.9	9.5	9.1	0.4	0.8
Improvement of the company's reputation	18.4	16.2	15.7	2.2	2.7
Voluntary actions or good practice initiatives for the environment	8.4	12.9	9.3	-4.5	-0.9
High energy, water or materials costs	18.1	16.9	12.7	1.2	5.4
Compliance with procurement requirements from the public sector	8.4	6.3	5.5	2.1	2.9

Source: Eurostat (2023) INN_CIS12_ENVF; ŠÚ SR (2020) and ŠÚ SR (2023) [vt1806rs].

Existing environmental taxes²¹ and charges, which in Slovakia are higher than the EU27 average (see Figure 4.6), represent a relatively strong incentive to introduce eco-innovation. Government grants as a direct financial instrument to support eco-innovation do not play a large role in innovation compared to other factors, not only in Slovakia but also in the EU27. The second group of factors can be described as market factors. Within these, the improvement of the reputation of enterprises (subjective factor) or high input prices (objective factor) have a relatively high share. The factors measured also include 'voluntary actions or good practice initiatives for the environment' (also seen as an indicator of the theoretical concept of corporate social responsibility).

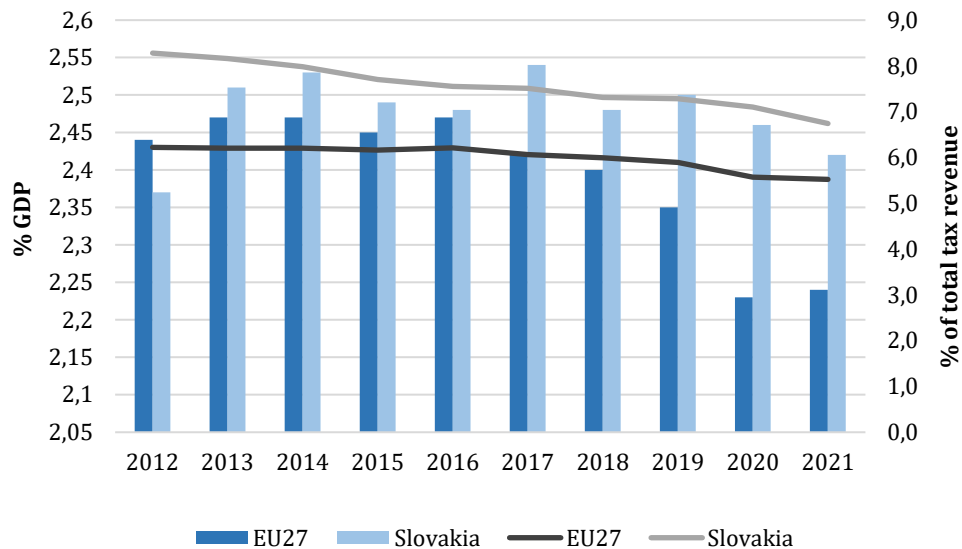
²¹ Environmental taxes in Slovakia include: energy taxes (mineral oil tax, electricity tax, coal tax, natural gas tax, nuclear facility siting tax, gas and liquid storage tax, emission quotas), transport taxes (road tax, motor vehicle registration fee, tax on entry and stay of motor vehicles in the historic district), pollution taxes (fees for discharge of waste water into surface waters, air pollution fees, tax on reimbursement for quarrying space).

We can say that environmental taxes in Slovakia are slightly higher than the EU average (Figure 4.6). In 2021 they amounted to 2.24% of GDP, compared to 2.42% of GDP in the EU27 (left axis of the figure). Environmental taxes accounted for 6.7% of total tax revenue, compared to 5.52% in the EU27 (right axis). Looking at their structure, Slovakia is dominated by energy taxes with a share of 91% (EU27: 78%). Transport taxes account for 8.5% (EU: 18.1%). Pollution or resource taxes had a share of 1.1% (EU: 3.52%). Given that excise duties on mineral fuels dominate in Slovakia, it can be assumed that under conditions of possible de-carbonisation of the Slovak economy (meeting climate targets), their share of total environmental taxes may decrease.

Figure 4.6

Environmental Taxes in Slovakia and the EU27

(% of GDP – left axis, % of total tax revenue – right axis)



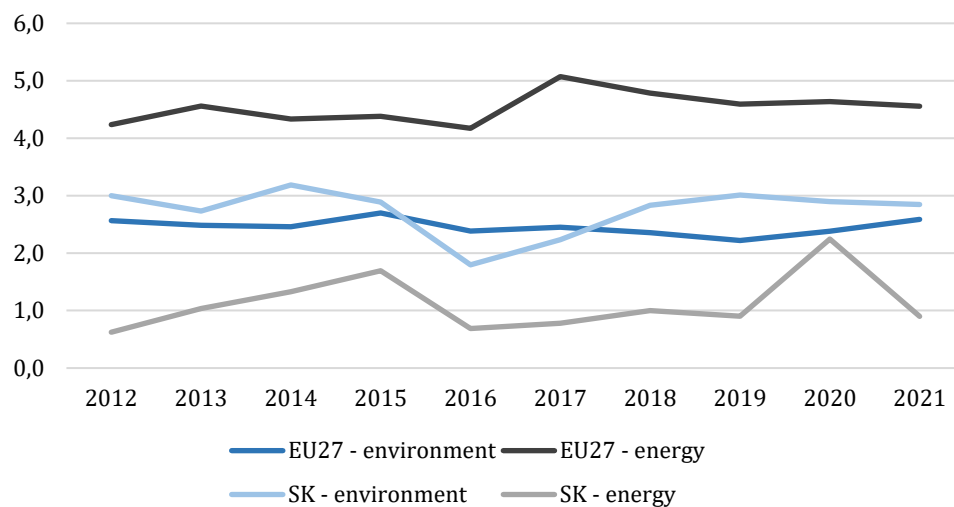
Sources: Eurostat (2023) [ENV_AC_TAX\$DEFAULTVIEW].

We will take a brief look at R&D as a potential resource for eco-innovation. The statistics of the state budget expenditure on R&D (GBOARD) allow to see the structure of public expenditure on R&D according to socio-economic objectives. Within these, we have focused on the area of R&D funding in environment and energy.

Slovakia's long-term lag in R&D funding is a well-known fact. In terms of the focus of public spending (which can also be seen as an indicator of the nature of public R&D policies) on R&D, we see in Figure 4.7 a similar share in environmental R&D funding of 2.8% in 2021 of total government spending in Slovakia, but also in the EU27. The difference is in energy R&D funding. While in Slovakia the share in 2021 was 0.9%, in the EU27 it was 4.6%.

Figure 4.7

Government Spending on Environmental R&D and Energy
(% of total expenditure) in Slovakia and EU27



Source: Eurostat (2023) [GBA_NABSFIN07].

Patents or patent applications are commonly used as another indicator of innovation performance. The advantage of patent statistics is the possibility of a deeper disaggregation by type of technology or technological domain covered by patents.

Table 4.6 shows the development of environmental patent applications in Slovakia and their share in total patent applications. Compared to the OECD, the share of environmental patent applications in Slovakia does not differ significantly. A weakness of the Slovak research system is the generally low level of patenting (poor patent "production"), which is also reflected in the low level of patenting of environmental technologies.

Table 4.6

Environmental Patent Applications in Slovakia and OECD

		2012	2013	2014	2015	2016	2017	2018	2019	Average per year
EPO patents total	SK	44.4	51.6	50.9	59.6	65.1	75.9	63.1	71.2	60.2
	OECD	134 609	138 334	135 661	135 836	136 060	137 953	138 733	139 145	137 041
Environmental patents	SK	5.9	5.1	4.2	9.8	10.8	8.6	6.5	5.3	7.0
	OECD	19 299	18 529	17 495	17 533	17 285	17 544	17 560	8 312	16 695
Share of environmental patents in total patents	SK	13.3	9.8	8.3	16.4	16.6	11.3	10.4	7.5	11.7
	OECD	14.3	13.4	12.9	12.9	12.7	12.7	12.7	6.0	12.4

Source: OECD (2023).

* * *

In Slovakia, the low level of R&D intensity (measured as a share of gross R&D expenditures per GDP). We see some positive development in the changing structure of R&D expenditure in favour of a rising share of business spending on R&D. Generally, it is sector of business R&D that is the most important factor in the national innovation and brings decisive benefits. Slovakia is one of the EU Member States that make greater use of EU funds to finance domestic R&D. In contrast, business abroad resources for domestic R&D have been steadily lower in the long term. For R&D resources from the European Commission, we foresee a sharp uptake in 2021 – 2022 due to the end of the ESIF programming period, i.e. we can expect an increase in the average share of R&D resources abroad. The combination of two views on the structure of R&D (by source sector and by use sector) allowed us to quantify more precisely some of the linkages of the Slovak R&D system: the weak interconnectedness of the business and higher education sectors, the low flows of R&D funding from the government to the business sector, as well as the weak capacity of the higher education sector to generate its own resources for R&D.

The second topic we paid attention are eco-innovations. Due to the scope of the topic and the large supply of statistical data (a result of the attention the environmental field in particular receives from public policies), we limited ourselves to a few selected topics. We have chosen energy intensity and material intensity as contextual indicators for the Slovak economy. The Slovak economy has been increasing its energy efficiency from 1995, but after 2013 it has been stagnating at around 60% of the EU level. In the case of material intensity, Slovakia also lags behind the EU, reaching only 80% of the EU level. Reducing the need for energy or materials, especially in manufacturing and energy production, are ongoing challenges for Slovakia. In terms of innovative enterprises in Slovakia, the situation is relatively good. There are more innovating enterprises in Slovakia that have introduced an innovation with an environmental benefit than in the EU. The biggest positive difference is for the effects of "recycling waste, water or materials for own use or for sale within the enterprise". We attribute this to the high proportion of foreign-controlled enterprises (especially from economically developed countries). Motivations for enterprises to introduce eco-innovations are mainly regulatory regulations and environmental taxes, the desire to enhance the reputation of the enterprise or rising input prices. Environmental taxes are slightly higher in Slovakia (measured as a share of GDP or total tax revenues). The R&D sector oriented towards environmental objectives in terms of funding or patent applications has a comparable share to the EU and OECD respectively. The difference is in R&D expenditure on energy, the share of which is several times lower in Slovakia. However, the problem remains their total volume, whether in terms of expenditure or patent applications.

5. EMPLOYMENT AND WAGES

In the context of the Slovak labour market, the European outbreak of the global SARS-COV-2 pandemic was met with earlier signs of weakening demand for labour, which at that time, especially in export-oriented industries, was reacting to the slowdown in economic activity in Slovakia's key trading partners (it was manifesting itself in a more noticeable decline in the number of job vacancies already before the pandemic). When the economic consequences of domestic anti-pandemic measures was added to the external factors in effect until then, it allowed for an almost immediate onset of employment decline (the decline in the number of working persons according to the sample survey occurred immediately in the first quarter of 2020). This decline in employment persisted for a year and a half, with a reversal of trend in mid-2021. Although the number of working persons stopped falling in the third quarter of 2021, we could not yet speak of a more significant recovery in employment. Employment growth was insignificant and certainly lagged behind the recovery in economic activity in several sectors of the economy. Employment growth in the last quarter of 2021 was somewhat more noticeable, but it was still below a 1% pace, and this turnaround in the second half of the year was thus only able to partially blunt the average annual decline (-1.4%), which was mainly caused by developments in the first quarter, when the fall in employment reached its overall pandemic low (-4.8%; LFS).

However, the year-and-a-half-long "pandemic" decline in employment has been weaker than initially expected.²² This was helped by a combination of several factors, ranging from economic policy measures aimed at preserving some of the employment threatened by the introduced anti-pandemic restrictions on economic activity (First Aid and First Aid+ programmes), to clever adaptation manoeuvres taken by employers (moving some operations online, allowing far more work to be carried out from home, mass testing of employees in establishments requiring physical

²² The average annual decline in employment calculated from the number of working persons (Labour Force Sample Survey - LFS) was -2% in the first year of the pandemic and -1.4% in the second year of the pandemic; the decline in employment by the number of persons employed (according to statistical reporting) was even weaker).

contact, and thus early reopening of production, etc.), to the limitation of the availability of foreign labour (measures, as well as the spread of Covid-19 itself, have complicated cross-border passage and commuting), which in recent years had compensated for the worsening availability of domestic labour (the result of demographic trends). The decline in economic activity has thus been much more pronounced in the fall in the number of hours worked than in the fall in the number of people working or employed (a topic we have addressed in previous editions of this publication).

Nevertheless, in the context of pandemic impacts on the labour market, it is important to highlight significant sectoral specificities. In particular, the first quarter of 2021 was a critical period, when a long and massive second wave peaked in Slovakia. The mandated curtailment of activity (ordered by the covid automat) dramatically affected standard operation particularly in accommodation, where sales fell by 90% in the first two months of the year and a quarter of the workforce left the sector, but also in catering, retail and passenger transport.²³ On average over the year, the most dynamic loss of employment occurred in accommodation and food services (almost -18% by number of employees). However, the largest absolute job losses were in the larger sectors: cumulatively, over the two years of the pandemic, the manufacturing, construction, trade and agriculture sectors saw the largest number of employees leave, followed by the relatively small but most affected accommodation and food services sector.²⁴ On the contrary, employment in some service sectors increased quite dynamically in the two years of the pandemic, and it was not just the public sector.

²³ The second wave (in Slovakia caused by the British variant of the virus) resulted in overloaded hospitals and an unflattering global lead in both the number of hospital admissions and deaths (per capita). The covid automat introduced in February then put the whole of Slovakia into a "black" marking and since at that time vaccination was not yet available to all population groups, many facilities designated as non-essential remained closed to the majority of customers. As in the first year of the pandemic, restaurants and accommodation services were the hardest hit. Food service outlets saw a 55% drop in sales at that time, while the take-away option was maintained. Sales were also down by around a fifth year-on-year in construction, retail, selected market services and transport. Due to travel restrictions, passenger traffic performance fell by 70%, and passenger transport fell by 60%. Construction output was down by a fifth.

²⁴ Comparison of the situation before the end of 2019 and end of 2021 according to statistical reporting; for LFS, the change in methodology does not allow for a comparison.

Having looked back at the aftermath of the pandemic, it is possible to proceed to an assessment of developments in the first year of the post-pandemic employment recovery, i.e. 2022. In the following sections of the chapter, we will focus in particular on selected noteworthy moments of development that deserve special attention.

Post-pandemic Employment Recovery against the Backdrop of an Ageing Workforce

Even with relatively weak economic growth in 2022 (even weaker than in the second pandemic year, as we note in the opening chapter), the recovery in employment – that had already begun slowly in the second half of 2021 – persisted. A stronger boost in employment was seen in the first half of 2022, also due to the comparative base.²⁵ The fastest rate of growth in the number of working persons was achieved in the first quarter, despite the fact that the most massive wave of the epidemic – in terms of the number of people tested positive for the virus – peaked in the middle of the quarter. At that time, the circulating dominant variant of the virus did not cause such a frequent occurrence of severe disease, and therefore during February there was a significant relaxation of epidemiological measures throughout the Slovak Republic. This further boosted already recovering employment in the services previously affected by the restrictions (employment growth strengthened not only in retail trade, but also in accommodation, restaurants and transport). In February, almost all sectors of the economy were already experiencing employment growth. However, the slowdown in the employment growth in the second half of the year was not only due to the fading of the low base effect from the first half of 2021. Labour office statistics on registered unemployment or job vacancies also confirmed some cooling or stagnation towards the end of the year (which will be discussed later).

A phenomenon that should catch our attention when assessing the overall change in employment in the recent period is the different dynamics of the increase in the number of working persons by the main age

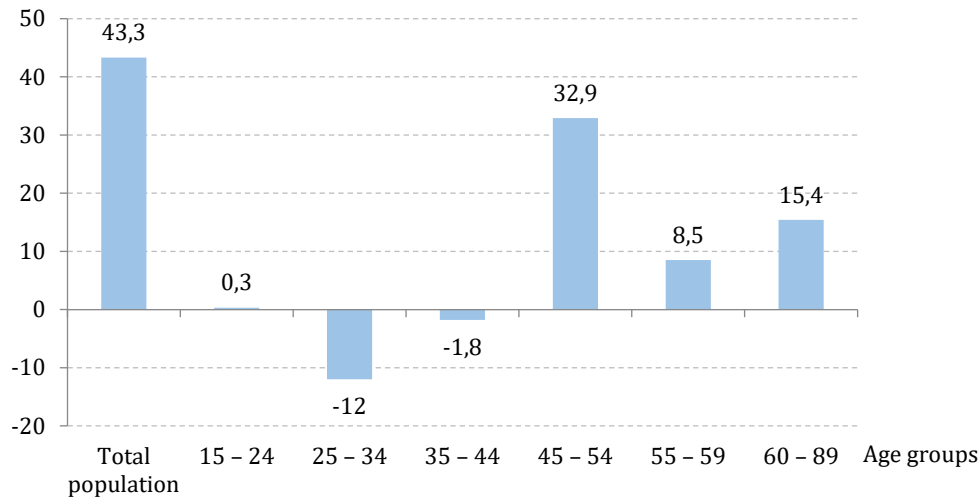
²⁵ In both quarters and for both methodologies (i.e. based on both the number of working persons by LFS and the number of employed according to statistical reporting) in the range of 2 – 3%.

categories and, in particular, the magnitude of the contribution of the increase in working persons of the highest age categories. Indeed, the post-pandemic employment recovery has drawn heavily on the employment growth of the oldest groups of the population. In fact, even in the year before, when total employment was still declining (2021), there was a year-on-year increase in the number of working persons in all age categories above 35 years. However, this growth was significant only in one of them, namely for persons aged over 60 (at a rate of 5.1%), while it was less than half a per cent in the other categories over 35.²⁶ By 2022, the growth rate of employment of persons aged 60 and over was already above 8% and those aged 55 to 59 were growing at an annual rate of more than 3%. In both years of the post-pandemic recovery, these were the two fastest employment growth rates by age. However, this is not a new phenomenon in Slovakia. The roots of this phenomenon are explained in the first part of the following Chapter 6. Not only due to favourable economic conditions, but also due to the ageing of large population cohorts and legislative changes, over the last two decades people over 55 have increased their share from 5% to today's almost one-fifth of total employment in the Slovak Republic. In the last two recessions, they have been an important source of employment recovery. In this context, the extent to which they have contributed to the absolute increase in total employment after the pandemic – as is well illustrated in Figure 5.1 – seems less surprising. Nevertheless, it is worth pointing out, given that this is a component of the labour force that accounted for only 5% of employment two decades ago.

The Figure shows which age categories have actually contributed to the employment recovery in the last year and to what extent. The labour market has seen an increase almost exclusively in the number of persons over 45, with a significant share of employment growth coming from a category that accounted for barely 1% of employment 20 years ago (persons aged 60+). If both recent years were included in the Figure, the increase in the 60+ category would be even more significant. In contrast, the younger working groups were declining in 2022. Even taking into account the limits of the sample survey, this trend is obvious.

²⁶ Broken down into age categories according to Table T24a, annexed to the Statistical Report on the Economy of the Slovak Republic in the fourth quarter of 2022 (ŠÚ SR, 2023a).

Figure 5.1
Increase in the Number of Working Persons in 2022 Broken Down by Age
 (in thousands of persons)



Source: Based on LFS data of the Statistical Office of the SR (Datacube database).

As a result of past demographic trends, the Slovak economy has entered the last phase of the demographic dividend period, when large population groups are gradually moving into pre-retirement and retirement age, the size of the working population is declining, and the share of the elderly population is increasing. In phases of favourable macroeconomic development, persons at the edge of retirement age are motivated to remain in the labour market (the adjustment of the state pension age also has an impact) and represent a source of employment growth; however, as a result of the fertility shortfall after 2000, the economy does not yet have an adequate replacement in terms of numbers for the generation that will gradually become inactive due to reaching the post-productive age. Labour demand was running up against the limits of labour supply in the years before the pandemic, as we have already mentioned in previous editions of this publication. This has been signalled by several statistical indicators, such as the increase in economic activity with a simultaneous decline in the working population, the gradually increasing share of the working persons in the economically active population, the record shrinkage of those groups of the unemployed, who have been out of work for the longest time (i.e. those who usually have the greatest difficulty in finding a job on the labour

market), the high year-on-year increases in reported job vacancies, the above-mentioned long-term most dynamic growth rates of the working population in the 60+ age group, and the several-fold increase in its share of total employment, the record decline in the unemployment rate, including long-term unemployment, the decline in the number of workers commuting abroad for short-term work, including from regions of the Slovak Republic with traditionally high unemployment rates and a rich experience of short-term labour migration, strong nominal wage growth, and finally, the significant increase in the number of foreigners working in Slovakia after 2016, especially foreigners from third countries (for whom the process of getting a job is administratively more difficult than for citizens of EU countries).

Demographic Transition – a Traditional Driver of Labour Immigration – Has Been Compounded by the War in Ukraine

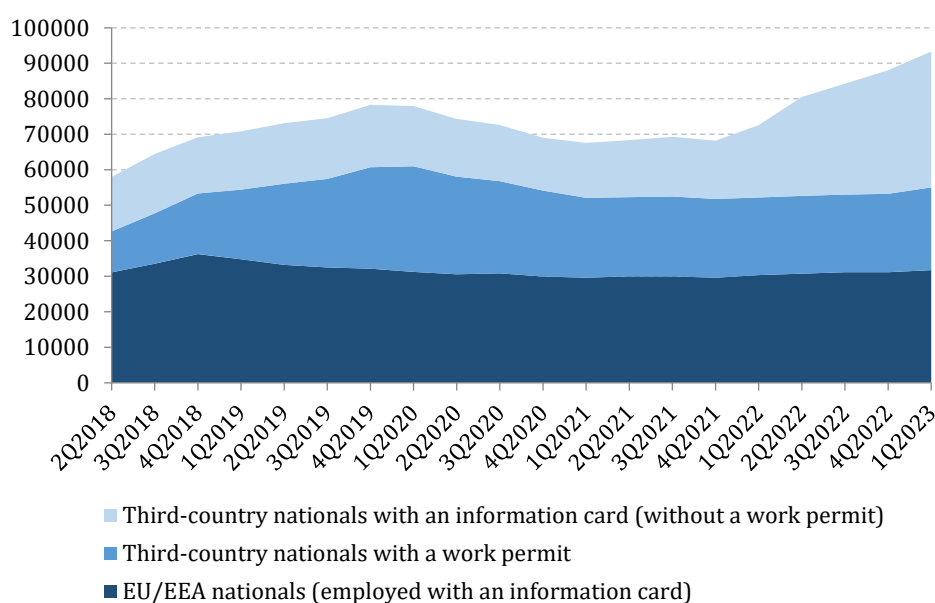
The number of foreigners working in the Slovak Republic started to increase significantly especially in the years of strong employment recovery after the global economic crisis. The number of foreigners officially employed in Slovakia exceeded the 50,000 mark in the first quarter of 2018.²⁷ In particular, the number of foreigners from third countries increased dynamically. Already in that year (2018), the groups of citizens of Serbia and Ukraine dominated. At that time, we were talking about a 40-fold increase in the number of Serbs employed in the Slovak Republic and an 11-fold increase in the number of Ukrainians employed in the SR over a five-year period. Thus, while before 2016, third-country nationals represented only a fraction of foreigners employed in the Slovak Republic, and EU citizens working in Slovakia prevailed to a great extent, since the first quarter of 2019, third-country nationals have become predominating among foreigners working in the Slovak labour market (for more information on developments in the pre-pandemic period, see, e.g., Hvozdíková and Lichner et al., 2018; Chapter 4).

²⁷ And yet only 5 years earlier, just little over 7 thousand EU citizens and even just over 4 thousand third-country nationals were working in Slovakia.

The inflow of foreigners to the Slovak labour market was peaking before the outbreak of the pandemic – in the last month of 2019 more than 78 thousand of them officially worked in Slovakia. The pandemic affected cross-border migration and the number of foreigners employed in Slovakia began to decline. However, not in the same intensity. Due to the effects of the pandemic crisis, third-country nationals were leaving the Slovak labour market to a much greater extent. In fact, the number of EU citizens employed in the SR had already fallen slightly before the pandemic and as a result of the pandemic, this decline deepened only insignificantly; rather, their number stopped growing and stabilised around the value of 30 thousand. Following the relatively rapid economic recovery from the pandemic crisis and the early onset of employment rebound (compared to the previous crisis), and soon related also to the outbreak of the war in Ukraine, there has been an even more dynamic increase in the number of employed third-country nationals than the decline following the pandemic.

Figure 5.2

Foreigners Employed in the Slovak Republic by Nationality (in persons)



Source: Based on the data of the Central Office of Labour, Social Affairs and Family of the SR (COLSaF) on employment of foreigners in section Statistics (ÚPSVaR, 2023).

Figure 5.2 captures both the aforementioned change in dominance by nationality (EU citizens vs. third-country nationals) at the turn of 2018/2019, as well as the more than twofold increase in the number of employed third-country nationals over the (shown) most recent 5-year period, and the different impact of the pandemic on their staying on the Slovak labour market, depending on their countries of origin.

At the end of the first quarter of 2023, already more than 90 thousand foreigners were employed in Slovakia; exactly two thirds of them were third-country nationals. During 2022, the number of those who were employed based on an information card (neither a work permit nor a confirmation of the possibility of filling a vacancy is required) has significantly increased. Easing administrative requirements for employment of third-country nationals was one of the objectives of the Labour Ministry yet in the pre-pandemic period.²⁸ However, in 2022, the government has been also already responding to the conflict in Ukraine and the subsequent influx of Ukrainian citizens - by proposing a number of legislative amendments, collectively referred to as Lex Ukraine, which, among other things, allow for the obtaining of temporary refuge status (“dočasné útočisko”) and the granting of tolerated stay with a refugee designation “departee” (“odídenec”). According to the amended Article 23a of the Employment Services Act, citizens in the temporary refuge regime can be employed without the need to obtain a work permit (only the so-called information card is filled in and sent to the relevant labour office). Indeed, citizens of Ukraine accounted for up to two thirds of the total increase in the number of employed third-country nationals between March 2022 and March 2023²⁹ and up to 85% of the total increase in the number of third-country nationals employed on the basis of the information card, which can be assessed as a real effect of the legislative amendments adopted in response to the outbreak of the conflict.³⁰ The fact that this is a consequence of the

²⁸ One of the measures since 2018 was the regular publication of a list of shortage professions, where it was possible to employ a foreigner from a third country through a simplified process if the legal conditions were met.

