INSTITUTE OF ECONOMIC RESEARCH

Slovak Academy of Sciences

Economic Development of Slovakia in 2019

Focused on:
Slowed Productivity Growth Lagging behind the Growth of Labour Costs

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Bratislava 2020

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The work supported by VEGA Grant Agency in the frame of the projects VEGA No. 2/0097/19 and APVV-17-0551.

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Technical editor: Silvia Rémayová

e-ISBN: 978-80-7144-313-1

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INTRODUCTION

Since the establishment of the Slovak Republic, the Institute of Economics SAS has been publishing its views on the economic development of Slovakia yearly along with the short-term outlook. It tries to uncover changes in trends and unique challenges for the current period. Although the annual publication primarily depicts the development trends in the past year, it also tries to place the picture of current developments into a broader time frame.

The current analysis arose in a unique situation: At the time of writing, it was already known that the economy was falling into a deep depression caused by a global pandemic. And so, in the background of the evaluation of development tendencies and problems of the economy, there was already the vision of a shock that would change a lot. The depicted summary of the Slovak economy development is a description of the state that the economy reached just before the global depression.

As the main issue, this year's publication pays particular attention to a phenomenon that has not been short-lived and also has implications for the future: it is a problem of weakening productivity growth and its lagging behind labour cost growth. This problem is unlikely to lose its professional and research attractiveness even after overcoming the current depression. It is a phenomenon that was not characteristic of the Slovak Republic in the past. On the contrary, the Slovak Republic was among the leaders in the growth of labour productivity; the growth of labour costs mostly lagged behind the growth of productivity. It was a pillar of the Slovak economy competitiveness. In recent years, however, productivity growth has slowed significantly as labour cost growth accelerated.

In the beginning, we bring a summary view "from above", then the view narrows down to a more detailed analysis of sub-topics in individual chapters: These focus on sectoral specifics, the labour market, price developments, competitiveness factors, the implementation of policies or the measures taken. In the final part, we provide opinions on issues of future development.

Due to the unpredictable extent and duration of depression, we scaled down the character of the last chapter in this issue. Traditionally, the final chapter provides the outlook for the next two years, with a quantification of the basic parameters. In this publication, we have temporarily limited our ambitions: we try to indicate a more likely scenario, expected side effects and impacts on a qualitative level. With a short-time interval (approximately a quarter), we will prepare a more detailed updated outlook, with quantifications of the expected development of selected parameters.

1. OVERALL ECONOMIC DEVELOPMENT

In this introductory chapter, we present an "overview" of the economic development of Slovakia, sometimes also in international comparison. We evaluate the basic development tendencies and look for changes in the current trends. We are aware that a significant turning point does not come until 2020 as a result of a pandemic (more on this in the last chapter). Herein, we provide an insight into the condition and problems of the economy on the "eve of the corona crisis", even before the onset of the pandemic shock.

In addition to the traditional review of the performance and stability of the economy, there is also the first approach to the topic, which is the focus of this year's issue: it is a slowdown in labour productivity growth and its lagging behind labour cost growth. The following chapters provide more detailed views of selected partial problems.

Growth Slowdown Even Before the "Corona Crisis"

During 2019, the Slovak economy entered the phase of a growth slowdown (Figure 1.1) even without any connection with the depression that comes in 2020. It was an expected cyclical slowdown, already anticipated during 2018. Within the V4 economies, the slowdown was most pronounced in Slovakia (see the slope of the curves between 2018 and 2019 in Figure 1.1).

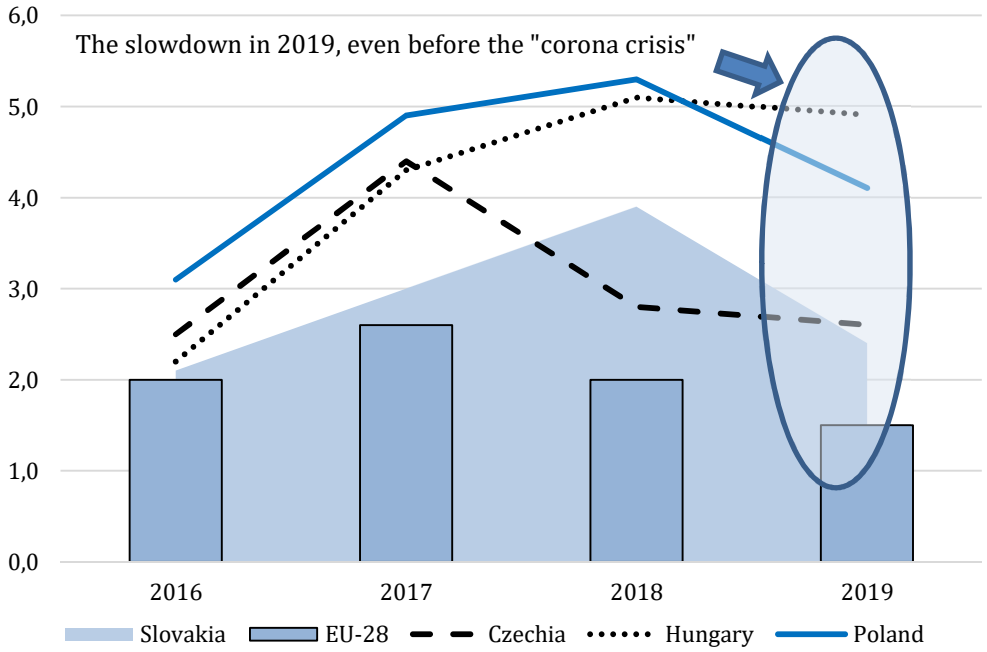
The growth slowdown of the Slovak economy was accompanied by a similar downturn in the whole EU-28. Therefore, the relative position of Slovakia in comparison with the economic level did not have to deteriorate (although the data for 2019 were not yet available, we can assume such a thing).

On the other hand, we can also believe that there has still been no acceleration in catching up with the performance of more advanced economies (slowed real convergence is shown in Figure 1.2, we paid more attention to it in last year's edition). Convergence with the performance of the most advanced economies is necessarily an ongoing goal

of the Slovak economic policy. At the same time, for several years now, the Slovak economy has had a problem with stagnating the process of real convergence. The level of GDP per capita in the purchasing power standard (a common measure of the economic level) fluctuated in the period from 2010 to 2018 in the range of 66.4% to 71.2% of the former EU-15 level.[1]

In 2018 (the latest available figure), it reached approximately 68% of the EU-15 level – similar to the level in 2010. The interrupted real convergence has been a severe shortcoming of the Slovak economic development in the last decade. As we will point out later, this is also related to the problem we are focusing on in this issue, the problem of slowed productivity growth.

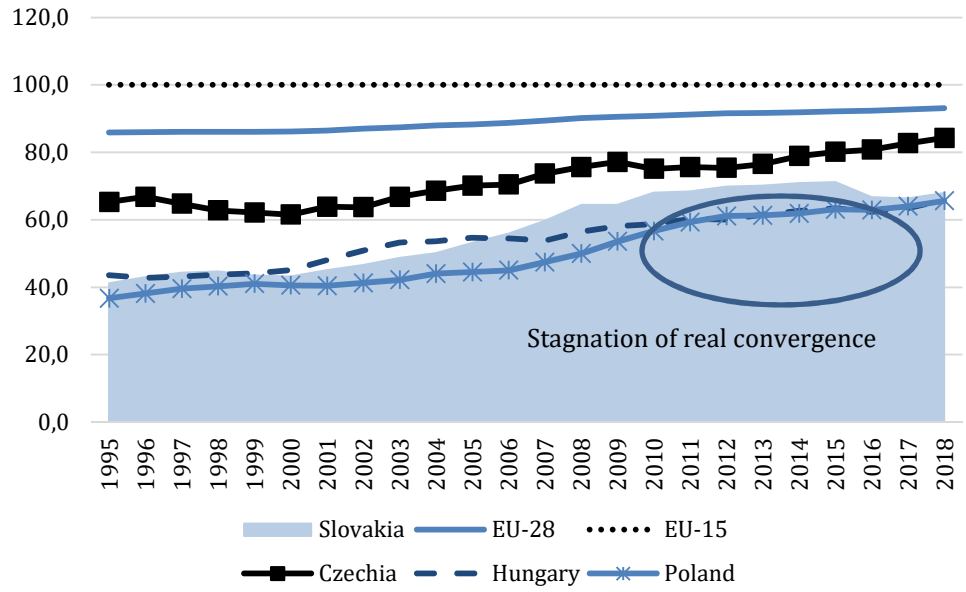
Figure 1.1
Changes in Real GDP in the Slovak Economy (in %)



Source: Eurostat.

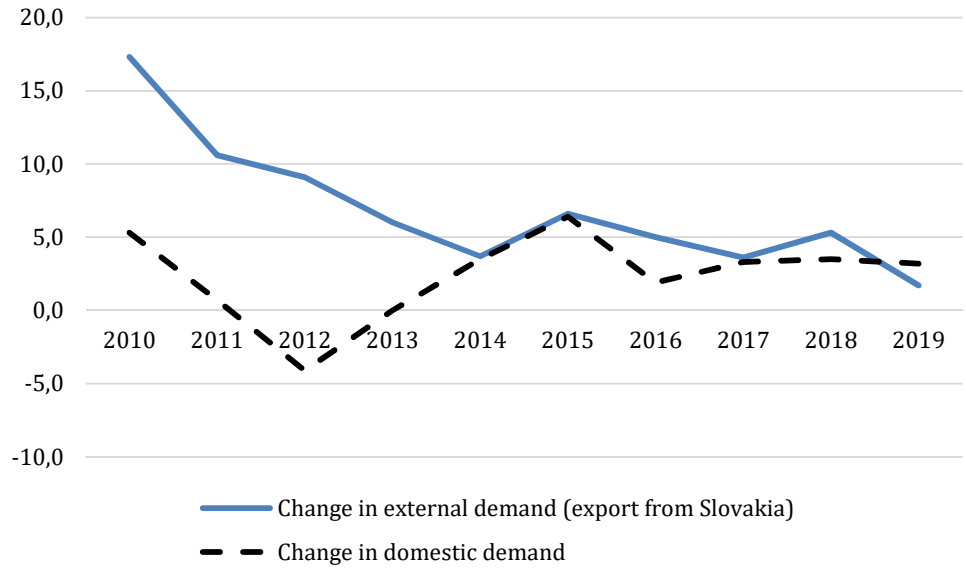
[1] To compare economic levels, we use the data for the former EU-15. It is a more appropriate benchmark than the EU-28. The EU-15 represents a more economically developed part of the EU, its values are not reduced by the less developed economies of Central and Eastern Europe.

Figure 1.2
Real Convergence Development
(GDP per capita in PPS, the EU-15 level = 100)



Source: Eurostat, Authors' calculations.

Figure 1.3
Changes in External and Domestic Demand (in %)

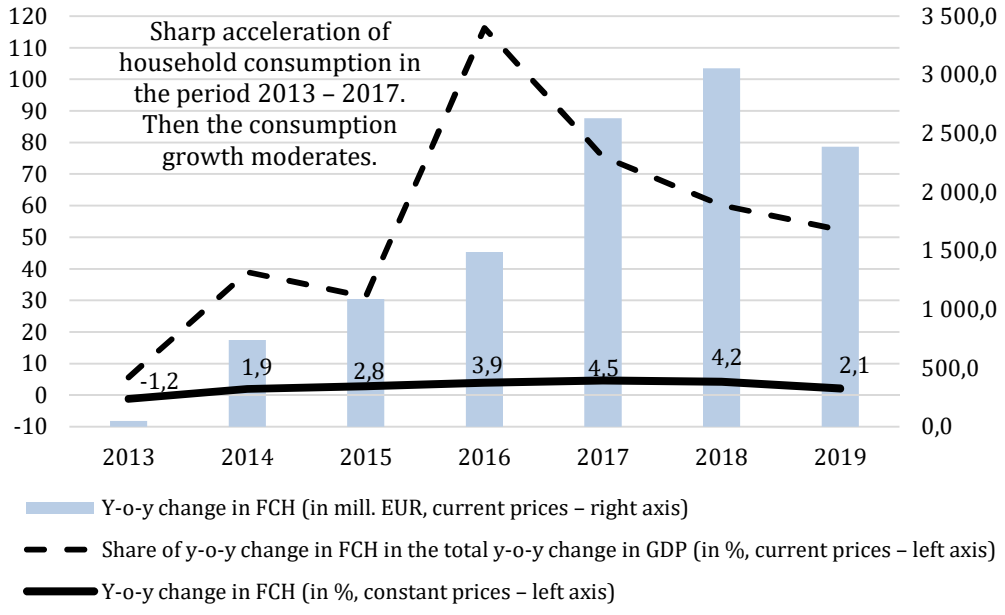


Note: Data obtained by chaining volumes.
Source: Eurostat, Authors' calculations.

Against the background of a slowdown in the growth of the Slovak economy, we see above all the role of external demand for goods from Slovakia: The dynamics of external demand was the lowest in the last decade, measured by changes in exports from Slovakia, (Figure 1.3). It is also worth to note the overall declining trend in the dynamics of external demand[2] for goods from Slovakia in the period 2010 – 2019. It suggests that the reasons for the slowdown in the economic growth must lie in the external environment.

In the period 2013 – 2018, the driving force of domestic demand was the acceleration of the final consumption of households (Figure 1.4). This expansion was driven not only by growth in employment and wages but also by the increasing indebtedness of the household sector. The acceleration of household consumption was interrupted in 2018. Its growth slowed down even more significantly in 2019.

Figure 1.4
Moderation in Household Consumption Expansion

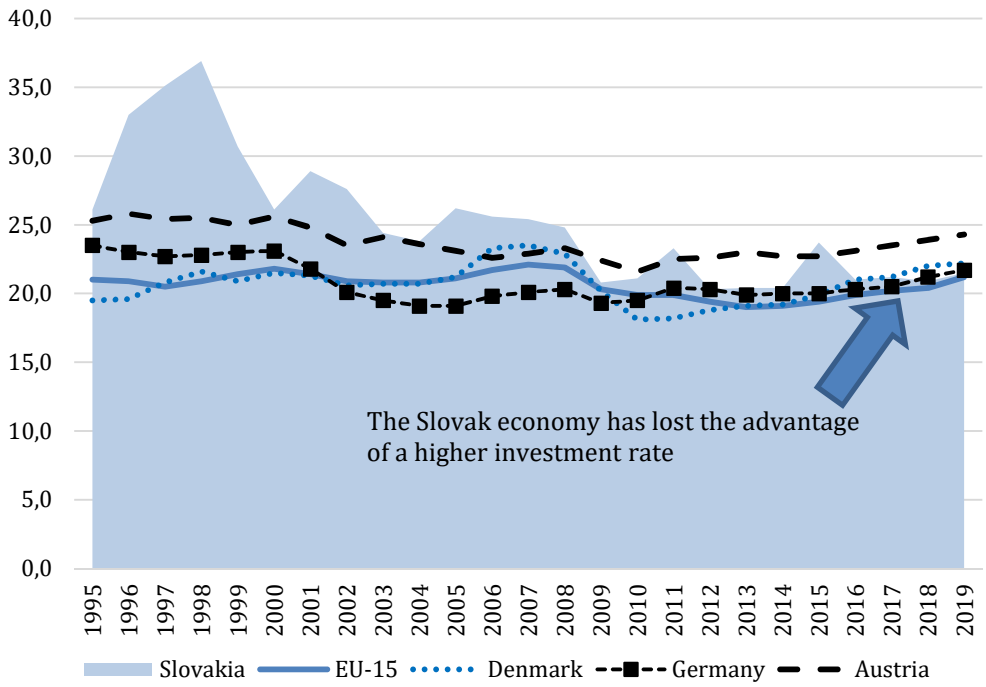


Note: FCH – Final consumption of households.
Source: Eurostat, Authors' calculations.

[2] External and internal demand are not isolated categories. Statistically, they can be separated, but they interact with each other. E.g. the growth of external demand for goods from Slovakia is spilled over into domestic demand through wages paid in exporting companies.

However, for future growth and real convergence opportunities, it is more important that the share of another component of domestic demand – gross fixed capital formation – has fallen to relatively low levels. The share of gross fixed capital formation in GDP (the so-called investment rate) in Slovakia decreased to the level or even below the level of the investment rate in those countries with the Slovak economy needs to catch up. We assume that the economy, which wants to catch up with the level of more advanced economies, should have a higher investment rate than those it aspires to. Thus, in the period since 2015, the investment rate in Slovakia is too low (Figure 1.5).

Figure 1.5
Investment Rate (share of gross fixed capital in GDP, in %)



Note: In addition to the former EU-15, we also display a large advanced economy (Germany) and two small advanced open economies (Austria, Denmark).

Source: Eurostat, Authors' calculations.

In the period shortly before the onset of the estimated deep depression (2020), a relatively favourable state of macro-stability was achieved (Figure 1.6). To demonstrate the state of macroeconomic balance, we

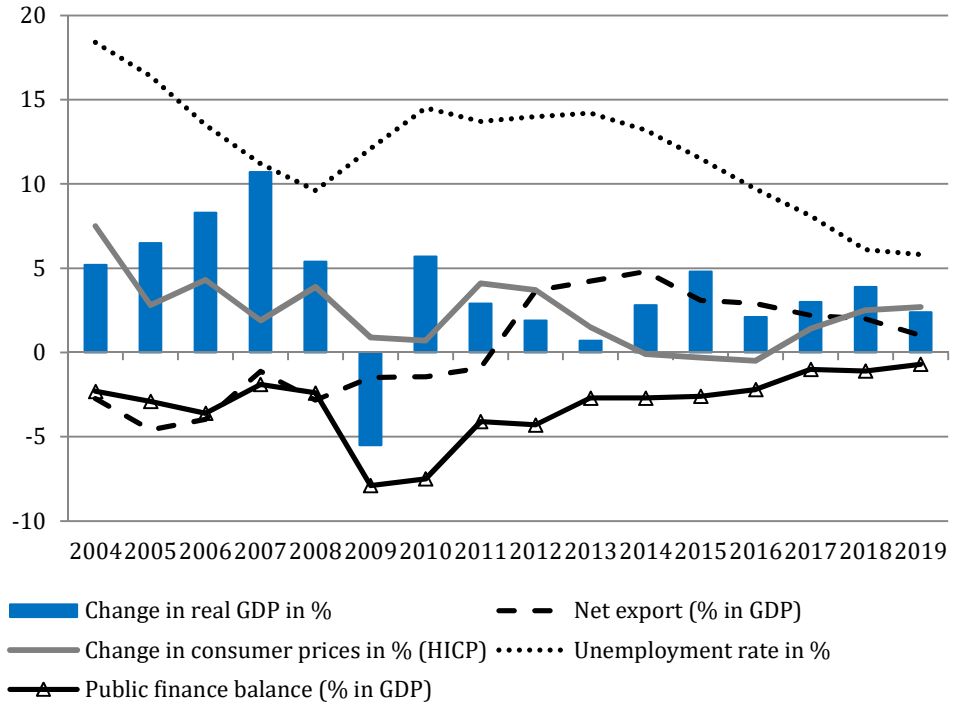
select only a few basic parameters here, a more detailed evaluation will follow in other chapters. Selected basic parameters of economic balance reached quite favourable values:

• After 2016, the inflation rate reached the desired values close to the level of 2% (it was 2.7% in 2019).

• The general government deficit has been gradually reduced in recent years, but the previously declared and postponed target of a balanced budget has not been met.

• In the period 2014/2015, the development of the labour market changed fundamentally, and since then, the unemployment rate has dropped significantly. In line with expectations, the decline in the unemployment rate has already moderated in 2019 (the unemployment rate fell to 5.8%).

Figure 1.6
Development of Main Parameters of Macroeconomic Balance in Slovak Economy

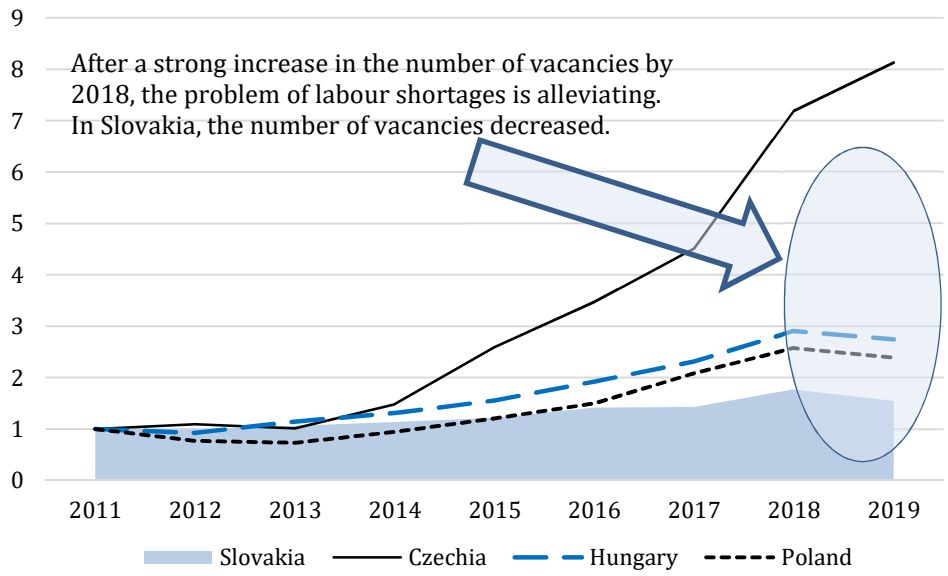


Note: Unemployment rate according to Labour Force Survey (LFS).
Source: Eurostat, MF SR, Authors' calculations.

Labour Market: Improvement That Has Reached Its Limit

In recent years, the labour market has been one of the most exciting areas of economic development. The reason behind was a significant reversal in its development. In the period after 2014, the development was unprecedented in the conditions of Slovakia: the massive growth of employment and the decline in the unemployment rate to set the record low values sharply contrasted with those characteristics of the labour market that prevailed for more than two decades before. The labour market has long been a neuralgic point of the economy due to a lack of jobs and a high unemployment rate. After the breakthrough around 2014/2015, it became a neuralgic point again – due to the rapid onset of labour shortages. The shortage of labour was associated with an increase in the number of job vacancies (Figure 1.7).

Figure 1.7
Number of Vacancies
(index against the base year, level 2011 = 1)



Source: Eurostat, Authors' calculations.

In Slovakia, the number of vacancies reached its peak in 2018 and decreased afterwards. When compared within the V4 group, the expansion of job vacancies volume was the strongest in the Czech Republic; in

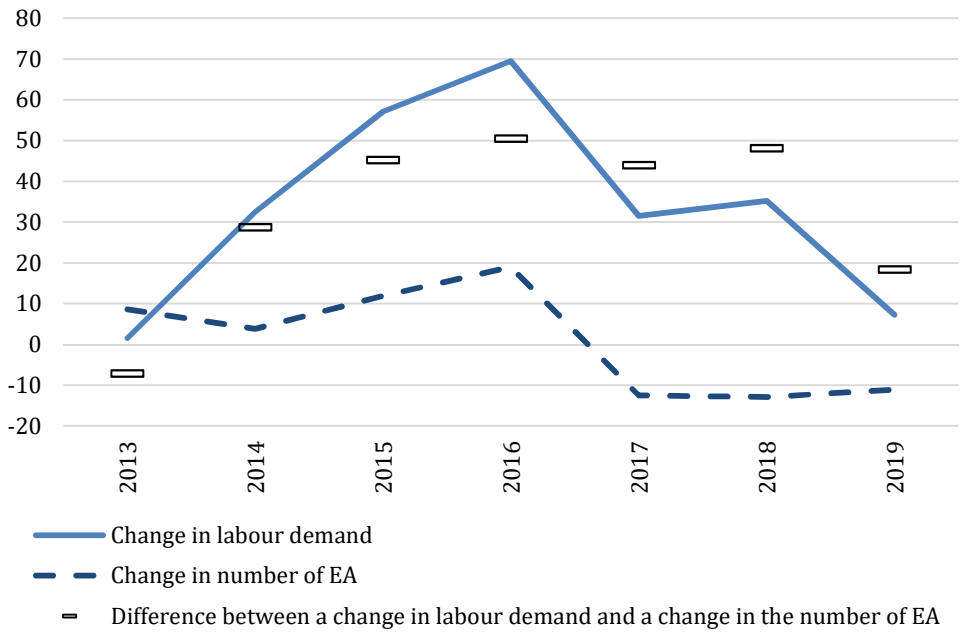
Slovakia, it was the weakest one. In Slovakia, the problem of labour shortages appeared later than in other V4 countries and also had a milder form. It can be explained by the fact that a "reserve" of the labour force was available in Slovakia in the form of high unemployment. The increase in labour demand may have been partly offset by the inclusion of the unemployed to workers.

Developments on both the supply and demand sides of the labour market contributed to the perception of the labour market as a limiting factor in the development of the economy. The sharp increase in demand for labour[3] was associated with an unfavourable evolution of labour supply in the productive age (decline in labour supply after 2016, Figure 1.8a, b). The adverse development of labour supply was the result of the following two tendencies:

- A significant decrease in the number of working-age population;
- An increase in the rate of economic activity.

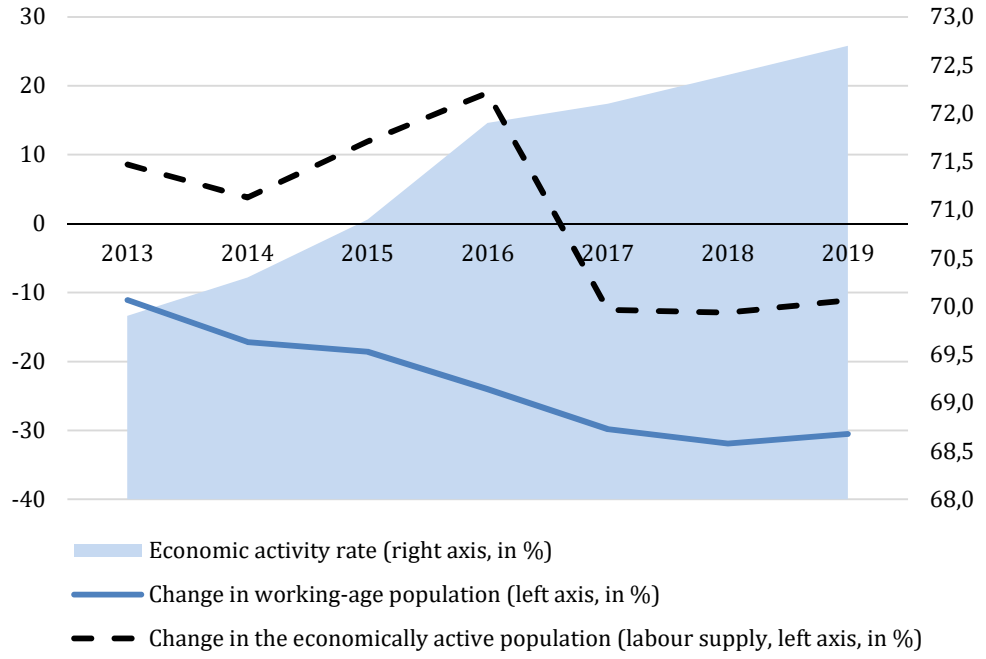
Figure 1.8 a, b
Demand and Supply Development on the Labour Market

a) Changes in Labour Demand and the Number of EA



[3] The demand for labour represents the sum of the number of employees and vacancies.

b) Unfavourable Demography Along with the Growth of the EA Rate



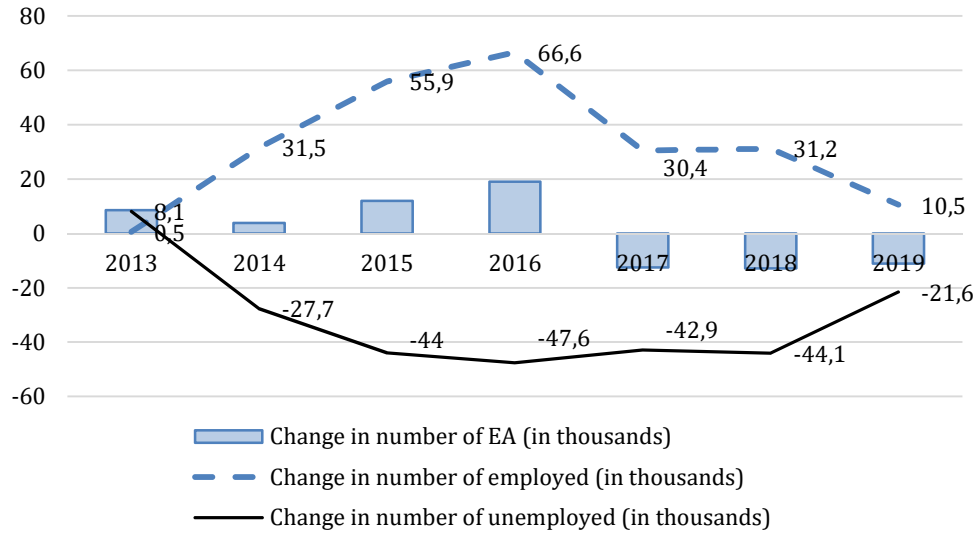
Note: EA – Economically active, Data for age cohort 15 – 64,
Source: Eurostat, Authors' calculations.

With the decline in the number of working-age population, the share of those who are economically active increased. The growth in the rate of economic activity was offset by the negative development of the demographic factor (see Figure 1.8b). After 2016, however, even further growth in the rate of economic activity could not fully compensate for the sharp decline in the number of working-age population. The result was the already mentioned decline in the supply of labour in the age cohort of 15 – 64 years (we demonstrate here the problem in the segment of productive age population, a more comprehensive view is provided in Chapter 4).

In the next step, we decompose the change in the number of economically active into a change in the number of employed and unemployed. In the last three years (2017 – 2019) the decrease in the number of unemployed was significantly higher than the increase in the number of employed (e.g. in 2019, the number of unemployed decreased by 21.6 thousand, while the number of employed persons increased only by 10.5

thousand, see Figure 1.9). It means that demographic factors also reduced unemployment, a significant part of the unemployed did not move to the employed group but left the labour market instead. The substantial, but also expected, a slowdown in the growth of demand for labour in 2019 (Figure 1.8a) was associated with a decrease in job vacancies (confront with Figure 1.7). Trends from the 2014 – 2018 period have already reached their limit in line with expectations. Thus, along with the weakening of economic dynamics, the problem of labour shortages was alleviated as well.

Figure 1.9
Changes in Structure of Economically Active Population in Productive Age: Y-on-Y Increases/Decreases in Number of Employed and Unemployed



Source: Eurostat, Authors' calculations.

The impact of the unfavourable development in the number of working-age population on the labour market was mitigated by an increase in the employment of elderly persons (more in Chapter 4).

The increase in the scarcity of the workforce has contributed to rising wage levels and labour costs. In 2017 – 2019, the wage growth and the average compensation of employees accelerated significantly in Slovakia. Besides, some adopted administrative measures (wage supplements) also contributed to this.

Box 1
Compensation of Employees and Average Compensation of Employee

For a seamless international comparison, we use the category – compensation of employees. This category originates in the national accounts; it reflects wages and salaries but also social contributions to social security funds. Therefore, it is a broader category than the category of wages and salaries, roughly corresponding to labour costs (we will continue to consider compensation of employees and labour costs as synonyms with a certain simplification).

Compensation of employees = Wages and salaries + Social contribution paid by employers

The volume of compensation of employees divided by the number of employees provides the average compensation of employee (number of employees according to the national accounting methodology, "domestic concept"

Average compensation of employee = Compensation of employees/Number of employees.

