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Inspire Policy Making with Territorial Evidence

EMPLOY SLOVAKIA
Final report
17.06.2021

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Geography of new employment dynamics in Slovakia

EMPLOY SLOVAKIA
Case study report

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Executive summary

In the early 2000s Slovakia successfully implemented deep structural reforms and became one of Europe's rising economic stars. After the financial and economic crisis of 2008, the Slovak economy lost its momentum in the following years and has since not over-performed the other countries of Central Europe in the same way it did before the Great Recession. The economic development was hampered by high levels of corruption (also in the judicial system), weak public administration and low levels of digital public services, the extreme fragmentation of local self-government, low spending on education, the outflow of smart students who chose to study abroad, the outflow of skilled workforce and the orientation on low value-added industry among other factors.

To get back on track, Slovakia needs to implement policies supporting the move from low value-added to high value-added industries. Otherwise, it risks falling into what is known as the 'middle income trap', where a country is no longer able to grow depending on the availability of cheap labour and capital, but it is not able to shift towards a growth model based on high productivity and innovation. The Slovak economy relies on manufacturing to a greater extent than is the case in most EU Member States. In terms of value added, the Slovak manufacturing sector is highly heterogenous – some factories are very modern and fully integrated in global production networks, which makes them able to benefit from technological developments, while many small and medium enterprises are visibly lagging behind the technology curve. Nonetheless, overall the importance of high-tech activities in the Slovak economy is increasing. Between 2008 and 2019 employment in the Slovak high-tech sector grew from 88 000 to 117 200 employees. The share of employment in technology, the ICT and knowledge-intensive sectors is roughly on par with the EU but Slovakia lags behind with respect to employment in the knowledge-intensive market services. The country is about to face several important challenges in the near future. The Slovak population, while still relatively young, is ageing quickly and the level of the Slovak youth in maths, reading, information and communication technology (ICT) skills and in digital literacy is decreasing or stagnating at the best. The digital competences of the adult population are low and therefore limit the development of the knowledge economy, particularly in the central and eastern parts of the country. The economy offers a production platform for the European automotive and electronic industries, but the share of jobs threatened by automation is among the highest in the OECD. The automotive industry directly employed over 15 % of the Slovak labour force in 2019 – the highest rate in the EU (the average is 8.5 %). Slovakia needs to improve the skills and adaptability of the labour force to new trends in digitalisation and automation technologies.

Efforts and policy priorities need to be refocused on the in-house innovation and R&D activities developed by the small and medium enterprises (SMEs). SMEs are the backbone of the economy in the country. In 2019 they accounted for three-quarters of employment (the EU average is 66 %) and 55 % of GDP (the EU average is 56 %). The vast majority (97 %) are micro firms with fewer than 10 employees. During the 2014–2018 period, SMEs created 154 000 new jobs (out of which 115 800 were created by micro firms), almost five times the total of 32 000 jobs created by large firms in Slovakia. The specialisation of Slovak SMEs in the knowledge-intensive services and high-tech manufacturing sectors is one of the lowest in the EU. The low levels of R&D expenditure reduce the innovation potential of SMEs and their capacity to add more jobs to the economy. Interviews with key stakeholders highlighted a need for a more comprehensive reform in the public administration at the local level. The guiding principles of future reform of regional governance should be the principle of subsidiarity, and the intra-municipal cooperation. The competencies and responsibilities of regional self-government need to be (re)defined with respect to the local conditions. Communication and cooperation between stakeholders at the local level is very rare. Several positive examples illustrate how the dialogue between public administration offices and the private sector was efficient to solve acute societal problems in local communities.

The total spending on education in Slovakia is low in comparison to neighbouring countries and the EU average. The spending on tertiary education has even decreased over the recent years. Slovakia has no university in the top 500 ranking of the world's best universities. Slovak universities are not competitive internationally and therefore less appealing to young Slovaks, who seek education abroad. Over the last decade the number of tertiary-educated Slovaks has grown twice as fast as the EU average but overall, tertiary attainment rates remain below the EU average. Almost half of young women (25 to 34 years old) and a third of young men are tertiary-educated. Due to the demographic development and the high outflux of young Slovaks to foreign universities (the highest in the EU after Luxembourg) the number of university students enrolled at Slovak universities is quickly decreasing. Worryingly, the decline is greatest in the

science and technology study fields. Only medical study fields retain a stable number of students. Slovak tertiary education is relatively closed to international influences; the numbers of foreign teachers and students are less than half of the OECD average.

The Slovak labour force is becoming more educated over time, but high-skilled workers are unequally distributed in the country. In Bratislava, almost half of the labour force has tertiary education while it is only a quarter of the labour force in other regions. Most high-tech services and industries are located in the western part of Slovakia, and the Bratislava region also concentrates most employment opportunities in creative and cultural industries. Regional differences in incomes and unemployment rates exhibit only little convergence over time. The gross monthly wages in Bratislava (EUR 1 359 in 2019) remain on average 160 % above those in the Prešov region and 150 % above the wages in the Nitra region. Over the past decade the unemployment rate in Bratislava remained approximately three times lower than in the eastern regions.

