Economic Development of Slovakia in 2018 and Outlook up to 2020

Focused on: Interrupted Convergence

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INTRODUCTION

The tradition of publishing the Economic Development of Slovakia is as long as the existence of an independent Slovak Republic. Since 1993, the Institute of Economic Research of the Slovak Academy of Sciences prepares its annual analytical and evaluation overview of the Slovak economic development. There are specific years mentioned in the title of the publication. However, we also try to put the latest developments into the context of the longer development trends.

Compared to the previous years, we bring a new innovation this year. Starting this year, the Economic Development of Slovakia publication will pay attention to some cross-field phenomenon shared in all areas of the economy. The topic of this publication is the interruption of real convergence in recent years because the catching-up process of the Slovak economy to the most advanced economies has been interrupted. We use the term *"interrupted convergence"* because the jamming or interruption as a process is only a temporary situation, and it can be re-established and run again. Therefore, we also see the problem of real convergence in this perspective – as temporarily blocked with the possibility of the new release.

On the other hand, other topics have also been part of economic debates in Slovakia recently – the issue of labour shortages or increasing pressure on wage growth resulting in changes of country competitiveness. These and other topics could not be missed in this year's publication.

In the individual chapters, the attention is paid to the evaluation of the economic level and performance of the economy and its economic policy, the development of the labour market, the changes in the price level as well as measures that changed the economic environment. However, in several chapters dealing with other sub-topics, the connection with the central topic (convergence) is also sought.

After the initial overview of the economy, there is plenty of more detailed views on the sub-topics to finally return to the synthetic perspective and outline the expected developments in the near future.

1. OVERALL ECONOMIC DEVELOPMENT

The first chapter intention is to provide a concentrated overview of economic development. We focus on the main trends of macroeconomic development trying to identify which developments have long-lasting tendencies and what are rather new moments. There is also the first, closer look at the problem which we focus in this publication – the problem of real convergence interruption. In addition to the main topic, we also pay attention to the problem of labour shortages, signs of accelerated labour cost growth or the state of macroeconomic stability. The following chapters take a closer look at other partial issues.

1.1. Catching-up Process to Most Advanced Got Stuck

The catching-up of the most advanced economies (real convergence) is the natural ambition of actors in economies that are lagging behind. Since the beginning of Slovak transformation to a market economy, the Slovak economy achieved a significant shift in the process. However, we have already drawn attention to the interruption of real convergence in the last year's publication. Now, with one year distance and with a newly available data, we may say that this problem is even more significant than before (it is no coincidence that we have chosen it as a central topic of this year's publication).

The dramatic convergence of the Slovak economy to the EU-15 level[1] ended in 2012. Since then, the level of the Slovak economy has reached just above 70% of the EU-15 level (Figure 1.1). However, this does not mean the stagnation of the Slovak economy performance. It rather says that the group of economies that Slovak economy wants to catch up raises its level at a similar pace as the Slovak one.

There are visible two distinctly different images of Slovak real convergence towards the EU-15 when we address the whole development period. First one is the *pre-crisis period* of 2001 – 2008 and the second one is the *post-crisis period* of 2010 – 2017 (Figure 1.2 and 1.3).

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[1] We employ a comparison with the EU-15, as this is a group of economically advanced EU countries. The parameters of this group are not affected by the less advanced economies that joined the EU after 2004.

F i g u r e 1.1
Real Convergence Development
(GDP per capita level in PPS, the EU15 = 100)

Significant slowdown of real convergence in the whole group, in Slovakia it lasts longer

Slovakia — Hungary ⋯⋯ Poland — Czechia – – Slovenia
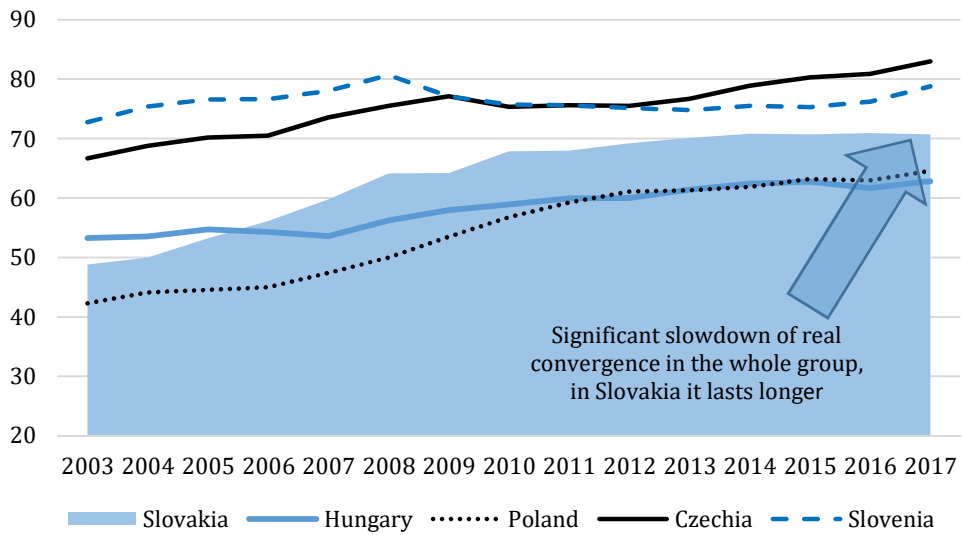
Note: Data for 2018 was not available at the time of text compilation.
Source: Eurostat (2019); Authors' calculations.

F i g u r e 1.2
Changes in Economic Level in 2001 – 2008 ("pre-crisis period")
(GDP per capita level in PPP, % of the EU-15 level)

Slovakia is among "best performers" in real convergence (large distance from the diagonal)
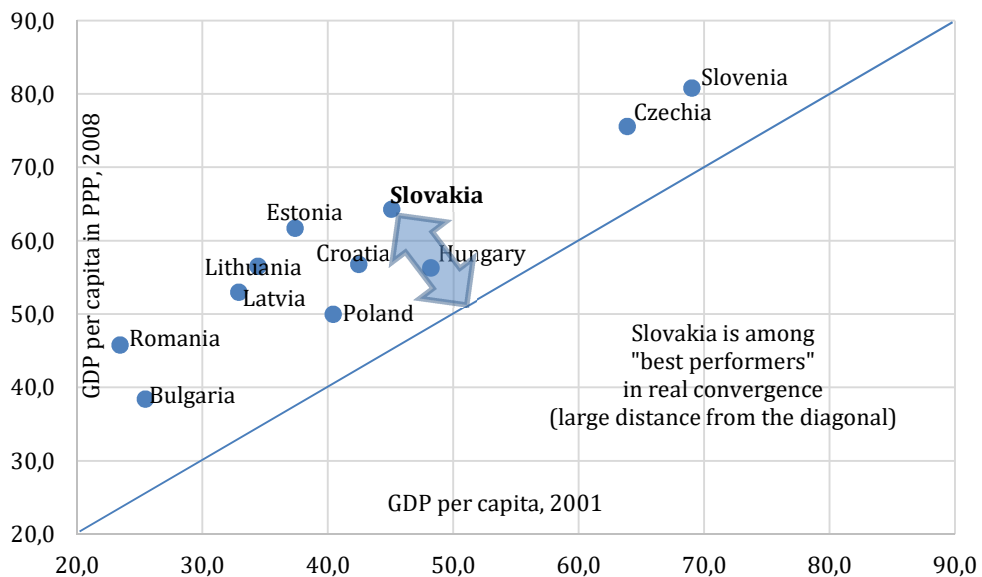
Source: Eurostat (2019).

In the period up to 2008, Slovakia achieved considerable progress expressed by the distance from the diagonal in Figure 1.2 (this distance was the largest in Slovakia compared to other V4 countries). However, in the later period (2010 – 2017), the position of Slovakia is almost on the diagonal (see Figure 1.3). That represents nearly no progress in real convergence at all. Since the real convergence continued in other countries (e.g. Lithuania or Estonia), these economies outstripped Slovak GDP per capita in PPP (cf. vertical axes of Figure 1.2 and 1.3).

F i g u r e 1.3
Changes in Economic Level in 2010 – 2017 ("post-crisis period")
(GDP per capita level in PPP, % of the EU-15 level)
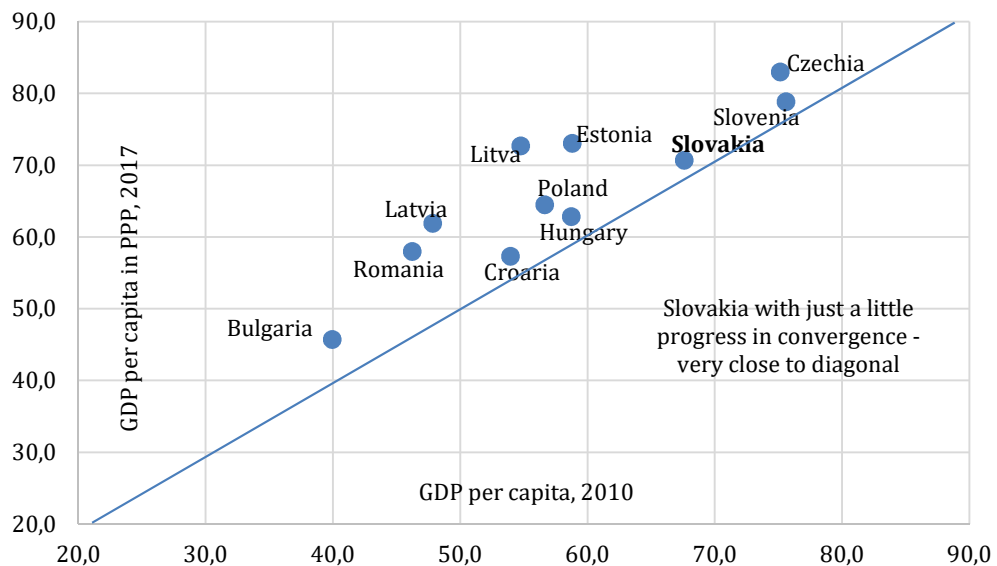

Source: Eurostat (2019).

The anticipated image of the catching-up process with the most advanced economies should look like the situation where the converging (i.e. weaker) economy reaches higher GDP growth rates (but also the higher price level growth[2]) than the economy which is being caught up (i.e. more advanced). This scheme corresponds to the Slovak economy development up to 2012. The subsequent convergence interruption was associated with these phenomena:

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[2] The convergence takes place through so-called "inflation channel". The stronger, converging economy cases to be "cheap". It is explained by so-called "Balassa-Samuelson effect".

- Slovak economy ceased to be a leader in GDP growth dynamics (Figure 1.4). In the period 2012 – 2017, a previously higher growth rate of the Slovak economy compared to the other CEE-5 countries disappeared (V4 countries + Slovenia). In the 2003 – 2008 period, the Slovak economy was a growth leader of the group and managed to stay being the leader even after the recession was overcome (i.e. 2010 – 2012). Since then, the Slovak economy has lost its position and is lagging behind. It has also been pointed out by the European Commission: in assessing the problem of slow convergence, the Commission speaks about the exhaustion of growing incentives that fuelled the economy in the past (mainly the inflow of foreign direct investment and the resulting effects; see EC, 2019a).

- Very low rate of inflation (even deflation) and a related stagnation in price convergence played a negative role. Approximately in the 2011 – 2016 period, there was no "price convergence" in the whole V4 group (price levels of GDP). The price level of these economies ceased to catch up with one of the most advanced countries (Figure 1.5). We have already pointed out this phenomenon in previous editions of this publication, and we perceived it rather as a problem. We assume that V4 countries have to catch up with their more economically advanced partners in both real performance and productivity, as well as in price levels. Both of these convergences (real and price) should be interconnected (however, this does not mean that they have to be consistent at any moment, nor that their pace should be the same). At the end of the period, the renewal of price convergence is visible (GDP price levels were at the time of writing available only up to 2017). The restoration of favourable inflation rates also comes with the resume in price convergence – this is discussed elsewhere in the publication.

- When comparing GDP per capita in purchasing power parity or purchasing parity standard, we must reckon with inaccuracies and imperfections that even more highlight the problem of interrupted or stuck convergence.[3]

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[3] For further information on impact of imperfections in the calculation of purchasing power parity and overall on this topic, see Habrman (2018).
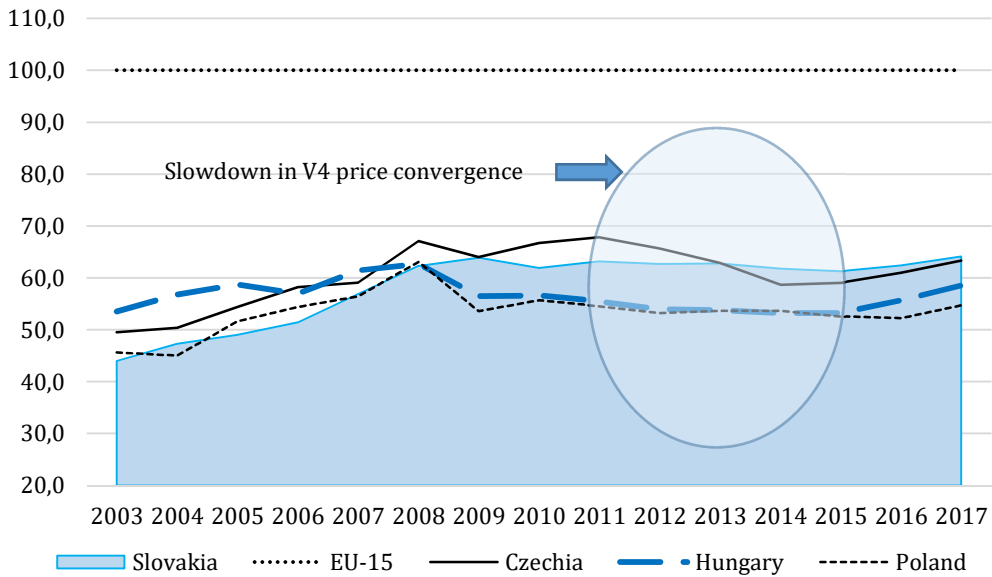
Figure 1.4
Real GDP Changes: Slovakia Ceased to Be a Growth Leader
(year-on-year changes in %)
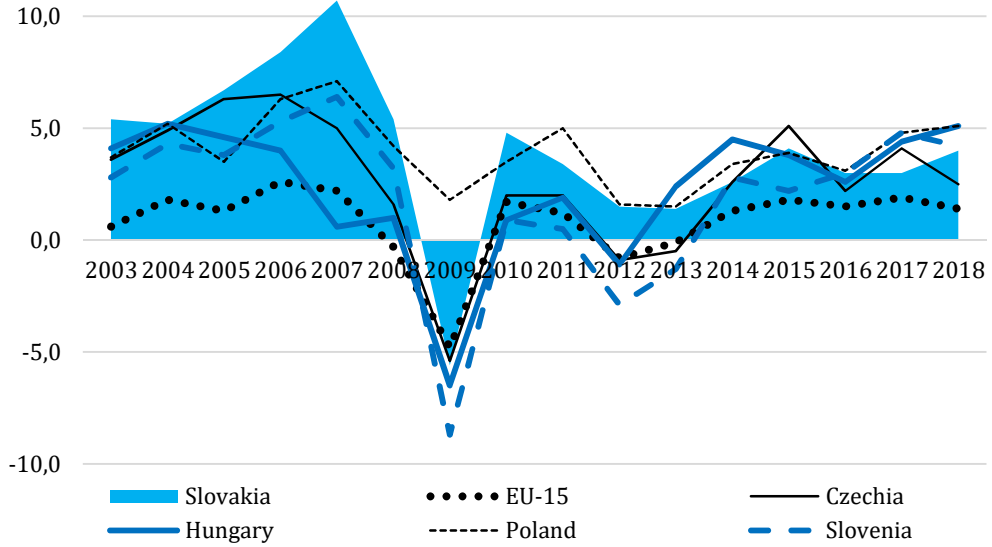
Source: Eurostat (2019).

Figure 1.5
The Convergence of Price Levels
(price levels compared to the EU-15; the EU-15 level = 100)

Note: Price level for GDP (total).
Source: Eurostat (2019).

Table 1.1 provides an overview of convergence parameters, combining GDP per capita convergence and price level convergence. We employ in our analysis following three indicators (all expressed as a ratio to the EU-15):

1) GDP per capita in current prices in EUR (or other national currency at the exchange rate). The ratios to the EU-15 are low, not only due to lower real performance but also by lower price levels in V4 countries. Economic level expressed by this indicator does not reach even half of the EU-15 average (45.3% in 2017).

2) GDP per capita in purchasing power parity (PPP). GDP per capita expressed in these terms is corrected for differences in price levels among the compared economies. The ratios of the V4 countries to the EU-15 average are inevitably higher than in case of previous indicator (the level of the Slovak economy reached about 70.7% of the EU-15 average in 2017).

3) GDP price level. The level and development of the price level ratio explain the differences between the two GDP per capita indicators (the convergence of price levels reduces the gap between the two performance indicators) mentioned above. Thus, in the long term, price levels are expected to converge, thereby losing the difference between the expression of economic performance in the current exchange rate and PPP. GDP per capita will catch up with the most advanced economies in both terms and the gap between the two GDP per capita parameters will be eliminated.

From the Slovak economy point of view, there was no desirable relationship between the parameters of economic performance and changes in price levels in recent years – resulting in stagnation of GDP per capita values in PPP (see Table 1.1). The difference in GDP per capita in PPP is given by a change in GDP per capita in national currency and change in the price level. If the Slovak GDP per capita is supposed to catch up with the most advanced countries, the catching up process of the performance level has to be faster than the catching up of the price level. However, such a link does not apply for the Slovak economy in recent years. In other countries, convergence parameters were more favourable. It is also because, unlike in the past, the Slovak economy was no longer the fastest growing in the region (as mentioned above).

T a b l e 1.1
Parameters of Convergence Developments in V4 Economies

	2014	2015	2016	2017
Slovakia				
GDP per capita in current prices in EUR (% of the EU-15 level)	43.7	43.3	44.2	45.3
Year-on-year change in GDP per capita ratio, Index (iY)		*0.991*	*1.021*	*1.024*
Price level as % of the EU-15 level	61.8	61.3	62.4	64.1
Year-on-year change in price level ratio, Index (iY)		*0.992*	*1.018*	*1.028*
GDP per capita in PPP (% of the EU-15 level)	**70.8**	**70.7**	**70.9**	**70.7**
Year-on-year change in GDP per capita in PPP ratio, Index (= iY/iP)		*0.999*	*1.003*	*0.996*
Czechia				
GDP per capita in current prices in EUR (% of the EU-15 level)	46.4	47.4	49.4	52.5
Year-on-year change in GDP per capita ratio, Index (iY)		*1.021*	*1.042*	*1.064*
Price level as % of the EU-15 level	58.7	59.1	61.0	63.3
Year-on-year change in price level ratio, Index (iY)		*1.005*	*1.034*	*1.038*
GDP per capita in PPP (% of the EU-15 level)	**78.9**	**80.3**	**80.9**	**83.0**
Year-on-year change in GDP per capita in PPP ratio, Index (= iY/iP)		*1.016*	*1.008*	*1.026*
Hungary				
GDP per capita in current prices in EUR (% of the EU-15 level)	33.3	33.4	34.4	36.8
Year-on-year change in GDP per capita ratio, Index (iY)		1.003	1.029	1.069
Price level as % of the EU-15 level	53.3	53.3	55.7	58.5
Year-on-year change in price level ratio, Index (iY)		1.000	1.045	1.050
GDP per capita in PPP (% of the EU-15 level)	**62.4**	**62.7**	**61.6**	**62.8**
Year-on-year change in GDP per capita in PPP ratio, Index (= iY/iP)		*1.004*	*0.983*	*1.019*
Poland				
GDP per capita in current prices in EUR (% of the EU-15 level)	38.6	38.5	37.9	40.5
Year-on-year change in GDP per capita ratio, Index (iY)		0.997	0.984	1.067
Price level as % of the EU-15 level	53.7	52.6	52.2	54.7
Year-on-year change in price level ratio, Index (iY)		0.980	0.992	1.048
GDP per capita in PPP (% of the EU-15 level)	**61.9**	**63.1**	**62.9**	**64.5**
Year-on-year change in GDP per capita in PPP ratio, Index (= iY/iP)		1.020	0.996	1.025

Source: Eurostat (2019); Authors' calculations.

1.2. Unprecedented Labour Market Situation

An important topic resonating in the economic debates over the past two years was an unprecedented labour market developments: labour shortages and (related) strengthened wage growth. For almost three decades, the labour market has been a neuralgic point of the economy for quite a different reason: because of the high rate of unemployment and a weak creation of new jobs.

However, the fact that there will be a labour shortage problem before 2020 has not been quite unexpected. This problem appeared in advance in some visionary or strategic documents[4], and some signs of labour shortages also appeared in the development of the real economy a decade earlier (in 2007 – 2008). However, later on, this phenomenon was postponed to future developments by the upcoming recession of the economy.

To assess the problem of labour shortages, we use occupied and vacant labour statistics. The number of vacancies in the Slovak economy increased in 2016 – 2018 (especially in 2018, see Figure 1.6). The fact is that in other V4 countries, the number of vacancies has increased even more (the most in the Czechia). The number of jobs in 2018 was approximately 1.8 times higher compared to 2011 in Slovakia. In Czechia, the number of jobs increased seven times within the same period. Thus, the problem of labour shortages in Slovakia appears to be delayed and more moderate than in neighbouring economies (this does not mean that the problem is not significant in Slovakia). It can be explained by the fact that there was another situation on the labour market in the previous years in Slovakia. With a high level of unemployment in Slovakia, there was considerable room for fulfilment of the created jobs (see also the chapter on employment). In the neighbouring V4 countries, therefore, the problem of unfilled jobs had to occur earlier. Thus, in Slovakia, employment has been able to grow strongly, and the number of vacancies could develop at a relatively lower growth rate. On the other hand, there was no significant room for employment growth in neighbouring economies, so the number of vacant, unfilled jobs grew faster.

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[4] E.g. Institute of Economics, SAS (2008). The document entitled *Long-term Vision of the Development of Slovak Society* predicted the onset of escalating labour shortages before 2020.

F i g u r e 1.6
Development of Vacancy Rates in V4 Economies
(index, 2011 = 1)
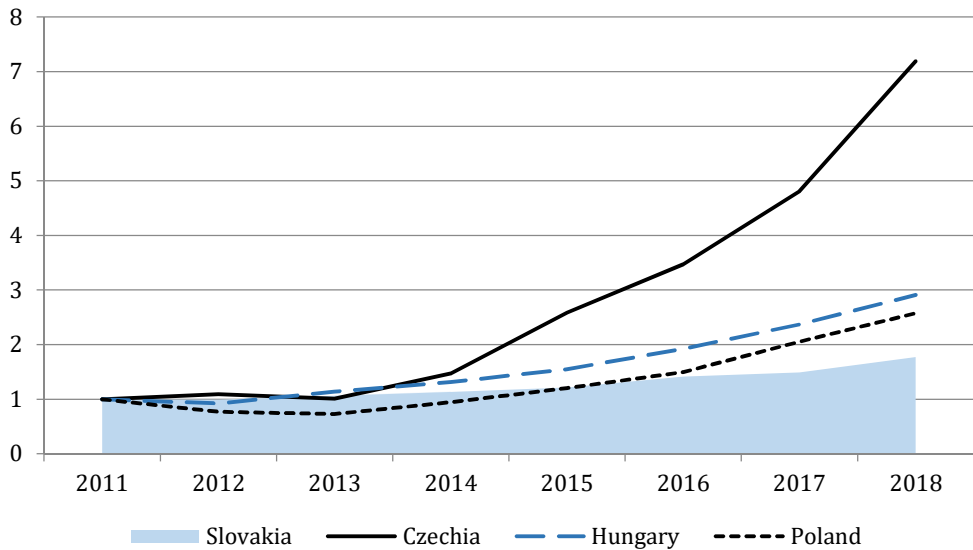
Source: Eurostat (2019); Authors' calculations.

F i g u r e 1.7
The Ratio of Vacant and Occupied Jobs in the Slovak Economy (in %)
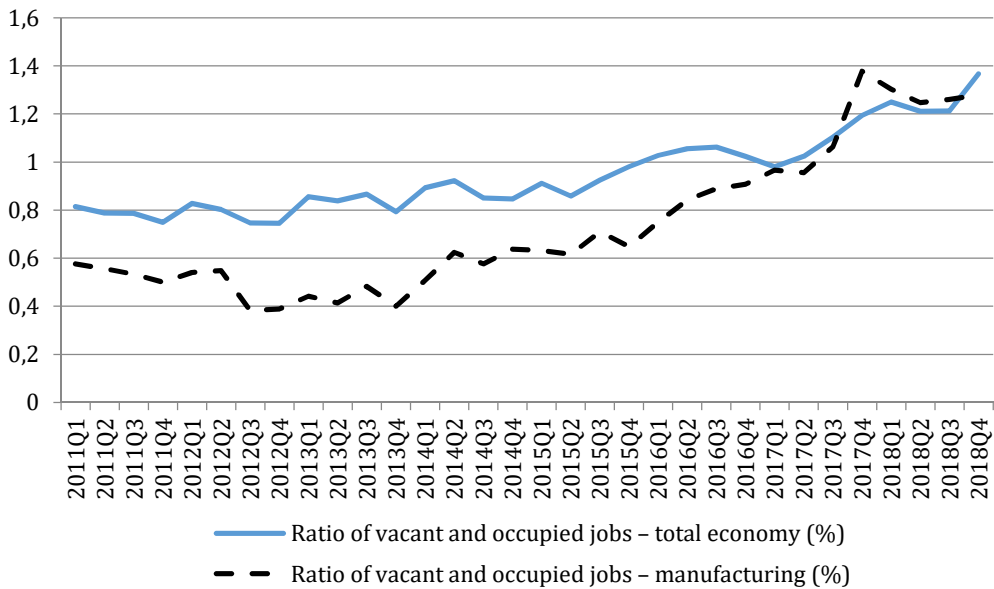
Note: 100*(number of vacant jobs/number of occupied jobs).
Source: Eurostat (2019); Authors' calculations.

The ratio of vacant and occupied jobs has not changed significantly in Slovakia. The only pronounced change was in the year 2018. A slightly steeper increase occurred in manufacturing (Figure 1.7).

In 2018, the slowdown in the y-o-y increase of occupied jobs in Slovakia occurred, while the significant increase in the number of vacancies is visible (Table 1.2). The y-o-y increase in the number of vacancies seems to have hit its limits, so the number of vacant (unfilled) jobs has increased. While in 2017 there were 2.8 additional vacancies per 100 additional occupied jobs, in 2018, it was already 13.9 additional vacancies per 100 of additional occupied jobs.

T a b l e 1.2
Towards Labour Shortages: Number of Vacant and Occupied Jobs

	2016	2017	2018
Number of vacant jobs	20 054	21 123	25 088
Number of occupied jobs	1 924 520	1 963 146	1 991 639
Y-o-y increase in the number of vacant jobs	2 855	1 070	3 965
Y-o-y increase in the number of occupied jobs	53 213	38 626	28 493
The ratio of y-o-y increase of vacant and occupied jobs in %	5.4	2.8	13.9

Source: Eurostat (2019); Authors' calculations.

An increasing scarcity of free labour contributed to the increase in wage levels and labour costs. In 2017 and 2018, the wage growth in Slovakia substantially accelerated as well as in the neighbouring V4 economies.

For international comparison, we employ the "compensation of employees" category. This category reflects not only the wages but also social contributions to social security funds. Therefore, it is a broader category than the wage, representing rather the total labour costs. The volume of compensation of employees divided by its number gives an average compensation per employee (number of employees based on the national accounts methodology).

If we declare a significant acceleration in the employee's compensation growth in Slovakia after 2016, we must also state a similar, even more pronounced acceleration in some neighbouring countries (Figure 1.8). The growth rate of compensation of employees in Slovakia was still considerably moderate compared to rates achieved in Czechia or Hungary.

Here we remind the already mentioned phenomenon – the scarcity of labour in the neighbouring economies appeared earlier and more pronounced than in case of Slovakia.

F i g u r e 1.8
Development of Average Compensation of Employee
(y-o-y changes in average compensation of an employee in %)
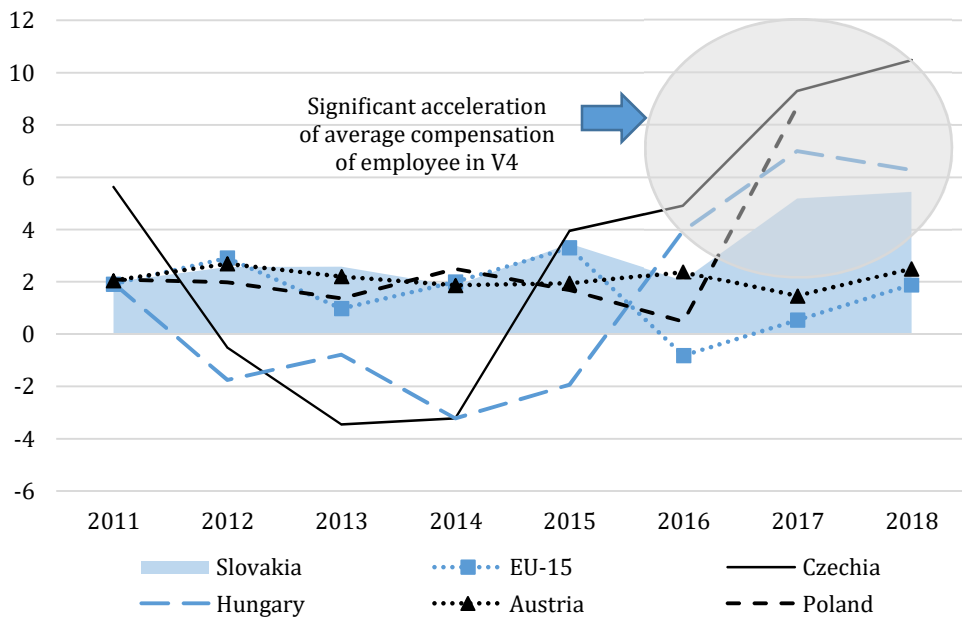
Note: Average compensation of an employee is calculated by dividing the volume of compensation of employees (annual volume) by the number of employees. A number of employees is based on national accounts methodology.
Source: Eurostat (2019); Authors' calculations.

The acceleration of the average compensation of an employee is logically linked to an increase in the share of employee's compensation in GDP (wage share or labour share). Such indicator shows what proportion of total economy income is paid to employees in the form of a wage. Low and long-decreasing wage share was rather typical for Slovakia.[5] However, recent years show growth in this indicator. The increase in wage share (which directly leads to an increase in unit labour costs; i.e. labour costs per unit of output) means a weaker position in the wage competitiveness for the Slovak economy. It is undoubtedly the case, but

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[5] Lower wage share (= lower unit labour costs) represented so-called "wage cushion". It was a factor of competitiveness. However, it gradually disappears (for more see e.g. Lábaj, 2018a).

it can be recalled that the increase in the wage share also takes place in other countries of the region. Also, the fact that the wage share in Slovakia was so low for the last 4 – 5 years that even after its growth in recent years is its value still relatively small when compared to other economies. However, we confirm that the competitive wage advantage of Slovakia is wearing off, and its preservation is hardly the strategic goal.