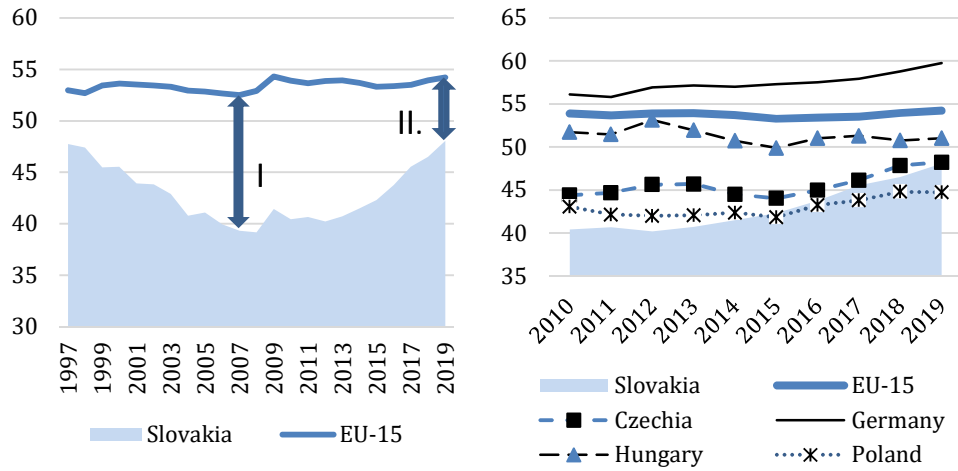
Accelerated growth in compensation of employees accompanied by weaker growth in the volume of value added reflected in an increase in the wage share (the share of compensation of employees in value added, Figure 1.10a, b). We have already pointed out to a remarkable reversal in the development of the wage share in previous issues. In the phase from the end of the 1990s until the "pre-crisis" moment, it decreased up to a point, where it was lower than values of the EU-15 by approximately 15 percentage points (distance I. in Figure 1.10a). However, since 2014, after a change in labour market trends, the wage share has been rising until it reached a record high of just over 48% in 2019, and was only six percentage points away from the EU-15 (distance II in Figure 1.10a). Chapter 2 provides a more detailed look at the wage share, also with its sectoral specifics. Such an increase in the wage quota (= increase in unit labour costs) may jeopardize the competitive advantage originating in low costs. The so-called "wage cushion" promoting competitiveness through a low wage level is diminishing. The change in the weight of labour costs may be highlighted, if we display the wage share in a dynamic form, i.e. the shift in compensation of employees to the change in value

added ("what proportion of the increase in value added takes the form of compensation of employees?"). Table 1.1 shows the results of such a calculation. In the case of Slovakia, the shift between the two development phases is very noticeable:

1) In the period of "pre-crisis" robust economic growth (2001 – 2008), the share of compensation of employees in the increase in value added was meagre (37%).

2) In the period approximately a decade later (2002 – 2019), the share of compensation of employees in the increase in value added more than doubled (up to 78% of the increase in value added took the form of compensation of employees). Such a significant change is specific to the Slovak economy. It is also present in other countries but to a lesser extent.

Figure 1.10 a,b
Wage Share – Share of Compensation of Employees in Gross Value Added



Source: Eurostat, Authors' calculations.

Table 1.1
Share of Compensation of Employees in Value Added Growth

	2001 – 2008	2012 – 2019
EU-15	0.50	0.56
Czechia	0.46	0.55
Hungrary	0.54	0.46
Poland	0.40	0.53
Slovakia	**0.37**	**0.78**

Source: Eurostat, Authors' calculations.

Slowed Productivity Growth Lagging behind the Growth of Labour Costs

The growth of wage share also indicates that labour costs have been growing faster than labour productivity in recent years. If the economy were not dependent on the competitive advantage of low costs (including low labour costs), the ratio of productivity growth to labour costs would not be perceived with such concerns. However, this is a sensitively perceived issue in Central and Eastern Europe, as the competitiveness of these economies has long been based on low labour costs and rapid productivity gains.

After 2012, the country experienced the growth of the average compensation of employee ahead of the growth of productivity – and continuously (in the short term, such a phenomenon also occurred in the past, but it was never a permanent phenomenon, Figure 1.11a).

As year-on-year changes are highly volatile, a better readable situation is given by the expression of the change in two equally long periods (these are periods not affected by more severe turbulence, i.e. periods of economic growth, Figure 1.11b). In 2001 – 2008, the growth of labour productivity slightly exceeded the growth of the average compensation of the employee.

In the period 2012 – 2019, it was the opposite[4]. The drivers of economic growth have changed: in the earlier period, productivity was more of a driving force; in the later period, employment played a more significant role with a smaller role for productivity.

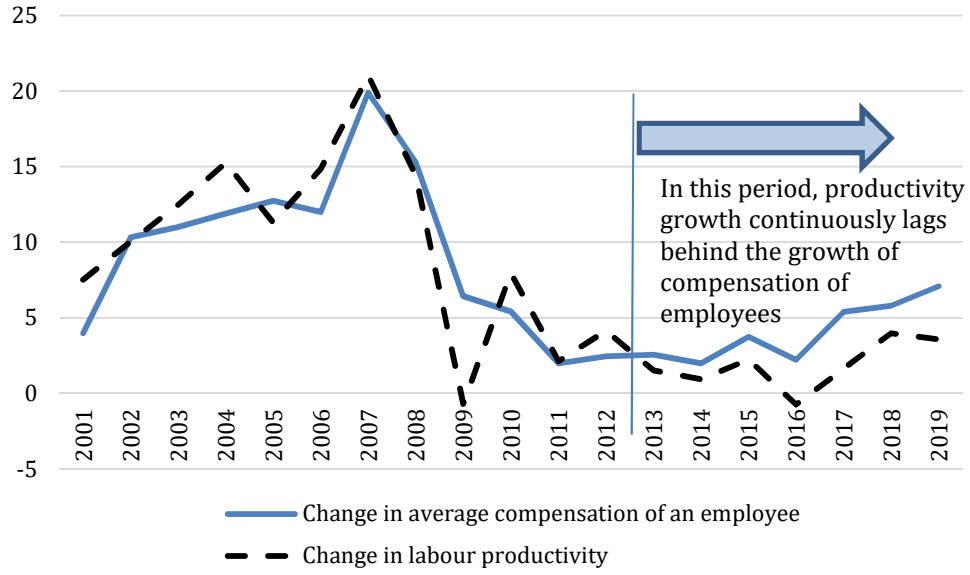
Looking at the cumulative changes, the imaginary scissors opening between the labour productivity and the average compensation of employee can be seen in the period up to 2008 (period with higher growth of productivity – Figure 1.11c). Subsequently, both curves flatten, the growth of both parameters slows down, but the growth of productivity slows down more significantly (compare the slope of the curves in the period

[4] In addition, the growth slowdown of both variables is also noticeable in the later period. It should be borne in mind that the calculation is based on data at current prices and that the values are therefore affected by changes in the price level. The weaker (sometimes none) growth of the price level in the later period is partly explained by the weaker growth of the analysed variables. However, the growth of real variables also slowed down.

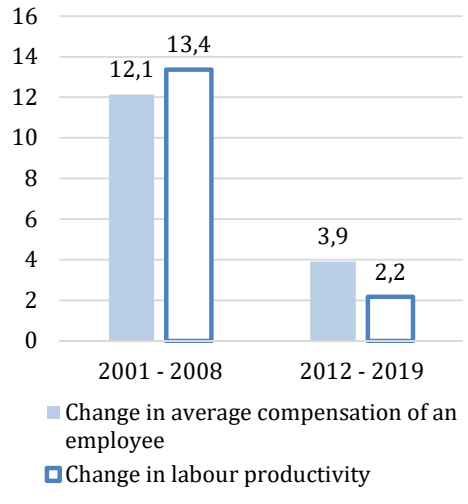
2010 – 2014). In 2015, they cut, and the scissors start to open again – but with higher growth of the average compensation of the employee.

Figure 1.11 a, b, c
Productivity vs. Compensation of Employees Dynamics

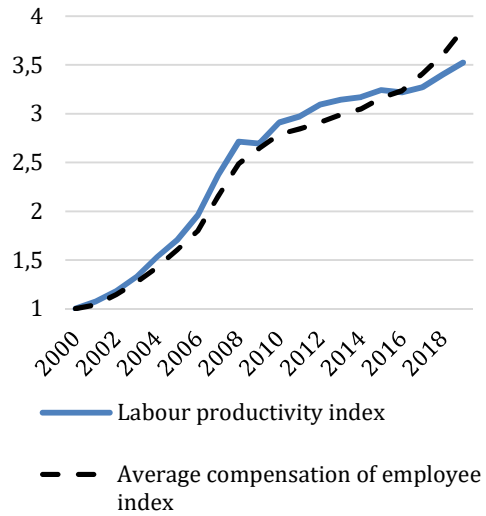
a) Year-on-year Changes in Labour Productivity and the Average Compensation of an Employee, in %



b) Change for Two (equally long) Periods, in %



c) Cumulative Changes (level in 2000 = 1)



Note: Labour productivity calculated as value added per worker. The average compensation of an employee is the volume of compensation of employees divided by the number of employees.

Source: Eurostat, Authors' calculations.

Similar changes in the relationship between the growth of labour productivity and compensation of employees, which we observe in the data for Slovakia, appeared to a less significant extent in the entire V4 group (Table 1.2 and Figure 1.12). In the period after 2014, in all V4 countries, the growth of labour productivity lagged behind the growth of average compensation of the employee. In the earlier period, it was the opposite. This change was most pronounced in the Slovak economy. Real productivity growth also slowed across economies, but the slowdown in Slovakia was particularly pronounced.

Table 1.2
Average Values of Changes in Average Compensation of Employee and Labour Productivity in V4 Countries

	Average 2001 – 2008	Average 2015 – 2018
Czechia		
Change in Average Compensation of Employee (%)	11.4	7.3
Change in Labour Productivity (%)	10.7	5.6
Hungary		
Change in Average Compensation of Employee (%)	10.3	3.6
Change in Labour Productivity (%)	10.3	3.4
Poland		
Change in Average Compensation of Employee (%)	6.5	4.6
Change in Labour Productivity (%)	7.8	3.4
Slovakia		
Change in Average Compensation of Employee (%)	12.1	4.3
Change in Labour Productivity (%)	13.4	1.8

Note: Average rates of change calculated from current prices data. Productivity expressed as the added value per employed person.
Source: Eurostat, Authors' calculations.

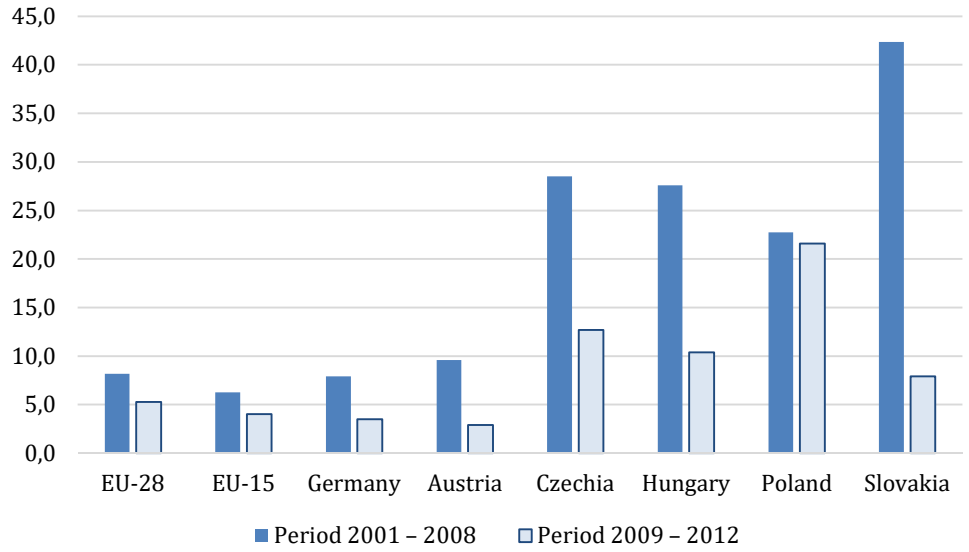
The slowdown in productivity growth has been a feature of many European economies. Figure 1.12 compares the change in real productivity again in two equally long periods. Productivity growth has slowed in all V4 countries (this trend is also present in the data for the EU-28 and the EU-15). The position of Slovakia in this international comparison is specific:

• In 2001 – 2008, productivity growth in Slovakia was *the strongest* among the V4 countries;

• In 2012 – 2019, productivity growth in Slovakia was *the weakest* among the V4 countries.

We assume that the development of productivity is related to the development of investments (and the resulting technological changes, etc.). The statement about the relatively low level of investment, expressed in section 1.1 leaves room for doubts about the possibility of significantly reducing the lag behind the level of productivity of the most advanced economies.

Figure 1.12
Change in Real Labour Productivity in Two Different Stages of Slovak Economy Development



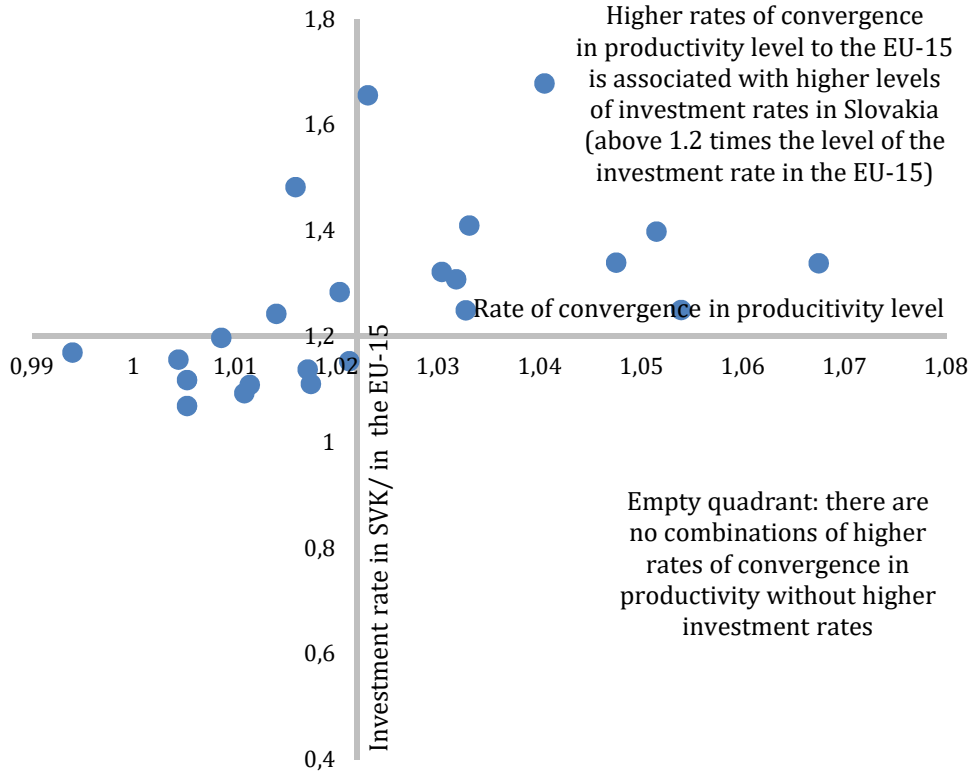
Note: Changes in hourly labour productivity expressed as value added at constant prices per number of hours worked.

Source: Eurostat, Authors' calculations.

In Figure 1.13, we combine data on the rate of convergence in productivity of more advanced economies (the EU-15) with data on investment rate (ratio of investment rate in Slovakia to investment rate in the EU-15). From a certain "critical" level of the investment rate in Slovakia (approximately at the level of 1.2 times the investment rate in the more advanced EU economies), the higher rates of convergence in the productivity appear. Therefore, the higher rates of convergence in the productivity to more

developed countries occurred if the investment rate in Slovakia was at least 1.2 times the investment rate of these more developed countries. If we confront this result with the development of the investment rate in Figure 1.5, we can confirm the suspicion of too low investment rate. In the last 7 – 10 years, the investment rate has not reached such a level associated with a significant overcoming of the lag in productivity in Slovakia.

Figure 1.13
Convergence Rate of Productivity Level to the EU-15 in Slovakia at Various Investment Rates



Notes: Individual points in the figure represent combinations of values of the two mentioned parameters in Slovakia in the period 1996 – 2018.
On the horizontal axis: index of change in the ratio of productivity in Slovakia/the EU-15 (average change for two consecutive periods).
On the vertical axis: the ratio of the investment rate Slovakia / the EU-15 (average for two consecutive periods but with a time advance of 1 period compared to changes in the productivity ratio).
Labour productivity calculated as the ratio of value added at constant prices and the number of employees (National accounts, domestic concept).
Investment rate calculated as the share of gross fixed capital formation in GDP (from current prices).

Source: Eurostat, Authors' calculations.

* * *

If we summarize this "overview" of the Slovak economy at the time of the end of one growth phase and before the onset of depression (which we are aware of, but we do not know its parameters), it can be emphasized that:

• The Slovak economy had an acceptable level of macroeconomic stability, but it was already slowing down independently of the coming "corona crisis". In particular, the significant slowdown of the external demand growth was recorded for goods from Slovakia.

• Developments in the labour market continued to be favourable. However, the limits for the positive developments have already been approached.

• Labour productivity has lost momentum, which we perceive as a serious challenge. Also, the scarcity of the workforce has pushed for higher labour costs. Thus, for several consecutive years, labour cost growth has outpaced productivity growth.

2. STRUCTURAL CHANGES IN THE SLOVAK ECONOMY

In this chapter, a probe is made into the development of value added and employment in selected sectors of the Slovak economy. The first part evaluates their development in the years 2017 – 2019. We pay attention to the contributions of individual industries to the overall growth of value added. Similarly, in the field of employment, we evaluate absolute changes in employment and the relative contributions of the industry to the total change. The second part is devoted to the change in the development of the relationship between labour productivity and wages. In addition to new insights, it also provides a summary of industry-level developments, which we have highlighted in the last three years in this publication.

In 2019, some development trends from the previous period became more pronounced. In most industries, value added growth has slowed or came close to a halt. Also, the employment experienced a slowdown in growth or even declined. Wage growth significantly outpaced labour productivity growth, and the wage share continued to rise in many industries. Since 2015, the Slovak manufacturing industry has lost a significant part of its cost competitiveness. At the same time, it has significantly shifted in the level of achieved labour productivity and wages paid.

The results of our research show that the Slovak manufacturing industry has found itself in a situation in which not only companies, but all participants in industrial policy will have to look for new ways of its further development. In 2019, we still had the highest labour productivity in the manufacturing among the countries with a similar level of development (although just with a small margin). In the next path of development towards advanced economies, the small Slovenian economy is closest to the EU-28 average. Italy and Spain are at the level of the EU-28 average in manufacturing productivity. These are the economies of a very different type. However, the further development of the manufacturing in Slovakia lies in convergence to their labour productivity, subsequently accompanied by wage growth also to the level in these countries.

Sectoral View of Value Added and Employment

After 2015, the development was characterised by lower growth of value added than in the previous period in Slovakia. In this respect, the year 2018 was an exception instead, as according to updated data, value added increased by 4%, with a relatively substantial contribution (3.3 pp.) of the manufacturing industry. The fact that this was a short-term deviation from the medium-term trend confirms the development of value added in 2019.

Table 2.1
Contribution of Individual Sectors to Value Added Growth (in pp.) and as Share on Total Growth (in %)

	Contribution in pp			Share in total growth		
	2017	2018	2019	2017	2018	2019
Total	**2,6**	**4,0**	**2,0**	**100,0**	**100,0**	**100,0**
Agriculture	–0,3	0,2	0,1	–12,0	6,0	5,5
Industry	0,2	3,1	0,0	7,6	78,7	0,0
Manufacturing	0,3	3,3	0,0	10,3	83,1	–2,2
Construction	0,8	–0,2	0,1	29,8	–4,6	4,7
Trade, transport and accommodation	0,7	1,5	0,0	28,0	36,9	–1,9
Information and communication tech.	0,2	0,0	0,3	9,0	0,0	15,1
Financial and insurance services	–0,1	0,3	0,1	–3,8	6,4	4,9
Real estate	0,5	–0,2	0,4	19,5	–4,3	19,9
Professional services	0,5	0,4	0,2	17,8	9,6	9,5
Public services	0,2	0,4	0,9	7,8	9,4	42,8
Other services	–0,1	–1,5	0,0	–3,8	–38,1	–0,6

Note: ***Agriculture:*** agriculture, forestry, fishing. ***Industry:*** includes manufacturing and energy. ***Trade, transport and accommodation:*** wholesale, retail, repair of motor vehicles and motorcycles; transport, storage, accommodation and catering services. ***Professional services***: professional, scientific, technical activities; administrative services. ***Public services:*** public administration, defence, compulsory social security; education; health care, social assistance. ***Other services***: arts, entertainment and recreation; other activities.

Source: Eurostat (2020b); Author's calculations.

Compared to the previous year, value added increased by only 2% in 2019. Out of this, the contribution of value added growth in public services was 0.9 pp. Real estate activities (0.4 pp) and information and communication technologies (0.3 pp) also contributed significantly to the increase in value added. The medium-term development trends were fully reflected in manufacturing. Its value added was slightly lower than in the previous year. Along with the transport, storage and accommodation

sector (they are strongly linked to the manufacturing), their contribution to growth was generally negative. as much as almost 43% of the total value added growth was generated by unprecedented growth in public services. In 2019, the economic development was influenced by upcoming parliamentary elections in 2020. Increase in the value added of public services was generated by growth in public expenditure, which is described and evaluated in Chapter 7 (Public Finances).

Table 2.2
Sectoral Changes in Employment (number of workers)

	Annual growth rates in %			Absolute change	Share in overall employment
	2017	2018	2019	2019 – 2018	2019
Total	**2,2**	**2,0**	**1,2**	**30 180**	**100,0**
Agriculture	–0,3	–0,2	1,6	1 170	3,0
Industry	3,6	1,8	–0,3	–1 980	23,9
of which: Manufacturing	3,9	1,7	–0,2	–1 060	21,9
Construction	2,3	2,3	4,7	8 120	7,4
Trade, transportation. accommod.	1,8	1,8	0,0	120	25,8
Information and commun. a.	4,4	5,8	4,3	3 020	3,0
Financial and insurance services	–1,0	1,4	0,6	290	1,9
Real estate	7,7	5,8	–2,4	–700	1,2
Professional services	1,1	4,7	4,6	11 540	10,8
Public services	1,2	0,9	1,6	7 800	19,9
Other services	5,6	1,1	1,1	820	3,2

Source: Eurostat (2020a); Author's calculations.

Compared to 2018, employment increased by 1.2% in Slovakia. It decreased slightly in the manufacturing, and its share in the total employment fell just below 22%. More than 8,000 new jobs were created in the construction. Overall, the highest employment growth was recorded in the professional services sector (11,540 jobs). There was also high growth in public services, by 1.6%, which represented 7,800 jobs.

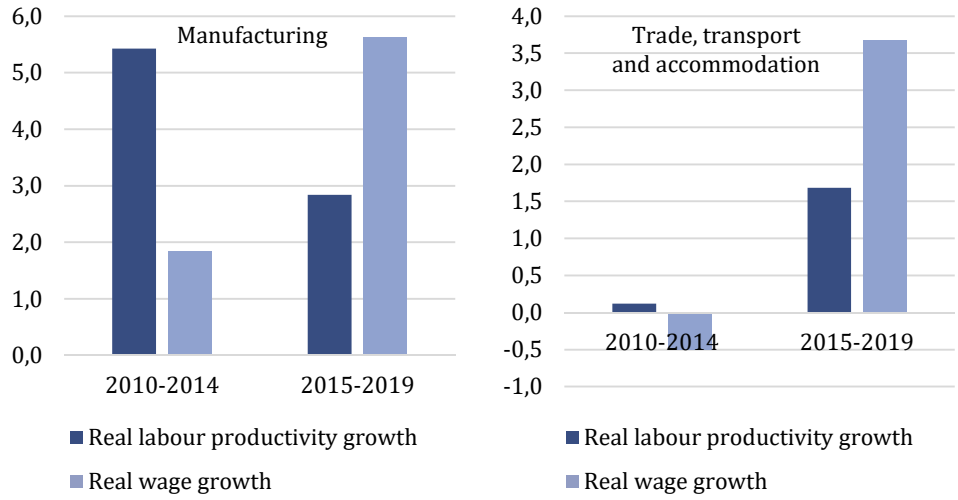
The Slowdown in Labour Productivity Growth and Rapid Wage Growth

After 2015, the significant changes in labour productivity and wage developments are visible. Already in 2014, the situation on the labour market indicated that we could expect more significant changes in the

medium-term development in the area of employment and wages with impacts on the performance of companies across industries. After many years of a high unemployment rate, there has been an increase in districts and industries where there has been a shortage of workers with a specific type of skills and qualifications. Moreover, these changes occurred in a situation where many companies lost room for further drastic increases in labour productivity without a significant reorganisation of production and transformation of production processes. Until 2014, labour productivity grew significantly, mainly due to existing reserves in increasing production efficiency, involving unused capital and responding to a growing demand by involving available production factors. These favourable conditions combined with low wage growth did not force companies to invest significantly in new capital, technology or intellectual assets. The debate on the need to respond to the challenges of Industry 4.0 was not reflected in real practice. It seemed that the new wave of automation, robotics and digitisation of production would hit the actual operation of Slovak companies with a significant delay. Rather, the need to prepare for these processes was encouraged without more specific proposals or support for public policies.

The change in the development of labour productivity and wages in the manufacturing and trade, transport and accommodation, shown in the following figure illustrates how the situation changed in most industries in Slovakia. in the period 2010 – 2014, the average annual growth of labour productivity in the manufacturing was 5.4%. The average growth of real wages in this period was 1.8%. It was a favourable period in terms of cost competitiveness for the Slovak manufacturing. While maintaining a modest growth rate of labour costs, the companies were able to increase production significantly and consequently also the formation of value added. The period of the last five years is entirely different. The average growth of labour productivity in the manufacturing slowed to 2.8% per year, while the average growth of real wages in 2015 – 2019 was up to 5.6%. Moreover, during this period, the development of these two variables took opposite direction gradually exacerbating the situation. The labour productivity growth rates have steadily slowed, and the pressure on wage growth has increased.

Figure 2.1
Relationship between Growth in Real Hourly Labour Productivity and Growth in Real Hourly Wages
(2015 constant prices, the harmonised index of consumer prices)



Source: Eurostat (2020a; 2020b); Author's calculations.

We see a similar development in the trade, transport and accommodation sector. It differs in the average productivity growth in this industry as this one has slightly increased. However, similarly to manufacturing, the wage growth over the last five years has been higher than labour productivity growth. In the years 2010 – 2014, the labour productivity in trade, transport and accommodation almost stagnated.

However, the need for more significant changes was delayed by the favourable situation on the labour market leading to real wages decrease by an average of 0.5% per year. In 2015 – 2019, the labour productivity growth has recovered and averaged to 1.7% per year. In this period, real wages grew by an average of 3.7% per year.

Agriculture, construction, or financial and insurance activities have undergone a similar development as the manufacturing. Agriculture was probably affected by the most dramatic changes. The labour productivity growth was declining from 27.7% to 3.4% per year, while real wage growth rose from 0.6% to 4.7% per year. In construction, labour productivity decreased, and real wages grew by 1.2% per year in 2015 – 2019.

Table 2.3
Comparison of Labour Productivity and Wage Development
(2015 constant prices, the harmonised index of consumer prices)

	2010 – 2014		2015 – 2019	
	Real labour productivity growth	Real wages growth	Real labour productivity growth	Real wages growth
Total	**2,1**	**0,3**	**1,6**	**4,6**
Agriculture	27,7	0,6	3,4	4,7
Industry	4,7	1,7	2,0	5,4
of which: Manufacturing	5,4	1,8	2,8	5,6
Construction	4,8	–0,4	–0,3	1,2
Trade, transportation. accommod.	0,1	–0,5	1,7	3,7
Information and commun. a.	–2,4	–0,1	1,4	1,7
Financial and insurance services	3,9	1,3	2,3	2,9
Real estate	–0,8	–1,7	–0,2	4,4
Professional services	1,8	–0,6	1,5	4,5
Public services	–1,7	0,4	4,6	6,0
Other services	1,4	–1,2	–14,1	7,0

Source: Eurostat (2020a; 2020b); Author's calculations.

There was an increase in the labour productivity growth with even higher wage growth (similarly to the transport, storage and accommodation), in the information and communication technology and public services sector. In the information and communication technology industry, the labour productivity decrease was more pronounced than in real wages. In the following period, the labour productivity growth in this industry resumed; however, wages continued to grow faster than productivity. Real estate activities and other services had an average decline in the labour productivity after 2015. It was especially significant for other services as they also achieved growth in real wages on average.

Changes in Development of Wage Share in Selected Industries

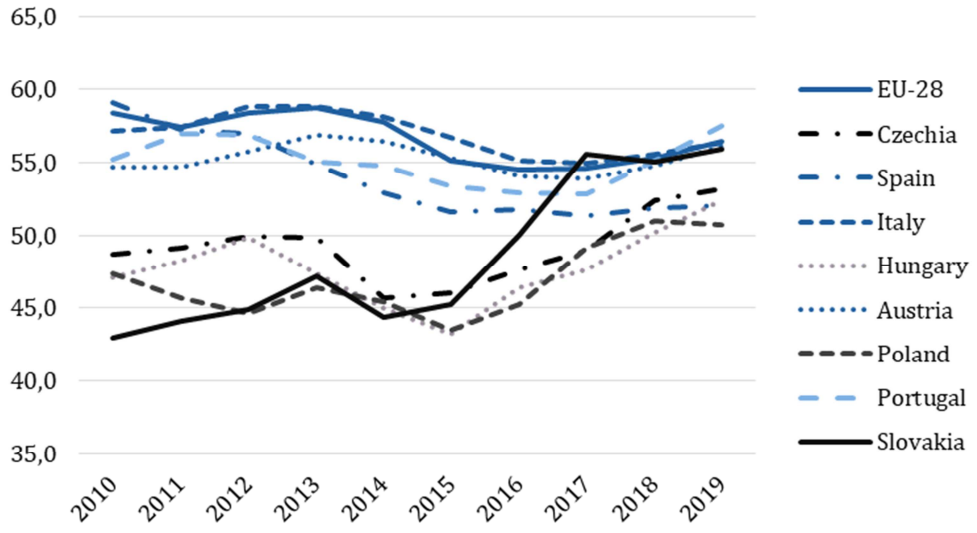
Slovakia has been a country with a relatively low wage share for a long time. The situation on the labour market was among the most often cited reasons. This situation weakened the bargaining position of employees in wage formation, leading to a higher part of the value added of capital. The changes in development trends (described in the previous section) contributed to the change in the development and level of the wage

share in Slovakia. However, its development has varied across industries, and the current level of the wage share by industry also differs across industries in international comparisons.

Perhaps the most significant and most exciting changes in the wage share (from the Slovak point of view, as well as in international comparison), occurred in the manufacturing. Until 2014, there were two groups of countries with significantly different wage shares in the manufacturing. Since 2015, there has been a significant convergence of wage shares between and within these groups of countries.

At the same time, two countries exchanged their position across them. Slovakia moved from a group of countries with a low wage share to the one with a higher wage share in the manufacturing. On the contrary, the Spanish manufacturing has moved from a group of countries with a high wage share to the one with a lower wage share.

Figure 2.2
Wage Share Development in Manufacturing (in %)



Source: Eurostat (2020b); Author's calculations.

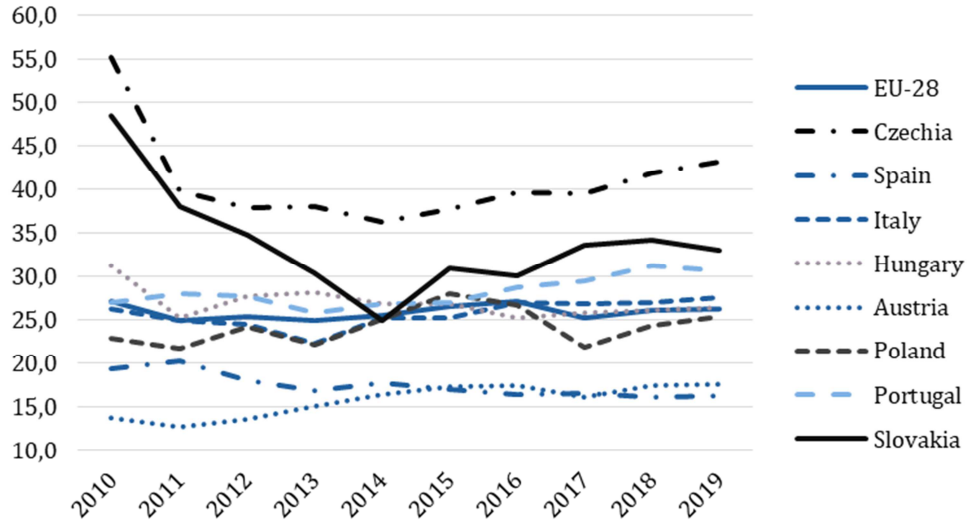
In Slovakia, the wage share in the manufacturing was below 45% until 2014. The EU-28 average was 58% during this period. The wage share was the lowest one among compared countries. In Slovakia, during the

three years (2015 – 2017), the wage share in the manufacturing reached almost the level of the EU-28 average. Among the countries of Poland, Hungary and the Czechia, Slovakia was the only country to move from this group of countries with a low wage in the manufacturing to countries with a higher wage share. Slovakia managed it in just three years. It indicates dramatic changes in the manufacturing, ignored in the creation of an industrial policy that would more strongly motivate and support the introduction of modern production methods. The economic policy-makers based their judgment on the situation before 2014 and did not reflect the changes that were taking place.