The Covid-19 pandemic will have a devastating impact on Slovakia in terms of both economy and loss of human life. Before 2020, the labour market was performing very well in spite of GDP growth not reaching the pre-crisis levels, pushing wages up and reducing the unemployment rate. The labour market was tight and vacancy rates were at historically high levels across the country. The pandemic reversed these positive trends. In 2020, unemployment started to grow and jobs were scarce. Data from the profesia.sk job portal indicate that demand for open vacancies in the public sector increased the most. The pandemic thus provides a unique opportunity for the state administration to recruit the best candidates from a large pool of applicants. Many businesses managed the adverse impact of the pandemic through leaning on the reserves generated in the good times, curbing investment and in some cases, laying off workers and decreasing salaries. The number of new businesses emerging during 2020 was five times greater than the number of businesses that closed down.

The negative social and economic consequences related to the Covid-19 pandemic were mitigated by measures taken to support the Slovak economy. New types of social benefits in the form of pandemic sickness and nursing allowances were approved by the Ministry of Labour, Social Affairs and Family. The Government approved financial contributions to help employees, entrepreneurs and the self-employed maintain jobs within the so-called First Aid, First Aid + and First Aid ++ packages. The schemes are non-repayable and co-financed by the European Social Fund. These emergency measures prevented a sharp rise in unemployment in Slovakia and a deterioration in economic development.

The pandemic forced many employers to adopt remote working arrangements as a common form of work. The expansion of teleworking largely depends on the employment structure and sectoral specialisation. Many high-skilled jobs in knowledge and ICT-intensive services could be done from home, but very few jobs in agriculture, manufacturing and the service sector. Around half of workers in Slovakia use ICT equipment at work while it is two-thirds in the EU. The share of employed people working from home regularly or at least some of the time before 2020 was 10 % in Slovakia in comparison to 15 % at the EU-27 level. Early data illustrate that around 30 % of workers in Slovakia started to telework due to the outbreak of Covid-19. The prevalence of teleworking was different between regions, depending on the structure of their economy.

The pandemic accentuated the long-term problems in the Slovak education system including the overloaded educational programmes, interregional and social inequalities in access to education, and less focus on developing digital competences for students and teachers. It is estimated that 52 000 (7.5 %) students in primary and secondary schools were not able to attend online classes in spring 2020 due to a lack of electronic devices or an internet connection, and another 130 000 students (18 %) were not educated online. The quality of education in the online environment was often insufficient and only one-fifth of children received a proper education on an online platform including regular interactions with teachers. Digital competences of teachers were insufficient as only 1 out of 5 teachers had sufficient digital competencies. Schools need to establish uniform rules for online communication and continuous IT and methodological guidance. Activities to inspire teachers leading online classes and helping students to attend remote education should be fostered.

The education quality of the labour force as an obstacle to the development of business is increasingly cited in Slovak business surveys. The adult proficiency in computer skills at the highest level lags behind the advanced economies and more than one-third of the adult population have no or only limited ability in using computers. The transition towards the information society would also require changes in the school curricula,

fostering ICT competences from an early age. Access to early childhood programmes, and a high-quality education should be available to all students irrespective of their socio-economic status and location. Socio-economic inequalities in educational outcomes in Slovakia are above the OECD average. The pandemic has exposed and often amplified the existing inequalities in the education system.

The pandemic accelerates the pace of modernisation and makes businesses evolve to digital. The higher demand for workers with digital competences after the pandemic will increase the need for learning opportunities. Slovakia should take steps to support lifelong education and training by creating a national network of training providers to support SMEs. Lifelong learning is still underdeveloped in Slovakia. The quality and relevance of vocational education and training can be improved by implementing a dual scheme combining education and employment. Tertiary education programmes can have a greater professional focus, and new vocational programmes at the bachelor's level can be established. The national campaigns such as 'ICT skills for employees' may be effective in improving digital competences and increase SMEs' motivation to create ICT-intensive jobs.

Slovakia should use the available skilled labour force more effectively. Younger women are more likely than younger men to attain tertiary education, but female labour force participation is visibly below the male labour force participation. Women's careers are restrained after childbirth. To unlock the potential of women, studies recommend reducing maximum parental leave, while expanding affordable and quality childcare. The enrolment rates in early childhood education particularly for children under the age of three remains substantially below the OECD average.