F i g u r e 1.9
Wage Share – Share of Compensation of Employees in Gross Value Added
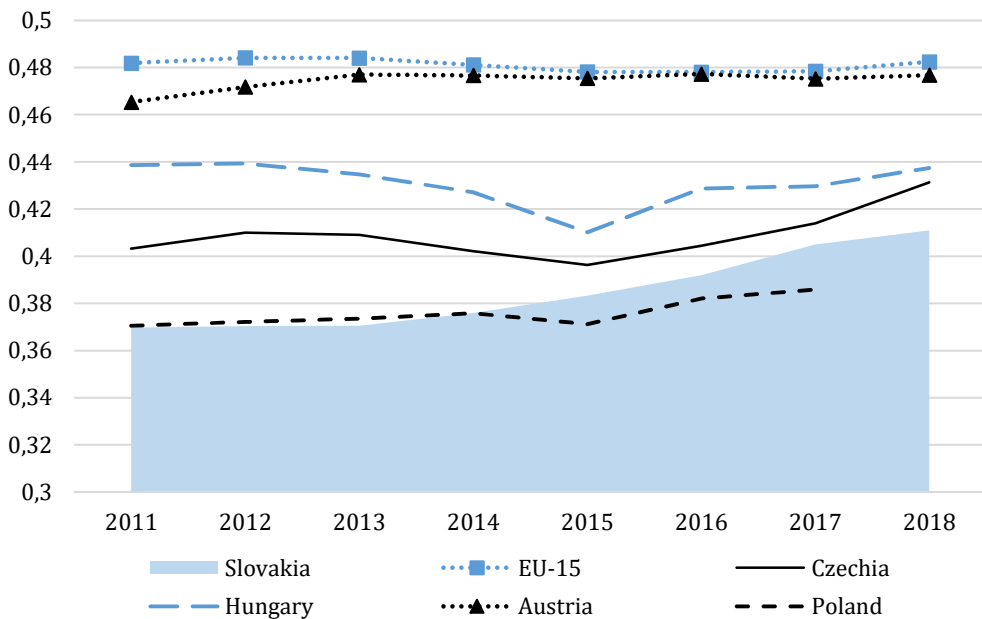
Source: Eurostat (2019); Authors' calculations.

On the one hand, the increase in labour costs, wage levels or wage share is a threat to competitiveness. More specifically, it is a threat to the type of competitiveness used so far. However, we also need to address the possible effects of wage growth on accelerating productivity growth, on automation and digitisation or structural changes in the economy. It is highly likely that a sharp increase in labour costs will lead to a rationalisation of labour use. And it can be achieved by the introduction of better organisation or technologies that reduce labour intensity. Thus, strong labour costs growth will inevitably require adequate strong productivity growth in two possible ways:

- Via organisational changes and the introduction of technologies that replace labour force and shift productivity to new levels (e.g. automation, digitalisation).
- The second way consists of structural changes in the production structure: Companies not able to pay higher wages will be excluded from the market (they will lose their ability to compete). Subsequently, the labour force will diffuse to more productive businesses which will be able to keep up with the rise in wage levels. It is pointless to defend against this process (and conserve low wages as well as the original structure of the economy), rather an easier adaptation to this process could be encouraged.

It means that wage growth can boost restructuring of economy and support automation and digitalisation processes.

1.3. Macroeconomic Stability and Growth in Symbiosis

In previous years, we have drawn attention to accelerating final household consumption growth. It was also a decisive driver of domestic demand and reason for increasing debt of households. Expansion of the final consumption of households also continued in 2018. The steady growth remained; however, its growth was no longer accelerating (see Figure 1.10).

Growth in household consumption is usually an accompanying phenomenon of the above-mentioned wage growth and wage share (for more information see, e.g. Zeman, 2017).

Over the past two years (2017 and 2018), the weight of domestic demand increased in GDP growth. The decisive role in this growth is played by the more favourable development of investment demand (gross capital formation). With relatively stable shares of both household and general government consumption, it was the capital formation, which was responsible for the sharp fluctuations of the share of domestic demand in recent years (Figure 1.11).

Increase in the share of capital formation in GDP growth may contribute to accelerating convergence. In recent years (especially in 2016), capital formation has fallen to levels that we considered as problematic ones.

Figure 1.10
Final Consumption of Household Parameters

Acceleration of household consumption up to 2017. Later, the consumption grows but do not accelerate.

-0,8   1,4   2,3   2,9   3,5   3,0

Y-o-y increase in FCH (in EUR million, current prices – right axis)
Share of FCH increase in total GDP increase (in %, current prices – left axis)
Y-o-y change in FCH (in %, constant prices – left axis)
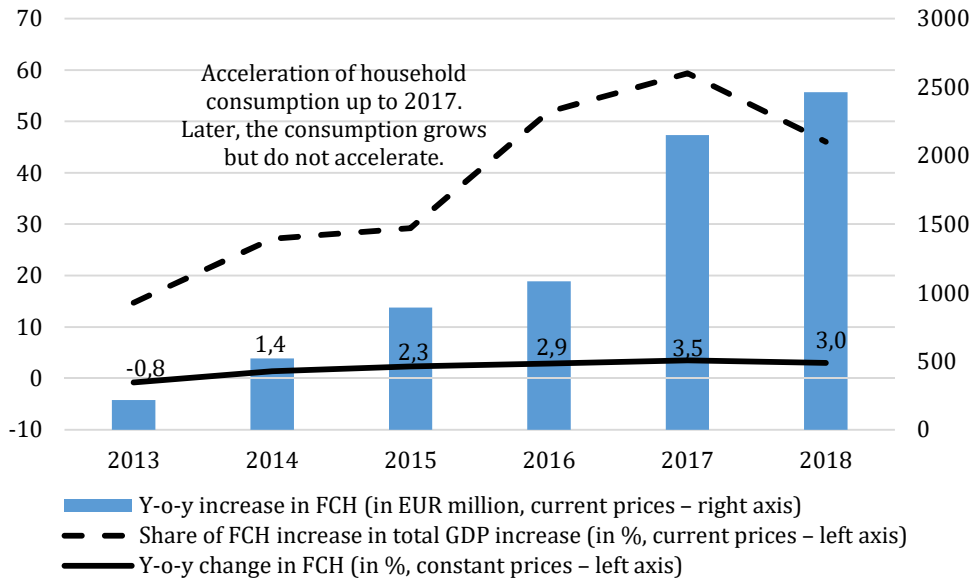
Note: FCH – Final consumption of households.

Source: Eurostat (2019); Authors' calculations.

Figure 1.11
Share of Domestic Demand Components in GDP Growth

Domestic demand – total
Final consumption of general government
Final consumption of households
Gross capital formation
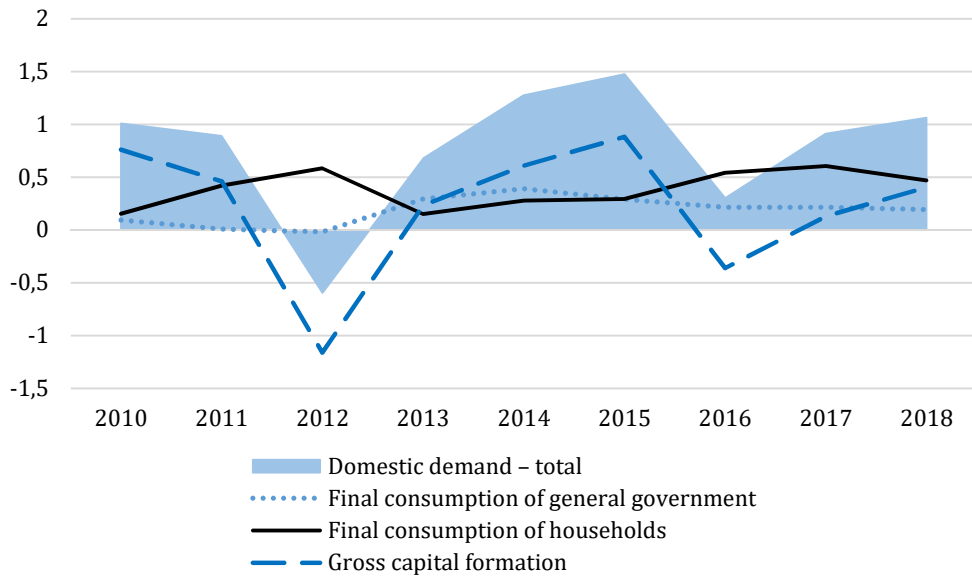
Note: Domestic demand is an aggregated variable. It consists of listed parameters. Shares of domestic demand components in GDP growth are computed from data in current prices.

Source: Eurostat (2019); Authors' calculations.

Indeed, the investment rate (the share of capital formation in GDP) has fallen to the average of the most advanced EU economies. We assume that this occurred too early – an economy that needs to catch up should have a share of capital formation in GDP higher than in the economies it is trying to catch up.

To assess the state of macroeconomic balance, we pay attention to only a few basic parameters (Figure 1.12) with the idea that considerably more detailed assessments of balances or imbalances of the economy are provided in following chapters.

F i g u r e 1.12
Development of Main Parameters of Macroeconomic Balance in Slovakia
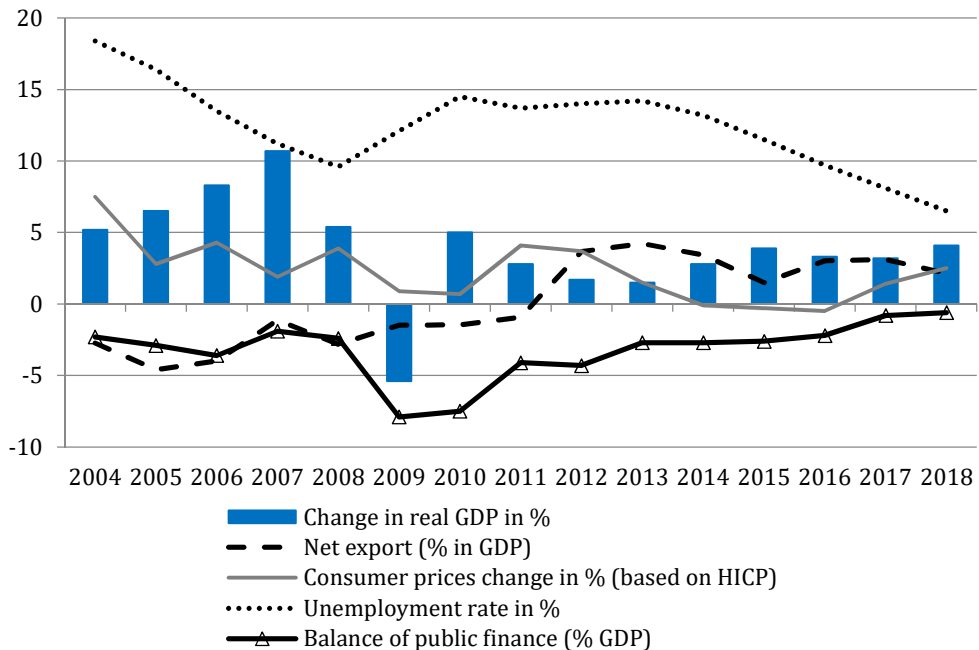
Note: Unemployment rate based on LFS.
Source: Eurostat (2019); Ministry of Finance SR (2019); Authors' calculations.

The basic parameters of internal and external balance remained in a safe corridor:

- The general government deficit has been gradually eased in recent years (while the goal of a balanced budget is still an illusion, it is presented as the goal also in the adopted general government budget for 2019).

- The labour market parameters have been improving for several years in a row, and in 2018, the unemployment rate fell to levels that were very daring to predict in the past (6.5% based on LFS). The scarcity of appropriate labour force could already be a barrier to faster growth in some sectors.
- The inflation rate in 2018 increased to an acceptable level of 2.5%. This level is finally far away from the deflation that hit the economy in 2014 – 2016. At the same time, it gives room for price convergence towards more advanced economies.

In addition to these relatively favourable balance parameters, the economic growth accelerated (4.1% real GDP growth was the strongest since 2010). It means quite a good match between economic growth and macro-stability. Also, such a boost to growth seems to indicate a renewal of convergence in GDP per capita levels to the EU most developed countries (data were not yet available to confirm).

2. STRUCTURAL CHANGES IN SLOVAK ECONOMY

In the first part of this chapter, we analyse the development of value added and employment in individual industries. The method of analysis copies the traditional format from previous issues of this publication when we examine contributions of particular industries over the last three years to the value added growth in percentage points as well as their share in overall growth. In employment changes of industries, we pay attention to the annual employment growth rates for 2016 – 2018, to the change in a number of employed persons by industries, and the share of industries in total employment in 2018.

The second part of the chapter focuses on the problem of interrupted convergence of the Slovak economy to the EU average or to the most advanced European economies from the point of view of the manufacturing industry. The labour productivity growth in the manufacturing exceeded labour productivity growth in most advanced economies for a long time. The manufacturing industry thus contributed significantly to the overall catching up of the Slovak economy to the EU average. However, in the last two issues of this publication, we have indicated that there is a turning point in the development of the Slovak manufacturing industry and an increase in the pressure to shift from cost competitiveness to competitiveness based on high labour productivity takes place. This new form of competitiveness should meet increasing demands for price and quality of labour.

We consider the relative weakening of the cost competitiveness of the Slovak manufacturing as one of the reasons for convergence interruption to the most advanced economies. The companies in the Slovak manufacturing industry are going through a period in which they are under pressure from a lack of skilled labour and increasing labour costs. Many of them concluded deliveries contracts with their business partners in the period, where they anticipated more favourable labour market conditions (regarding labour force availability and slower wage growth). In these contracts, they committed to meet deliveries conditions (at certain prices) for 3 – 5 years.

While in the case of domestic suppliers and buyers, they are in a similar situation and both sides understand the need for renegotiation of their contracts under new conditions. However, with respect to the competition from abroad, these companies must bear lower profit margins than expected. Also, they are under much higher pressure to acquire new orders for products meant for export, as they have lost a significant portion of cost-competitive ability over the past period. And this loss was not only related to the surrounding V4 countries but also countries like Spain or especially Portugal.

Sectoral View of Value Added and Employment

In 2018, changes in the manufacturing industry, which we have been drawing attention to for a long time, have emerged to a significant extent and have been particularly urgent for manufacturing companies for several years. While in 2016 and 2017, the manufacturing industry generated almost half of the total value added growth in Slovakia, its share fell to 26.4% in 2018. The manufacturing industry contributed to the overall growth of 3.8% only by 1 pp. In 2016 and 2017, it was 1.6 pp. (or 1.3 pp. respectively) with a slower overall value added growth.

Overall valued added growth exceeded in the last three years due to the value added formed in services and construction. The contribution of value added growth in construction came significantly closer to the contribution of the entire manufacturing industry. In particular, services like trade, transport and accommodation, public services and real estate services contributed to its growth. Financial and insurance activities were the only aggregated industry that experienced a decline in gross value added. The industry's gross value added has been falling for three consecutive years.

Despite the relatively tight labour market situation with record low unemployment rates, overall employment growth reached 2% in 2018. It is slightly less than in 2016 and 2017; however, concerning the whole macroeconomic situation, it is a relatively high growth in employment, representing an increase by more than 47,000 jobs.

T a b l e 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		
	2016	2017	2018	2016	2017	2018
Total	**3.3**	**2.8**	**3.8**	**100.0**	**100.0**	**100.0**
Agriculture	0.3	−0.3	0.3	7.9	−9.6	6.6
Industry	1.5	1.2	0.9	46.4	43.1	23.0
Manufacturing	1.6	1.3	1.0	49.4	46.3	26.4
Construction	−0.1	0.5	0.7	−4.2	19.2	17.7
Trade, transport and accommodation	−1.3	0.9	0.8	−39.7	30.1	21.6
Information and communication tech.	0.2	0.2	0.3	6.0	6.8	7.6
Financial and insurance services	−0.2	−0.2	−0.2	−4.7	−8.0	−6.1
Real estate	0.9	0.0	0.4	27.4	−1.2	10.1
Professional services	1.1	0.4	0.2	32.2	12.4	5.0
Public services	1.4	0.2	0.5	43.0	8.8	12.3
Other services	−0.5	0.0	0.1	−14.2	−1.6	2.4

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 (2019c); Author's calculations.

It is evident from the perspective of the previous value added development that services were the dominant driver of employment growth. From the total number of jobs created, only 13,250 were in the industry, out of which 11,250 in manufacturing industry itself. A comparable number of jobs was created in trade, transport and accommodation (12,940). Employment grew by 7,170 jobs in professional services and by 6,250 jobs in public services (for more information see Chapter 4).

The share of employment in manufacturing in the total employment was 22.3% in 2018, which is still above 20% target set by the European Commission. Thus, Slovakia is one of the European countries with a relatively higher share of industry in the total national economy, and its development significantly affects the overall macroeconomic growth. Nearly one-fifth of all workers worked in public services.

In 2018, the highest growth rate of employment was recorded in construction, which was successful also in other parameters in the previous year (i.e. in the above-mentioned development of value added).

T a b l e 2.2
Sectoral Changes in Employment (number of workers)

	Annual growth rates in %			Absolute change	Share in overall employment
	2016	2017	2018	2018 – 2017	2018
Total	**2.4**	**2.2**	**2.0**	**47 640**	**100**
Agriculture	–1.1	–0.3	–0.6	–450	3
Industry	3.4	3.6	2.3	13 250	24.4
of which: Manufacturing	3.7	3.9	2.1	11 250	22.3
Construction	1.6	2.3	3.9	6 660	7.3
Trade, transportation. accommod.	1.1	1.7	2.1	12 940	26.4
Information and commun. a.	5.4	4.4	2.9	1 930	2.9
Financial and insurance services	1.5	–0.8	0.2	70	1.9
Real estate	12.2	7.7	–2.6	–710	1.1
Professional services	4.7	1.1	3.0	7 170	10.3
Public services	1.1	1.3	1.3	6 250	19.9
Other services	6.9	5.3	0.8	530	2.9

Source: Eurostat (2019b); Author's calculations.

Convergence Slowdown and Losing Cost Competitive Advantage of Slovak Manufacturing

In this part, we analyse the development of labour productivity in the manufacturing industry in the post-crisis period, i.e. 2010. The year 2010 was characterised by a significant recovery compared to the crisis years 2008 and 2009. However, as we will see, despite the seemingly positive development of Slovak manufacturing after 2010, it is gradually losing room for the cost competitiveness of the old type (i.e. relatively low labour costs, which compensate for lower labour productivity and therefore create a kind of cushion vis-à-vis the foreign competition.

The growth in labour productivity and labour costs in Slovakia and neighbouring countries has led to the fact that the relative differences in labour productivity and wages among them are getting smaller. Still, maintenance of competitiveness requires growth in labour productivity, which should be able to compensate for increased wage demands. Therefore, the administrative increase in labour costs argued by favourable labour market development in the manufacturing is not justified. The legislative changes affect companies when they are under pressure from increased wage costs even without the changes imposed. The current

labour market situation creates pressure for wage growth even without state interventions. In such a case, the government should rather help companies to shift to new ways of production or manufacture new products through industrial policy and its indirect tools. It could be done by supporting investments in automated production, robotics, digitisation, as well as by supporting workers' skills in this area. While the increasing labour costs indirectly accelerate the process of the shift to a qualitatively higher level of competitiveness, at the same time, it increases the risk of harm to many small and medium-sized enterprises which need a more extended period for adaptation than medium and large manufacturing companies.

The change in the development of the manufacturing industry can be seen in several indicators and moods of entrepreneurs since 2016. The analysis in this section shows that the year 2015 was the peak of seemingly "good old days" for the Slovak manufacturing. In 2016, the labour productivity indicators experienced a relatively sharp fall, and although the data for more recent period are not available yet, we believe that this fall persisted in 2017 and 2018.

When analysing the development of Slovak manufacturing labour productivity in international comparison, we use two indicators. The first is so-called "apparent labour productivity" defined by Eurostat methodology as a ratio of gross value added per worker in EUR. The second, a less common indicator is wage adjusted labour productivity measuring the share of gross value added in total labour costs.[1]

In international comparison, one of the advantages of this indicator is that it is not biased by the different share of employees in part-time jobs or the different hours worked by workers from different countries. Besides, it shows what value added brings the 1 EUR paid on wages beyond the level of labour costs. As the rest from the ratio is mainly a gross operating surplus, this indicator indicates what profits may an investor expect with given labour costs and labour productivity in a particular country.

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[1] Wage adjusted labour productivity is calculated as value added divided by total labour costs and then adjusted by the proportion of paid employees to the total number of workers.

Between 2010 and 2016, labour productivity in the Slovak manufacturing increased from 21,500 EUR to 26,900 EUR. Slovakia continues to lag behind Europe's top (77,400 EUR of gross value added per worker in Germany in 2016). In 2016, the similar labour productivity was achieved in Czechia, Estonia, Hungary, Poland and Portugal. For the labour productivity in Spain, we exceeded 50% of its gross value added per employee. Both Romania and Bulgaria lags behind this group of countries in terms of labour productivity per worker, although in Bulgaria, the significant progress has been made in recent years and labour productivity has almost matched labour productivity in Romania.

T a b l e 2.3
Labour Productivity in Manufacturing:
Gross Value Added per Worker, thousand EUR, 2010 – 2016

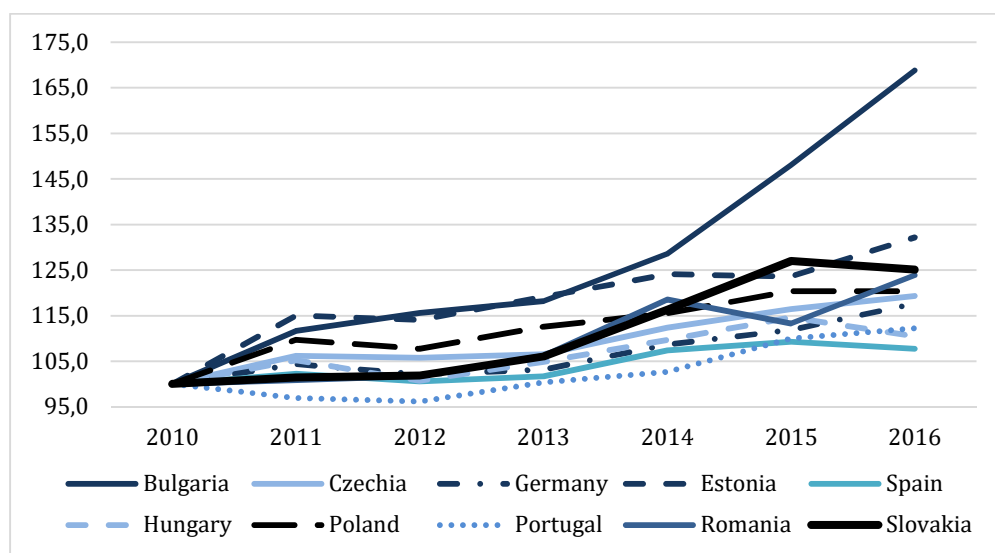|	2010	2011	2012	2013	2014	2015	2016
Bulgaria	7.7	8.6	8.9	9.1	9.9	11.4	13.0
Czechia	24.3	25.8	25.7	25.9	27.3	28.3	29.0
Germany	**65.8**	**68.7**	**67.2**	**67.9**	**71.5**	**73.6**	**77.4**
Estonia	19.9	22.9	22.7	23.7	24.7	24.6	26.3
Spain	52.7	53.9	53.0	53.6	56.6	57.6	56.8
Hungary	26.7	28.1	26.9	28.0	29.3	30.6	29.5
Poland	20.6	22.6	22.2	23.2	23.8	24.8	24.8
Portugal	26.1	25.3	25.1	26.2	26.8	28.7	29.3
Romania	11.3	11.4	11.5	12.0	13.4	12.8	14.0
Slovakia	**21.5**	**21.8**	**21.9**	**22.8**	**25.0**	**27.3**	**26.9**

Source: Eurostat (2019a); Author's calculations.

The relatively favourable development of labour productivity measured this way is also evidenced by the index of value added in individual years with respect to 2010. In Slovakia, productivity grew by 25%. Higher growth was achieved only in Estonia (32%) and Bulgaria (69%).

Wage adjusted labour productivity measures gross value added per unit of labour costs (multiplied by 100), meaning that the value of 100 would be achieved in this indicator if only wages would form the total value added. Wage adjusted labour productivity in the manufacturing was 162.4 in 2010. That represents that per one unit of wage costs was 0.62 EUR belonging to the remaining components of value added, in particular, gross operating surplus and depreciation. Compared to Germany in 2010 (137.9), this is an indication of cost competitiveness concerning

wage costs. One unit of wage costs created a higher value added in Slovakia than in Germany. In comparison to Spain, Slovakia was in a similar situation as with Germany. However, both Spain and Germany are countries with significantly higher value added per employee and hourly wage levels, and their competitive advantages of the manufacturing are based on several other, non-cost factors.

F i g u r e 2.1
Manufacturing Productivity Index, 2010 and 2016, 2010 = 100

Source: Eurostat (2019a); Author's calculations.

T a b l e 2.4
Wage Adjusted Labour Productivity in Manufacturing:
**Gross Value Added per Unit of Labour Costs, 2010 – 2016**

	2010	2011	2012	2013	2014	2015	2016
Bulgaria	191.4	199.9	192.4	185.7	189.7	200.9	208.1
Czechia	160.5	160.9	158.5	163.3	176.1	175.6	170.6
Germany	**137.9**	**141.0**	**133.5**	**132.0**	**134.6**	**133.6**	**140.3**
Estonia	167.1	178.8	167.2	162.0	158.5	151.9	152.3
Spain	147.3	147.2	142.8	142.9	150.5	154.3	154.6
Hungary	216.7	215.6	204.6	211.7	219.1	223.8	204.5
Poland	190.6	199.9	187.4	193.0	189.8	192.1	193.7
Portugal	155.9	149.3	147.8	153.4	155.1	164.0	165.4
Romania	195.3	185.4	184.7	179.7	189.8	167.7	165.5
Slovakia	**162.4**	**157.3**	**147.8**	**147.5**	**157.9**	**167.9**	**159.7**

Source: Eurostat (2018b); Authors calculations.

In 2010, Slovakia had an adjusted value added rate at a level comparable to that of Czechia and Estonia, and even slightly higher compared to Portugal. Other countries, Hungary, Romania, Poland and Bulgaria, have adjusted productivity above the index level of 190 reflecting the relatively high cost competitive advantage of these countries.

By 2016, however, the cost competitiveness of manufacturing industry developed a negative way in Slovakia. By this statement, we do not mean to judge whether it was a desirable or unwanted phenomenon, rather point out to the fact that the position of the Slovak manufacturing in cost competitive ability has relatively deteriorated. Although in 2015, competitiveness was the highest one in the whole period under review, the long-term development trend suggests its decrease. In particular, we lost our cost competitiveness to Czechia and Portugal. These are economies with a similar level of labour productivity per employee and companies in the manufacturing industry competing for similar types of contracts as Slovak ones. From this development, the growing concerns of the automotive supply companies as well as the engineering companies and those operating in the electrical industry are understandable. They are concerned about the loss of new production orders for the next 3 to 5 years. These are mainly companies that supply a significant part of their production for export.

F i g u r e 2.2
Labour Productivity in Manufacturing, 2010 and 2016
**Germany = 100**
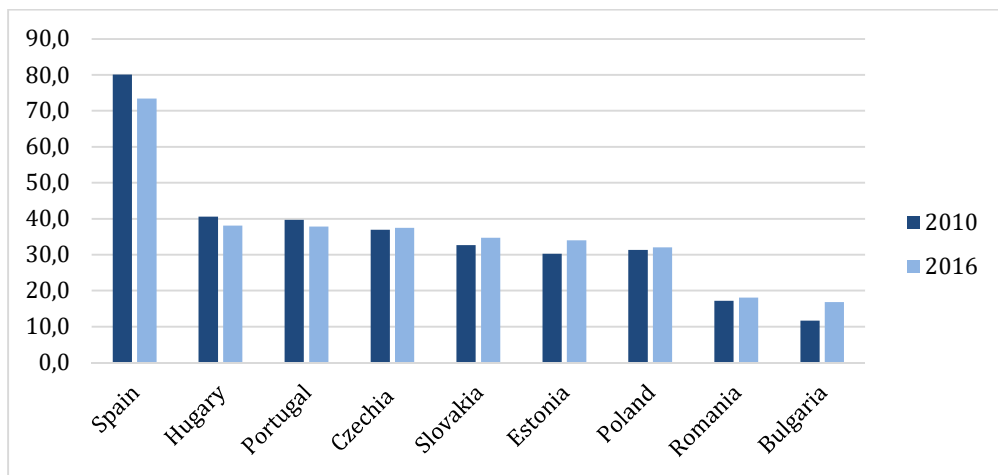
Source: Eurostat (2018a); Author's calculations.

The conclusions above are also supported by the analysis of the following figure. From 2010 to 2016, the Slovak manufacturing industry improved in relation to labour productivity in Germany. Although not in a very significant way, it nevertheless shows some degree of convergence in productivity to the most advanced European economies.

However, Slovakia has deteriorated in relation to Germany and several other countries in wage adjusted labour productivity. In addition to the traditional competitive struggle with the neighbouring V4 countries, competitive pressure also grows from companies in Spain and Portugal.

F i g u r e 2.3
Wage Adjusted Labour Productivity in Manufacturing, 2010 and 2016
Germany = 100
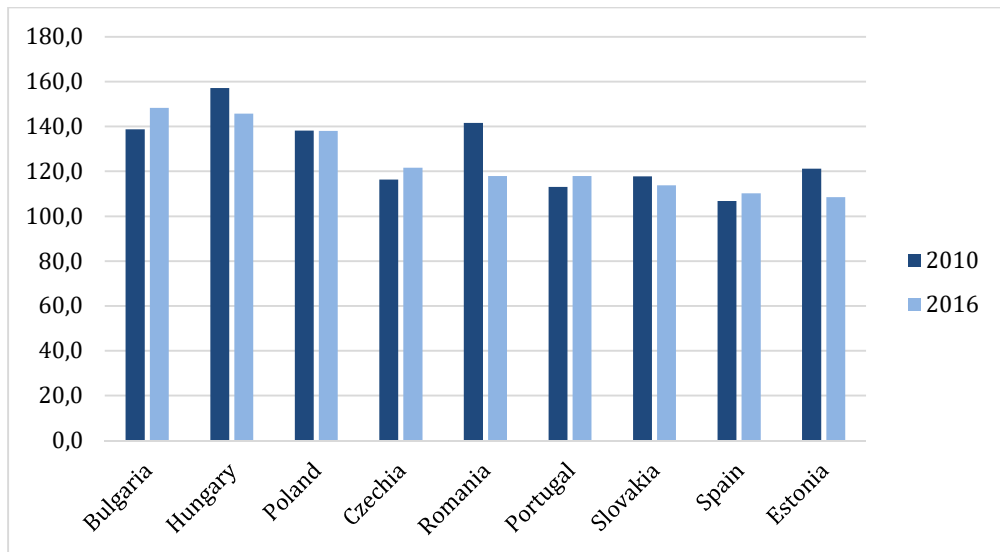
Source: Eurostat (2018a); Author's calculations.

Therefore, there should be caution exercised when assessing labour productivity developments in the manufacturing industry. Although the labour productivity index vis-à-vis Germany grew the most markedly in Slovakia among the countries such as Czechia, Spain or Portugal between 2010 and 2016 (Figure 2.3), Slovakia was the only country from this group of nations to show a relative deterioration in the wage (cost) competitiveness of the processing industry (Chart 2.4).