In 2019, the Slovak wage share in the manufacturing was at the level of Italy, Portugal or Austria.

Significant growth in labour productivity in agriculture led to a sharp decline in the wage share in this industry in 2010 – 2014. It fell from 48.5% in 2010 to 25%, which corresponds to the EU-28 average over the whole period under the review. Austria and Spain have significantly low wage share in agriculture, just over 15%. Since 2015, the wage share in Slovak agriculture has increased again and reached the level of 33%.

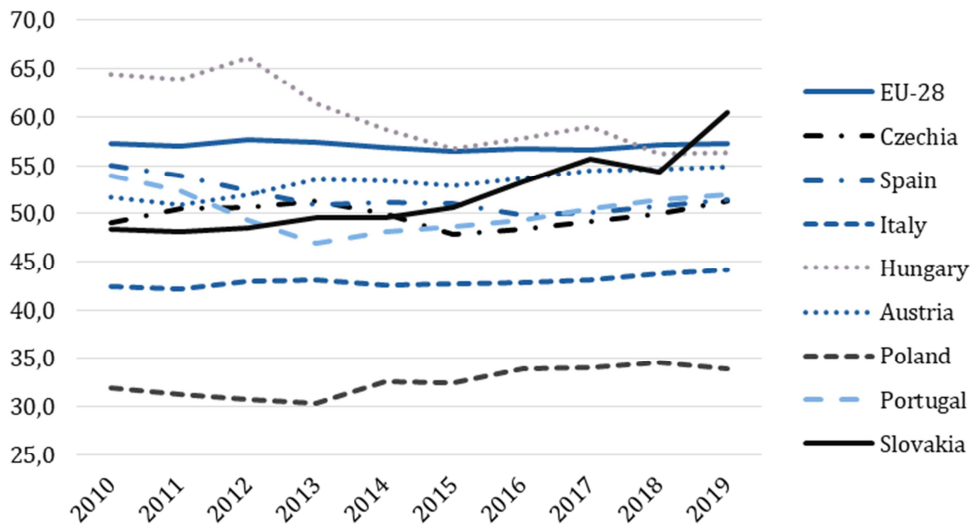
Figure 2.3
Wage Share Development in Agriculture (in %)



Source: Eurostat (2020b); Author's calculations.

A significant wage share differences remain in trade, transport and accommodation in the EU-28. The EU-28 average is 57%. Out of the countries compared, the lowest one is in Poland – below 35%. In this industry, the wage share was below 50% for a long time in Slovakia. However, it has increased significantly since 2015, reaching 60.5% in 2019, which is higher than the EU-28 average and the highest one among the other countries mentioned. A similar development to Slovak agriculture was recorded in the Czech Republic. However, after a sharp decline between 2010 and 2011, its further decline was only modest and rose again to just under 45% since 2015 – the most among the countries shown in the following figure.

Figure 2.4
Wage Share Development in Trade, Transport and Accommodation (in %)



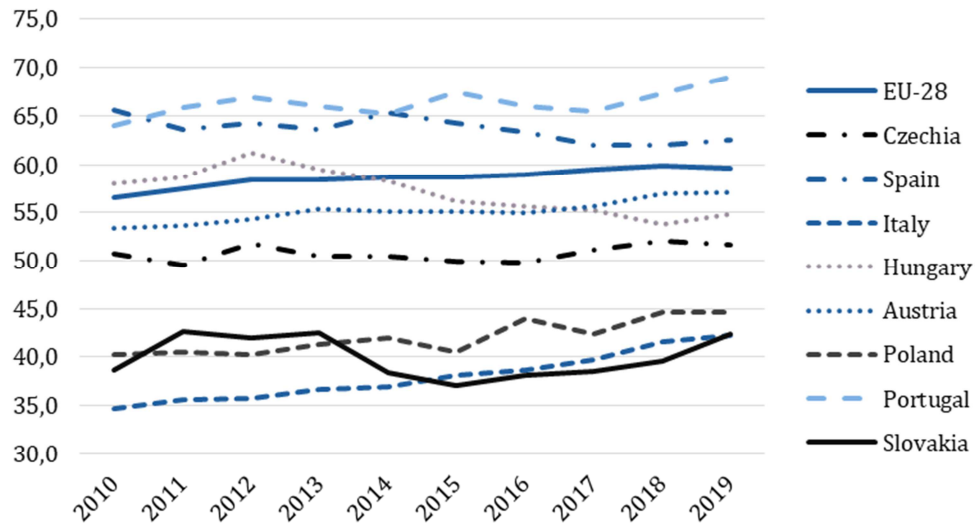
Source: Eurostat (2020b); Author's calculations.

In Slovakia, a completely different situation is in the international comparison of the wage share in professional services. In this industry, the wage share in 2014 was lower than in 2010. Although it has been growing since 2015, in a recent year, it has only reached a level comparable to 2013, i.e. just over 42%. The EU-28 average is significantly higher, rising from 56.6% in 2010 to 59.6% in 2019. Along with Italy and Poland,

Slovakia has the lowest wage share in this industry among the countries under comparison. In Czechia and Hungary (despite the decline in recent years), the wage share in professional services is over 50%.

A wage share itself is not a suitable indicator of cost competitiveness. At the same time, however, it reflects the relationship between the development of labour productivity and labour costs. The shift in competitiveness also needs to be examined and assessed based on the absolute value of labour productivity and the corresponding labour costs.

Figure 2.5
Wage Share Development in Professional Services (in %)



Source: Eurostat (2020b); Author's calculations.

Productivity and Labour Costs of the Manufacturing in an International Comparison

The question "What to produce?" is in terms of international trade significantly influenced by comparative advantages. It is worthwhile for both developed and emerging countries to trade with each other, even if the advanced economy has absolute advantages in the production of all kinds of goods. However, increasing the country's wealth and real wages, in the long run, is associated with absolute productivity growth.

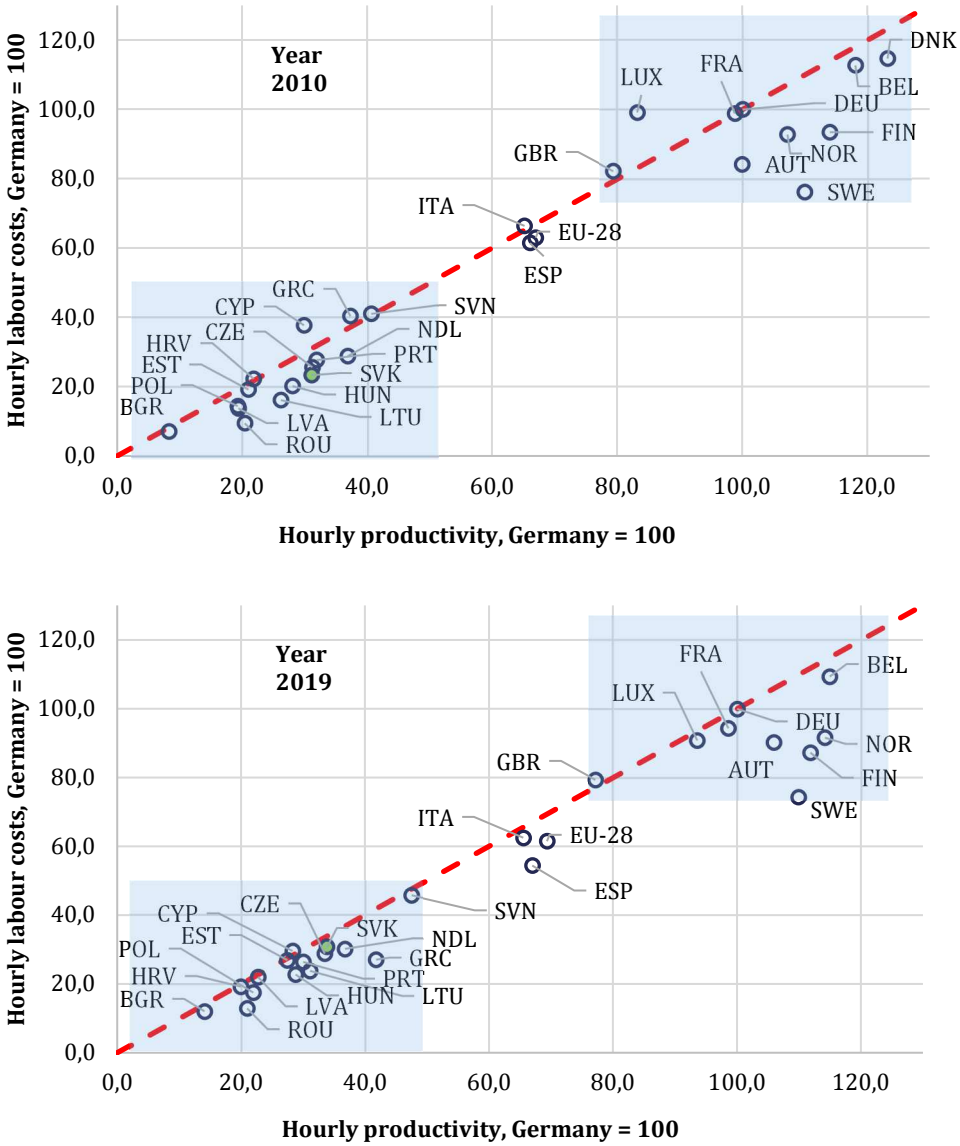
There is a relatively stable relationship between the absolute level of productivity and the hourly wage costs. This relationship can be disrupted in the short term and is not entirely linearly determined between countries. Still, in the medium and long term, the two variables must be in balance. It is also proved by a comparison of hourly labour productivity and hourly labour costs in the manufacturing vis-à-vis Germany in 2010 and 2019. In both years, all countries are very close to a 45-degree line. In each year, the level of hourly labour costs corresponds more or less to their level of hourly productivity.

In the figure, we can identify three groups of countries. Slovakia is in the first group of countries that have less than 50% wages and productivity compared to Germany. On the other hand, there are countries whose wage and productivity levels range from 75% to 125% of Germany. Italy and Spain are 55% – 70%, being close to the EU-28 average.

The hourly labour productivity of the manufacturing was at the level of 31% of German productivity in 2010 in Slovakia. By 2019, it had risen to 33.8%. Similarly, the hourly wage level was 23.4% of the German level in 2010, and by 2019 it has risen to 30.7%. While in 2010, wages were relatively low compared to its productivity in Slovakia, these differences have significantly decreased by 2019. It indicates a loss of cost competitiveness vis-à-vis Germany. Without the development of competitiveness based on innovation, this may have negative consequences for the Slovak manufacturing in the long run (more on lagging in innovation competitiveness in Chapter 3).

Until 2019, relative labour productivity and wages in Slovakia slightly exceeded their level in Czechia, and even more significantly in Portugal. Slovenia is closest to Slovakia on the path of development towards developed countries, followed by Italy and Spain after a significant gap in productivity and wages. On the one hand, Slovakia has become a moderate leader in productivity and wages compared to the competing countries. On the other hand, it faces a massive challenge of moving towards advanced Western economies. For the time being, Slovenia appears to be the only country that has managed to move away from productivity and wage levels in the countries of Central and Eastern Europe and has moved significantly closer to the EU-28 average.

Figure 2.6
Relationship between Hourly Productivity and Labour Costs
(Germany = 100, current exchange rate)



Source: Eurostat (2020a; 2020b); Author's calculations.

We see that there is a large gap between the manufacturing in advanced economies and a group of countries with low productivity. This gap is filled only by Italy and Spain. To catch up with the Western developed countries, it would mean to go through this unexplored path. Empirical

literature in the field of so-called "middle-income trap" is slightly sceptical in the sense that most countries fail to overcome the middle-income level. On the other hand, it provides optimism by mentioning some countries which have succeeded, due to the active role of industrial policy and coordinated actions of the private and public sectors.

* * *

The development of labour productivity, wages and wage share over the last five years shows that Slovakia is very close to the limits of further development (given the technological possibilities and the organisation of production). So far, changes in the development of labour productivity and wages in Slovakia have not been reflected in the real policymaking. In the process of policy formulation and discussions with representatives of industry associations, economic policymakers relied on the situation before 2014 and often downplayed these changes. They inclined rather to the opinion that finally, after years, there was a "fairer" redistribution of value added than to the idea of the need to take measures to support investment in promising areas of development, redirect priorities from job creation to a new automated technological production process, digitalisation of production, and retraining of workers who have to seek employment in new sectors and professions. Increasing labour costs by implementing various measures (we wrote about them in the previous issue of this publication), the pressure to reduce cost competitiveness was fuelled beyond the natural market development and thus further complicated the situation in many companies.

The shocks caused by the COVID-19 pandemic in 2020 will significantly affect the development trends described. The supply shock limiting labour involvement affected production in linked industries negatively. The subsequent demand shock dramatically changed the structure and the size of final demand, especially concerning exports. However, the decline in household income and the shortfall in public budget revenues will subsequently cause a further reduction in domestic, private and public demand.

In particular, companies in services responded to the new situation by using various forms of work from home and various information and communication technologies or platforms. We think that the impacts about the digitisation and informatisation of the service sector will be permanent in the sense that even after the end of direct measures related to the pandemic, they will lead to their use to a greater extent in the long term and significantly increase the rate of digitisation and informatisation of the service sector.

3. QUALITATIVE FACTORS OF ECONOMIC DEVELOPMENT

The Slovak economy is excessively exposed to many risk factors of the external environment (turbulence in the development of world trade, demographic trends, challenges of robotics and automation in industry, etc.). It also faces the weakening of its sources of growth. The areas of research and development (R&D) and digital transformation represent a suitable opportunity and impulse for the Slovak economy to solve slowing growth, productivity, and economic convergence. In this chapter, we pay attention to some questions of R&D developments and digitalization of the economy in the previous period in Slovakia.

R&D in Slovakia

According to the indicators presented in Table 3.1, in the most recent year[1], the R&D in Slovakia did not show a significant year-on-year change, which would deserve increased attention.

R&D intensity (gross expenditure on R&D as % of GDP) has been stagnant at 0.8 – 0.9% of GDP for several years. This stagnation may be explained by the weak financial implementation of the EU resources in 2018 (public R&D expenditures depend on them), as well as insufficient activity of business expenditure on R&D (the growth stopped in 2018 after the positive trend development in 2015 – 2017). We do not expect a significant increase in R&D intensity nor in the future period 2019 – 2020. Given the fact that it is currently the second half of the 2014 – 2020 programming period and the projects in the Operational Program Research and Innovation are approaching the end of their implementation period, we expect an increase in the financial implementation of the EU resources intended for R&D and innovation. We assume that this factor will increase the share of public funds for R&D. However, given the persisting limits on both – the provider side and the barriers on the recipient side (a limited absorption capacity and administrative burden), the growth in financial implementation will not be dramatic. They may be concentrated in one (last) year, as in the previous period.

[1] Most statistics on R&D or innovation are published with a two-year lag.

Table 3.1
Selected Indicators of Research and Development, 2014 – 2018

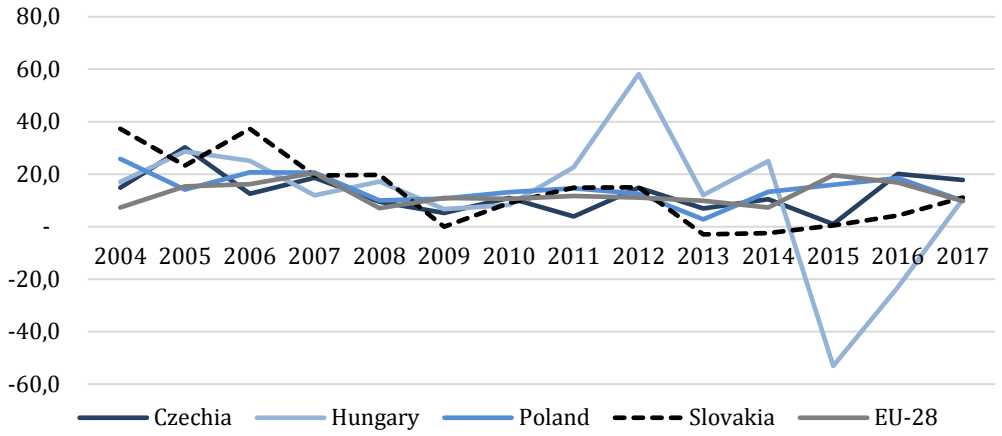
	2014	2015	2016	2017	2018
Funding for R&D:					
Gross expenditure on R&D (% GDP)	0,89	1,18	0,79	0,88	0.84
Divided by sector of performance (% GDP):					
Government sector	0,25	0,33	0,17	0,18	0,18
Business enterprise sector	0,33	0,33	0,40	0,48	0,45
Higher education sector	0,31	0,52	0,22	0,22	0,20
Divided by source of funds (% of total):					
Government sector	41,4	31,9	41,0	35,5	38,0
Higher education sector	32,2	25,1	46,2	49,0	48,8
Business enterprise sector	2,7	3,6	2,1	1,7	2,0
Abroad	23,7	39,4	10,7	13,8	11,2
R&D personnel (persons as of 31st December)	28 825	28 752	33 252	33 467	35 770
Outputs of R&D:					
Domestic patent applications[2]	211	228	218	183	216
Number of patent appl.[2] per 1,000 R&D employees	7,3	7,9	6,6	5,5	6,0
Number of EPO applications[3]	26	47	44	41	51
Number of EPO appl. per 1,000 R&D employees	0,9	1,6	1,3	1,2	1,4

[2] Domestic patent applications filed at the Industrial Property Office of the Slovak Republic.
[3] *European patent applications per country of residence of the first named applicant.*
Source: IPO SR (2019); SO SR (2020); EPO (2020); Eurostat (2020).

However, the expected growth of public resources in R&D may not be satisfactory. It may be negatively "offset" by the decline of business sources in R&D funding caused by the economic slowdown in 2019 and the expected dramatic decrease in 2020 (especially in the first half of 2020). The long-term growth of R&D intensity in Slovakia may also be disadvantaged by structural shortcomings in R&D, such as "low quality of public research and limited cooperation with enterprises, which can be partly explained by inefficiencies resulting from a fragmented governance system" (European Commission, 2020). In 2019, the so-called super-deduction of business expenditure on R&D increased. However, it seems that it does not have a dramatic effect on the growth of business expenditure on R&D. In the 2017 tax period, a total of 164 entities (FA SR, 2019) applied the deduction of R&D expenditures, the total amount of the deducted costs was 40.1 million EUR. The low intensity of R&D and the low quality of public research also reflect low patent productivity and long-term stagnation (Table 3.1).

Business expenditure on R&D in Slovakia are strongly tied to the sector of foreign-controlled enterprises. In Slovakia, up to 80% of corporate R&D expenditures are made by foreign-controlled enterprises[2] (69% in Czechia, 68% in Hungary, and 52% in Poland). In the absence of positive structural changes that would lead to a higher involvement of domestic companies in R&D financing, there is a strong assumption that corporate R&D expenditures will continue to depend on the inflow of foreign direct investment (FDI) to Slovakia. The share of FDI in gross fixed capital formation was at the level of about 10% in 2017 (Figure 3.1). Compared to other economies, this indicator shows a gradual and relatively stable growth since 2013.

Figure 3.1
Share of FDI Inflows in Gross Fixed Capital Formation (2004 – 2017)



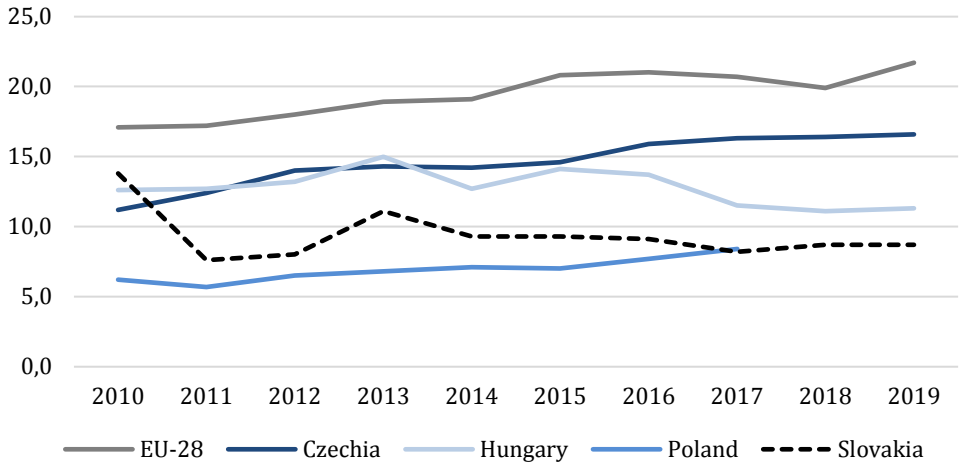
Source: UNCTAD (2020); Author's design.

The low level of investment[3] in intellectual property products is persistently negative in Slovakia. These are 1. investments in R&D, 2. exploration and evaluation of mineral deposits, 3. computer software and databases, 4. genuine literary and artistic works. Investments in intellectual property products are tightly and positively related to the overall innovation level of the economy (measured by a composite Summary Innovation Index).

[2] The latest data are for 2017 for the manufacturing and construction industries.

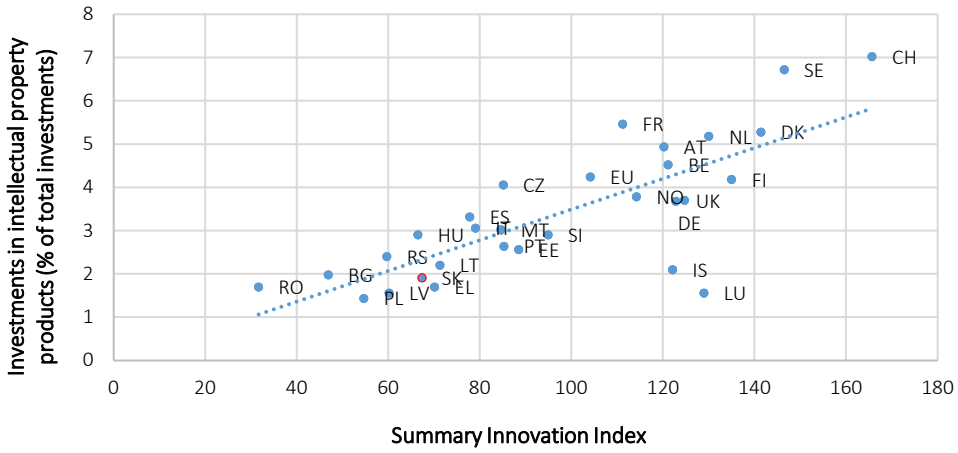
[3] I.e. gross fixed capital formation.

Figure 3.2
Share of Investments in Intellectual Property Products in Total Investments (in %, 2010 – 2019)



Source: Eurostat (2020); Author's design.

Figure 3.3
The link between Intellectual Property Investment and Innovation Performance



Source: Eurostat (2020); Author's design.

Figure 3.3 illustrates this relationship with the example of twenty-eight European economies. If we take into account the average values of both variables for the last five years, we see a strong correlation (Pearson's correlation coefficient is 0.77). At the same time, in Figure 3.2, we know

the lag of the Slovak economy in intellectual property products investing in comparison with other V4 economies and the EU-28 in the years 2010 – 2019. In the last six years, the share of investments in intellectual property products in total investments did not exceed 10% in Slovakia.

Digital Economy in Slovakia

Information and communication technologies (ICT) have been playing a key role for several decades as a factor in economic growth, productivity, and structural change. More intensive involvement of them may be a way of increasing the productivity of the Slovak economy. In this part, we pay attention to some issues of the use of ICT in the Slovak economy. A closer look at the position of ICT in the economy means to focus only on the Information and Communication sector (according to SK NACE rev. 2 – section J).

This service sector includes "the production and distribution of information and cultural products, the provision of the means to transmit or distribute these products, as well as data or communications, information technology activities and the processing of data and other information service activities."[4] In terms of its share in gross value added formation (GVAF) in the years 2011 to 2019, the share of this sector in Slovakia is comparable to the EU-28, although, in the last two years, we see its slight weakening (Table 3.2) and some divergent trends. The situation is similar in the case of compensation of employees (COE). There has been a slight widening of the lag behind the EU level in the last two years.

The ICT sector consists of ICT production and ICT services.[5] According to the latest available data for 2017, the share of the ICT sector in the Slovak economy was 4.3% of GDP.

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[4] <http://www.nace.sk/nace/j-sekcia-j-informacie-a-komunikacia/>.

[5] ICT production consists of the following groups of NACE rev. 2: 26.1 – Manufacture of electronic components and boards; 26.2 – Manufacture of computers and peripheral equipment; 26.3 – Manufacture of communication equipment; 26.4 – Manufacture of consumer electronics; 26.8 – Manufacture of magnetic and optical media.

ICT services consist of: 95.1 – Repair of computers and communication equipment; 46.5 – Wholesale of information and communication equipment; 58.2 - Software publishing; 61 – Telecommunications; 62 – Computer programming, consultancy and related services; 63.1 – Data processing, providing server space on the Internet and related services; web portals.

Slovakia ranks among the EU countries with a relatively higher share (the EU-28 average is 3.75%). Within the ICT sector, we have an over-proportional share in ICT production (0.76% of GDP, which is the 3rd place in the EU). ICT services have a relatively lower weight in the Slovak ICT sector, compared to the rest of the EU (3.38% of GDP in 2017). The situation is similar in the case of the share of employment in the ICT sector in total employment when 3.18% of employees worked in this sector in 2017.

Table 3.2
Gross Value Added and Compensation of Employees in Sector "J – Information and Communication"

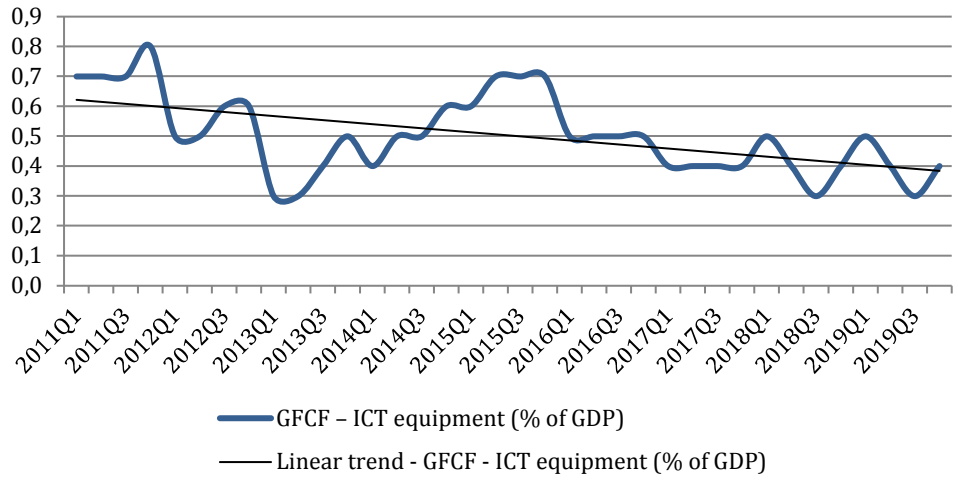
		2011	2012	2013	2014	2015	2016	2017	2018	2019
Share of industry in GVAF	EU-28 (%)	4.9	4.9	4.9	4.9	5.0	5.0	5.1	5.2	5.3
	SVK (%)	4.7	5.1	4.7	4.5	4.5	4.9	5.0	4.7	4.8
	Difference (p.p)	–0.2	0.2	–0.2	–0.4	–0.5	–0.1	–0.1	–0.5	–0.5
Share of industry in COE	EU-28 (%)	4.7	4.8	4.8	4.8	5.0	5.0	5.1	5.2	5.3
	SVK (%)	4.2	4.2	4.3	4.3	4.4	4.4	4.5	4.5	4.5
	Difference (p.p)	–0.5	–0.6	–0.5	–0.5	–0.6	–0.6	–0.6	–0.7	–0.8

Source: Eurostat (2020); Author's design.

The value of this share has been increasing every year since 2008. Slovakia ranks among the economies with a higher share within the EU. A key role in this positive evaluation is played by export-oriented foreign companies, which still use the classic competitive factors of the Slovak economy. At the same time, they represent the potential for the involvement of the domestic R&D sector.

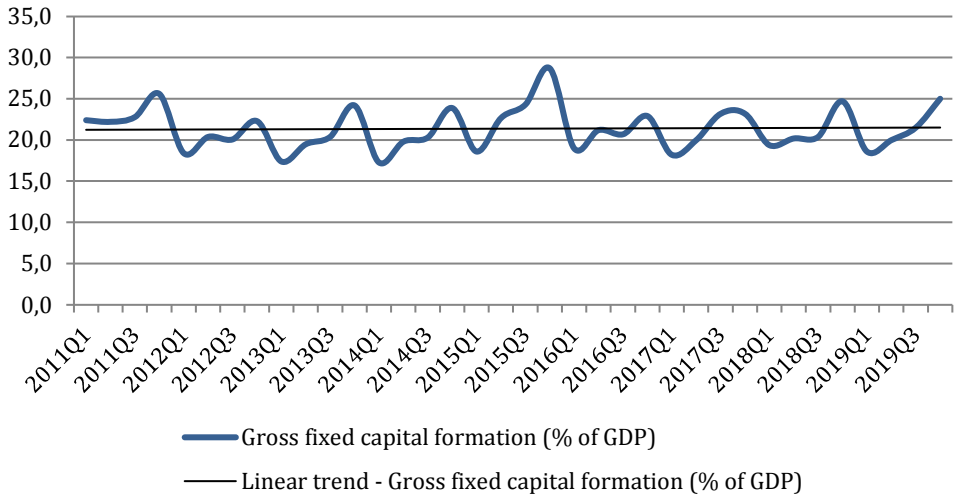
From the digital economy development point of view, investments in the procurement of ICT equipment play a key role. In this respect, the Slovak economy has shown negative trends in recent years. Figures 3.4 and 3.5 show a comparison of the development of gross fixed capital formation – the purchase of ICT equipment and gross fixed capital formation of all fixed assets. The investment rate in ICT shows a declining trend between 2011 and 2019 compared to the relatively stable development of the overall investment rate.

Figure 3.4
Gross Fixed Capital Formation – Investment to ICT Equipment
(% of GDP)



Source: Eurostat (2020); Author's design.

Figure 3.5
Gross Fixed Capital Formation (% HDP)



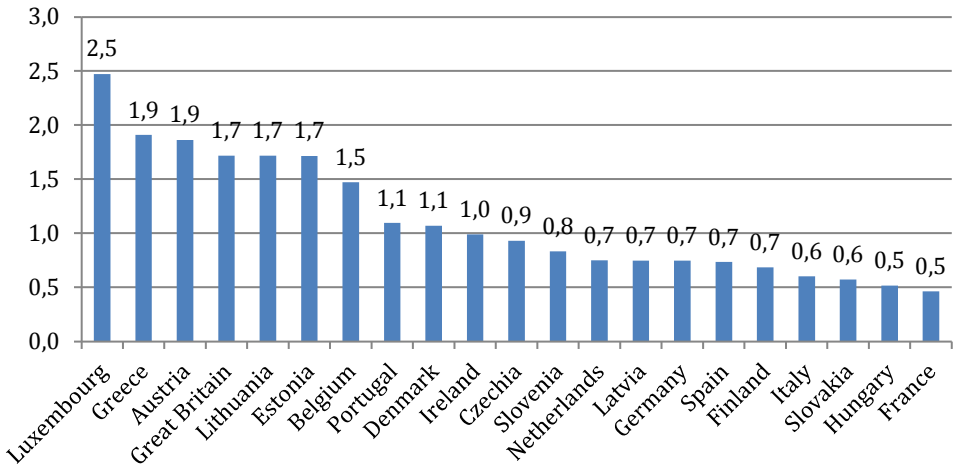
Source: Eurostat (2020); Author's design.