The government should implement migration programmes to facilitate immigration of qualified workers and help companies to hire workers under specific admission conditions. Slovakia has one of the lowest rates of highly skilled foreigners from outside the EU immigrating with an EU Blue Card. Recent immigration is dominated by young migrants between 16 and 24 years old who arrive in Slovakia for economic purposes, and their employment rate is high. The government needs to strengthen the rights of immigrants, including the protection of foreign workers at the workplace, their work safety and their right to decent work standards. Slovakia ranks in the bottom position of 52 countries in the Migrant Integration Policy Index (MIPEX). In addition, Slovaks hold some of the most negative attitudes in the European Union towards immigrants and refugees. The successful integration of immigrants and their children is vital for social cohesion, and contributes to the population's acceptance of further immigration.

The Slovak government is committed to achieve 17 agreed objectives of the 2030 Agenda for Sustainable Development. 'Leave no-one behind' is the guiding principle of the Agenda and shall be considered in the process of national employment strategy. Poverty and social exclusion are highly prevalent among Roma communities. Many Roma people live in isolated communities with limited access to education, health, employment and other public services. Roma households are not sufficiently captured in the standard household surveys, hence problems specific to Roma households are not visible in many official population statistics. The pandemic slowed economic growth, increased unemployment and has had a damaging effect on many people. The policies promoting integration and social cohesion are even more important in the post-pandemic period.

Introduction

In the early 2000s, Slovakia successfully implemented deep structural reforms that significantly improved the business environment and helped Slovakia to become one of Europe's rising economic stars. The implemented reforms touched every area of the public sector including the restructuring and privatisation of the banking sector, a new law on bankruptcy, strengthened rights of creditors, public finance reform, tax reform, pension reform, labour market liberalisation and flexibilisation, social assistance reform, health care reform, public administration reform and fiscal decentralisation.

Slovakia joined the OECD in 2000, entered the European Union and NATO in 2004 and adopted the euro currency in 2009. The high economic growth between 2000 and 2008 was primarily driven by foreign direct investments (FDI) into the automotive and electronics industries. Slovakia benefited from cheap and skilled labour, and good infrastructure. The high exposure to international markets became problematic in the economic crisis of 2008; FDI inflows have been subdued since the crisis and the Slovak economy did not retain its strength.

During the 2010s the economic development in Slovakia was hampered by high levels of corruption (also in the judicial system), weak public administration and the low level of digital public services, the extreme fragmentation of local self-government, the outflow of talented students who chose to study at universities abroad, the outflow of skilled workers, and the orientation to low-value-added industries among others (OECD, 2019a; EC 2020a; Fidrmuc et al., 2019; Szczurek and Tomaszewski, 2017).

This report builds upon the ESPON EMPLOY project that evaluated regional indicators related to labour market and education; migration and population dynamics; knowledge economy (KE) incidence; and socio-economic context in the EU Member States. In the case of Slovakia, the findings of the report point to high territorial segmentation. The Bratislava region in particular stands out with high values for KE indicators, favourable labour market and socio-economic conditions, and a positive population dynamic in comparison to other regions in the country.

This report further elaborates the evidence that emerged from the ESPON EMPLOY project. The report draws on desk research based on academic literature, policy reports and available data from national and international databases. Interviews with relevant experts and policymakers provide additional inputs for the analysis. The Covid-19 situation did not allow us to organise focus groups as originally planned. Instead, we organised semi-structured interviews with key stakeholders including trade union officials, mayors, academic scholars and government experts.

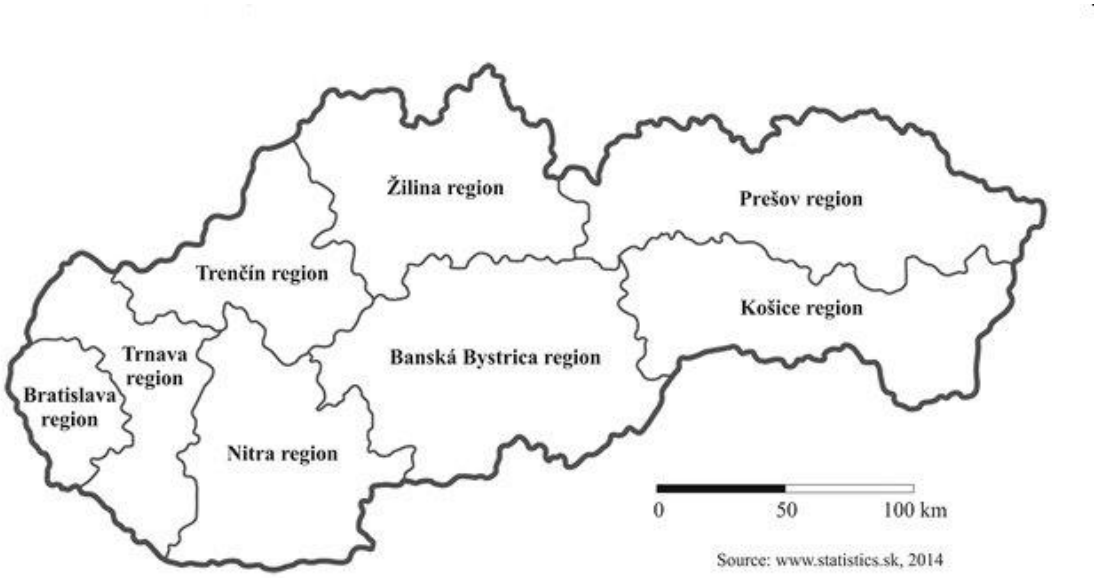
The report focuses on the developments from 2013 to 2020 and brings attention to the impact of the Covid-19 pandemic. It presents the evolution of regional socio-economic and labour market conditions, business demography, education trends, and population and migration dynamics with a focus on the likely effects of the knowledge economy (KE) on all of these aspects. It also summarises the development of policies and institutions in the relevant areas vis-à-vis the recommendations of international organisations.