Figure 2.4
Labour Productivity in Manufacturing
Index 2016/2010, Germany = 100
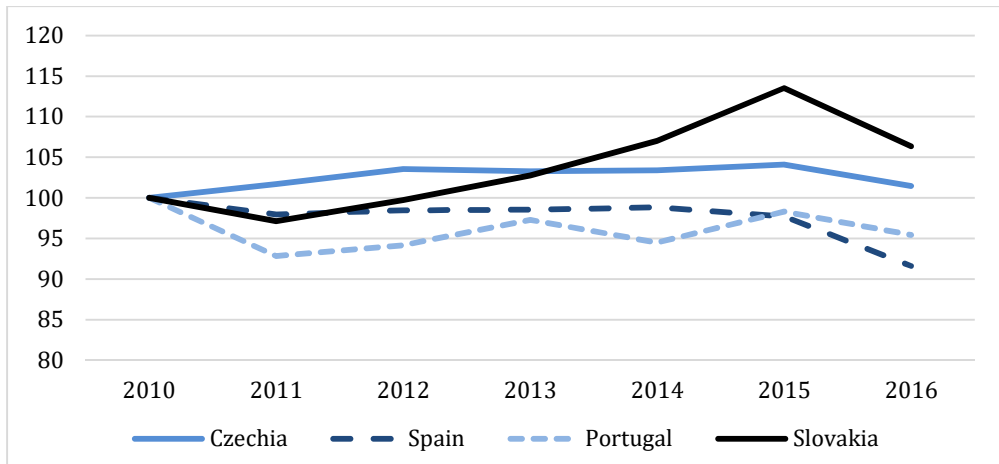
Source: Eurostat (2018a); Author's calculations.

Again, it is too simplistic to assess this development as favourable or unfavourable for the Slovak manufacturing. However, this suggests that the Slovak manufacturing is at a crossroads and that there will be even more dynamic changes that have so far only affected a significant minority of companies. By this, we mean the pressure to increase labour productivity not by looking for cost savings, but by finding new opportunities to produce products with high value added (profit margin). Many companies that consider their production to be "at the edge" of potential productivity gains will need to reassess their production focus and seek opportunities to produce new (other) products.

From economic policy makers and industrial policy makers point of view, it would be unreasonable to change legislation to increase labour cost pressures further (e.g. by increasing overtime pay, working on holidays, lowering the limit for maximum hours of overtime, abolishing flexible working time account, introducing recreational vouchers, etc.). It would also be unreasonable to rescue companies that are under pressure from the growth in labour costs. With the current shortage of skilled labour and its relatively poor allocation, it is essential that part of the employees shift from less productive firms to more productive ones, even if this will increase bankruptcy of firms in the manufacturing industry.
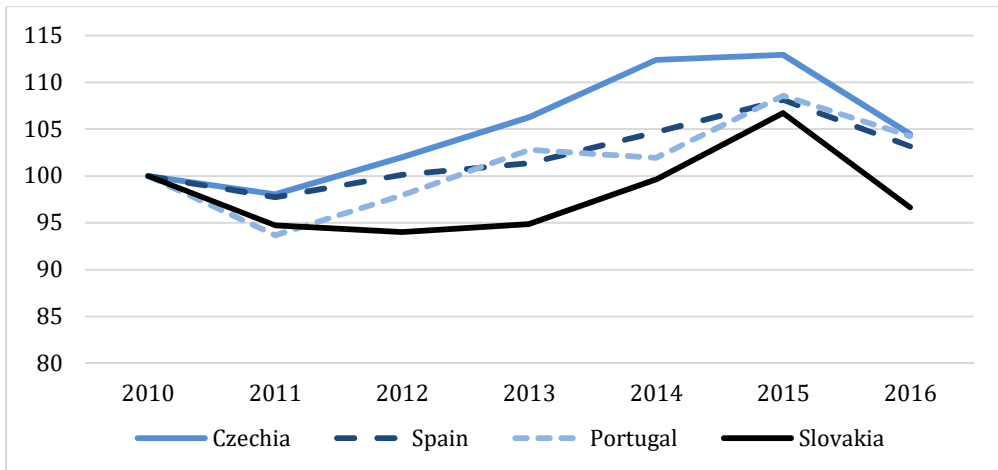
Figure 2.5
Wage Adjusted Labour Productivity in Manufacturing
Index 2016/2010, Germany = 100

Source: Eurostat (2018a); Author's calculations.

Industrial policy must adapt to these new challenges. Its priorities should include promoting worker mobility and promoting the introduction of new technologies into production. In the first area (mobility promotion), it is necessary to broaden the already existing functional support schemes from the area of workers' accommodation support to support also workers commuting. At the same time, the threshold for tax and social contribution-free accommodation could be increased for employees. In the area of supporting the introduction of new technologies, it is necessary to make the existing activities (the strategy of smart specialisation and the follow-up action plan) functional and to look for new practical tools to support prospective companies in the manufacturing industry.

3. QUALITATIVE FACTORS OF ECONOMIC DEVELOPMENT

The gradual depletion of price and cost factors of Slovak competitiveness, reinforced by the risks of the external environment (Brexit, the onset of protectionism in world trade), negative demographic trends, but also the opportunities and risks of technological progress currently conceptualized as the 4th Industrial Revolution, draws attention to the assessment of qualitative factors of economic development. Efficient domestic research and development (R&D), the innovative ability of the economy and the use of information and communication technologies (ICT) are prerequisites for greater appreciation of national labour, economic growth, and job creation. The analysis of the previous period will enable us to answer the question of what pace was set in qualitative factors of economic development in Slovakia in convergence to the EU level.

R&D in Slovakia

Table 3.1 shows the development of selected input indicators (expenditures on R&D and R&D employees) and output indicators (patent applications) of the Slovak R&D system in 2011 – 2016.[1] The development of the main indicator of innovation development and R&D – the intensity of gross domestic expenditures on R&D (GERD) – experienced a slight increase (compared to 2016) to 0.88% of GDP in 2017. GERD has risen slightly after the fall in 2016 (the lowest in 5-years), but it is still below the medium-term target of 1.2% of GDP and significantly below the EU-28 average (43% in 2017). Only in 2015, we experienced a sharp increase in R&D expenditure intensity. However, it was rather a consequence of the substantial financial implementation of the EU resources in the field of R&D (OP Research and Development and OP Competitiveness and Economic Growth). The implementation of OP Research and Innovation in the 4th and 5th years of the seven-year programming period 2014 – 2020 did not have the required dynamics. In the structure of R&D expenditures from the sectors of performance and source of funds point

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[1] Some indicators published in this chapter are 2 years lagged.

of view (Table 3.1), we can only positively evaluate the continuing increase in the relevance of the business sector. In the public sector (government sector + higher education), we see a long-term stagnation. In 2017, in terms of source of funds, the business sector achieved a 49% share of all R&D expenditures (the highest value since 2003).

T a b l e   3.1
Selected Indicators of Research and Development, 2012 – 2017

	2012	2013	2014	2015	2016	2017
Funding for R&D:						
Gross domestic expenditure on R&D (% GDP)	0.81	0.83	0.89	1.18	0.79	0.88
Divided by sector of performance (% GDP):						
Government sector	0.20	0.17	0.25	0.33	0.17	0.18
Business enterprise sector	0.34	0.38	0.33	0.33	0.40	0.48
Higher education sector	0.28	0.27	0.31	0.52	0.22	0.22
Divided by source of funds (% of total):						
Government sector	41.6	40.2	41.4	31.9	41.0	35.5
Higher education sector	37.7	38.9	32.2	25.1	46.2	49.0
Business enterprise sector	2.1	2.9	2.7	3.6	2.1	1.7
Abroad	18.6	18.0	23.7	39.4	10.7	13.8
R&D personnel[1]	28,880	27,823	28,825	28,752	33,252	33,467
Outputs of R&D:						
Domestic patent applications[2]	168	184	211	228	218	183
Number of patent appl.[2] per 1,000 R&D employees	5.8	6.6	7.3	7.9	6.6	5.5
Number of EPO applications	29	26	47	44	41	50
Number of EPO appl. per 1,000 R&D employees	1.0	0.9	1.6	1.5	1.2	1.5

[1] Head Count by 31st December.
[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 (2017); SO SR (2018); EPO (2019); Eurostat (2019).

Since 2015, the so-called "super-deduction" (deduction of R&D expenditures (cost) from the tax base) exists in the slovak economy. A total of 164 entities applied the deduction of R&D expenditures for the 2017 fiscal period (FA SR, 2019); a total value of deducted costs was 40.1 million EUR. In 2017, a total of 405.32 million EUR was spent in the business sector on R&D. Thus, we can estimate the contribution of "super-deduction" to R&D expenditures to a maximum of approximately 10% of gross business spending.

In Figure 3.1, we present contributions to the growth of R&D expenditures. In 2017, the expenditures increased by 17% year-on-year (right

axis), while the share of the business sector in growth was 11 p.p. and foreign resources 5.4 p.p. (left axis). The increase in other sources of funding remained virtually unchanged compared to the previous year.

F i g u r e 3.1
Year-on-year Change in Gross R&D Expenditure (%) **and Contribution of Sectors to the Growth** (pp.), **2008 – 2016**
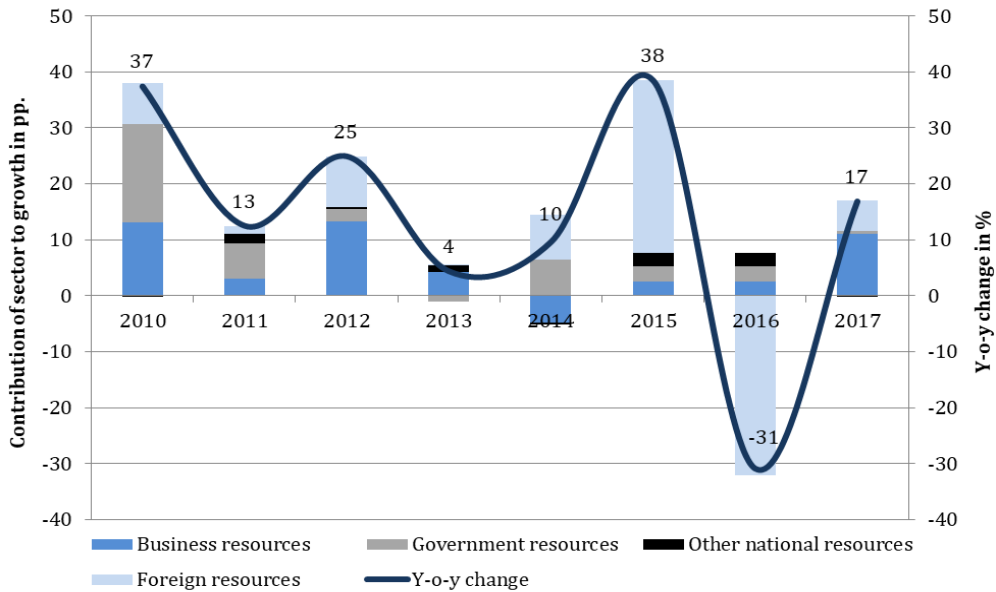
Source: Eurostat (2018); SO SR (2018); Author's design.

The EU resources are part of R&D funding in Slovakia; in the current programming period 2014 – 2020, it is the Research and Innovation Operational Program. Based on the state of its implementation and experience with the previous programming period, we may predict the development of foreign public resources in R&D. For the years 2014 – 2023, approximately 1.732 billion EUR is allocated for the Slovak R&D sector (in priority axis 1 and 2, which are focused on R&D). However, the current state of financial implementation (Table 3.2) suggests that although we are in the middle of the programming period, we were unable to implement even 10% of funds (7% in axis 1 and 5% in axis 2). Therefore, we assume a substantial part of the funds will be (probably) implemented in the last years of the program period when we believe we can expect an increase in R&D intensity above 1% of GDP. The future risk

for R&D and innovation is the failure to utilize the full potential of the OP R&I. At the beginning of 2019, the decommitment of OP R&I funds was realized in the amount of 81 million EUR. In May 2019, part of OP R&I funds (70 million EUR) was transferred to OP Integrated Infrastructure. We see this as a sign of improper policy design and overestimation of R&D absorption capacity and innovation system. Decommitment signals the inefficiency of innovation and R&D policies, particularly with the implementation of EU funds.

T a b l e 3.2
Implementation Status of OP Research & Innovation as of 31 December 2018

|	EU funds allocation in 2014 – 2020 (EUR)	% contracted	% implemented
Priority axis 1 – Supporting research, development and innovation	1 590 971 633	21	7
Priority Axis 2 – Support for Research, Development and Innovation in the Bratislava Region	142 040 738	16	5
Priority axis 3 – Enhancing SME competitiveness and growth	376 415 000	88	14
Priority axis 4 – Development of SME competitiveness in the Bratislava region	24 632 000	95	14
Priority Axis 5 – Technical Assistance	70 000 000	73	43
OP Research and Innovation – total	2 204 059 380	35	10

Source: ITMS+(2019).

The lasting poor commercialization of R&D outcomes is the primary limiting factor among the prerequisites of innovation performance in the long-term. The patent activity measured by the number of domestic patent applications in 2017 dropped to 183 domestic patent applications. It also reflected in decline in patent productivity, which reached 5.5 domestic patent applications per 1,000 R&D employees. In the number of EPO applications per 1,000 R&D employees, we recorded an increase to 1.5 in 2017.

A frequently used quantitative indicator of R&D performance is the number of scientific publications. Figure 3.2 shows the proportion of scientific articles published in Slovakia, Finland and Denmark on the

total number of scientific articles worldwide. In a comparatively large (in terms of population) and innovative economies such as Denmark and Finland, the publication activity is several times higher.

F i g u r e 3.2
Slovak Scientific Articles 2010 – 2018 (% of all articles worldwide)
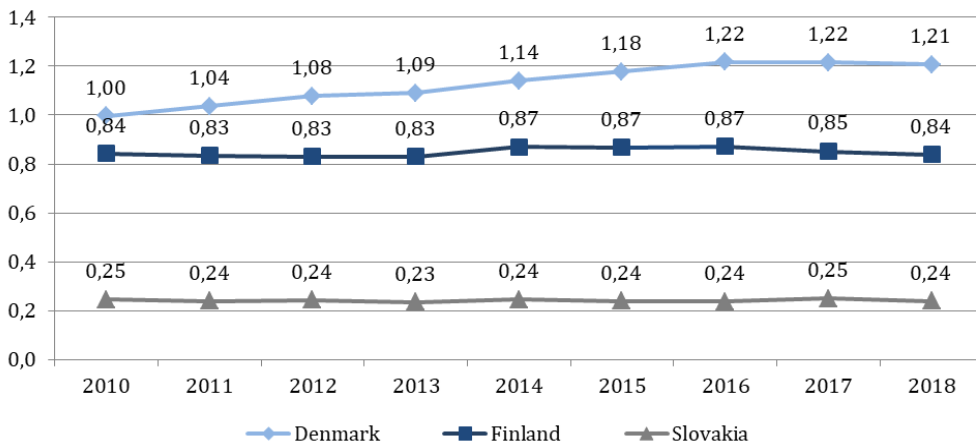
Methodological note: scientific articles published in the Web of Science Core Collection in which at least one co-author has one of stated countries affiliation; articles found in *Science Citation Index Expanded, Social Sciences Citation Index, Arts & Humanities Citation Index.*
Source: Web of Science (2019), Author's compilation.

Innovation Development in Slovakia

If we want to evaluate the innovation level in Slovakia based on a single index, we can use the European Commission's Summary Innovation Index, which synthesizes 27 indicators of innovation development. The Slovak economy ranked 23rd in the EU among moderate innovators in 2017 (there are 14 European economies in this group; Czechia has the best position among them). In comparison with the previous year, Slovakia recorded a decrease by one rank. Table 3.3 presents the development of selected innovation indicators in Slovakia in contrast to the EU, the average of neighbouring countries - Hungary, Poland, the Czech Republic (V3) and the average of highly innovative small economies – Sweden, Finland, Denmark (TOP3). In the number of new doctoral graduates per 1 000 inhabitants, the Slovak economy reaches above-average values. It was 110% compared to the EU-28 in the latest available year. Given the

decreasing number of students at Slovak universities and the departure of students abroad, we may assume a weakening of this crucial factor of innovation and R&D development in the future.

T a b l e 3.3
Selected Indicators of Innovative Development 2010 – 2017

	2010	2011	2012	2013	2014	2015	2016	2017
Number of new doctoral graduates per 1000 25 – 34-year-olds								
EU-28	1.5	1.5	1.8	1.9	1.9	2.0	2.0	n/a
V3 average	0.9	0.9	1.1	1.0	1.0	1.1	1.1	n/a
TOP3 average	2.5	2.6	2.6	2.8	3.0	3.0	2.9	n/a
Slovakia	3.2	1.9	2.4	2.4	2.5	2.2	2.2	n/a
Percentage of 25 – 65-year-olds included in lifelong learning								
EU-28	10.7	10.7	10.7	10.7	10.8	10.7	10.8	10.9
V3 average	7.1	7.1	7.1	7.1	7.1	7.1	6.3	6.2
TOP3 average	25.1	25.6	26.4	27.0	27.3	27.5	27.9	28.2
Slovakia	4.1	4.1	3.2	3.1	3.1	3.1	2.9	3.4
R&D expenditures in the business sector (% of GDP)								
EU-28	1.2	1.2	1.3	1.3	1.3	1.3	1.3	n/a
V3 average	0.5	0.6	0.7	0.8	0.8	0.8	0.9	n/a
TOP3 average	2.3	2.3	2.2	2.1	2.0	2.0	2.0	n/a
Slovakia	0.3	0.3	0.3	0.4	0.3	0.3	0.4	0.5
Non-R&D innovation expenditure (% of turnover)								
EU-28	0.6	0.6	0.7	0.7	0.8	0.8	n/a	n/a
V3 average	0.7	0.7	0.8	0.8	1.0	1.0	n/a	n/a
TOP3 average	0.5	0.5	0.5	0.5	0.6	0.6	n/a	n/a
Slovakia	0.6	0.6	0.8	0.8	0.6	0.6	n/a	n/a
Employment in knowledge-intensive activities (% of total employment)								
EU-28	13.4	13.5	13.7	13.8	13.9	13.9	14.1	14.2
V3 average	11.2	11.3	11.5	11.6	11.8	11.6	11.5	11.6
TOP3 average	15.7	15.7	15.9	16.1	16.2	16.3	16.5	16.6
Slovakia	10.4	10.4	10.4	10.1	9.6	9.9	9.6	10.6
Export of high and medium-high-tech products								
EU-28	54.6	53.5	53.5	53.1	54.4	56.2	57.1	56.7
V3 average	62.0	60.4	59.0	59.2	60.1	61.0	61.6	61.0
TOP3 average	46.7	45.9	44.9	44.9	46.3	49.1	49.1	49.1
Slovakia	62.1	60.3	61.7	63.6	64.9	66.5	67.6	66.4

Note: V3 – Hungary, Czechia, Poland; TOP3 – Denmark, Sweden, Finland.
Source: EC (2018).

The ongoing weakness is also the involvement of the Slovak population in a lifelong development, although, in 2017, the percentage of the population of 25 – 65 years included in lifelong learning increased to 3.4%. Anyhow, that accounts only for one-third of the EU-28 and half of the average of V3. The low intensity of engagement in lifelong learning

can be a weakening factor in the adaptation of the Slovak economy to the challenges of the 4th Industrial Revolution. However, the already mentioned positive development of business expenditures on R&D in Slovakia is still lagging behind the EU. Another indicator is the non-R&D expenditures on innovation. With the existence of a weak domestic business research, this is the type of innovation expenditure (new technology purchase, organizational innovation, etc.) that increases the innovation capacity of the Slovak economy. The main driver of such innovations in our economy are FDI. In the last two years, we have seen a decline in these innovation expenditures compared to the EU-28, which may be in combination with the weak growth rate of business expenditures on R&D a factor that will weaken the competitiveness of the Slovak economy. We evaluate the outcomes of innovation processes through two indicators; employment in knowledge-intensive activities[2] remains more or less stable over a longer period, at 10% of total employment. In Slovakia, exports of high and medium-high-tech products have long been above the level of 110% of the EU-28 average. In addition to the innovation development factors in Table 3.3, we will mention some indicators in which they lag behind the EU-28 level is long-term. The most significant barriers to innovation are: the number of foreign doctoral students (28% of the EU-28 level); the use of venture capital (15% of the EU-28), the number of SMEs that have introduced new product or process innovation (21% of the EU-28), as well as a generally low level of intellectual property (patents, trademarks, etc.).

Digital Economy and Development of Information and Communication Technologies

The Digital Agenda Scoreboard provides insight into the business use of ICT in production processes, customer relations, its environment or public administration. The Slovak business sector is relatively best involved in the use of ICT compared to other areas of the digital society. Table 3.4 lists some indicators of ICT penetration into business (e-Commerce) and entrepreneurship (e-Business).

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[2] Knowledge-intensive activities are sectors where at least 33% of employees have higher education (ISCED 5-8).

T a b l e 3.4

Indicators of e-Commerce and e-Business in Slovakia and Selected EU-28 Countries (2018)

	SVK	EU-28	SK/ EU-28 in%	EST	CZE	PLN	HUN
Enterprises exploiting B2C opportunities of web sales – SMEs, (in% of enterprises)	7	8	88	8	12	6	7
Enterprises selling cross-border to other EU countries – SMEs, (in% of enterprises)	6	7	85	7	9	4	5
Enterprises selling online – Large enterprises (in% of enterprises)	33	38	87	32	47	35	37
Enterprises selling online – SMEs (in% of enterprises)	13	17	76	16	23	12	12
Turnover from e-Commerce – Large enterprises (in% of enterprises)	29	24	121	22	37	23	26
Turnover from e-Commerce – SMEs (in% of enterprises)	11	10	110	12	18	7	9
Cross-border e-Commerce (in% of individuals)	28	25	112	32	13	7	21
Ordering goods or services online (in% of individuals)	59	60	98	31	59	48	41
Integration of internal processes (with an ERP*) – SMEs (in% of enterprises)	29	33	88	27	26	25	13
Persons employed provided with a portable device by their enterprise (in% of total employment)	19	23	83	20	25	21	20
Enterprises using mobile internet for their enterprise applications (in% of enterprises)	31	33	94	31	43	34	19
Cloud computing services (medium-high sophistication), (in% of enterprises)	14	18	78	26	16	7	12
Enterprises analysing big data (in% of enterprises)	9	12	75	11	8	8	6
Use of analytical CRM software – SMEs (in% of enterprises, 2017)	17	21	81	19	16	15	9
Enterprises with High levels of Digital Intensity – Large enterprises (in% of enterprises)	30	47	64	46	42	42	36
Enterprises with High levels of Digital Intensity – SMEs (in% of enterprises)	12	17	94	20	16	12	11
Enterprises sending e-invoices (in% of enterprises, 2017)	18	–	–	20	18	13	8
Enterprises using 2 or more platforms of social media (in% of enterprises)	17	21	81	13	13	10	15
Enterprises using RFID** technology (in% of enterprises, 2017)	18	12,4	145	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 (2019).

Comparison in most indicators suggests that the business sector uses ICT capabilities at levels comparable to the EU average, to the other V4 countries or Estonia.[3] In Slovakia, the above-average results are achie ved mainly by the turnover from e-Commerce (SMEs as well as large enterprises).

The situation is similar in the case of Slovak consumers, who are above-average involved in cross-border e-Commerce (online ordering of goods from another EU Member State). The relatively lower level of cross-border business sales to other EU countries (85% of the EU-28) may result from the structure of the Slovak economy focused on the non-final stages of the production chain rather than from under-utilization of business ICT. The digitization of the business sphere is one of the critical elements of Industry 4.0. Its status and development options in Slovakia can be indicated based on some indicators in Table 3.4. We observe lagging behind in the case of the relatively low share of large enterprises with a high degree of digital intensity[4] (63% of the EU-28). In the case of small and medium-sized enterprises in Slovakia, the situation is better and comparable with the EU-28. The use of *Radio Frequency Identification* technology, which is used in Slovakia by 18% of businesses (being 145% of the EU-28 level), may also indicate the digitization of production processes. In case of system software used to integrate business activities (ERP), in Slovakia, businesses are lagging behind the EU-28 level but surpassed Czech, Hungarian or Polish ones. A factor that may influence the broader engagement in the fourth industrial revolution in Slovakia is the low share of enterprises using fast broadband internet (38% of enterprises in 2018, the 4th worst in the EU-28).

The use of ICT has an enormous potential in society. The implementation of ICT in the public sector is a priority for transnational and national

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[3] We have chosen Estonia as an example of a post-transition economy that has made the best progress in implementing ICT.

[4] A high degree of digital intensity arises when an enterprise uses at least seven of these technologies: most workers use the internet, the enterprise has access to ICT specialist skills, fixed broadband internet (over 30 Mbps), more than 20% of workers use mobile devices, has a website, it has some sophisticated functionality on the website, the company is present on social media, more than 1% of the turnover comes from e-commerce, uses B2C options for on-line sales, uses CRM software, shares electronic information in the supply chain management, uses online advertising, buys advanced cloud computing services, sends electronic invoices.

policies, as it creates some positive effects across the public sector, as well as in the relationship between the government sector and business and household sector. The area of e-Government is probably the most visible form of overlapping the fourth industrial revolution into society.

F i g u r e 3.3
Digital Economy and Society Index
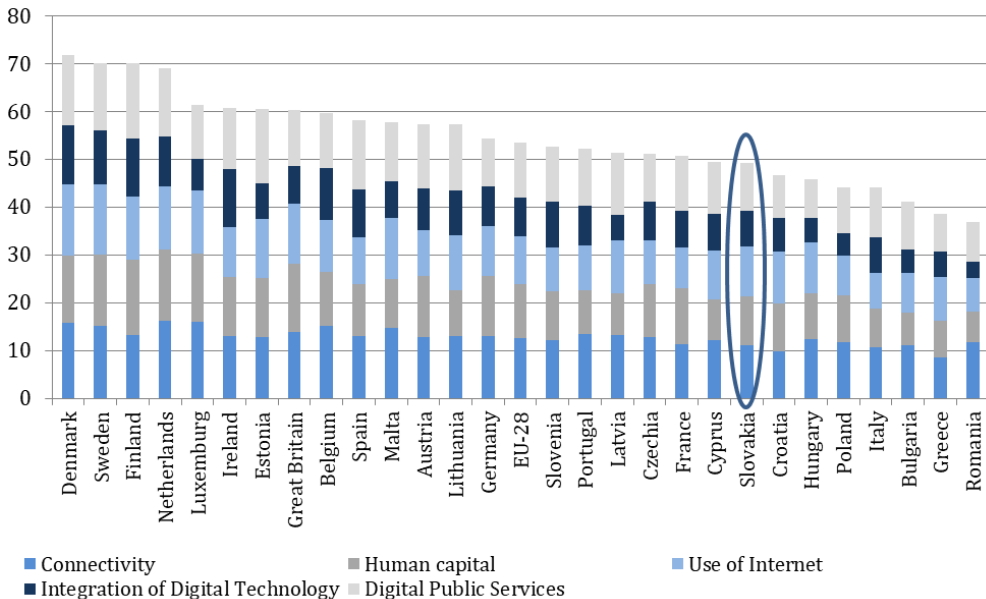
Source: EC (2019); Author's compilation.

In Slovakia, the digitization has been a normative part (and a priority in the proclamatory level) of economic policy for several years. The European Commission uses the Digital Economy and Society Index (DESI) to assess its level. The index evaluates five dimensions: Connectivity, Human Capital, Use of Internet, Integration of Digital Technology, and Digital Public Services. According to the 2018 report, Slovakia is still considered as a country with under-developed digitalization. In the area of digital public services, it ranks below the EU-28 level, reaching 20th rank. The European Commission's Digital Agenda Scoreboard provides several indicators that make it possible to assess the state of Slovak digitalization of public administration compared to the EU in several areas. If we take a closer look at the use of public institutions' websites by citizens in

Slovakia (Table 3.5), we see a relatively unflattering state and development in all four indicators compared to the regional informatization leader in Estonia.

T a b l e 3.5
Use of Public Institutions Websites (% of citizens)

	Interaction with a public institution (last 12 months)		Submitting the pre-filled form to a public authority (last 12 months)		Meeting with a general practitioner via a website	Transparency of public organizations* (score 1 – 100)
	2008	2018	2008	2018	2018	2017
EU-28	35	52	34	52	20	71
Czechia	19	53	26	53	11	66
Estonia	37	79	72	79	27	92
Hungary	28	53	37	53	29	42
Poland	22	36	16	36	13	76
Slovakia	40	51	25	51	11	60
Finland	62	83	65	83	47	80

Note: the extent to which public organizations publish information about themselves and their activities.
Source: EC (2019); Author's compilation.

If in 2008 (the oldest data available), Slovakia was on the same starting line with Estonia, in 2018, Estonia was far ahead of Slovakia. On the other hand, however, we must say that Slovakia achieved comparable results in the first two types of activities compared to the EU-28 average. In terms of eHealth services usage – meeting with a general practitioner via a web site is relatively poorly used in Slovakia (only 11% of citizens). Slovakia is also lagging behind in the area of e-Government transparency (last column of Table 3.5).

* * *

The R&D funding remains a persistent weakness of the Slovak economy. Although we saw a sharp rise in R&D intensity to 1.18% of GDP in 2015, this indicator was again below 1% of GDP for the next two years. R&D funding as a key prerequisite for innovative progress is still lagging behind the declared target of 1.2% of GDP or the EU-28 average. In a closer look, this is mainly due to the stagnation in the financing of the

public R&D sector (and its dependence on the EU funds) and the still weak dynamics in the development of business expenditures on R&D. Although, it is also necessary to add that the business sector has already almost 50% share in R&D financing, which is a very positive fact in Slovak terms. Long-term lagging in R&D system inputs is also reflected in Slovakia's lagging in R&D outputs, whether in patent or publishing activity. In total innovative development evaluated by the Summary Innovation Index, Slovakia did not record any progress in the last evaluated year. Certain stagnation is a hallmark of the long-term innovative development of the Slovak economy in the European context. In most innovation inputs, we do not see a positive trend of development; on the contrary, we see stagnation in the above-average factors (e.g., expenditures on innovation not related to R&D). The digitization of the business sector is performing relatively well. In many indicators, the ICT use penetration is approaching the EU level in the business sector in Slovakia. For example, the share of enterprises with a high degree of digital intensity already reached 94% of the EU level in 2018. The weakness of Slovak digitization is still the electronization of government public services where only partial progress is reported.

4. DEVELOPMENT OF EMPLOYMENT AND WAGES

In 2018, the unemployment in Slovakia again exceeded historical lows and finding a suitable worker for a job was again a bit harder. The tense situation on the labour market contributed to the growing pressure on nominal average wage growth and, due to a stable inflation rate, also reflected in real wage growth. In particular, the following aspects can be seen as necessary in developing an overall picture of developments.

Decline in Economically Active was Hampered by Greater Participation of Elderly People

The number of economically active population (EAP) is decreasing for the second year in a row, but at the same time, the population participation rate is growing. In absolute terms, the number of EAP has fallen. However, the number of inactive persons has fallen even faster. Therefore, a significant contribution to the only slight decline in EAP is the higher activity rate of people over 55, as shown in Figure 4.1

F i g u r e 4.1
Population Development in Selected Demographic Cohorts 15 – 24 Years and 50 – 64 Years (left axis) with Shares of Economically Active and Inactive Population in Them (right axis) (LFS, in thousands of persons and %)
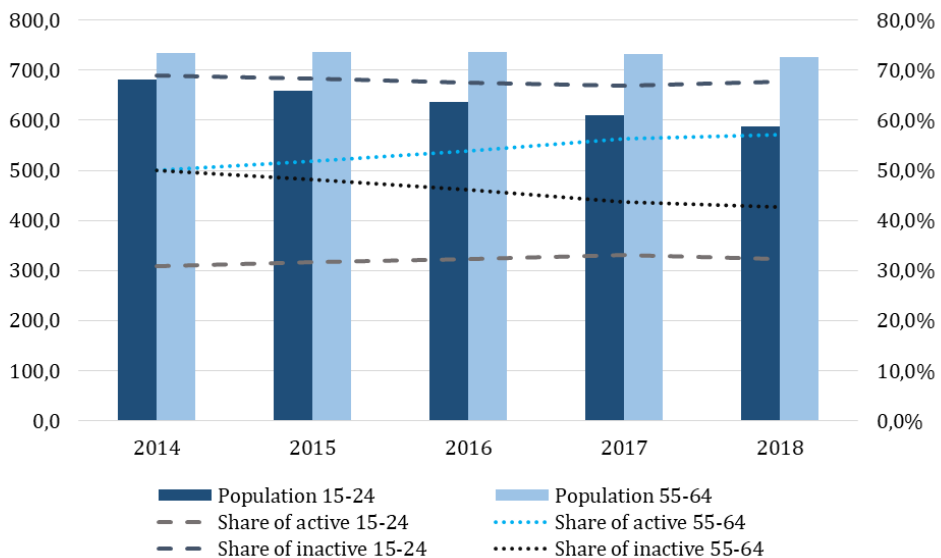
Source: Eurostat (2019); Author's computations and design.