In addition to the analysis of the "J – Information and Communication" sector or the ICT sector, the readiness of the domestic economy for digitization can also be assessed based on the size of the "digital assets" available to the whole economy or individual sectors.

In Table 3.3, we used *Cross-classification of fixed assets by industry and by asset* (EUROSTAT, 2020) data on corporate assets to demonstrate the state of ICT assets in the individual EU 21 economies (EUROSTAT, 2020). The data represents net fixed assets and are valued at reproductive acquisition prices. ICT assets consist of computer hardware (CH), telecommunications equipment (TE), and computer software and databases (CSD). The first two groups of assets (CH and TE) may also be described as tangible, and the third group (CSD) as intangible assets.

In terms of ICT equipment of the economy, the Slovak economy is not doing well in comparison with other economies. The share of ICT assets in total fixed assets is among the lowest in the EU economies (the EU 21 average is 1.1%). We consider this to be a barrier to further digitization of the Slovak economy.

F i g u r e 3.6
Share of ICT Assets in Total Fixed Assets (in %, 2009 – 2018 average)



Source: Eurostat (2020); Author's design.

Development and State of Digital Society in Slovakia

In this part of the chapter, we pay attention to the analysis of assumptions and the state of development of the digital economy and society in Slovakia. There is also a focus set on the readiness of the mentioned sectors, actors, and possible barriers to the use of the digital economy

in a broader understanding. The European Commission uses the Digital Economy and Society Index (DESI) to assess the digitization of society. The index evaluates five dimensions: Connectivity, Human capital, Use of Internet Services, Integration of Digital Technologies, and Digital Public Services. According to this assessment for 2019, Slovakia is still considered to be a country with below-average digitization, while in the area of digital public services – it is below the level of the EU-28, only in 21st rank (compared to 2018, a decrease of one rank). Internet coverage and access to ICT for households and businesses is a crucial infrastructure prerequisite for the development of the digital society. Slovakia still lags behind the EU-28 average as well as neighbouring economies in terms of ICT equipment (Table 3.3).

Table 3.3
Internet and Computer Coverage in Households

	SVK	EU-28	SR/EU-28 in %	EST	CZE	PLN	HUN
% of households with access to the Internet at home (2019)	82	90	90	90	87	87	86
% of households with broadband (2019)	80	89	90	90	87	83	86
% of households with computer access at home (2017)	82	84	98	87	82	82	80
% of households in rural areas with broadband (2018)	71	81	88	88	84	76	77
% of households in rural areas with access to a home computer (2018)	77	80	96	85	81	79	70
% of low - income households with access to broadband (2018)	61	70	87	74	59	54	46

Source: EC (2020); OECD (2020).

A persistent risk is still the different access to ICT of Slovak households. All regions in Slovakia have more than 80% internet coverage, except for the Banská Bystrica region, where 78% of households have internet access. Within Slovakia, this region similarly lags in the coverage of broadband or mobile Internet (SO SR, 2019). Although we do not see significant differences in terms of regional differences in Slovakia, there is still a substantial deficit in access to the Internet or computers in rural areas as well as for low-income households (last two lines in Table 3.3). In Slovakia, 4% of households do not have access to the Internet because

they cannot afford it. Thus, in this indicator, we belong to the countries with a higher value than the EU average (3% of households in the EU-28). Low access to ICT in rural areas or within low-income households may be (in the further development of digitization) a factor of social and economic polarization in Slovakia. It creates a barrier not only in business development but also in access to digital services for healthcare, education, or public administration. In addition to the so-called hard factors, digital skills are also an essential prerequisite for the development of a digital society. In 2019, 27% of citizens stated that they have basic digital knowledge (in the EU-28 it is 25%), 31% of people have higher than basic digital skills (in the EU, it is 37%) in Slovakia.

In terms of the use of Internet services, Slovakia is comparable to the EU. Still, it lags behind the leaders in the countries of the Central and Eastern EU, Estonia, and the Czechia (Table 3.4).

Table 3.4
Use of Internet Services

	SVK	EU-28	SR/EU-28 in %	EST	CZE	PLN	HUN
% of 16 – 74 years old individuals reading periodicals online	72	72	100	89	92	75	84
% of 16 – 74 years individuals using internet banking	66	66	100	90	78	58	59
% of unemployed seeking job online	40	59	68	65	66	38	56
% 16 – 74 years old individuals searching for information on education online	39	41	95	49	26	27	40

Source: EC (2020).

As we mentioned in the previous part, the investments in ICT equipment decreased in the previous period, and the Slovak economy is one of the countries with a lower share of ICT equipment in fixed assets. These may also be factors of a certain lag of the Slovak business sector, either behind the EU average or behind the economies of Central and Eastern Europe such as the Czechia or Estonia (we consider these two countries to be the leaders of digitization in our region). Table 3.5 lists some of the many indicators of ICT penetration into commerce (eCommerce) and entrepreneurship (eBusiness).

Table 3.5
Indicators of e-Commerce and e-Business in Slovakia and the Selected EU-28 Countries (2019)

	SVK	EU-28	SR/EU-28 in %	EST	CZE	PLN	HUN
Enterprises exploiting B2C opportunities of web sales – SMEs, (in % of enterprises)	6	8	75	10	14	7	7
Turnover from e-Commerce (in % of enterprises)	21	19	90	14	31	18	24
Cross-border e-Commerce (in % of individuals purchasing good and services online)	40	35	86	43	20	12	44
Integration of internal processes (with an ERP*) – SMEs (in % of enterprises)	31	34	91	26	38	29	14
Persons employed provided with a portable device by their enterprise (in % of total employment, 2017)	18	23	78	20	25	21	20
Enterprises using mobile Internet for their enterprise applications (in % of enterprises, 2018)	31	33	94	31	43	34	19
Cloud computing services (in % of enterprises)	21	26	81	34	27	12	18
Enterprises analyzing big data (in % of enterprises, 2018)	9	12	75	11	8	8	6
Use of analytical CRM software (in % of enterprises, 2018)	15	18	83	16	15	7	21
Enterprises with high levels of digital intensity (in % of enterprises)	18	25	72	22	35	11	15
Enterprises with very low levels of digital intensity (in % of enterprises)	48	39	123	44	26	60	57
Enterprises using RFID** technology (in % of enterprises, 2017)	18	12	150	12	8	9	7

Note: SVK – Slovakia, EST – Estonia, CZE – Czechia, PLN – Poland, HUN – Hungary;
* – *Enterprise Resource Planning* (enterprise activity management software); ** – *Radio Frequency Identification.*

Source: EC (2020).

If we were to use only one indicator to evaluate the digitization of companies, it would be the share of companies with a high degree of digital intensity.[6] It was achieved by only 18% of companies in Slovakia in 2019. We see a lag in the case of a relatively low share of large companies with a high degree of digital intensity. In this indicator, we reach the EU level of 72%, although ahead of Poland or Hungary, still overall 21st in the EU-27.

An important factor limiting the more massive digitalization of the corporate sector is the still low share of companies with fast broadband internet (in 2019, it was 37% of companies, the 3rd worst rank in the EU-28).

Table 3.6
Utilization of Public Institutions Websites
(% of 16 – 74 years old individuals)

	Interaction with a public institution (last 12 months)		Submitting completed form to a public authority (last 12 months)		Arranging a meeting with a general practitioner via the website	Transparency of public organizations* (score 1 – 100)
	2008	2019	2008	2019	2018	2017
EU-28	35	55	34	43	22	60
Czechia	19	54	26	29	11	71
Estonia	37	80	72	82	29	84
Hungary	28	53	37	47	30	33
Poland	22	40	16	38	14	51
Slovakia	40	59	25	21	12	37
Finland	62	87	65	76	51	66

Note: *– the extent to which governments are transparent regarding: a) the process of providing services in the public interest b) their responsibilities and performance c) personal data involved in the provision of services.

Source: EC (2019); Author's design.

The possibilities of using ICT in society have a huge potential. The implementation of ICT in the public sector is a priority of transnational and national policies because it creates a number of positive effects in the entire public sector, as well as in the relationship between the state sector and the business and household sector. The field of electronic public administration services (eGovernment) is probably the most visible form of digitalization of society. In Slovakia, digitization has long been a normative part (and a priority, especially at the proclamatory level) of economic

[6] A high degree of digital intensity is achieved when a company uses at least seven of these technologies: most employees use the Internet, the company has access to the skills of ICT specialists, fixed broadband Internet (speed more than 30 Mbps), more than 20% of employees use mobile devices, has a website , has some sophisticated functionalities on the website, the company is present on social media, more than 1% of turnover comes from e-commerce, uses B2C opportunities in online sales, uses CRM software, shares information within the electronic management of suppliers networks, pays for advertising on the Internet, buys advanced cloud computing services, sends electronic invoices.

policy. In addition to the active policy of developing digital public administration services through the creation of legislation, institutions, or direct financing, the emphasis on the need for digitization in the overall economic policy has also been added, for example, through the formulation of economic strategies[7] and legislation (e.g., the GDPR Act).

In Table 3.6, we present some more detailed eGovernment indicators. The lagging is noticeable – except for the interaction of citizens with a public institution (obtaining information from public authorities' websites, downloading official forms or submitting completed forms), where Slovakia ranks above the EU average. However, it is at the level which Finland had in 2008.

* * *

The Slovak economy still makes insufficient use of qualitative factors of economic development, such as R&D or opportunities for digital transformation. The intensity of R&D has been stagnant for a long time and grows significantly only with a sharp increase of the financial implementation of public funds from the EU sources. Insufficient investment in intellectual property products is also a factor in weak R&D and innovative progress.

The position of the ICT sector (ICT production and services) is relatively favourable, although it consists mainly of export-oriented foreign companies creating an opportunity for domestic R&D. The negative trend is the declining rate of investment in ICT equipment. Low investment in ICT may be due to the small share of ICT assets in total fixed assets in the economy. In this respect, the Slovak economy reaches the share of ICT assets of 0.7% in total assets (2009 – 2018 average). That is a low level within the EU-21, and we consider it a barrier to the digitization of the Slovak economy. In the digitization of society, we see the most significant barrier in access to ICT in rural areas reaching only about 3/4 of Slovak households. In the field of ICT use in the corporate sector, companies still lag in many areas.

[7] E.g. in 2019, the documents *Strategy of Digital Transformation of Slovakia 2030* or *Action Plan of Digital Transformation of Slovakia for 2019* –2022 were adopted.

4. DEVELOPMENT OF EMPLOYMENT AND WAGES

In 2019, the employment growth slowed and indicated the achievement of its performance limits in some parameters. Employment continued to grow, although its pace slowed significantly compared to previous years. Similarly, there has been downward progress in the unemployment rate – but far from sharp declines as in past years. On the contrary, real wages have risen sharply, mainly due to robust wage growth in the public sector. To create a comprehensive picture of the development of the Slovak labour market, we particularly consider these factors to be important. However, the fundamental trend here is not the dynamics of the overall development of the economically active population, but rather the development dynamics of its structure.

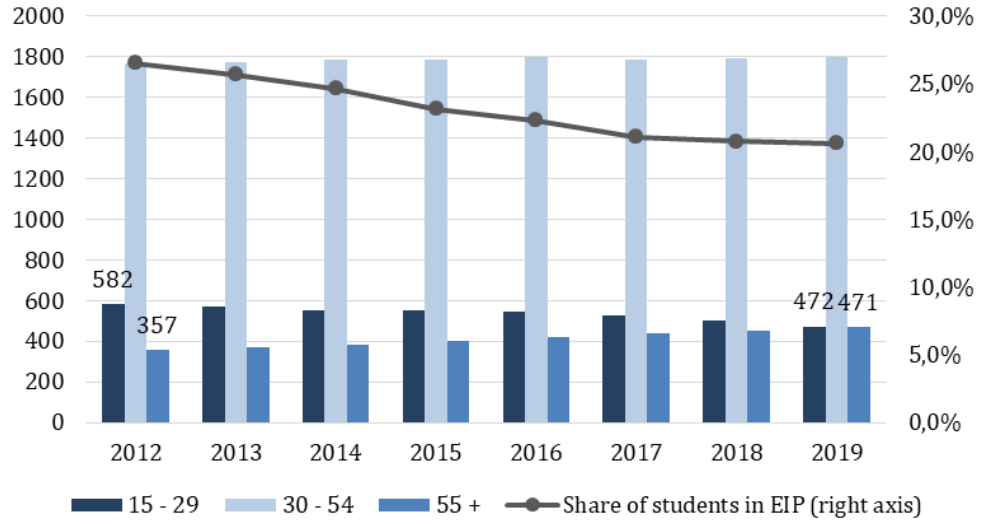
Economically Active Population is Aging

Also, in 2019, the number of persons actively participating in the labour market decreased – the economically active population (EAP). This trend had continued since 2017 when there was a reversal in the development, and the number of economically active persons is gradually decreasing (in 2019 a decrease of 5,000). Figure 4.1 particularly shows that the ratio is changing in the youngest age cohorts to the oldest age cohorts in the EAP. Within eight years, a fundamental disparity equalled between persons under the age of 29 and over the age of 56. In 2012, youth under 29 represented more than 200,000 larger cohorts of economically active population than persons over 55 years of age. By 2019, these cohorts shared the same size.

Several factors could influence this decline in youth in the EAP. The first is the greater participation of youth in education and thus the longer stay in the economically inactive population (EIP), the second factor is simply the lower number of people in this cohort. However, the first factor can be ruled out because the share of students in the total number of EIP is continually declining. If the primary factor were to be significant, this trend would have to be reversed. Therefore, it is clear that overall EAP is ageing, and the role of the cohort over 55 is increasing over time.

However, its increase is not only due to ageing but also to greater participation in the EAP as the cohort of people aged 50 – 54[1] had a declining trend during the period 2012 – 2014.

Figure 4.1
Population Development in Selected Demographic Cohorts 15 – 29 and 55+ Years (left axis) with Share of Students in Economically Inactive Population (LFS, in thousands of persons and %)



Source: Macroeconomic database NBS (2020); Author's design.

Employment Growth Rate Has Slowed

Regardless of the methodology used (LFS or ESA), the size of employment has increased. However, its pace was lower than in previous years – in the case of LFS, it is a decrease from 1.4% (2018) to 0.7%; in the case of ESA national accounts methodology, it was a slowdown from 2.0% to 1.2%. However, this still represents an increase of 17 thousand (LFS) and 29 thousand (ESA) in y-o-y change. It did not directly cause a decline in employment, but rather the additional demand for work in some sectors has disappeared.

In 2019, however, a factor of concern about the impending slowdown in economic growth also began to affect the labour market reflecting in

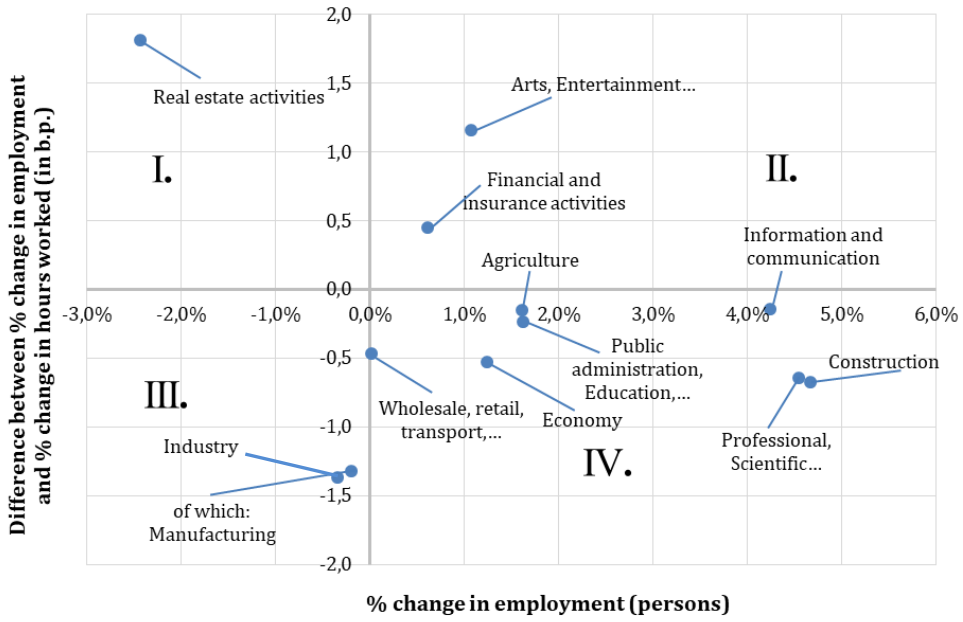
[1] People in this cohort are already in cohort 55 and more after five years.

a change in expectations about the future development of the economy. Figure 4.2 shows that employment continued to grow in the majority of industries in 2019 (x-axis). The only exceptions were manufacturing and real estate activities, which recorded a slight decline in employment.

However, it is interesting to compare the development of employment measured in persons vs. hours worked. While employment in the total economy increased by 1.2% (according to the ESA), the number of hours worked increased by 0.7%. We may state that even though the total number of employees increased, the growth of a number of hours worked was not proportional (people worked "shorter time" per person – see Figure 4.2).

Figure 4.2

Comparison of Employment Development in Persons and the Difference in Growth Rate between Employment in Persons and Hours Worked
(in % and p.p; ESA)



Source: Macroeconomic database NBS (2020); Author's calculation and design.

Based on this logic, we may divide Figure 4.2 into four quadrants:

- Quadrant I – decrease in employment of persons in parallel with a positive value of the difference between the growth of employment

of persons and hours worked. This phenomenon may be understood as a net increase in work intensity when the total number of workers decreases. Still, the remaining workers work "more" hours per person than in the previous year.

- Quadrant II – a growth of employment of persons in accordance with the positive difference between the growth rate of employment of persons and hours worked. It can be understood as a strong demand for work in the sector when a higher number of workers work even "more" hours per person than in the previous year.
- Quadrant III – a decrease in the employment of persons in parallel with an even faster decrease in the number of hours worked. It is a significant weakening of the demand for work in the sector when the total number of workers is declining, and even the remaining workers work "less" hours per person than in the previous year.
- Quadrant IV – a growth of employment of persons and at the same time negative value of the difference between the growth of employment of persons and hours worked. It is an increase in the number of workers in the sector; however, in marginal terms, they work "shorter" working hours per person than in the previous year.

In our analysis, the development is interesting, especially in some industries that deviate from the average. Real estate activities are the only industry in the first quadrant, so there has been some form of "consolidation" in this sector with pressure to increase work efficiency. Fewer employees worked more hours per person than in the past. On the contrary, the above-mentioned concerns about the slowdown in the economy of our largest trading partner (Germany) have placed the industry in the third quadrant, which means cooling of the demand for labour compared to the previous year. In the area of positive employment growth, most sectors of the economy ranked in the fourth quadrant, which represents employment growth with a lower growth rate of hours worked. The leaders in the growth of employment of persons was mainly construction, professional and scientific activities and mostly administrative activities. The growth of employment in financial and insurance activities, together with arts, entertainment and recreation, was exceptional –

the positive growth of employment of persons was accompanied by an even faster growth rate of hours worked. It means strong demand for work – more workers working on average more hours per person than in the previous year.

Regional Levelling of Unemployment Rate

The unemployment rate also fell and reached new historic lows in 2019. The decline is visible in both published unemployment rates (LFS and COLSAF), although similar to the development of employment, its pace decreased compared to previous years. The number of unemployed decreased by 7.5% to approximately 168 thousand persons according to COLSAF. According to LFS, it decreased by up to 12% to 158 thousand persons. The overall unemployment rate thus reached the level of 5.8% according to the (LFS), even lower was the unemployment rate expressed by available job seekers (COLSAF), reaching a historical record of 5.0%.

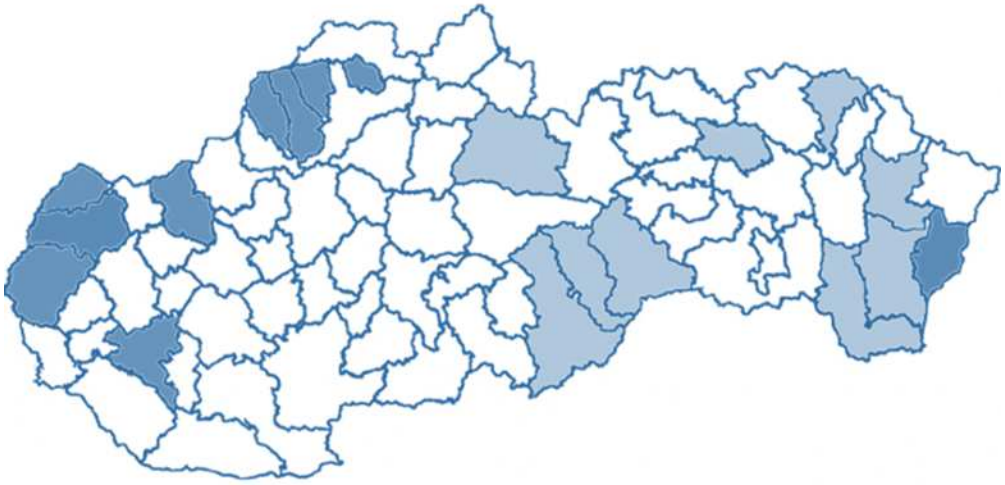
The decline in the unemployment rate for the whole economy can be considered a positive sign of development; However, the y-o-y change in the regional distribution of the unemployment rate could be considered even more positively. The economy has long suffered from an uneven distribution of economic activities, which leads to a significant differentiation of unemployment rates by region or district. In general, it can be stated that the regions in the West and north of the country achieve noticeably lower unemployment rates than in the east and south. Therefore, the positive news is an indication of some geographical convergence in the unemployment rate in 2019.

It is indicated in Image 4.1 when the most significant decline in the unemployment rate is concentrated in the districts of eastern and southeastern Slovakia (except for the districts of Sobrance and Liptovský Mikuláš). On the other hand, the most substantial increase in the unemployment rate took place in the districts of northern and western Slovakia (Považie and Záhorie regions). A significant part of manufacturing is concentrated in these two regions. The manufacturing was one of the few industries to record a decline in employment even in the pre-corona period.

I m a g e 4.1

TOP 10 Largest Increases (dark blue) and TOP 10 Largest Decreases (light blue) in Unemployment Rate by District

(y-o-y change in p.p within the unemployment rate in the district)



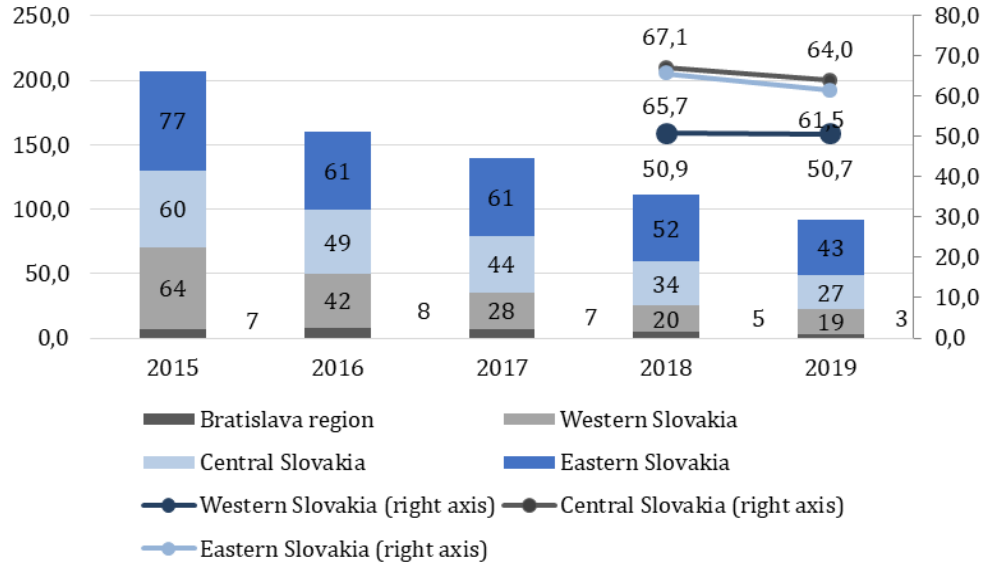
Source: Datacube database (2020); Author's calculation and design.

The decline in Long-Term Unemployed Has Stopped in the West

Long-term unemployment has been a persistent problem for the Slovak labour market. In recent years, however, there has also been a positive shift in this area. After the depletion of the short-term unemployed, the labour market was able to integrate the long-term unemployed into work. The problem in this area is again the uneven distribution of the long-term unemployed with about half of the total being concentrated in the east of the country.

Also, in 2019, there was a decrease in the number of long-term unemployed in national terms. However, the difference is that their decline in the West of the country has stopped. On average, the regions of Central and Eastern Slovakia continued the previous trend, while in Western Slovakia the downward trend almost completely stopped. It is also evidenced by the share of the long-term unemployed in the total number of unemployed in the region – the region of Central and Eastern Slovakia recording a decline in their share of at least three p.p.. In contrast, the region of Western Slovakia remained almost unchanged.

Figure 4.3
Number of Long-Term Unemployed (over one year) by NUTS-2 Regions of Slovakia and Their Share in Total Number of Unemployed
(in thousand persons and %, LFS)



Note: Data on the share of long-term unemployed in the Bratislava Region not provided due to low reliability.

Source: Eurostat (2020); Author's calculation and design.

It may be a combination of several factors when, on the one hand, the supply of "employable" long-term unemployed has been depleted. On the other hand, the unemployment rate in this region has generally risen (due to lower activity in manufacturing). So the demand for the employment of any jobseekers has declined.

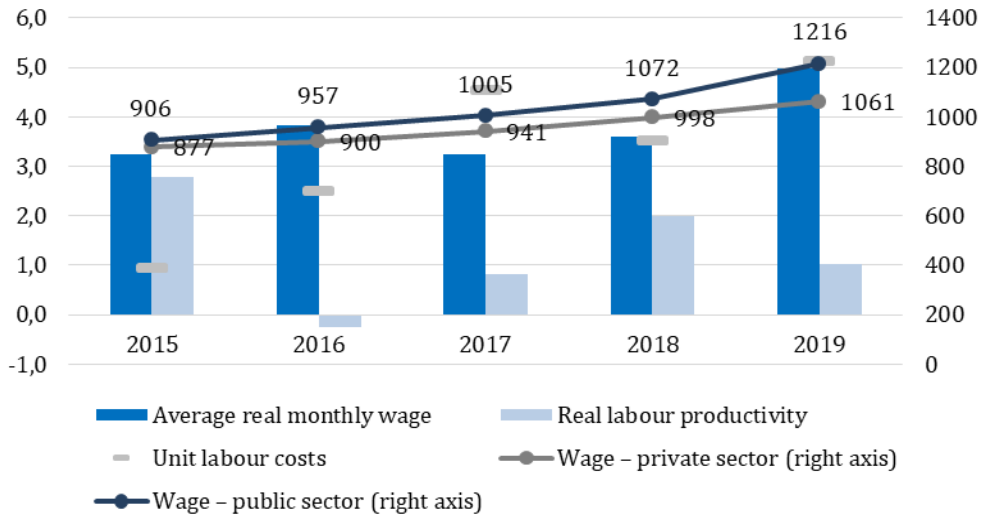
Real Wages Have Risen to Record Highs – Public Sector is Moving Away from Private Sector

The growth of the real wage is associated with the growth of the living standard of the population. It was due to the stagnant price level in the past, which supported its growth. However, even after the resumption of price level growth in 2017, real wage growth did not stop, and in 2019, reached the highest average growth since 2005 (5.0%). However, this growth has not been balanced across all sectors; on the contrary, the

public sector can be described as the leader in real wage growth. The public administration recorded growth of almost 13.5%, education 9.7% and healthcare 8.7%. In the private sector, real wages increased "only" by 3.6%. We may observe a noticeable difference between the speed of the private and public sector's reaction to the current (or predicted) development of the economy. While in the private sector the decline in job vacancies no longer put upward pressure on higher wage growth (as in previous years), the public sector showed some indifference from economic developments and corporate sentiment and continued to experience record increases.

In the long run, however, real wage growth should develop in the same way as real labour productivity growth. Their mutual development affects, in theoretical terms, the country's international cost competitiveness. Wage growth, which would not be offset by growth in labour productivity, is pushing up unit labour costs (ULC). Figure 4.4 points to the fact that the economy has seen significantly faster wage growth in recent years. Labour productivity growth can offset this growth to a very limited extent.

Figure 4.4
Year-On-Year Change in Real Wages, ULC and Labour productivity in Slovakia with Average Wage in Public and Private Sector
(in % and EUR, ESA)



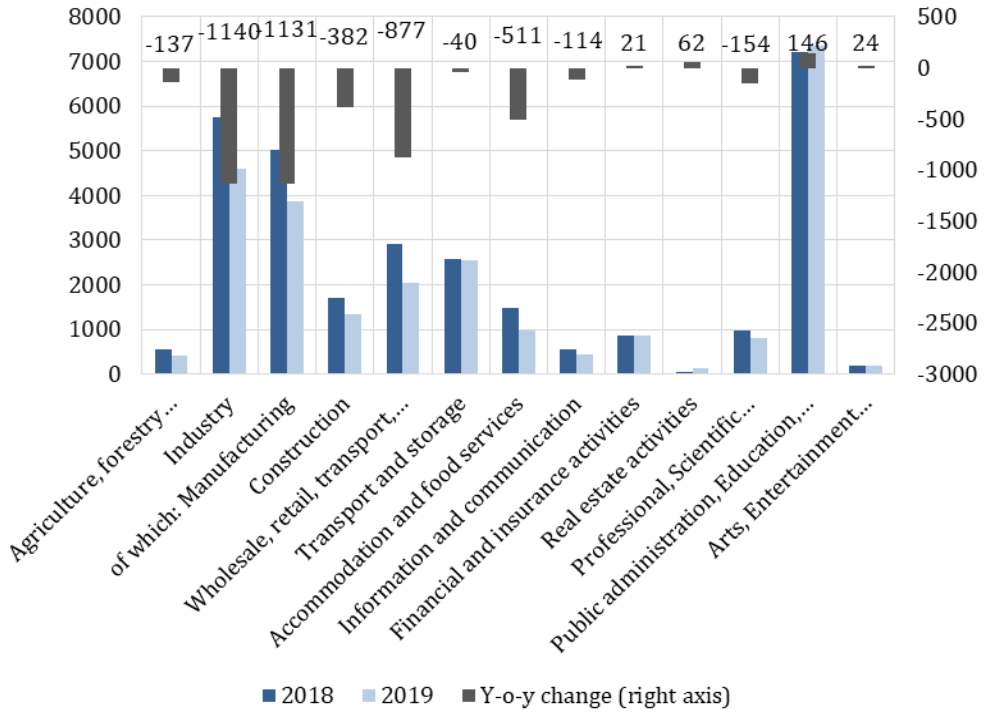
Source: Macroeconomic Database NBS (2020); Author's design.

After a temporary slowdown in the growth rate of ULC in 2018, their growth rate increased again in 2019, reaching the highest growth rate since the crisis in 2009. However, it is essential to recall that the goal of economic policymakers should not be to keep them at a low level in the long run. The natural process of convergence directly requires its growth. It is important to realize that their recent increase is associated mainly with a loss of labour productivity growth, not excessive wage growth.

The Decline in Number of Job Vacancies Even Before "Corona Crisis"

Although the labour market was fully affected by the effects of the "corona crisis" at the time of writing – it is important to note that signs of a slowdown in labour market dynamics were already apparent in 2019. It is also evidenced by the weakened demand for work measured by the number of vacancies.