²⁹ More precisely, 66.9% of the total increase of almost 20 thousand employed third-country nationals and 62.6% of the total increase of all foreigners employed in the Slovak Republic.

³⁰ Since the outbreak of the war in Ukraine, the number of Ukrainians with work permits in the Slovak Republic has actually decreased; on the contrary, there are 2.6 times more Ukrainians working here based on an information card than before the war.

war is evidenced also by the difference between men and women: the number of Ukrainian men employed in the Slovak Republic has increased by only 15% since the outbreak of the conflict, while the number of employed Ukrainian women has increased almost 2.3-fold. Employment with the information card has increased more than threefold in a year (since March 2022) for female citizens of Ukraine (of the total increase of almost 13 thousand employed citizens of Ukraine, more than 10.8 thousand were women).³¹ In March 2023, citizens of Ukraine accounted for more than 38% of all foreigners employed in the Slovak Republic registered in the statistics of the Labour Office. They were by far the largest group of employed foreigners by nationality. The second most numerous – citizens of Serbia accounted for less than 11% of all employed foreigners.

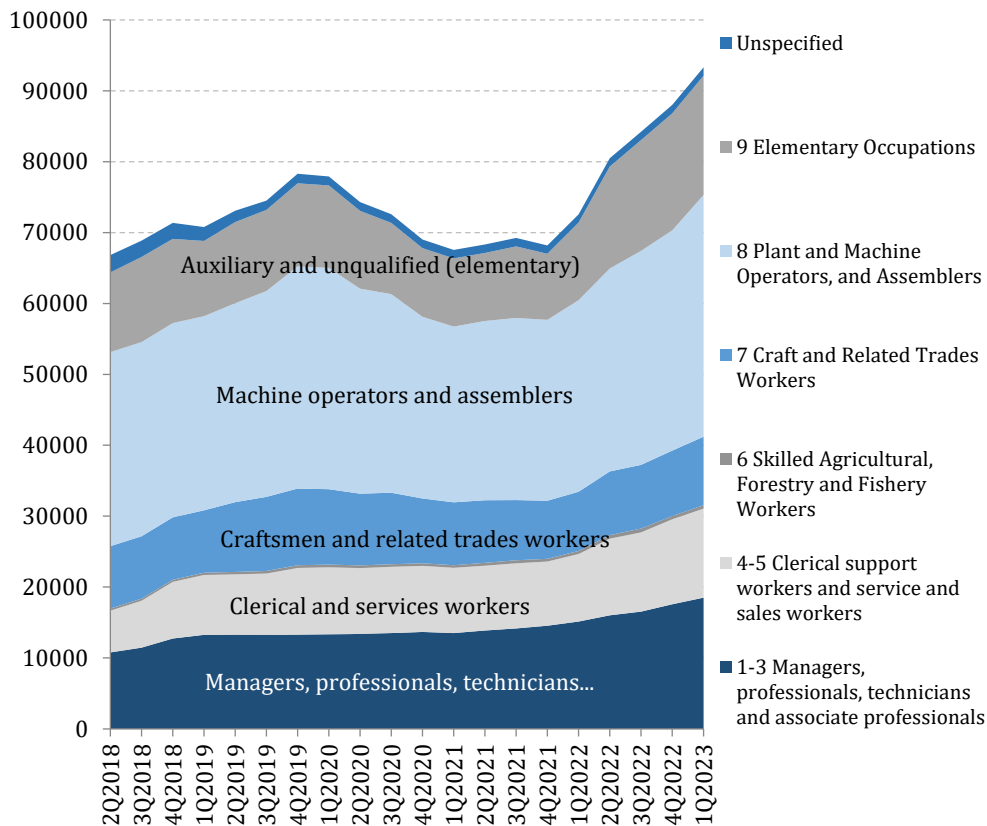
Also noteworthy is the different impact of the pandemic on the employment of foreigners depending on the occupation they had. As Figure 5.3 documents, the employment of foreigners working in occupations falling into the first occupational categories (1 to 5 according to the ISCO) was essentially unaffected by the pandemic.³² On the contrary, some skilled workers/craftsmen left the Slovak labour market during the pandemic and their numbers have not yet returned to pre-pandemic levels. And employment of foreigners in the last two occupational categories has been most affected by the pandemic. A significant number of operators and assemblers of machinery and equipment, which has long been the most common occupation in which foreigners find employment, have left the labour market. They started returning to Slovakia at the first signs of employment recovery, i.e. in mid-2021, but their numbers have returned to pre-pandemic levels only recently, with the arrival of 2023. Auxiliary workers have also been leaving the labour market due to the pandemic, but since the beginning of 2022, low-qualified labour from foreign countries has been increasing significantly, and by the end of the first quarter of 2023 their number exceeded the pre-pandemic level the most among

³¹ Comparison between March 2022 and March 2023.

³² The number of managers decreased only slightly during the pandemic, while the number of specialists, technical and professional workers increased almost continuously during the pandemic, as did the number of administrative staff (officials). Employment of foreigners in the services indeed fell slightly during the pandemic, but by March 2023 it had risen significantly again and is double the level of five years ago.

all occupational classes. After operators and assemblers, this is the second occupational group where foreign nationals are most frequently employed. The significant increase in the number of foreigners employed as unskilled and auxiliary labour after March 2022 is related to the arrival of (mainly) women from Ukraine after the outbreak of the conflict, who often had no choice but to find employment outside their original occupation.

Figure 5.3
Foreigners Employed in the Slovak Republic by Occupation (in persons)



Note: According to the aggregated main classes of the standard classification of occupations: 0+1+2+3; 4+5; 6; 7; 8; 9+10 (no employed foreigners are recorded in class 0, so they do not appear in the legend).

Source: Based on the data of the Central Office of Labour, Social Affairs and Family of the SR (COLSaF) on employment of foreigners in section Statistics (ÚPSVaR, 2023).

In total, there were 19 810 more foreigners employed (officially registered) in Slovakia as of December 2022 than at the end of 2021. For comparison, the total increase in the number of persons employed in the

economy in 2022 according to the LFS was 43.3 thousand persons and according to the statistical reporting it was 39.8 thousand persons. Although these are different data sources and different methodologies, these figures clearly indicate that the increase in employment in the Slovak Republic in 2022 was significantly driven by employed foreigners, in fact at almost half the rate. (The "wartime" increase in the number of registered employed citizens of Ukraine alone is close to one-third the magnitude of the increase in total employment in the SR). At the same time, the share of foreigners in total employment in the Slovak Republic, despite their significant inflow in recent years, is still very low (below 3.7% at the end of 2022),³³ incomparably lower than is commonly seen in Western European countries. The importance of the increase in their number in 2022 for the increase in total employment in the SR is therefore a phenomenon that should not go unnoticed.

Services Sector behind Employment Growth in 2022

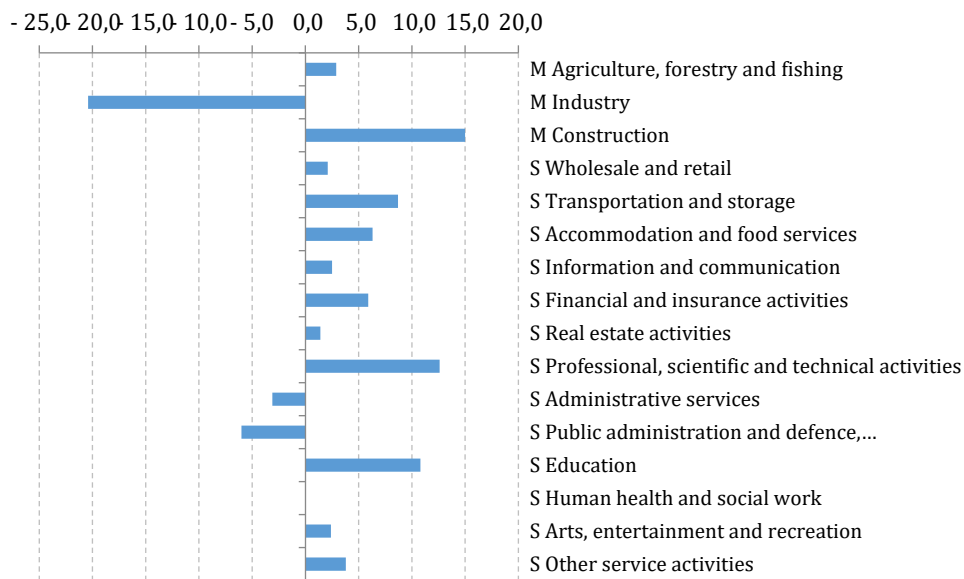
Apart from the fact that the resulting year-on-year increase in employment was driven almost exclusively by the over-45 age categories, and the fact that the increase in the number of employed foreigners (among them especially citizens of Ukraine) contributed almost half as much to employment growth, the composition of employment growth by the sectoral structure of the economy also attracts attention in the 2022 statistics. At the aggregate level, services, not the manufacturing industries, are behind the post-pandemic employment recovery. In fact, the number of working persons (LFS) in manufacturing industries declined cumulatively year-on-year in 2022, while employment in services grew by more than 46 thousand persons. Among the manufacturing sectors, it was exclusively industry that dragged the year-on-year employment outcome into negative numbers. However, employment gains in services more than doubled the decline in industry, offsetting the negative employment developments in manufacturing.

³³ Comparison of the number of employed foreigners according to the statistics of COLSaF (ÚPSVaR) with the total number of employed persons in the Slovak economy according to statistical reporting.

This trend escalated at the end of the year: in the last quarter of the year, 47 thousand fewer people were working in the manufacturing industries (in this context, sectors A to F of NACE classification) year-on-year, while the "compensation" from the services side was in the range of plus 57.5 thousand working persons. As a result, employment growth slowed down noticeably in the last quarter. This was the result of developments in manufacturing (sector C in NACE classification), especially in the second half of the year, when the sector lost more than 86 thousand workers, representing more than 14% of the total number of persons employed in the sector.³⁴ Given the importance of manufacturing for employment in the Slovak context, this can be seen as a massive exodus of workers from the sector, especially at a time of still favourable developments in most other sectors.

Figure 5.4

Change in the Number of Working Persons (LFS) in the Economic Sectors of the Slovak Republic (in thousands of persons; year 2022)



Note: M – manufacturing industries; S – services.

Source: Based on the data from table section of the Statistical Report on the Economy of the Slovak Republic in the 4th quarter of 2022 (ŠÚ SR, 2023a).

³⁴ Industrial production has been lower year-on-year since February 2022, but its decline deepened in the last months of the year.

The decline in employment in industry is confirmed also by business statistics, which show that the industry has been the only sector to experience a year-on-year decline in employment continuously since March 2022. At a time when the economy was weathering another strong pandemic wave (omicron) and economic activity was beginning to benefit from the relaxation of epidemiological measures, the offsetting of the pandemic employment losses in industry was hampered by the outbreak of war in Ukraine. High prices of energy and other inputs, renewed problems with components supply and general uncertainty in international markets have affected industrial production since the beginning of the conflict. In contrast, household consumption developed favourably after the lifting of the anti-pandemic measures, with households making deferred purchases, including for services, with positive effects for retail, accommodation and food services and other market services. This trend continued despite high inflation, with recovering consumer demand becoming a driver of employment growth in services. Not only there has been no post-pandemic recovery in employment in industry, in fact, the number of persons employed in industry has fallen for the fourth year in a row. Even in construction, despite overall employment growth in 2022, the number of people employed has not returned to pre-pandemic levels. Among services, the same is true for accommodation and food services, where employment growth was just a replenishment of employees laid off during the pandemic.

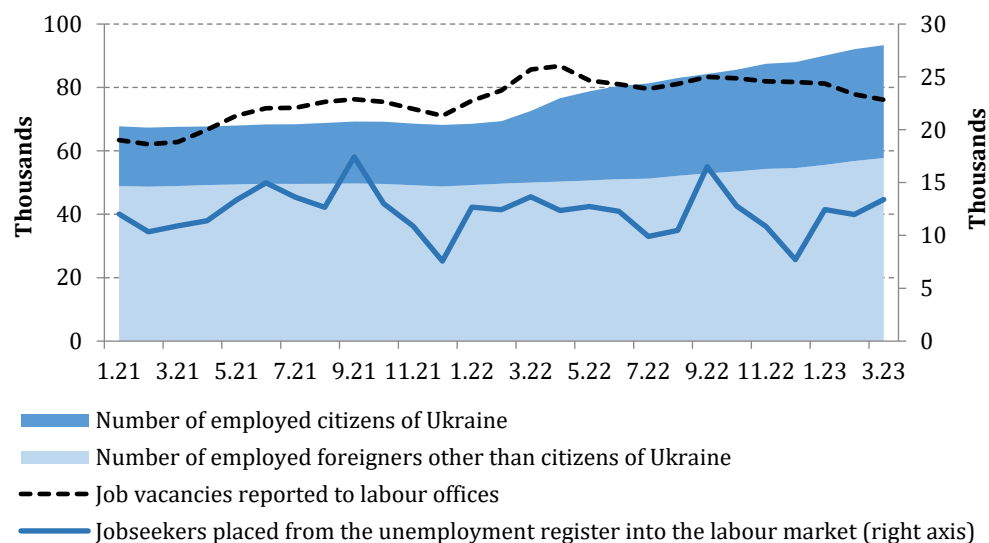
And so, paradoxically, when we talk about a post-crisis employment recovery in 2022 (from a pandemic recession), we must also stress a phenomenon that was once absolutely unthinkable for the Slovak economy, and that is that this time, the post-crisis employment recovery was driven by the service sector. This paradox occurred because, shortly after recovering from the pandemic recession, industrial production suffered another downturn, this time as a result of the war in Ukraine and the combination of shocks that this conflict caused in many economies. The second factor was that the pandemic crisis directly affected a number of service industries, which, thanks to revived consumer activity, were catching up with the pandemic shortfalls (both in output and employment). As a result, the share of service industries in total employment in the country rose to almost 62% in 2022 (and to 63% before the end of the year).

Detailed Statistics from Labour Offices Reveal the Effect of War in Ukraine and Show Signs of Cooling Labour Market

The gradual change in the labour market situation over the year can be traced from more detailed monthly statistics. Figure 5.5 presents some of them. The Figure clearly shows the timing and effect of the outbreak of war in Ukraine. Some of the Ukrainian departees were able to find employment in the Slovak labour market almost immediately after the Russian invasion began – right from March 2022 we can observe a noticeable and continuous increase in the number of Ukrainian citizens employed here.³⁵ Only in the first 4 months since the outbreak of the war (March-June 2022), the number of foreigners in the employment statistics increased by more than 11 thousand people, 87% of them being citizens of Ukraine (see Figure 5.5b). Such a high increase of employed foreigners in such a short period is an unprecedented experience for the Slovak labour market.

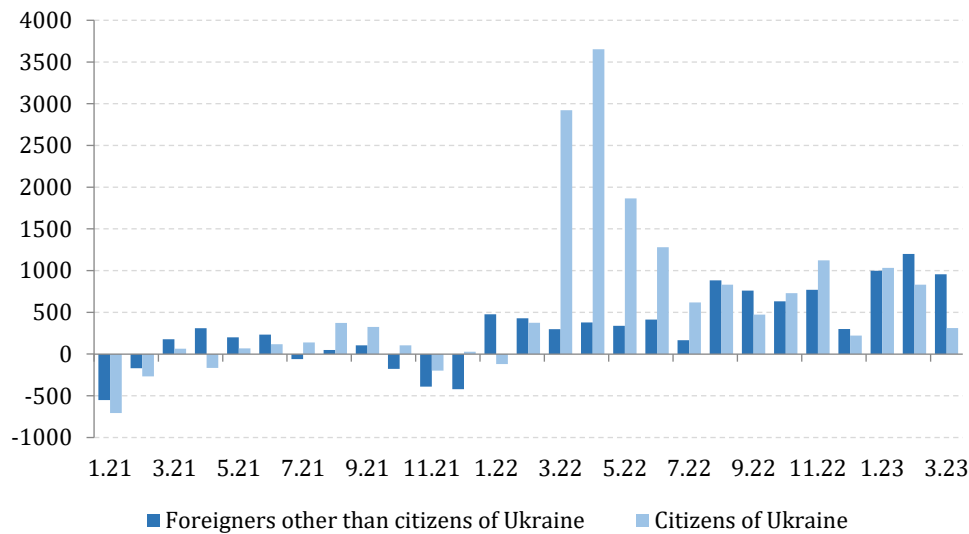
Figure 5.5

a) Monthly Data on Employed Foreigners, Job Vacancies and Registered Jobseekers Placed on the Labour Market (in thousands)



³⁵ From January 2022 onwards, the number of other employed foreigners registered in the statistics of the labour offices has also grown continuously, but not to such an extent (nor cumulatively per year). Figure 5.5a also shows the resulting increase in the share of citizens of Ukraine in the total employment of foreigners in the Slovak Republic, in March 2023 they already accounted for 38% of all registered employed foreigners.

b) Month-on-Month Flows (inflows/outflows) of Foreigners Employed in the Slovak Republic



Source: Based on data on unemployment and data on employment of foreigners (ÚPSVAR, 2023).

One of the signals of the saturation of labour demand can be the evolution of the number of jobseekers removed from the unemployment register because they have found a job on the labour market. The success curve of jobseekers' placement in the labour market (solid line in Figure 5.5a; values on the right axis) shows that, after a strong first few months of 2022, when substantially more registered unemployed found jobs than a year earlier, recruitment from the ranks of unemployed jobseekers in the middle of the year (from May to September) was noticeably weaker than in the same period of 2021.³⁶

The first clear signal of cooling labour demand is the evolution of the number of job vacancies. The number of vacant positions reported to the labour offices has been rising since March 2021 (Figure 5.5a), a few months before employment growth actually resumed. The strengthening demand for labour in the form of a rise in vacancies persisted (with a temporary pause in the last quarter of 2021) until April 2022, when almost

³⁶ Particularly in the summer months, roughly 20-30% fewer registered unemployed found jobs; even the traditional September hiring peak, when statistics are influenced by school leavers, was slightly lower.

87 thousand vacancies were reported. This was the moment when the number of vacant positions returned to pre-pandemic levels.³⁷

After the outbreak of the war, labour demand has stabilised, with a clear decline in vacancies since October 2022, signalling a gradual saturation of the demand. This decline in the number of reported vacancies has been met with a concomitant rise in the number of foreigners employed, further accelerating the saturation of demand. The weaker demand for labour can be seen as a consequence of rising input costs for employers, with some firms having to cut back on production due to energy prices, but also as a result of the overall uncertainty in the external environment or the continuing trend of weaker labour productivity. However, even in March 2023, there were still roughly 76 thousand vacancies reported. More than half of these were for machine and equipment operators and assemblers, the second largest group was for skilled workers and craftsmen, and the third largest group was for unskilled and ancillary labour. Thus, it was the reported vacancies that were filled to a significant extent by foreigners, as these occupational classes experienced their largest increases (except of craft workers). With the exception of firms with energy-intensive production (specific industries such as metal production or chemical industry are particularly affected by energy development), more massive layoffs are not expected; employers are aware of the labour shortages situation and take into account the cost of rehiring; in case of a further deterioration in economic activity, they are more likely to resort again to the reduction in hours worked that was widely used in the pandemic period (NBS, 2023).³⁸

³⁷ In fact, for the first time, their April stock was slightly higher than in March 2020 (although the real peak in pre-pandemic labour demand can be considered to be autumn 2019, led by October, when the number of reported vacancies was close to the 100 thousand mark).

³⁸ The issue of saturation of unmet demand for labour in certain professions by refugees from Ukraine (with implications for e.g. average wages due to the filling of lower-skilled positions or for the forms of part-time work, given the prevalence of women with children), as well as the broader context of employment of Ukrainians since the outbreak of the conflict, is addressed in more detail in the commentary of the Institute of Financial Policy of the Ministry of Finance of the Slovak Republic (Klůčik and Kubala, 2023). The authors of the commentary assume that about half of the applicants for temporary refuge status (105 thousand people had applied for it by the end of 2022) from Ukraine will have moved to Slovakia permanently. This will affect the size of the productive population and therefore the number of economically active persons; depending on their employment opportunities the productive capacity of the economy, investment and exports will increase. Increased consumption of goods and services alone will boost GDP by an additional 0.2 p.p.; higher tax and social contributions collection will bring additional revenue to the state budget in the range of 0.1% of GDP (see Commentary for further details).

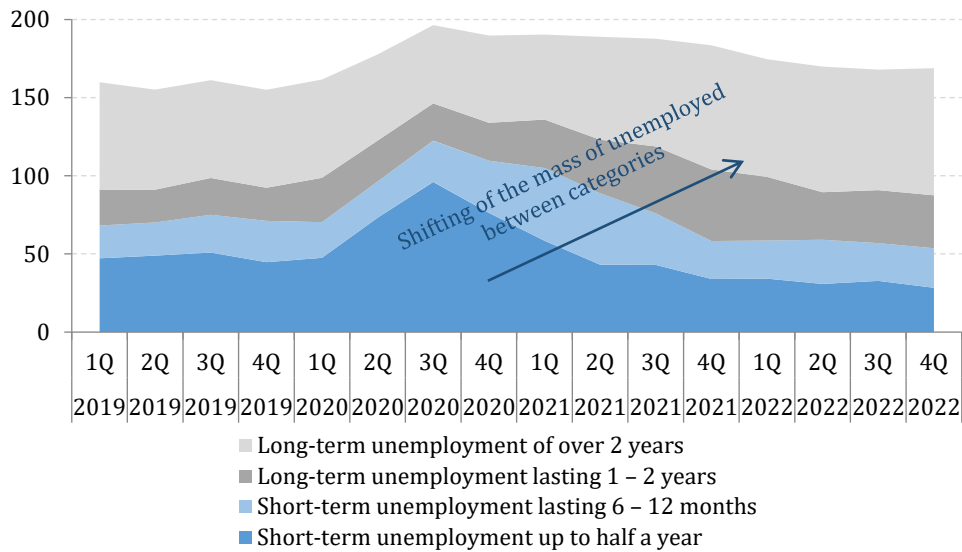
Rise in Long-term Unemployment as a Result of the Pandemic Persists

This weakening of labour demand has translated into a slowing employment growth rate in the second half of the year and a relatively weak (0.4%) employment growth rate in the last quarter of 2022. On average, employment grew by 1.7% over the year, with more than 2.6 million people working (working persons by LFS) in the economy. Signs of cooling labour demand could also be seen in the unemployment statistics, according to both methodologies. The LFS unemployment rate stopped declining in the middle of the year, stabilising at 6.0%. Although the number of unemployed was still declining compared to the previous year, it had already stagnated quarter-on-quarter in the third quarter and increased quarter-on-quarter in the last quarter. According to the LFS, the average annual number of unemployed in Slovakia was 170 thousand, which is 17 thousand unemployed persons less than in 2021.

In the statistics of unemployment registered at the labour offices, the cooling of the labour market was signalled by: the aforementioned reduction in the number of jobseekers successfully placed on the labour market, the intermittent decline in the number of job vacancies since April, and the steady decline in their number towards the end of the year, as well as, for example, higher inflows into the unemployment register from the labour market (i.e. from employment), especially in the autumn months, and also, from June onwards, noticeably smaller month-on-month falls in the number of registered unemployed, and thus a marked slowdown in the decline in the registered unemployment rate. The latter fell by 1.06 p.p. between January and December 2022, two-thirds of this decline being realised in the first half of the year. In fact, it had already risen slightly (to 5.9%) in December, when the number of registered unemployed actually rose (slightly above the 178 thousand mark). The annual average official unemployment rate reached 6.3%, still 1.3 p.p. behind the pre-pandemic record decline of 2019. The number of unemployed has not yet fallen to pre-pandemic levels after a year and a half of employment recovery.³⁹

³⁹ The lowest number of registered unemployed in the year, registered in November (176.9 thousand), is close to the value of the pre-pandemic March 2020, but it is still 11.5 thousand behind the record low number of registered unemployed (December 2019).

Figure 5.6
Structure of the Unemployed by Duration of Unemployment
 (thousands of persons)



Note: Due to methodological changes, there is a break in the series between 2020 and 2021; the figure serves to illustrate the phenomenon described in the text.

Source: Based on LFS data of the Statistical Office of the SR (Datacube database).

In the previous edition of this publication, we reported the rise in long-term unemployment as one of the serious consequences of the pandemic crisis – as a result of which long-term unemployment exceeded two-thirds of total unemployment in 2022. A positive development, therefore, is the reduction in the average length of registration with the labour offices by 2.5 years compared to 2021.⁴⁰ According to the sample survey, the number of unemployed in 2022 fell in all unemployment duration groups that are less than 1.5 years. However, even with the resulting full-year decline in the number of unemployed, the number of unemployed who have been out of work for 1.5 years or longer continued to rise. Thus, these are the unemployed who lost their jobs during the pandemic and earlier.⁴¹ The

⁴⁰ Average length of registration dropped to 11.54 months. In the pre-pandemic year of 2019, the jobseeker stayed on the register for an average of 8.85 months.

⁴¹ While in 2021 the number of unemployed who had been out of work for 1 to 2 years (and within the category the group of people out of work for 1 to 1.5 years) grew the fastest, in 2022 the group of people out of work for 2 to 4 years took over the lead in the rate of increase – so these are partly the same unemployed who lost their jobs during the first months of the pandemic (when all categories of the short-term unemployed grew the fastest), they just move up to the next category each year.

positive trend is for at least a moderation in the dynamics of the increase in the number of long-term unemployed in 2022.