Over the past five years, the number of economically active in the 55 – 64 cohort has increased by more than 7 p.p. Especially serious is the increase of economically active people in the group of 60 – 64 years, which grew by almost 50 thousand (from 78 thousand to 123 thousand) in five years while maintaining a similar number of people included in the cohort. On the contrary, the participation of young people in education had no significant impact on the development of the EAP (the proportion of active people in this cohort has even increased in recent years – as may be seen in Figure 4.1). Thus, the impact of this young cohort on the size of the EAP is limited to the demographic trend, which suggests a lower number of young people in total. However, such development can also be expected in the future.

Employment has Increased Again

Regardless of the methodology used (LFS or ESA), the size of employment has increased. However, its pace is lower than in previous years – in the case of LFS, it decreased from 2.6% (2017) to 1.4%; according to ESA methodology, there is a slowdown from 2.2% to 2.0%. Still, this represents an increase of 36 thousand (LFS) or 47 thousand persons (ESA). In our case, it is more appropriate to work with the ESA methodology to express a more detailed involvement of the workforce in the production of the national economy. Therefore, we utilise the ESA methodology here.[1] The largest increase in employment was shared between the two sub-sectors of the economy in the approximately same size. Namely, it was the industry and the cumulative sector of trade, transport, accommodation and food sectors.[2]

Together, they accounted for more than half of all new jobs (see Figure 4.2). The public sector also generated new employment, but its pace was lower than that of the private sector. It translates into overcoming the notional 80% employment share of the private sector. In summary, four out of five workers operate in the private sector in Slovakia (Table 4.1).

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[1] There are several differences between the LFS and ESA methodology. Most important is the approach towards the workers who work temporarily in a cross-border. While the ESA methodology (according to national accounts – the so-called "domestic approach") does not include these workers, the LFS does.

[2] A more detailed analysis of employment growth by industries may be found in the chapter on structural changes (Chapter 2).

F i g u r e 4.2

Percentage Share of Industries in Y-o-y Growth of Employment in Slovakia in 2018 (in %, ESA)
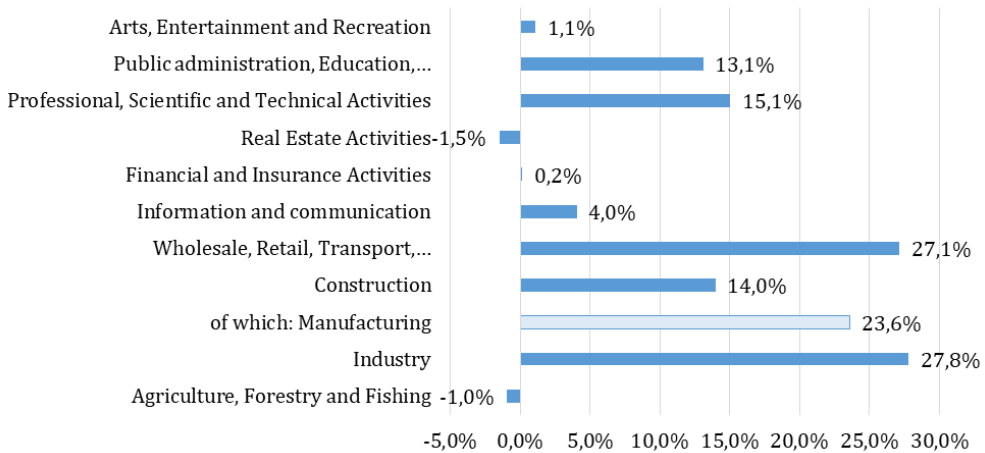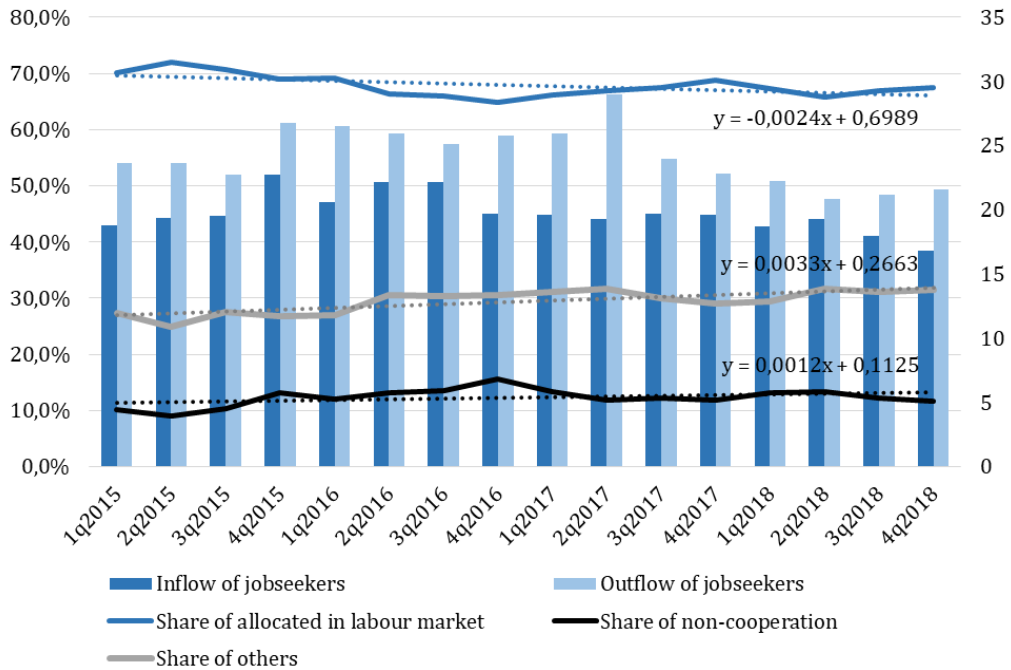

Source: Eurostat (2019); Author's computations and design.

Gradual Depletion of Unemployment Stock

In 2018, the unemployment rate continued to decline and reached new historical lows. The decline is visible in both published unemployment rates (LFS and COLSAF), although its rate of decline decreased compared to 2017. The number of unemployed decreased by 20% to approximately 180 thousand persons according to both methodologies. Gradually, there is a situation when the supply of unemployed people available on the labour market is increasingly depleted, and finding a suitable job seeker becomes more and more difficult. It is also confirmed by the decrease in the average volume of jobseekers who enter the register of unemployed by COLSAF (adjusted for graduates). The adjusted average jobseekers' inflow in 2018 was more than 5% lower than in 2017 (even more than 10% compared to 2016), suggesting less labour market fluctuations and a tendency to limit layoffs. Also, the statistics of the outflow of individuals from the COLSAF register show a similar phenomenon. The share of labour market allocations decreases in trend, indicating the inability to find a sufficient number of unemployed and place them on the labour market (a trend with a negative sign in Figure 4.3). On the contrary, the share of individuals excluded

from the register for non-cooperation or in the category other (a positive sign of the trend in Figure 4.3) mildly grows in the trend.

Figure 4.3

Average Inflow and Outflow of Jobseekers into Register (right axis) and Share of Individual Outflow Categories from the Register in Total Outflow (left axis) (seasonally adjusted, in thousands of persons and %, COLSAF)

*Source:* Macroeconomic Database of NBS (2019); Author's computations and design.

Growth Reduces Long-Term Unemployment Regionally Unbalanced

The long-term neuralgic point of the Slovak labour market was the majority share of long-term unemployed (more than one year) in total unemployment. Previous economic growth was able to employ rather the short--term unemployed, while long-term unemployment resisted to it. The situation has changed in recent years when employers are forced to reach out to the long-term unemployed after the availability of short-term (or natural frictional) unemployed has been exhausted. Over the past five years, the number of long-term unemployed has been reduced from 252 thousand to

111 thousand representing a remarkable decrease of more than 55%. The number of long-term decreased in 2018 by more than 20%, indicating a follow-up to progress in the long-term unemployment tackling after the slowdown in 2017. However, its geographical distribution remains problematic in the case of long-term unemployment. While in 2014, the distribution of the long-term unemployed in Slovakia was relatively even among the three NUTS-2 regions of Slovakia (abstracted from the Bratislava region), in 2018, the sum of Western Slovakia (Západné Slovensko) and Central Slovakia (Stredné Slovensko) was similar to the total of Eastern Slovakia (Východné Slovensko). Thus, the decline in the long-term unemployment is most noticeable in the region of Western Slovakia, to a slightly lower (although still significant) level in Central Slovakia and lagging behind in Eastern Slovakia. It indirectly copies the geographical distribution of past foreign investments in Slovakia.

F i g u r e 4.4

**Number of Long-Term Unemployed (over one year) by NUTS-2 Regions of Slovakia** (in thousand persons, LFS)
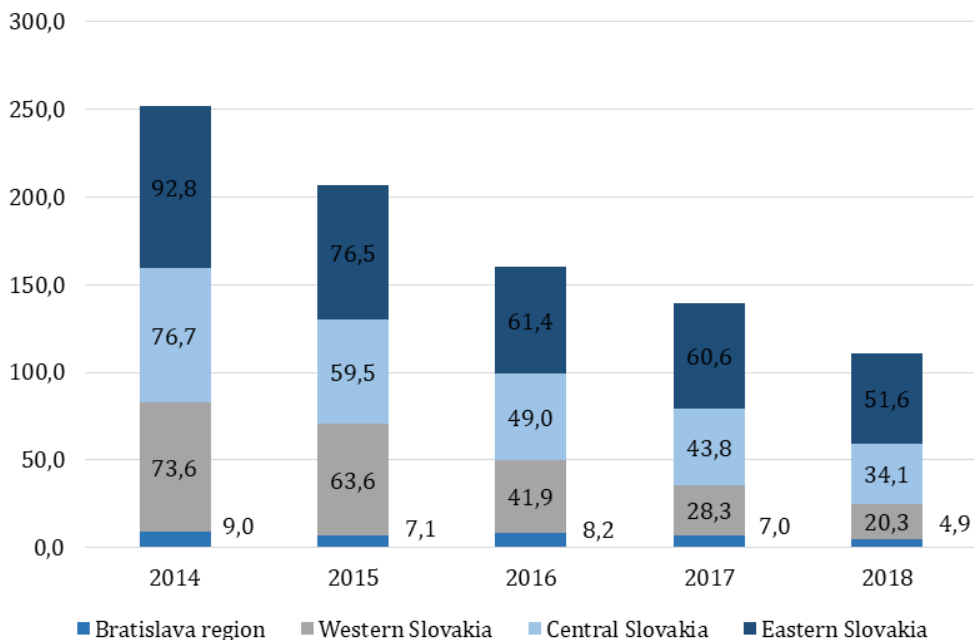
Working Migrants Occupy Particularly Low-Skilled Jobs

The labour shortage in the domestic labour market leads employers to hire an increasing number of foreign workers, particularly from countries outside the EU and Romania.[3]

F i g u r e 4.5

Number of Foreigners Employed in Slovakia by Origin and in Selected Occupations (persons, December of the given year, COLSAF)
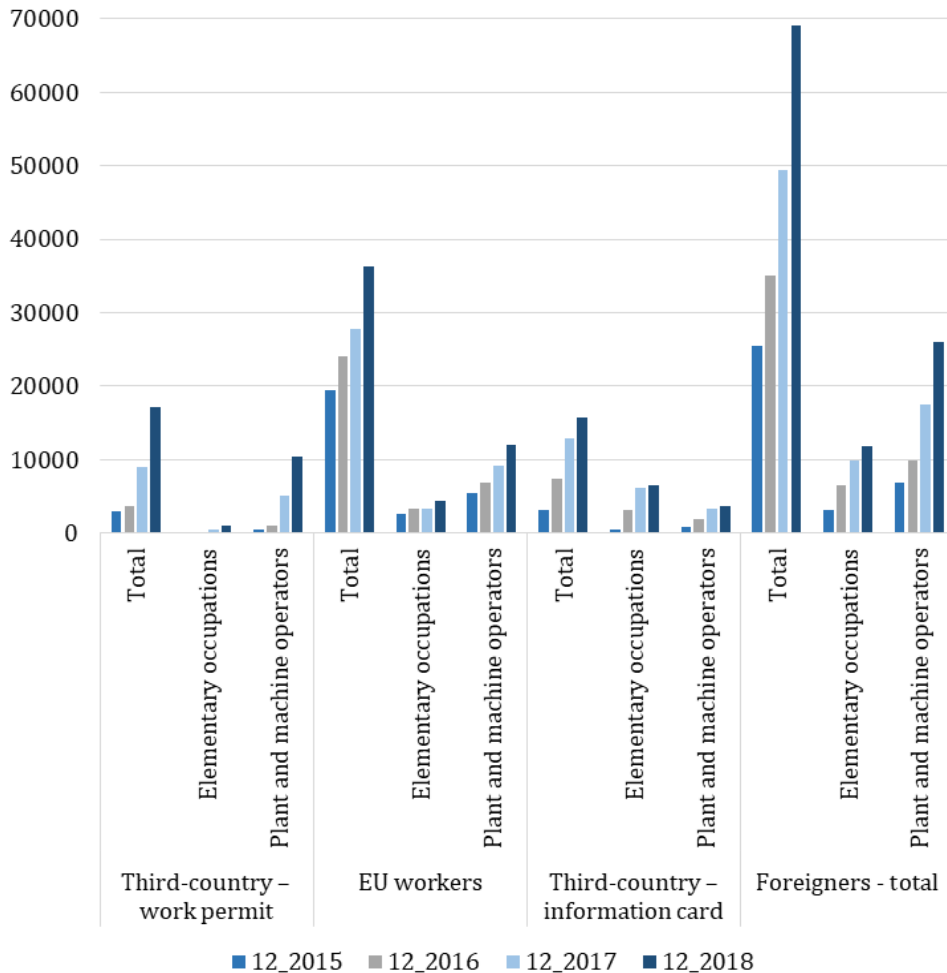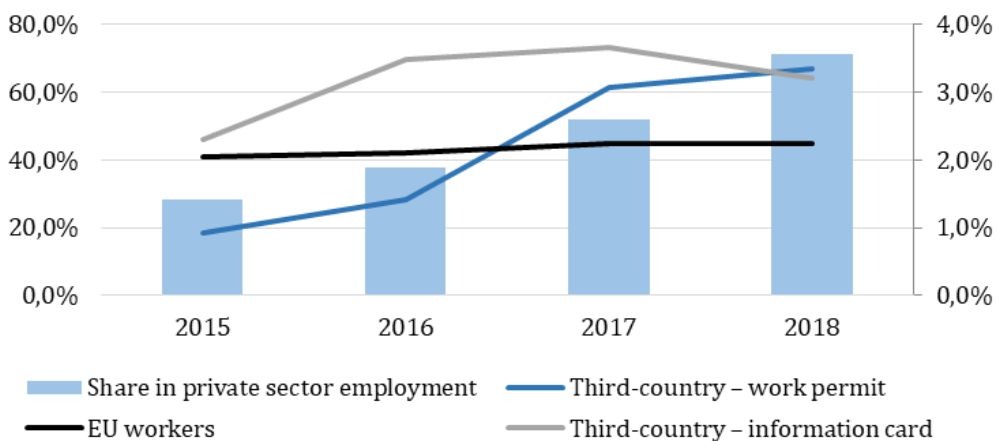

Source: COLSAF (2019); Author's design.

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[3] Workers from Romania represent the largest share of workers in Slovakia among all EU Member States.

In particular, the almost 100% increase in the number of third-country workers (outside the EU) on work permits is noteworthy. At the same time, the attractiveness of the employment of third-country nationals on so-called information card slightly decreases. Particularly, in the occupation of plant and machine operator and assembler, a work permit is the preferred way of employing third-country nationals. On the contrary, the information card institute is mainly used for elementary occupations. It is for the first time in history when the Slovak labour market has faced a phenomenon that has previously been associated with more advanced Western econo-mies – massive labour immigration (see Figure 4.5). It also increases the representation of foreigners in the domestic labour market (especially in the private sector). Over the last four years, their share has risen from a marginal 1% level to almost 4% of private sector employment (based on ESA), with the option of a possible growth continuation to optimize rising labour costs for domestic staff (see Figure 4.6).

F i g u r e 4.6

Share of Foreign Workers in Selected Occupations in Total Number of Foreign Workers (left axis) and Share of Foreign Workers in Total Employment by ESA (in %)

Note: We pay attention to Plant and machine operators, assemblers (ISCO-8) a Elementary occu-pation workers (ISCO-9).

Source: Macroekonomic Database NBS (2019); COLSAF (2019); Author's computations and design.

However, the remarkable characteristic of labour immigration is not its volume, but rather the occupation these foreigners take. Figure 4.6 shows the proportion of two occupations that we believe do not require higher qualifications (ISCO categories 8 and 9).[4] Their combined share is dominant in the total number of working foreigners with work permits with a two-thirds representation in 2018. The lack of labour force in the domestic labour market is also evidenced by a decrease in the share of these working foreigners in the ISCO 8 and nine categories with information card, despite the growth in their total number. One explanation that arises is that other occupations could grow even faster than the above-mentioned plant and machine operators and elementary occupation workers, and therefore their share has fallen. Another option is that they have been transferred from an information card to work permits.

Real Wages Grew Again, but with Slowest Pace in the Whole V4

The growth of the real wage is connected with the growth in the population standard of living, and its growth was helped in previous years by the non-inflationary environment, which was present in the Slovak environment. Also, after the price level growth was restored in 2017, real wage growth has not stopped and still grows at a relatively high pace. It is also confirmed by the relatively high real wage growth rates across the V4 region. However, the growth rate slowed in the last year, and Slovakia achieved the lowest growth among V4 countries. In particular, Hungary has achieved above-average growth rates over the past two years, even to the Central European region circumstances.

In theory, wage growth can affect the country's international cost competitiveness, as long as wage growth and labour productivity are not in line in the long-term. In the case, when the growth of wages would not be compensated by the increase of labour productivity, pressure on the growth of so-called "unit labour costs" (ULC) would form. Therefore, this is about finding a compromise between a reasonable increase in living standards (in the form of real wage growth) and wage competitiveness. However, if unit

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[4] These are the plant and machine operators and assemblers, and elementary occupations.

labour costs exceed a certain notional threshold, the country would become unattractive to production without any cost correction, and foreign investors would consider reallocating their businesses abroad. That is why the development of ULC is also significant for the development of the overall economy in the future. Slovakia has seen a faster rise in wages over the past two years, which labour productivity has been able to compensate only to a limited extent. That leads to a more significant increase in ULC. However, in 2018, the rate of ULC growth slowed, mainly due to a slight increase in labour productivity growth in the national economy. Still, the increase in ULC should not be seen as a negative phenomenon. Slovakia has been trying to catch up with the most developed countries for a long time, and the gradual convergence is inevitably connected with their growth. However, it seems that the possibilities of the current economic model are gradually exhausted and without switching to another economic model, the rise in labour costs can become a threat to competitiveness.

F i g u r e 4.7
Year-On-Year Change in Real Wages and Salaries in V4 Deflated by Private Consumption Deflator in Industry, Construction and Services and Development of Unit Labour Costs and Labour Productivity in Slovakia (in %, ESA)
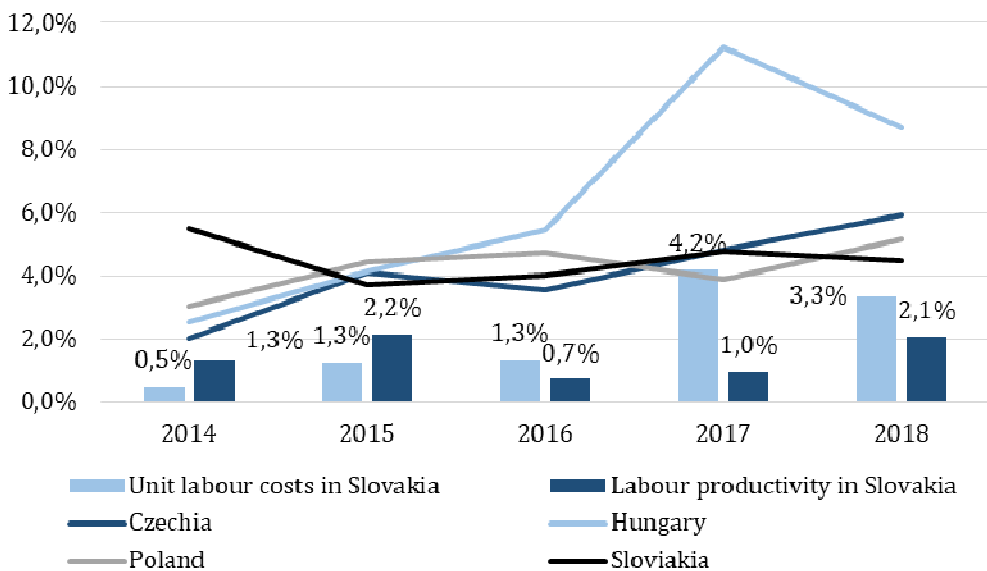
Source: Eurostat (2019); Macroeconomic Database NBS (2019); Author's computations and design.

T a b l e 4.1

Overview of Basic Labour Market Parameters Development in Slovakia (2015 – 2018)

	2015	2016	2017	2018
Economically active population	2 738.23	2 758.11	2 754.66	2 746.23
Participation rate (15 – 64 years)	70.9 %	71.9 %	72.1 %	72.4 %
Employment (LFS; thousand persons)	2 424.00	2 492.12	2 530.67	2 566.73
Employment rate (15 – 64 years)	62.7 %	64.9 %	66.2 %	67.6 %
Entrepreneurs (LFS; thousand persons)	357.7	375.7	375.9	369.9
Employment (ESA)	2 267.10	2 321.05	2 372.26	2 419.90
Private sector	79.6 %	79.8 %	80.0 %	80.1 %
Public sector	20.4 %	20.2 %	20.0 %	19.9 %
Unemployment rate (LFS)	11.5 %	9.7 %	8.2 %	6.6 %
Unemployment rate – registered (COLSAF)	10.6 %	8.7 %	5.9 %	5.0 %
Long-term Unemployed Share				
Western Slovakia	30.8 %	26.1 %	20.3 %	18.3 %
Central Slovakia	28.8 %	30.5 %	31.4 %	30.7 %
Eastern Slovakia	37.0 %	38.3 %	43.4 %	46.5 %

Source: Macroeconomic Database NBS (2019); COLSAF (2019); Datacube Database, SO SR (2019); Eurostat (2019).

Better Quality of Economic Growth

In the past, Slovakia was in a situation where economic growth did not require such intensive involvement of human labour in the production process. This low elasticity of employment growth caused the isolated development of the overall economy and labour market (see, e.g. Morvay, 2012 or Hudcovský, 2015). However, this has changed rapidly with employment growth in recent years, which is different from the past. To demonstrate this phenomenon, we will use the LFS microdata, which on a representative sample can track individuals and their status in the labour market for several periods in a row. Table 4.2 demonstrates the likelihood of an individual moving from one situation[5] (vertical column) to another one (horizontal row) within one year.

We may conclude that the probability that an individual employed at the beginning of the observation will remain employed at the end of the observation does not change substantially over the years.

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[5] There are three possible statuses for the individual: employed, unemployed and inactive.

Table 4.2

Average Probabilities of an Individual's Transition from One Labour Market Status (Vertical Column) to Another Status (Horizontal Row) for Slovakia (LFS, Eurostat Experimental Data)

2012 – 2014	Employed	Unemployed	Inactive
Employed	98.4%	0.8%	0.8%
Unemployed	7.7%	90.1%	2.2%
Inactive	0.9%	1.0%	98.1%

2015 – 2017	Employed	Unemployed	Inactive
Employed	98.1%	0.8%	1.1%
Unemployed	12.4%	84.4%	3.2%
Inactive	1.6%	0.8%	97.5%

2018	Employed	Unemployed	Inactive
Employed	98.5%	0.5%	0.9%
Unemployed	14.2%	81.7%	4.0%
Inactive	1.5%	0.6%	97.9%

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

Thus, there is no employee turnover, but rather, these individuals tend to maintain their jobs. On the contrary, a significant change occurred in the probability of an individual going from unemployed to employed. The increase between the two average periods is already visible (in the period 2012 – 2014 it was 7.7%, while in the period 2015 – 2017 it was already 12.4%). Compared to the average of the years 2012 – 2015, the probability in 2018 reaches almost doubled values. Thus, economic growth is more closely linked to employment growth by taking sources from the pool of unemployed, even if the economy is not at a rate of economic growth as in the past. Employment thus mostly finds resources for its growth primarily from the unemployed. On the other hand, progress in the ability to return inactive people to work is minimal, despite the frequently mentioned claims of returning inactive people to the labour market.

Thus, the total supply of the unemployed in the labour market reduces substantially. The number of unemployed is adjusted not only for those who have been employed but also for people who prefer to go into inactive status. The probability of transition from unemployed to inactive status has also increased and was almost twice as high in 2018 as in 2012 – 2015.

Therefore, similarly to the likelihood of maintaining the status of employed, the possibility for those who were inactive at the beginning of the observation remained almost the same and is highly inactive at the end of the observation.

* * *

In conclusion, the labour market experiences an unprecedented boom in Slovakia along with the expansion of new phenomena such as the accelerated inflow of foreign labour migration and intensive employment growth with moderate economic growth. However, there are also challenges that the economy must overcome soon. One of them is the long-term inability to fill vacancies in public administration, where the Beveridge curve[6] has an abnormal value compared to the private sector (Jankovič, Mandžák, 2019). The ability to use the growth of labour immigration will also be challenging to fill more skill-intensive jobs than just plant and machine operators or elementary occupations (shift towards more demanding occupation). Another risk is the announced economy slowdown of our biggest trading partner – Germany. It demonstrates already on the labour market in lower demand for specific types of professions. However, the ability to fill vacancies remains a critical condition for progress in real convergence. The ongoing economic boom could soon deplete all stocks of employable persons, which could hinder further economic convergence in the future. Still, the overall developments in the labour market can be viewed positively in the EU context. Some economies in the EU are still reaching double-digit unemployment rates even at the peak of the boom. Historically, this fact used to be a problem rather for the Slovak labour market.

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[6] The Beveridge curve represents the ratio between the rate of job vacancies and the rate of unemployment in the economy or sector.

5. PRICE DEVELOPMENT

The inflation rate, after a long period of unexpectedly low development, returned to expected (positive) values in 2018. It even almost doubled its growth rate compared to the previous year.

However, this is not a cause for concern, as most of the time in 2017 it resembled rather an uncertain recovery than a sharp growth. Finally, its average growth reached 2.5%, but with a declining growth rate during the year (the last two months of the year even decreased in month-on--month).

Continued Trend

The y-o-y growth rate of 2.5% may appear to be high after a few years of moderate deflation, however, since 1994, it has been the eighth-lowest y-o-y price change since the establishment of independent Slovakia (including three deflation years).[1] Indeed, this also points out to the fact that the three years of the absence of price increases in recent years have partially distorted the inflationary perception of the economy.

However, developments in the inflation subcategories were different and mostly unbalanced. In particular, the following factors are essential for the development of the price level:

- *A further rise in food prices* – Food continued in the new trend from the second half of 2017 and again achieved one of the highest annual growth rates among all categories of a consumer price index (only the category Food achieved higher price growth).
- *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.

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[1] Therefore, it is still lower than the median (3.9%) or average (4.8%). If we abstract from the deflationary values of 2014, 2015 and 2016, the lower y-o-y rate of inflation was achieved only in 2009, 2010, 2013 and 2017.

- *The growth in prices of regulated industries* – Already at the beginning of the year, prices of regulated industries rose after a long-term decline from the previous years. It was the first increase in administrative prices since 2014. It provided an inflationary impulse to the overall price level change throughout the year.

- *Continued growth of real estate prices* – A stricter mortgage lending rules have helped to moderate the upward trend in real estate demand, but its size, together with the lack of supply, still puts upward pressure on real estate (especially condos) prices. While the rise in property prices moderated in the Bratislava region, it exceeded the double-digit value in the Nitra and Trnava regions. It contributed to the increase in the importance of the housing subcategory, which has the most significant weight of all categories in the measured consumer basket.

- *Positive output gap* – Since the last quarter of 2017, the Slovak economy has reached a positive output gap, while in 2018, its size gradually increased. Although its current size is not critical, if the economy keeps its current growth trend, the gradual overheating of the economy and the consequent increase in inflation would pose a challenging problem for the whole economy in the absence of the possibility of "cooling" the economy by raising interest rates.

Neighbouring economies are following a trend similar to the one they set up last year. After overcoming the complicated years 2014 to 2016, they returned to positive values within reach of their inflation targets. Slovakia is above the average for the whole Euro area group of countries. The gradual restriction of monetary policy by the ECB, which would counteract higher inflation, is rather hampered by the price level in countries that are still experiencing the effects of the financial crisis several years ago (the so-called PIIGS).

All of these countries have only below-average inflation (the weighted average inflation rate for PIGGS is 1.3%), so there is a concern that a significant monetary policy restriction would lead to a return to the deflation zone. However, a more significant concern for these countries represents their fiscal parameters and economic performance than the monetary developments.

F i g u r e 5.1
Y-o-y Inflation Rate in Selected Countries in 2018 (HCPI)
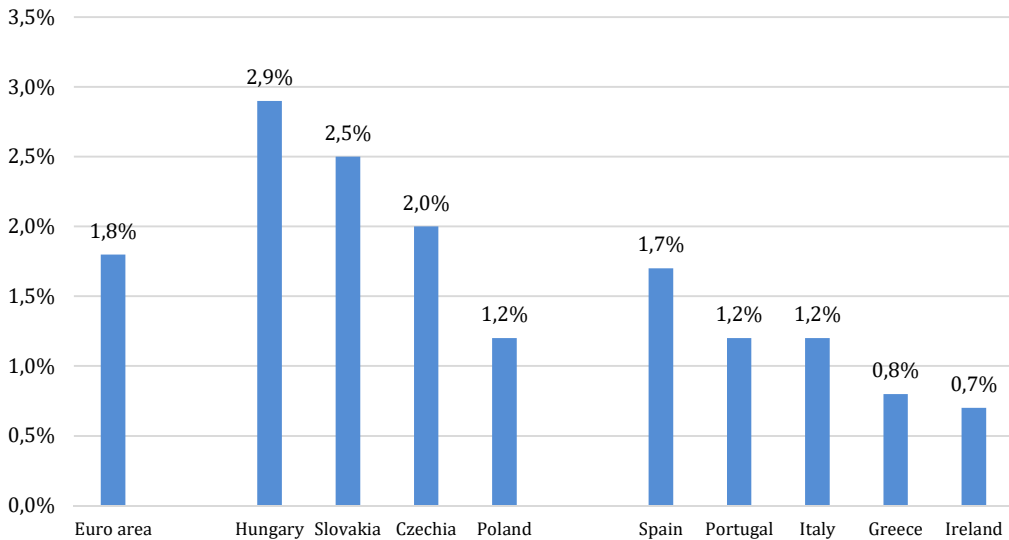
Sourc: Eurostat (2019).