Figure 4.5
Year-On-Year Change in Job Vacancies by Sector (absolute terms, ESA)



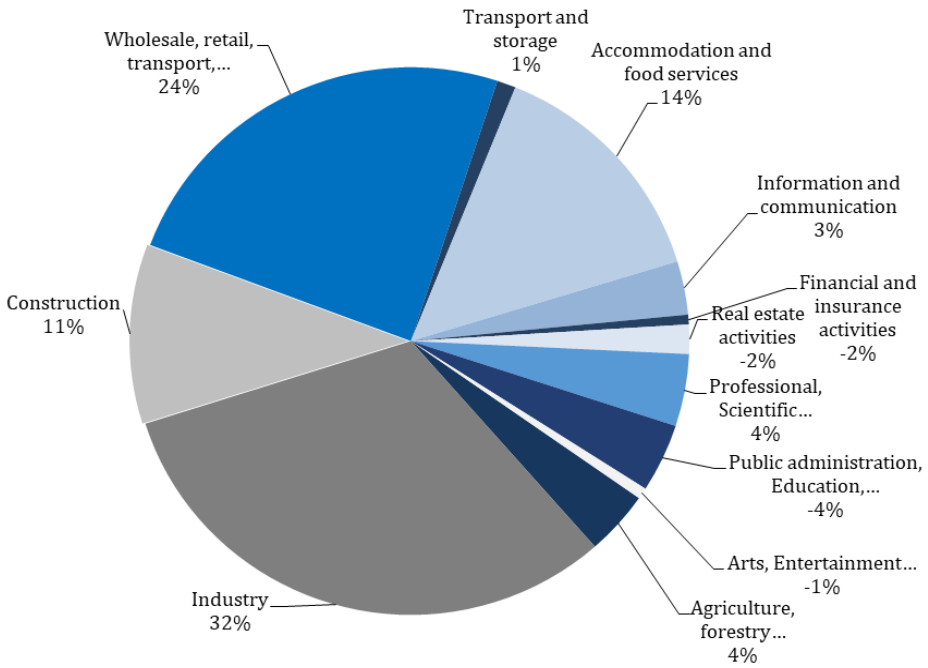
Source: Macroeconomic Database NBS (2020); Author's calculation and design.

The y-o-y decrease in the number of vacancies amounted to more than 3,000 jobs, which represents a decrease of 12.3% of the total number. However, similar to other indicators of labour market developments, the development of job vacancies was not homogeneous. E.g. the public administration sector recorded an increased demand for labour, also in 2019 (see Figure 4.5).

The sector of real estate activities is interesting – the employment in the sector decreased, but at the same time the number of vacancies increased. It confirms our deduction based on Figure 4.1 when this sector was one of the sectors that increase work efficiency, and the decline in employment is probably only a temporary phenomenon.

Figure 4.6

Structure of Year-On-Year Decline in Job Vacancies by Sector (in %, ESA)



Note: Negative values represent a year-on-year increase in job vacancies in the sector when expressed as a share of the total year-on-year change.

Source: Macroeconomic Database NBS (2020); Author's calculation and design.

The development of job vacancies in the industrial sector has proved to be important. As can be seen from Figure 4.5, almost the entire decline in demand for labour in this sector can be attributed to manufacturing.

So the other sectors included in the aggregate group "industry" did not experience such a significant drop in interest in employment. Nevertheless, industry accounted for more than a third of the overall decline in job vacancies.

However, to think that manufacturing was the only sector where the demand for labour weakened would be wrong. There has been a significant decline in demand for new workers also in other market services – such as wholesale and retail or accommodation and food services. Similarly, developments in the construction sector suggest that demand and labour supply have levelled out. The sector experienced the highest employment growth in the total economy, and at the same time, the number of job vacancies in the sector fell by more than 10%.

Higher Surcharges for Work and Increased Minimum Wage Contributed to the Growth of Wages as well as Unit Labour Costs

From 1 May 2019, the amount of surcharges for work during non-standard working hours was adjusted. The amount of surcharges for work at night, Saturday and Sunday have increased. The surcharge for work during the holiday was already adjusted in 2018. Therefore, it remained the same in 2019. An abbreviated overview of the changes can be found in Table 4.1.

The adjusted level of work surcharges became a sensitive and societal issue, as employers considered their increase to be disproportionately high. To some extent, surcharges for work have also been adjusted as a result of the political cycle.

The fact that such a change concerns a significant part of companies is evidenced by Figure 4.7. It suggests that Slovakia is the country with the largest share of total night workers in the entire EU-27, as well as in the number of regular night workers.

However, an increase in surcharges for work increases not only wages but also total labour costs to more than a fifth of all jobs. The increase in surcharges for work on Sunday affects almost a third and work on Saturday even nearly half of all workers in the economy.

Table 4.1

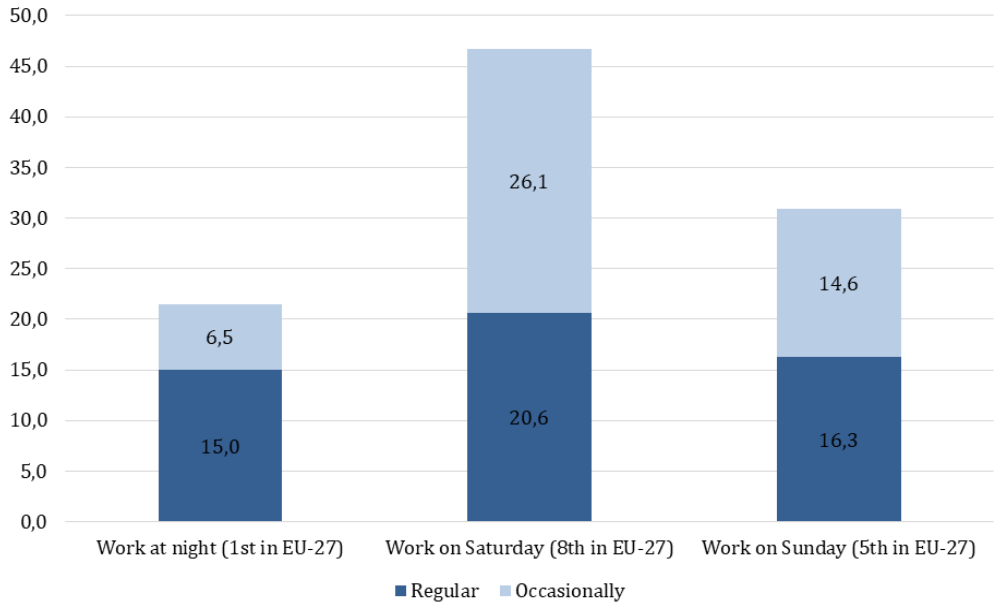
Overview of Changes in Surcharges for Work in Non-standard Working Hours

		Until 30/4/2019	From 1/5/2019
Work on Saturday	% rate	25% of the hourly min. wage	50% of the hourly min. wage
	Nominal rate	0,7473 EUR/hour	1,4945 EUR/hour
Work on Sunday	% rate	50% of the hourly min. wage	100% of the hourly min. wage
	Nominal rate	1,4945 EUR/hour	2,989 EUR/hour
Work at night (non-risk occupation)	% rate	30% of the hourly min. wage	40% of the hourly min. wage
	Nominal rate	0,8967 EUR/hour	1,1956 EUR/hour
Work at night (risk occupation)	% rate	35% of the hourly min. wage	50% of the hourly min. wage
	Nominal rate	1,0462 EUR/hour	1,4945 EUR/hour

Source:
<https://www.podnikajte.sk/pracovne-pravo-bozp/priplatky-za-pracu-noci-sviatky-vikendy-1-5-2019>.

Figure 4.7

Share of Regular and Occasional Workers in Non-standard Working Hours in Total Number of Workers (in %, LFS)



Note: The ranking of the country among all EU Member States in the given indicator is expressed in brackets.

Source: Eurostat (2020); Author's design.

Box 4.1
Impact of Raising Minimum Wage and Surcharges for Work on the Exemplary Case

There is an employee who works in the company on a continuous change operation (1st group of work intensity, non-risk occupation). For simplicity of calculation, the amount of his gross wage is given by the level of the minimum wage without bonuses or personal evaluation. There is no public holiday in the month we use for this case. We assume that he spends a third of his working time working at night. Also, we assume he works twice a month over the weekend. The employee works full time – 40 hours/week, which with an average number of weeks in a month of 4,348 weeks/month is 173.9 hours.

Average number of hours worked per month	173.9 h.
Average number of hours worked at night	57.4 h.
Average number of hours worked on Saturday	15.8 h.
Average number of hours worked on Sunday	15.8 h.

Given the working hours used, the employee's gross wage at the level of the minimum wage and surcharges for work valid in 2018 is approximately 508.90 EUR/month (total labour costs € 688.10).

In 2019, the level of the minimum wage was valorised and from 1 May 2019, the amount of surcharges for work was adjusted. Given the same working time hours used before, the new level of gross wage is 566.50 EUR/month (total labour costs € 765.90). With this adjustment, total labour costs increased y-o-y by € 77.9 per month, representing an increase of 11.3%. The valorisation of the minimum wage accounted for 51.4% of the increase and 48.6% share was due to the increase in surcharges for work.

Although the exemplary case is very abstract – some results may be deemed important. The contribution of work surcharges and their link to the rapidly rising minimum wage had to be reflected in the dynamic growth of total labour costs. A gradual and predictable approach would be a more appropriate alternative to a leap and unpredictable increase in total labour costs.

The second factor pointed out by employers when increasing surcharges for work is their derivation from the value of the minimum wage. In recent years, it has grown at a record pace, while its valorization did not take into account other economic parameters like, e.g.

development of labour productivity. It is difficult to express the overall effect of the increase in surcharges for work to total labour costs due to their fragmentation (several levels of work intensity, groups of risky and non-risky occupations, etc.). Furthermore, we present only an exemplary case, which does not have the ambition to completely capture all changes in labour costs that have occurred in the area of increasing the minimum wage and surcharges for work. Rather, it is an attempt to express their influence on a standardized example of an employee.

5. PRICE DEVELOPMENT

In 2019, the inflation rate followed the development of the previous year, and the y-o-y growth rate changed only slightly. The average annual change has stabilized at 2.7%, which is somewhat higher than its medium--term objective.

However, the individual components of inflation were far from having such a stable development. In particular, the impact of regulated prices increased, giving the economy an inflationary impulse at the beginning of the year, or the ongoing growth in food prices. In the short term, the inflation rate does not yet pose a dramatic risk to economic development (this will be the impact of the coronavirus on the labor market and economic output in 2020).

However, if production does not resume in the short term, the lack of supply of some goods may lead to limited supply-led inflationary trends at the individual product level.

Similarly to Previous Year

Development in the sub-categories of headline inflation was (as already indicated) different and the effects of the individual components unbalanced, both in intensity and time. The following factors can be identified as important for the development of the price level.

- *A further rise in food prices* – Food continued the growing trend from 2017, some types of food even achieved double-digit y-o-y growth, which contributed to the steady growth of the category as a whole. The development of prices of vegetables (potatoes) and pork was particularly important.
- *Fuel price increase* – In particular, in the second half of 2018, fuel prices recorded a more significant increase in both commonly used fuels (petrol and diesel). The importance of this growth lies mainly in its multiplier effect, as fuels enter as a cost item into almost every sector of the economy, supporting the rise in final product prices. However, the rapid growth in some months was dampened by the fall in oil prices on world markets towards the end of the year.

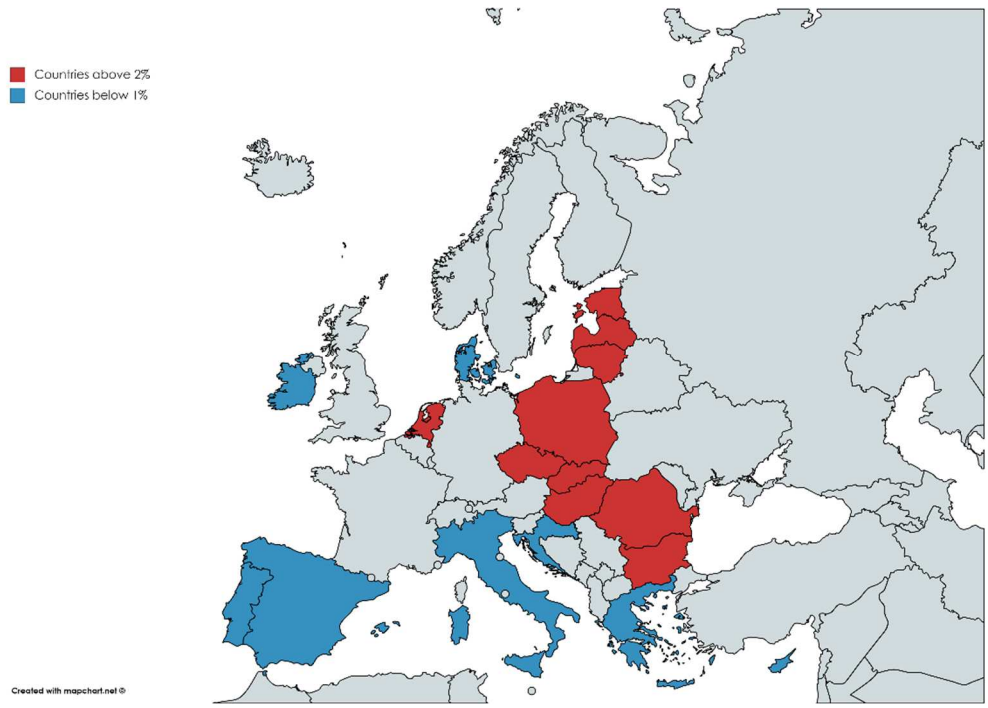
• *Substantial growth in regulated prices* – After the recovery of regulated prices in 2018 and the previous several-years slump, the prices of regulated industries became a significant driver of y-o-y inflation. Therefore, the price development of some commodities (e.g., gas, electricity, and others) in the previous year on world markets had a significant effect on domestic regulated prices.

• *A decrease in fuel prices* – Especially in the second half of 2019, fuel prices recorded a continuous y-o-y decline in both commonly used fuels (petrol and diesel).

• *Free meals for students hampered the inflation growth* – the rise in bus transport prices, together with the increase in postage prices, determined a significant contribution to the increase of some regulated prices. However, this contribution has been hampered since September by the introduction of a measure to provide free meals for students, which has subsequently dampened their impact.

Image 5.1

Inflation Rate Development in Selected EU Countries in 2019 (HICP)



Source: Eurostat (2020), Author's design.

Although the value of the inflation rate is not dramatic, Slovakia achieves the highest inflation rate of all Euro area countries. The other EU Member States with higher inflation rates are only Romania and Hungary. When displaying countries according to the inflation rate on the map of the EU, we can identify two trends.

The first trend is a generally faster growth rate of the price level in the eastern part of the EU[1], representing a group of later acceded Member States (albeit at non-dramatic values).

The second trend is that price growth is significantly lagging behind the ECB's medium-term objective in some southern EU countries or rather in the PIIGS countries.[2] Thus, the impact of economic developments on the price level was not homogeneous across the EU, making it challenging to implement a single monetary policy for the Euro area.

In the consumer basket, the most substantial increase was recorded by the two largest categories in the entire basket – *Food and non-alcoholic beverages, and Housing, water, electricity, gas and other energy* (Figure 5.1). Both grew at an average y-o-y rate of up to 4%. As the prices growth rate of other categories was not so high, the dynamics of these two categories had to be reflected in the overall growth. The only category in the consumer basket that recorded a decrease (although only a very slight one) was Transport. In total, the prices rose in more than 90% of all sub-categories of the consumer basket.

Overview of the production side of the economy tells us that industrial producer prices have increased in total at a lower rate as consumer prices (1.9%).

However, in terms of their structure, prices rose faster for domestic products than for export products (they are approaching consumer inflation). Prices of industrial products for the local market lagged significantly behind the pace of the overall category and recorded only a slight increase of 0.7%. Thus, the overall growth of this category was driven mainly by growth in the prices of electricity, gas, and steam production, which grew at a rate of around 7% y-o-y.

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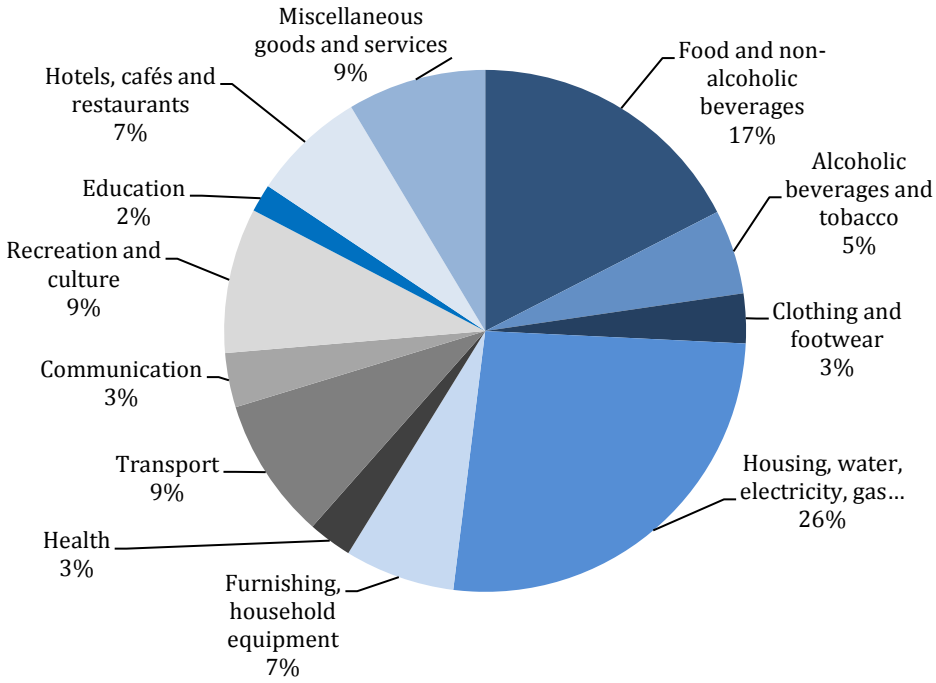
[1] The Netherlands is the exception.

[2] With the exception of Denmark and Croatia.

Figure 5.1

Year-On-Year Change of the Price Level in CPI Categories

(size of categories are based on their weights in the CPI)



Source: Eurostat (2019).

The prices of industrial production intended for export had a heterogeneous development. While the development of vehicle prices picked up and grew by more than 3%, other important export sectors such as the manufacture of metals and metal structures, the manufacture of computer, electronic and optical equipment, and the manufacture of machinery and equipment recorded an average y-o-y decline. As a result, on average industrial producer prices for foreign markets grew slowly than for the domestic market (1.5% vs. 2.5%).

Construction work prices followed the trend of previous years and increased by almost 4%, while construction material prices slowed by more than half the rate of the previous year. These factors also supported the growth of housing prices, although the overall increase in housing prices (by 7.5%) was still largely determined by the lack of supply of new real estate, which pushes the growth of existing ones.

After turbulent years, the prices of agricultural products produced in the domestic economy have stabilized at a y-o-y growth rate close to 2%. This growth was driven by an increase in the prices of crop products, which reached 3.2% compared to animal products with a y-o-y change of –0.3%.

T a b l e 5.1
Overview of the Main Price Indexes in Slovakia (in %)

	2016	2017	2018	2019
Inflation rate (HICP):				
Euro area	0.2	1.5	1.8	1.2
Slovakia	–0.5	1.4	2.5	2.8
Czech Republic	0.6	2.4	2.0	2.6
Hungary	0.4	2.4	2.9	3.4
Poland	–0.2	1.6	1.2	2.1
Industrial prices:				
Industrial producers prices – domestic	–4.3	1.9	4.9	2.5
of which: Manufacturing	–3.5	2.6	3.2	0.7
Industrial producers prices – total	–4.1	2.5	2.5	1.9
Industrial producers prices – export	–3.8	2.9	1.1	1.5
Construction work prices	1.2	3.0	3.4	3.9
Construction material prices	–0.4	3.5	4.4	1.8
Agriculture products price	–5.3	4.7	2.0	1.8
Deflators:				
GDP deflator	–0.5	1.2	2.0	2.6
Government consumption deflator	1.3	3.2	4.2	5.6
Private consumption deflator	–0.3	1.4	2.3	2.7
Fixed investments deflator	–0.8	1.6	2.3	1.2
Export deflator of goods and services	–1.5	2.2	1.8	0.0
Import deflator of goods and services	–1.1	2.8	2.4	0.2
Terms of trade	–0.4	–0.6	–0.6	–0.2

Source: Macroeconomic Database NBS (2020); MF SR (April 2020); SO SR (2020).

In the area of deflators, the government expenditure deflator again found itself above average, with prices of products consumed in general government growing at least twice as fast as other deflators of GDP components. The y-o-y deflator of private consumption matched the growth rate of consumer prices. Prices in Slovak foreign trade have stagnated. The aforementioned heterogeneous growth in export prices of industrial products contributed to price stagnation in the export deflator. In contrast,

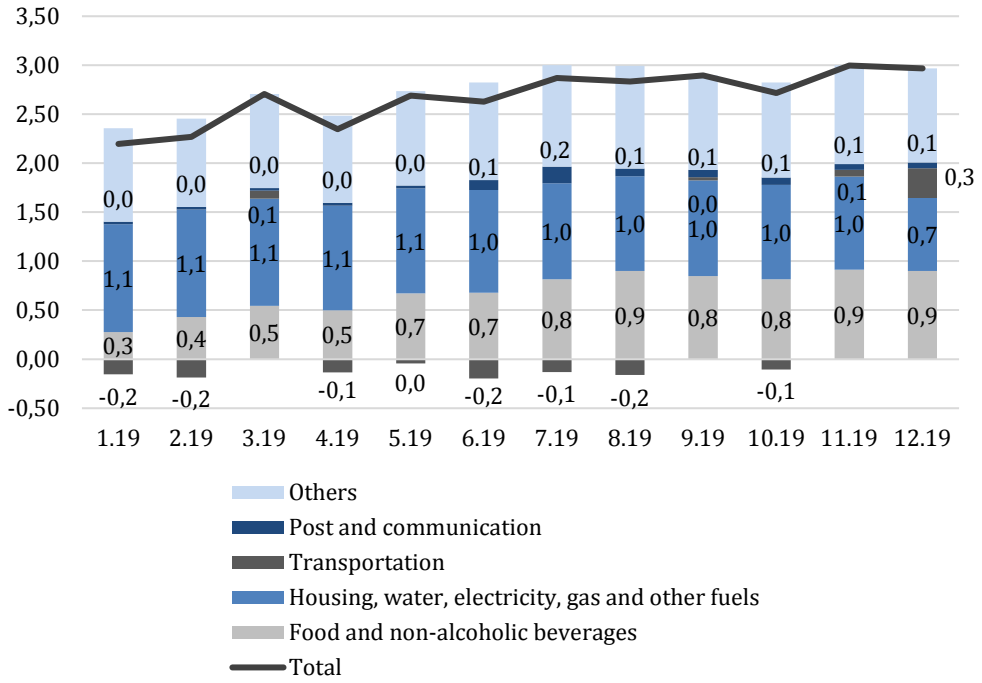
the import deflator changed only minimally (an y-o-y increase of 0.2%). Thus, the terms of trade have deteriorated, albeit only marginally. For the same amount of exports, it was possible to import a smaller amount of imports (although only by 0.2%). However, the positive development in terms of trade is historically sporadic in the Slovak environment. Instead, the country records a deterioration of terms of trade every year (usually always up to 1%).

Food and Housing Costs Leaders in Price Growth

Looking at the contribution of individual categories of the consumer basket, it is easy to identify two basic categories whose impact on the growth of the price level was decisive. The rise in food prices and housing costs contributed up to about 2/3 of the overall increase in the price level for most of the year (see Figure 5.2).

Figure 5.2

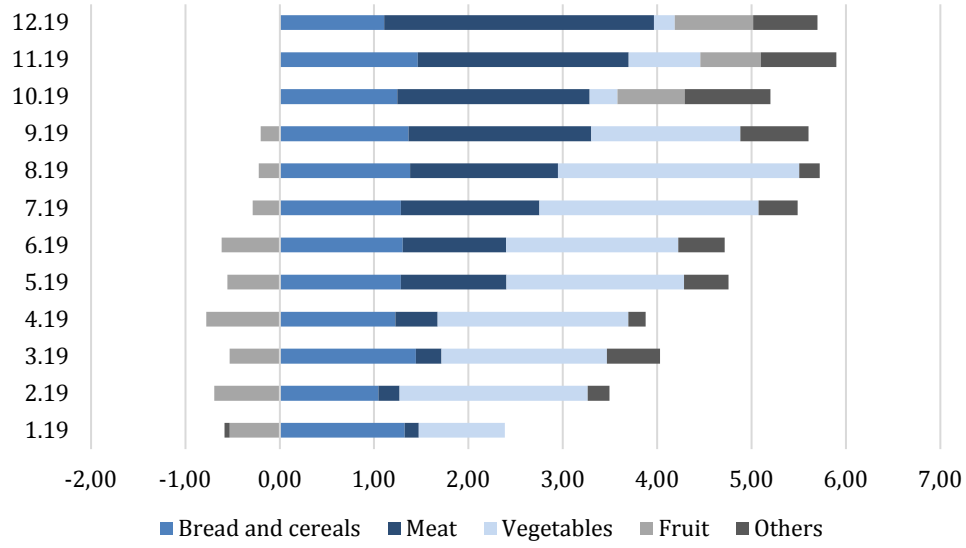
Percentage Contribution to Y-O-Y Growth in Individual Months for Selected Categories of Consumption Basket (in %)



Source: SO SR (2019), Author's calculations and design.

It is also worth mentioning the marginal contribution of the category Post and Communications, which increased the prices of postage from 7/2019 after the decision of the regulatory authority. However, the weight of this category in the consumer basket is low. That is why the inflationary impulse caused by the increase in postage prices was only at the level of tenths of a percent. While the increase in housing costs is linked to the development of commodity prices on world markets and the subsequent decision to increase prices by regulators, food prices are determined by market supply and demand. Therefore, in the following analysis, we will focus on this category.

Figure 5.3
Contribution of Selected Sub-categories to Overall Growth of Food Category (in p.p.)



Source: Eurostat (2019), Author's calculations and design.

The development of prices in the food category was influenced mainly by the development of bread and cereal prices, which contributed to the positive growth throughout the year (min. 1 p.p. in each month). The higher prices of bread and cereals are mainly due to an increase in the prices of food wheat and feed wheat. The price of those was in some months up to 15% higher in y-o-y comparison. The higher costs of material

inputs were thus, to some extent, reflected in the growth of product prices. Also, the increase in various surcharges for work and total labour costs that took place in 2019 contributed to higher prices in this category. However, the factors that had a decisive influence on the rise in food prices and which are worth paying more attention to were vegetables (especially potatoes) and pork. They grew even though there were no compelling reasons for their increase in the domestic economy.

Potatoes Prices Determined by Climate Change and Storage Availability

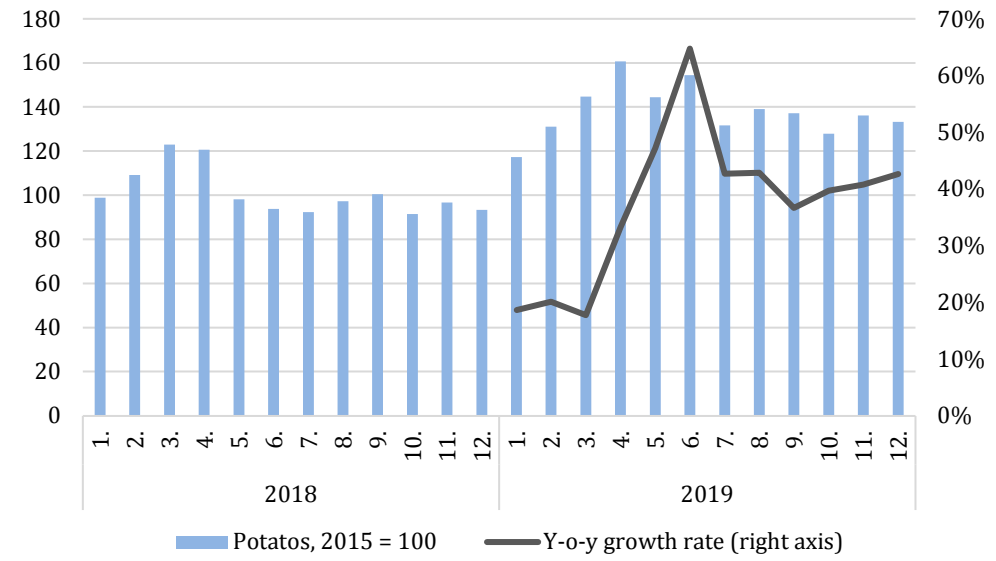
Potatoes have been sold at historically high prices since 2000 and in some months were 60% higher than in the previous year. However, the problem with potatoes was not the bad domestic harvest (lower yield was in 2017), but rather the combination of lack of storage space with the effects of climate change. Slovakia is self-sufficient in potato production at around 50%. After harvest, the country uses domestic resources for several months. Once they are gone, they are replaced by imports from abroad (mostly France, Germany, and the Netherlands). The argument of domestic producers for this strategy of using local and foreign crop resources is the lack of suitable storage capacities (refrigerated warehouses are necessary for longer storage). They would provide space for supplying the domestic market with domestic production throughout the year.

Therefore, at the end of 2018, post-harvest potato prices remained at the level of 2015 (stagnant) due to higher yields than in the previous year. However, after domestic stocks were depleted, they were inevitably replaced by higher imports of commodities from abroad. However, in the main importing countries, potato prices have risen sharply due to lower harvests caused by the droughts that hit Europe in 2018 (a phenomenon often associated with climate change).

Therefore, while the y-o-y shift in the harvest in Slovakia grew by 13.5%, in France, its volume decreased by 8%, in the Netherlands by 18.5% and in Germany even by 23.9%. Thus, the rise in prices was also imported to Slovakia, raising the potato's contribution to the overall

growth in inflation. However, in the second half of the year, the new (higher harvest) brought a slight decline in potato prices, so the overall contribution of this commodity to inflation eased.

Figure 5.4
Potato Price Development Index and Y-O-Y Growth Rate in Slovakia
(2015 = 100)



Prameň: SO SR (2020); Author's calculations and design.

Pork Prices Were Affected by the Virus

Although the coronavirus was affecting the whole economy at the time of writing, there was already the virus behind the rise in pork prices in 2019 – but this time, it was the African swine fever. It has caused a massive decline in the supply of pork in China – the largest consumer of this meat in the world. On the other hand, the EU is the world's largest exporter of pork, and a shortage of pork in Asia motivated European producers to redirect export volumes to the Asian region at higher prices.

Slovakia was only indirectly affected by the African swine fever. Within pigs bred in Slovakia, the infection was confirmed "only" in 11 bred pigs and 26 wild boars.[3]

[3] <https://www.svps.sk/Zvierata/choroby_AMO.asp>.

Slovak pork production is self-sufficient for about 40% of domestic consumption[4], so relying on imports from other countries is a necessity. The countries that are the largest importers of pork to Slovakia include Germany, Poland, Spain, and Belgium.

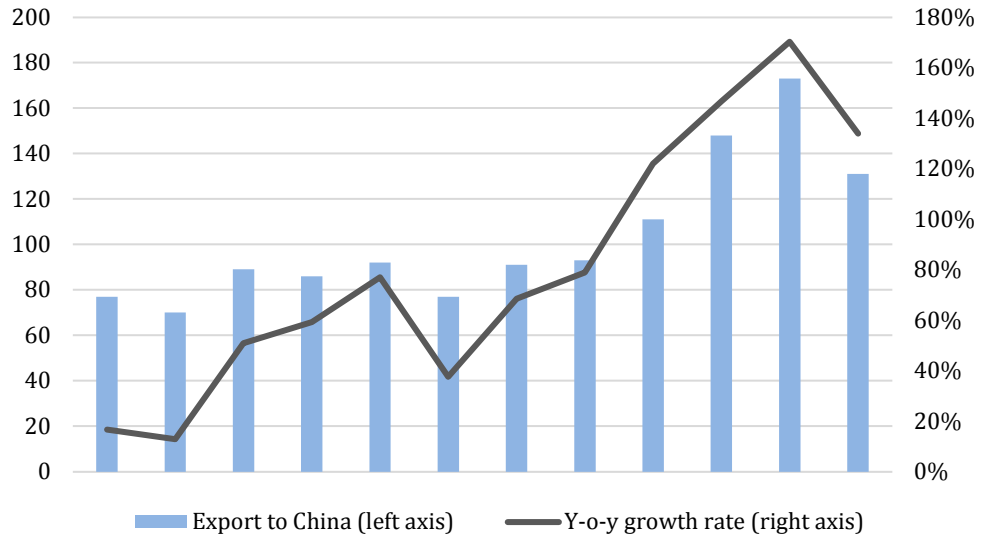
However, they responded to the outbreak of the African swine flu by increasing exports from Europe to China, which effectively reduced the supply of pork in Slovakia.

The dramatic increase in exports can be seen in Figure 5.5 when a slight increase from the beginning of the year turned to very dramatic growth in the second half of the year.