1 The country profile

Slovakia presents a highly fragmented municipal structure with highly unequal economic conditions. The country has a population of 5.452 million and 2 890 settlements. Around a half of the population (53 %) resides in 141 urban areas (cities or towns) but many people reside in small villages (1 900 villages have fewer than 1 000 inhabitants). The country is administratively divided into eight regions at the NUTS-3 level. For the ease of presentation throughout the report, we focus on regional disparities at the NUTS-2 level in the Bratislava region, western regions (including Nitra, Trenčín and Trnava), the central regions (Banská Bystrica, Žilina), and the eastern regions (Košice, Prešov).

This section presents the evolution of regional socio-economic and labour market conditions, education trends, and population and migration dynamics since 2013. The assessment is based on the most recent data available at national and regional level.

Figure 1.1
Map of Slovak regions (NUTS-3)



1.1 Socio-economic, employment and territorial conditions

1.1.1 Evolution of demographic conditions and migration

The population of Slovakia is younger relative to the EU average but **the process of population ageing in Slovakia is one of the fastest in the EU**. The current median age of the Slovak population is 41 years and it is projected to increase by 8 years by 2050 (EU-27's median age is projected to increase by 4.5 years).[1] Between 2013 and 2019 the average age in Slovakia increased from 39.6 to 41. Population ageing will likely translate to lower labour force participation, and may lead to a slowdown of investment and hamper economic growth. The population residing in urban areas is 1.2 year older in comparison to rural areas, but the share of working age population is identical across urban and rural areas, at 68 %. The population growth

[1] https://ec.europa.eu/eurostat/statistics-explained/index.php/Ageing_Europe_-_statistics_on_population_developments

is positive. Between 2013 and 2019 the population increased by 42 000 and the fertility rate rose from 1.34 to 1.56; the highest number of births per population is recorded in the Bratislava region.

The demographic development contributes to the shortage of workers in Slovakia. The period after the fall of the Iron Curtain in 1989 was marked by rapid political and societal changes. The population born in the late 1970s shifted childbearing to later years and the country registered negative population growth during 2001–2003. The fertility rate in the early 2000s reached the lowest values – around 1.2. Only since 2017 has the fertility rate reached values above 1.5.[2] The low number of births throughout the late 1990s and early 2000s thus contributed to the low inflows of 20-year-olds to the labour market as seen in Figure 1.2. Since 2015, the outflow of workers over the age of 64 years has exceeded the number of graduates entering the labour market. **The shrinking labour force will contribute to the labour shortages in the coming years** (Lichner et al., 2018).

Figure 1.2
Labour supply development in the Slovak labour market

Source: Lichner et al. (2018)

The internal migration within Slovakia remains low. The growing differences in the cost of living and a limited rental market prevent low-skilled internal migration. In 2019 around 105 000 people (1.8 % of the population) officially changed their place of residence, up from 90 000 in 2013.

Historically, Slovakia is a country whose residents used to migrate abroad for work. **Emigration of young and highly educated Slovaks intensified after Slovakia entered the EU.** It is estimated that approximately 300 000 (5.5 % of the population) left Slovakia between 2002 and 2012. The propensity to leave Slovakia is higher among medical graduates, and people from the eastern regions where job opportunities for university graduates are scarce. Haluš et al. (2017) show that the emigration in Slovakia is economically motivated, as the probability of emigration substantially increases when people become unemployed. Authors find that about **half of Slovaks who emigrated after 2000 did not return until 2015**. Rizman and Sacherová (2018) show that until 2015, the net migration of Slovak nationals was negative but this trend reversed in 2016 when more Slovaks returned home than left the country in the same year. Table 1.1 shows that the migration dynamics of Slovak people are higher relative to the migration dynamics of foreign nationals.