Even Strong Nominal Wage Growth Has Not Prevented a Fall in Its Real Value

Through 2022, compensation for adverse wage developments in the sectors most affected by the pandemic in 2020 continued. Nominal wages grew most dynamically in accommodation and food services (the only sector in which average wages fell as a result of the reduction in activity in the first year of the pandemic), construction, transport and trade. In all four cases, wages increased by more than 10% year-on-year. On average, wages in the economy rose by 7.7%, almost identical to the highest rate since the global financial crisis, achieved during the peak of the labour market boom before the pandemic. Thus, year-on-year, the average wage was EUR 93 higher, reaching EUR 1,304 (roughly 20% higher than in pre-pandemic 2019).

As the noticeable increase in consumer prices did not arise only with the conflict in Ukraine, but was a continuation of the trend from the previous year (especially in the prices of agricultural products or construction materials), accelerating inflation pushed the change in the real value of average wages into negative territory already in the first quarter. The fall in real wages continued to deepen during the year, with real wages already down by as much as 7.6% year-on-year in the final quarter of 2022. As also pointed out by the Statistical Office of the Slovak Republic (ŠÚ SR, 2023b), this was the deepest fall in real wages in 22 years. Even during the pandemic period 2020 – 2021, there was no such decline in real wages.⁴² So even though average earnings grew in 2022 in all sectors (and at a rate above 10% in almost half), inflation has devalued them so that their real value has fallen in all of them.⁴³ Old-age pensions are even

⁴² At that time, it fell in just one quarter, the critical Q2 2020, by just 3%. The last time where there was a decline in real wages on an annual average basis, was in 2011 and 2012, due to the lingering effects of the global financial crisis.

⁴³ Mostly in health and education, as average wages there were inflated by one-off bonuses and pandemic pay rises in 2021, resulting in the lowest nominal year-on-year increases in 2022.

worse off, rising by only 2.6% in nominal terms in 2022, with their real value falling by more than 12% by the end of the year. Moreover, the real value of old-age pensions was already falling in 2021.

However, even the unfavourable development of the real value of labour incomes and pensions did not affect consumer activity; households were willing to make purchases even at the cost of reduced savings. There were several reasons for this, outlined in the opening chapter (the realisation of consumption deferred through the pandemic, especially in services previously unavailable due to pandemic restrictions, fears of war and associated stock repositioning, fears of a further acceleration of inflation and related premature realisation of purchases of more expensive goods, as well as the tendency to spend savings earlier for fear of their devaluation by inflation, or fears of exacerbating problems in supply chains and of shortfalls in the availability of goods). Higher current household spending and the increase in final consumption compared to the previous year (or the extent of spending increase exceeding the increase in current income) were reflected in gross household savings. These (according to ESA 2010) fell by 39% year-on-year, down for the second year in a row. The savings rate has fallen to an all-time low.⁴⁴

* * *

Judging by the average outcomes in 2022, it would appear that the labour market has remained *prima facie* unaffected by the combination of shocks experienced by the economy particularly as a result of the aftermath of the pandemic crisis and the outbreak of the war in Ukraine: Employment in 2022 rose by 1.7%, the registered unemployment rate fell by 1.2 pp to 6.3%, the number of unemployed registered at the labour offices fell by almost 33 thousand, according to the sample survey by more than 17 thousand persons, the average wage rose by 7.7% in nominal terms, final household consumption grew at a respectable pace.

⁴⁴ The possibility of a slight distortion was pointed out by the NBS already in 2022, as refugees from Ukraine increase household consumption in aggregate more than incomes and probably cover part of their consumption from past savings (NBS, 2022; the NBS also estimated here that the contribution of increased immigration from Ukraine to the increase in household consumption in the Slovak Republic in 2022 could be in the range of 0.2 – 0.8 p.p.).

However, this was not entirely the case. Foreigners have contributed almost half as much to the increase in employment, of whom in the first months after the outbreak of the war mainly Ukrainian women fleeing the devastating effects of the conflict. Foreigners largely filled jobs where there was already a long-standing demand for available workers, easing labour market tensions in the sectors concerned. Employment in services indeed increased, but employment in manufacturing, once the traditional engine of recovery and growth in the Slovak economy, declined dramatically. Although employment has already approached the pre-pandemic level, it has still not reached it (there are still more than 21 thousand fewer people employed in the economy than in the pre-pandemic year 2019). Long-term unemployment, a traditional structural problem of the Slovak Republic, has been rising for the second year despite an overall decline in unemployment. In the second half of the year, there were signs of cooling to stagnation in the labour market, occurring also in the statistics of labour offices (the supply of vacancies was shrinking, the inflow of unemployed from employment increased, the number of jobseekers placed in the labour market was decreasing, and by the end of the year, the registered unemployment was already growing). Inflation was taking a significant toll on labour income and pensions, and negative expectations stemming from the turbulent situation may have been behind the increased household consumption, in addition to the realisation of deferred consumption. Moreover, it was realised at the expense of a decline in savings.

6. THE NEED TO REPLACE WORKERS IN THE SLOVAK LABOUR MARKET

In this chapter, we present a forecast of labour demand arising from the need to replace workers in existing jobs – the so-called replacement labour demand. Modelling of labour market needs distinguishes between two types of labour demand: replacement and expansion demand (Lettmayr and Nehls, 2012). Expansion demand represents the usual output from macroeconomic forecasts or statistical indicators. It represents the net difference in the number of employed persons between forecast or data collection periods. Depending on economic developments, it can be positive or negative. Replacement demand quantifies the expected need to replace workers in existing jobs. It can only be positive, and is usually several times higher than expansion demand (Willems and De Grip, 1993).

Within this chapter we present a forecast of the replacement demand for labour in Slovakia up to 2050, constructed using the SLAMM micro-simulation model, which has been under long-term development at the Institute of Economics of the Slovak Academy of Sciences (Štefánik and Miklošovič, 2020). The forecast uses data from the latest nationwide Census of Population, Houses and Dwellings 2021 (Cenzus, 2021). We will look in more detail at the labour force broken down by occupational classification (ISCO), its exit from the labour market and the need to replace these workers. We present the results of the replacement demand forecast in the third part of this chapter; however, for a better assessment it is necessary to put them in a broader context, the age structure of workers as well as the longer-term demographic development of the Slovak labour market.

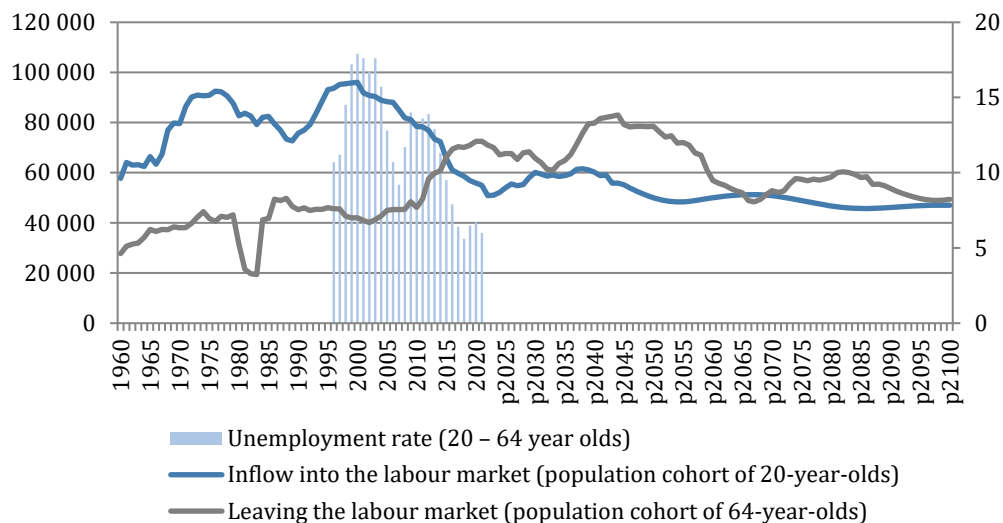
Therefore, they are preceded by a more detailed analysis of the age structure of workers in individual occupations, using up-to-date data from Census 2021, compiled for the first time for this purpose. In order to better assess the significance of the projected changes, the following part of the chapter describes the impacts of demographic developments in a longer-term, historical perspective.

The Departure of Husák's Children awaits Us

The labour market in Slovakia has faced a number of recent turbulences; it has had to cope with the impact of the pandemic and the slow-down in the subsequent economic recovery due to the energy crisis and high inflation. However, trends such as the ageing population or automation will influence labour demand in the long term. Over the last two decades, the labour market has benefited from a large economically active population. The total labour supply has increased by almost 150 thousand persons to almost 2.8 million over this period. The Slovak economy has been able to translate this increase into stronger output growth. The associated employment growth between 2005 – 2009 and 2015 – 2020 gradually cut the pool of unemployed from the labour force. In the last four years, the number of unemployed has stabilised at around 170 thousand persons with an unemployment rate of around 6 per cent (Labour Force Sample Survey – LFS).

Figure 6.1

Inflows into and Outflows from the Slovak Labour Market in the Long Term



Source: Based on Eurostat data (demo_pjan); EUROPOP Demographic Forecast 2023 (PROJ_23NP).

Slovakia has drawn a demographic dividend in the form of extensive economic growth for more than five decades. This situation is gradually turning around after 2015 (Figure 6.1). The country has become one of

the fastest ageing countries in Europe. Particularly problematic will be the period after 2035, when the strongest demographic years of the so-called Husák's children start to leave the labour market.

The last strong demographic wave, whose inflow into the labour market peaked around 2000, will thus not be fully replaced by the population born in Slovakia. As a result of the birth rate response to the end of the Second World War, the demographic development is similarly undulating in several European countries. However, in Slovakia (as in neighbouring countries), the historically highest birth rates of the 1980s were replaced by historically lowest birth rates during the 1990s (Figure 6.1).

We are Running Out of Labour

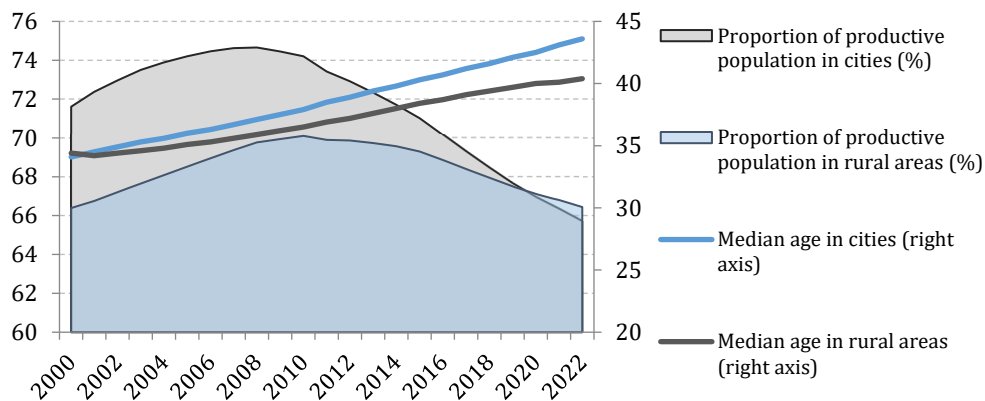
The decline in the working-age population is the culmination of past demographic trends, particularly the ageing from below, i.e. the decline in fertility rates with a trough shortly after 2000. The extent of this problem is even better illustrated than their declining numbers by the declining share of the working-age population in the total Slovak population. The latter takes into account not only the evolution of the working population itself, but also the evolution of the child population and the post-working population, and is also the basis for the calculation of dependency indices, i.e. the increasing, or possibly decreasing, financial burden placed on the working population in terms of covering the needs/consumption of the entire population.

Figure 6.2 basically illustrates the peak and the disappearance of the so-called demographic dividend, which the Slovak economy could have benefited from in the first decade of the new millennium. At that time, strong population cohorts were entering working age, but due to the transformation processes in society, natural changes in family behaviour were taking place. The postponement of marriage and parenthood to older ages became a common phenomenon – the average age of women at childbirth increased, the number of children in families declined. The proportion of children, which still accounted for almost a fifth of the total population in 2000, fell to 14% in urban areas and 17% in rural areas in the first ten years of the millennium. Since then, it has been rising slightly,

but cumulatively by 2022 not even to the extent of 1 p.p. At the same time, the share of the post-working population has not yet risen significantly in the first decade; in fact, in rural areas, the share of people over 65 years of age declined steadily between 2000 and 2010. The development of this segment of the population was more dramatic in urban settlements – here, the share of the older population did not account for even a tenth of the population as the millennium approached, it increased by 2 p.p. during the first decade, but after 2010 it started to rise dynamically and today people over 65 represent a fifth of the urban population. Their share of the total urban population has thus doubled, while in rural areas it has risen to 17% today.

Figure 6.2

Evolution of the Share of the Population of Working Age (%) and of the Median Age (in years) after 2000 in Slovak Urban and Rural Areas



Notes: Pre-productive age (0 – 14 years) – age at which the population is not yet economically active.

Productive age (15 – 64 years) – the age at which the majority of the population is economically active.

Post-working age (65 years and over; 65+) – the age at which the majority of the population is no longer economically active.

Median age (median age, median age) – the age that divides the population into two equal parts (half with a lower and half with a higher age than the median).

Source: Based on data of ŠÚ SR (Datacube database).

The first two decades of the millennium were markedly different in terms of changes in the age composition of the post-population. While during the first ten years the number of people of working age grew with a concomitant decline in the number of children and with the number of people aged 65 and over declining slightly at first and then increasing

slightly, after 2010 not only is the working-age population declining, but this is happening with a concomitant slight increase in the number of children (from the middle of the second decade onwards) and, above all, with a concomitant strong growth in the number of older people. Thus, while the share of the working age population increased significantly between 2000 and 2010, it has been declining just as significantly since 2010, and even steeper in the case of cities than the increase before 2010 (see Figure 6.2). To illustrate the situation, the figure shows the evolution of the median age of the total population, which was roughly 34 years at the beginning of this millennium, slightly higher in rural areas. The urban population has "aged" by almost ten years during the period under review, half of which is now (2022) older than 43.6 years. In the countryside, the median age has risen to just over 40.

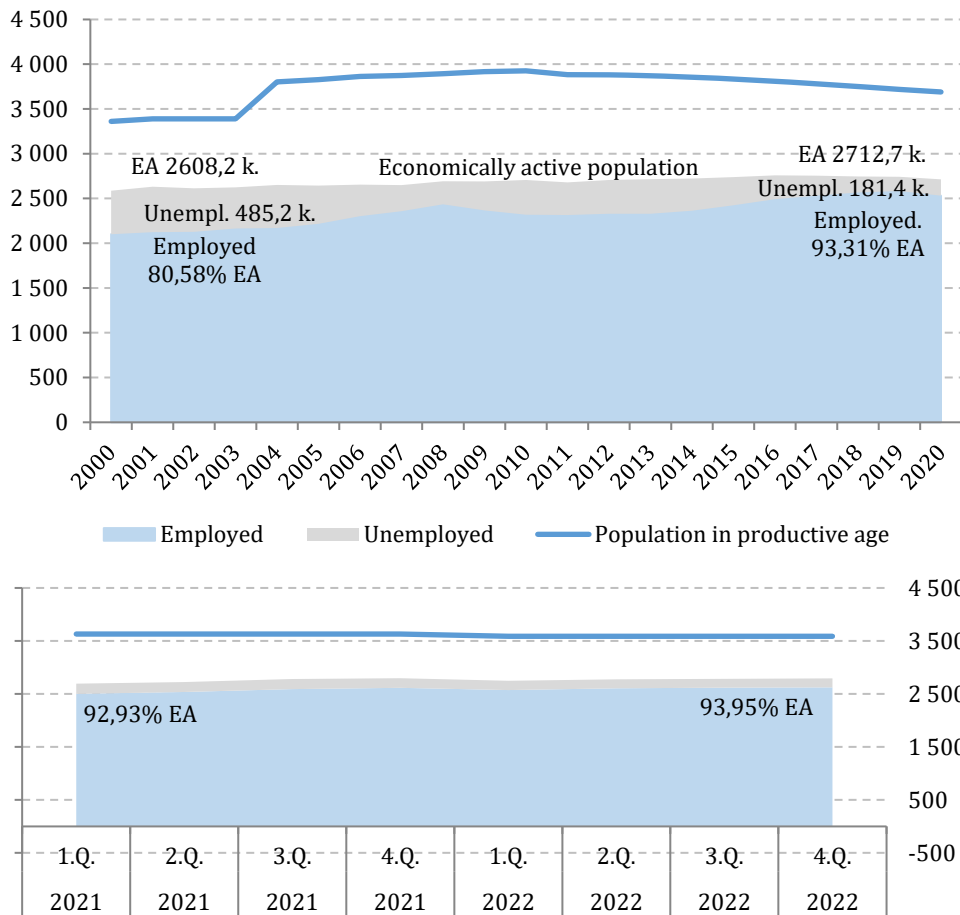
The Economically Active Population Is Declining

This explains the current changes in labour supply, not only in terms of the decline in the number of economically active (the size of the potential labour force) or the most dynamic additions to the labour force at the oldest ages, but also its resulting ageing (the increase in the median age). Figure 6.3 shows the changing composition of the economically active population over time. The favourable macroeconomic development in the Slovak Republic before the global economic crisis both motivated the growth of economic activity and brought about a significant decline in the number of unemployed persons. Thus, the share of the employed in the economically active (EA) population increased significantly.

The post-2008 period in the figure clearly illustrates the magnitude and persistence of the impact of the global crisis on employment in the Slovak Republic, when, in contrast, the share of the unemployed increased over the next few years and, after an initial gradual improvement in employment, the pre-crisis situation was restored only in 2016, when the share of the employed in the active population exceeded the pre-crisis 90% for the first time. From that moment until the pandemic, the Slovak labour market experienced a more stunning boom year after year, at least according to statistical indicators, which in many respects broke historical records every

year. This period culminated in 2019, when the number of unemployed fell to an all-time low (below 158 thousand people), the unemployment rate fell to an all-time low (5.8%), and the number of people in work stayed above the 2.5 million mark for the third year in a row (with a record high of 2,583.7 thousand people). The share of the working population in the economically active population thus reached an all-time high of 94.25%.

Figure 6.3
Composition of the Economically Active Population by Employment Status vs. Movement of the Working Population (in thousands of persons)



Note: The figure is split into two time periods as the European definitions of employed and unemployed (in the sample survey methodology) changed in 2021 and it is not correct to link the time series based on absolute values over this period. It has therefore been possible to illustrate the last two years in more detail in quarters.

Methodological notes – From 2004 onwards, working age changed to 15 – 64 (from 20 – 64). Economically active population, including soldiers on military basic service until 2005.

Source: Based on data from ŠÚ SR (Datacube database).

However, as can be seen from the figure, at that time the size of the economically active population was already past its peak, which it reached in 2016. A look at the development curve of the productive population provides an explanation of why the number of economically active people was declining in the period of the most successful historical development of the Slovak labour market, with the unemployment rate still below the natural threshold. The number of people of working age, usually referred to as the age at which the majority of the population is economically active (15 – 64 years old, the definition was changed in 2004, hence the jump visible in the figure), has been declining continuously since 2010. Thanks to favourable developments on the labour market, the number of economically active people was able to grow for the next six years⁴⁵ despite the decline in the working population. The rise in the share of the working population in an increasingly smaller active population has motivated the oldest age groups to enter the labour force more frequently, thus at least partially compensating for the decline in the working population. As can be seen from the continuation of the figure beyond 2021, the pandemic crisis did not affect the labour market either to the same extent or with the same duration as the global economic crisis. The trends observed in the pre-pandemic period soon continued. Demographic developments (decline in the working population) can thus be identified as one of the factors that mitigated the employment effects of the pandemic crisis.

Unemployment is Falling Due to Ageing

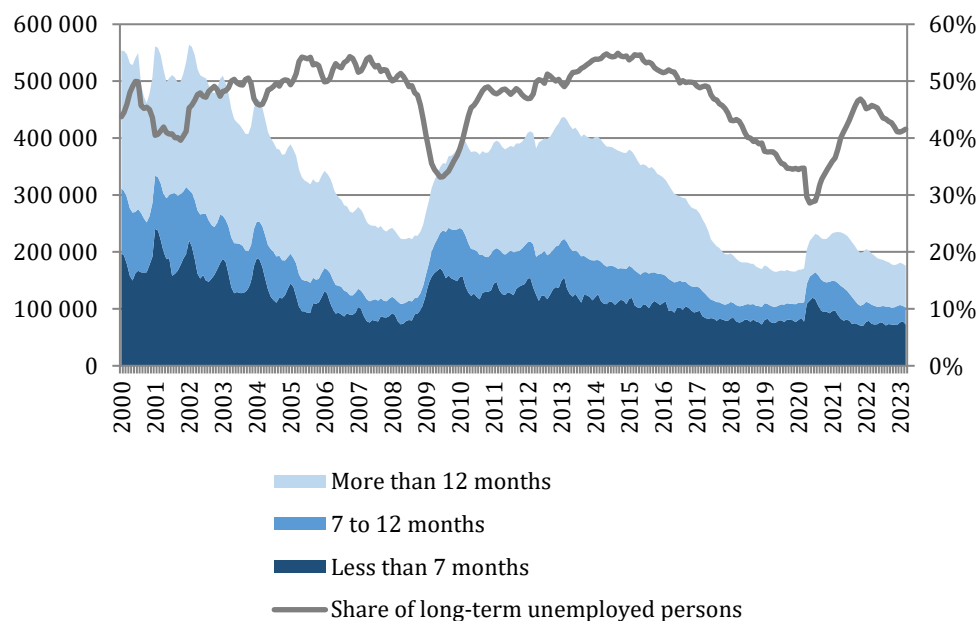
Temporarily, the unfavourable demographic development was offset by a decline in unemployment, which in Slovakia was one of the highest in the EU in the period around 2000. However, both the number and the structure of the unemployed have changed fundamentally over the last 10 years. The unemployment rate in Slovakia in 2023 is around the EU average. Even short-term crises, such as the recent COVID-19 pandemic, do not cause the number of unemployed to rise to values comparable to the period around 2000. In addition to the number of unemployed

⁴⁵ A temporary breakthrough in 2011 was brought about by the then new census.

persons, the duration of unemployment is also changing. The share of the long-term unemployed in the total number of registered unemployed shows a long-term downward trend (Figure 6.4).

Figure 6.4

Structure of the Registered Unemployed by Length of Registration



Source: Based on data of Central Office of Labour, Social Affairs and Family.

In the current period, the number of unemployed is stable, regardless of the evolution of the number of people in employment. This trend suggests limits to further additions to the labour force from the ranks of the unemployed. Thus, the attention of policy makers should naturally be focused on activating groups outside the labour market, in addition to reducing frictional unemployment, activating and retraining the unemployed, as well as attracting labour from other countries.

Age Structure of Occupations

Increasing labour market participation of the elderly population has been observed since the 1990s. Even in 2009 – 2010, when the Slovak labour market was suffering from the effects of the global economic crisis

even more than the post-pandemic decline in employment, the number of workers over 55 was the only one to rise, even to the extent of close to six per cent. Even during most of the years of favourable macroeconomic developments both before and after the global crisis, it was this age group that saw the fastest rates of employment growth, driven primarily by the increase in the retirement age but also by the relative increase in the population in this age group.

As a consequence, the share of older workers in total employment in the Slovak Republic has gradually increased. Before 2002, the share of workers aged over 60 was just below or around 1%, but since 2003 it has been rising steadily and is now close to eight per cent. Together with workers aged 55 – 59, the share of workers aged 55+ thus doubled from around 5% to 10% in the decade before the global economic crisis, and has continued to rise since the crisis to almost 19% today. Workers aged 55 and over are now a significant group in the labour market, accounting for close to a fifth of total employment in the Slovak Republic.

In looking at the current Slovak workforce, we have focused in this chapter primarily on the breakdown of workers by ISCO occupational classification, where we have been able to observe individual classifications down to the 3-digit code level. In this breakdown we identified 130 occupational groups. The Census 2021 data represent a unique data source, allowing us to plot the age distribution of workers at this level of detail of occupational groups. The age distribution of workers across occupational groups differs substantially, which determines future replacement labour demand.

Table 6.1 shows the 10 occupational groups with the highest proportion of workers aged 65 and over.

We can see that among the occupations with the highest representation of workers in the 65+ age group we find two types of occupations. University and higher education teachers (ISCO 231) and medical doctors (ISCO 221) represent the first type. These are occupations that allow working to an older age, are sufficiently attractive and with a relatively older structure of workers. The share of older workers in these occupations declines gradually from age 50 towards the older years and remains high even

after age 65. The second type are occupations that represent a refuge from retirement age. Examples are street and market salespersons (ISCO 521) or other elementary workers (ISCO 962). These are occupations with relatively lower pay but probably also lower work intensity, which motivates older workers to move into these occupations after a certain age. The peak of the age distribution of workers in these occupations is shortly before retirement and then declines rapidly thereafter. Figure 6.5 shows the age distribution of workers in these four occupations.