This increase in exports from the EU countries (the most significant importers to Slovakia) is in absolute alignment with the increase in pork prices in Slovakia (due to the decline in supply on the domestic market). Thus, the inflationary impulse was imported from abroad – similarly as in the case of potato prices.

Figure 5.5

Monthly Export of Pork from Germany, Poland, Spain, and Belgium to China and Its Y-On-Y Change (2019, in thousand tonnes and %)[5]



Source: DG AGRI – Pigmeat Trade (2020); Author's calculations and design.

[4] <http://www.retailmagazin.sk/aktualne-vpravo/4080-bravcove-maso-je-druhe-najoblubenejsie-maso-v-europe>.

[5] https://agridata.ec.europa.eu/extensions/DashboardPigmeat/PigmeatTrade.html>.

* * *

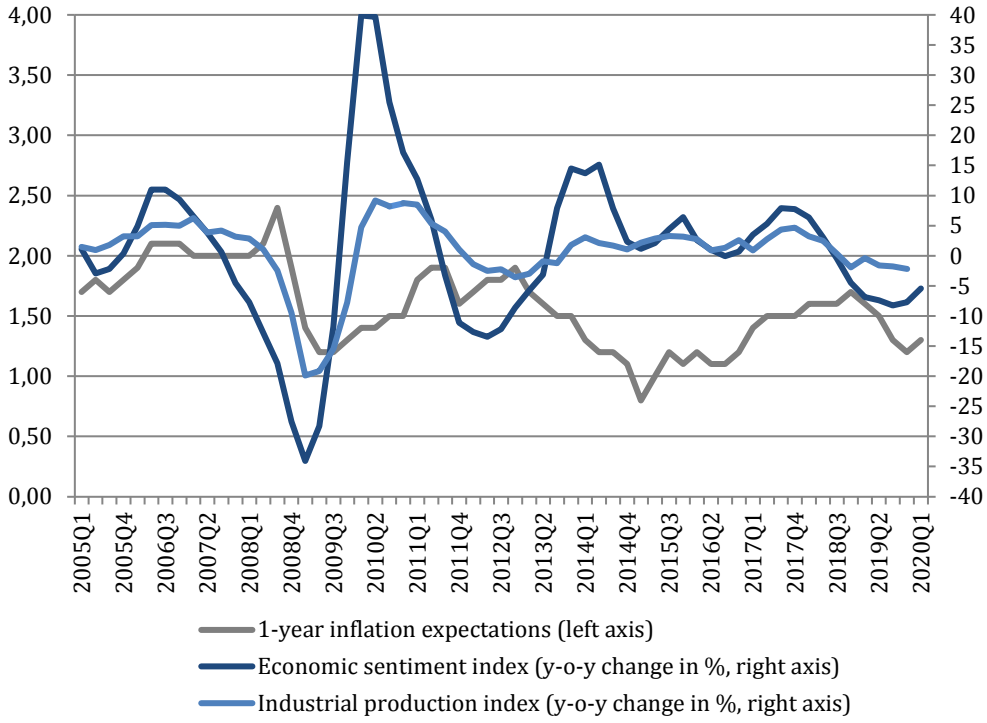
In 2019, the price development in Slovakia did not experience a particularly dramatic development. The threats to price stagnation that have occurred in the economy several years ago seem to be overcome. At the same time, the country ranks among the group of countries that are above the medium-term objective for inflation. The key factors influencing price developments were rising food prices and housing costs, which were the drivers of overall growth. An unconventional statement is that the biggest inflationary impulses came to the economy from an external environment. While housing costs were affected by commodity prices in foreign markets, food prices grew due to shocks that did not directly affect the domestic economy, but rather our largest trading partners in agriculture. While potato prices grew due to a supply shock created by crop shortages and climate change in other EU countries, the price of pork was affected by a supply shock created by increased exports to China.

The lesson from such a development is that if the Slovak economy continues to rely on the import of certain commodities into the domestic economy in the future, it must expect that the susceptibility to supply shocks (which is unable to prevent them from happening) will continue to increase.

6. MONETARY POLICY OF THE EUROPEAN CENTRAL BANK AND ITS IMPLICATIONS FOR THE SLOVAK ECONOMY

The end of 2018 indicated a gradual slowdown of the Euro area economy, which subsequently led to a continuous decline in inflation, as well as in real economic activity (see Figure 6.1) in 2019. The same economic trend was captured by surveys of individual inflation expectations of professional analysts (see Figure 6.1). After two years characterized by a certain stabilization of the Euro area economy accompanied by a long-awaited economic recovery, the year 2019 was thus marked by the first decline in inflation expectations practically since 2015. The yield curve of US and German government bonds has been inverted since mid-2019 (NBS, 2019), indicating a situation that is often interpreted as an increased likelihood of impending economic slowdown.

Figure 6.1
Development of Economic Activity Indicators and 1-year Inflation Expectations

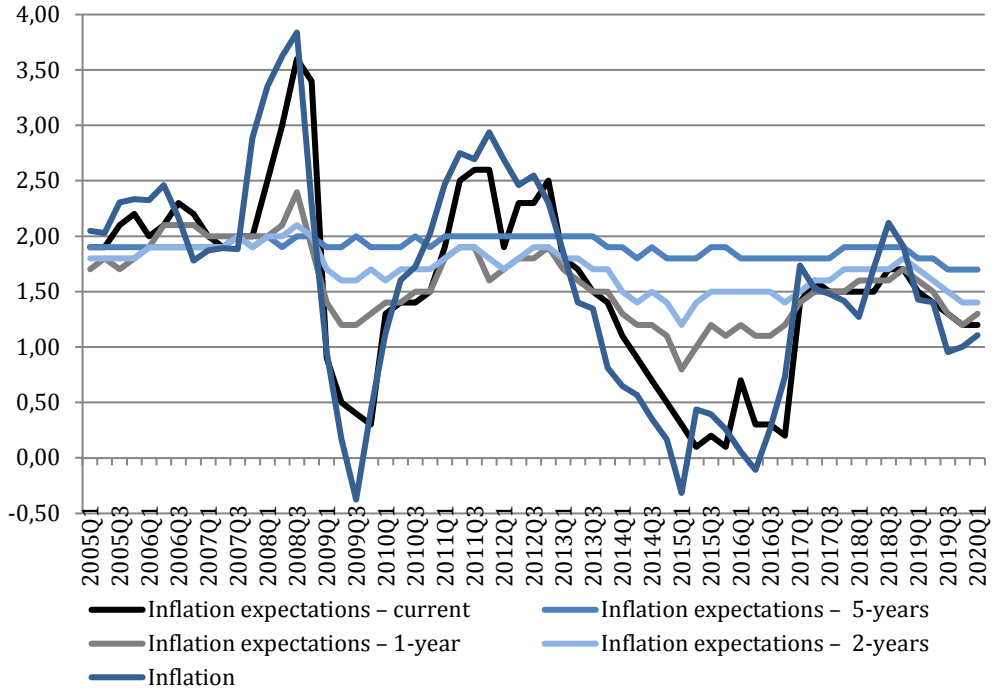


Source: ECB, Eurostat.

As the monitoring and management of inflation expectations of economic agents are at the heart of the modern approach to monetary policy, the historic decline in long-term inflation expectations (5 years) to 1.7% had to be accepted as a reliable indicator of a possible slowdown in the so far positive economic development (see Figure 6.2). On the other hand, the average growth rate of the main monetary aggregate M3 slightly exceeded the reference value of 4.5%, reflecting an ongoing bank credit creation as well as low opportunity costs of holding M3 (see Figure 6.3).[1]

Given that the relationship between the broader monetary aggregate and inflation ought to be observed over the longer term, and its strength is a debated issue (Gertler and Hoffman, 2018), the ongoing decline in real economic activity coupled with declining inflation expectations during 2019 signaled possible risks for achieving the already problematic value of targeted inflation close to but below 2%.

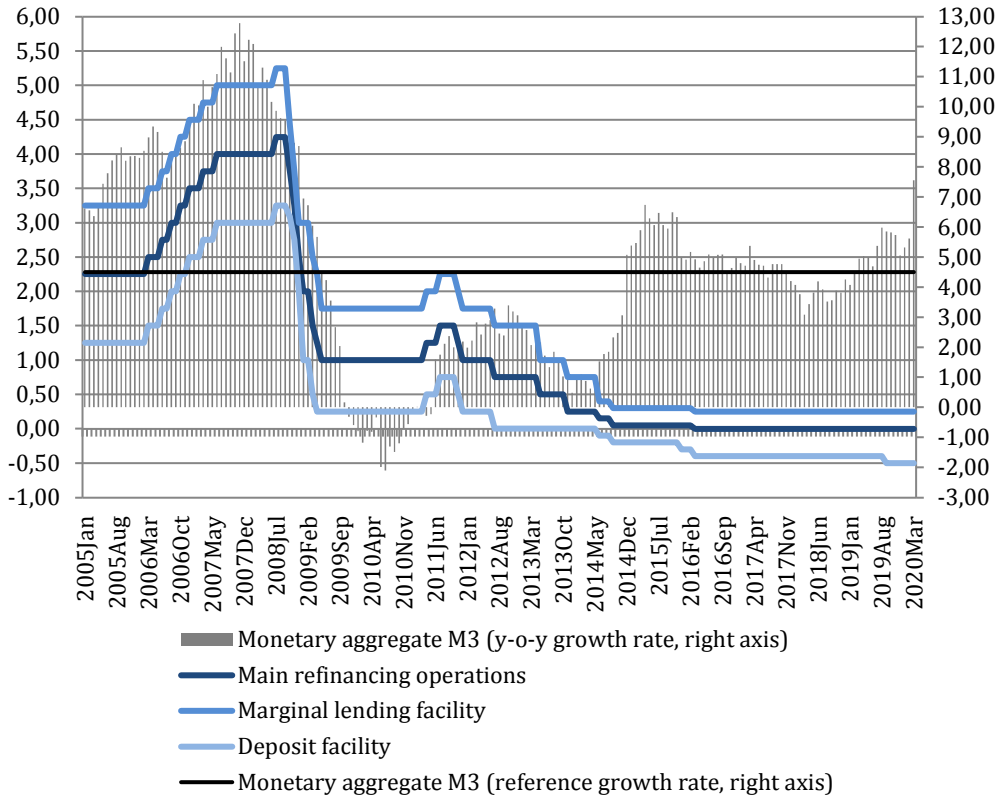
Figure 6.2
Development of Inflation Expectations and Inflation Rate (in %)



Source: ECB; Eurostat.

[1] <https://www.ecb.europa.eu/press/pressconf/2019/html/ecb.is190912~658eb51d68.en.html>.

Figure 6.3
Key ECB Interest Rates Development and Monetary Aggregate M3 Growth Rate (%)



Source: ECB.

The ECB kept its key interest rates unchanged until the September meeting, when it decreased the deposit interest rate for the first time since February 2016 to the current level of –0.50% (see Figure 6.3). In addition to reducing one of the key rates, the meeting resulted in a renewed Asset Purchase Programme (APP) of 20 billion EUR per month with an open end, a third wave of Targeted Long-Term Refinancing Operations (TLTRO) with a three-year maturity, a new system of remuneration of excess reserves, and an explicit linking of forward guidance policy to achieving the required level of core inflation.[2] At the same time, the

[2] A more detailed description of individual non-standard ECB measures adopted after the 2008 financial crisis is available in previous issues of this publication or in Širaňová and Kotlebová (2018). A more detailed description of the measures taken at the September meeting is available at: <https://www.ecb.europa.eu/press/pr/date/2019/html/ecb.mp190912~08de50b4d2.en.html>.

leaving President of the ECB, Mario Draghi, noted that the inclination towards an accommodative monetary policy would be here "for a prolonged period".

As can be seen in Figure 6.4, the decision on further monetary easing came at a time when, for the first time, a decline in the overgrown Eurosystem's balance sheet could have been expected. The overall balance reached astronomical levels as the result of the quantitative easing launch in 2015. The fact that despite the reactivation of active purchases under APP (Securities section in Figure 6.4) and the new wave of TLTRO, the Eurosystem's annual balance sheet declined to –0.63% y-o-y indicates that the ECB was ready to continue in a slow exit strategy from non-standard monetary measures. However, economic developments in 2019 thwarted these plans.[3]

The renewed quantitative easing policy has not only been sharply criticized by several renowned economists, and both current and former central bankers, it has been also born in an environment of significantly different opinions within the internal composition of the ECB's executive bodies. In response to the measures taken, the German member of the ECB's Executive Board resigned in October 2019 and several other members publicly expressed their concerns about the possible adverse effects of this policy. The discussion on the negative impacts of long-lasting non-standard monetary measures has been around practically from the introduction of these instruments.

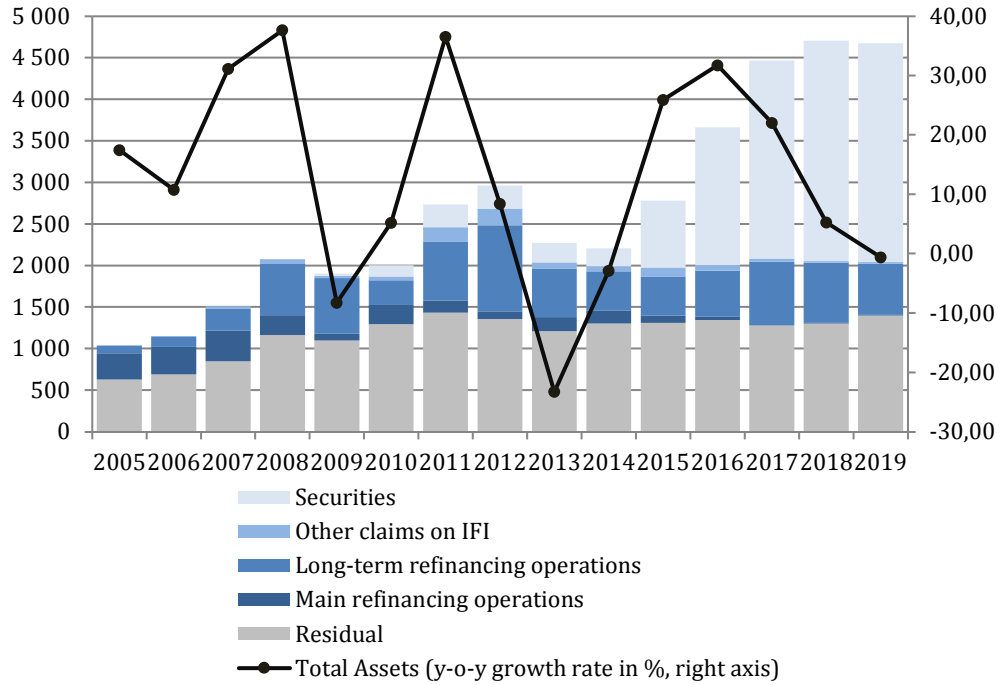
However, the possibility of not only simple materialization of negative consequences but also their potential growth in time has become more and more plausible. The negative reactions to the September decision thus reflected pessimistic expectations regarding possible impact of renewed and new non-standard measures on financial stability (a reduction in the profits of financial institutions, a reduction in the return on assets for savers in mutual and pension funds), a bubble in real estate

[3] For a discussion of a possible exit from non-standard monetary measures associated with the sequencing of individual steps, see Horvath (2017a). According to the scheme presented in the study, before its decision in September 2019, the ECB was in Phase 3, which is characterized by suspended asset purchases under the APP program with reinvestment of maturing assets, a zero (or negative but constant) key interest rate, and a communication strategy aimed at informing about future monetary policy developments.

markets, increasing income and other inequalities, as well as the overall effect on the labour productivity and economic activity.[4]

Figure 6.4

Development of Eurosystem's Balance Sheet Structure (EUR billion, %)



Source: ECB.

During the last two decades, the Slovak banking sector has been in a state of constant excess liquidity, which is a phenomenon that has not been disrupted by the financial and economic crisis of 2008-2012. In the Slovak banking sector, the long-lived unconventional monetary policy of the ECB did not result in increased demand for central bank liquidity through the purchase of securities (quantitative easing). Rather, these effects took the form of the radical reduction in interest rates, also materializing in the increased availability of credit, especially in the segment of the household sector.[5]

[4] For a discussion of the negative effects of non-standard monetary measures, see e.g. Horvath (2017b).

[5] Due to the strong connection of the domestic banking sector to foreign mothers domiciled mainly in Western Europe, the need for domestic liquidity is often addressed outside the interbank market through borrowing within a banking group. For further discussion, see Morvay et al. (2019).

After reaching the maximum historical levels of indebtedness and lending growth rates to the non-financial sector in the first half of 2019, the lending slowed down as result of preparations for tightening of macroprudential policy. These included increasing the value of the countercyclical capital buffer to 1.50% and tightening the conditions for retail loans provisioning (e.g., increasing the LTV indicator, introducing a limit on the ratio of total indebtedness to income). Even after taking into account the impact of these measures, the future projected credit growth forced policy makers to adopt another increase in the countercyclical capital buffer to 2.00% in mid-2019, effective from August 2020.[6] These restrictive macroprudential policy measures initialized at country level independently by the National Bank of Slovakia (henceforth NBS) were partially offset by the ECB's accommodative monetary policy described above, which again led to increased activity in the banking market, mainly in the mortgage segment (Kalman, 2019). We conclude that the domestic debate in the given period was rather shaped by the question of the future functioning of the so-called "bank levy," as well as the overall setting of the macroprudential policy conducted relatively autonomously under the auspices of the NBS, and less by the ECB's common monetary policy.

However, from the long-term perspective, Slovakia will not be able to avoid pan-European phenomena that significantly limit the conduct of monetary policy, being it the question of the effective conduct of monetary policy in an environment of low inflation, stagnant labour productivity, and a disproportionate increase in nominal wages (see Chapter 1 and Chapter 4). In the following text, we will therefore take a closer look at two topics that are currently the focus of professional discussion.

Is the Phillips Curve Dead? Monetary Policy in the Environment of Low Inflation and Secular Stagnation

The phenomenon of absent deflation in the crisis period 2008 – 2012 and the low rate of inflation in the post-crisis period compared to the predictions of standard economic models led several experts to focus on

[6] However, this increase did not became valid and later was canceled at the end of April 2020 due to the negative economic impact of the COVID-19 pandemic.

the question of what fundamental determinants shape the development of inflation. Explanations on possible causes of the divergence between real economic development and model predictions include the effects of globalization (global value chains, imported inflation, increased competition), structural labour market changes (flexible contracts, lower unions role), monetary policy performance (forward guidance, the success of anchoring of inflation expectations), or the discussion on how inflation expectations are shaped (backward and forward-looking economic agents, consumers, and professionals).[7] In this text, however, we will take a closer look at the theoretical concept, which represents the basic building block of theoretical models currently used in the conduct of monetary policy and is often discussed as one of the reasons for the divergence between models and reality.

The concept of the Phillips curve dates back to the 1950s. While the original design of the Phillips curve was based on an observable economic relationship between the unemployment rate and wage inflation, in modern monetary policy instrumentarium, the Phillips curve captures the link between the output gap and price inflation after taking into account the effect of inflation expectations.[8] In a simplified view, in the case of a positive output gap, each additional unit of production increases inefficiency and marginal costs of production. As part of this, production requires a higher volume of labour, which also increases labour costs due to an increase in demand for labour. This mechanism thus links the original specification of the Phillips curve for the labour market with its current formulation.

The disruption of the relationship captured by the Phillips curve has significant consequences for the conduct of monetary policy. Using changes in the short-term interest rate, the central bank seeks to influence economic activity (consumption and investment), the change in which will subsequently results in achieving the required inflation rate.

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[7] For a more detailed discussion, see the report by Belz et al. (2020), co-authorized by former Fed Governor Janet Yellen.

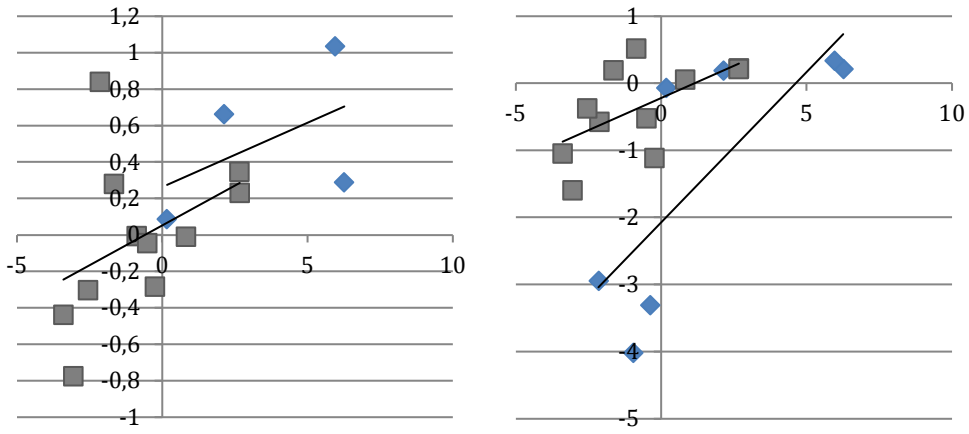
[8] There are several specifications of the Philips curve in the literature It is necessary to distinguish between the so-called structural and empirical formulation (Occhino, 2019). For the purposes of our argument, we will proceed from the simplified empirical formulation used in Occhino (2019).

However, if the central bank assumes a stronger relationship between inflation and the output gap than in the reality, it may pursue too accommodative (or restrictive) monetary policy to achieve a targeted inflation rate if inflation is below (or above) the targeted level. In this context, the presence of long-term low inflation in the Euro area is not necessarily a manifestation of structural change. On the contrary (and it may seem unbelievable), the ECB's monetary policy may not be sufficiently accommodative.

However, the results of empirical studies for the Euro area have not yet come to a definite conclusion whether the long-lived Phillips curve has really "died." Hindrayanto et al. (2019) find no evidence that the slope of the pre- and post-crisis Phillips curve changes significantly. Oinonen and Paloviita (2014) and Riggi and Vendetti (2015) state that the slope of the Phillips curve in the Euro area has become even steeper after the crisis. Ciccarelli and Osbat (2017) point to the heterogeneous shape of the Phillips curve in the EU countries, while in some countries, it is possible to observe a rather steeper slope of the curve in the post--crisis period.

Figure 6.5

Output Gap vs. Inflation Gap in Slovakia
(before 2008 – grey, after 2012 – blue)



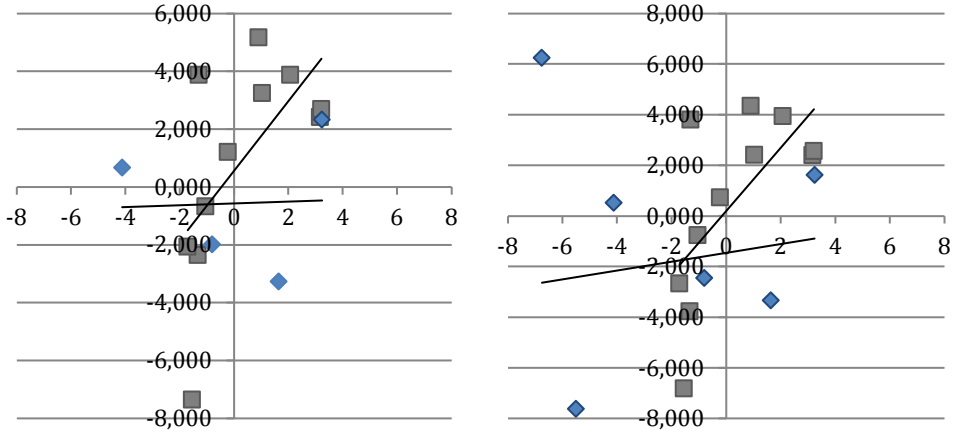
Note: The inflation gap is calculated as the difference between inflation and inflation forecasts for a given year according to the NBS (left figure) and updated consumer inflation expectations (right figure), according to Tura-Gawron et al.

Source: AMECO. NBS; Tura-Gawron et al. (2018).

Figure 6.5 shows a simple version of the Phillips curve for Slovakia in the pre-crisis and post-crisis period. As may be seen, in the case of the official inflation forecast, we do not find a significant difference in the slope of the curve, which continues to point to the unchanged effect of the output gap on the price inflation. Regarding consumer inflation expectations, the slope of the curve flattened slightly. The difference was caused by the period 2002 – 2004, during which inflation expectations were significantly higher than the actual inflation despite the negative output gap. Without these observations, the shape of the curve in the post-crisis period is steeper. If we exclude the crisis period of 2008 – 2012 from the observations, then the slope of the curve will remain almost unchanged in the case of both professionals and consumer inflation expectations.

Figure 6.6

Growth Rate of Real Wages Adjusted for Effect of Changes in Labour Productivity vs. Labour Market Gap (before 2008 – grey, after 2012 – blue)



Note: The real wage is determined as the difference between the year-on-year growth rate of nominal wages and the inflation forecast for a given year according to the NBS (left figure) and the updated consumer inflation expectations (right figure) according to Tura-Gawron et al. (2018), after including the effect of the rate of growth of labour productivity. The labour market gap is calculated as the difference between the natural unemployment rate and the current unemployment rate.

Source: OECD. NBS; Tura-Gawron a kol. (2018).

In Figure 6.6, we look again at the course of the Phillips curve in Slovakia. However, this time it is applied to labour market conditions.

In this case, we extend the original Phillips curve with the effect of the growth rate of labour productivity (Orlandi, 2018) and investigate the impact of the labour market gap on the change in real wages. In this case, there is even a steeper course of the curve in the post-crisis period than in the period up to 2008. If we again exclude the period of the crisis years 2008 – 2012 from the observations, then we find a difference in the slope of both curves pointing to a much stronger link between the change in real wages and the labour market situation in the post-crisis period.

Therefore, warnings about the possible death of the Phillips curve are likely not to be warranted in Slovakia. Rather, this relationship may even shed light on rising wage inflation in the presence of stagnant labour productivity growth in the labour market.

Although the issue of the direct link between wage and price inflation is also the subject of long-standing debate,[9] in the current environment of low inflation and negative interest rates, the possibility of triggering inflation through upward pressure on nominal wages is also supported by the scientific literature. The latest publication by authors from the Bank for International Settlements (Pereira da Silva and Mojon, 2019) advocates the creation of a common package of broad consensus measures that would help to achieve objectives of monetary policy by triggering wage inflation. The direct impact on wage inflation should be the result of agreements between a broader range of government representatives, employers, and trade unions. From the Slovak economy point of view, it is possible to expect somewhat stronger inflationary pressures in the case of the ECB's continued accommodative monetary policy and a positive gap in the labour market, signalling an excess of demand over labour supply.

[9] The discussion of the direction of causality between price and wage inflation is based on the standard concept of cost-push inflation, which has already been described when discussing the formulation of the Phillips curve. Backward causality points to the incorporation of inflation expectations into the growth rate of nominal wages, assuming that employees expect to maintain a stable level of real wages. A recent ECB publication (Bobeica et al., 2019) states that wage inflation is transmitted on to price inflation in the major Euro area economies, but the strength of this transmission depends on the type of shock (demand shock is conducive to better transmission) and the inflation rate (in an environment with low inflation, transmission is lower).

Redefining the ECB's Monetary Policy Strategy

The ECB's September decision to ease monetary policy came at a time when the 20th anniversary and euro celebrations were taking place and the ECB was preparing for activities to re-design the current version of the ECB's official monetary strategy. The original plan of work on the new or updated version of the ECB's monetary policy strategy initially scheduled to be completed by the end of 2020 was postponed until mid-2021 due to the situation with the COVID-19 pandemic. It is unclear whether the changes in the monetary policy strategy will be of only purely cosmetic nature, whether they will focus on some minor technicalities, or what is the likelihood that there will be significant changes in the ECB's overall code of conduct.

However, as we may at least expect an adjustment in the ECB's current policy toolkit that will affect the development of the Euro area economy over the next few years to decades, the following text provides a brief overview of the current discussion on key areas in which some changes are to be expected.

i) The Objective of Monetary Policy

The current definition of the ECB's monetary policy objective was formulated in 2003 with the phrase: "HICP inflation close to but below 2%".[10] However, in recent years, there have been several objections against such wording related to the experience of the post-crisis period of long-lasting negative interest rates and low inflation.

The first issue that comes into play is the question of the level of targeted inflation itself, as the 2% used so far does not appear in the scientific literature as a certain quantitatively determined optimal level of inflation.[11] Although there are voices in favour of increasing the rate of targeted inflation, as such a move would provide a better room for manoeuvre (Cohen-Setton et al., 2019), the concerns about the loss of the ECB's credibility are likely to counteract this decision. Rather, we may

[10] From 1999 to 2003, the objective was defined as "a year-on-year increase in the Harmonized Index of Consumer Prices (HICP) for the EA of below 2%."

[11] For a discussion on determining the optimal level of targeted inflation, see e.g. Dujava (2016).

expect a redefinition of the vague formulation used so far, allowing the ECB to have more room for manoeuvre. This would also not undermine the successful anchoring of economic agents' inflation expectations by increasing uncertainty about the ECB's objectives.

Whelan (2019) thus advocates an accurate quantitative specification of the level of inflation without the phrase "close, but below." Claeys et al. (2019) propose a formulation that would define the inflation target as an average inflation rate of 2% over a long period. It should solve an existing asymmetry that the original phrase implies. At the same time, such a definition would mean a shift from the currently medium-term targeting horizon to an indefinite long-term period. However, it still does not address the issue of the vague specification of the targeted time horizon. As it is not clear what is meant by the currently specified medium-term horizon used in official documents, most experts operate with a period of three to five years. According to Whelan (2019), the average long-term inflation rate could potentially be interpreted as to capture a period of one economic cycle.

Another problem is that the currently used definition of inflation focuses on consumer prices. However, they include both a highly cyclical component (food prices, energy prices), and a strong element of import prices, which in the current environment monetary policy can influence only to a limited extent.[12] Given these factors, some economists are in favour of orienting monetary policy to the explicit targeting of core inflation in a shorter period, an inclination already hinted to in some statements of central bankers (Whelan, 2019).

Among some bolder recommendations, there are regular proposals advocating for a change in the definition of the objective in favour of targeting the price level, or the nominal GDP. While these options are interesting from the scientific community point of view, they are less likely to be adopted by policymakers due to more ambiguity in their application in practice, as well as concerns about the ECB's loss of credibility based on (un) successes of inflation targeting.

[12] For a discussion of the role of the global factors in domestic inflation and monetary policy limitations, see Horvath (2017b).

On the other hand, Whelan (2019) pointed to the possibility of a broader understanding of the operation of the ECB's monetary policy. A narrow understanding of the ECB's monetary objective focuses on achieving a targeted inflation rate. However, according to the founding treaties the ECB is committed to supporting the EU's broader economic objectives, provided that such performance does not undermine its ability to achieve its primary objective of maintaining price stability (Article 127, paragraph 1 of the Treaty on the Functioning of the European Union). As result of such a broad interpretation of the conduct of monetary policy itself, Harwell (2019) points to the need to clarify several contentious issues concerning the ECB's mandate. Although the ECB cannot be expected to extend its mandate to (e.g.) achieve full employment, as in the case of the FED, a broader interpretation of its mandate opens up at least more scope for the application of non-standard monetary policy instruments.

ii) Tools of Monetary Policy

The crisis experience and the post-crisis period of zero and negative interest rates have brought about a change in terminology related to the conduct of monetary policy. The ECB tools used until 2008 were termed as standard and the tools put into practice after 2008 as unconventional.[13] Unconventional monetary measures include credit easing instruments (a targeted long-term refinancing operation, purchase of covered bonds and other covered securities), quantitative easing (purchase of government bonds), and the so-called forward guidance. Given that twelve years after the outbreak of the financial crisis and the Great Recession the ECB's unconventional instruments are fully used in practice without a clear end-of-use plan, the change in the ECB's monetary policy toolkit is likely to focus on question how to include them in the standard instrumentarium, how to specify the circumstances under which these instruments are to be used, as well as the terms of their utilization. On

[13] Standard instruments include open market operations (main refinancing operations, long-term refinancing operations, fine-tuning and structural operations), automatic operations and reserve requirements. Some authors include among the unconventional monetary measures also changes in the execution of operations of some standard instruments (e.g. change in the execution of repo transactions, change in the policy of acceptance of collateral in repo transactions), or activation of the ELA instrument (emergency liquidity assistance).

the contrary, the need for new potential tools – which could be activated in the event of another deep recession – will come along with a further search for "even more" unconventional tools or new nonstandard measures. Along this lines, potential suggestions include the idea of a cashless economy (Rogoff, 2016), or the innovative introduction and use of new virtual money issued by central banks inspired by blockchain technology.[14] One of the possibilities is the use of instruments that omit the banking sector as an intermediary between monetary authority and final demand and directly affect the liquidity of companies or consumers. This includes direct purchases of securities issued by non-financial companies on the capital market, which have already been implemented to cope up with the effects of the COVID-19 pandemic, as well as the controversial idea of helicopter money. The question of the possible use of helicopter money is an open topic, and several new publications already address the technical issues of its implementation. Cohen-Setton et al. (2019) argue that the helicopter money idea should undoubtedly be further analyzed with an aim to investigate its possible application in exceptional cases.