[2] https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Fertility_statistics

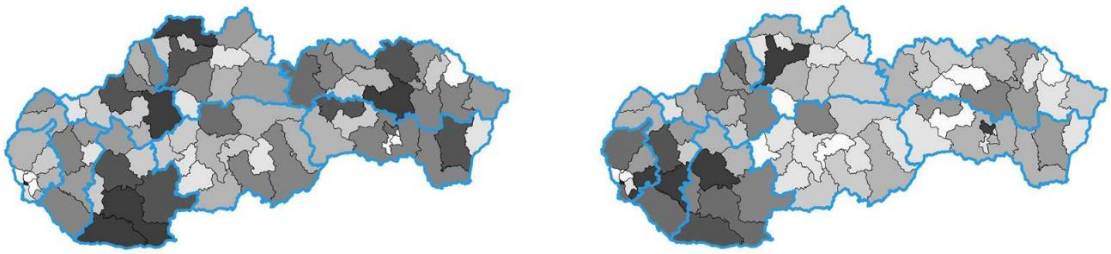
Many Slovaks return home for family reasons and the majority of them remain in Slovakia for the long term (Rizman and Sacherová, 2018). Slovak nationals return more often to central and eastern regions, i.e. the regions with the highest outflow of Slovaks. In contrast, foreign nationals are typically located in Bratislava and the western regions, i.e. in regions with the best employment opportunities (Figure 1.3).

Table 1.1
Immigration and emigration statistics (in thousands), 2013 and 2017

	2013	2017
Immigration		
Slovak nationals	27.1	30.2
EEA nationals	7.3	18.9
Third-country nationals	1.6	5.3
Emigration		
Slovak nationals	46.8	31.2
EEA nationals	6.3	8.0
Third-country nationals	0.5	0.7

Source: Rizman and Sacherová (2018)

Figure 1.3
Geographical distribution of immigrating Slovak (left) and foreign nationals (right)



Source: Rizman and Sacherová (2018)

Note: The location is defined based on the place of employment in the first year of arrival. The darker the colour, the higher the number of people employed in the location.

In 2015 the Ministry of Labour and Social Affairs adopted the first motivation scheme to facilitate the return home of skilled Slovaks. The scheme offered a one-time bonus to returning experts who took on employment in academic institutions or in the public sector in Slovakia. Nonetheless, due to the strict conditions associated with this support and relatively small bonus amounts (EUR 10 000–50 000 bonus based on seniority) the scheme had only a negligible impact on return migration. The scheme attracted fewer than 10 experts per year between 2015 and 2018, when it was available.

Slovakia is not a typical destination for immigrants, which is also due to a cumbersome immigration policy. In 2020 **the share of foreigners in Slovakia remained low at 2.75 %, which is the third lowest figure in the EU**.[3] At the same time, Slovakia is largely unaffected by humanitarian migration flows. With the exception

[3] https://www.iom.sk/sk/migracia/migracia-na-slovensku.html

of 2016, when a group of Iraqi refugees were relocated to Slovakia, the number of granted asylums remains low and typically does not exceed 10 per year.[4]

A total of 61 highly skilled foreigners from outside the EU immigrated to Slovakia with the EU Blue Card between 2013 and 2019.[5] To qualify for the EU Blue Card, immigrants have to prove they have a university education and an employment contract for a minimum of one year, with income above 150 % of the average income in the industry of employment. Slovakia has one of the lowest rates of EU Blue Cards per population in the EU.

The inflow of foreign population to Slovakia accelerated only in economically successful years shortly before the pandemic, and it was driven by the shortage of low-skilled workers in some sectors. Based on the statistics collected by the Bureau of Border and Foreign Police, **the number of foreign citizens with valid residence permit doubled from 71 649 in 2013 to 143 075 in 2019**. The recent immigrants to Slovakia originate mostly from countries outside the EU, as their numbers have increased from one-third of the total migrant population in 2013 to almost two-thirds in 2019.

More detailed information (including gender, age and region of residence) on foreigners applying for work permits is available from 2015. Overall, the foreign population grew by 54 % between 2015 and 2019. The most substantial increase (around 350 %) in the foreign population occurred in the age group 16–24 in the western and eastern regions. This age group includes foreigners predominantly from Serbia and Ukraine who are attracted to enterprises located in Trnava, Košice and Prešov districts. Interestingly, new foreign inflows are gender balanced in Bratislava and western regions but dominated by male foreigners in central and eastern regions. The majority of foreigners arriving in Slovakia are motivated by working opportunities. Less than 10 % enter through a family reunion visa. In 2019, two-thirds of foreigners resided in Bratislava and western regions. Almost 90 % of foreigners in Slovakia are of working age.