Overview of the production side of the economy tells us that industrial producer prices have increased in total at the same rate as consumer prices. However, in terms of their structure, prices rose faster for domestic products than for export products. The above-average value of local price increases must be attributed to the categories of electric power generation, transmission and distribution, and in particular the manufacture of coke and refined petroleum products. Electric power generation has seen an unusual increase of up to 11.3% y-o-y, as a result of a decision of the regulator from 2017, while the price increase in the refined petroleum product category was due to rising oil prices during 2018.

Construction work prices increased by more than 3%, while construction material prices rose by more than 4%. Gradually, we come to a situation where the average annual increase in housing prices develop at similar values as objective changes in prices of construction work and materials. While in 2017 the difference between the average increase in construction work prices and the price of real estate was more than double (3% vs. 6.3%), the growth rates reached 3.4% and 5.2% respectively in 2018.

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

	2015	2016	2017	2018
Inflation rate (HICP):				
Euro area	0.2	0.2	1.5	1.8
Slovakia	−0.3	−0.5	1.4	2.5
Czech Republic	0.3	0.6	2.4	2.0
Hungary	0.1	0.4	2.4	2.9
Poland	−0.7	−0.2	1.6	1.2
Industrial prices:				
Industrial producers prices – domestic	−4.2	−4.3	1.9	4.9
of which: Manufacturing	−3.2	−3.5	2.6	3.2
Industrial producers prices – total	−2.9	−4.1	2.5	2.5
Industrial producers prices – export	−2.2	−3.8	2.9	1.1
Construction work prices	1.8	1.2	3.0	3.4
Construction material prices	−0.8	−0.4	3.5	4.4
Agriculture products price	−2.2	−5.3	4.7	2.0
Deflators:				
GDP deflator	−0.2	−0.5	1.2	2.3
Government consumption deflator	0.7	1.3	3.2	4.1
Private consumption deflator	−0.1	−0.3	1.4	2.5
Fixed investments deflator	−0.1	−0.8	1.6	2.6
Export deflator of goods and services	−1.4	−1.5	2.2	1.8
Import deflator of goods and services	−1.1	−1.1	2.8	2.3
Terms of trade	−0.2	−0.4	−0.6	−0.5

Source: Macroeconomic Database NBS (2019); MF SR (February 2019); SO SR (2019).

Agricultural product prices have stabilized at 2% after the turbulent years (partly due to the base effect of last year). This growth was mainly driven by a rise in the prices of crop products, which reached 2.7% compared to animal products with a y-o-y change of 1.3%.

Regarding deflators, the government consumption deflator was again above average, with prices of products consumed in general government rising the fastest of all deflators of GDP components. It is confirmed again that the limited competition environment in the public sphere cannot effectively reduce the growth in prices of goods and services purchased by the government to the levels achieved in the private sector. Similarly, prices in Slovakia's foreign trade increased. However, the growth in export prices outpaced the growth in import prices, which again led to

a deterioration in the position of the terms of trade. For the same amount of exports, it was possible to import a smaller amount of imports again.

Calm on the Outside, Turmoil Inside

The title of this subchapter is an attempt to explain the different tendencies that occurred in 2018. Although the level of y-o-y inflation alone does not give the impression of an attractive economic theme, the changing impact of the individual components of the consumer basket can be seen during the year. The value of 2.5% is in line with the long-term objective of a stable price level (especially considering the period of price stagnation or decline in previous years). Thus, the ongoing price level recovery is a welcomed phenomenon supporting consumption growth again.

G r a f 5.2

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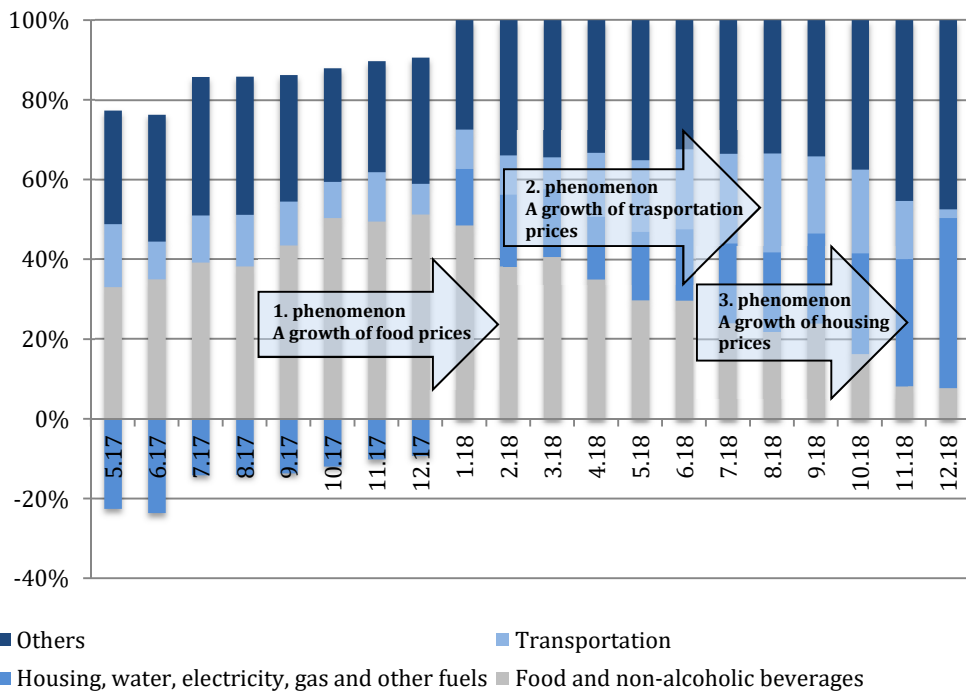

Source: Macroeconomic Database NBS (2019); Author's calculations and design.

During 2018, we can identify three major impacts on the overall change in the price level, with one phenomenon alternating with another, i.e., their impact is spread over time and not acting at the same time. If they acted at the same time, the overall development would be more dynamic.

At the beginning of the year, food price growth was the most significant contribution to inflation. It continued from the previous year when the phenomenon of the increase in butter and egg prices was gradually highlighted (we dealt with in the last edition of this publication). It became the main factor in the price change of this consumption category. Similarly, fruit prices recorded such a percentage increase at the end of 2017 and in the first half of 2018, which exceeded double-digit figures over six months on a y-o-y basis (see Figure 5.3). Thus, food prices were the primary driver of the overall price level, especially in the first half of 2018.

F i g u r e 5.3

Y-o-y Change in Prices of Fruit (left axis) and Housing and Energy Subcategories (right axis) in HICP in Individual Months (Slovakia, in %)
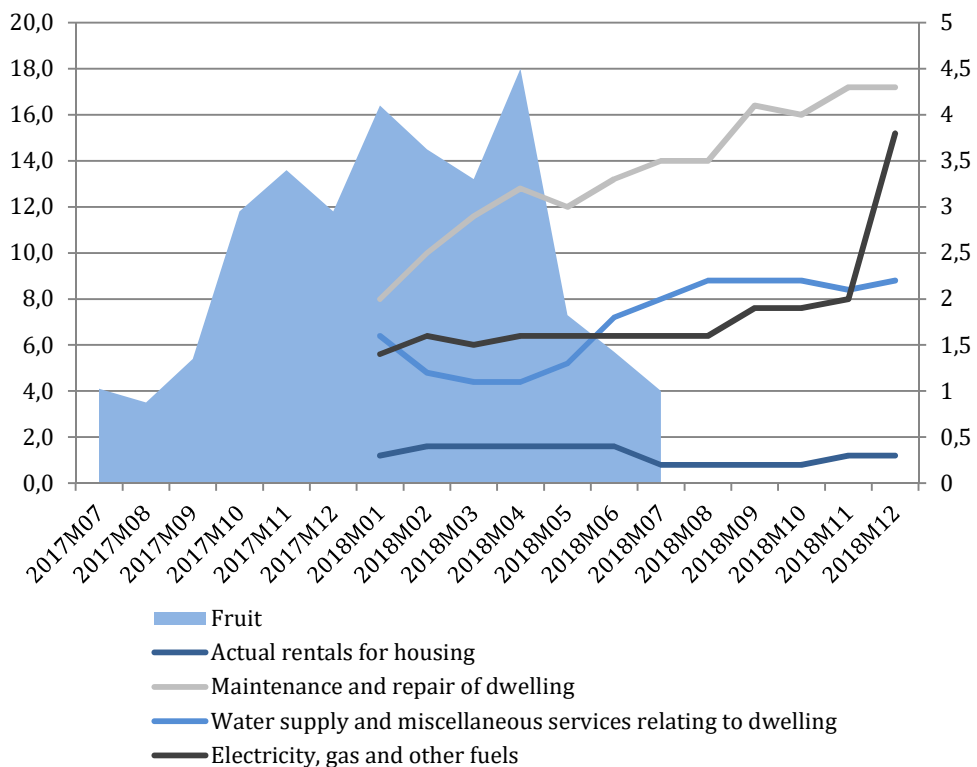
Source: Eurostat (2019); Author's calculations and design.

The second driver was gradually rising prices in the transport category. It was mainly due to rising operating costs of vehicles, especially fuel. From June to October 2018, both diesel and petrol attributed a y-o-y price change of more than 10%. As fuel is a cost item for other sectors, its multiplier effect on growth also had to be reflected in an increase in the prices of different forms of transport (especially in air transport prices).[2]

On the other hand, even higher price growth in the category did not occur due to y-o-y stagnation in prices of new vehicles, which did not reach the level of growth higher than 0.6% y-o-y in even one month during the year. Thus, it can be stated that, after the inflationary impulse of food growth disappeared, the pressure on the price level spilled over into the category of transport, where prices increased mainly due to rising fuel prices.

The last significant impact on price level growth was the gradual rise in prices in the housing and energy category, which returned to the positive contribution band in 2018. It is due to the decision of the regulatory authority leading to an increase in electricity and sewerage charges at the beginning of the year.

However, a more dynamic increase was recorded in the subcategory of maintenance and repair of the dwelling, which includes craftsmen (e.g., plumbers, electricians, heating repairers, and others). Thus, the lack of workers in these crafts observed in recent years also seems to translate into rising prices for their services. It is a logical manifestation of a situation where the demand for their services cannot be met by the limited supply of these workers. In the last month, the overall price increase was supported by the rise in gas prices.

Thus, it can be stated that despite relatively stable developments over the year, the impact of the individual categories affecting main inflation has changed. In the first half of the year, inflation was driven by the catching-up effect of food prices from the previous year. The inflation was later affected by fuel growth, and by the end of the year, the impact of price increases in the housing and energy category was highlighted.

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[2] Spillover of the inflation impulse from the change in the price of diesel and petrol was discussed in detail in the previous edition of this publication in 2015.

Interrupted Price Convergence

One of the prerequisites for real convergence of a country to another is, in addition to catching up on economic performance, the accompanying phenomenon of catching up on the price level. We will use purchasing power parity as a measure of convergence in price levels. It eliminates differences in price levels between countries caused by fluctuations in the exchange rate. Dividing the purchasing power parity by the nominal exchange rate delivers a price level index that expresses the comparative price level (CPL) of one country to another or a group of countries (in our case the EU-15).

F i g u r e 5.4

Comparative Price Level of Slovakia vis-a-vis EU-15 (right axis) and its Y-o-y Change (left axis) (measured from GDP, 1999 – 2017; in %)
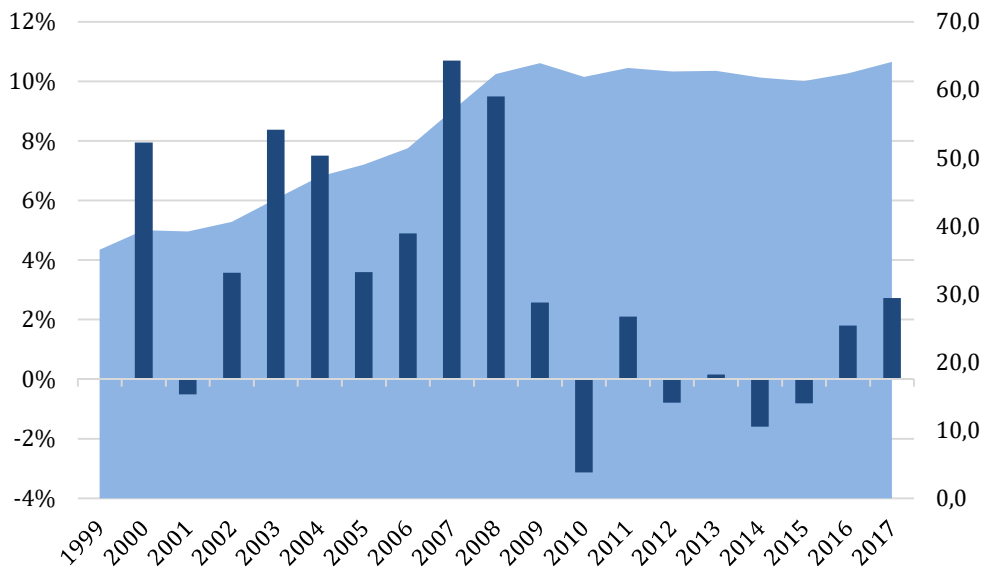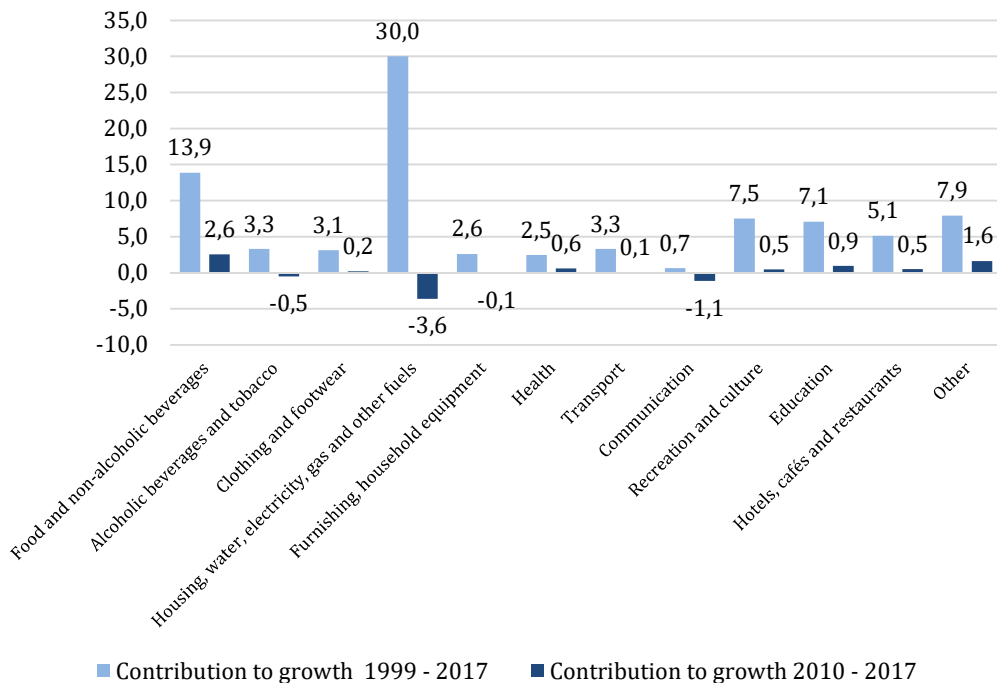

Source: Eurostat (2019); Author's calculations and design.

As may be seen in Figure 5.4, Slovakia has experienced a period of sharp price convergence towards the EU-15, especially in the period up to 2008. After the economic crisis, the convergence process stopped (even divergence occurred in 2010) and has not substantially resumed since.

For the whole period of 1999 – 2017, the CPL shifted up to 85% according to actual individual consumption.[3] However, if we narrow our focus only to the years after the economic crisis (2010 – 2017), we see that the change in CPL represents an increase of only 3.6%. Therefore, we can speak of interrupted price convergence.

A more detailed view of convergence by individual components of the consumer basket tells us that the strong convergence process was driven throughout the entire period mainly by catching up with housing and energy prices (contributing up to 30 p.p. to the total growth of 85%).[4] The second fastest converging category was food contributing almost 14 p.p.

F i g u r e 5.5
Contributions of Growth of Comparative Price Level in Period 1999 – 2017 and 2010 – 2017 (by categories in HICP, in p.p.)

■ Contribution to growth 1999 - 2017   ■ Contribution to growth 2010 - 2017

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

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[3] Actual individual consumption – a category from national accounts. Resembles a collection of goods and services that households have actually consumed, regardless of who has financed the consumption. It is an increase from 32.8% to 60.8% of the EU-15 average price level.

[4] Weights of individual categories in 2017 were used to identify contributions to price level growth.

Once again, looking at the post-economic crisis, quite different results can be seen. In particular, developments in housing and energy prices have primarily dampened the price level convergence process. It is also possible to see the impact of EU administrative intervention on the regulation of call prices within the EU when prices in the category even diverged from prices in the EU-15.[5]

The factors that contributed to the interruption of price convergence include, in particular, the period of very moderate deflation, which started in Slovakia in 2014. While prices in Slovakia fell on average, average prices in the EU-15 remained positive (albeit very low). This fact, by definition, prevents a shift in price convergence.

The return to price convergence is indicated by data from years after deflation when the price level in Slovakia has started to develop at a faster pace than in Western Europe since 2016.

* * *

In the future, the growth of the price level should not act as a threatening factor in the growing tendency of the Slovak economy. All institutions dealing with macroeconomic forecasts agree that the inflation environment should be stable in the coming years. The economic recession predicted for several years has not materialized yet, predicting that the inflation rate will follow a steady and renewed trajectory of appropriate growth. It could only be threatened by the spill-over of the external shock into the domestic economy, but the ability to prevent it is minimal.

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[5] An empirical view of the price convergence can be found in Chapter 6 – Monetary policy of the ECB and its implications for the Slovak economy.

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

Despite the year-on-year inflation in the Euro area being above 1.9% from May to October 2018 as the European Central Bank's inflation target, the average annual rate of growth was still below 1.9%. Therefore, it is not surprising that even during this year, the central bank did not raise base interest rates from the level it was set at in March 2016.

F i g u r e 6.1
Key ECB Interest Rates (right axis) **and Monetary Base of the Euro Area** (left axis)
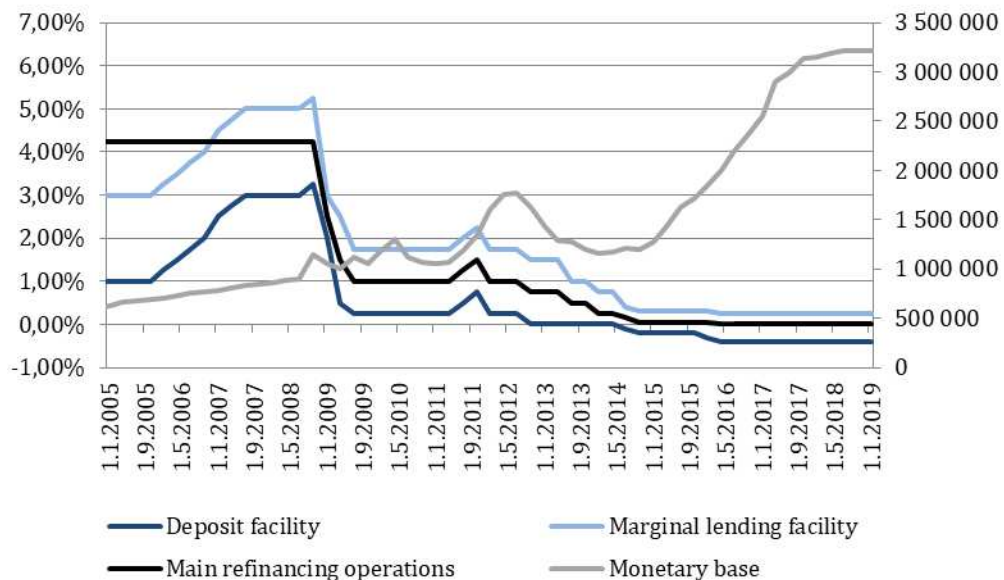
Source: ECB (2019).

The rate of the primary refinancing operations was still at 0.00% at the end of the year, the rate of the marginal lending facility was 0.25%, and the deposit facility rate was still at –0.40%. The ECB did not change their level at the beginning of 2019 and informed the markets in the April statement that they are expected to remain at their present levels at least through the end of 2019. It also committed itself to keep critical rates at these low levels "*for as long as necessary to ensure the continued sustained convergence of inflation to levels that are below, but close to, 2%*

over the medium term." This phrase has been the norm in the ECB's statements for several years now. The ECB thus determines the duration of the non-standard monetary policy, i.e., a policy combining low-interest rates and large volumes of asset purchases.

End of Quantitative Easing

As ECB interest rates have already fallen to the de facto bottom line, the main monetary policy instruments have recently been the above-mentioned changes in net asset purchases in the so-called "*quantitative easing*"[1] and, in particular, the *information provision* about planned changes – so-called "*forward guidance.*" The ECB started using quantitative easing for the first time in March 2015, when it began to purchase assets in the financial market at a monthly volume of 60 billion EUR. The ECB subsequently adjusted the net volumes purchases several times.

The first change was reported in March 2016. Starting in April 2016, the volume of net purchases increased to 80 billion EUR per month. A year later, another adjustment was made. In March 2017, the ECB reported that starting April, the rate of qualitative easing will drop to 60 billion EUR per month and other changes conditioned by a constant shift in inflation development corresponding to the inflation target. In October 2017, the central bank announced a further decline in net purchases. Since January 2018, the ECB has made net purchases of only 30 billion EUR and with a plan to continue these purchases at least until September. With the upcoming September, the ECB reported on a plan to cut these purchases to 15 billion EUR for the remaining three months

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[1] Particularly, it is the *Public Sector Purchase Programme* (PSPP), which has been in operation since March 2015. The ECB uses this program to purchase nominal and indexed government bonds and bonds issued by other public institutions through the national central banks. In addition, the ECB is currently implementing three other programs: ABSPP – the *Asset-Backed Securities Purchase Programme*, which has been in operation since November 2014 to support lending activity; CSPP – *Corporate Sector Purchase Programme* launched by the ECB in June 2016 with the intention of supporting the transmission mechanism between asset purchase and support for financing conditions in the real economy, and CBPP3 – *Covered Bond Purchase Programme 3* with similar intention to buy secured securities. The CBPP1, CBPP2, and SMP (*Securities Markets Programme*) already ended. As of April 2018, 82% of the assets have been purchased in the quantitative easing programs in the PSPP program (*Source*: ECB).

and definitively put an end to net purchases in December 2018. This plan has also been implemented. At that time, the ECB held in its balance sheet securities of 2.57 trillion EUR purchased through quantitative easing programs. Since the beginning of 2019, the ECB no longer increases its balance sheet volume through asset purchases, although it should be stressed that, given that a portion of the assets in the central bank's balance sheet is payable every month, the ECB reinvests the full amount of principal due. The ECB committed itself in its press release to continue reinvesting "*for an extended period of time past the date when it starts raising the key ECB interest rates, and in any case for as long as necessary to maintain favourable liquidity conditions and an ample degree of monetary accommodation.*"

Here, we introduce both the purpose of reinvestment and the sense of ECB's communication on future policy changes.

The essential motivation for continued reinvestment is that if the ECB did not continue to invest the principal of maturing securities and the loans granted in the *targeted long-term refinancing operations* (TLTRO) would be repaid, almost 2 trillion EUR of liquidity would disappear from the market over the next four years. Such a significant decline in the available money on the market would be an extremely restrictive measure. Also, one of the objectives of continued reinvestment is to exert pressure on the decline in long-term interest rates by decreasing one of their components, the premium for the period. ECB does that by holding mainly long-term securities in its portfolio (this pressure will gradually decline with a maturity of these securities).

Regarding the communication of future intended changes in monetary policy on both rates and reinvestments (i.e., *forward guidance*), the central bank currently uses them for purposes other than usual. The most regular use of *forward guidance* is to provide an additional monetary stimulus in a zero rate environment. If the central bank informs (or, commits) that it plans to pursue a more expansionary policy in the future than inflation developments would require, it increases inflation expectations and thus reduces long-term real interest rates. However, the ECB currently uses *forward guidance* primarily for other purposes.

The ECB does not consider a monetary stimulus to be necessary (the Euro area economy is no longer operating under a potential product, and inflation is close to the inflation target). It mainly applies *forward guidance* to reduce market uncertainty. Praet (2018a) states that the spread of forward rates during 2018 was much higher than in the past, indicating a major uncertainty about the future monetary policy. On the day of the press conference (i.e., the day the ECB provided information on future monetary policy), both forward rates and their dispersion decreased, which Praet (2018a; 2018b) interprets as a result of a decline in market uncertainty. However, stopping the net purchases in the quantitative easing process means that while the main instrument of communication has been the change in net purchases, since January 2019, it will be *forward guidance* due to planned changes in interest rates.

When Will the ECB Be Able to Raise Rates?

The ECB's statement that reinvestments will continue at least until the central bank raises rates deserves special attention. Combining non--zero interest rates (i.e., interest rates above the effective lower limit) and the "inflated" monetary base as a result of non-standard monetary policy measures is problematic.

In the case of zero interest rates, banks are only slightly motivated to provide loans and the growth of the monetary base (and the associated growth in bank reserves) does not translate into a rise in M2 money supply (this is why the central bank buys large amounts of assets when using non-standard measures). However, when interest rates rise above the zero threshold, there is an incentive to expand credit activity, increasing the money supply, and generating inflationary pressures. Managing inflation is challenging in such an environment.

Therefore, the US Federal Reserve (FED), together with the increase in the operational target by the federal funds rate, also increased the interest rate paid to commercial banks on excess reserves (at 2.4% in April 2019). The remuneration of excess reserves discourages credit activity. Such an instrument does not belong to the central bank's

standard measures repertoire and, given the ECB's conservatism, the ECB is unlikely to be prone to such a measure (currently the excess reserves bear a negative rate). Therefore, the increase in interest rates would either have to be preceded by an active reduction in the ECB's balance sheet by divesting part of the assets acquired in the quantitative easing program, or the ECB would have to wait until the nominal GDP in the Euro area, as well as, the demand for money increases so much that the ECB's balance sheet would not have to be actively reduced at all.

Figure 6.2 shows the evolution of M0 in the Euro area (its natural logarithm) and the long-term trend calculated based on developments during the pre-crisis period (specifically during the period January 2002 to August 2008). Currently, M0 exceeds this long-term trend by more than 21% (approximately 800 billion EUR), but in the case that the ECB maintains M0 stable over the next two years, the resulting monetary base would already be in line with the long-term trend. The purpose of this simple exercise is to illustrate that if the ECB would wait for some time to raise rates, it will not have to considerably reduce its balance sheet.

F i g u r e 6.2
M0 Growth in the Euro Area – Reality vs. Trend
(data in natural logarithms)
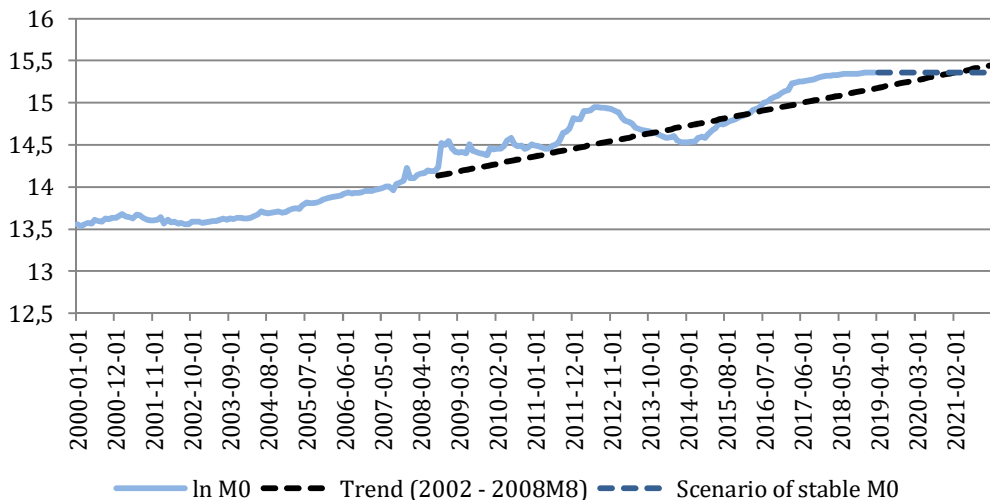
Source: St. Louis FED; Author's calculations.

Economic Recovery of the Euro Area

As we have indicated above, the economic recovery in the Euro area is mainly indicated by a gradual decline in net assets purchased. According to the AMECO database, only one Euro area economy should operate below the potential level in 2019 – Greece, with the "output gap" reaching –0.1 %. GDP estimates for the Euro area indicate a modest performance above potential output (0.7%). Ireland (output gap of 5.0% above potential), Malta (2.7%), and Slovenia (2,5%) are the most over-heating. The ECB Governor Mario Draghi said in a speech in November 2018 (Draghi, 2018) that the central bank perceives that this recovery is based on solid fundamentals, in particular on (1) structural changes (e.g., increasing labour market participation); (2) increasing consumption generating jobs more reliably than e.g. export-driven growth; and (3) favorable financing conditions, which are mainly the result of the ECB's accommodative policy. The recovery of the real economy, coupled with inflation, which already exceeds the inflation target for some months[2] is, therefore, a sufficiently strong incentive for the ECB to gradually tighten its policy, although it remains only to halt net purchases and the central bank is not actively reducing monetary base or raising rates.

The economic recovery is not the only reason why the central bank launched moderation of monetary policy. Another reason was more extensively elaborated in the last year's publication of this publication (Economic Development of the Slovak Economy in 2017 and Outlook up to 2019). Here, we only state that among other things, the effort (1) to anticipate a possible rapid rise in inflation in the future (this may be due to the fact that nominal wage growth is not yet fully transferred in price growth); (2) to implement changes in monetary policy gradually, and the fact that (3) the large volume of reinvestments made by the ECB in view of the ongoing maturity of securities in its portfolio means that less net purchases are needed to achieve monetary-policy objectives.

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[2] Surveys conducted by the European Central Bank indicate that markets see this growth as permanent and do not consider the threat of deflation typical of economic crises realistic. At the end of 2018, the one-, two- and five-year horizons reached 1.6%, 1.7% and 1.8% respectively.

Figure 6.3
The Euro Area Output Gap (current structure, annual frequency)**, Real and Expected Inflation**

Output gap — Inflation rate
Inflation expectations (one-year horizon) — Inflation expectations (five-year horizon)
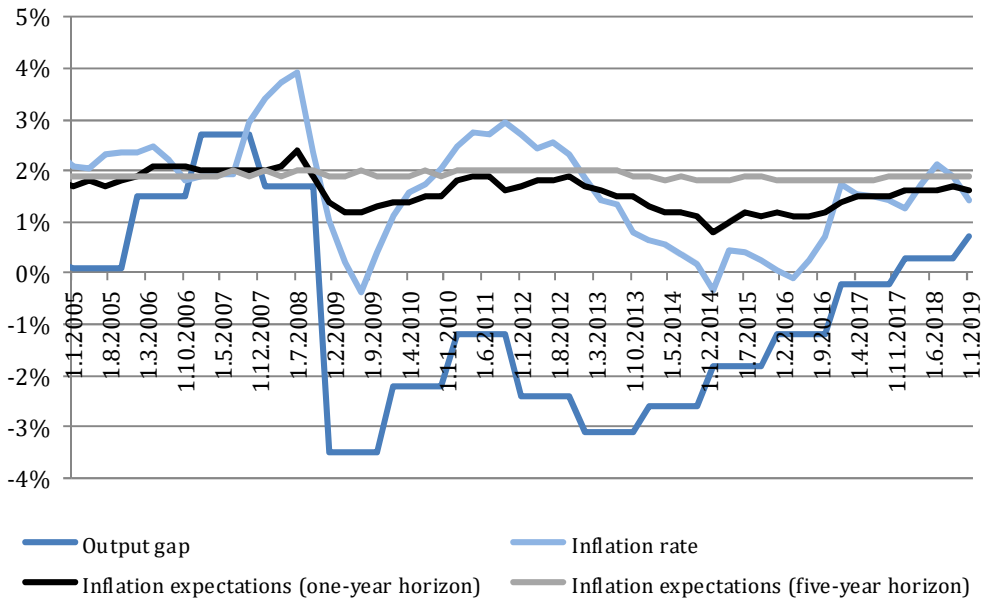
Source: ECB; Eurostat; AMECO.