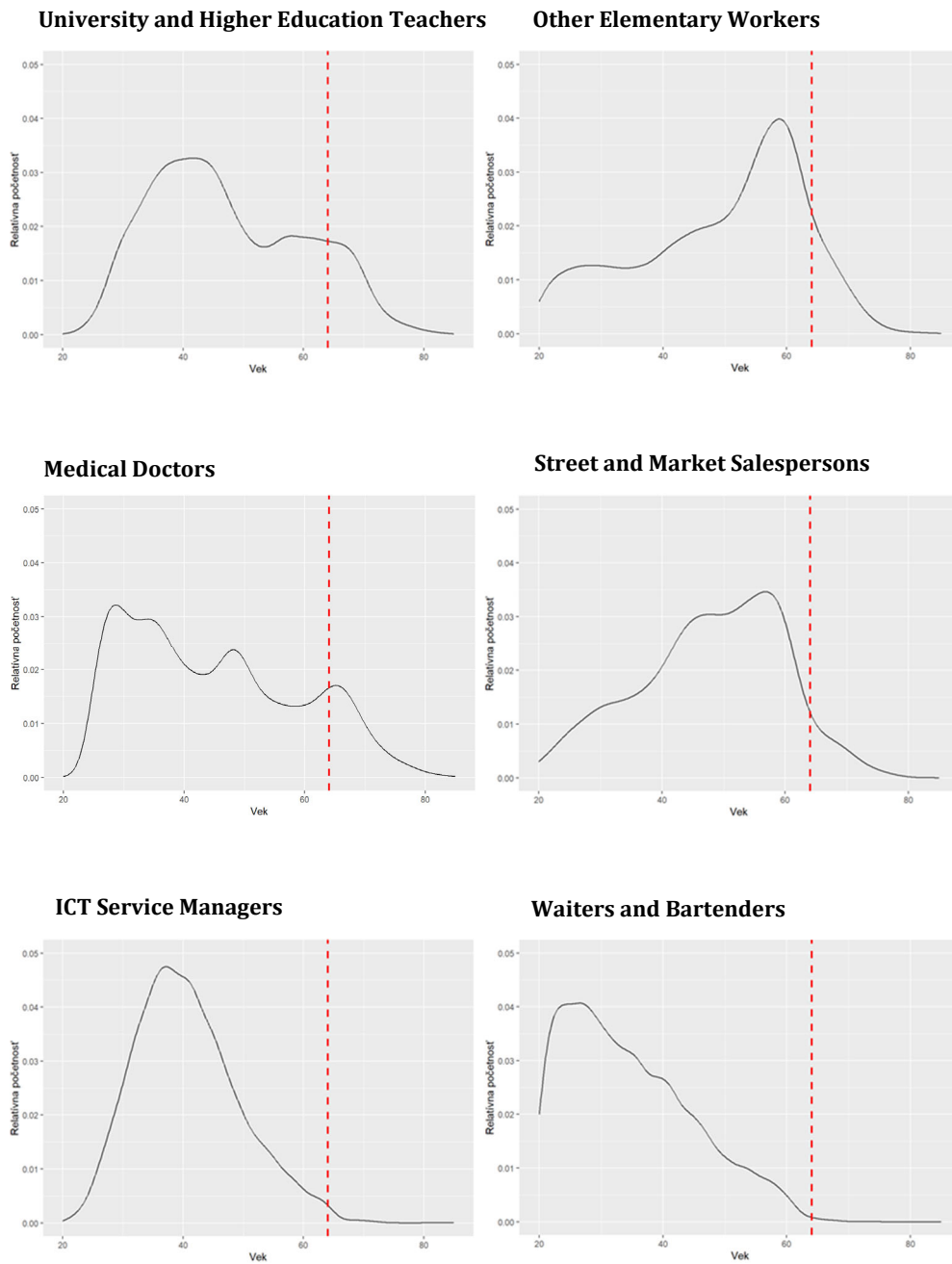
Table 6.1

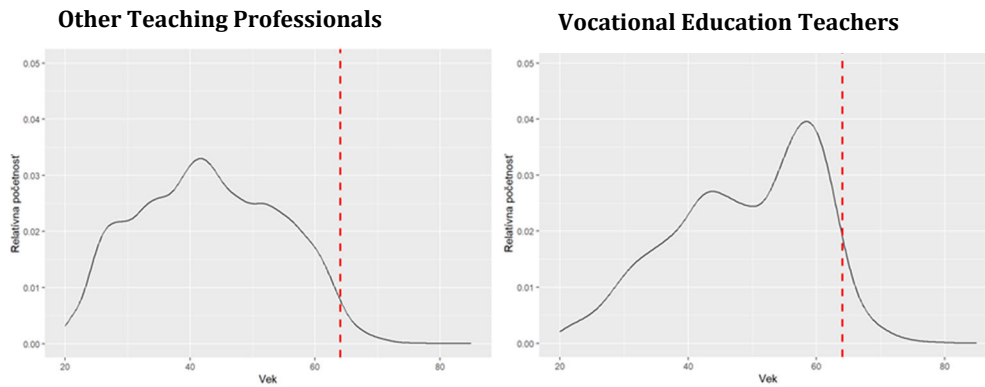
The Ten Occupational Groups with the Highest Proportion of Workers Aged 65+

ISCO code	Name	Number of working	Average age	Median age	Share 50+	Share 55+	Share 60+	Share 65+
231	University and higher education teachers	9 656	47	45	0.387	0.306	0.214	0.127
221	Medical doctors	23 497	45	43	0.353	0.266	0.200	0.126
962	Other elementary workers	11 798	49	53	0.573	0.452	0.262	0.103
521	Street and market salespersons	1 789	48	49	0.483	0.334	0.150	0.057
211	Physical and earth science professionals	3 041	43	41	0.323	0.230	0.124	0.051
262	Librarians, archivists and curators	2 022	46	46	0.408	0.295	0.160	0.045
111	Legislators and senior officials	6 439	49	49	0.479	0.332	0.169	0.043
226	Other health professionals	14 110	39	36	0.209	0.152	0.093	0.042
232	Vocational education teachers	3 535	49	50	0.518	0.389	0.197	0.042
322	Nursing and midwifery associate professionals	19 672	48	48	0.436	0.289	0.142	0.042

Source: Based on Census 2021 (ŠÚ SR).

Figure 6.5
Age Distribution of Workers in Each Occupation (3-digit ISCO code)





Source: Based on Census 2021 (ŠÚ SR).

A look at the average age of workers by occupational or sectoral classification may be misleading. Therefore, in order to better understand the heterogeneous situation, we have selected the four occupational groups with the highest share of workers aged 65+. The age distribution makes it possible to track the need for replacement of workers in occupations in both the short and longer term. In the case of physicians, for example, we see that workers reaching retirement age in 2021 will be followed by smaller cohorts of physicians. This currently creates a demand for physicians due to the replacement of those retiring. The heterogeneity of this demand across physician specialties is likely to be high. We know from everyday experience that the situation of outpatient paediatricians, for example, is even more alarming.

Unfortunately, the data provided do not allow us to analyse the age structure of doctors at a more detailed level. In the longer term, however, the age structure of doctors is not unfavourable. The relative representation of workers around the age of 35 is among the highest among the occupational groups surveyed.

The second part of Figure 6.5 shows the heterogeneous situation in selected types of professions. In the case of ICT managers (ISCO 133, labelled ICT managers in the figure), the low average age of those working in this occupation is noticeable. These workers have the lowest average age of all groups in ISCO category 1. It is also interesting to note that only a minimal number of managers in this group work beyond the age of 65. One of the youngest occupations is waiters and bartenders (ISCO 513). This type

of occupation is mainly preferred by the younger age groups. It can be concluded that this occupation seems to be universal when first entering the labour market. The heterogeneous situation in the education sector is probably best seen in the case of the occupations of other teaching professionals (ISCO 235) and vocational education teachers (ISCO 232). While the first occupational group has a relatively even age distribution of workers, a significant over-ageing is evident in the case of the second occupational group. Already in the short term, the largest age cohorts will retire and the situation in this type of occupation will be even more critical than at present, with several vocational school principals having difficulty finding masters and lecturers to cover the teaching process.

We can see that a look at the age structure in the different post-call cohorts reveals different patterns. Some occupations are relatively more closed, for example by requiring specific qualifications, and the age structure of workers in these occupations determines the need for substitution to a greater extent than in occupations where worker mobility between occupations plays a more significant role. Selected indicators of the age distribution of workers in the full list of 125 occupational groups distinguished at the 3-digit ISCO code level can be found in the online annex⁴⁶ (Table A3). A graphical representation of the situation in all types of occupations is part of the [online](#) annex.

Who Do We Need First?

Census 2021 is the most comprehensive survey of population, houses and dwellings in Slovakia conducted every 10 years. The results of the latest round are published successively on the website of the Statistical Office of the Slovak Republic (ŠÚ SR).

The authors of the chapter were provided with these data for the purpose of micro-economic modelling. The results of the SLAMM model presented in this chapter represent the first application use of data from the 2021 Census. For the purposes of the model, data were provided only at the level of the two-digit ISCO code.

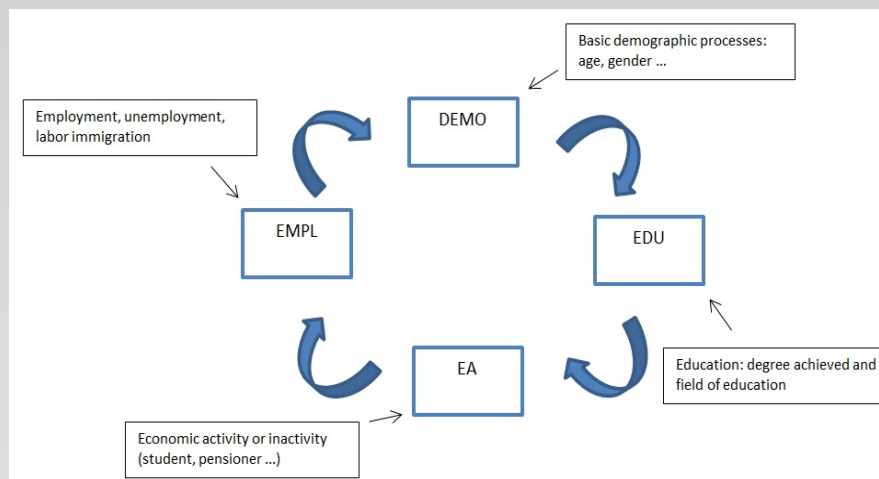
⁴⁶ All the annexes are available online.

Microsimulation Model of Slovak Labour Supply – SLAMM

The SLAMM model was developed at the EU SAS to simulate the evolution of labour supply in Slovakia. As part of the refinement of the modelling apparatus, an underlying microsimulation model for Slovak conditions was developed, the main features of which have been published in several outputs (e.g. Štefánik and Miklošovič, 2020; Miklošovič and Štefánik, 2019; Štefánik et al., 2018). SLAMM reproduces the Slovak population in a dynamic environment, simulating basic demographic processes, educational attainment, as well as decisions related to economic activity and employment. Previous versions of the model worked with input data from the Labour Force Sample Survey (LFS) or the 2011 Census survey.

The SLAMM microsimulation model contains 4 basic modules that are repeated in each year of the forecasting process. In addition, in the first forecasting period (year), initialization processes occur that specify the attributes of individuals. The list of modelled attributes can be found in the online appendix (Table A2).

Diagram 6.1
Individual Modules of the SLAMM Model



Source: Authors.

The replacement demand forecast assumes emigration from Slovakia at the level observed in the Census and for graduates in the 2019/2020 academic year (Martinák and Varsik, 2021). At the same time, the model assumes that vacancies that cannot be filled by workers from Slovakia will be filled by workers from abroad, whose usual stay lasts 5 years. When changing occupations, workers are limited by the degree and field of education attained.

The SLAMM model predicts individual types of economic activity for each Slovak resident over the entire forecast period. These types are divided into 5 basic groups, where aggregate counts for each group are shown in Figure A1 (with information on total employment omitted). In the case of the number of students, we can see a significant decrease, which is mainly due to a lower fertility rate in the forecast period, which also results in a smaller number of students. A faster decline is predicted especially after 2030. The total number of pensioners increases continuously from 1.06 million in 2021 to 1.3 million in 2050. The category of other inactivity includes e.g. the disabled, women on maternity leave or voluntarily inactive. For the total number of persons with this status, we assume a continuous decline from 400 thousand in 2021 to around 380 thousand in 2050. The last type of economic activity is the unemployed, whose number gradually decreases until 2030 and then oscillates around the level of 75 thousand (see online appendix Figure A1).

The ageing of Slovakia's population results in a decline in the labour force born in Slovakia. Consequently, in order to meet the demand for labour, more labour immigration is taking place, filling vacancies that could not be filled by workers from Slovakia. The number of foreigners working in Slovakia is reaching 12% of total employment. The number of unemployed after 2030 is at the same level, which represents frictional unemployment. After this period, there is also a rapid increase in labour immigration as the potential of the Slovak labour force is exhausted. There is also a decline in the number of Slovaks living abroad and their transfer to the Slovak labour market. At the end of the period under review, the number of foreign Slovaks dropped from 300 thousand to 220 thousand (see online appendix Figure A2).

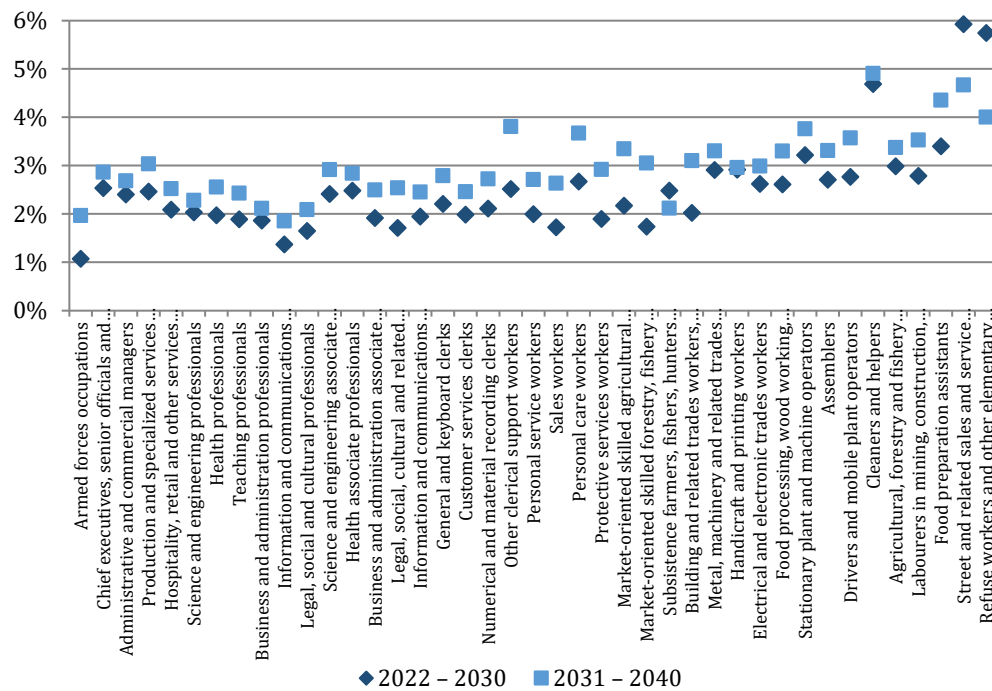
The amount of replacement demand indicates the need for new labour force due to retirement (or death) of the older labour force. To quantify it, we use the replacement rate indicator, i.e. the percentage of workers that need to be replaced in a given segment due to natural attrition.⁴⁷ We have divided the replacement rate into two periods (2022 – 2030 and 2031 –

⁴⁷ Assuming a 40-year working career and an age-equally distributed workforce, such a replacement rate would be 2.5% (1/40) of the workforce per year. This means that on average 2.5% of the workforce would retire each year.

2040) to better portray the situation in each occupational group. The highest replacement rates are recorded for less skilled occupations⁴⁸ such as refuse workers and other elementary workers (ISCO 96), cleaners and domestic helpers (ISCO 91) or food preparation assistants (ISCO 94), which have an average annual rate of over 4.5%. These occupations requiring lower skill levels may represent a partly viable job option in the pre-retirement stages of a career (see the age distribution of those working as other support workers in Figure 6.5).

Conversely, the lowest replacement demand rates were observed for more skilled occupations. Information and communication technology professionals (ISCO 25), legal, social and cultural professionals (ISCO 26) and legal, social, cultural and related associate professionals (ISCO 34) are also in the 1.5 to 2 per cent per annum range. For these occupations, the lower replacement rate is explained by the 'younger' age structure of IT and legal workers.

Figure 6.6
Replacement Rates for the Different ISCO Occupational Classifications
 (2-digit code)



Source: SLAMM; authors' calculations.

Conversely, in occupations requiring a higher level of skill with an 'older' age structure of workers (e.g. doctors or university teachers discussed above), where extending working careers beyond retirement age is relatively more common, the model assumes a persistently higher share of retired workers. At the same time, we see occupations with lower complexity of activities performed (e.g., machine operators) where, despite the relatively "young" structure of the workforce, the model assumes a high replacement rate. This is mainly due to the outflow of older workers from these occupations.

* * *

Slovakia is one of the countries with the fastest ageing population in the world. This trend will have long-lasting effects on many areas of our lives. It will also significantly constrain the development of the labour market. In the context of an ageing population, we will be forced to change the way we think about economic growth, public finance management and unemployment. Extensive economic growth, requiring the involvement of additional numbers of workers, will be severely limited. Unemployment has long ceased to be society's most pressing problem. The issue of replacing workers leaving the labour market is gradually coming to the fore, as is the orientation towards intensive economic growth.

The structure of occupations in this context takes on a specific significance. It is in the general interest that the need for workers in the various occupations is covered. At the same time, we see the diversity of individual career stories depending on the occupation being pursued. While some occupations are more closed in terms of worker mobility, for example by requiring specific qualifications, others are relatively open. Less complex occupations, requiring fewer qualifications, are also more open to mobility. In these occupations, we also observe a higher need for replacement workers (see Figure 6.6).

⁴⁸ We do not estimate the occupations street and related sales and service workers (ISCO 95) and subsistence farmers, fishers, hunters and gatherers (ISCO 63), as the abundances in these groups are small (less than 300 observations).

Looking at the occupational structure in more detail (ISCO 3-digit code level), occupational groups with a relatively older worker population, where a high replacement need can be expected, especially in the short term, also start to come to the fore. These are relatively closed occupations, such as doctors and health care specialists, university and secondary school teachers and foremen. A detailed overview of the occupational age structure indicators, published for the first time at such a detailed level thanks to the Census 2021 data, can be found in the online annex – Table A3.

7. FOREIGN TRADE AND FOREIGN INVESTMENT

The development of Slovakia's foreign trade in 2022 was also affected by two major events of recent years – the COVID-19 pandemic and Russia's invasion of Ukraine. This was manifested specifically by persistent disruptions in supply chains and thus component shortages, increases in the prices of energy commodities and other inputs, as well as changes in trade with Russia.

Following the recovery in Slovak foreign trade recorded in 2021, strong dynamics on both the export and import side continued in 2022, but to a much greater extent on the import side, leading to a rapid change in the foreign trade balance. In this chapter, we look in more detail at its development over the year, as well as at its changes in terms of territorial and commodity structure. Attention will also be paid to the development and current state of foreign investment in Slovakia and Slovak investment abroad.

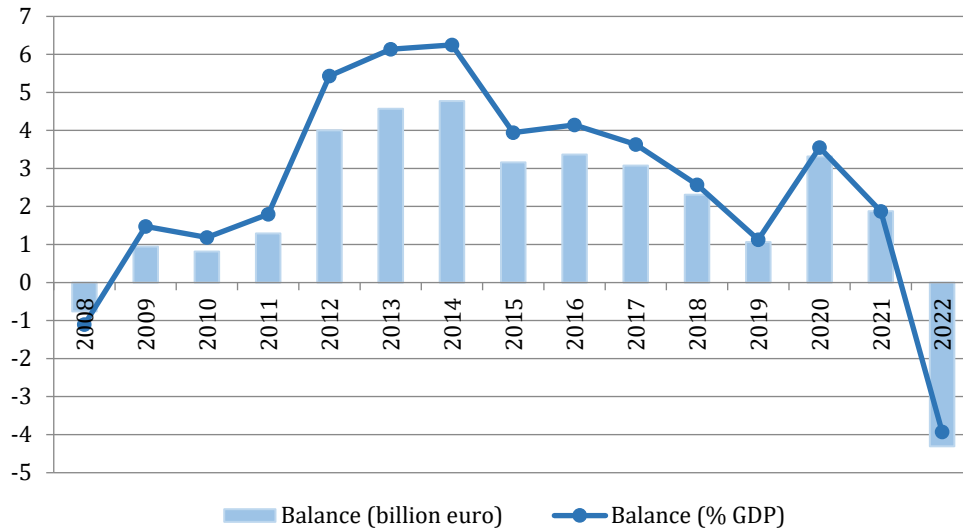
Foreign Trade Balance Deeply in Deficit

After more than a decade of foreign trade surpluses, Slovakia reported a negative trade balance in 2022, with imports of goods exceeding their exports by more than EUR 4.3 billion, representing almost 4% of GDP (Figure 7.1). The last time a passive foreign trade balance was recorded in 2008, when it did not exceed EUR 1 billion. Such a development can be assumed to be only temporary, given the circumstances and factors which have led to it and which will be discussed below.

Total exports as well as imports of goods in 2022 exceeded the EUR 100 billion threshold for the first time, with exports reaching over EUR 102 billion and imports almost EUR 107 billion (NBS, 2023b). The development of the external trade balance was mainly affected by a significant year-on-year increase in imports (by 23.3%) due to the rise in the prices of natural gas, oil and electricity. Even a 15.8% year-on-year increase in exports could not avoid the trade balance falling deep into negative figures. Exports were dampened by persisting problems in supply chains and weaker external demand hit by inflation.

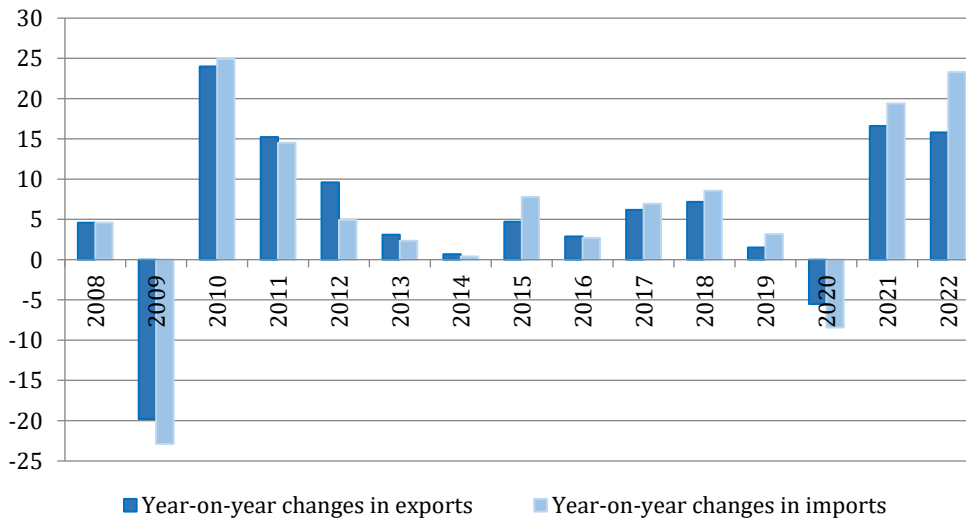
Compared with the previous year, there was thus a slight slowdown in export growth and a more significant acceleration in import growth (Figure 7.2).

Figure 7.1
Foreign Trade Balance (billion euro, % GDP)



Source: Based on NBS data (2023b).

Figure 7.2
Year-on-Year Changes in Exports and Imports (%)



Source: Based on NBS data (2023b).

Faster year-on-year growth in foreign trade compared to GDP growth resulted in an increase in the export performance as well as in the import intensity of the Slovak economy to new record levels, similarly to the previous year. Given the strong import dynamics triggered by the sharp rise in prices of imported commodities, the import intensity of the Slovak economy (measured as the share of imports of goods in GDP at current prices) reached 98% of GDP in 2022, while the export performance (measured as the share of exports of goods in GDP at current prices) represented 94% of GDP.

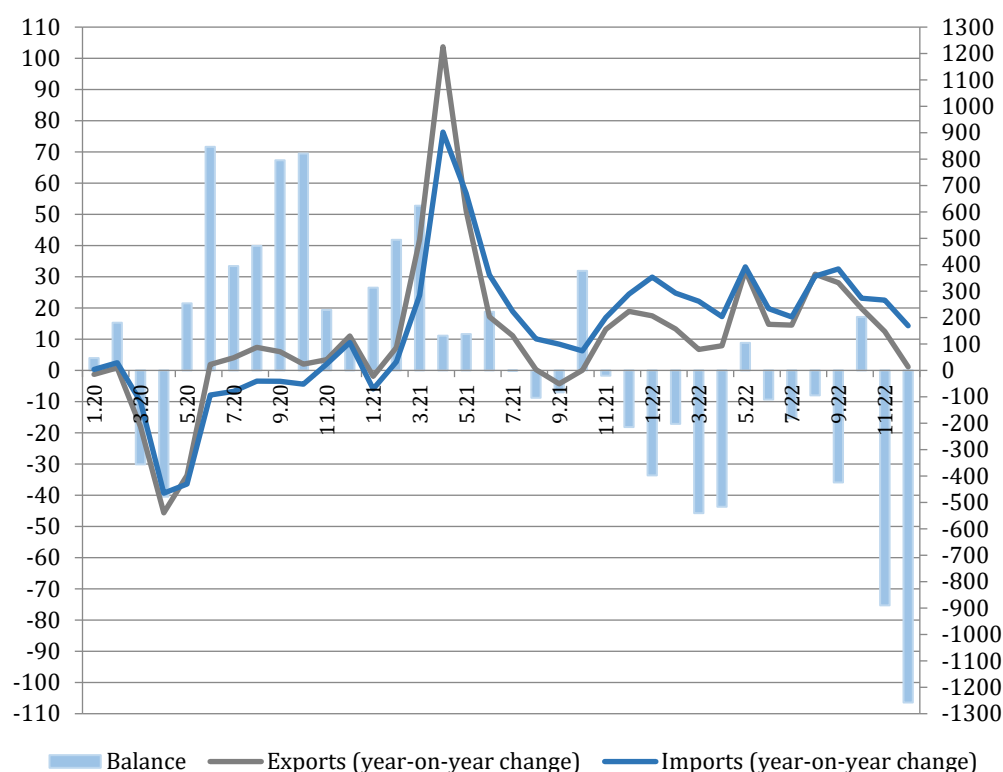
As can be seen from Figure 7.3, only in two months of last year (May, October) Slovakia reported an active foreign trade balance. At the beginning of the year, problems with chip supply in the industry persisted, which had a negative impact on both production and exports. The war conflict in Ukraine further complicated the situation in the supply chains. At the same time it brought additional uncertainty with commodity prices rising sharply. The combination of high prices of imported commodities (oil, gas) and lower exports due to problems in the industry led to Slovakia's foreign trade balance falling deep into negative territory in the first quarter of 2022 (over EUR 1.1 billion for the whole quarter).