However, the omission of the banking sector as an entity creating the money supply also brings with it certain controversies. In the perspective of the end-user of these benefits (the state budget itself or the household and corporate sector), a direct financial transfer (purchase) without the intervention of the market mechanism represented by the banking system blurs the boundaries between fiscal and monetary policy or borders with prohibited monetary financing of the state budget.

The formulation of a new third direction within the framework of economic stabilization policy, the so-called macro-prudential policy, has subsequently exacerbated this problem, as the interactions between these economic policies are considerable. In the Eurozone environment

[14] Given that the Euro is the world's second most widely used currency serving as international public good and the Euro area as a whole may be rather characterized as a large relatively closed economy – the use of foreign exchange interventions to affect the Euro exchange rate has never been included in the ECB's list of actively used monetary policy instruments. As a result, it can be expected that this will not be the case in the future, as a tendency towards foreign exchange interventions in such strong economic entity would naturally result in a series of competitive devaluations, which is certainly not a desirable phenomenon after the interwar experience.

characterized by the fiscal sovereignty of individual Member States combined with the promotion of national (not only) economic interests, the ECB must strongly defend its independence. The experience with the use of non-standard monetary instruments (quantitative easing) led to raised concerns about the possible loss of its independence.[15]

From the ECB's point of view, this criticism has subsequently translated into a more transparent communication of the limitations of the various instruments that the ECB can and will use in the future. One can read the repeated calls by central bank officials to activate fiscal policy instruments to boost growth in the Euro area and escape the trap of persistently low inflation within this context.[16] Although there is no sign of coordinating fiscal and monetary policy beyond the limits of independence of the ECB, the need to activate fiscal policy to escape the trap of low inflation is a common theme in several recent publications (e.g., Blanchard, 2019).

iii) Analytical Framework of the ECB's Strategy

The monetary policy strategy formulated at the inception of the ECB is based on a two-pillar approach consisting of economic and monetary analysis. The economic analysis monitors developments in the real sector and analyzes financial market conditions while the monetary analysis looks at longer-term developments in the credit and money markets. The original version of the 1999 strategy incorporated the principles of the quantitative theory of money, reflecting it in the explicit reference value of the M3 growth rate set at 4.5% per annum. However, the 2003 update removed such explicitly formulated quantitative targets. The monetary pillar should provide information on inflationary pressures in the medium to long term, as inflation ought to be limited by the growth of the money

[15] The use of unconventional instruments to purchase government bonds of individual Member States has been the subject of debate since their inception. The most recent of a series of objections was added by the German Constitutional Court in its decision of 5 May 2020 declaring that the German Constitution had been violated as a result of insufficient monitoring of the ECB's activities in implementing quantitative easing measures.
<https://www.bundesverfassungsgericht.de/SharedDocs/Pressemitteilungen/EN/2020/bvg20-032.html>.

[16] "Attacks on the ECB's monetary policy are misguided. The energy would be better spent calling EU institutions, national governments, parliaments and social partners to fulfil their obligations." Jean-Claude Trichet, Financial Times, 13 October 2019.

supply. Alternatively, information on credit market developments should signal possible problems for financial stability (Gros and Capologno, 2019).

This two-pillar approach is still formally used in the so-called cross-validation between predictions from economic and monetary analysis, and it appears by default in official ECB statements. However, apart from these formal occasions, it has received virtually no attention in the actual conduct of monetary policy since 2003 (Gros and Capologno, 2019).

Currently, there is a consensus among the scientific and professional public that relying on such a two-pillar approach is no longer desirable. According to Blot et al. (2019), the reduced role of money supply in the monetary analysis was the result of a disruption of the relationship between money supply and inflation, as well money supply and the volume of loans to private sector. At the same time, the responsibility to analyze credit market developments, as well as overall financial stability, has been transferred to the shoulders of macro-prudential policy, for which a separate architecture of the system of powers and enforcement has been developed at the Euro area level. In the future, it is somewhat necessary to address the issue of the interaction between monetary and macroprudential policy, however, it is likely that it will be achieved without the explicitly defined pillar of monetary analysis.

Within the analytical framework used in the conduct of monetary policy, in recent years there has been a significant deepening of expertise in theoretical modelling based on DSGE models. The new analytical apparatus represents a shift in modelling approaches, which had to reflect empirical findings reflecting the experience from the financial crisis or the deepening problem of income inequality over the last 15 years. Thus, these models integrate the imperfections in the functioning of the financial sector into the models of the real economy. Also, they investigate the effects of economic inequality and idiosyncratic risk in consumption, income, and wealth using an approach with heterogeneous agents. Therefore, it is expected that the analytical framework will have to reflect on new challenges that will fundamentally change the functioning of economy. Among these topics, the issue of climate change has so far

attracted attention due to its hypothesised significant effect on the supply side of the economy (fuel and food prices, use of renewable energy sources), with a consequent impact on inflation expectations (Blot et al., 2019). Population ageing or technological innovation remain equally important topics (Hartwell, 2019).

iv) Communication Strategy of ECB

Even in standard times, the modern conduct of monetary policy focuses on influencing the expectations of economic agents by signalling its very intentions and purposes. A necessary condition for the successful conduct of monetary policy, which aims to influence the subjective perception of economic reality, stands and falls on the ability of the central bank to communicate effectively with its main partners, both the professionals from financial sector, as well as consumers and non-financial corporations. An equally important factor is the ability of these partners to understand the role of monetary policy (and the central bank as well), and correctly interpret the monetary policy decisions. The monetary policy of a central bank does not only influence the subjects of the given economy. In the case of the most important central banks in the world (thus also the ECB), the effects are often spilled-over to the economies of the given region or influence the rest of the world. This feature puts even more pressure on the proper communication of monetary policy decisions. The formulation of the communication strategy also gains on importance due to the possible changes in the ECB's objective, or the ECB's policy framework (use of forwarding guidance, quantitative easing controversy). Therefore, communication is expected to play an essential role in the ECB's new monetary policy strategy. At the same time, the use of social networks has shortened the transmission of information from central bank to final consumers, thus opening up a new channel for the transmission of monetary policy signals (Blot et al., 2019). From this point of view, the communication strategy can even be defined and perceived as a separate monetary policy instrument with a very specific transmission mechanism. Technical adjustments in the communication strategy are thus expected to focus on the scope and depth of publishing the outputs of individual ECB forecasts, explaining key concepts influencing

monetary policy performance ("hard facts"), more transparency in describing how consensus on monetary policy decisions has been reached ("soft facts"), and also how this information is communicated. In this area, the overwhelming consensus expects a higher degree of transparency in the ECB's conduct than has been the case so far. It will also be interesting to see how the latest advances in the field of behavioural economics are to be implemented into the communication strategy.

7. PUBLIC FINANCE

The past year has been relatively rich in the development of public finances, with changes that have significantly affected and will affect its management in the upcoming years. Given that 2019 was the year of political cycle end, there has traditionally been a loosening of budgetary discipline and the adoption of measures that have negatively affected the revenues and expenditures of the general government budget.

However, we can say that there has been no declared consolidation of public finances throughout the policy cycle. The medium-term objective of achieving a balanced budget on a structural basis in 2017 has continuously been postponed to the future. A specific feature compared to another end of the political cycle was the scope and depth of one-off adopted budget measures fundamentally deteriorating the sustainability of public finances. The same actions significantly changed the long-term sustainability of public finances by introducing laws in the area of old-age pensions and introduced elements of instability into the old-age pension system. The changes were approved in 2019, and the effects on public finances will be tangible in the upcoming years. The main changes included:

• Increasing the minimum pension. During 30 years of pension insurance, the minimum pension was increased to the level of 334.3 EUR from last year's 278.9 EUR. There has also been a change in its calculation – the minimum pension must be at least 33% of the average wage in the economy valid for the last two years.

• Changing the method of valorization is in favour of the faster growth of the lowest pensions. For each additional year of the pension insurance period above 30 years, the minimum pension will increase by 2% of the subsistence minimum. In 40 and more years by 3% of the subsistence level. Changes in valorization will cause the number of minimum pension recipients to increase from approximately 51,000 to 170,000.

• Removal of the merit principle in the first "pay-as-you-go" pillar of the pension system.

• Adjustment of pensions paid from the Social Insurance Agency for citizens who save for pensions in the second pillar.

• Capping the retirement age at 64 years. In the case of women, it is possible to reduce the retirement age for each child brought up by half a year.

• The contribution to the second pillar was also increased to 5% of the assessment base, and the pension calculation for savers in the second pillar was changed. Savers will have a lower share of the "pay-as-you-go" system because they will be recognized for the contributions they make to the reserve fund.

• In the case of the second pillar, program selection will be allowed if the sum of all the saver's pensions reaches 464.6 EUR.

In the area of taxation, income tax adjustments were made:

• The category of micro-taxpayer has been introduced, which is set as the limit at which an entrepreneur becomes a VAT payer. This setting puts about half of the existing entrepreneurs into this category. The advantage is the extension of the tax loss deduction to five years and the removal of the principle of uniformity, as well as the introduction of more flexible depreciation of assets except for the real estate.

• The threshold for the payment of tax advances increased to 5,000 EUR, and the automatic registration of taxpayers by the tax administrator is introduced.

• The possibility of providing documents to the employee in electronic form has been extended. Also, the abolition of the employee's obligation to sign a declaration for the application of the non-taxable part of the tax base has been adopted.

• Support for business research has also been increased to 150% of the deduction of R&D costs. In 2020, the value will increase to 200%.

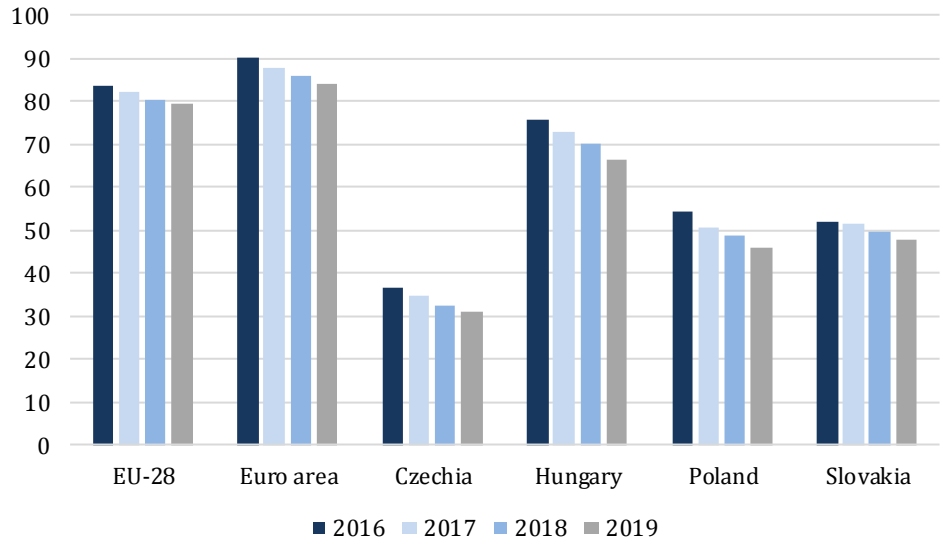
• The depreciation period for the purchase of an electric car has been reduced to 2 years to support these forms of mobility.

• The non-taxable part of the tax base has been increased from 19.2 to 21 times the amount of the applicable subsistence minimum since the beginning of 2020. The adjustment will increase the net income of employees, but there will be a shortfall in municipal income from personal income tax.

Development of the General Government Budget Balance

In 2019, the general government budget reached a deficit of 1.3% of GDP (1.22 billion EUR) and was 0.2 p.p. higher than in the previous year 2018.[1] General government revenue was 41.5% of GDP, and general government expenditure reached 42.8% of GDP. The value of public debt reached 48% of GDP, which represents a decrease of 1.4 p.p. in y-o-y change. The total amount of public debt was 45.2 billion EUR and increased y-o-y by 879 million EUR. Compared to the EU average and the Euro area, the general government deficit is slightly higher. However, Slovakia's gross debt is lower than the EU average and the Euro area (see Figure 7.1 and 7.2).

Figure 7.1
General Government Deficit in % of GDP, 2015 – 2018



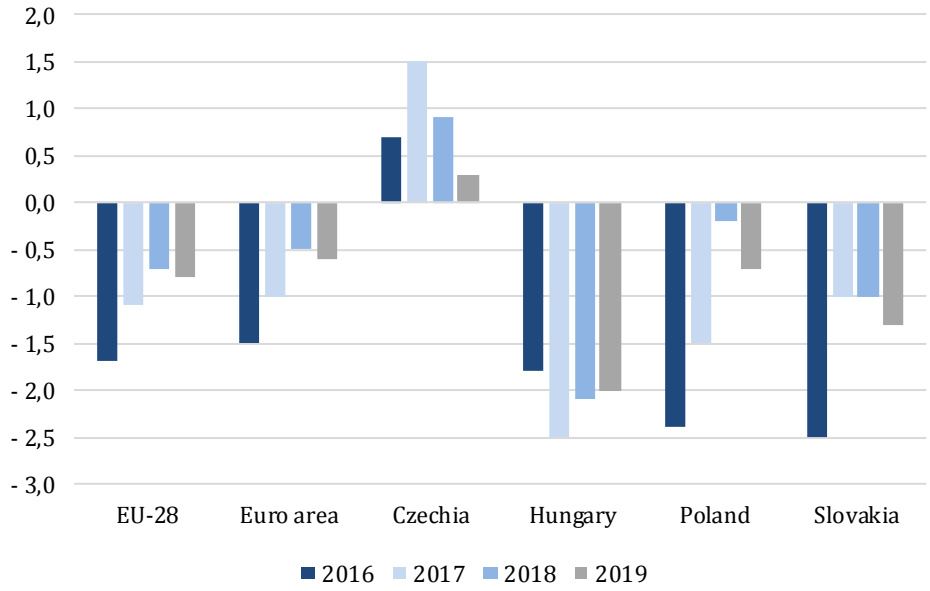
Source: Eurostat (2020).

The current results for 2019 do not capture the economic impacts related to the measures associated with the solution of the COVID-19 pandemic. It hit the Slovak economy in full force in the second quarter of 2020.

[1] Preliminary data published in April 2020 by Eurostat.

General deterioration in the level of general government deficits, as well as an increase in gross public debt in all countries of the EU, may be expected. We will discuss the impact in more detail in next year's issue of this publication.

Figure 7.2
Comparison of General Government Deficits in % of GDP, 2016 – 2019



Source: Eurostat (2020).

The State Budget Development in 2019

The State budget revenue was 15.8 billion EUR, which was 328 million EUR higher than the approved budget.

In the area of tax revenues, there was a decrease of 118 million EUR compared to the planned collection. The collection of corporate income tax (CIT) was lower by 16 million EUR. The positive development was experienced in the field of value added tax (VAT) collection, achieving a higher amount by 113 million EUR than planned. Revenues from grants and transfers also increased by 460 million EUR due to a higher financial implementation of European Investment and Structural Funds by 27.7% (461 million EUR).

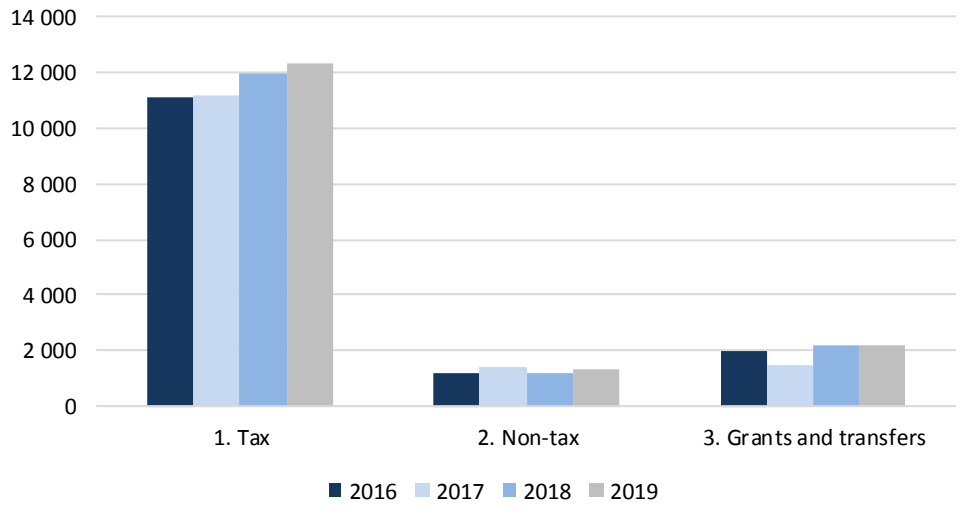
Table 7.1
State Budget Development in 2015 – 2018 (EUR million)

Indicator	2016	2017	2018	Planned 2019	Actual 2019	% of compliance 2019	Year-on-year change, %
Total revenues	14 275	14 014	15 381	15 497	15 825	102,1	2,9
of which:							
1.Tax	11 068	11 152	11 966	12 454	12 336	99,1	3,1
of which:							
Personal income tax	–8,5	7,0	10,0	–16,0	–7,4	46,3	–174,0
Corporate income tax	3 187	2 604	2 801	2 773	2 757	99,4	–1,6
Income tax collected by deduction	179	179	209	235	245	104,3	17,2
VAT	5 368	5 923	6 419	6 629	6 742	101,7	5,0
Excise taxes	2 170	2 253	2 324	2 417	2 357	97,5	1,4
2. Non-tax	1 217	1 395	1 211	1 331	1 327	99,7	9,6
3. Grants and transfers	1 989	1 467	2 203	1 701	2 161	127,0	–1,9
of which:							
Income from EU budget	1 939	1 423	2 169	1 665	2 126	127,7	–2,0
Total expenditures	15 256	15 234	16 563	17 538	18 027	102,8	8,8
of which:							
Current expend.	13 353	13 682	14 160	15 250	15 168	99,5	7,1
Capital expend.	1 902	1 553	2 402	2 288	2 858	124,9	19,0
Deficit/Surplus	–980	–1 220	–1 182	–2 041	–2 201	107,8	86,2

Note: Total revenues from the tax on personal income are higher, but given the fact that it is the revenue for the regional government, the values within the state budget are low.

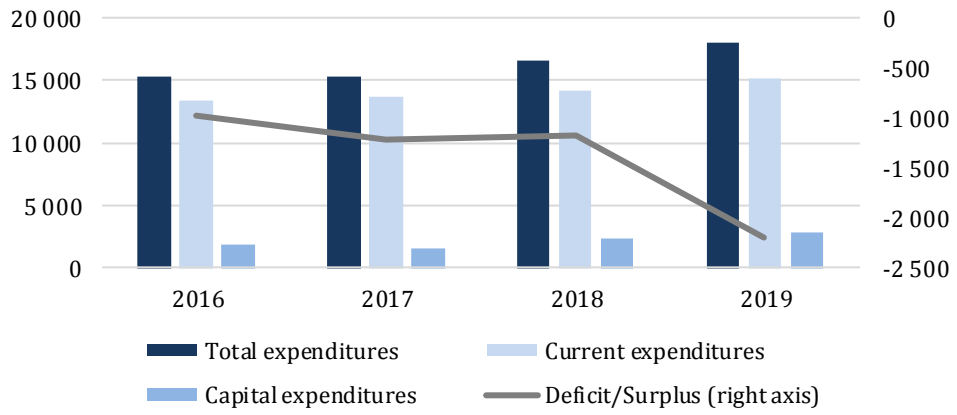
Source: MF SR (2020a); Author's calculations.

Figure 7.3
State Budget Revenues Development in 2016 – 2019



Source: MF SR (2020a).

Figure 7.4
State Budget Expenditures Development in 2016 – 2019

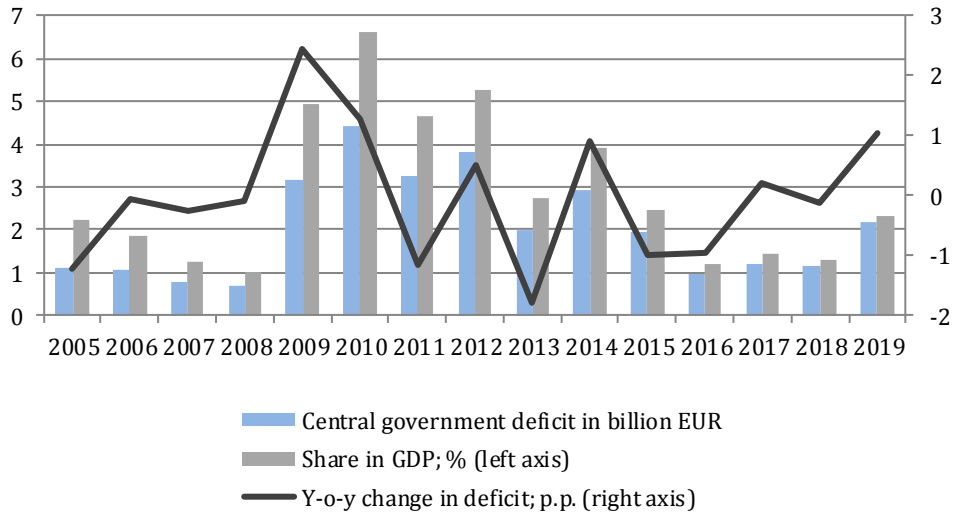


Source: MF SR (2020a).

The State Budget Deficit and Central Government Debt

In 2019, the state budget deficit was at the level of 2.2 billion EUR and reached a value of 2.34 % of GDP. Compared to the previous year, it was higher by 1.02 billion EUR (Figure 7.5). Compared to the approved budget, the deficit was higher by 160 million. EUR.

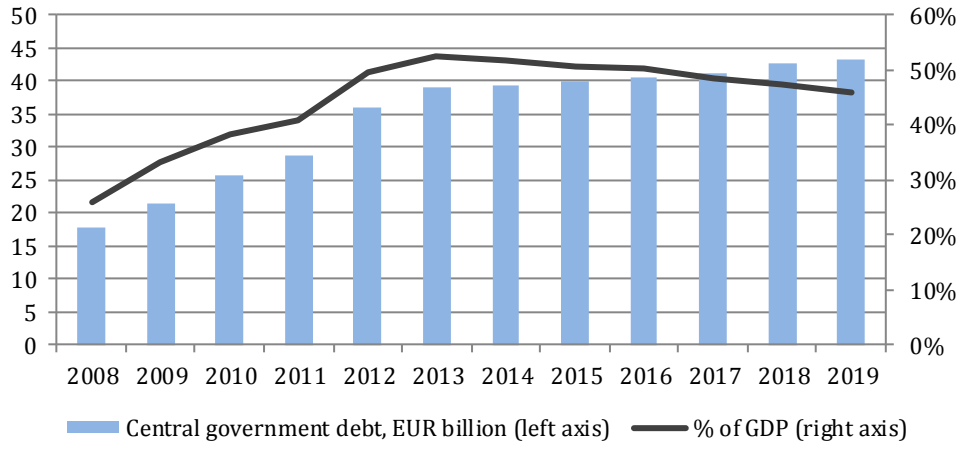
Figure 7.5
The State Budget Deficit in 2005 – 2019



Source: MF SR (2020a), Authors' calculations.

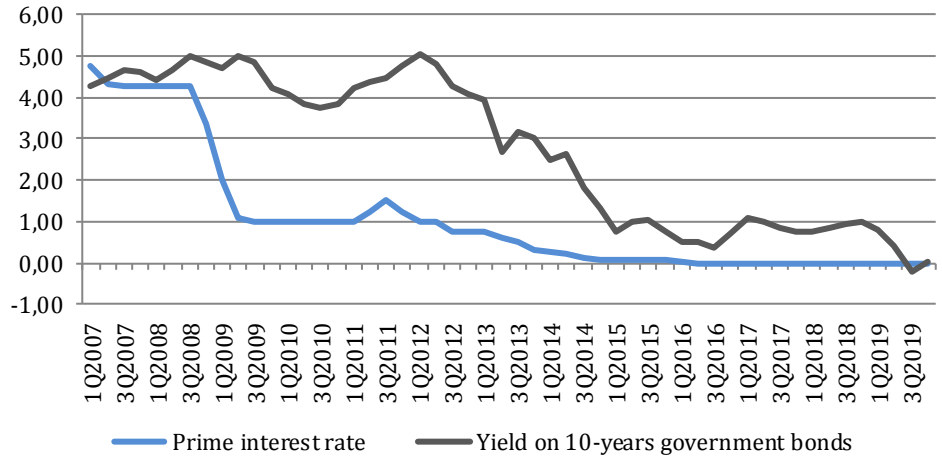
In 2019, the debt of the central government increased by 634 million EUR, and its total amount reached 43.2 billion EUR. Despite the somewhat unfavourable results, its share in GDP fell further as a result of higher economic growth than central government debt. Central government debt was 45.9% of GDP.

Figure 7.6
Central Government Debt in 2005 – 2019



Source: MF SR (2020c); Authors' calculations.

Figure 7.7
Interest Rates on 10-years Slovak Government Bonds by their Maturity in 2007 – 2019 (%)



Source: Macroeconomic Database NBS.

The ECB's quantitative easing policy continues to be reflected in government bond yields. Besides, measures to address the COVID-19 pandemic have resulted in further actions by the ECB to reduce bond yields and refinance public debt at more favourable interest rates. In 2019, and especially in the third quarter of 2019, the average yield reached a record low of –0.22% (Chart 7.7).

Financial Position of Slovakia vis-à-vis the European Union Budget

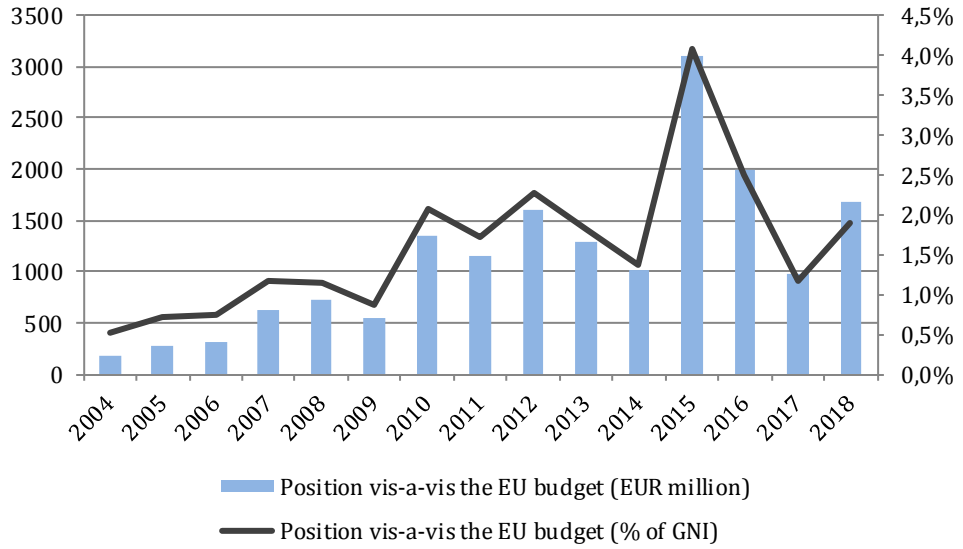
Since Slovakia's accession to the EU in 2004, we may observe a gradual increase in the net position vis-a-vis the EU budget (see Figure 7.8). In 2015, as a result of the ending programming period, the net position was 4.0% of GNI (3.09 billion EUR). In 2018, the net position reached only 1.9% of GNI (1,683 million EUR) and was lower by approximately one billion EUR compared to the year 2017.

Table 7.2
Expenditures of the EU Budget in Slovakia in 2010 – 2016 (EUR million)

	2011	2012	2013	2014	2015	2016	2017	2018
1. Sustainable growth	1096.8	1646	1439.2	1120	3147.9	2075	1005.8	1782.6
1.1 Competitiveness for growth and employment	40.9	70.4	58.4	69.2	61.6	85.5	191.0	168.3
1.2 Cohesion for growth and employment	1056	1575.7	1380.8	1051.7	3086.3	1989.6	814.9	1614.3
1.2.1 Structural funds	917.6	1212.9	812.1	1026.3	3053.6	1904.2	759.1	1544.8
1.2.2 Cohesion fund	138.2	362.7	568.7	507.2	1281.1	558.2	325.7	723.9
2. Preservation and management of natural resources	647.9	618	566	532	566.5	566.4	616.9	653
3. Citizenship, freedom, security and justice	29.2	12.6	11	5.6	9	10.7	11.2	10.2
4. EU as a global partner	0.5	0.5	0	0	0.5	0.1	0	0
5. Administration	10.7	9.7	9.9	10.2	10.9	10.6	11.3	11.4
6. Compensation	0	0	0	0	0	0	0	0
Total	1785.1	2286.8	2026.1	1668.8	3734.8	2662.8	1645.2	2457.0

Notes: 2019 data were not available at the time of chapter publication.
Source: European Commission (2020).

Figure 7.8
Net Financial Position of the SR vis-à-vis the EU Budget, 2004 – 2018



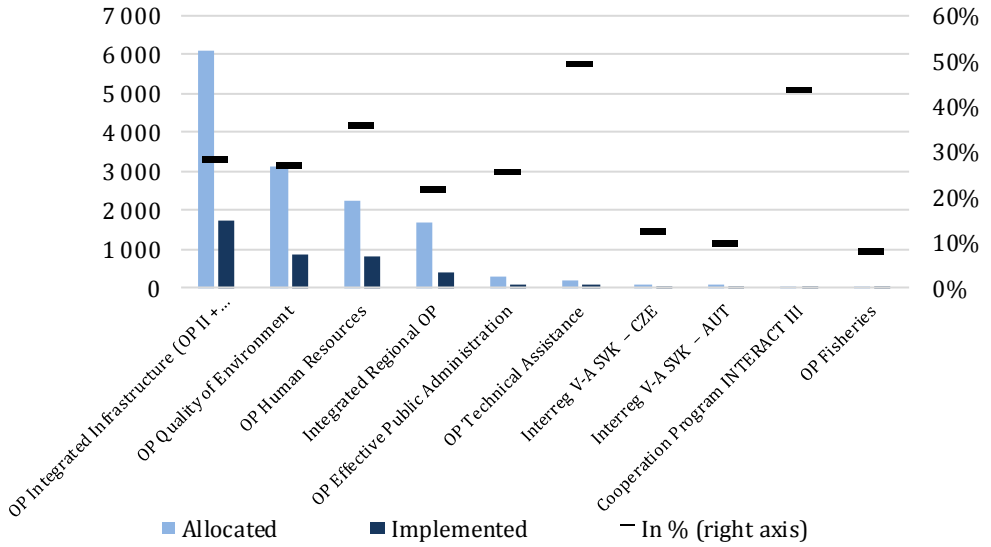
Notes: 2019 data were not available at the time of chapter publication.
Source: European Commission (2020).

EU Cohesion Policy Implementation in 2014 – 2020 Programming Period

At the end of 2019, the total level of financial implementation from the EU budget reached 28.6% of the total committed funds for the programming period 2014 – 2020. The financial implementation was relatively low even after five years since the beginning of the programming period. In absolute terms, there was an implementation of 3.9 billion EUR.

Within the structure of OP – the highest level of implementation was achieved (the EU funds only) in the Integrated Infrastructure OP (1.7 billion EUR), the Environmental Quality OP (857 million EUR), and the Human Resources OP (795 million EUR). The persistently low financial implementation in the R&D Operational Program resulted in its integration into the Integrated Infrastructure OP, thus preventing decommitment and loss of potential resources for investment in science and research in the upcoming years.

Figure 7.9
State of Financial Implementation of the Committed Resources in 2014 – 2020 by Operational Programs in % – 31st December 2019
(the EU source)



Source: MF SR (2020c); Author's calculations.