How Low-Interest Rates Affect the Slovak Economy?

Maintaining interest rates close to zero affects the Slovak economy mainly through three channels, in particular (1) it leads to a slightly weaker Euro exchange rate than other currencies, especially the US Dollar, which supports exports, (2) it helps stabilize aggregate demand in other Euro area countries which are key trading partners of Slovakia and (3) it facilitates the financing of households and companies in Slovakia, as it allows for lowering of interest rates in the banking sector.

The National Bank of Slovakia's *Survey on Supply and Demand on Lending Market* indicates that lower interest rates lead to an increase in demand for loans, mainly from businesses (the net percentage share of the banking market for this answer is 50.2%[3]) while household demand

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[3] The difference in the number of responses confirming a rise in demand and responses indicating a decline in demand. Banks' responses are weighted by the volume of loans provided.

is stagnating (it concerns demand for housing loans as well as other loans). Among other things, it may be the result of a slight tightening of the business terms for households, which Slovak banks have already adopted in previous years and continued last year. Still, the trend of terms tightening (mainly due to the decreasing willingness of banks to take on risks as well as the decline in creditworthiness of loan applicants) is not typical only for the Slovak economy, but also affects other Euro area countries.

Nominal Convergence in Low Inflation Environment

In the introduction to this chapter, we mentioned that even though the inflation rate in the Euro area countries still did not reach nominally 1.9%, the actual value was only a tenth of a percentage point lower and even exceeded the target in some months. The increase in inflation will also possibly bring implications for the gradual convergence of the Slovak price level and the other Member States to the rest of the Euro area. Indeed, the pace of price convergence between the Euro area countries has fallen to shallow levels over the past decade. Figure 6.4 shows the standard deviation development of the consumer goods and services prices level in EU countries (EA19 curve)[4] which either use the Euro or have a domestic currency pegged to the Euro at a fixed rate. That means a sample in which price convergence takes place solely by the rise in prices of goods and services and wages, and not through the exchange rate channel.

The partial convergence that began between 2005 and 2007 stopped in 2008. Figure 6.4 also shows the standard deviation of price levels within the countries that started using the Euro in 1999 (including Greece, which joined the Euro area in 2000; the EA11 curve). The gradual increase in price differences (visible since 2011) suggests that the slow convergence in prices is partly due to differences in the original Member States.

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[4] This is the standard deviation of the purchasing power parity logarithm for household consumption expenditure according to Eurostat. The composition of the sample is variable.

For illustrative purposes, the figure also shows the difference bet-
ween the prices of goods and services in Slovakia and the Euro area
average.[5]

F i g u r e 6.4
Price Sigma Convergence in EU Countries
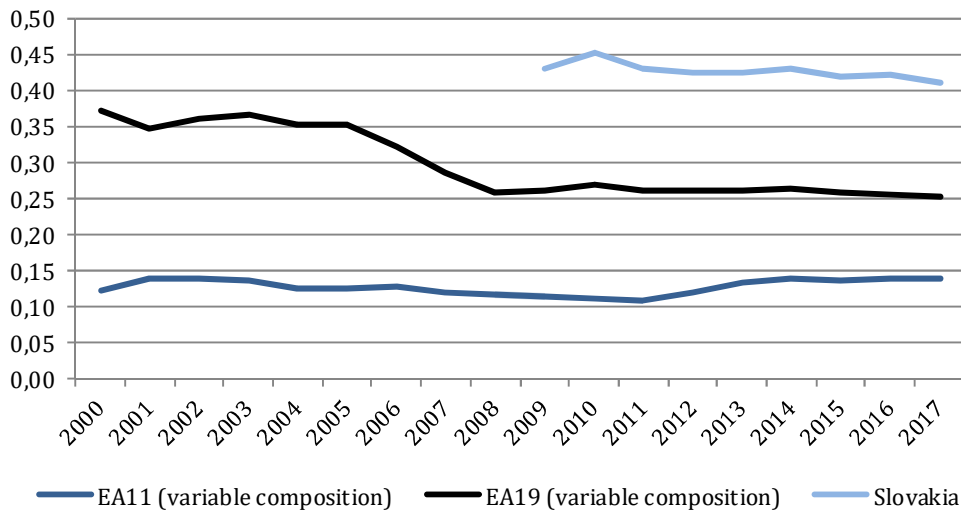
Source: Eurostat (2019); Author's calculations.

A more detailed look at the causes of the slowdown in price
convergence is given by a simple regression model in which the rate of
price level growth is explained, among other determinants, by the level
of the price level in the previous period. The coefficient corresponding to
the previous price level has a negative value, which means that countries
with a low price level will see higher inflation – i.e., they converge
nominally. If the absolute value of this coefficient is high, this indicates
rapid convergence.

In Box 6.1, we allow the coefficient in the model to depend, among
other things, on inflation in the Euro area. Our estimates are consistent
with the conclusion that, at a time of low inflation, nominal convergence
is also slower.

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[5] We use the difference of the logarithm of purchasing power parity for household consumption
expenditure.

Box 6.1

Determinants of Nominal Convergence in Euro Area

The model used is close to the growth regressions that explore the growth of the real economy. We are instead of GDP growth looking at the growth of the nominal price level (more on the growth regression e.g. in Mankiw, Romer and Weil, 1992; all data entering the model are from the Eurostat database). Model specification is following:

$$\Delta \ln P_{i,t} = \beta_0 + \beta_1 \ln P_{i,t-1} + \beta_2 \ln P_{i,t-1}\left(\pi_t^{EZ} - 0.019\right) + \boldsymbol{\beta}_3 \ln P_{i,t-1}\mathbf{x}_{i,t} + \boldsymbol{\beta}_4 \ln \mathbf{x}_{i,t} + \delta_t + \mu_i + \varepsilon_{i,t}$$

where $P_{i,t}$ is price level in country i in period t (purchasing power parity for consumer goods service is used), $\mathbf{x}_{i,t}$ is a vector of characteristics further elaborated below, π^{EA}_t is inflation rate of Euro area (the actual composition at time t is used), δ_t is time dummy variable, μ_i is fixed effect, $\varepsilon_{i,t}$ is random error and β_0, β_1, β_2, $\boldsymbol{\beta}_3$ and $\boldsymbol{\beta}_4$ coefficients or vector of coefficients. For 2000 – 2007 data (2018 data not yet available), we estimate two versions of the models: (1) without fixed effect μ_i including unobserved country characteristics that may cause long-term equilibrium price levels to vary across countries and (2) with fixed effect.[1] We estimate the model on three different samples: (1) a sample of EU countries using the Euro, (2) sample of EU countries that either use the Euro or are pegged to the Euro by a fixed rate (which includes e.g. Croatia, Bulgaria and the Baltic countries before joining the Euro area), (3) sample of all countries that either use the Euro or are pegged to the Euro with a fixed rate (this includes e.g. the Baltic countries, Bulgaria and Croatia before joining the EU, but also Macedonia, Montenegro and Bosnia and Herzegovina).

Vector of characteristics $\mathbf{x}_{i,t}$ contains:
- Dummy *EA* taking value 1 for the Euro area countries.
- Dummy *EU* taking value 1 for the EU countries.
- Dummy *crisis* taking value 0 for pre-crisis period (before 2008) and 1 for post-crisis period (2008 onwards)
- Difference of natural logarithm of GDP per capita in purchasing power parity at current prices and average of EA countries for the whole period, $\ln y_{i,t} - \ln y_{EZ}$.

- Difference in GDP growth rates based on data at constant prices and the average of Euro area countries over the entire period, $g_{i,t} - g_{EZ}$.

- Difference in openness of the economy expressed as the share of total exports and imports in GDP and the average of Euro area countries over the entire period $open_{i,t} - open_{EZ}$.

The model allows these characteristics to affect both the long-term equilibrium and the *convergence rate*. Negative values of the respective value in the vector **β₃** indicate that the increase in the given characteristic *accelerates* convergence. The subject of our interest is in particular the coefficient $β_2$.

The estimates are shown in Table 6.1.

T a b l e 6.1
Estimated Results of a Price Convergence Determinants Model

Sample	EA	EU count. pegged to EUR	All count. pegged to EUR	EA	EU count. Pegged to EUR	All count. pegged to EUR
$\ln P_{i,t-1}$	−0.063*** (−0.018)	−0.130** (−0.062)	−0.034 (−0.039)	−0.237*** (−0.039)	−0.690*** (−0.105)	−0.470*** (−0.067)
$\ln P_{i,t-1}\left(\pi_t^{EZ}-0.019\right)$	−0.462 (−0.431)	−0.890* (−0.519)	−0.793** (−0.402)	−0.881** (−0.407)	−1.599** (−0.578)	−1.359*** (−0.401)
$\ln P_{i,t-1}crisis$	0.029** (−0.014)	0.035*** (−0.011)	0.012 (−0.009)	0.007 (−0.013)	0.014 (−0.013)	0.027*** (−0.008)
$\ln P_{i,t-1}EZ$		0.045 (−0.049)	0.034 (−0.036)		0.316*** (−0.109)	0.305*** (−0.079)
$\ln P_{i,t-1}EU$			−0.050* (−0.029)			−0.120*** (−0.022)
$\ln P_{i,t-1}\left(\ln y_{i,t}-\ln y_{EZ}\right)$	−0.034 (−0.030)	−0.039 (−0.035)	−0.016 (−0.023)	−0.055 (−0.041)	−0.166*** (−0.051)	−0.096*** (−0.030)
$\ln P_{i,t-1}\left(g_{i,t}-g_{EZ}\right)$	−0.044 (−0.236)	−0.478** (−0.201)	−0.390** (−0.173)	0.023 (−0.124)	−0.356* (−0.187)	−0.127 (−0.147)
$\ln P_{i,t-1}\left(open_{i,t}-open_{EZ}\right)$	−0.024*** (−0.009)	−0.003 (−0.010)	−0.003 (−0.011)	0.013 (−0.029)	0.076 (−0.045)	0.019 (−0.031)
crisis	−0.016*** (−0.005)	−0.013** (−0.006)	−0.010* (−0.005)	−0.038*** (−0.009)	−0.024** (−0.009)	−0.033*** (−0.007)
EA		0.014 (−0.023)	0.013 (−0.019)		0.137*** (−0.044)	0.135*** (−0.031)
EU			−0.023 (−0.020)			−0.063*** (−0.019)
$\ln y_{i,t}-\ln y_{EZ}$	0.039*** (−0.010)	0.025** (−0.012)	0.015 (−0.011)	0.099*** (−0.029)	0.088*** (−0.015)	0.107*** (−0.020)
$g_{i,t}-g_{EZ}$	0.060 (−0.053)	0.128* (−0.069)	0.103* (−0.061)	−0.021 (−0.031)	0.011 (−0.050)	0.003 (−0.041)
$open_{i,t}-open_{EZ}$	−0.004 (−0.003)	−0.002 (−0.003)	−0.001 (−0.003)	−0.013 (−0.007)	−0.021* (−0.012)	−0.016 (−0.010)
Constant	−0.063*** (−0.018)	−0.130** (−0.062)	−0.034 (−0.039)	−0.237*** (−0.039)	−0.690*** (−0.105)	−0.470*** (−0.067)
Time dummy	yes	yes	yes	yes	yes	yes
Country fixed effect	nie	no	no	yes	yes	yes
N	264	305	356	264	305	356
R^2	0.22	0.48	0.39	0.34	0.58	0.53

Poznámka: V zátvorkách robustné štandardné chyby; ***, **, * – významnosť na hladine 1%,5 % a 10%.

Prameň: Výpočty podľa údajov Eurostatu.

Negative values for the $\ln P_{i,t-1}$ coefficient indicate that the Euro area countries, the EU countries, but also sample with all countries pegged to Euro in general tend to converge in price levels not only by direct use of it, but also by pegging their currency the Euro. As mentioned above, the object of our interest is in particular the coefficient β_2 belonging to $\ln P_{i,t-1}\left(\pi_t^{EZ} - 0.019\right)$. It is always statistically significant and negative in each model except the first model specification estimated without fixed effects and solely on the sample of EA countries. It indicates that in a low inflation environment, price convergence tends to be slower. This leads us to the conclusion that it is possible that price convergence will accelerate as the Euro area inflation rate rises. It may also support the convergence of Slovak prices to the rest of the EU countries.

[1] The introduction of a fixed effect into the model can cause so-called "Nickell bias" (Nickell, 1981) and therefore fixed-effect models are often estimated by the general method of moments (Allerano-Bond, 1991). In this case, the general method of moments delivers similar results and the main conclusion that price convergence is slower in a period of low inflation remains unchanged.

* * *

In 2018, the European Central Bank came again closer to normalizing monetary policy, in particular by stopping net purchases in the quantitative easing program. Forward guidance, which has hitherto been based on communicating planned changes in net purchase volumes, will soon be focused on informing about the future interest rate path. These remain *de facto* at the bottom line which facilitates funding conditions in the Euro area countries. Low-interest rates also motivate relatively risky clients to indebt themselves, leading banks to tighten credit conditions not only in Slovakia but also in other Euro area countries. A gradual rise in the Euro area inflation may have implications for future price convergence. Experience suggests that price convergence is faster under higher inflation.

7. PUBLIC FINANCE

Public finance development continued to be positively influenced by ongoing economic growth and the resulting tax and social contribution revenues in 2018. Many changes to the tax and payroll system came into effect, with a positive but also a negative impact on government revenue and expenditure.

Changes in Tax System

We can identify changes in tax legislation and regulations as one of the most comprehensive over the years. Important selected changes include:

- Increase of flat-rate expenses of self-employed persons up to 60%, a maximum of 20 thousand EUR. Flat-rate expenses may also be charged in the event of a full operation suspension, not reduced by a number of months.
- Increase in the minimal social contributions for self-employed to 215 EUR.
- Compulsory filing of tax returns by electronic means for self-employed persons and free professions from 1 July 2018 and for companies from 1 January 2018.
- Motor vehicle tax return, Corporate income tax return, or other submissions are only filled electronically.
- Cancellation of tax licenses as of January 1, 2018.
- Super-deduction of R&D costs. Besides, the company can also deduct 100% of the increase in R&D expenditures for all R&D projects, while the amendment regulates the calculation of this increase.
- 50% of income is already exempt from tax for the right to use, for the use of a patent or utility model, but also the use of software. The condition is that they must be the result of their activities.
- Tax exempted is also a part of revenues from the sale of a product for which R&D results achieved within the company were used.
- Increase in *exit tax* – taxes on the transfer of assets to 21%, although the owner does not change.
- Abolition of the contribution deduction with a direct impact on the net minimum wage.
- New, percentage-based indexation of the pension system.

An important step in 2018 is the approval of a new public wage scheme, effective from 2019. The lowest pay scale is 520 EUR, corresponding to the government-approved minimum wage in 2019. The lowest pay scale in the basic wage scheme was 246.50 EUR and 231 EUR in an individual wage scheme, while the employer had to equalize the wages with bonuses up to the level of a minimum wage. Also, wage schemes for certain groups of public employees have been merged.

Employees in the basic scale, on the individual level, and the health care staff, are paid accordingly to a uniform table. This uniform table is also used to calculate the wages of employees abroad.

In the uniform table, the number of pay grades reduced from the 14 to 11, merging the first six grades into three (1 + 2, 3 + 4 and 5 + 6), while taking into account the qualifications established for each grade.

The new universal table does not apply to teaching and professional staff, university teachers, and scientific and development staff. In the case of these groups of employees, the Ministry of Education has proposed to keep two wage schemes.

The first scheme focuses on teaching and professional staff. The second scheme identifies an individual table of the pay scale for higher education and research and development staff. The two new pay grades limited to 40 years will be added to the scheme.

Changes in public employee's wage schemes will require approximately 255 million EUR, out of which 124.8 million EUR will be financed from the state budget, 93 million EUR from municipal budgets and 37.7 million EUR from the budgets of higher territorial units.

Development of the General Government Budget Balance

The general government budget deficit reached 0.7% of GDP (629.4 million EUR) in 2018 and compared to the previous year was lower by 0.1 p.p.[1]

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[1] Preliminary data published in April 2019 by Eurostat. The Eurostat will confirm the definitive values after consultations with the Slovak statistical authorities, as there were doubts about the quality of the data sent, which could increase the deficit by 0.3% of GDP.

F i g u r e 7.1
General Government Deficit in % of GDP (2015 – 2018)
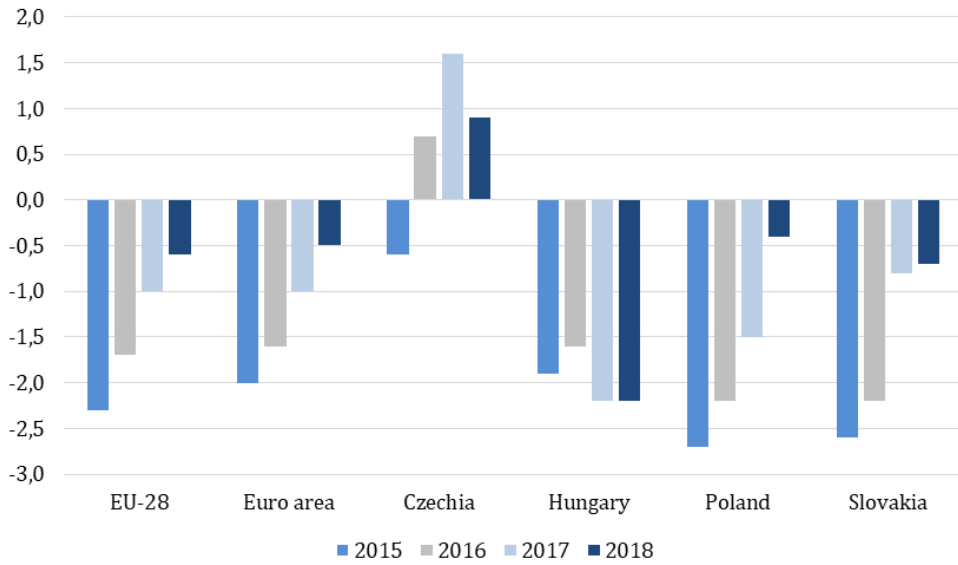
Source: Eurostat (2019).

F i g u r e 7.2
General Government Debt in % of GDP (2015 – 2018)
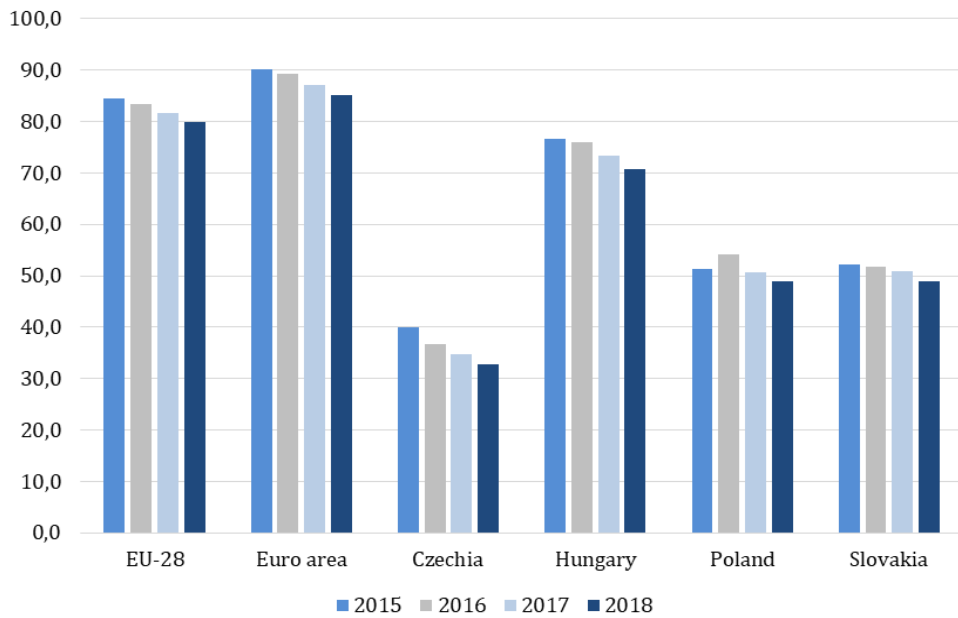
Source: Eurostat (2019).

General government revenue was 39.9% of GDP, and government expenditure was 40.6% of GDP. The value of public debt was 48.9%, down by two p.p. compared to 2017. The total amount of public debt was 44.1 billion EUR and increased y-o-y by 914 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).

The State Budget Development in 2018

State budget revenue was 15.3 billion EUR, which was 1.4 billion EUR higher than the approved budget. The revenue of personal income tax (PIT) from the dependent activity was 2.87 billion EUR and 58.9 million EUR from entrepreneurship and other self-employment activities. The 2.86 billion EUR was transferred to the accounts of higher territorial units and municipalities from the PIT total revenue. The corporate income tax collection (CIT) amounted to 2.8 billion EUR, being more by 327 million EUR compared to the 2018 budget plan.

The VAT collection was 332 million EUR higher than planned and amounted to 6.4 billion EUR (y-o-y increase by about 400 million EUR). The collection of excise duties brought to the state budget 2.3 billion EUR, out of which the most substantial part is a tax on mineral oils of 1.26 billion EUR. Non-tax revenues were 236 million EUR, out of which the most significant part was income from lotteries and other similar games amounting to 221.9 million EUR. A negative trend was recorded in taxes on international trade and transactions, other taxes, including sanctions amounting to 8.2 million EUR. Positive developments were recorded in the revenues from the EU budget, with a year-on-year increase of 747.2 million EUR (+52.5%).

State budget expenditures were lower by 790 million EUR compared to the approved budget. Current expenditures were lower by 464 million EUR and capital expenditures higher by 1 billion EUR. Expenditure on state debt servicing recorded a y-o-y decrease of 32.0 million EUR (−2.7%). In the state budget expenditure categories related to the use of the budget,

there was a y-o-y increase of 649.8 million EUR (+45.4%), which is also associated with an increase in co-financing resources of 114.3 million EUR. The payments to the EU budget grew y-o-y by 97.2 million EUR (+15.3%). The transfer to the Social Insurance Agency decreased by 308.9 million EUR (–74.4%). The implementation of further expenditures of the state budget increased y-o-y by 808.6 million EUR (+7.1%).

T a b l e 7.1
State Budget Development in 2015 – 2018 (EUR million)

Indicator	2015	2016	2017	Planned 2018	Actual 2018	% of compliance 2018	Year-on-year change,%
Total revenues	16 233	14 275	14 014	13 928	15 381	110,4%	9,8%
of which:							
1.Tax	10 612	11 068	11 152	11 361	11 966	105,3%	7,3%
of which:							
Personal income tax	64	–8,5	7,0	3,5	10,0	285,7%	42,9%
Corporate income tax	2 607	3 187	2 604	2 472	2 801	113,3%	7,6%
Income tax collected by deduction	162	179	179	242	209	86,4%	17,1%
VAT	5 510	5 368	5 923	6 079	6 419	105,6%	8,4%
Excise taxes	2 096	2 170	2 253	2 335	2 324	99,5%	3,2%
2. Non-tax	1 274	1 217	1 395	1 208	1 211	100,2%	–13,2%
3. Grants and transfers	4 346	1 989	1 467	1 412	2 203	156,0%	50,2%
of which:							
Income from EU budget	4 280	1 939	1 423	1 378	2 169	157,4%	52,5%
Total expenditures	18 166	15 256	15 234	15 955	16 563	103,8%	8,7%
of which:							
Current expend.	13 507	13 353	13 682	14 624	14 160	96,8%	3,5%
Capital expend.	4 658	1 902	1 553	1 331	2 402	180,5%	54,7%
Deficit/Surplus	–1 932	–980	–1 220	–1 972	–1 182	59,9%	–3,1%

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.
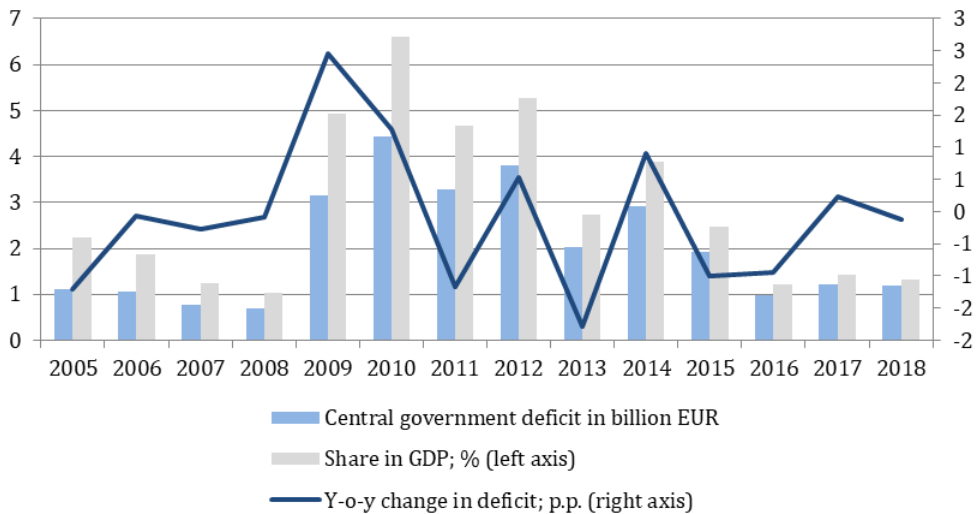*Source:* MF SR (2019); Author's calculations.

The State Budget Deficit and Central Government Debt

In 2018, the state budget deficit was 1.18 billion EUR, reaching 1.31% of GDP. Compared to the previous year, it was lower by 38 million EUR (Figure 7.3). The deficit was 790 million EUR lower than in the approved budget. In 2018, the central government debt increased by 1.35 billion EUR and reached a total of 42.5 billion EUR. As a result of ongoing
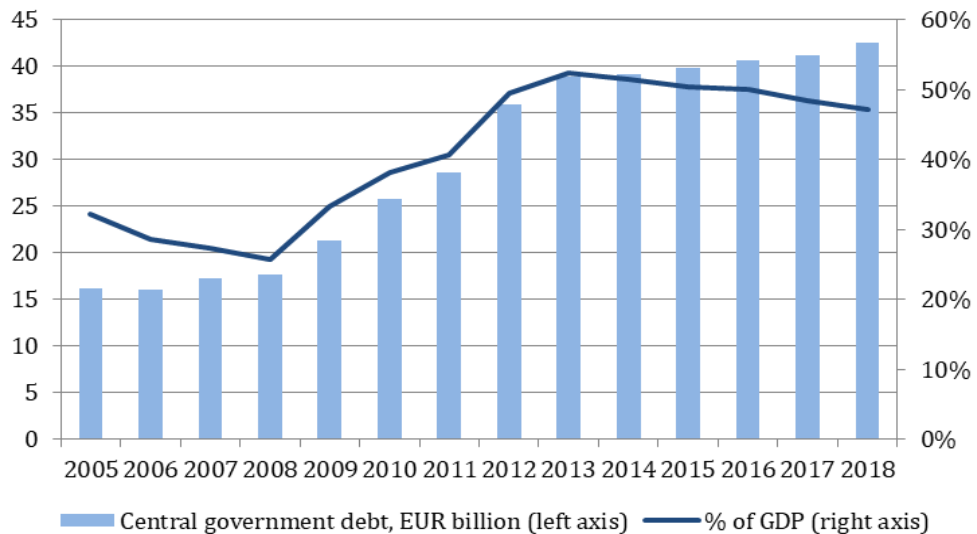
economic growth or rather achievement of higher GDP growth rate than the growth rate of central government debt; the debt share in GDP is gradually decreasing. Central government debt was 47.2% of GDP.

F i g u r e 7.3
The State Budget Deficit in 2005 – 2018

Source: MF SR (2016a); Authors' calculations.

F i g u r e 7.4
**Central Government Debt in 2005 – 2018**

Source: MF SR (2017c); Authors' calculations.

The QE policy of the ECB has been reflected in government bond yields in recent years. While in 2008 or 2012, the average yield was close to 5%, in the third quarter of 2016, it was at the historical low values of 0.37% (see Figure 7.5). In 2018, we may see a slight increase in the average yield reaching 1.01% in the fourth quarter of 2018.

Figure 7.5

Interest Rates on 10-years Slovak Government Bonds by their Maturity in 2007 – 2017 (%)
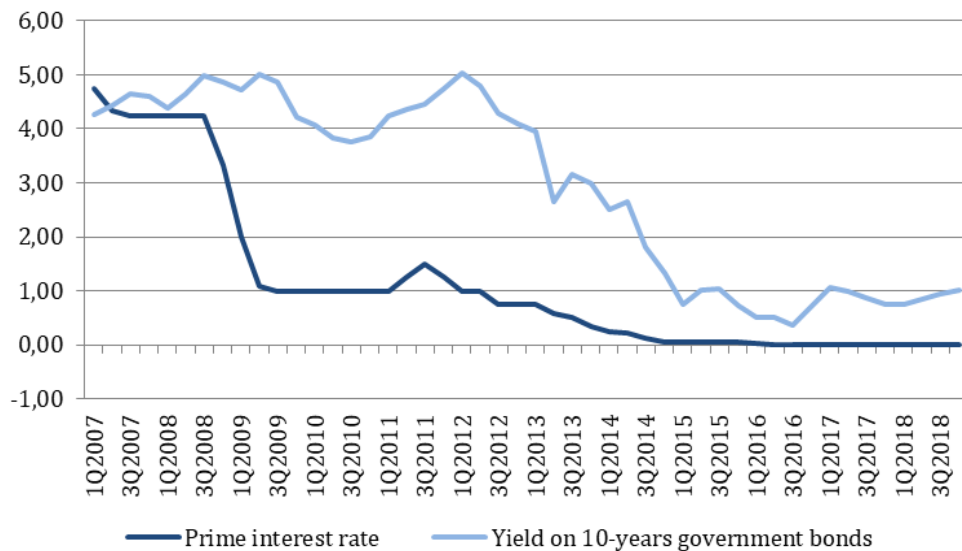
Source: Macroeconomic Database NBS (2018).

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 7.6). In 2015, as a result of the ending programming period, the net position was 4.0% of GNI (3.09 billion EUR). In 2017, the net position reached only 1.17% of GNI (979.8 million EUR) and was lower by approximately one billion EUR compared to the year 2016.

Table 7.2

Expenditures of the EU budget in Slovakia in 2010 – 2016 (EUR million)

	2010	2011	2012	2013	2014	2015	2016	2017
1. Sustainable growth	1208	1096,8	1646	1439,2	1120	3147,9	2075	1005,8
1.1 Competitiveness for growth and employment	11,8	40,9	70,4	58,4	69,2	61,6	85,5	191
1.2 Cohesion for growth and employment	1096,1	1056	1575,7	1380,8	1051,7	3086,3	1989,6	814,9
1.2.1 Structural funds	633,7	917,6	1212,9	812,1	1026,3	3053,6	1904,2	759,1
1.2.2 Cohesion fund	462,4	138,2	362,7	568,7	507,2	1281,1	558,2	325,7
2. Preservation and management of natural resources	676,5	647,9	618	566	532	566,5	566,4	616,9
3. Citizenship, freedom, security and justice	8,7	29,2	12,6	11	5,6	9	10,7	11,2
4. EU as a global partner	0,3	0,5	0,5	0	0	0,5	0,1	0
5. Administration	11,5	10,7	9,7	9,9	10,2	10,9	10,6	11,3
6. Compensation	0	0	0	0	0	0	0	0
Total	1905	1785,1	2286,8	2026,1	1668,8	3734,8	2662,8	1645,2

Notes: 2018 data were not available at the time of chapter publication.