Table 1.2
Foreign population characteristics, changes between 2015 and 2019

	Bratislava	Western	Central	Eastern	Slovakia
Year: 2019					
Male	29 754	31 395	13 190	17 030	91 369
Female	17 517	14 253	7 296	10 058	49 124
Age 0–15	3 957	2 220	1 245	1 762	9 184
Age 16–24	5 449	5 116	2 490	4 993	18 048
Age 25–65	36 121	36 058	15 363	18 524	106 066
Age 66+	1 744	2 254	1 388	1 809	7 195
% change 2019–2015					
Male	54 %	54 %	45 %	75 %	56 %
Female	50 %	57 %	33 %	50 %	49 %
Age 0–15	96 %	83 %	86 %	114 %	95 %
Age 16–24	203 %	348 %	243 %	371 %	282 %
Age 25–65	43 %	47 %	31 %	48 %	43 %
Age 66+	−10 %	-14 %	−6 %	−9 %	−11 %

Source: Bureau of Border and Foreign Police statistics

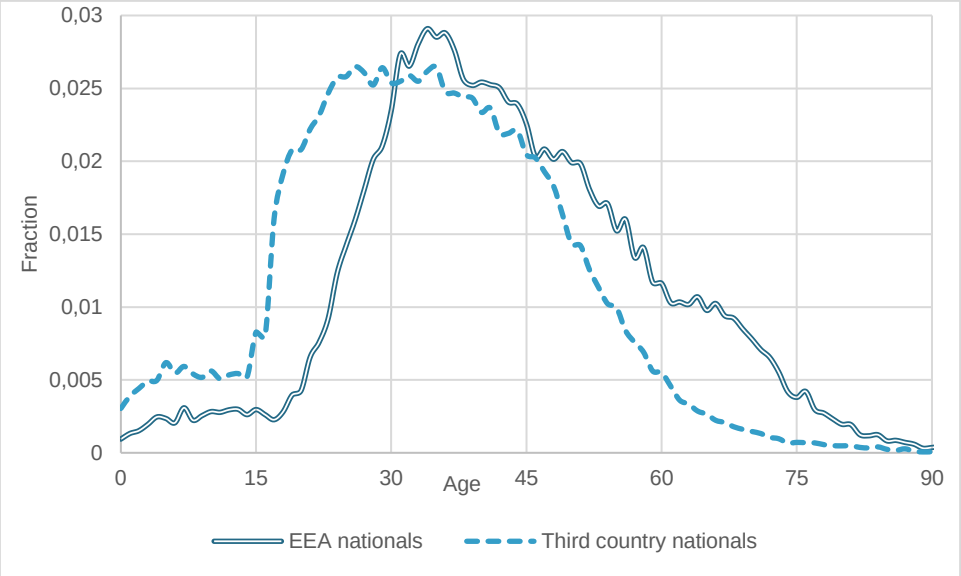
Migrant workers are successful in the labour market. The characteristics of migrants differ according to their origin (Figures 1.4 and 1.5). EEA nationals are older and their earnings are high. EEA migrants on average earn 50 % more relative to Slovak workers in all age cohorts. The high average earnings of EEA nationals are likely driven by high wages in managerial positions in the private sector. Third-country nationals

[4] https://www.minv.sk/?statistiky-20

[5] https://ec.europa.eu/eurostat/databrowser/view/migr_resbc1/default/table?lang=en

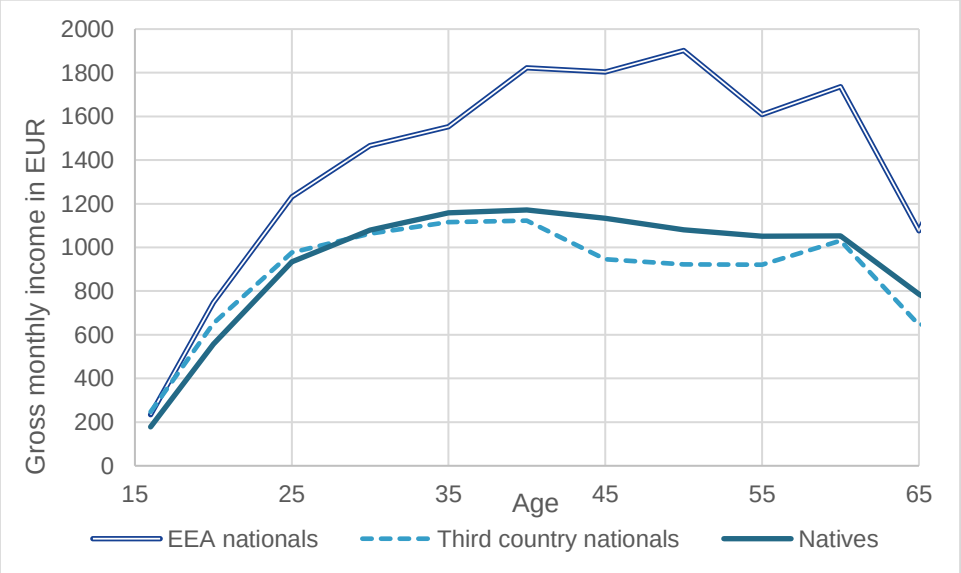
(TCN) are younger and they earn less than Slovak workers except for young cohorts. Young TCNs (below 30 years old) earn more than young Slovaks. It seems that many young Slovaks seek better paid jobs abroad and their positions are filled with young migrants from countries outside the EU. Young migrants are paid less relative to older Slovak workers, hence the migrant employment benefits employers as well.