In the second quarter, the economy continued to face supply problems worsened by the situation in Ukraine. In addition, high input prices dampened output in some sectors, thus constraining Slovak exports. This, together with the impact of the high value of natural gas imports due to rising gas prices, resulted in a similarly high external trade deficit in April as in March (over EUR 0.5 billion).⁴⁹

The situation in supply chains partially improved over the summer, which was reflected in more favourable developments on the export side in the third quarter. The easing of supply problems had a positive impact in particular on the automotive, machinery and electronics industries. At the same time, however, the import side continued to be affected by higher prices for purchased electricity, gas and oil, which resulted in external trade deficits in all three months.

⁴⁹ Over the last decade, the external trade deficit has reached a comparable value only in April 2020, when Slovak exports were affected by the pandemic of the COVID-19 disease.

Figure 7.3
Year-on-Year Changes in Exports and Imports (left axis, %)
and Foreign Trade Balance (right axis, million euro)
in the Individual Months of 2020 – 2022



Source: Based on NBS data (2023b).

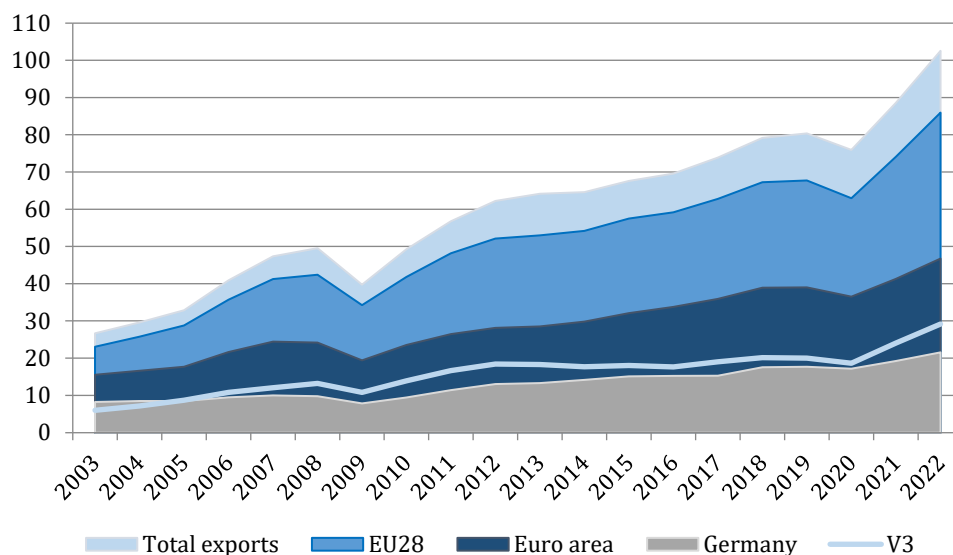
The last quarter started with a shift from deficit to surplus in October. This was largely the result of a significant increase in exports of cars while imports of components and accessories for motor vehicles decreased. However, the last two months of the year brought deepening foreign trade deficits, reaching up to EUR 1.2 billion in December, one third of the whole year's balance (and almost six times the previous year's December balance). At the same time, exports and imports recorded the lowest year-on-year dynamics in December, due to their relatively high increases in the same period of the previous year. The high monthly external trade deficits at the end of 2022 were largely influenced by a decrease in exports of more energy-intensive production (metal and chemical industries) due to high input prices, as well as by higher imports of energy commodities.

Changes in Country Shares Mainly on the Import Side

The year-on-year growth of total exports from Slovakia in 2022 more or less corresponds to the dynamics of exports to the European Union as a whole (Figure 7.4), which retained its share in Slovak exports at the level of 84% (Figure 7.5). Weaker export dynamics to Germany dampened the increase in exports to the euro area as a whole, with the share of the monetary union in Slovak exports falling slightly (to 46%). On the other hand, as in the previous year, Slovakia's exports to geographically closer countries (outside the euro area), i.e. to the other Visegrad Four countries (Czech Republic, Poland and Hungary – V3, Figure 7.4), grew rapidly year-on-year, driven mainly by increased export volumes to Hungary.

Figure 7.4

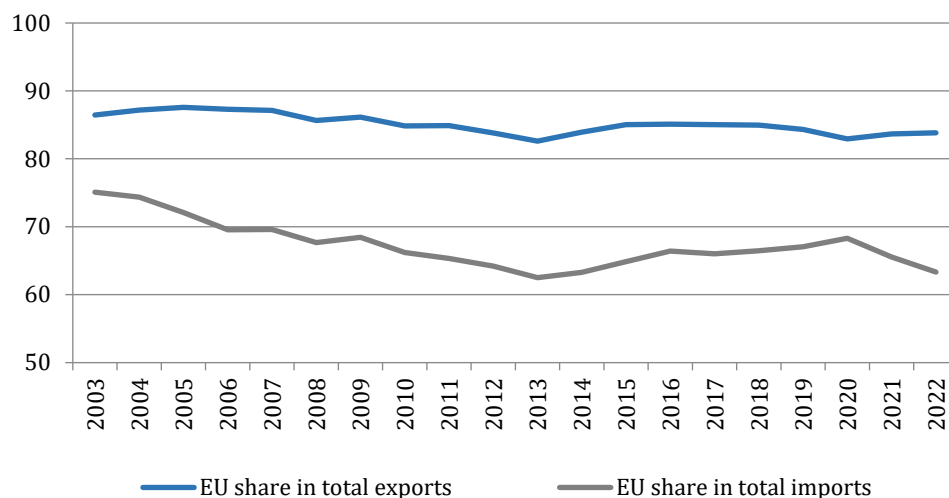
Exports from the Slovak Republic in Terms of the Most Important Economic Groupings and Countries (billion euro)



Source: Based on NBS data (2023b).

The continued sharp year-on-year growth of imports from Russia (47%), caused by an increase in the prices of energy raw materials as a result of the war conflict in Ukraine, had a significant impact on imports into the Slovak Republic. This meant a further increase in the share of this country in total Slovak imports to 8% (from 6% in the previous year).

Figure 7.5
Share of Exports to and Imports from the EU in Total Slovak Exports and Imports (%)



Source: Based on NBS data (2023b).

A more significant year-on-year increase in imports compared to the change in total imports in 2022 was also recorded for China and the Republic of Korea. The slower dynamics of imports from the EU or the euro area and particularly from Germany (Figure 7.6), which even registered a year-on-year decline of almost 10%, had the opposite effect on imports into the Slovak Republic. At the same time, the increase in imports from the V3 countries was strongly driven by Hungary (as in the case of exports).

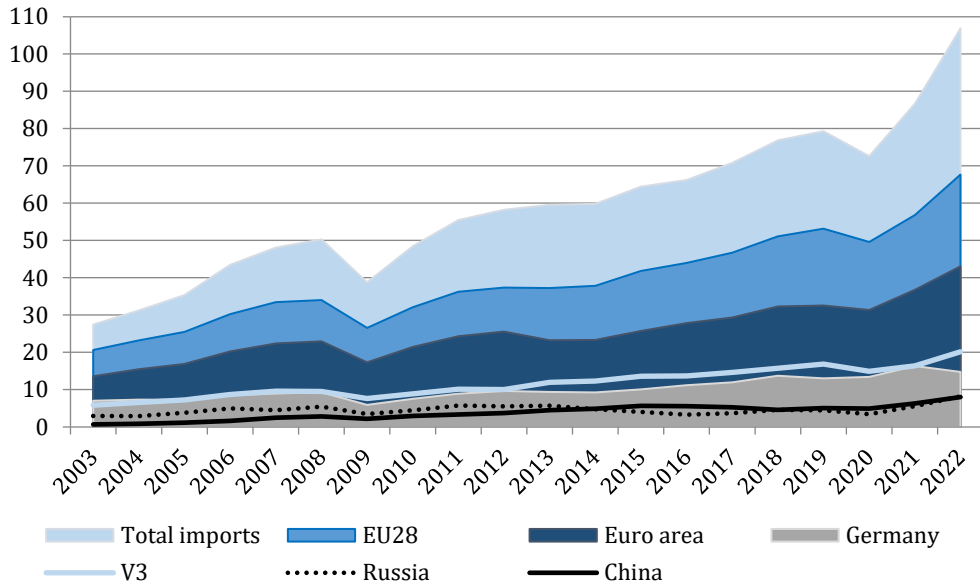
In 2022, the Slovak Republic reached the highest active balance with Germany (EUR 6.9 billion), followed by Hungary (EUR 4.0 billion), Austria and France (both EUR 2.8 billion). On the other hand, Slovakia recorded the highest passive balance with the Russian Federation, amounting to EUR 7.6 billion, which is almost double the balance reported in the previous year (Figure 7.7). This sharp year-on-year increase was driven by both the price development of imported energy commodities and the drop in Slovak exports to Russia (by almost 60% compared to 2021).⁵⁰

⁵⁰ Russia does not belong to Slovakia's major export markets – its share in total Slovak exports declined from 1.5% in 2021 to 0.5% in 2022.

Other countries the Slovak Republic recorded a passive balance with were, as in previous years, the Republic of Korea (EUR 5.6 billion), China (EUR 5.4 billion) and Vietnam (EUR 4.2 billion).

Figure 7.6

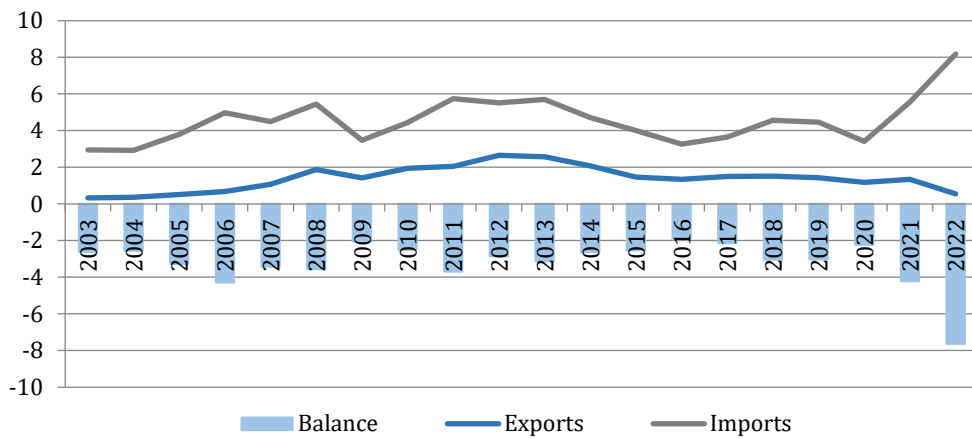
Imports into the Slovak Republic in Terms of the Most Important Economic Groupings and Countries (billion euro)



Source: Based on NBS data (2023b).

Figure 7.7

Slovakia's Foreign Trade with Russia (billion euro)



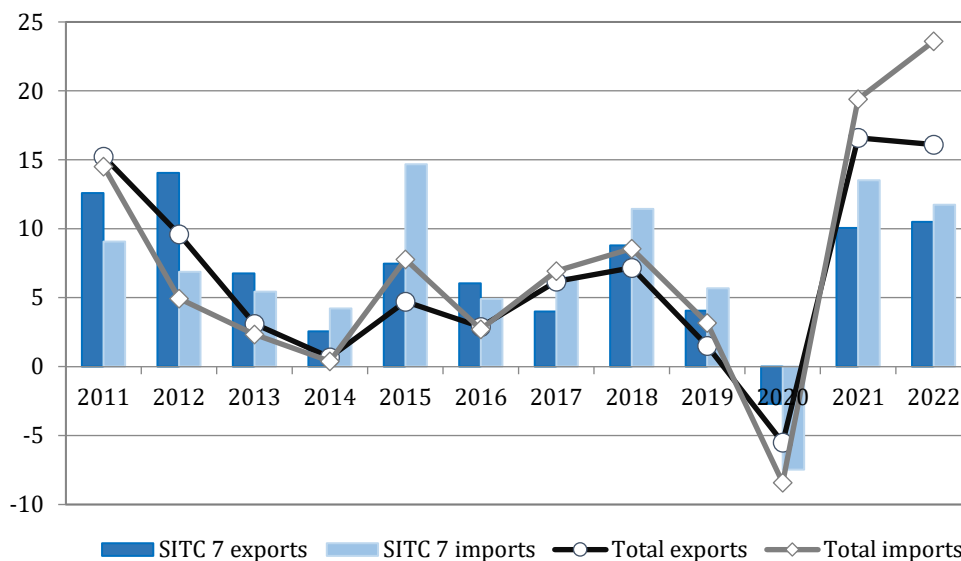
Source: Based on NBS data (2023b).

Foreign Trade Dynamics Driven by Several Classes in Parallel

In 2022, both exports and imports grew at double-digit annual rates across all SITC classes. Despite complications in the functioning of supply chains, exports were mainly driven by the most traded SITC class – SITC 7 – *Machinery and transport equipment* (including automobiles), which recorded the highest annual growth rate in the last decade (Figure 7.8).

Figure 7.8

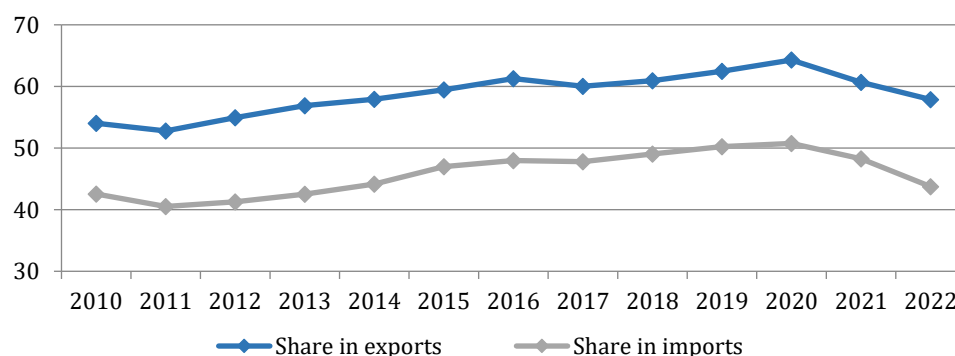
Year-on-Year Changes in Exports and Imports of SITC7 – Machinery and Transport Equipment Compared with Changes in Total Exports and Imports (%)



Source: Based on ŠÚ SR data (2023a).

However, the share of this class in total Slovak exports fell below the level of the previous year (to 58%, Figure 7.9). The highest share was achieved by SITC 7 in 2020 (almost two-thirds of total exports), when the automotive industry pulled Slovak exports up after the drop recorded in the spring months mostly affected by the COVID-19 pandemic. In 2022, SITC 3 – *Mineral fuels and lubricants*, which also includes exports of petroleum products and electricity, also contributed significantly to export dynamics, with a year-on-year increase of almost 90%.

Figure 7.9
Share of SITC 7 – Machinery and Transport Equipment in Total Exports and Imports (%)



Source: Based on ŠÚ SR data (2023a).

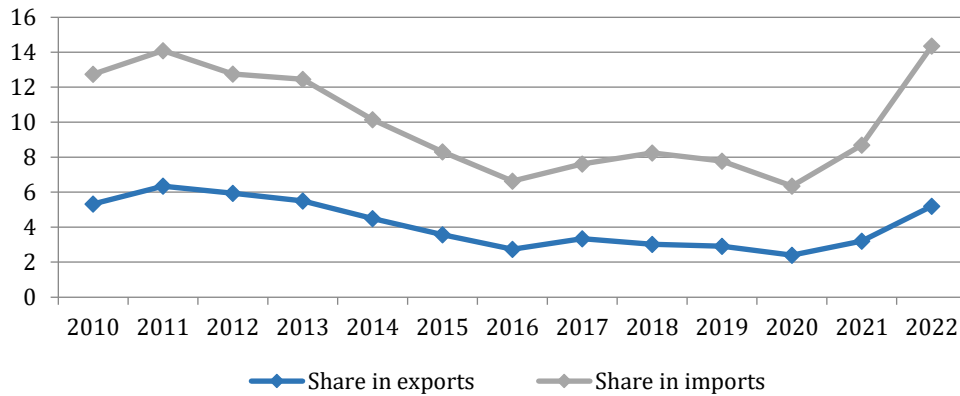
As already mentioned above, the significant year-on-year increase in imports to Slovakia was driven mainly by developments within SITC 3 – *Mineral fuels and lubricants*. Imports of goods included in this class reached in 2022 more than double their value of the previous year due to the record growth in energy commodity prices. This was reflected in an increase in the share of this class in total imports – from less than 9% in the previous year to over 14% (Figures 7.10, 7.12).

The development of monthly imports (total and within them from Russia) in SITC 3 in 2022 and in the first months of 2023 is documented in Figure 7.11. While at the beginning of 2022 the share of the Russian Federation in Slovak imports of mineral fuels and lubricants amounted to 70%, in the course of the year this share reduced to one-third and in the following months it more or less stabilised at around 50%.

This could indicate some reducing of Slovakia's dependence on imports of energy raw materials from Russia, however, the volume of Russian natural gas imports can show some fluctuations from month to month. At the same time, it is not going to be easy to replace it with natural gas imported from other countries (Croatia, Germany, Poland, Italy, etc.), also considering that Slovakia is one of the most gasified EU Member States. Finally, given the pressure of climate change, a more preferable alternative for Slovakia in the long term would be to focus on the gradual replacement of gas by renewable energy sources.

Figure 7.10

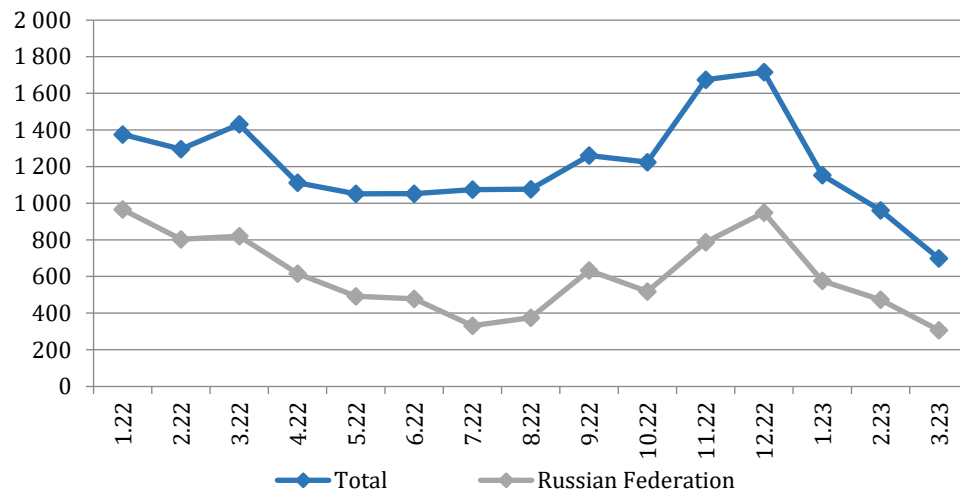
Share of SITC 3 – Mineral Fuels and Lubricants in Total Exports and Imports (%)



Source: Based on ŠÚ SR data (2023a).

Figure 7.11

Total Imports in SITC 3 – Mineral Fuels and Lubricants and Imports from Russia in this Class (million euro)



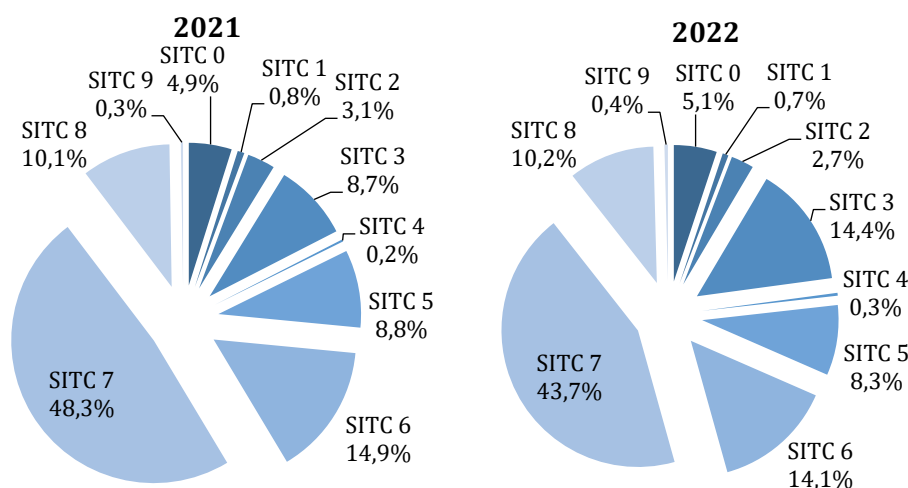
Source: Based on ŠÚ SR data (2023a).

Similarly as in the case of exports, the year-on-year increase in total imports was also significantly driven by SITC 7 – *Machinery and transport equipment*, which recorded an increase in imports by almost 12%. Given the linkage between the volume of automotive components imported and the volume of cars exported the trend in the share of imports in this class

in total imports more or less follows the trend in the share of its exports in total exports (Figure 7.9), with a record share being reached in 2020 (almost 51%) and its further decline to less than 44% in 2022 (Figure 7.12).

Figure 7.12

Structure of Imports into the Slovak Republic in 2021 and 2022 (%)



Explanatory notes:

SITC0 – Food and live animals

SITC1 – Beverages and tobacco

SITC2 – Crude materials, inedible, except fuels

SITC3 – Mineral fuels, lubricants and related materials

SITC4 – Animal and vegetable oils, fats and waxes

SITC5 – Chemicals and related products not classified elsewhere

SITC6 – Manufactured goods classified chiefly by material

SITC7 – Machinery and transport equipment

SITC8 – Miscellaneous manufactured articles

SITC9 – Commodities and transactions not classified elsewhere

Source: Based on ŠÚ SR data (2023a).

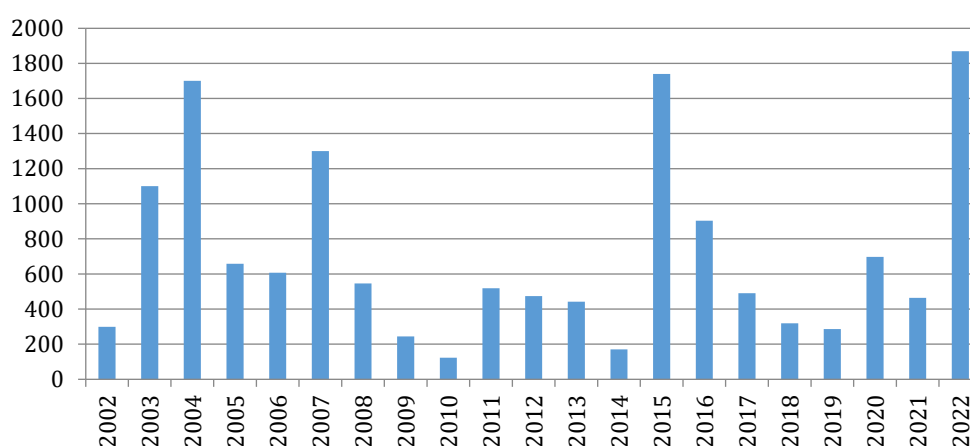
Successful Year for Investment Projects of SARIO

For more than two decades, the SARIO's (as a state agency of the Slovak Republic within the competence of the Ministry of Economy of the Slovak Republic) Department of Investment Projects has provided a wide portfolio of services to both potential and established investors. SARIO focuses on supporting investment projects with significant social and economic impacts, including active support for investments in less developed regions of Slovakia.

In the course of 2022, SARIO implemented further 31 investment projects,⁵¹ generating more than 7,500 new jobs and investing almost EUR 2 billion, i.e. four times the amount of the previous year (SARIO, 2023, Figure 7.13). The majority of this amount represents the announced investment by Volvo Cars near Košice (EUR 1.2 billion),⁵² which is reflected in an increase in the share of the Košice region in both the number of SARIO projects completed (15%) and the number of jobs created (15%) over the period 2002 – 2022. Only the Nitra region (16%) and the Trnava region (17%) have a higher share of projects completed and jobs created, respectively.

Figure 7.13

Volume of SARIO's Investment Projects (million euro)



Source: Based on SARIO data (2023).

For the entire period from 2002 to 2022, SARIO's Department of Investment Projects recorded a total of 640 successful projects, the implementation of which allowed the creation of more than 143,000 jobs throughout Slovakia and meant the investment of almost EUR 15 billion (SARIO, 2023). The interest of investors in the Central and Eastern Slovak regions has increased, investments with higher added value have come in, and the number of investments with a multiplier effect on the development of the subcontracting network has also grown.

⁵¹ The highest number of investment projects was recorded in the Bratislava and Košice regions (6 projects each).

⁵² In 2022, investments worth almost EUR 1.5 billion were allocated to the Eastern Slovakia region.

The investment of Swedish car company Volvo in 2022 strengthened the position of the automotive sector in terms of sector structure, with almost one third of total investments made in Slovakia within SARIO for more than two decades. In 2022, there were also further investments in the automotive sector – another investment by the British Jaguar Land Rover (Nitra) and investment of German Porsche into the production of battery modules for electric vehicles (Horná Streda).

Preliminary data from the NBS (2023c) show that in 2021 (the latest data available), investment inflows to Slovakia amounted to only EUR 50 million. Total investment inflows were significantly lowered by debt instruments, especially in the case of the Czech Republic and Luxembourg. On the other hand, more than EUR 328 million flowed out of Slovakia in 2021, the vast majority of it to EU countries, and within these, about half to euro area Member States and the other half to non-euro area countries. Almost 40% of Slovak investment in that year flowed to the Czech Republic.

The total stock of foreign direct investments (FDI) in Slovakia reached over EUR 52 billion in 2021. More than 90% of this comes from European countries, with the highest volumes originating from the Netherlands (almost a quarter), Austria (almost a fifth) and the Czech Republic (almost a seventh). Both in terms of the total volume of FDI in Slovakia and the most important investor countries, not much has changed over the last few years, with a slight increase in the share of Austria and a decrease in the share of the Czech Republic.