Source: European Commission (2018).

Figure 7.6

Net Financial Position of the SR vis-à-vis the EU Budget, 2004 – 2017
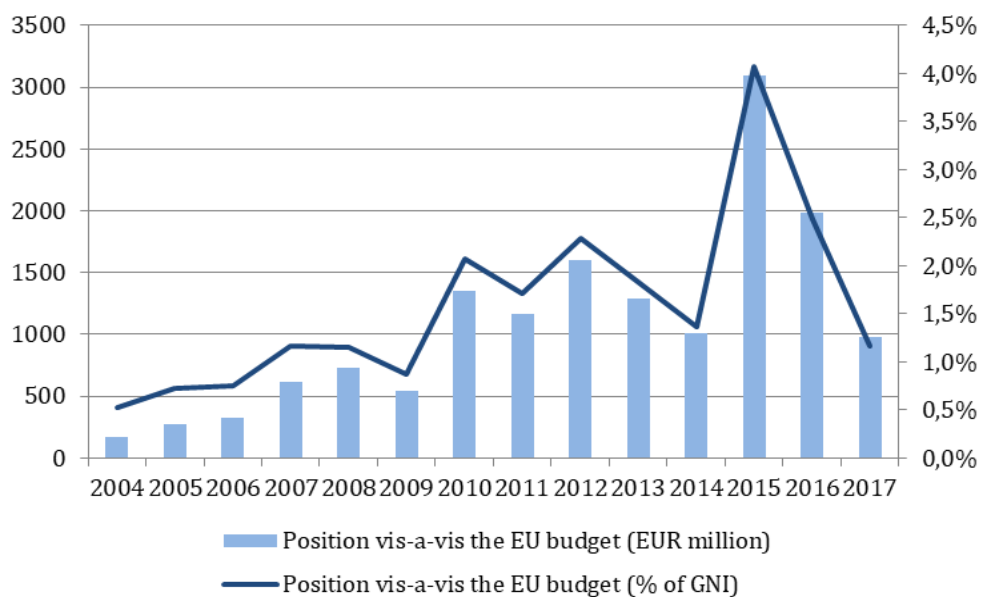
Notes: 2017 data were not available at the time of chapter publication.

Source: European Commission (2017).

EU Cohesion Policy Implementation in 2014 – 2020 Programming Period

At the end of 2018, the total level of financial implementation from the EU budget reached 19.9% of the total committed funds for the programming period 2014 – 2020. The financial implementation was relatively low even after four years since the beginning of the programming period. In absolute terms, there was an implementation of 2.7 billion EUR. The highest level of implementation was achieved (the EU funds only without co-financing by the state budget) in the Integrated Infrastructure OP (1.2 billion EUR), the Human Resources OP (516 million EUR), and the Environmental Quality OP (505 million EUR). On the contrary, the lowest level of financial implementation was recorded in the OP Research and Innovation (210 million EUR), and in the Integrated Regional OP (12.8 million).

In relative terms, the Integrated Infrastructure OP (30.5%), Human Resources OP (23.3%), and Technical Assistance OP (34%) achieved the highest financial implementation to the overall allocation for 2014 – 2020.

Interreg V-A Cross-border Cooperation Program Slovak Republic – Czech Republic, Interreg Cross-border Cooperation Program V-A Slovak Republic - Austria, and the Fisheries Operational Program started financial implementation in 2018. However, it remains at a low level in both absolute and relative terms.

Thus, the situation from the previous programming period is reoccurring. It was characteristic of slow financial implementation and delayed contracts establishment in the early years of the programming period.

Moreover, when comparing the previous programming period with the current one, we may say that the pace of financial implementation is currently slower. If there is no change in the pace of implementation, we can expect to see a relatively significant implementation of resources in the final years of the current programming period. As at the end of the previous period, this entails a risk of increased error occurrence, support of inefficient projects with all related risks.

Figure 7.7

State of Financial Implementation of the Committed Resources in 2014 – 2020 by Operational Programs in % – 31st December 2017 (EU source)
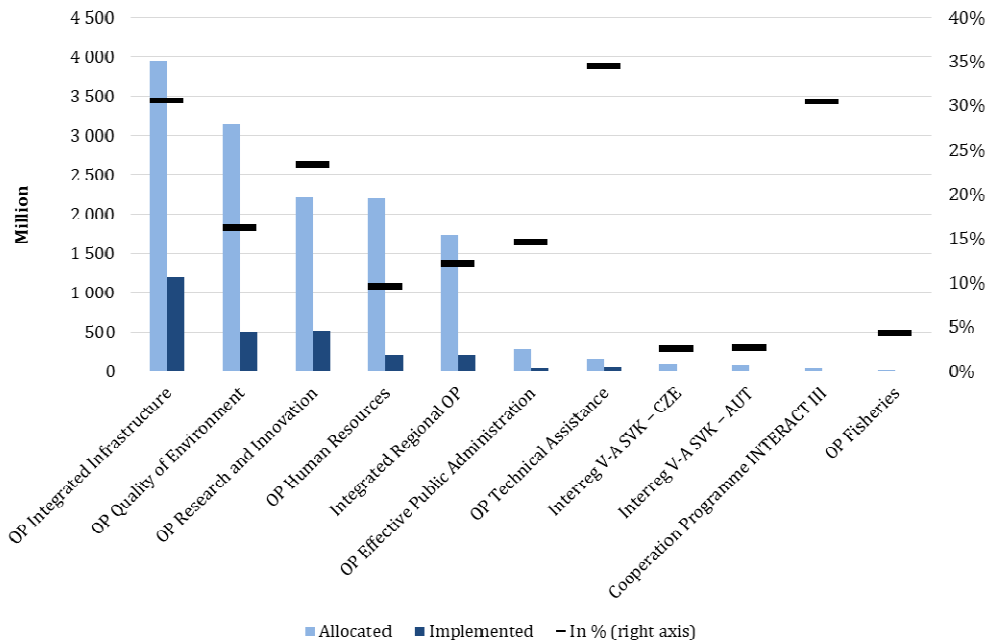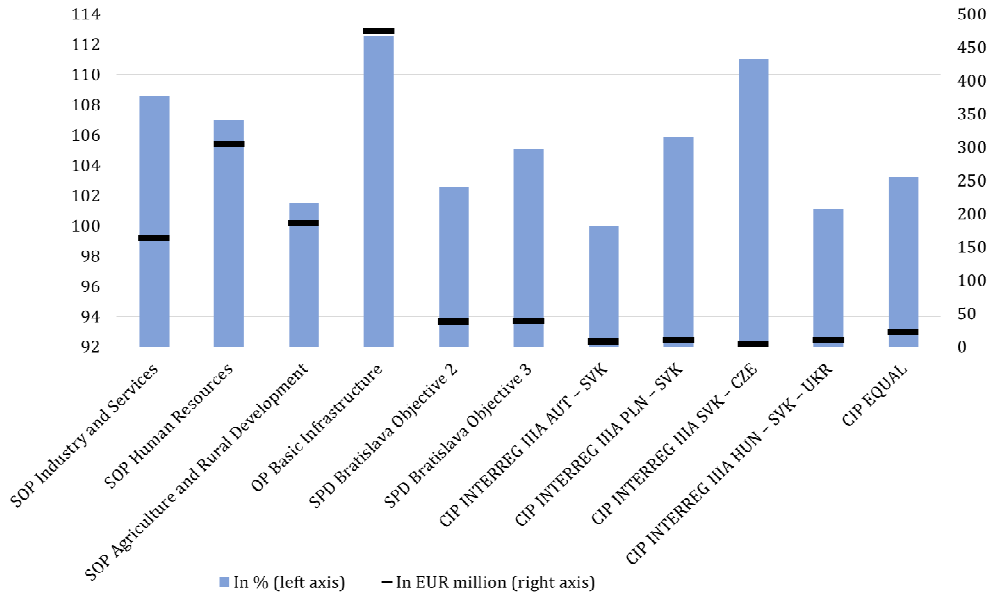

Source: MF SR (2019b); Author's calculations.

Cohesion Policy – Tool for Slovak Economy Convergence?

Slovakia was already implementing the EU funds in the form of pre-accession assistance from PHARE, ISPA, and SAPARD before accession to the EU. The PHARE (Poland Hungary Assistance for Restructuring their Economies) program was initially created for Hungary and Poland and later extended to all acceding countries. The main objectives of the program were to support public administration and institutions and to prepare them for operation within the EU, to support the implementation of the EU and candidate states legislation, as well as economic and social cohesion. In 1999, the assistance was expanded through the Instrument for Structural Policies for Pre-Accession (ISPA), the main objective of which was to co-finance infrastructure and transport infrastructure projects. The SAPARD (Special Accession Program for Agriculture and Rural Development) was a unique pre-accession program for agricultural and rural development used to adapt the domestic sector to the EU accession.

State of Financial Implementation of Structural Assistance in 2004 – 2006 Programming Period as of 31 December 2009

Source: MF SR (2010); Author's calculations.

By accession to the EU in 2004, the Slovak economy could implement financial resources from the EU budget in the shortened programming period 2004 – 2006. This PP already provided the Slovak economy with greater financial resources to support economic and social cohesion. The funds in this period could be used until 2009. Figure 7.8 illustrates the financial implementation status.

The largest volume of funds went to infrastructure, human resources, agriculture and rural development, and support to the corporate sector, as well as support for the Bratislava region and cross-border cooperation. In addition to financial assistance, the shortened 2004 – 2006 programming period was intended to prepare domestic institutions for the next programming period, which should provide a significantly higher volume of financial resources for the Slovak economy.

The programming period 2007 – 2013 was the first comprehensive period when the Slovak economy could implement Cohesion Policy resources of 13.5 billion EUR.

Figure 7.9

State of Financial Implementation of the Committed Resources in 2007 – 2013 by Operational Programs in EUR million – as for 29th February 2016

■ EU Budget contribution   ■ State Budget Co-financing
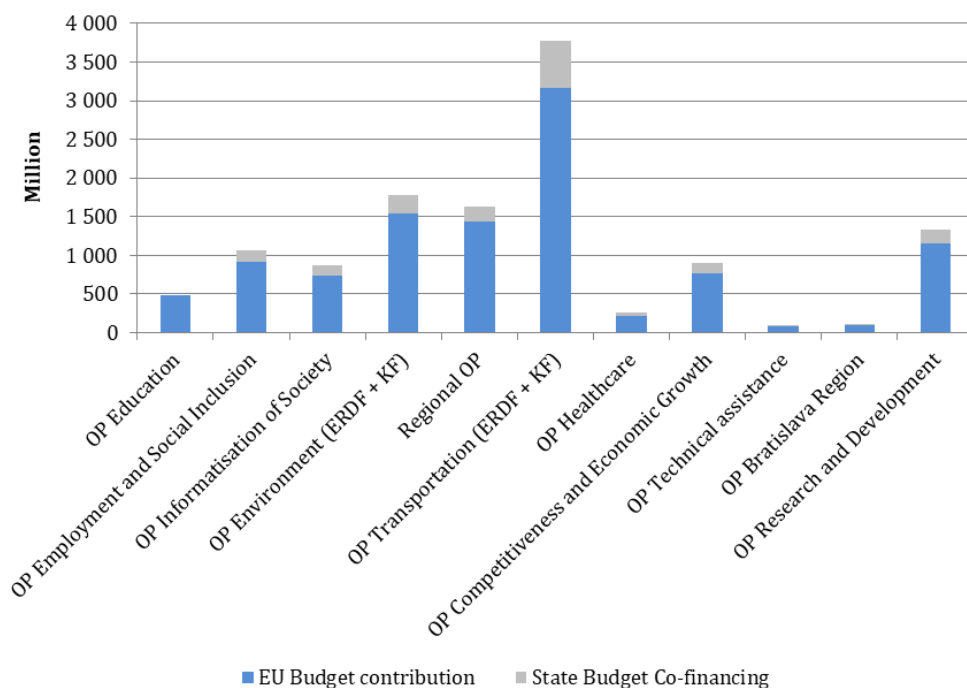
Source: MF SR (2016); Author's calculations.

The highest volume of resources went to transport infrastructure, environment, regional operational program, research and development, to support employment and inclusion, informatization of society, support of enterprise competitiveness and education. From the achieved effects point of view, the sources of cohesion policy were an important tool for the realization of public investments in the Slovak economy, and in particular, during the economic crisis, they helped to mitigate its impacts. The impacts of cohesion policy in terms of Slovak economy convergence to the EU average and internal convergence at the regional level were analyzed by Radvanský et al. (2016). The positive impact of cohesion policy resources on the convergence process has been confirmed. However, only modest progress has been made in the context of Slovakia's regional differences measured by GDP per capita. Also, without the implementation of cohesion policy, regional disparities would be even more

pronounced, given the specific position of the Bratislava Region, which in some way distorts the view of the regional disparities within Slovakia.

In the current programming period 2014 – 2020, Slovakia has 15.3 billion EUR available for implementation. As of 2018, 2.7 billion EUR has been implemented, representing the level of financial implementation less than 20%.

The current programming period has a slower pace of implementation than in previous periods. In particular, the OP Research and Innovation (R&I) has not been able to use up the necessary funds due to the cancellation of some calls for applications in previous years. It resulted in a decommitment of approximately 80 million EUR in 2018.

European Structural and Investment Funds have been one of the major instruments for balancing regional disparities since the pre-accession period and are an important source of public investment. Their implementation helps Slovakia to reduce its modernization and investment debt. However, a specific dependence of the Slovak economy on these sources has been built up over the years. Their significant share in total public investment is necessary to gradually diminish and utilize more of domestic resources. However, these resources are tied mainly to mandatory spending and are primarily directed towards chapters that are more oriented on current than capital expenditure. These include, in particular, investments in science, research and innovation, education, the environment, transport infrastructure (first to third class roads) and public services. It is an investment in these sectors that will help the Slovak economy to increase its pace of convergence towards the EU.

8. OVERVIEW OF SELECTED LEGISLATIVE AND ECONOMIC POLICY MEASURES IN 2018

In 2018, the economic policy processes in Slovakia were also shaped by social and political movements, which resulted in a partial reconstruction of the government (changes in the positions of Prime Minister, Ministry of Culture, Justice, Health and Home Affairs), but this did not affect the nature of the economic policy. Policy Statement of the Government remained unchanged.

From the economic policy point of view, the key document is *the National Reform Program of the Slovak Republic 2018* (MF SR, 2018), which defines the key challenges and priorities of policies, as well as specific measures for their fulfillment. The reforms should mainly focus on building childcare facilities capacities for children within three years. In the field of education, the attractiveness of the teaching profession should be increased. Another priority is the continuation in the linkage of education and labour market needs through the dual learning system. Other structural measures should aim at reducing the administrative and regulatory burden on the business environment, the continuing electronization of public administration, or the resolution of court executions.

Part of the strategic planning of economic policies in 2018 was the adoption of *the Draft of National Priorities for Implementation of the 2030 Agenda*. Slovakia endorses 17 objectives of Agenda 2030, which have been grouped into five thematic objectives[1]: (1) improving the quality of education and the level of school facilities; (2) creating decent jobs, promoting entrepreneurship, innovation, ensuring access to drinking water, sanitation and waste management while respecting environmental sustainability; (3) strengthening the resilience of local communities to extreme events related to climate change and other economic, social and environmental shocks; (4) supporting institution-building and efficient state administration with strong self-government and civil society; (5) improving the health status of the population in the partner countries and improving access to quality training for medical staff.

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[1] Government Office of the Slovak Republic. 2018. Draft of National Priorities for Implementation of Agenda 2030. https://www.slov-lex.sk/legislativne-procesy/-/SK/dokumenty/LP-2018-296.

As part of the long-term development strategies of the Slovak Republic, a pilot version of *the National Investment Plan of the Slovak Republic for 2018 – 2030* was approved. It builds on the National Agenda 2030 and defines priority themes, and key programs for 2030 "through which new economic, social and environmental infrastructure will be built, or existing infrastructure will be improved to gradually meet the long-term needs of the Slovak Republic" (ODPMSRII, 2018). The National Investment Plan describes the current and desirable situation in 2030, as well as an estimate of the investment gap in areas such as transport, energy, information and electronic communications, research and innovation, health, environment, agriculture and forestry, social inclusion and employment, regional development.

The approved document *Initial Position of the Slovak Republic to the EU Cohesion policy post-2020* sets out Slovakia's position on shared management, regional focus, and other simplification options in the future Cohesion Policy. Slovakia is inclined to maintain a strong position of cohesion policy after 2020. The adopted *Urban Development Concept of the Slovak Republic until 2030* proposes principles and measures that should systematically strengthen the role of cities and urban regions in the development of Slovakia. The adoption of *the Adaptation Strategy of the Slovak Republic on Adverse Impacts of Climate Change* is intended to improve Slovakia's readiness for the adverse effects of climate change. The draft of *the Intelligent Industry Action Plan of the Slovak Republic* presents 35 measures to help transform the Slovak economy responding to the digitalization of industry. As in previous years, a number of "soft" legislation (strategy papers, action plans) was adopted in 2018. Their consistent implementation will be a major challenge for economic policy.

In 2018, the Government of the Slovak Republic introduced another, an extensive package of social measures, which were to be effective from January 2019. Among the measures presented were free lunches for pupils, income tax cuts for parents with children under six years (doubling the current tax bonus), the exceptional 2.5% levy for supermarket chains, increase of minimum wage, growth of tariff wages of state and public employees, introduction of new 8% tax on non-life insurance, decrease

of state premium for building savings, support of tourism (holiday checks, decrease of VAT on accommodation from 20 to 10 percent). Some measures from the package were already adopted in 2018.

Several changes were made to the Labour Code in 2018: employees' extra pay at night, public holidays and weekends increased; exemption of 13th and 14th salaries from social contributions and taxes (so-called summer and Christmas bonuses, their disbursement is voluntary). "However, if the employer pays them, a number of conditions must be fulfilled to benefit from the concessions. The first is that these salaries should be at least equal to the average monthly earnings of the employee. Another condition is that the concessions can be applied up to a maximum of 500 EUR" (Bartko, 2018). A new feature is the obligation to publish the amount of salaries offered in job advertisements. These measures can significantly affect the competitiveness of some sectors.

Slovakia responded to the labour market situation and labour shortages by adopting *the Strategy for Labour Mobility of Foreigners in the Slovak Republic.* The document contains 23 short-term measures to be adopted by the government by 2020 and 27 long-term measures to be implemented by 2030. The situation should also be improved by the amendment to the Employment Services Act and the Act on Residence of Foreigners (No. 376/2018 Coll.). It brings several changes, e.g., "Extending the possibilities for third-country nationals to enter the labour market through temporary employment agencies in cases of vocation with labour shortages or shortening the deadlines for examining applications for seasonal work permits." (Najpravo.sk, 2019).

Act No. 213/2018 Coll. on Insurance Tax introduces a new non-life tax of 8%; "shall apply to all non-life insurance products except compulsory contractual insurance. Therefore, it will affect a wide range of insurance products that cover personal and property insurance." (arisan.sk, 2019). The tax replaced the current levy on non-life insurance, which was in place up to now.

In December 2018, a new Act on a Special Levy of Supermarket Chains with levy size of 2.5% of net turnover was rapidly approved. It concerned those supermarket chains in which (1) at least 25% of net turnover comes

from the sale of food to the final consumer (2) operate in at least 15% of all districts, (3) operations have a unified design, shared communication and joint marketing activities. The Act was to be effective as of 1 January 2019. However, in March 2019, the European Commission issued a provisional measure to suspend it, and in April 2019 it was canceled by the National Council of the Slovak Republic.

Amendment to the Act on Value Added Tax (No. 323/2018 Coll.) reduced VAT on accommodation services from 20% to 10%. The reduction in VAT applies not only to the hotel and similar services but also to dormitories.

New Act on Social Economy and Social Enterprises (No. 112/2018 Coll.) "defines the social economy sector, social economy entities, social enterprise, disadvantaged persons and vulnerable persons, as well as other concepts of social economy, establishes conditions for granting the status of registered social enterprise, defines individual types of registered social enterprises and possibilities of their support" (NR SR, 2019).

In order to reduce the administrative burden, the Certain Measures to Reduce Administrative Burden through Use of Public Information Systems (the so-called "Act against Bureaucracy") (No. 177/2018 Coll.) was adopted. The Act extends the scope of data recorded in public administration information systems and exempts citizens and entrepreneurs from the obligation to submit further certificates and statements in paper form (certificates: on tax arrears, on social insurance arrears, on health insurance arrears, on school visits and extracts from the register of non-governmental non-profit organizations.) The amendment No. 263/2018 of the Decree of the Office of Geodesy, Cartography and Cadastre of the Slovak Republic improved the functioning of digital public administration services, namely the cadastre of real estate. The change tracking service has started (the user is automatically informed about changes in the cadastre on the monitored property). A new service is also a new output – an inventory of the owner's real estate.

In 2018, several measures responded to the digitization of the economy. The amendment to the Road Transport Act (the Road Act), among other things, facilitates the operation of conventional taxis; creates more

comfortable conditions for the business of conventional taxis, and regulates the functioning of alternative taxis, operating based on digital platforms (e.g., Uber). Legislation dealing with the field of virtual currencies was adopted (Amendment No. 213/2018 on Insurance Tax and the Methodological Guideline of the Ministry of Finance of the Slovak Republic No. MF / 10386 / 2018-721 on the procedure of taxation of virtual currencies). Legislative changes concern the valuation of virtual currency; it enshrines the terminology of cryptocurrencies and the way they are taxed.

Regulatory Framework and Effective Public Administration as Factor of Competitiveness

The scope of government regulation concerning the business environment is also provided by some indicators in the World Bank Doing Business.[2] 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 (according to the actual Doing Business data 2018) 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 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. 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.

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[2] WB. 2017. Doing Business Measuring Business Regulations. World Bank. [online]. [cit. 11. 3. 2017]. <http://www.doingbusiness.org/data>.

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.

T a b l e 8.1
Selected Indicators of Doing Business (2017)

|		SVK 2018	SVK 2017	OECD* 2018	SVK/OECD
Starting a Business	Procedure (number)	8.0	7.0	4.9	163
	Time (days)	26.5	26.5	9.3	285
	Cost (% of income per capita)	1.0	1.1	3.1	32
Dealing with Construction Permits	Procedure (number)	14	14	12.7	110
	Time (days)	300	300	153.1	196
	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	20.1	82
	Cost (% of property value)	0.0	0.0	4.2	–
	Quality of the land administration index (0 – 30)	25.5	26.5	23.0	111
Paying Taxes	Payments (number per year)	8.0	8.0	11.2	71
	Time (hours per year)	192	192	159.4	120
	Total tax rate (% of profit)	49.7	51.6	39.8	125
	Post-filing index**	87.17	87.17	84.41	103
Enforcing Contracts	Time (days)	775	775	582.4	133
	Cost (% of claim)	20.5	20.5	21.2	97
	Quality of judicial processes index (0 – 18)	13.5	12.5	11.5	117
Resolving Insolvency	Recovery rate	48.8	47.3	70.5	69
	Time (years)	4.0	4.0	1.7	235

Notes: * Average of high-income countries of OECD; V3 – Poland, Hungary, Czechia; ** *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 (2019); World Bank (2018).

If we look at the Doing Business indicators in the longer-term perspective from 2004 to 2018, we see a favourable development only in paying taxes and resolving insolvency in the case of the Slovak economy. The values in the figure are given as a score of 1 – 100 (the score takes into account all indicators within the dimension).

Figure 8.1

Selected Indicators of Doing Business Development in Slovakia
2004 – 2018 (score)
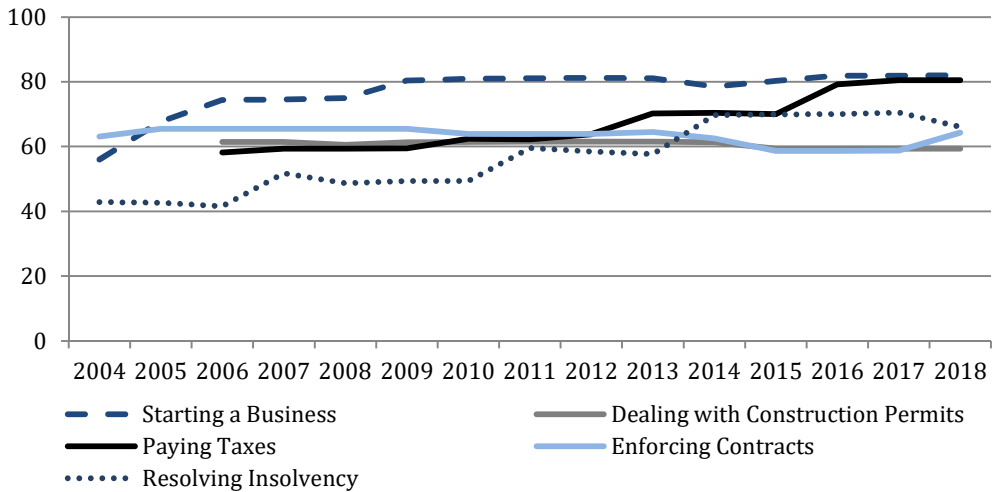
Source: World Bank (2019); Author's compilation.

* * *

Unfortunately, in 2018, 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. A certain reduction in ambitions to take more significant structural measures can be attributed to the election cycle phase (3rd year of government) and the reconstruction of the government in the first half of the year.

Some of the legislative measures adopted have responded to the structural changes brought about by technological advances. In addition to measures aiming at the further development of digital public administration services, (we are only catching up the EU with a certain lag), e.g., the amendment to the Road Transport Act regulated the business of taxis operating on a shared economy platform. Another measure in this area may be the adjustment of cryptocurrencies taxation.

9. OUTLOOK FOR 2018 AND 2019

After a few more detailed assessments of developments in selected areas, we return to the overall view of the economy, to comment on the possibilities of its development in the short term.

At the time of this text preparation, during the first part of 2019, the expectations of a slowdown in economic growth in the near future were widely publicized. The task for this chapter is also to examine whether such a development is the most likely option and how significant such a slowdown could be. And since, in a number of chapters, the interrupted convergence appears to be a common object of interest, we also comment on the chance of its recovery.

We want to note that our primary goal is not to provide a detailed quantitative forecast of a large number of macro-indicators.[1] The quantifications are secondary for us; we would like to sketch the trajectory of development and its likelihood: we try to identify the determinants of development (as well as positive and negative risks and challenges that may occur in the short and medium term).

9.1. Current and Future Determinant of Development

We summarize the factors that have emerged from previous chapters or current developments, and should not be overlooked when considering developments in the near term (although the first two do not have typically short-term nature):

1) The exhaustion of price and cost factors of Slovakia's competitiveness is no longer a future threat but a current trend. Indeed, the impact of this tendency may not be well identified in the short-term considerations; it is a factor with potential longer-term effects. The approach of economic actors to this challenge raises doubts. The chapter devoted to the qualitative factors of economic development showed the continuation of long-term lagging in the inputs and outputs of the science and

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[1] A significantly more detailed forecast (also for the medium-term horizon) elaborated at the Institute of Economics SAS represents the work of Radvanský a Lichner (2019). It includes a considerably broader range of indicators that we are dealing with.

research system, as well as in innovation activity (evaluated by summary innovation index). A positive moment is the state of digitization of the corporate sector, but the public sector is lagging behind (electronization of public services of the country).

2) The demographic factor is another factor with influence oriented mainly on the long-term horizon. However, it has already drawn attention to itself when drafting this text. For the first time, the number of seniors (65+) exceeded the number of children in this period. This phenomenon caused a lot of worried comments. We do not doubt that this is a significant problem for the social security system and the sustainability of public finances. However, interpreting the increase in the number of seniors in society only as an obstacle to development is inappropriate (and unethical for the affected part of the population). If such a tendency already exists, society should create conditions for the supply of goods oriented to the needs of the elderly; services that help keep older people active for longer (keeping them in a good shape and longer in an economic activity not only improves the quality of life but may mitigate the adverse effects of an aging population). The society should also focus on the development of policies to support young families (in particular by linking labour market opportunities to childcare).

While the two previous factors affect the medium- and long-term development framework (albeit also on the short-term outlook), we continue to point out the effects mainly affecting development in the short-term:

3) Slower financial implementation of resources (from the EU funds) in the current programming period compared to previous periods. It still needs to be highlighted that these resources support the real convergence of economically less efficient countries. A particularly problematic operational program is the OP Research and Innovation, which has a direct impact on the quality factors of competitiveness.

4) The ECB's policy has come close to monetary policy that we consider being standard or normal. It stopped net purchases under the quantitative easing program. The *forward guidance* will focus shortly on informing about the intended interest rate movements. Meanwhile, they remain at the bottom, which facilitates funding conditions. In any case,

monetary policy will not be as expansive as in previous years (detailed in the chapter on ECB policy). Here we can attribute the so-called problem of declining credit impulse in the world economy.[2] This phenomenon indicates a slowdown in the economy.

5) Gradual growth in the Euro area inflation may support future price convergence. Experience suggests that price convergence is faster in conditions of higher inflation.

6) Efforts to further consolidate public finances (with a zero deficit planned for 2020, which has been repeatedly postponed until now) conflict with proposals for more generous social policies (social packages) or tax rate adjustments. These efforts can be further enhanced by the effect of the election year (2020). During the time of this text preparation, the form of measures proposed by the government coalition was unknown. However, it can be assumed that a more generous social policy and a reduction in the rates of certain taxes (so far proposed reductions are rather selective) will weaken the government's consolidation efforts in public finances. It may have a short-term stimulating effect on domestic demand (more generous social policy, realized wage growth in the public sector) or a longer-term positive impact on economic activity (reducing the tax burden) and thus on GDP growth.

7) The pressure on the growth of the minimum wage may lead to a one-off increase. The regulation of the minimum wage becomes a political agenda, and the publicized proposals raise the expectation of a sharp increase in the minimum wage. We assume that labour shortages will continue to increase wage dynamics. Further stimulating wage growth by one-off increases of a minimum wage is rather a political signal. However, it may help to support wage growth that would be too rapid, and productivity growth would not be able to keep up. In the short term, this can increase domestic demand (mainly consumption of households) and boost GDP growth.

8) Expansion of production capacity through Jaguar Land Rover investment is likely to boost exports. The production starts gradually, it began at the end of 2018 and during 2019 is set to achieve its peak. In

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[2] See Dembik (2019).

the small, open Slovak economy, the launch of the operation of a multinational giant has still a noticeable impact (albeit not same in the size as were the starts of previous automotive producers over a decade ago).

9) In the end, this is probably the most important: an economic slowdown is taking place in the external environment, but is expected to recover growth following year. Economic activity in the EU was already slowing towards the end of 2018, and in the first months of 2019, forecasters corrected their growth forecasts to lower levels. Without going into the details of the problems of the global economy (e.g., Obadi S. M. et al., 2018), here we will only summarize the growth expectations for the Euro area and Germany (due to the strong ties of the Slovak economy). Remarkable, unusual impacts are the specific factors in the German automotive industry (here it is difficult to predict to what extent this is a temporary negative fluctuation or a longer structural problem). Also, there are uncertainties associated with Brexit. At the same time, the still low financing costs should help investment dynamics (low-interest rates on loans could at least partially overcome the negative impact of lower expected revenues on investments). The forecasts for the Euro area economic growth from the three different institutions[3] selected by us are rarely balanced (Table 9.1): economic growth is set to slow from 1.9% in 2018 to 1.2% – 1.3% in 2019, with a slight recovery to 1.5% in 2020.