Figure 1.4
The age distribution of migrant population, 2019



Source: Domonkos (2021)

Figure 1.5
The gross monthly income of native and migrant populations, 2019



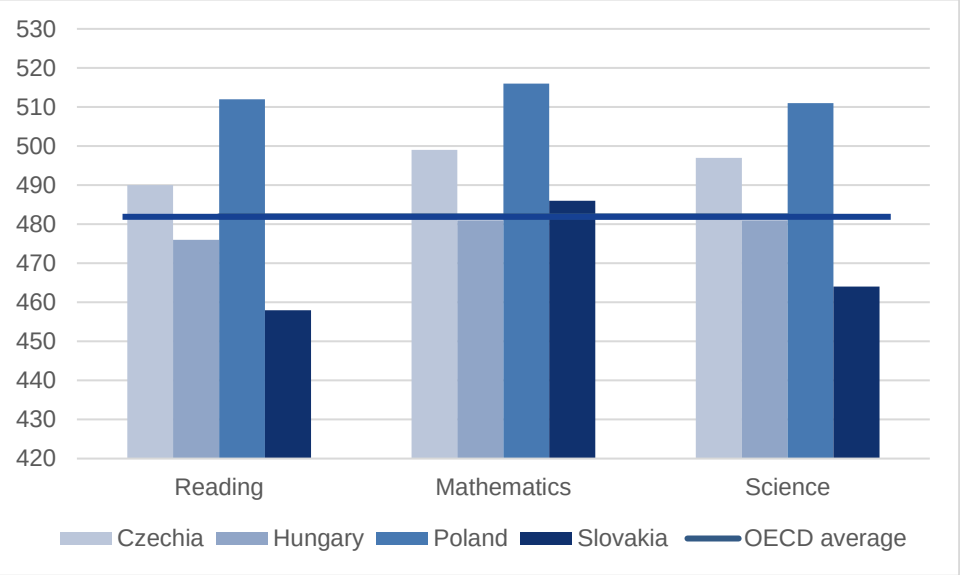
Source: Domonkos (2021)

Note: Lines represent earning age profiles of the native and migrant (total, EEA and TCN) population. For presentation purposes, lines are smoothed.

1.1.2 Skills and educational levels

The legacy of socialism has resulted in a nearly universal secondary education attainment and as a result, only very few Slovaks remain uneducated. Nonetheless, the skill level of 15-year-old Slovaks tends to be just average in mathematics and below average in reading and science. Slovakia scores are visibly lower than in the neighbouring countries. Even more worrying is the trend of continuous decline in the performance of Slovak youth vis-à-vis the young people in other OECD countries.

Figure 1.6
Average performance of 15-year-olds in Slovakia and neighbouring countries, 2018



Source: PISA

One possible reason behind the poor performance of young Slovaks is the relatively low spending on education in Slovakia, which is significantly lower relative to neighbouring countries and the EU average. Another possible cause may be the high share (42 %) of students in vocational secondary education, with a relatively low focus on academic excellence. In 2019 the expenditure on education in Slovakia was at 4.2 % of GDP compared to the EU average of 4.7 %.[6]

The **spending on tertiary education in Slovakia is very low in comparison to neighbouring countries** and it decreased most in Slovakia in relative terms between 2013 and 2019. The total spending on education in Slovakia and Czechia increased between 2013 and 2019, while it shows the opposite trend in other countries. The financing of tertiary institutions is not targeted to support the quality of universities, which is reflected in the poor performance of Slovak universities in global rankings (Table 1.4). Slovakia has never had a university in the top 500 ranking of the world's best universities; Slovak universities are not competitive internationally and therefore less appealing to young Slovaks who seek education abroad.

The attainment rates of upper secondary education are above the OECD average (OECD, 2019a). Tertiary attainment rates are below the average of advanced economies although the rates are increasing. The number of tertiary-educated Slovaks has grown by 18 percentage points, twice as fast as the EU average over the last decade (OECD, 2020), although it remains under the EU average of 44 %. Young women are more likely than young men to attain tertiary education in all EU countries already in 2009 but the gender gap has increased in 2019. Similarly, in Slovakia the share of tertiary attainment rose from 17 to 31 % for men, and from 24 to 48 % for women (i.e. gender gap in education attainment rose from 7 % to 17 %). The increase in tertiary attainment of Slovak women has been among the fastest in the EU over the past decade.