According to the preliminary data of the NBS, the stock of Slovak FDI abroad in 2021 reached nearly EUR 4.8 billion. Almost half of them were directed to the Czech Republic, followed by Poland (8%), the UK (7%) and Austria (7%). Also in the case of Slovak investment abroad, the share of Austria in the total volume has increased in recent years. The stock of Slovak investment abroad has risen by almost EUR 1 billion over the last four years.

* * *

The Slovak industry entered the year 2023 facing shortages and high prices of materials, as well as high energy prices. As the problems in the supply chains eased at the beginning of the year, production as well as

exports in the automotive industry recovered. However, both energy-intensive manufacturing and the electronic industry lagged behind. At the same time, imports were limited, which was related to some pre-supply at the end of 2022. The import side was also influenced by weaker consumption and, in particular, by lower value of imports of energy commodities (Figure 7.11), mainly natural gas. Although Slovakia's foreign trade still ended with a deficit in January 2023, in the next three months the foreign trade balance already recorded a surplus (NBS, 2023b). In aggregate, the balance for the first four months of the year was active, amounting to almost EUR 1.1 billion, in contrast to the previous year.⁵³

However, a significantly favourable development of export performance of the Slovak economy cannot be expected for the whole year 2023 (even in the situation of car exports recovery) due to weaker foreign demand. On the other hand, a temporary decrease in import intensity due to the above-mentioned factors could help to improve the result of the foreign trade balance from the previous year.

Expecting a gradual stabilisation of the situation in the automotive supply chains in the next period, as well as an improving outlook for the economic growth of Slovakia's trading partners, the preconditions for increasing Slovakia's exports are likely to slowly develop beyond the horizon of 2023.⁵⁴ The expansion of capacity in the automotive industry in the context of the arrival of the fifth automotive company (Volvo Cars), which is expected to start mass production of electric cars in 2026, will also contribute to the growth of export performance in the coming years.⁵⁵ On the other hand, the price development of imported energy raw materials remains uncertain, which may continue to have an adverse impact on trade balance in the future.

⁵³ This result was attributed to a double-digit increase in exports (driven by the most traded SITC 7 – *Machinery and transport equipment* and, within it, by exports of automobiles and aircraft) and a less than 3% increase in imports (held back mainly by a lower value of imports in SITC 3 – *Mineral fuels and lubricants*, which also includes oil, electricity and natural gas) compared to the same period of the last year (ŠÚ SR, 2023b).

⁵⁴ Both the NBS (2023a) and Inštitút finančnej politiky Ministerstva financií SR (2023) expect weak foreign demand for Slovak products in 2023 and its increase in the next two years, along with slowing inflation.

⁵⁵ Given the strengthening of emission standards in the EU, the transition to electro mobility is a necessary prerequisite for the future success of the Slovak automotive sector.

8. PUBLIC FINANCE

The general government budget for 2022 to 2024 was prepared at a time when the world was still coming to terms with the COVID-19 pandemic and its uncertain consequences. The budget took into account Slovakia's commitment to budgetary discipline and to reducing public debt, which had increased during the coronavirus crisis. Slovakia was thus among the 8 EU countries that put emphasis on the health of their public finances. At the same time, the budget addressed the need to finance measures to mitigate the impact of the 3rd wave of the pandemic, which persisted at the beginning of 2022. Given that the persistence of the 3rd wave of the pandemic had adverse consequences, the general government budget foresaw a reserve of EUR 717.4 million for the negative impact of the pandemic. The earmarked financial resources were used to finance first aid measures, humanitarian aid, SOS grants and other pandemic contributions.

Performance of the General Government Budget

The Government of the Slovak Republic approved the general government budget for 2022 – 2024, which foresaw deficit throughout the three-year period. The main budgetary target is to reduce the general government deficit to 4.9% of GDP in 2022, which would take Slovakia out of the corrective arm of the Stability and Growth Pact. To achieve this, the government planned consolidation measures to ensure a gradual reduction of the deficit to 2.68% of GDP in 2023 and a nominally balanced budget in 2024. The budget thus proposed is in line with the constitutional law on budgetary responsibility, which requires the budget to be balanced with debt above all the debt bands defined in the law.

The performance of the general government budget is illustrated in Table 8.1. The performance was significantly better than planned, mainly due to a lower cash deficit of the state budget and higher surpluses of some other components of the general government (health facilities, the Social Insurance Institution, other central enterprises and the Railways of the Slovak Republic). In particular, local governments recorded negative developments (MFSR, 2022e).

Table 8.1

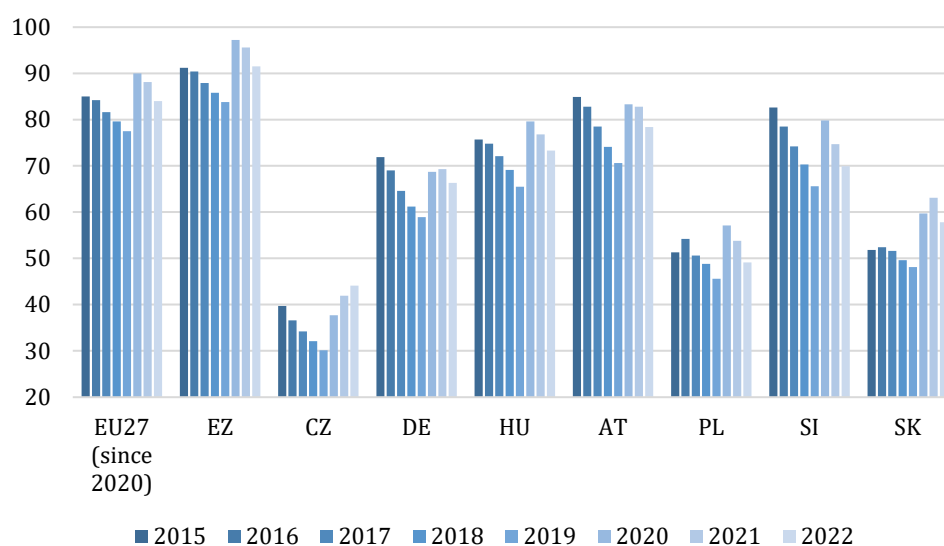
Key Fiscal Performance Indicators for 2019 – 2022

Indicator		2019	2020	2021	2022
Net lending (+) / borrowing (-)	mil. Eur	-1 140	-4 999	-5 448	-2 234
Net lending (+) / borrowing (-)	% GDP	-1.2	-5.4	-5.4	-2.0
Primary balance	% GDP	0.0	-4.2	-4.3	-1.0
Structural primary balance	% GDP	-0.7	-3.1	-3.8	-0.6
Structural balance	% GDP	-1.9	-4.9	-1.5	-0.8
General government gross debt (Maastricht)	mil. Eur	48.0	58.9	61.0	57.8
General government gross debt (Maastricht)	% GDP	43.1	48.9	49.6	47.7
General government net debt	% GDP	-1 140	-4 999	-5 448	-2 234

Note: 1. Net lending/borrowing for the years according to the ESA 2010 methodology. 2. The primary balance is the general government balance net of interest paid. 3. Cyclically-adjusted primary balance is the primary balance net of the cyclical component. 4. the structural balance is the general government balance net of the cyclical component and one-off effects. 5. Government net debt is government gross debt less government liquid financial assets.

Source: MF SR (2023d).

Figure 8.1

Comparison of Gross Public Debt as % of GDP (2015 – 2022)

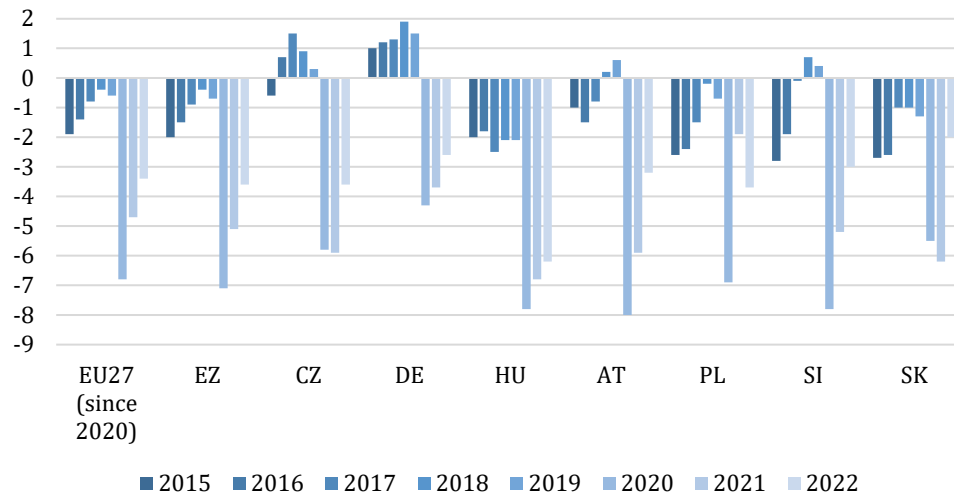
Source: Eurostat (2023).

A closer look and comparison with neighbouring countries as well as the EU and euro area average shows that the deficit was the second

highest in the V4 countries and was also above the EU and euro area average (Figure 8.2).

Figure 8.2

Comparison of General Government Deficits as % of GDP (2015 – 2022)



Source: Eurostat (2022).

Development of the State Budget in 2022

A number of legislative proposals were passed in 2022 that have a major impact on their long-term sustainability, both positively and negatively. One positive change was the reform of the second pension pillar. As part of the reform, the following have been implemented:

- adjustment of management fees,
- the introduction of a default investment strategy,
- limiting the lump-sum withdrawal of the entire amount saved in the second pillar upon retirement,
- adjusting the inheritance from the second pillar,
- making it easier to change the pension management company (DSS),
- a reduction in second pillar contributions (between 2023 and 2024, the second pillar contribution rate will be 5.5% of gross wages, between 2025 and 2026 it will be 5.75% and only in 2027 it will reach the target of 6%),

- Guarantees in bond funds (If a saver applies for a pension from the second pillar, the pension management company will check whether his current assets are higher than the contributions he has sent to the guaranteed pension fund. If the saver's current assets before retirement are not higher than his contributions, the DSS will make up the difference from its assets).

Another positive change was the approval of expenditure limits by amending the Financial Regulation Act. Expenditure limits bring the necessary stability to the management of public finances and are one of the elements of their long-term sustainability.

Expenditure aimed at supporting families with children, namely the increase in the child benefit and the increase in the tax bonus, had a negative impact on the sustainability of public finances. We do not question any political intention to also help families with children with financial instruments, but these proposals should be discussed in the standard legislative process. This would not create a situation where the approval of a higher tax bonus causes a huge shortfall in local government revenue, which then has to be dealt with by earmarked subsidies and unconceptual improvisation.

Another long-term expenditure that has adversely affected sustainability is the so-called parental bonus. The parental bonus or parental pension is an additional pension that seniors will receive on top of their old-age pension. It will be paid automatically by the Social Insurance Institution according to the data in the register of natural persons for the biological parent and the adopter.

In 2022, the state budget ended with a deficit of EUR 4 524.9 million. This was EUR 2,489.3 million better than the previous year, as revenues grew and expenditures declined. Revenues increased by EUR 1,832.4 million, which was mainly due to higher tax revenues. These increased by EUR 1 971.0 million (+14.6%) compared to 2021. The largest contributors were value added tax (+829.4 million euro), corporate income tax (+951.0 million euro) and excise duties (+154.9 million euro). Personal income tax was the only tax that recorded a decrease (-25.8 million euro). The state also received more funds from the Recovery and Resilience Plan

(+36.8 million euro). On the other hand, revenues from the EU budget (-123.1 million euro) and from dividends (-319.9 million euro) decreased. State expenditure decreased by EUR 656.9 million year-on-year.

Table 8.2

Development of the State Budget in 2019 - 2022 (EUR million)

	2019	2020	2021	2022
Total revenue	15 825	15 750	17 197	19 029
1. Tax	12 336	11 872	13 546	15 517
2. Non-tax	1 327	1 289	1 338	1 285
3. Grants and transfers	2 161	2 588	2 313	2 227
Total expenditure	18 027	23 509	24 211	20 847
Current expenditure	15 168	20 846	21 772	20 847
Capital expenditure	2 858	2 662	2 440	2 707
Deficit/Surplus	-2 201	-7 758	-7 014	-4 524

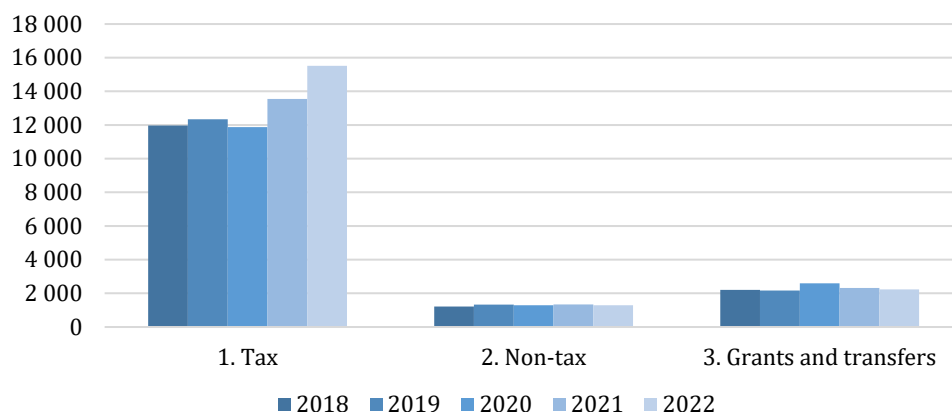
Source: Based on MF SR (2023a).

In the structure of tax revenues, we can observe a significant increase in tax revenues in 2022 and a persistent decline in revenues from grants and transfers to a level close to 2019. The most significant part of this item is the revenue from the European Structural and Investment Funds (ESIF), the absorption of which remains problematic.

Firms are partially recovering from the pandemic and resuming their activities. The energy crisis did not have as much impact on their operations in 2022 as expected. Firms in the retail, banking and some industrial sectors performed well. Improvement is also visible in other sectors, which was reflected in higher corporate income tax collections of EUR 165.2 million.

Value added tax revenue was EUR 311 million lower than planned, largely due to poorer tax collection, which resulted in a reduction in the effective rate of this tax. This is due to the resumption of activity in sectors where cash payments, which are usually associated with VAT evasion, are applied. In addition to this effect, lower household consumption due to price increases for virtually all goods and services has had a negative impact on collections.

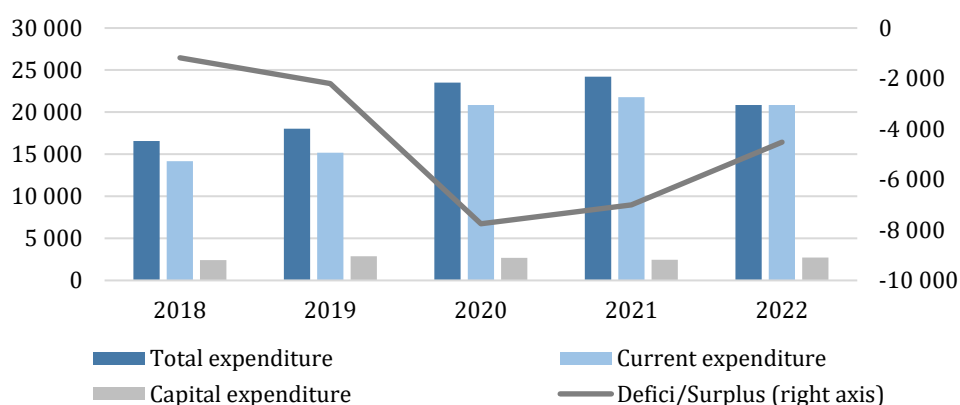
Figure 8.3
Development of State Budget Revenue in 2018 – 2022



Source: MF SR (2022a).

Current expenditures were higher than originally planned, which is natural as the government reacted to existing external shocks as well as a result of the legislation passed in the National Assembly of the Slovak Republic, which introduced several mandatory expenditures (increase in social benefits, payment of additional old-age pensions, stabilisation allowance for health employees, etc.). The largest expenditure was recorded in the areas of wage and salary costs, costs of goods and services, current transfers and interest. From a sectoral perspective, the increase in expenditure was at the level of local government and health facilities.

Figure 8.4
Development of State Budget Expenditure in 2018 – 2022

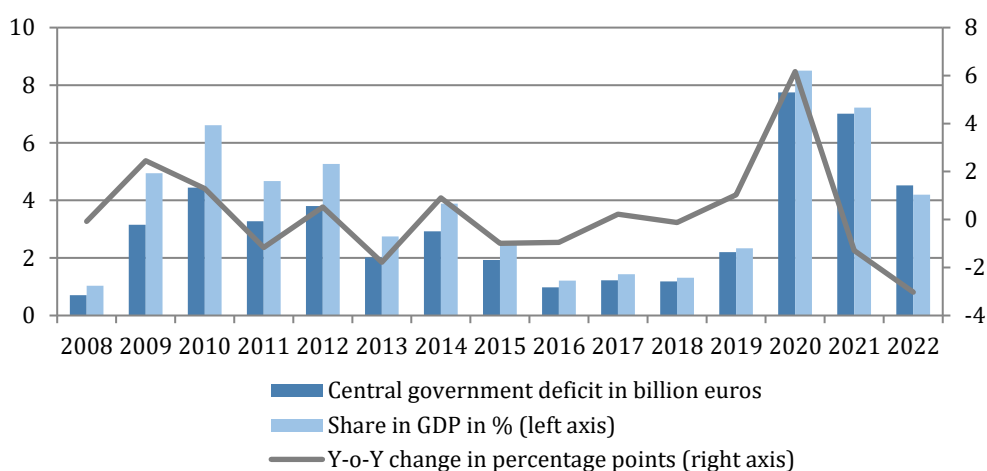


Source: MF SR (2022a).

Central Government Budget Deficit and Debt

Since the start of the pandemic in 2020, which required large-scale interventions from the state budget over the next two years, the need for further stimulus to public administration entities, businesses and households in 2022 has become apparent as a result of the Russian aggression in Ukraine. The Russian aggression caused a huge panic in the energy market as a result of the unilateral shutdown of supplies from Russia. Concerns about energy shortages for industry and households, especially in winter, have translated into record prices for natural gas and electricity on the exchanges. The government has responded to these developments with compensation schemes for industry and, through an agreement with the Slovak Power Plants, has set a cap on the price of electricity until 2027 (see Chapter 2 for more on this issue). Naturally, all these crises have had a negative impact on state budget spending and have been reflected in the growth of central government debt (Figure 8.5 and 8.6).

Figure 8.5
Central Government Budget Deficit 2008 – 2022

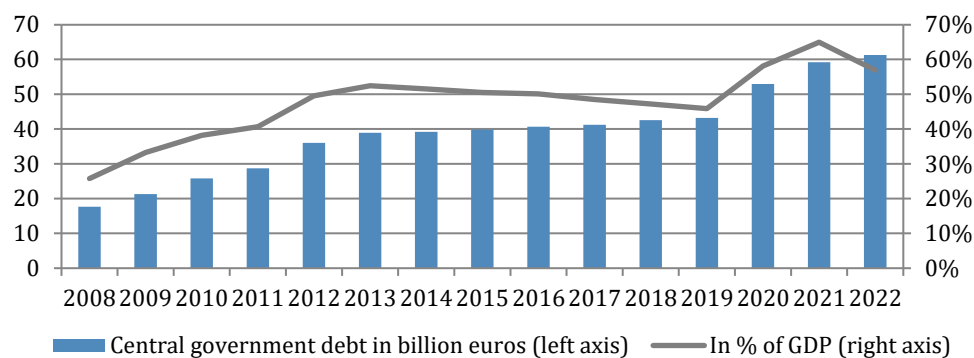


Source: Based on MF SR (2023a).

While the two-year pandemic period caused the central government's debt to rise from EUR 43 billion to EUR 59.2 billion, the need to respond to energy shocks did not impose significant costs on the state budget in 2022. High inflation was one of the factors behind the growth in state

budget revenues, and the deficit was thus down by 3 percentage points year-on-year to EUR 4.5 billion in 2021.

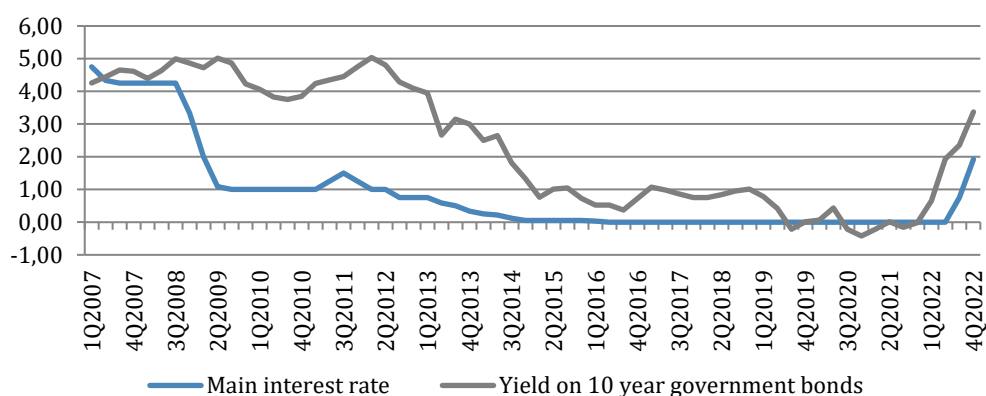
Figure 8.6
Central Government Debt 2008 – 2022



Source: Based on MF SR (2022b).

In line with our expectations last year, the ECB's monetary policy tightening due to high inflation has gradually been reflected in the yields on Slovak 10-year government bonds, which have reached their 2013 levels (Figure 8.7). Thus, the relatively favourable ten-year period that provided Slovakia with relatively cheap deficit financing options has come to an end, and any additional debt created will be reflected more strongly in Slovakia's public debt servicing costs.

Figure 8.7
Development of Interest Rates on 10-year Slovak Government Bonds in 2007 – 2022 (in %)



Source: Macroeconomic database of NBS.

***Implementation of the Cohesion Policy of the European Union
in the 2014 – 2020 Programming Period
Traditionally Insufficient Momentum Persists***

Since the pre-accession period, the European Structural and Investment Funds have been one of the important instruments for balancing regional disparities and represent an important source of public investment. Their implementation has helped Slovakia to reduce its modernisation and investment debt, but on the other hand, over the years a certain dependence of the Slovak economy on these resources has developed. There is a need to gradually reduce their significant share in total public investment and to make greater use of domestic resources. However, these are largely tied up in mandatory expenditure and are mainly directed to several chapters, replacing domestic capital expenditure. These include in particular investment in science, research and innovation, education, environment, transport infrastructure and public services. It is investment in these sectors that will help the Slovak economy to increase the pace of convergence towards the EU. Although Slovakia can use cohesion policy resources from the current programming period until 2023 without increasing the efficiency of the whole governance structure, there is a significant risk that a large part of its allocation will not be used up. With regard to spending at the end of the programming period, it will be important not to repeat the situation of the last programming period, where projects were approved, implemented and reimbursed at the last possible date. This significantly increases the risk of errors, inefficiencies and other undesirable behaviour which will ultimately result in financial corrections and the funding of long term inefficient and unsustainable projects.

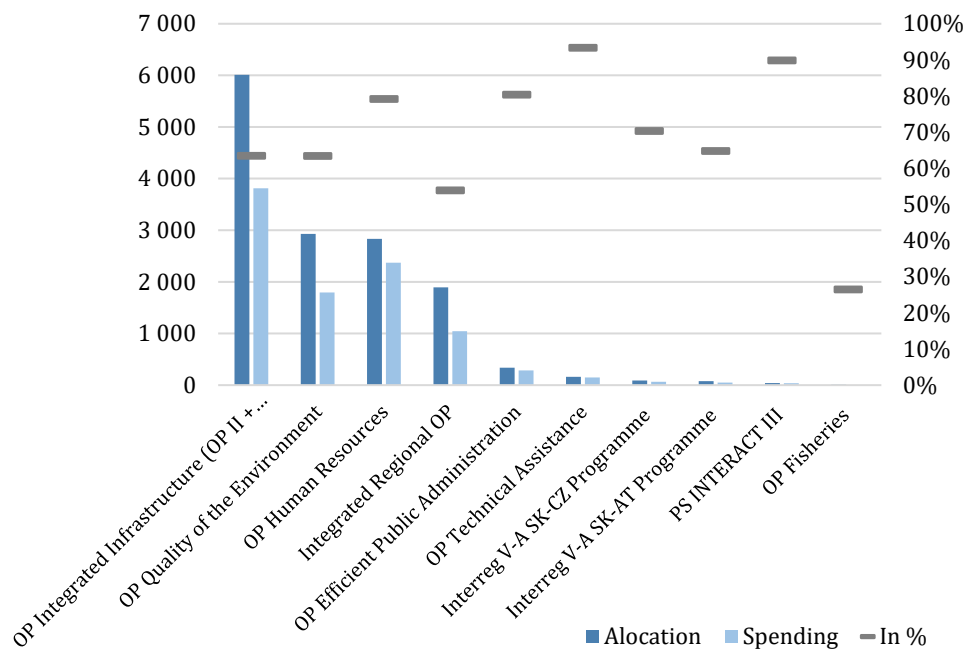
While in recent years there was an assumption that the cohesion envelope would gradually decrease as Slovakia's economic level increased, the opposite is proving to be true. Although the allocation for 2021 – 2027 will be slightly lower, due to the SARS-CoV-2 pandemic and its impact on EU Member States, the European Commission has introduced extensive support schemes to help overcome its effects and modernise European economies. From Slovakia's point of view, drawing on such a large volume of financial resources will require the preparation and implementation

of development and investment plans and the provision of administrative capacity to implement them.

In the 2014 – 2020 programming period, the implementation rate reached 64.8% at the end of the year (see Figure below).

Figure 8.8

Financial Implementation of Structural Funds in 2014 – 2020 by Individual Operational Programmes as of 31. 12. 2022 (in %) (EU source)



Source: Based on MF SR (2023c).