The year 2019 was the penultimate year before the beginning of the new programming period 2021 – 2027. Even though Slovakia can implement cohesion policy resources from the current programming period until 2023 – without an increase in the efficiency of the entire governance structure, there is a significant risk of their non-implementation and non-use for the development of the Slovak economy. While in recent years, we have considered the possibility that this aid will gradually decrease with the growth of the economic level of Slovakia, it turns out that the opposite will be true. Although the allocation for 2021 – 2027 will be slightly lower due to the COVID-19 pandemic and its impact on the EU Member States. The European Commission is proposing extensive support schemes to help overcome its consequences and modernize European economies. From Slovakia's position, the financial implementation of such a large amount of financial resources will require the preparation and implementation of development and investment plans. Moreover, the country needs to ensure administrative capacity for its implementation.

As the volume and structure of the aid have not yet been definitively approved and allocated to individual Member States, we will address it in detail in next year's edition of our publication.

The year 2019 was the last year of the political cycle, which was always characterized by the loosening of budgetary discipline and the failure to meet the targets set in the approved general government budget. The beginning of 2020 was marked by an unprecedented economic crisis caused by the COVID-19 pandemic. It significantly affected all areas of the economy and will fully affect the management of public finances. The extent of anti-crisis measures adopted, together with revenue shortfalls and expenditure growth due to the slowdown in economic activity, will reflect in an unprecedented increase in public debt and the general government deficit in 2020 as well as in the following years. The effects of this crisis also show the importance of responsible fiscal policy, which in crises such as this is the most important tool for mitigating its consequences and starting the changes that need to be implemented in the Slovak economy.

8. OVERVIEW OF SELECTED LEGISLATIVE AND ECONOMIC POLICY MEASURES IN 2019

The economic-policy and legislative measures adopted in 2019 were strongly influenced by the end of the election cycle (4th year) and the forthcoming parliamentary elections in February 2020. In 2019, presidential and European elections took place in Slovakia. The elections to the European Parliament in the Member States brought changes (more significant political fragmentation, strengthening of the "Greens"), which may reflect in a change in the content and priorities of individual EU policies in the upcoming years. In June 2019, the European Council approved *the EU Strategic Agenda for 2019 – 2024*. In the forthcoming period, the EU policies will be based on four main priorities: the protection of citizens and freedoms, developing a strong and vibrant economic base; building a climate-neutral, ecological, fair, and social Europe; promoting European interests and values at the global stage. In 2019, the completion of the single market and the deepening and strengthening of the Economic and Monetary Union remained among Slovakia's priorities on the EU stage. Slovakia has committed itself to the goal of achieving EU climate neutrality by 2050, and enlargement policy remains a priority. As part of its climate neutrality policy, the EC presented *the European Green Deal.* Legal acts adopted at the EU level have a major impact on the creation of economic policy and the regulatory environment in Slovakia. "Approximately 201 directives, 850 regulations, and 1300 decisions were published in the Official Journal of the European Union in 2019" (Slov-lex, 2020). In 2019, the process of preparing *the Partnership Agreement 2021-2027* was also launched. It is a crucial document for the financial implementation of EU funds in the next programming period. In the document *Framework Position of the Slovak Republic on the Multi-annual Financial Framework of the EU after 2020,* Slovakia formulated its priorities and objections for the proposed changes regarding the multiannual financial framework 2021 – 2027.

From the economic policy perspective – the key document was *the National Reform Program of the Slovak Republic 2019* (MF SR, 2019a), which defined the main challenges and priorities of economic policies in

the next two years, as well as specific measures to meet them. Similarly to the previous national program, the main priorities are education, health, and the labour market. Among the identified challenges of the Slovak economy, the document includes the lagging of primary education, the readiness of children from disadvantaged backgrounds for the education system, the employment of low-skilled and long-term unemployed people, and the efficiency of the Slovak health system.

In 2019, as every year, several medium- and long-term economic policy documents were adopted, which will shape or create basic frameworks (especially by setting goals and priorities) for the measures taken and determine the nature of future economic policies. These include *the Medium-Term Development Cooperation Strategy of the Slovak Republic for the years 2019 – 2023*, which is a continuation of the 2030 Agenda and defines the principles, programs, and priorities of Slovakia's development aid. The document considers climate change and migration to be the key global challenges.

Slovakia wants to reach a level of development aid spending of 0.33% of gross national income by 2030. In 2019, *the 1st Action Plan for Implementation of Measures Resulting from the Economic Policy Strategy of the Slovak Republic until 2030* was adopted. The Action Plan specifies the measures resulting from the Economic Policy Strategy of the Slovak Republic until 2030 in the period 2019 – 2021. The measures cover areas such as human capital development, technological change, and the promotion of innovative potential, the environmental and energy efficiency of the economy, the development of the business environment, and regional development in the context of agriculture. The document *Measures for the Removal of Barriers to the Sustainable Development of the Automotive Industry in Slovakia, Including the Supply Network* is also related to the Ministry of Economy. The proposed measures are intended to address the main problem of the development of the automotive industry - which is labour shortages. The document also reflects other barriers such as the instability of the business environment, the low level of R&D activities, and the insufficient application of the principles of the circular economy in the automotive industry.

In 2019, the challenges of technological progress were reflected in several strategic and conceptual documents. We can include among them *the Strategy of Digital Transformation of Slovakia 2030*. The documentary sees Slovakia in 2030 as a modern country "with an innovative and ecological industry benefiting from a knowledge-based digital and data economy, an efficient public administration ensuring intelligent use of land and infrastructure, and an information society whose citizens reach their full potential and live a quality and safe life in the digital age." (IPO SR, 2019). The document presents declarative intentions and priorities in the areas of society and education, economics, territorial development, public administration, and R&D in the context of key trends such as artificial intelligence, the Internet of Things, 5G technologies, big data, blockchain, and super-powerful computing. The strategy is followed by *the Action Plan for Digital Transformation of Slovakia for 2019 – 2022*, which defines the measures through which the vision of the national digital strategy until 2022 is to be achieved. These measures are in the field of regulations, organizational measures, and projects and initiatives. The principles of policies and state support in the intelligent development of cities and local governments are defined in the document *Support for Innovative Solutions in Slovak Cities*.

Environmental protection, as one of the main themes of the EU policies, is also being transferred to the national level. In Slovakia, several documents have been adopted in this area. *Greener Slovakia – Strategy of the Environmental Policy of the Slovak Republic until 2030* became a strategic document in the national environmental policy. Its basic vision is "to achieve a better quality of the environment and a sustainable circular economy based on the consistent protection of environmental components and using as few non-renewable natural resources and hazardous substances as possible, which will lead to improved population health" (ME SR, 2019a). The current version of the *Waste Prevention Program of the Slovak Republic for the years 2019 – 2025* "also takes into account the current development in the EU in the field of application of the circular economy. The principle is the transition from a linear model of economic growth ("mine – produce – distribute – use – discard") to a complex,

dynamic, and closed model (for the most part). Thus it is focused on the development of efficient use of resources and sustainable growth." (ME SR, 2019b). The program aims to move from material recovery as the only priority to waste prevention. The aim is to be achieved by increasing waste disposal fees, implementing the principles of green public procurement, and voluntary environmental policy instruments (environmental management and audit, eco-design). The adopted *Integrated National Energy and Climate Plan for 2021 – 2030* defines the national energy policy concerning climate change. The main quantifiable targets for 2030 include reducing greenhouse gas emissions for sectors excluded from emissions trading by 20%, the use of RES for final energy consumption is set at 19.2%, and 14% for RES in transport. We can also include the adoption of *the Action Plan for the Development of Electromobility in the Slovak Republic* in this area. The document defines a set of 15 measures to support electromobility in Slovakia.

The Government adopted a package of 36 *Measures to Improve the Business Environment III.* The package includes measures that remove administrative barriers to business; the proposed legislative measures reduce the direct or indirect costs of doing business (e.g., by eliminating administrative fees). The measures also concern the removal of some obsolete or disproportionately burdensome measures in the business environment. The package influenced in particular the quality of the business environment to public health, construction proceedings, computerization of services, efficient processes for starting a business and opening of operations. The package intends to save 50 million EUR.

The amendment to *the Commercial Code* (Act No. 156/2019 Coll.) brought several changes. The changes concern the Commercial Register, which will be newly exclusively in electronic form. Also, more data will be entered into it and individuals will be excluded from registration in it (so far, e.g., self-employed persons could register voluntarily). The deletion of old, inactive legal entities is also a new change. The change also concerns the tightening of the sanction (liquidation of the company) if there is a delay in depositing the financial statement in the collection of documents for more than six months. The person against whom execution

is conducted will no longer be able to establish a limited liability company (this also applies to the transfer of a business share).

The amendment to *the Waste Act* (Act No. 460/2019 Coll.) sets a minimum price for plastic bags provided for purchase. Also, it prohibits the introduction of one-off plastic products and packaging and non-packaging products made of oxo-degradable plastics[1] in the Slovak market.

The new *Act on Deposit of Disposable Beverage Packaging* was adopted (Act No. 302/2019 Coll.). This act introduces new obligations for packaging manufacturers and distributors who sell beverages in deposit disposable plastic and metal beverage packaging. The amendment to *the Act on Energy Efficiency of Buildings* (Act No. 96/2016 Coll.) introduces, e.g., a new obligation for the owner of a new or significantly refurbished existing non-residential building to equip at least one charging station for electric vehicles and wiring infrastructure in at least one of the five parking spaces. It applies to non-residential buildings with more than ten parking spaces.

The amendment to *the Execution Rules* (Act No. 233/2019 Coll.) addresses the termination of some so-called old executions (those that started before 1st April 2017). The amendment aims to crucially relieve the courts from a large number of executions (approximately 3 million). The newly adopted act explicitly states to which executions the suspension relates to (the decisive period has elapsed, the beneficiary or obligor has ceased to exist without a legal successor, etc.).

The amendment to *the VAT Act* (Act No. 368/2019 Coll.) – In addition to the transposition of EU law to harmonize and simplify the rules in the EU concerning the supply of goods among individual Member States (introduction of the so-called call-off stock regime), the amendment also brings reduced VAT on some newspapers, magazines, and periodicals (the aim was to support traditional print media). The rate for selected types of food was also reduced to 10% (only for healthy food, the change does not apply to beverages, sweets, additives, flavorings, nutritional supplements and confectionery products).

[1] "Plastic material that contains additives causing (through oxidation) the fragmentation of plastic material into microfragments or its chemical decomposition" (Act No. 460/2016 Coll.).

The area of corporate and personal income taxation has also changed. A relatively significant change was the reduction of the income tax rate to 15% for legal entities (from the original 21%) and self-employed persons (from the original 19%) with annual incomes up to 100 thousand EUR. The amount of the non-taxable part of the tax base changed as well (it increased from 19.2 times the subsistence minimum to 21 times). In order to motivate companies to invest in R&D, the so-called superdeduction was set to 150% of R&D costs for 2019 (retrospectively) and 200% from 1. 1. 2020. The exemption of the employee's non-monetary income when accommodation is provided to the employee by the employer has increased. Income-related to the improvement of the employee's qualifications will be exempt from taxes and social contributions. A new depreciation group for electric and hybrid vehicles with a reduced depreciation period has also been introduced.

Considerable attention has been paid to the social sphere. The Constitutional Act No. 99/2019 Coll., or the so-called *"Constitutional Act on the Pension Ceiling"* was adopted. In the act, the retirement age in Slovakia was constitutionally "capped" to 64 years. Women retire earlier, depending on the number of children. *The Christmas Allowance* has also increased. The upper limit for its entitlement has been increased (1.3 million recipients of pension benefits are entitled to it). In this context, we cannot forget the approval of the 13th pension in the accelerated legislative procedure in March 2020, just before the parliamentary elections. In 2019, the minimum wage was increased from 520 EUR (2019) to 580 EUR valid for 2020.

Thus, the minimum wage has increased by 175 EUR since 2016 (in 2016, it was 405 euros). Surcharges for work at night, on Saturday and Sunday also increased, as they remained linked to the minimum wage. The amendment to *the Labour Code* (Act No. 380/2019 Coll.) increased the leave of an employee who reaches at least 33 years of age by the end of the relevant calendar year and an employee who takes care of a child permanently to five weeks. The amendment increased the leave to a minimum of 8 weeks for pedagogical staff, university teachers, and researchers at the SAS.

The Act on the Provision of Aid in Agricultural Primary Production (Act No. 43/2019 Coll.) represents a tax relief for entrepreneurs who operate in agricultural primary production. The aid will be provided as a refund of part of the already paid excise duty on mineral oils ((The aid is set at 0.347 EUR per liter of mineral oil). The act aims to reduce the cost of purchasing mineral oil. Higher regulation in food retailing is introduced by *Act No. 91/2019 Coll. on Unfair Terms in Food Trade*. The new legal norm (according to Misároš (2019)), e.g., extended the current exhaustive calculation of unfair terms, covers not only the agreement phase – but also the stage of the procedure leading to the agreement of the unfair condition (i.e., the demand phase) and the phase of implementation of the unfair condition (i.e., the application phase).

As part of the fight against corruption, a new act on the protection of whistleblowers was adopted. The so-called "Whistleblowing Act" (Act No. 54/2019 Coll.) is intended to strengthen the fight against corruption. The new act introduces a new Office for the Protection of Whistleblowers and the power of the Office to participate in criminal and administrative proceedings. The act also provides extended whistleblower protection, the protection of a whistleblower who has made a notification via media, or improving the conditions for obtaining remuneration for notification.

Regulatory Framework and Efficient Public Administration as Factor of Competitiveness

Some indicators also provide the scope of government regulation concerning the business environment in the World Bank *Doing Business* (World Bank, 2020). Table 8.1 shows a comparison of transaction costs incurred by enterprises in typical business situations. The number of processes/actions, the number of days/years, or the financial expenditures express the costs. In Slovakia, the length of insolvency resolution (4 years) remains the most significant regulatory barrier in Slovakia. This period, which tells how long creditors need to get their credit back through the courts, is one of the longest in the EU. In this respect, a particular benefit may be gained by the amendment to *the Execution Rules* (the solution of the so-called "old executions"), which should reduce the

burden on courts and speed up bankruptcy proceedings. In the area of construction proceedings, the weak point in Slovakia is the time required to obtain a construction permit (up to 300 days). It is almost twice as high as the OECD high-income countries' average, even if the number of procedures is lower. Long construction procedures are a factor in the construction sector as part of public investments affecting the efficiency of the implementation of the European Structural and Investment Funds, as well as foreign direct investment in the construction of physical infrastructure.

Table 8.1
Selected Indicators of Doing Business (2017)

		SVK 2018	SVK 2019	OECD* 2019	SVK/OECD (%)
Starting a Business	Procedure (number)	8.0	7.0	4.9	143
	Time (days)	26.5	21.5	9.2	234
	Cost (% of income per capita)	1.0	1.0	3.0	33
Dealing with Construction Permits	Procedure (number)	14	14	12.7	110
	Time (days)	300	300	152.3	197
	Cost (% of warehouse value)	0.2	0.2	1.5	13
Registering Property	Procedure (number)	3.0	3.0	4.7	64
	Time (days)	16.5	16.5	23.6	70
	Cost (% of property value)	0.0	0.0	4.2	0
	Quality of the land administration index (0 – 30)	25.5	25.5	23.2	110
Paying Taxes	Payments (number per year)	8.0	8.0	10.3	78
	Time (hours per year)	192	192	158.8	121
	Total tax rate (% of profit)	49.7	49.7	39.9	125
	Post-filing index**	87.17	87.2	86.7	101
Enforcing Contracts	Time (days)	775	775	589	132
	Cost (% of claim)	20.5	20.5	21.5	95
	Quality of judicial processes index (0 – 18)	13.5	13.5	11.7	115
Resolving Insolvency	Recovery rate	48.8	46.1	70.2	66
	Time (years)	4.0	4.0	1.7	235

Notes: * – Average of high-income countries of OECD; ** – *post-filling index* includes the time to comply with VAT refund, as well as the time to complete a corporate income tax audit.
Source: World Bank (2020).

The length of the construction procedure also affects the development of the rental housing area. In this regard, 3rd anti-bureaucratic package contains a proposal of several measures aimed at simplifying the administration in the construction procedure (e.g., creating an electronic repository for the purpose of sharing project documentation for the

construction procedure). In terms of the number of procedures and time, starting a business in Slovakia is also complicated. The length of the enforceability of contracts is also negative. In the case of property registration, the current status has been constant since 2007; the registration takes 16.5 days. The similar "status quo" is also the case for the length of insolvency resolving, which has not changed since 2006 and is still at four years.

The quality of the business environment to the quality and scope of government regulation and institutions can also be indicated based on some indicators provided by the current edition of The Global Competitiveness Report (WEF, 2019). According to this assessment, the Slovak economy lags far behind the level of developed countries, especially in areas that are the primary domain of the state and the public sector. Itconcerns, e.g., low reliability of police services, weak efficiency of legal framework and independence of judicial system, high burden of government regulations, weak regulation of conflict of interest, low responsiveness of the Government to changes, weak long-term vision of the Government.

* * *

In 2019, the adoption of new legislative measures was already influenced by the ending election cycle. Unfortunately, in 2019, we again did not see a fundamental ambition to change the functioning of Slovakia's key sectors, such as the education system, healthcare, public administration, or the public R&D system. The performance of public policies is mostly influenced by two factors: in the area of public capital expenditure – dependence on EU funds resources and in the field of adopted legislation and soft law-making (strategies, action plans) – the need for transposition of EU legislation. The resignation to adopt more fundamental structural reforms was based on the fact that the Government of the Slovak Republic was in the 4th year of its rule, and two elections took place during the year (presidential and to the European Parliament). Thus, the measures taken aimed more at reducing the tax burden and increasing the expenditure part of public budgets. The high frequency

of change in legislative measures affecting the business environment remains to be considered negatively. E.g., the Income Tax Act was amended up to eight times in 2019; the Social Insurance Act or the Health Insurance Act was amended five times.

In the area of environmental policies, the introduction of the principles of the circular economy, strengthening the regulatory role of the state, which puts more pressure on the behavior of economic actors and increases business costs and price competitiveness of the whole economy, continues to be promoted. The pressure for changes in the national energy and environmental agenda comes mainly from the transnational level (Agenda 2030 and EU environmental policy). On the other hand, regulatory pressures create new markets and opportunities for domestic business (eco-innovation). Many legislative measures adopted to respond to structural changes caused by technological progress, in particular, the catching-up of the digitized public administration services or the overall digital transformation. One of the biggest challenges for Slovakia remains the digitization of education, health care, and public administration services.

The role of the Government's regulatory function concerning the mismatch between labour productivity growth and wages is questionable. On the one hand, we record the intense activity of regulations that administratively increase wage costs (growth of the minimum wage and related bonuses, increase in holidays, etc.). On the other hand, we see an effort to implement measures to address labour shortages (e.g., in the document Measures for the Removal of Barriers to the Sustainable Development of the Automotive Industry in Slovakia, Including the Supply Network). We cannot ignore the long-term stagnation in the strategic management of areas that would provide an impetus for productivity growth such as digitization/automation, R&D and innovation, or changes in environmental legislation that are still perceived as a barrier.

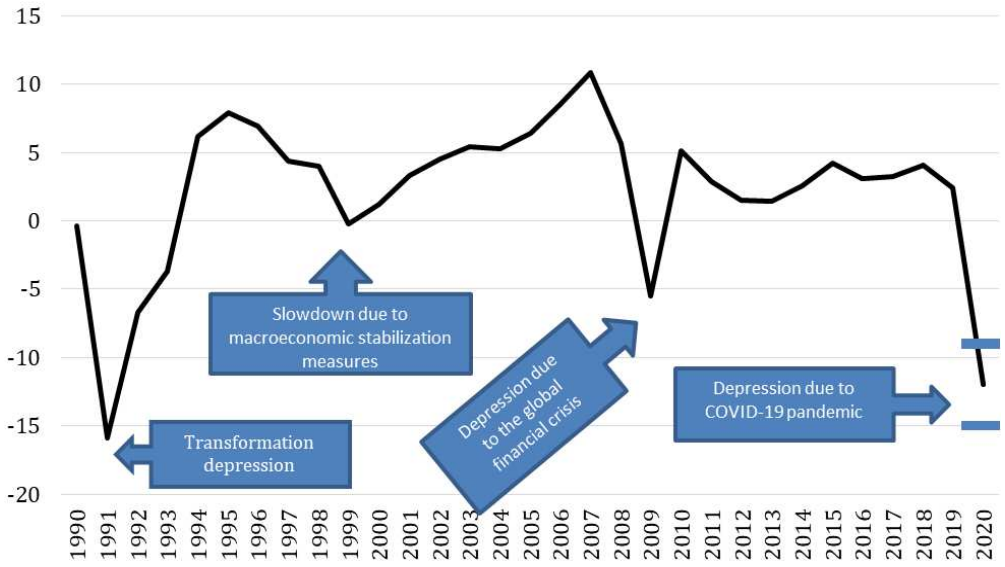
9. EXPECTATIONS REGARDING FUTURE DEVELOPMENT

At this point in publication, we regularly provide our outlook for the next two years. However, as we pointed out in the introduction chapter, this publication was created at the time of the depression onset, and the parameters were not predictable enough to be able to present any set of estimated values. We offer only a rough outline of the probable development. With a short time lag (about a quarter of a year), the outline will be followed by a two-year horizon, already based on data from the course of the depression.[1]

The Slovak economy has entered its fourth economic slowdown since the beginning of its transformation (i.e. three decades). Three of these may be considered deep depressions (Figure 9.1). Each slowdown had completely different reasons, unique manifestations, different course, duration and other impacts.[2]

Figure 9.1

Economic Slowdowns in Slovak Economy (change in real GDP in %)



Note: Up to 2019 – real data, 2020 – preliminary estimate with and interval indicator.
Source: Up to 2019 – Eurostat, 2020 – Author's estimate.

[1] We did the same during the onset of depression in 2009.

[2] For an analysis of historical downturns in the Slovak economy, see Frank, Morvay et al. (2019).

Based on the initial signals about the depth of the coming depression, its intensity will be comparable only with the first, the so-called transformation depression from the beginning of the 1990s (from the times of the first transformational economic shocks in the then Czech-Slovak economy). Naturally, the transformational depression in the early 1990s had utterly different causes and took place in entirely different conditions. Its depth, expressed as an estimated decline in real GDP, is the only similar element between the then and current depressions.

Current depression is primarily a supply shock[3] (reduction of production due to the unavailability of one of the production factors – labour). Secondly, it is a demand shock (missing incomes of the "decommissioned" workforce lead to a decline in demand). The first available data indicate a massive drop in industrial production and foreign trade parameters (Figures 9.2 and 9.3).

The onset of the depression is more pronounced than in the case of the financial crisis in 2009 and affects economic activity unequally. Manufacturing, export and import are affected significantly more than, e.g. construction industry (Figure 9.3). It can be expected that the Slovak economy will be one of those European economies that will be more significantly affected by the depression – despite the relatively good epidemic situation in Slovakia at the time of writing.[4]

The reasons for such an expectation are as follows:

- *Position of Slovak producers in global production chains.* Dependence on the supply of inputs from the global environment and on the consumption of production outputs (especially to the European environment) severely limits the possibilities of resuming production in the domestic environment. The Slovak economy is characterized by high demands on intermediate consumption.[5] It is also associated with significant vulnerability through the supply of inputs.

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[3] The decomposition of the supply and demand shock during the first phases of the crisis was elaborated by e.g. Brinca, Duarte, Faria and Castro (2020).

[4] On the differentiated impact of a pandemic on economies (in the first stage of the crisis), see UNIDO (2020).

[5] The share of intermediate consumption in the value of gross production fluctuates around 62%. This results in a high degree of dependence on the inputs that are consumed in production.

• *High degree of economic openness, dependence on the possibilities of export and import.* It is connected with the impact of the previous factor. The Slovak economy is particularly sensitive to fluctuations in exports and imports, as exports of products and services, as well as imports, have reached values of around 95% – 98% of GDP in recent years. The Slovak domestic market is too small to compensate for fluctuations in cross-border flows more significantly.

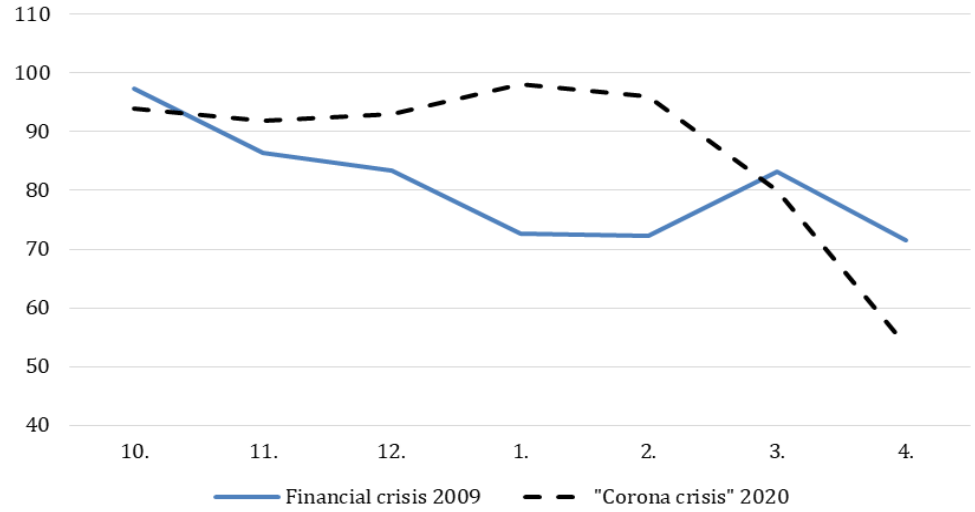
• *Strictness of measures to protect public health.* The strictness of the measures is not the subject of our analysis; we only take into account the relatively radical approach of the government. It helped slow the spread of the epidemic but at the cost of a more significant reduction in economic activity.

• *Economic slowdown occurred even before the "corona crisis".* As already shown in the first chapter, the dynamics of the economy weakened even before the onset of the pandemic, which made the workforce unavailable. This factor only highlights the depth of slowdown in economic activity.

• *Weakened competitiveness even before the depression* due to lagging productivity growth behind rising labour costs (this is analyzed later).

Figure 9.2

Sharpness of the Onset of Economic Downturn in the Last Two Depressions
(y-o-y changes of revenues in the industry sector in %, constant prices)



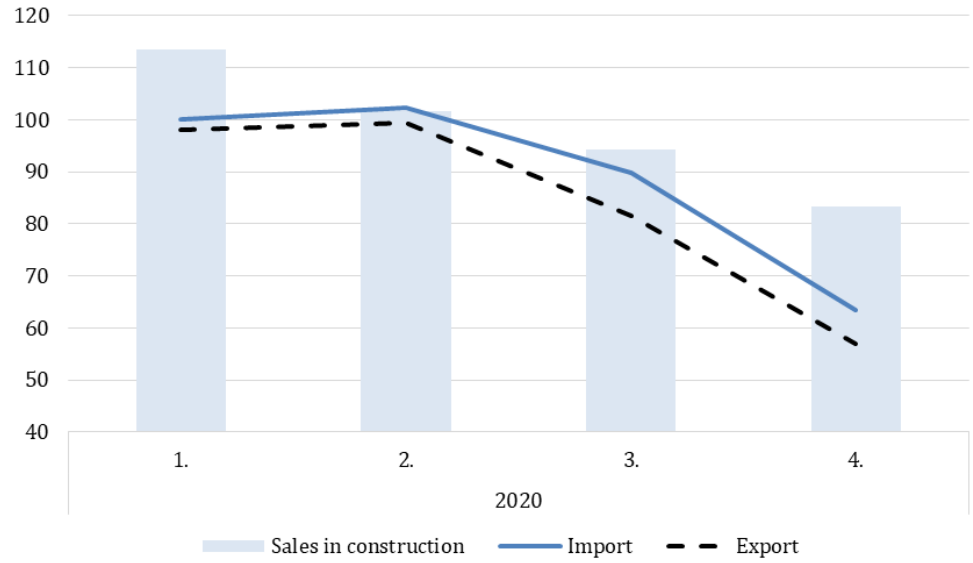
Note: Note: Both curves cover the period from October to April of the respective years (Oct. 2008 – April 2009 and Oct. 2019 – April 2020, respectively).

Source: SO SR.

Figure 9.3

Uneven Sensitivity to the Onset of the "Corona Crisis"

(index of y-o-y changes, sppy = 100)



Note: Development in the first four months of 2020. Revenues in construction at constant prices. Construction – as a typical activity with a less fragmented chain and less dependent on precisely timed cross-border deliveries is less affected by the downturn. Exports and imports represent foreign trade with products and services.

Source: SO SR.

In the debates about the expected course of depression, some scenarios have been drawn describing some letters of the alphabet:

Scenario "V": Assumes a sharp fall followed by a similarly sharp rise after overcoming the cause of the shock. The condition for the implementation of such a scenario is that the economy is otherwise capable of expansion, and the reason for the depression is eliminated quickly and without significant residues.

Scenario "U": After the downturn, the turnaround comes only gradually, the economy does not break free from the bottom of the depression, but stays close to the bottom for a longer time. Such a scenario occurs in the event of the impossibility of rapid elimination of the cause of depression, elimination of negative expectations or inability to resolve temporary distrust of economic actors in further development. It also happens in the case of variables that tend to inertia (e.g. the course in the shape

of a wide "U", with an extended stay close to the bottom, describes the employment indicator development in the crisis 2009 – 2010).

Scenario "L": A sharp decline, after which the performance has stabilized at a reduced value and persists there for a longer period. The scenario would occur if the factor causing the downturn continued for a long time, and the economy would stabilize in a mode of operation with partially used capacities. Then, there would be a risk of a spiral of further slowdown, which is very difficult to stop.

Although it is not our aim to expand this alphabet, we see a gradual increase in the probability of a scenario that does not correspond to any letter used. It is similar to the "V" scenario with a broken uplink phase.

"Broken V" scenario:

A sharp decline accompanied by rebounding from the bottom and an increase in two phases:
Initially, a sharp rise takes place after a rebound from the bottom. It is possible by the partial resumption of economic activities and is also strengthened by the base effect. This effect occurs when comparing the values of indicators in the recovery with very low values from the previous, declining period.

The continuation of the growth may no longer be so drastic, as restrictive influences, uncertainty, and caution persist for some time. Part of the production capacity can be quickly reconnected, part gradually, by eliminating the residuals of public health threats.

Once the economic depression is overcome, we may expect the following effects on economic development and the structure of the economy:

- Depression will alleviate the problem of labour shortages for some time. Subsequently, however, this problem resumes. Still, the demand for labour is likely to change: digital skills requirements will increase even more.
- The nature of work in many jobs will change. The growth of online work is expected; the need for physical presence and physical movement is reduced. The delivery of goods and services to the customer's household will flourish.

- The pressure on automation and robotization will be even more pronounced to avoid the risks of human labour unavailability. We assume that this factor will help the growth of labour productivity and structural changes in the economy.
- Efforts to increase self-sufficiency, a higher degree of completeness of the production chain wherever possible. The depression revealed the vulnerability of production depending on the necessary inputs supplied by a small number of suppliers on a global scale. It also revealed the risks of significant fragmentation of production chains and offshoring. We do not anticipate the revoke of these processes. However, their reassessment and at least partial suppression in some sectors will probably occur.[6]
- In line with the above, the understanding of the regulatory role of the state and public finances will also change (e.g. in the short term, an increase in deficits and public debt will be tolerated in the interest of economic recovery).

The problem we have particularly paid attention to in this publication – slowed productivity growth lagging behind the growth of labour costs – is an additional complication in the current depression. Increased labour costs motivate a more widespread reduction of employment in the event of economic shocks. Also, weakened competitiveness makes it challenging to revive production after bouncing off the bottom of the depression.

On the other hand, the current crisis may help future productivity (which could help solve the problem of slowed productivity growth in Slovakia). The pressures caused by the "corona crisis" to accelerate automation, digitization, or to changes in the nature of work and structural changes in the economy bring room for increased productivity. Here we can identify the challenge for policy-making in Slovakia: to create conditions for the expansion and use of digitization (and related structural changes) to use this stimulus for future productivity growth and streamlining the functioning of the state.

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[6] An example where higher pressure on self-sufficiency can be expected is the production of drugs and medical devices. E.g. the inability of European economies to produce certain essential medicines due to the inability to obtain the active substance from Asian countries is a prominent example of this problem.

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Authors: Karol Frank – Karol Morvay et al.

Published since 1993.

1st Issue

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