The forecast for Germany is similar, but with a slightly more pronounced expected slowdown in 2019. For example, the European Commission forecast (EC, 2019) assumes the growth of the economies of all Member States over a two-year horizon. However, the growth projections from spring 2019 were considerably more cautious than those inautumn 2018. These predictions are based on the assumption that uncertainties in trade (caused by protectionist efforts) and in politics (e.g., Brexit) will recede or at least will not intensify. In particular, the imposition of duties on cars and their components by the US could lead to less favourable developments. A possible Brexit without a deal could dampen economic growth, especially in the UK, to a lesser extent in the EU-27.

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[3] We have traditionally selected the European Commission, the IMF and a common platform of several economic research and forecasting organizations, Projektgruppe Gemeinschaftsdiagnose.

T a b l e   9.1
Forecasted Changes in Real GDP in the Euro area and Germany

	2018 real		2019 forecast	2020 forecast
Euro area				
Year-on-year change in real GDP; %	1.9	Gemeinschaftsdiagnose	1.2	1.5
		EC	1.2	1.5
		IMF	1.3	1.5
Germany				
Year-on-year change in real GDP; %	1.4	Gemeinschaftsdiagnose	0.8	1.4.
		EC	0.5	1.5
		IMF	0.8	1.4

Notes: We have selected the forecasts of three different types of institutions. The "Gemein-schaaftsdiagnose" project team brings together several German and Austrian research centers for this purpose; The European Commission is a representative of a transnational European institution, and the IMF is a representative of a global financial institution.

Source: Projektgruppe Gemeinschaftsdiagnose (2019), April 2018; EC (2019), May 2019; IMF (2018), April 2019.

The above-mentioned sample of factors (it cannot be assumed that it is a complete calculation of important factors) implies contradictory effects on the Slovak economy in the short term. The constellation of expected impacts is not as positive as in the preparation of our last year's analysis; however, there are no clear and strict economy hampering effects visible. Still, there are significant risks from the external environment present (Brexit or the onset of protectionism in world trade). Internal risks include negative demographic trends, (miss-) management of opportunities and threats from technological change (digitization, automation...) or more difficult predictable fiscal policy measures in the pre-election period.

9.2. Key Determinants of Future Development

Before the presentation of the outlook, attention is paid to review the last year's outlook (which is confronted with actual developments in Box 9.1) and assessment of some available economic performance parameters in the first quarter of 2019. In the early months of 2019, performance data in some sectors (mainly sales) was already available. Such data have only a limited value, do not replace GDP data and report performance only in the first quarter. They need to be approached with caution, but they

can at least serve as an imperfect confrontation with pessimistic comments about the economic slowdown. These preliminary data about the beginning of 2019 are considerably heterogeneous. Sales in the industry were more favourable than in the same quarter of previous years. But, for example, retail sales indicate a slowdown in growth. However, looking at the revenues of such a mix of industries in the total certainly does not indicate any negative development (although a slowdown is usually shown).

Box 9.1
**Previous Forecast versus Real Development
(or forecast formation also need self-reflection)**

In the previous year edition of this publications (Morvay et al., 2018), we expressed the expectation for 2018 of accelerating economic growth, strengthening inflation or continuing employment growth, confronted with an increasingly apparent lack of suitable workforce.

To estimate these tendencies was not difficult given the already present indications. However, as it turned out, the biggest problem was to "predict" the intensity of the changes. While real GDP growth was estimated very well, estimates of the intensity of the acceleration in price level growth and further unemployment reduction were too conservative. The direction of the variables was estimated correctly, but the figures were too cautious (Table 9.2). The underestimated intensity of changes in prices inevitably led to an underestimation of nominal GDP growth, although real GDP growth rates predicted reality correctly.

T a b l e 9.2
Comparison of Forecast with Real Development

| Parameter		2016 (s)	2017 (s)	2018 (p)	2018(s)
Year-on-year change in real GDP	%	3.3	3.2	3.9 to 4.3	4.1
Year-on-year change in GDP, current prices	%	2.6	4.5	5.1 to 5.9	6.3
Year-on-year change of employed, LFSS (%)	%	2.8	1.5	1.3 to 1.9	1.4
The unemployment rate, LFS	%	9.7	8.1	7.1 to 7.6	6.5
Average annual change of inflation measured by consumers price index	%	–0.5	1.3	1.8 to 2.4	2.5

Note: r – real data, f – forecast.
Source: SO SR (real data), intervals of forecast based on authors (Morvay et al., 2018).

Figure 9.1

Dynamics Indicators of Selected Branches
(year-on-year indexes, the same period of previous year = 100)

A. Industrial sales
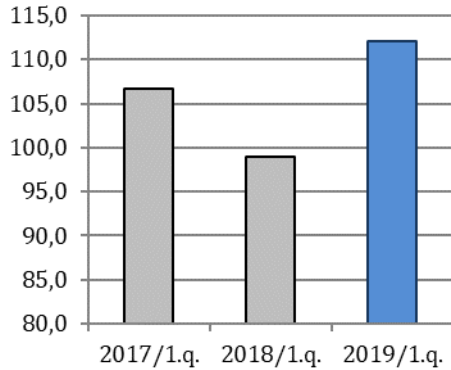
B. Construction sales
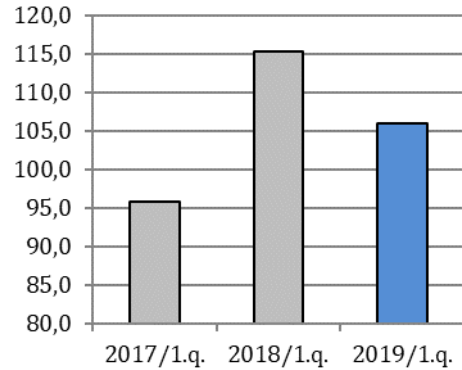
C. Wholesale sales
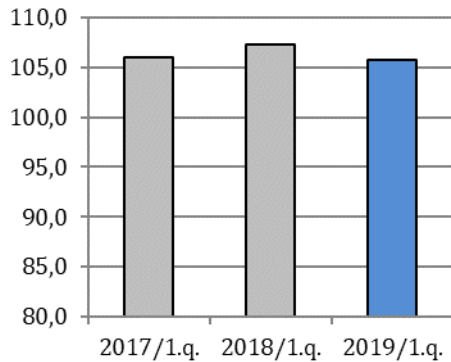
D. Retail sales
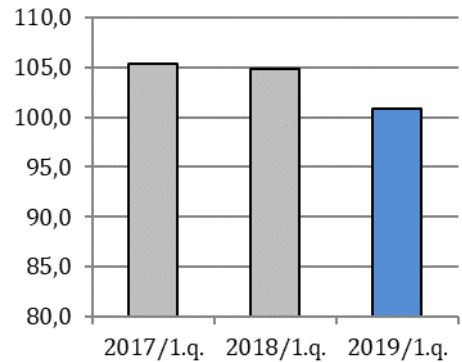
Explanation: Figure A is the index of revenues for own performances and goods in industry (sppy = 100, in constant prices); Figure B is the index of revenues for own performances and goods in construction (sppy = 100, in constant prices); Figures C and D are a year-on-year index of revenue from own performances and goods in wholesale and retail trade, excluding motor vehicle sales (sppy = 100), wholesale in current prices, retail in constant prices.

Source: SO SR.

In 2018 and early 2019, several signs of the economy "overheating" were observed, indicating a likely slowdown. It may include phenomena such as the rise in property prices, lack of labour (to the extent of limiting the economic activity of some companies and rejection of orders) and the position of the economy above its potential production.

T a b l e 9.3
Forecast of Selected Macroeconomic Parameters Development

Parameter		2017 (r)	2018 (r)	2019 (f)	2020 (f)
Year-on-year change in real GDP	%	3.2	4.1	3.5 to 3.9	3.2 to 3.7
Year-on-year change in GDP, current prices	%	4.5	6.3	5.3 to 6.0	5.1 to 5.8
Year-on-year change of workers, LFS (%)	%	1.5	1.4	1.3 to 1.9	0.9 to 1.4
The unemployment rate, LFS	%	8.1	6.5	5.8 to 6.1	5.4 to 5.7
Average annual change in inflation measured by CPI	%	1.3	2.5	2.0 to 2.4	2.0 to 2.4

Note: r – real data, f – forecast.

Source: Real data (r) for 2017 – 2018 based on SO SR, intervals of forecast (f) based on authors.

Taking into account the factors and trends mentioned above, we expect the following development (also in Table 9.3):

• Although economic growth is very likely to slow down in the current year and 2020 (and mainly due to external environmental impacts), the slowdown will not be significant. While GDP growth is likely to decline compared to 2018, it will still be higher than in 2016 and 2017. Household consumption may continue to play a positive role. The growth is likely to be fuelled by significant real wage growth and rising employment. Possible weaker demand from foreign partners in the EU could be compensated by expanded export capacities in the form of a new car manufacturing plant with full production operations. However, as a highly open economy, Slovakia will probably feel the impact of weakened foreign demand, especially in the first half of 2019 (according to the EC external demand forecast, 2019).

• The inflation rate will remain at a similar level to 2018 (close to 2.5%), supported by wage growth and consumer demand growth.

• The unemployment rate has nowhere to drop significantly. We expect only a slight decrease to other historical lows. It is likely to be a combination of the unemployment rate above 5.5% and the current labour shortage. Declining unemployment rates will increasingly hit the core of hard--to-employ people (employable only through special labour market policy instruments). Employment growth will also slow gradually. It will be confronted with the increasingly difficult availability of available domestic labour, and in the short term, only foreign labour will be an auxiliary help. Tensions in the labour market, coupled with a scarcity of the workforce,

are likely to trigger wage growth that outstrips productivity growth (which is not a desirable phenomenon in the long run due to weakening competitiveness).

T a b l e 9.4a
Expected Changes in Real GDP in Slovakia by Forecasts of Various Institutions

	2018 real		2019 forecast	2020 forecast
		External institutions		
		EC	3.8	3.4
Year-on-year change in real GDP (%)	4.1	IMF	3.7	3.5
		Gemeinschaftsdiagnose	3.6	3.5
		Domestic institutions		
		IFP	4.0	3.7
		NBS	3.5	3.4
		IER SAS (*)	3.8	3.5

T a b l e 9.4b
Expected Rate of Inflation in Slovakia by Forecasts of Various Institutions

	2018 real		2019 forecast	2020 forecast
		External institutions		
		EC	2.4	2.3
Average annual change in inflation measured by HICP (%)	2.5	IMF	2.4	2.2
		Gemeinschaftsdiagnose	2.3	2.2
		Domestic institutions		
		IFP	2.6	2.4
		NBS	2.5	2.5
		IER SAS (*)	2.4	2.3

T a b l e 9.4c
Expected Unemployment Rate in Slovakia by Forecasts of Various Institutions

	2018 real		2019 forecast	2020 forecast
		External institutions		
		EC	5.9	5.6
Unemployment rate measured by LFS (%)	6.5	IMF	6.1	6.0
		Gemeinschaftsdiagnose	5.9	5.5
		Domestic institutions		
		IFP	6.0	5.6
		NBS	6.0	5.8
		IER SAS (*)	5.8	5.1

Note: The forecasts were not created at the same time. It should be taken into account in their comparison. For example, at the time of the IFP forecast publication, some final data were not available for 2018, which could affect the forecast.

Source: EC (2019), May 2019; IMF (2019), April 2019; Projektgruppe Gemeinschaftsdiagnose (2019), April 2019; IFP (2019); Forecast of the Committee for the Macroeconomic Forecasts, February 2019; NBS (2019), Mid-term forecast P1Q 2019; (*) Radvanský and Lichner (2018), June 2019.

9.3. Will Convergence Be Restored?

To assess the convergence chances, we note the differences in the rate of expected real GDP growth (based on our outlook and the EC forecast, 2019) and the expected inflation rate. Although the inflation rate does not reflect the movement of the overall price level (indicating only the movement of consumer prices), it gives at least a good enough approximate picture of price level dynamics.

It is likely that already the 2018 data will reflect the renewed convergence of both GDP and price levels (not available at the time of this text preparation). In 2018, the economic growth accelerated, and the gap between the growth rate of the Slovak economy and the group of the most advanced European economies increased. It seems that despite a slight slowdown in economic growth in Slovakia in 2019 and 2020, real convergence could resume. A slowdown is also expected for the catching-up economies. We expect growth in Slovakia and the Euro area average to slow down. However, the difference in growth rates will be significantly in favour of the Slovak economy (see Figure 9.2).

F i g u r e 9.2
Difference Between Real GDP Growth Rates in Slovakia and the Euro Area
(y-o-y changes in real GDP in %, the difference in p.p.)
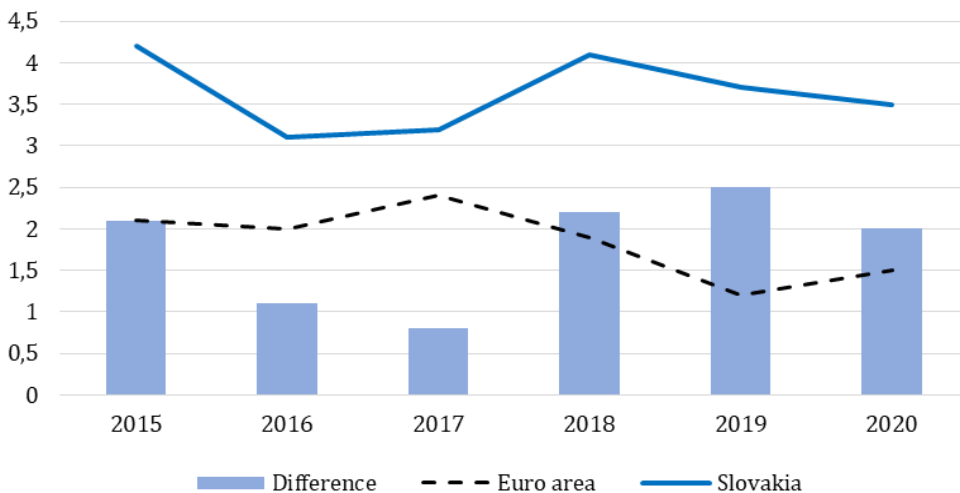
Source: Real data for 2015 – 2018 based on Eurostat, forecast for the Euro area based on EC (2019), forecast for Slovakia based on authors.

F i g u r e 9.3

Difference Between Growth Rates of Consumer Prices in Slovakia and the Euro Area (y-o-y changes in HICP in %, difference in p.p.)
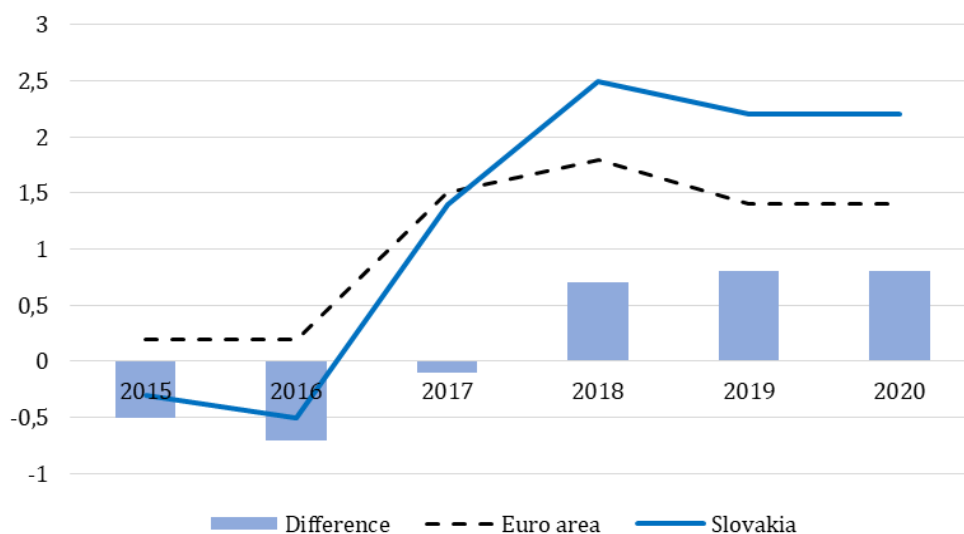
Source: Real data for 2015 – 2018 based on Eurostat, forecast for the Euro area based on EC (2019), forecast for Slovakia based on authors.

* * *

The limitations of the current *growth model* of the Slovak economy are right now already fully visible. Growth based on FDI inflows and low wage and cost levels loses its pillars. These problems have long been pointed out by various documents. But they seemed like warnings for the future. We now see them as an acute problem.

Part of the growth potential is temporarily locked in the disadvantageous workforce allocation. As the analysis by Lábaj (2018) showed, in Slovakia, the distribution of labour is far from what we could perceive as effective. Too much of the workforce works in the segment of too low-productivity enterprises. At the same time, highly productive firms announce an increasingly difficult problem of recruiting the workforce. The solution is often seen only in the promotion of labour migration from third countries, while at the same time postponing the possibility of hiring labour from domestic low-productive enterprises (internal reallocation).

In the relatively short-term, two-year outlook, we can speak of a fairly favourable expected development, even though economic growth is likely to slow slightly. There is certainly no need to talk of any more severe recession, or also to suggest some similarities to the developments in 2008 – 2009. Indication of such connections inadequately deepens negative expectations and thus can harm the economy.

REFERENCES

References (1st Chapter):

EC (2019a): Country Report Slovakia 2019. Communication from the Commission to the European Parliament, the European Council, the European Central Bank and the Eurogroup. Available at: <https://ec.europa.eu/info/sites/info/files/file_import/2019-european-semester-country-report-slovakia_en_0.pdf>.

HABRMAN, M. (2018): Dobiehame alebo nedobiehame ten západ? Bratislava: Institute for Financial Policy MF SR. Available at: <http://www.finance.gov.sk/Default.aspx?CatID=11650>.

INSTITUTE OF ECONOMIC RESEARCH SAS (2008): Dlhodobá vízia rozvoja slovenskej spoločnosti. Bratislava: Institute of Economic Research SAS. ISBN 978-80-224-1050-2.

LÁBAJ, M. (2018a): Produktivita, mzdové náklady a jednotkové náklady práce spracovateľského priemyslu v medzinárodnom porovnaní. In: Monitor hospodárskej politiky, 2018, No. 1, March. ISSN 2453-9287. Available at: <https://nhf.euba.sk/www_write/files/katedry/khp/MHP_03_18_final.pdf>.

MINISTRY OF FINANCE SR (2019): Rozpočet verejnej správy na roky 2019 až 2021 – schválený NR SR. Bratislava: MF SR. Available at: <https://www.finance.gov.sk/sk/financie/verejne-financie/rozpocet-verejnej-spravy/>.

ZEMAN, J. (2018): Income Distribution and Economic Growth; Empirical Results for Slovakia. [NBS Working Paper, 1/2018.] Bratislava: NBS. Available at: <https://www.nbs.sk/_img/Documents/PUBLIK/WP_1_2018_Zeman_Income_distribution_EN.pdf>.

References (2nd Chapter):

EUROSTAT (2019a): Annual Enterprise Statistics for Special Aggregates of Activities (NACE Rev. 2) – Structural Business Indicators. Brusel: Eurostat. Last update March 22, 2019.

EUROSTAT (2019b): Employment by A*10 Industry Breakdowns. Brusel: Eurostat. Last update April 12, 2019.

EUROSTAT (2019c): Gross Value Added and Income by A*10 Industry Breakdowns. Brusel: Eurostat. Last update April 12, 2019.

References (3rd Chapter):

CENTRAL COORDINATION BODY (2019): Štandardná monitorovacia tabuľka – Stav implementácie EŠIF podľa OP pre programové obdobie 2014 – 2020.

EPO (2019): European Patent Office. Statistics. Filings 2009 – 2018 per Country of Residence of the Applicant. Available at: <https:/www.epo.org/ about-us/annual-reports-statistics/statistics.html#applications>.

EC (2018): European Innovation Scoreboard 2018. Brusel: EUROPEAN COMMISSION. 102 p. ISBN 978-92-79-77622-9.

EC (2019): Digital Agenda Scoreboard Key Indicators. Brusel: European Commission. Available at: <https://digital-agenda-data.eu/datasets/ digital_agenda_scoreboard_key_indicators/visualizations>.

EUROSTAT (2019): Statistical Database Eurostat. Brusel: Eurostat. Available at:
<http://datacube.statistics.sk/TM1WebSK/TM1WebLogin.aspx>;
<http://ec.europa.eu/eurostat/data/browse-statistics-by-theme>.

FINANCIAL ADMINISTRATION SR (2019): Zoznam daňových subjektov, ktorí si uplatnili odpočet výdavkov na výskum a vývoj. Bratislava: Finačná správa Slovenskej republiky. Available at:
<https://www.financnasprava.sk/sk/elektronicke-sluzby/verejne-sluzby/ zoznamy/zoznam-danovych-subjektov-kto>.

INDUSTRIAL PROPERTY OFFICE OF SR (2017): Výročná správa 2017. Bratislava: Industrial Property Rights of the Slovak Republic. ISBN 978-80-88994-91-6. Available at:
<https://www.indprop.gov.sk/?vyrocne-spravy>.

SO SR (2018): Ročenka vedy a techniky v Slovenskej republike 2018. Bratislava: SO SR. 82 p. ISBN 978-80-8121-640-4.

References (4th Chapter):

COLSAF (2019): Database – Štatistiky zamestnávania cudzincov. Bratislava: COLSAF.

EUROSTAT (2019): Database Eurostat. Brusel: Eurostat.

HUDCOVSKÝ, M. (2015): Väzby makroekonomickej výkonnosti a zamestnanosti. [Dissertation thesis.] Bratislava: Národohospodárska fakulta Ekonomickej univerzity v Bratislave.

JANKOVIČ, P. – MANDŽÁK, P. (2019): Márny nábor do verejnej správy. In: Monitor hospodárskej politiky, EUBA, NHF, 2019, No. 1, pp. 6 – 9. Available at: <https://nhf.euba.sk/www_write/files/veda-a-vyskum/casopisy /monitor-hospodarskej-politiky/MHP_03_18_final.pdf>.

MORVAY, K. (2012): Štruktúrne špecifiká vývoja zamestnanosti a príjmov v SR a ich súvislosti s povahou ekonomického rastu. [Working Papers, 2012.] Bratislava: Institute of Economic Research SAS.

NBS (2019): Macroeconomic Database NBS. Bratislava: NBS.

OECD (2019): Database OECD.Stat. Paris: OECD.

SO SR (2019): Database Datacube. Bratislava: SO SR.

References (5th Chapter):

EUROSTAT (2019): Database Eurostat. Brusel: Eurostat.

MF SR (2018): 47. zasadanie výboru pre makroekonomické prognózy. Bratislava: Institute for Financial Policy MF SR. Available at: <https://www.finance.gov.sk/sk/financie/institut-financnej-politiky/ ekonomickeprognozy/makroekonomicke-prognozy/47-zasadnutie-vyboru-makroekonomicke-prognozy-februar-2019.html>.

NBS (2019): Macroeconomic Database NBS. Bratislava: NBS.

SO SR (2019): Database Datacube. Bratislava: SO SR.

References (6th Chapter):

ARELLANO, M. – BOND, S. (1991): Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations. The Review of Economic Studies, *58*, No. 2, pp. 277 – 297.

BARRO, R. J. – SALA-i-MARTIN, X. (2004): Economic Growth. 2nd Issue. Cambridge, MA: The MIT Press.

DRAGHI (2018): The Outlook for the Euro Area Economy. Available at: <https://www.ecb.europa.eu/press/key/date/2018/html/ecb.sp18111 6.en.html>.

ISLAM, N. (1995): Growth Empirics: A Panel Data Approach. Quarterly Journal of Economics, *110,* No. 4, pp. 1127 – 1170.

MANKIW, G. N. – ROMER, P. – WEIL, D. (1992): A Contribution to the Empirics of Economic Growth. Quarterly Journal of Economics, *107, No.* 2, pp. 407 – 437.

NICKELL, S. (1981): Biases in Dynamic Models with Fixed Effects. *Econometrica, 49,* No. 6, pp. 1417 – 1426.

PRAET (2018a): Forward Guidance and Policy Normalisation. Available at:
<https://www.ecb.europa.eu/press/key/date/2018/html/ecb.sp180917_1.en.html>.

PRAET (2018b): Preserving Monetary Accommodation in Times of Normalisation. Available at: <https://www.ecb.europa.eu/press/key/date/2018/html/ecb.sp181126.en.html>.

References (7th Chapter):

EUROPEAN COMMISSION (2018a): European Structural and Investment Funds Database. Brusel: EC. Available at:
<https://cohesiondata.ec.europa.eu/countries/SK>.

EUROPEAN COMMISSION (2018b): EU Expenditure and Revenue 2014 – 2020. Brusel: EC. Available at:
<http://ec.europa.eu/budget/figures/interactive/index_en.cfm>.

MF SR (2010): Rozpočet verejnej správy na roky 2011 až 2013. Bratislava: MF SR. Available at:
<http://www.finance.gov.sk/Default.aspx?CatID=7830>.

MF SR (2016): Stav čerpania Štrukturálnych fondov a Kohézneho fondu. Bratislava: MF SR.

MF SR (2019a): Plnenie štátneho rozpočtu. Bratislava: Ministerstvo financií SR. Available at:
<http://www.mfsr.sk/Default.aspx?CatID=10601>.

MF SR (2019b): Dlh ústrednej správy Slovenskej republiky. Bratislava: MF SR. Available at:
<http://www.finance.gov.sk/Default.aspx?CatId=7319&id=2016>.

NBS (2019): Macroeconomic Database NBS. Bratislava: NBS.

References (8th Chapter):

arisan.sk (2019): Nová daň z poistenia. Čo nám prinesie? Available at: <https://www.arisan.sk/sk/blog/dane-a-odvody/nova-dan-z-poistenia-co-nam-prinesie>.

BARTKO, T. (2018). Zmeny v Zákonníku práce od 01. 05. 2018. Available at: <https://www.podnikajte.sk/zakonne-povinnosti-podnikatela/zmeny-zakonnik-prace-1-5-2018>.

GOVERNMENT OFFICE OF SLOVAK REPUBLIC (2018): Návrh národných priorít implementácie Agendy 2030. Available at: <https://www.slov-lex.sk/legislativne-procesy/-/SK/dokumenty/LP-2018-296>.

MF SR (2018): Národný program reforiem Slovenskej republiky 2018. Bratislava: MF SR. Available at: <https://www.finance.gov.sk/sk/financie/institut-financnej-politiky/strategicke-materialy/narodny-program-reforiem/narodny-program-reforiem.html>.

najpravo.sk (2019): Dôvodové správy/2018. Available at: <https://www.najpravo.sk/dovodove-spravy/rok-2018/376-2018-z-z.html>.

NATIONAL COUNCIL SR (2019): Vládny návrh zákona o sociálnej ekonomike a sociálnych podnikoch a o zmene a doplnení niektorých zákonov. Available at: <https://www.nrsr.sk/web/Default.aspx?sid=zakony/zakon&MasterID=6651>.

OFFICE OF DEPUTY PRIME MINISTER OF SR FOR INVESTMENTS AND INFORMATIZATION (2018): Národný investičný plán SR na roky 2018 – 2030. [Pilot version.] Bratislava: Office of the Deputy Prime Minister of the Slovak Republic for Investments and Informatization.

WB (2018): Doing Business 2018. Reforming to Create Jobs. Washington, DC: International Bank for Reconstruction and Development/The World Bank. 303 p.

WB (2019): Doing Business 2019. Training for Reform. Washington, DC: International Bank for Reconstruction and Development/The World Bank. 302 p. Available at: <http://www.doingbusiness.org/content/dam/doingBusiness/media/Annual-Reports/English/DB2019-report_web-version.pdf>

References (9th Chapter):

DEMBIK, Ch. (2019): Úverový impulz opäť klesá. Svetovú ekonomiku čaká spomalenie. Available at: <https://finweb.hnonline.sk/komentare-a-analyzy/1902056-uverovy-impulz-opat-klesa-svetovu-ekonomiku-caka-spomalenie>.

EUROPEAN COMMISSION (2019): European Economic Forecast. Spring 2019. [Institutional Paper 102/May 2019.] Brusel: EC. PDF. ISBN 978-92-79-98849-3; ISSN 2443-8014. Available at: <https://ec.europa.eu/info/sites/info/files/economy-finance/ip102_en.pdf>.

IFP (2019): Makroekonomické prognózy. Február 2019. Available at: <https://www.finance.gov.sk/sk/financie/institut-financnej-politiky/ekonomicke-prognozy/makroekonomicke-prognozy/47-zasadnutie-vyboru-makroekonomicke-prognozy-februar-2019.html>.

IMF (2019): World Economic Outlook, April 2019. Available at: <https://www.imf.org/external/pubs/ft/weo/2019/01/weodata/index.aspx>.

LÁBAJ, M. (2018): (Ne)efektívne využívanie výrobných faktorov a rozdiely v produktivite práce v rámci spracovateľského priemyslu na Slovensku. In: Monitor hospodárskej politiky 2018, No. 2, June. Available at: <https://nhf.euba.sk/www_write/files/veda-a-vyskum/casopisy/monitor-hospodarskej-politiky/MHP_06_18_final.pdf>.

MORVAY, K. ET AL. (2018): Hospodársky vývoj Slovenska v roku 2017 a výhľad do roku 2019. Bratislava: Bratislava: Institute of Economic Research SAS. ISBN 978-80-7144-288-2. Available at: <http://www.ekonom.sav.sk/sk/publikacie/-p381>.

NBS (2019): Strednodobá predikcia NBS. Bratislava: NBS. Available at: <http://www.nbs.sk/sk/publikacie/strednodoba-predikcia/strednodoba-predikcia-2019>.

OBADI S. M. a kol. (2018): Vývoj a perspektívy svetovej ekonomiky: Pozitívny výhľad a hroziaca obchodná vojna. Bratislava: Institute of Economic Research SAS. ISBN 978-80-7144-294-3.

PROJEKTGRUPPE GEMEINSCHAFTSDIAGNOSE (2019): Gemeinschaftsdiagnose 1/2019: Konjunktur deutlich abgekühlt – Politische Risiken hoch. Frühjahr 2019. Available at: <http://gemeinschaftsdiagnose.de/wp-content/uploads/2019/04/GD1_2019_final_20190408.pdf>.

RADVANSKÝ, M. – LICHNER, I. (2019): Strednodobá prognóza vývoja ekonomiky SR v rokoch 2019 – 2022. In: Slovenská štatistická a demografická spoločnosť: Pohľady na ekonomiku Slovenska 2019. Available at: <http://ssds.sk/publikacie/pes/pes2019.pdf>.

HABRMAN, M. (2018): Dobiehame alebo nedobiehame ten západ? Institute for Financial Policy MF SR. Available at: <http://www.finance.gov.sk/Default.aspx?CatID=11650>.

MINISTRY OF FINANCE OF THE SLOVAK REPUBLIC (2018): Rozpočet verejnej správy na roky 2018 až 2020 – schválený NR SR. Available at: <http://www.finance.gov.sk/Default.aspx?CatID=11521>.

MORVAY, K. (2015): Príčiny zmien vo vývoji funkčnej štruktúry príjmov v slovenskej ekonomike. In: Journal of Economics, Series *63*, No. 9. ISSN 0013-3035.

ZEMAN, J. (2018): Income distribution and economic growth; empirical results for Slovakia. NBS Working Paper, 1/2018. Available at: <https://www.nbs.sk/_img/Documents/PUBLIK/WP_1_2018_Zeman_Income_distribution_EN.pdf>.

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Focused on: Interrupted Convergence

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