The Slovak Republic suffers from a chronically low distribution and absorption capacity of the ESIF, especially in the area of infrastructure investments (CF, ERDF). Despite the fact that the 2014 – 2020 programming period is the third programming period in which the Slovak Republic can participate, the system of effective implementation of cohesion policy is already limping. The complexity of the existing management system and the system of financial management and control of the ESIF contributes to this.

The 2007 – 2013 period showed that a significant part of the funds was invested in the last n+2 years in the 2014 – 2015 period. The country faces

an alarming situation with critically low absorption levels also in the 2014 – 2020 period. With only 14 months to go until the end of the period, more than EUR 4.7 billion of the EUR 11.1 billion cohesion package of CF and ERDF earmarked for Slovakia remains to be spent.

Despite this inefficiency and the fact that the majority of public investment comes from the ESIF, there has been no reform in Slovakia to improve the management of the ESIF. If there is no significant change and Slovakia continues to apply a similar regulatory framework, the next programming period 2021 – 2027 may end with comparable results.

The underspending would be at least one billion higher in the absence of crises (COVID-19, refugees from Ukraine) which allowed for a high degree of flexibility in redeploying resources from the CF and ERDF or spending them in an exceptional 100% co-financing regime. In other words, some EUR 6 billion (5.5% of GDP in EN) that should have been spent on infrastructure projects in previous years but was not, is now clearly missing from the economy and the debt for infrastructure is growing.

Despite this inefficiency and the fact that most public investment comes from the ESIF, no reform aimed at improving the management of the ESIF has taken place in Slovakia. If there is no significant change and Slovakia continues to apply a similar regulatory framework, the next programming period 2021 – 2027 may end with comparable results.

The cause of this problem is the following:

- a complex web of regulatory documentation, including legislation and methodological documents related to the ESIF,
- the extreme bureaucratic burden on the public authorities managing the ESIF caused by this complexity as well as by the constant changes in the regulatory documentation,
- gold-plating at all regulatory levels,
- extreme bureaucratic burden on beneficiaries,
- a very high level of legal uncertainty despite a large bureaucracy,
- low use of simplified accounting methods,
- complicated public procurement rules and lengthy procurement procedures,

- the unequal relationship between beneficiaries and the managing authorities of the ESIF,
- strong centralisation of the management of the ESIF at national level and low involvement of regional and local authorities,
- inconsistencies between operational programmes and national strategy papers,
- insufficient and inadequate management skills at senior administrative management level.

The consequences of the above causes include:

- low level of public investment, as the ESIF represent more than 80% of all public investment in Slovakia,
- low levels of trust in civil society organisations, municipalities and businesses and reluctance to undergo the administratively demanding procedures under the ESIF, leading to a reduced demand for funds from beneficiaries,
- low level of confidence of civil servants in the system they administer, uncertainty and confusion due to complex regulations,
- excessive focus on regulations and procedures by civil servants administering the ESIF system rather than seeking quality outputs and results from ESIF investments,
- this in turn leads to a low level of trust in the European Union as a whole,
- the inability to exhaust the allocation of operational programmes, leading to the perpetuation of existing regional disparities in the quality of infrastructure, quality of life, availability of public services, access to education, labour market opportunities, etc.,
- ineffective cohesion policy where regional disparities are not mitigated.

In general, the implementation of the ESIF requires radical change and the new programming period should be implemented on the basis of simplified procedures and rules.

The problem of low uptake of the ESIF and the complicated management system of the ESIF affects the whole economy of the Slovak Republic. All areas with a need for public investment are among those affected. The

whole idea of cohesion is slowed down and the economic growth potential is limited due to the low absorption of the ESIF. Lagging regions have limited chances to catch up with the more developed ones, which is particularly visible in the eastern and southern regions of Slovakia, where a large number of inhabitants (including, but not limited to, marginalised Roma communities) live without access to basic infrastructure – water, sewerage, access to energy, local roads, etc.

European funds account for more than 80% of all public investment in Slovakia since the country joined the EU in 2004, compared to an EU average of 15%. Slovak municipalities are highly dependent on access to EU funds. The average size of a municipality in Slovakia is 1 850 inhabitants (compared to 5 765 in the EU or 9 440 in the OECD). The fragmentation and size of Slovak municipalities makes them dependent on EU funding for their investment needs, as they are unable to generate sufficient revenue on their own.

Areas highly dependent on EU funding:

- active labour market measures,
- transport infrastructure,
- research and development,
- environmental protection,
- inclusion of marginalised Roma communities.

Most assessments/evaluations carried out so far identify bottlenecks as follows (PWC, 2021):

- unnecessary administrative burden and requirements, complicated documentation,
- unnecessary information and document requirements,
- complexity of the procurement process,
- the need for a higher degree of application of simplified implementation processes,
- the need for simplified systems for SMEs.

Although some changes have been made in the last two years (concerning the 2014 – 2020 programming period) and a new operational programme structure has been decided for the 2021 – 2027 period, there is still a need for a more thorough review of the whole system. The merging

of the current six ESIF OPs into a future single programme will help Slovakia to manage the decommitment of the n+3 commitment, but not the actual progress in the implementation of investments. An independent review of rules and procedures is needed to revolutionise the investment efficiency of the ESIF. The smooth implementation of the ESIF is even more important in times of multiple crises (Russian aggression, migration wave, energy crisis, environmental crisis). Households, civil society organisations, regional and local authorities are calling for more effective implementation of the ESIF.

Solutions Applied so Far

Stakeholders involved in the implementation of the ESIF are naturally aware of the need to simplify cohesion policy implementation processes. In recent years, several legislative measures have been adopted to simplify and streamline the processes:

1. Amendment to Act No. 292/2014 Coll. on the contribution from the ESIF – the so-called *lex corona* – entered into force on 21 May 2020 and achieved, for example, forgiveness of missing selected legal deadlines, introduction of the possibility to change or cancel the announced call more flexibly, introduction of the possibility to stop the procedure (instead of an obligation), extension of deadlines in relation to instalment agreements.
2. 40 simplifications in the Integrated Regional Operational Programme (e.g. reduction of compulsory controls before launching procurement, simplification of worksheets and simplification of economic performance verification) + new management system and introduction of 52 anti-bureaucratic measures (e.g. abolition of redundant controls, increase of the limit for low-value contracts to 50 000 euro, publication of the most frequent errors in the applications for non-reimbursable financial contribution (NFA) and the model NFA application, etc.).
3. In order to ensure maximum transparency, the amendment to the ESIF Act effective from 15.6.2021 introduced the obligation to publish deficiencies and audit recommendations, project advisors are also published, easy modification of calls and simplified reporting of expenditure

is made possible, and the possibility to appeal against the discontinuation of a procedure is introduced.

4. The Single Procurement Manual replaces two dozen previous manuals and unifies the rules for all programmes. It removes many rules that were set beyond the scope of the Public Procurement Act, including template documents as well as the most frequent findings of control bodies.

5. Amendment to Act No. 292/2014 Coll. on the contribution provided from the ESIF came into force on 7 June 2022, it responds to the unprecedented increase in the prices of construction materials and allows for an increase in the NFA contract for national projects, which can cover the price increase of construction materials in this way. This law creates the possibility to provide an additional contribution to the NFA for demand-driven projects.

6. The new EU Contributions Act introduces simpler rules for EU funds in the 2021 – 2027 programming period.

According to the latest National Reform Programme of the Slovak Republic 2022, measures have been taken to accelerate implementation while maintaining transparency and cost-effectiveness of spending. A new crisis management system was introduced by Government Resolution No. 218/2021, under which individual ministers undertook to perform specific tasks in order to eliminate the risk of non-fulfilment of financial allocations in the respective operational programmes. The implementation of these tasks is reported to the Government on a quarterly basis. Crisis management is applied through increased oversight of the implementation of EU funds, such as the development of action plans, the need to carry out internal transfers of funds within the OPs based on analyses, to ensure the launch of calls for up to 100% of the allocation of the relevant Operational Programmes (OPs) by the end of 2021, to ensure the contracting of 90% by the end of 2021 and 100% by the end of 2022, the creation of a pipeline of projects, the creation and continuous monitoring and updating of strategic projects.

In addition, a mechanism has been set up at OP level to coordinate and ensure synergies between EU funds and other EU support instruments. The review and comparison of the individual strategic documents was

carried out by the Office of the Government of the SR and the Ministry of Investment, Regional Development and Informatisation of the SR. Specific opportunities for cooperation between the strategies, complementarity of measures within the strategies, as well as potential duplication between the measures in the Recovery and Resilience Plan and the planned measures under the Partnership Agreement were sought. The aim is to spend resources efficiently to achieve the objectives and avoid potential duplication of funding. A key component of the Platform is the Synergies and Complementarities Steering Committee, which will oversee the effective implementation of the measures. A document outlining the details of the cooperation has been submitted to the Government following the approval of the Slovakia OP by the European Commission.

In the framework of the country-specific recommendations for 2022 – 2023, it recommends continuing the implementation of its Framework Reform Programme in line with the milestones and targets contained in the Council Implementing Decision of 13 July 2021. More importantly, present the Cohesion Policy programming documents for 2021 – 2027 in order to finalise their negotiation with the Commission and subsequently start their implementation. The Council also recommends expanding public investment in the green and digital transition and in energy security, including through the use of the RRF, RePowerEU and other EU funds.

In order to successfully use all financial instruments with an unprecedented volume of available financial resources, processes need to be set up to maximise the absorption capacity of the final beneficiaries and to remove unnecessary bureaucratic burdens. The Office of the Government of the Slovak Republic has also asked the EC for assistance with the reform of the management of the ESIF, the project will be implemented between 2023 and 2024.

As a result of the Russian aggression, Member States have incurred additional costs due to the arrival of migrants from Ukraine. The European Commission has responded with a legislative proposal, known as FAST (Flexible Assistance for Territories) – CARE, which introduces new provisions for additional flexibility and maximum efficiency of Cohesion Policy investments.

The EC has expressed its readiness to work together on constructive solutions to ensure that the condition of 30% earmarking of expenditure for projects whose beneficiaries are local authorities or civil society organisations is met.

Following the negotiations with the EC, MIRRI SR submitted to the EC a document describing the principle of project partnership and its anchoring in our legislation and the ESIF management system. The aim was to obtain the EC's opinion on the implementation of a national project with municipalities as project partners. In response, the EC stated that the legislative changes to FAST-CARE did not change the concept of beneficiary as defined in the general regulation. The 30% requirement therefore has no impact on the definitions as set out in the general Regulation. The implementation of a national project through a project partnership does not allow compliance with the requirement to allocate 30% of resources to support allocated to local authorities or civil society organisations. The EC notes that now is the best time to move forward and launch a funding scheme directly to municipalities in order to meet the 30% condition.

The current SK proposal for the allocation of resources for FAST-CARE operations foresees an amount of 310.25 million euro.

The forthcoming revisions of FAST-CARE concern three OPs:

1. OPII – EUR 30 million (support to the staff of the Ministry of Interior, digital contribution to Ukrainian pupils) – revision of OPs in preparation,
2. IROP – EUR 239 million (reimbursement of expenses of municipalities in connection with initial reception of refugees, support to state administration in connection with reception of refugees) – the revision of the OPs has been sent to the EC for informal comments and the RO is preparing a call for proposals,
3. OP HR – 41.25 million euro (integration of refugees, labour market integration, social services).

Under IROP, a national project is being prepared to support the state and public administration in the reception and immediate assistance of refugees in the context of the Russian aggression in Ukraine. If the IROP makes use of the flexibilities introduced by the FAST – CARE Regulation, in the light of the EC opinion, the IROP RO will have to launch a new call

for all municipalities that have provided accommodation to refugees from Ukraine. In practice, this will mean the implementation of more than 1,400 new projects during 2023. The amount of EUR 239 million allocated under IROP may be further increased in view of the arrival of more refugees on the territory of the Slovak Republic.

Public Finances' Response to the Rapid Rise in Energy Prices

In October 2022, the Commission presented a framework called SAFE-CARE, which introduces new flexibilities that will allow measures to address the consequences of the energy crisis to be implemented from the unspent European Structural and Investment Funds for the 2014 – 2020 programming period.

The support targets the following categories of beneficiaries:

- vulnerable households and their energy costs,
- working capital support for micro, small and medium-sized enterprises.

Table 8.3

Allocation for FAST – CARE from ESIF by Departments and Funds in EUR

Operational Programme	Fund	Amount
OP Integrated Infrastructure	ERDF	205 618 080
	CF	551 589
	ERDF	150 000 000
	ERDF	74 818 551
OP Human Resources	ERDF	48 000 000
OP Quality of the Environment	CF	387 899 356
Integrated Regional Operational Programme	ERDF	155 292 844
	ERDF	15 404 830
	ERDF	18 302 326
Total		1 055 887 576

Source: MF SR (2022d).

In order to compensate for the additional costs incurred by enterprises as a result of high electricity and gas prices, the Ministry of Economy has developed a state aid scheme. On 1 December 2022, the Ministry of Economy issued a call under the European Commission's Temporary Crisis

Framework aid scheme for all economic operators. Not only businesses, but also the public sector, such as municipalities, social service homes or civic associations, could apply for compensation. Large and energy-intensive enterprises could apply, and the Ministry of Economic Affairs ensured that the call was launched, processed and compensation paid by the end of 2022. The scheme continues in 2023.

Small consumers, which are electricity consumers with a consumption of up to 30 MWh/year and gas consumers with a consumption of up to 100 MWh/year, are assured of electricity supply prices of a maximum of EUR 199/MWh and gas supply prices of a maximum of EUR 99/MWh.

All other electricity and gas customers may apply for compensation for the increased costs of purchasing electricity and gas above the set level of the electricity supply price up to a maximum of EUR 199/MWh and the gas supply price up to a maximum of EUR 99/MWh.

* * *

Similarly, to the previous year, 2021 was an extraordinary challenge for the public finances of the Slovak Republic last year. Despite the expected fall of the economy into recession due to the Russian aggression in Ukraine and its secondary effects, there were positive developments, and the deficit was significantly lower than expected. However, this is only a temporary phenomenon, and the Slovak public finances are still at high risk of unsustainability if the necessary consolidation measures are not taken in the coming years. We have also devoted a significant part of the chapter to the EU funds, as the end of the programming period is approaching and a similar or even worse situation with their absorption than in the previous programming period is recurring. Reform of the system of their management is a necessity, so that the delayed new programming period 2021 – 2027 does not lead to the same situation, and the resources that could have been used for the development of the Slovak economy will not be used.

9. ECONOMIC POLICY MEASURES IN 2022

In 2022, the adoption of economic policy measures was influenced by a number of important external factors which, through their economic impact on the global economy, have made it necessary to take action, in particular in energy/price policy, security and migration (asylum) policy. The nature of the measures taken was also influenced by the need to achieve the "milestones" necessary for the Recovery and Resilience Plan of the Slovak Republic, i.e. legislative changes that conditioned and enabled the drawing of funds from this source.

Strategic Documents

The key medium-term public policy document is the Stability Programme of the Slovak Republic for 2022 – 2025. The document considers the key structural challenges to be "education, the labour market and allocative efficiency determined by the country's innovative potential and the efficient performance of the public administration" (MF SR, 2022). Measures such as the implementation of compulsory pre-primary education, curriculum reform and changes in higher education, and the establishment of centres of excellence for linking vocational education and the labour market are expected to bring about a re-acceleration of Slovakia's convergence. Productivity growth is to be supported by increased R&D spending and support for digitisation.

In April 2022, the government approved the *Slovak Republic's Partnership Agreement for the period 2021 – 2027*. The document is a strategic investment plan for EU funds, which form an important part of public investment. Between 2021 and 2027, EUR 12.59 billion is to be invested in Slovakia in five target areas (MIRRIb, 2022): a more competitive and smarter Slovakia (EUR 1.89 billion), a greener Slovakia (EUR 4.2 billion), a more connected Slovakia (EUR 2 billion), a more social and inclusive Slovakia (EUR 3.25 billion), and a Europe closer to its citizens (EUR 400 mil.). Compared to the previous programming period, there is one operational programme (Operational Programme Slovakia). The expected change is to simplify administrative processes (one managing authority, uniform rules

and methodology for public procurement). As part of the shaping of future policy frameworks in 2022, the *Strategic Plan of the Common Agricultural Policy for 2023 – 2027* was approved. More than EUR 3.3 billion has been earmarked for Slovakia from European funds, with a contribution from the state budget of EUR 865 mil. The aim of the strategic plan is 'to increase the competitiveness and resilience of the agricultural sector while protecting natural resources. The plan introduces an upper limit for direct payments based on farm size and redistributive support for small and medium-sized enterprises' (Koreň, 2022).

In the context of the EU's climate goals and efforts to achieve climate neutrality by 2050, a number of soft legislation is being adopted. In 2022, the Slovak Government adopted the *Strategy for Smart and Sustainable Mobility in Slovakia*. Among the transport policy objectives is the greening of transport based on the use of smart and sustainable transport and a multimodal transport system. The purpose of the strategy is to "set out a roadmap to put transport in Slovakia on the path of building green, smart and sustainable transport" (MIRRIa, 2022). Transport policy and environmental protection are also addressed in the newly adopted *Concept for the Development of Intermodal Transport in Slovakia*, which responds to the growth of road freight transport. The aim is to accelerate the performance of intermodal transport and to maintain and increase the share of environmentally friendly modes of transport, especially rail transport. The environment is also concerned by the update of the strategy entitled *Water Plan of Slovakia for 2022 – 2027 (Danube River Basin Management Plan – 2nd update)*. The plan frames water management in the context of environmental quality and climate change in particular (MŽ SR, 2022). Digitisation and digital technologies are one of the main leitmotifs of public policies in Slovakia. This was no different in 2022. The state's objectives in the field of digitisation are defined by the adopted *Action Plan for the Digital Transformation of Slovakia for 2023 – 2026*. The plan focuses on supporting "businesses and the wider economy, developing and deploying top digital technologies and building a resilient society. It defines the basic framework for promoting productivity, knowledge economy, focusing on higher value-added segments, more competitive economy, sustainable development" (MIRRI SRc, 2022).

Recovery and Resilience Plan as a Driver for Reforms

A robust driver for the adoption of reform legislative measures is the achievement of the Recovery and Stability Plan milestones, which are a condition for the disbursement of funds. Briefly recapitulating some of the milestones achieved in the previous year 2021, the conditions of the EUR 458 mil. payment request were met by the measures adopted in the areas of higher education (new legislation on reform of the governance system, roadmap for merging universities, adoption of the Strategy for the Internationalisation of Universities), judiciary (new judicial roadmap, set of anti-corruption legislation, strengthening of the integrity and independence of the judicial system, strengthening of the capacity to investigate crime), public administration (digitalisation, introduction of expenditure ceilings). The fulfilment of the conditions of the 2022 payment request of EUR 814.7 mil. was conditional on the adoption of a number of measures. In the environmental area, the Waste Act was amended (to reuse at least 70% of construction waste, to change the mandatory green public procurement of construction works by public authorities, to increase the statutory landfill charges and to simplify the rules on the use of construction and demolition waste). In the case of promoting access to and the development of inclusive education, new standards have been introduced for the debarring of education. Support for the science and research sector is part of the recovery plan. Reform measures included the introduction of a unified system of research assessment for universities and research institutes and reform in the management of support for research, development and innovation (a new Council for Science, Technology and Innovation of the Government of the Slovak Republic has been established). A system of support for research and development of digital solutions for enterprises and public sector R&D institutions is to be established. The new system is to serve as a mechanism for co-financing projects that succeed in directly managed EU programmes (Digital Europe, Horizon Europe and the Connecting Europe Facility). Attention has also been paid to attracting and retaining talent. Amendments to the Citizenship Act are intended to facilitate return to the country and make it more attractive for foreigners with family ties to Slovakia, and changes to visa

policy are intended to facilitate the admission of highly skilled third-country nationals seeking employment. Recognition of foreign education documents (especially for health professionals) has also been facilitated. The health sector is also among the priorities of the Recovery Plan. The introduction of the optimisation of the hospital network has earned media attention, as did the 2021 justice map. The reform defines a new hierarchy of hospital care providers depending on the complexity of the care provided, the range of services and time availability (5 levels of hospital care providers). A third set of milestones implemented or planned for 2023 is a condition for receiving EUR 815 mil. in funding.

From the Ending Coronavirus Pandemic to the War in Ukraine

The impact of the waning coronavirus epidemic in Slovakia was also felt in 2022, but with less intensity than in the previous two years. In January 2022, the Slovak government adopted a set of measures against SARS-CoV-2 (omicron variant). The measures partially restricted social and some economic activities. Enforcement of home office forms and full-time education in schools persisted. The OP+ scheme was introduced. Anti-pandemic measures lasted until 28 March.⁵⁶

In 2022, as in the year before, there is increased legislative activity in the area of strengthening external security. Although not directly related to the economy, external and internal security conditions create the necessary preconditions for the functioning of the economy.⁵⁷ In the context of the war in Ukraine, this area is all the more urgent. Documents such as the *Action Plan for Coordination of Combating Hybrid Threats (2022 – 2024)*, the *Comprehensive Defence Assessment of the Slovak Republic for 2021*, the *Cyber Defence Strategy of the Slovak Republic*, the *Long-term Development Plan of the Ministry of Defence with a view to 2035*, the *Plan for Securing the Main Site of State Defence Management and the Activities of the*

⁵⁶ For February 2022, it was possible to apply for small business assistance and employment retention allowances from the First Aid scheme. Support for one-person limited companies was still available until February and for self-employed persons until March (First Aid Measures 2 and 4).

⁵⁷ In 2021, strategic documents such as the *Security Strategy of the Slovak Republic* and the *Defence Strategy of the Slovak Republic* were adopted.

Constitutional Bodies in this Site have been adopted. The Military Intelligence Act (500/2022 Coll.) was also amended. The original act, adopted in 1994, was inadequate in terms of application practice and did not correspond to today's situation.

New Legislation in 2022⁵⁸

Simplification of administrative processes in the use of EU funds was aimed at the adoption of an amendment to the Financial Control Act (39/2022 Coll.). The lengthy construction of motorways in Slovakia, which is often slowed down by bureaucratic processes, is to be accelerated and made more efficient by an amendment to the Act on one-off extraordinary measures (50/2022 Coll.). Both acts relate to simplifying public investment processes.

In order to facilitate the employment of foreigners in the Slovak healthcare sector, an amendment to the Act on Healthcare Providers (419/2022 Coll.) has been adopted. The amendments concern, among other things, the verification of the national language to the extent necessary for the exercise of the health profession or the recognition of educational documents issued outside Slovakia.

An amendment to the Regional Investment Aid Act (65/2022 Coll.) was intended to help address the impact of the pandemic on the corporate sector. The adopted amendment eased some of the obligations and conditions that aid recipients had to fulfil during the period of pandemic restrictions.

The war in Ukraine and the increase in the arrival of asylum seekers is reflected in the amendment to the Asylum Act (124/2022 Coll.), which systemically regulates the initial integration of asylum seekers and foreigners. It introduces several major changes (MV SR, 2023): it modifies the hierarchy of protection statuses granted to foreigners in the Slovak Republic, i.e. it gives priority to the ground of serious injustice; it introduces a one-off allowance of 1.5 times the minimum subsistence level for one adult

⁵⁸ This section is based on a search of legislation and enacted acts and explanatory notes available on the websites of the NR SR (2023) and Vláda SR (2023).

person in the framework of initial integration; it shortens the time limit for asylum seekers' access to the labour market (from 9 to 6 months); provides for the provision of social and psychological counselling and a cultural orientation course. The amendment is effective from 1 June 2022.

Quite a lot of attention has been paid to social or family policy measures – the amendment to the Act on the Allowance for the Support of Foster Care (107/2022 Coll.) – "The aim of the amendment is to increase the interest in foster care, both of larger sibling groups and of medically disadvantaged children, by adjusting the recurrent allowances to foster parents and by supporting foster families" (ULC, 2022).

The amendment to the Act on Regulation in Network Industries (No. 85/2022 Coll.) strengthens the regulation of the electricity and gas supply market for price-regulated customers: households and small enterprises. The amendment broadens the scope of price-regulated entities in the electricity and gas sectors and introduces a new concept – vulnerable customer. A major amendment to the Energy Act (324/2022 Coll.) transposed a large part of the so-called winter energy package into our legislation. It newly regulates the so-called electricity emergency and the so-called gas emergency (the price of wholesale energy products or gas on wholesale markets may lead to price unavailability for consumers in a defined territory).

The transposition of supranational legislation and the harmonisation of regulation of national financial markets has meant the adoption of several acts. The new Act on the Pan-European Personal Pension Product (No. 129/2022 Coll.) introduces a new type of product in the field of personal pension savings, which responds to the increasing mobility of the workforce within the EU and allows the transfer of pension savings across EU borders. The financial sector is also affected by the newly adopted Act No. 132/2022 Coll. on the Central Register of Accounts, which introduces a centralised automated mechanism that will facilitate the identification of bank or payment accounts by public authorities. The new act is a measure to combat money laundering and terrorist financing. The amendment to the Financial Market Crisis Resolution Act (No. 208/2022 Coll.) addresses certain elements in the securities, stock exchange, consumer protection or

collective investment acts. The amendment aims to improve procedures for dealing with the consequences of turbulence on financial markets.

The amendment to the Act on the contribution from the ESIF (No. 198/2022 Coll.) responds to the new crisis situations. The ESIF resources are one of the important sources of public expenditure in Slovakia. The aim of the amendment is to increase the flexibility of the provision of funds to overcome the consequences of crisis situations.

The amendment to the acts related to improving the business environment (No. 249/2022 Coll.) is a legislative change to a number of acts regulating entrepreneurship (so-called Kilečko 2). It consists of 198 measures aimed at simplifying the business environment, reducing the regulation of the economy and increasing the motivation to do business. Among a number of measures, we can mention, for example, the possibility for driving schools to teach via e-learning; allowing the sale of non-food goods even after their expiry date; extending the authorisation of the Trade Licensing Authority to close a trade in the event of non-performance for a longer period of time, from 2 to 4 years after its establishment; liberalising the conditions of education and experience for the operation of a detective service and vocational training and counselling; abolishing the occupational health service for one-person limited companies in which the only employee is the managing director or a shareholder.

The area of social policies was the target of significant legislative activity in 2022. The so-called pro-family package was intended to respond to rising inflation. An amendment to the Act on the financing of children's leisure time (232/2022 Coll.) was adopted. The monthly allowance of EUR 60 for leisure activities was abolished and instead the amount was divided between the tax bonus and the child allowance.

More significant changes were introduced by the amendment to the Labour Code (350/2022 Coll.). The biggest innovations according to the NIP (2023) concern the employer's documents on the establishment, change and termination of the employment relationship or the establishment, change and termination of the employee's obligations arising from the employment contract. The duration of the probationary period in the case of fixed-term employment has changed. In the case of an employee

with a fixed-term employment relationship, the agreed probationary period may not be longer than half the agreed duration of the employment relationship. The amendment has regulated controversial issues of application practice in relation to the right of survivors to benefits arising from the termination of an employment relationship which has ended by death before the date of the regular termination of the employment relationship. The amendment also introduces a new concept – paternity leave.

10. ECONOMIC OUTLOOK

After analysing several partial problems, we return here to a comprehensive view: both on the decisive factors that are likely to influence the development of the Slovak economy in the near term; but also on the forecasting of the economy's parameters. In the first part of this chapter, we focus on phenomena that may imply a change in conditions in the economy. This will be followed by a short-term development outlook with quantification of the parameters.

Shift in Driving and Braking Forces

While the development conditions in 2022 were perceived as a "multi-crisis", we can now speak of a gradual adaptation to this patchwork of shocks and crises. Some threats have become less acute (energy crisis, threat of unavailability of materials and components, price shock), but others are still gaining momentum (internal political tensions, but also the threat of a shortage of exploitable labour). And for one group of threats, its intensity remains unpredictable – geopolitical tensions and the war in Ukraine.

Internal Political Instability as an Additional Blocker

A specific domestic threat factor is the internal political tension and unpredictability of the situation (the turbulent process from the collapse of the ruling coalition, the fall of the government, the establishment of a caretaker government and the move towards early elections). The protracted political crisis strengthens anti-systemic forces, introduces uncertainty and marasmus into the economy (this includes the postponement of activities in the public administration in anticipation of a new government), the risk of a reversal in geopolitical orientation, etc.

Such an atmosphere is more associated with waiting, and is generally not conducive to savings and investment, nor to developing strategic plans. The economy's ability to adapt to the mix of threats is thus reduced by rigidity due to the protracted domestic political crisis.

The distorted macroeconomic stability, which has been presented from several perspectives in previous chapters, will require consolidation policies. However, its implementation may be blocked in the event of further domestic political instability.

In a state of permanent threats, economic policymakers focus almost exclusively on short-term remedial and compensatory measures,⁵⁹ with no room for strategic initiatives. A strategic approach is then absent. There is a need to allocate part of the capacity of policy makers to strategic activities even in a mixture of threats and crises. The tactic of waiting for a quieter, crisis-free period could lead to too long a stagnation in a policy of continuous "fire-fighting", with no visible perspective.

One of the few current instruments of pressure to implement reforms is the Recovery Plan. An instrument originally used to rebuild and modernise economies after a pandemic recession, it has become a tool that is forcing measures that governments in Slovakia would not currently pay attention to. Therefore, the "auxiliary" instrument of modernisation in the form of the Recovery Plan can be seen as a significant (even major) positive driving force for improving conditions in the economy.

As is almost always the case, the pressure of the aforementioned threats also leads to desired changes (which are postponed in less turbulent times): it was only the threat of a catastrophic energy crisis that forced the decision-makers of the economy to fundamentally diversify the sources of energy sources and to reduce unilateral dependence on Russia (this was a strategic intention declared for decades). This is one example of the fulfilment of strategic tasks in the economy of the Slovak Republic only when there is an acute threat of dramatic events.

Savings Erosion Clouds Perspective

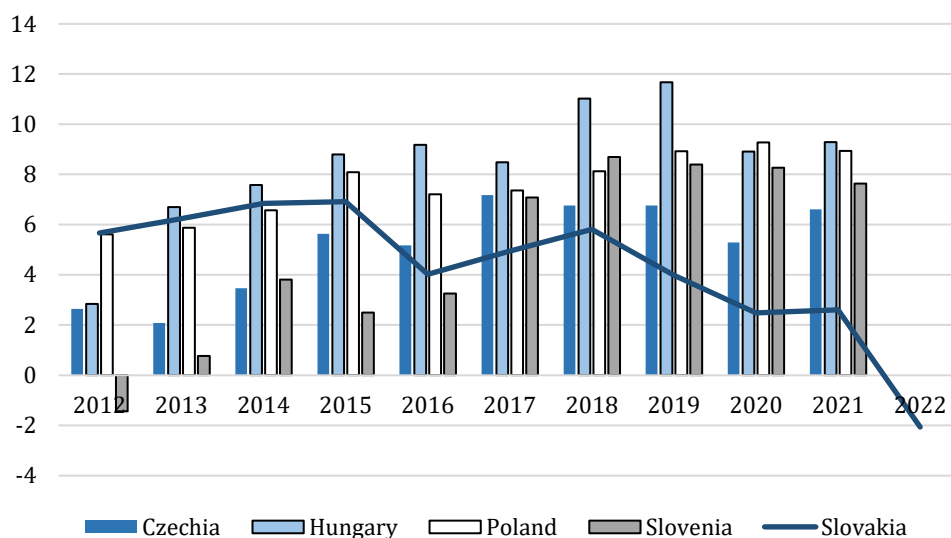
To expand assets and move the economy to higher levels of performance or competitiveness, the creation of net savings is necessary. The inability to generate savings that are converted into new assets in the investment process is a limiting factor for development.

⁵⁹ One manifestation of the focus on remediation and compensation measures is the maintenance of high levels of household consumption (we addressed this phenomenon in Chapter 1 and also in last year's analysis). The other side is the weak and volatile investment dynamics.

In the Slovak economy, there has been a significant decline in net saving. Capturing a one-decade period (Figure 10.1), we find relatively favourable net savings performance in 2012 – 2015, but then the results in the SR have deteriorated significantly, with net savings falling into negative figures in 2022 (they last turned negative in the 2009 recession).

Figure 10.1

Net Savings as a Ratio to GDP in CEE5 Countries (%)



Note: The CEE5 are the five countries of Central and Eastern Europe (V4 + Slovenia). At the time of processing, data for 2022 were only available for the Slovak Republic.

Source: Based on Eurostat data.

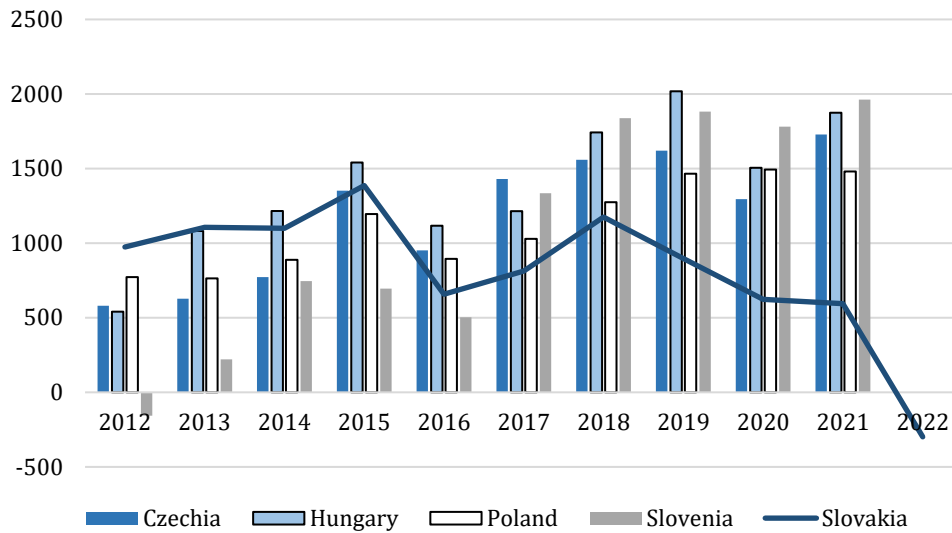
Net savings can be complemented by capital transfers⁶⁰ and thus together form a (non-credit) source for asset expansion. Here, we observe a similar negative trend: the per capita values of savings and capital transfers have been substantially lower in the post-2018 period than in other V4 or CEE5 economies (Figure 10.2). Thus, for example, in 2021, per capita resources for asset expansion (net savings + capital transfers) in the Slovak

⁶⁰ Capital transfers represent a flow of money intended for the creation of assets in the recipient country, without a counterpart. Euro funds are a typical example. Together with domestic net savings, they constitute the primary source of financing for the expansion of assets in the recipient economy. The sum of net savings and capital transfers is therefore referred to in national accounts statistics as 'changes in net worth due to savings and capital transfers'. It is this per capita indicator that is shown in Figure 10.2.

Republic amounted to just under EUR 600. In the other CEE5 countries, this value ranged between EUR 1,400 and EUR 2,000. As this is already a recurrent phenomenon, the Slovak economy is handicapped by the significantly lower possibility of financing development investments (or the need to finance them with the use of debt). We stress that this is not only about the absence of savings generation in households (although this is also the case), but in all sectors (public administration, enterprises). Strengthening the incentive to save is thus a desirable new element in current economic policy.

Figure 10.2

Net Savings Plus Capital Transfers in CEE 5 Countries
(calculated per capita, in EUR)



Source: Based on Eurostat data.

Thus, for the further development of the economy, it is desirable in the short term to complement the currently popular political theme of distributing "money for the people" (to use the current political phrase) with a policy of promoting the performance of the economy so that it generates "money for the people". Inevitably, this calls for the return of displaced strategic elements to the agenda of political elites.

In the next section, we will focus on forecasting the development of basic macroeconomic parameters.

Expectations for Future Developments

To provide a more detailed view of possible developments from the point of view of production sectors, we used the SLAMM – EC IO model, which is described in more detail in Radvanský et al. (2019). The development of the main components of GDP – household consumption, government consumption, fixed capital formation and exports from IFP’s February 2022 – 2026 forecast at current prices and total employment – have been incorporated into this model as exogenous driving variables.

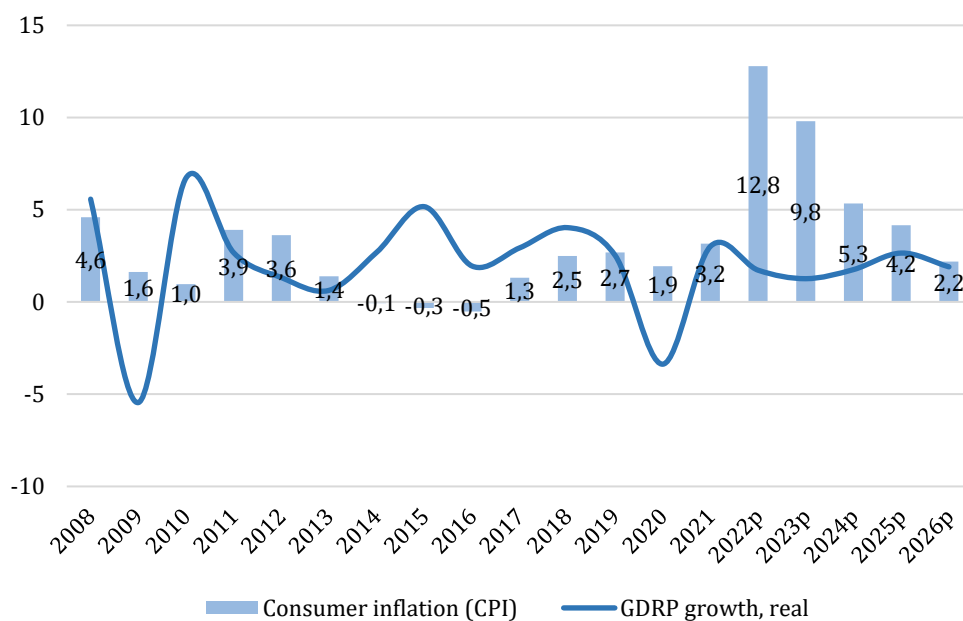
At the present time of considerable uncertainty, in which a number of risks overlap in parallel, especially on the negative side, it is relatively difficult to prepare a reliable forecast. The ongoing war in Ukraine, price developments and the coronavirus pandemic remain the main risks. Although the situation with the COVID-19 pandemic appears calm for now, the emergence of another wave cannot be completely ruled out and vigilant actions are needed (Branda et al., 2023). This uncertainty was also reflected in recent forecasts of the development of the Slovak economy from Institute of Financial Policy (IFP) and National Bank of Slovakia (NBS). The Institute of Financial Policy’s projections varied by more than 100% over the course of the semester, with analysts forecasting growth at 0.6% of GDP in September 2022 and fearing a possible recession. At the same time, the NBS forecast even projected a 1% drop in GDP for 2023. However, in February 2023 the Ministry of Finance of the Slovak Republic already expected GDP growth of 1.3% (as well as the NBS) and the recession was not among the main expected directions of development.

In the long-run, price development appears to be the most problematic part of future expectations in the Slovak and European (global) economies. In 2022, the overall price level for consumers increased by more than double-digit percentage for the first time since 2000. In the last year, after a period of markedly positive developments in real household income, it fell by around 4%. Part of the above-mentioned negative developments can also be identified from future consumer expectations. In the context of the price acceleration highlighted by the war conflict in Ukraine, have those gradually declined since the second half of 2021. During this period, it fell almost to its lowest level since a period of great uncertainty

related to the outbreak of the COVID-19 pandemic. However, due to the significant salary indexation in the non-market services sectors (public administration, education and health) decline of real income should not repeat in 2023. This was already reflected in the household confidence indicator, which increased slightly in the first quarter of 2023, also partially owing to the relatively stable evolution of regulated energy prices.

Figure 10.3

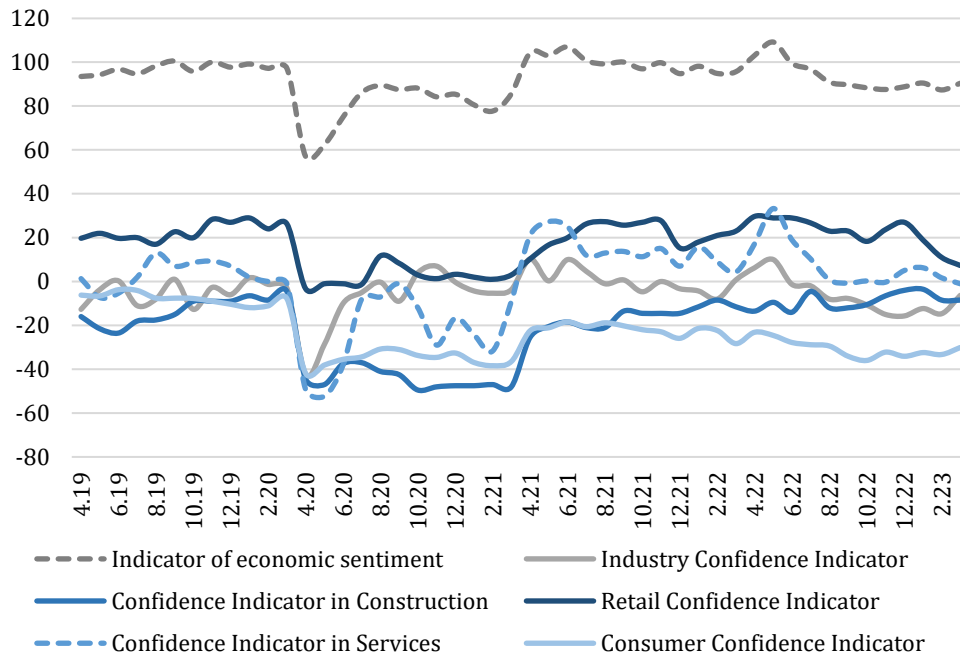
GDP and Consumer Prices Developments



Source: IFP (2023).

The services and industrial sectors gradually corrected their positive sentiment from first half of 2022, following falling consumer expectations. Expectations in retail sector has in the first three months of 2023 fallen sharply to the levels previously seen in mid-2020. The only sector that displayed positive expectations development in 2022 despite rising input prices was construction. This development reflected the demand for its services linked to the end of the programming period for EU funds. Overall, since the second half of 2022, the economic range index has been relatively stable and at a slightly negative level.

Figure 10.4
Evolution of Expectations and Confidence in the Economy



Source: ŠÚ SR.

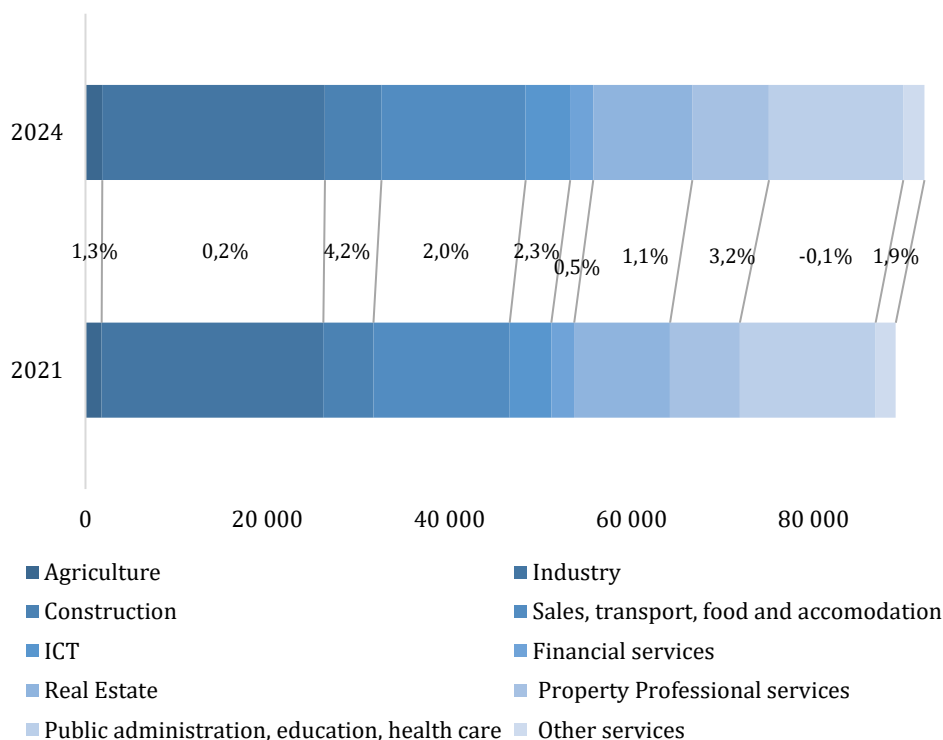
The level and intensity of the absorption of funds available in Recovery and resilience plan, the 2014 – 2020 Multiannual Financial Framework and Operational Programme Slovakia 2021 – 2027 appear to be key to the current developments. As was the case in 2015, in which the massive implementation of EU funds from ending 2007 – 2013 programming period and year-on-year increase in investment activity of more than 20% took place. Similar increase in gross fixed capital formation can be expected in 2023. However, based on experience so far in the coming years, a significant correction of the single-off spike will occur and a period of gradual return to long-term investment level levels will follow.

In terms of structure, the crisis year 2020 resulted in a marked decline in the share of industrial production in the total output of the Slovak economy. As the economy recovers and pre-crisis levels of industrial production regained momentum, it has stabilised and growth is not expected to be strong in the short term. Looking ahead, construction output is expected to continue to recover, owing to increased investment activity

supported mainly by available external financial frameworks. More dynamic growth can also be expected in 2023 and 2024 for sectors of high value added services, driven mainly by developments in the IT sector and highly specialised services.

Figure 10.5

Developments in Gross Value Added Creation, Constant Prices

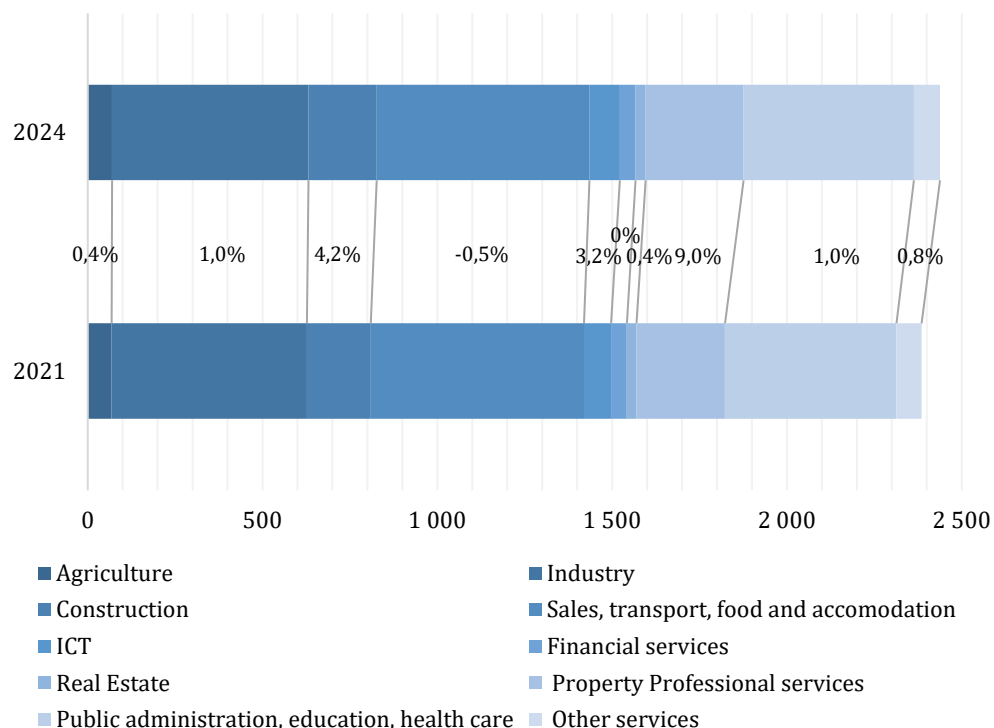


Source: ŠÚ SR and authors.

The sectoral breakdown of employment provides a positive outlook for 2023, in particular for the construction sector, where more than 8 thousand jobs are expected to emerge after last year's solid growth. Given the length of time of construction (mainly transport infrastructure) this sector can be expected to have relatively stable employment levels in the following years 2024 and 2025. By contrast, industry is expected to see a slight (temporary) decline in employment this year, determined by declines for almost all sub-sectors, with the exception of stagnating manufacture of machinery and equipment and motor vehicles. In terms of employment

in services, the worst outlook is indicated for the trade and non-market services sectors (mostly concentrated in the education sector). This negative outlook is related to two main developments, digitalisation and automation, and the ageing of the workforce, without adequate possibilities to replace retirees by graduates. High labour demand is currently expected for the information technology and trade-related services sectors.

Figure 10.6
Expected Employment Developments



Source: ŠÚ SR and authors.

Developments in the last year, as described in more detail in the previous chapters of this monograph, have been strongly influenced by developments in energy prices. From the point of view of Slovak households, the last year was not as volatile in the energy prices as in the case of enterprises due to price regulation. Nevertheless, and due to the expected increase in the prices of other categories of goods and services, there was a decrease in the total consumption of electricity as well as natural gas by

Slovak households. However, these type of savings, which could only be realised on the basis of a change in consumption behaviour, have already been largely exhausted. Further reductions in energy consumption and a reduction in dependence on external energy sources will need to be supported by the state support. Fortunately, a significant amount of funds is allocated for this purpose in the next few years, with EUR 4.2 billion earmarked for the 2021 – 2027 programming period in the case of the Slovakia Operational Programme for investments supporting energy efficiency, reducing carbon emissions, renewable energy sources, nature conservation, etc. The Recovery Plan also allocates more than EUR 2 billion to support the transformation of the Slovak economy towards a green economy.

As indicated above, the Slovak economy now has a relatively good position in terms of the availability of resources for investment, which has the potential to increase its production capacity and energy efficiency. It could therefore be said that, in the classical division of production factors, capital should not be one that will be binding. By contrast, the labour force and/or the availability of the labour force have been a longer-term factor limiting the growth potential of the Slovak economy. In the run-up to the COVID-19 pandemic, these negative trends were well contained by increasing the employment rate of non-nationals. However, after 2020, there was a break in growth in the employment of foreigners (Lichner, 2022) and the massive influx of refugees from Ukraine following the outbreak of the war conflict on its territory contributed to its revival. The extent to which the Slovak labour market will be able to use their potential will be important.

The high level of unemployment in the south-east part of Slovakia and the associated relatively higher availability of labour in a context of low labour mobility, also due to the lack of affordable housing, have recently encouraged several investors to locate their future production capacities to these regions. However, for these activities, it will be essential that the state actively proceed with the activation of the available workforce, focusing increased efforts on their targeted retraining, promoting mobility and attracting return to Slovakia.

Finally, it is crucial to mention the fact that parliamentary elections will take place in September 2023, the outcome of which and the subsequent composition of the government have the potential to exert considerable influence on the fulfilment of some of the above-mentioned assumptions and future (not only) economic developments. This is especially the case for investment priorities, support for households in cushioning the negative consequences of unstable price developments and labour market rules, e.g. in relation to foreign workers. Also, in the event of unnecessary personnel interference in the structures responsible for the use of the available financial frameworks, their implementation could be slowed down considerably and, consequently, the possibility of using the non-marginal amounts of available funds could be lost.

* * *

At the time of writing, the scenario of the Slovak economy falling into recession in 2023 seemed less likely. However, the fulfilment of this assumption is conditional on a number of factors that are only partly influenced by the implementation of national policies. An important element of Slovakia's future development, apart from the use of available European resources, will be how efficiently they are allocated. In view of a partial loss of motivation of households in their efforts to seek energy savings through price stabilisation in this segment, it will be necessary in the short term to look for other motivating factors for the transition to the expansion of the use of alternative energy sources.

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