[6] https://ec.europa.eu/eurostat/statistics-explained/index.php/Government_expenditure_on_education#Expenditure_on_.27education.27

Table 1.3
Education spending in Slovakia and neighbouring countries (% of GDP)

	Austria	Czechia	Hungary	Poland	Slovakia	EU27
Year: 2019						
Pre-primary and primary education	1.5	1.1	1.2	2.2	1.2	1.6
Secondary education	2	2.2	1.8	1	1.4	1.8
Tertiary education	0.7	0.8	0.9	1.2	0.6	0.8
Total	4.8	4.9	4.7	5	4.2	4.7
% change 2019–2013						
Pre-primary and primary education	7 %	0 %	33 %	22 %	33 %	0 %
Secondary education	−9 %	22 %	20 %	−33 %	0 %	−5 %
Tertiary education	−13 %	−11 %	0 %	−14 %	−25 %	0 %
Total	−4 %	9 %	0 %	−6 %	2 %	−4 %

Source: Eurostat (variable gov_10a_exp)

Note: Some components of expenditure on education are not listed so the figures do not add up to the total.

Table 1.4
Comparison of the number of universities in the top 1 000 and the ranking of the highest ranked university in the country (in brackets) in Slovakia and neighbouring countries

	QS World University Rankings 2021	Times Higher Education Impact Rankings 2021	Academic Ranking of World Universities (Shangai Ranking) 2020
Czechia	10 (260)	4 (401–500)	7 (201–300)
Hungary	8 (501–510)	5 (401–500)	3 (601–700)
Poland	15 (321)	3 (501–600)	7 (301–400)
Slovakia	4 (651–700)	0	1 (601–700)

Source: Own elaboration

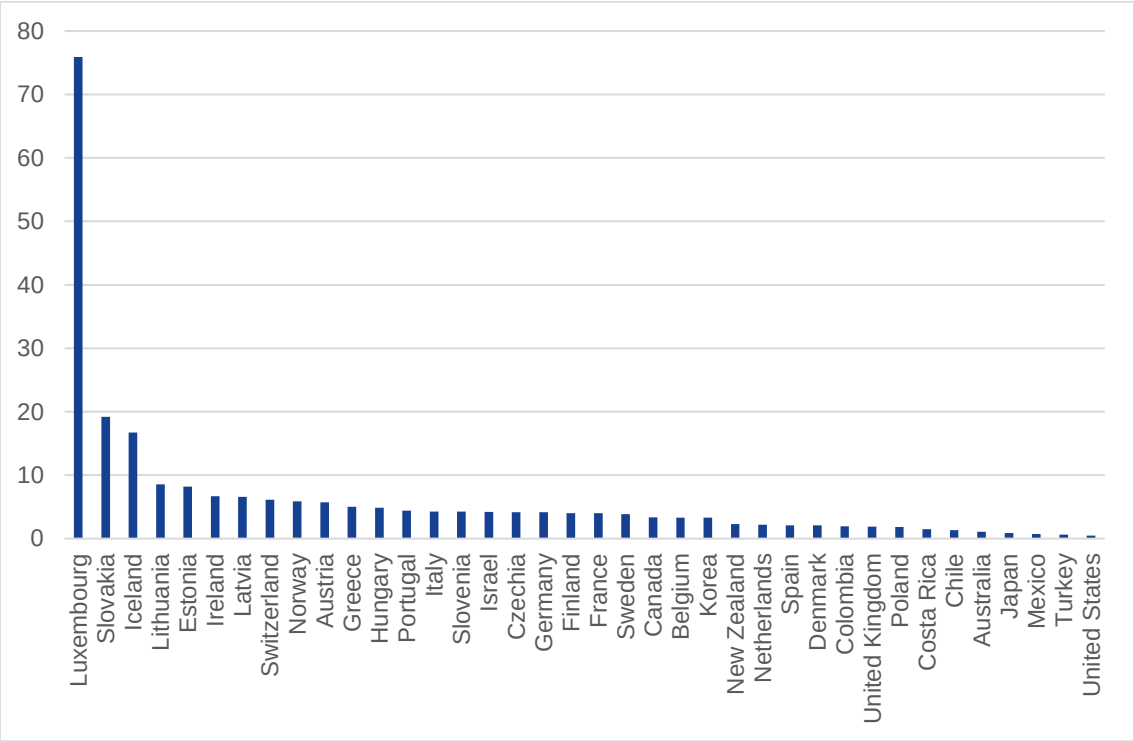
Table 1.5
Trends in educational attainment of 25–34 year-olds (%, by gender)

Year	Education level	Slovakia		EU-23	
		Men	Women	Men	Women
Year: 2009	Below upper secondary	5	5	19	15
	Upper secondary	77	71	52	45
	Tertiary	17	24	29	40
Year: 2019	Below upper secondary	9	9	15	11
	Upper secondary	60	43	47	37
	Tertiary	31	48	38	51
% change 2019–2009	Below upper secondary	80	80	−20	−24
	Upper secondary	−22	−39	−8	−17
	Tertiary	82	100	28	28

Source: Own elaboration based on OECD data https://doi.org/10.1787/69096873-en

The quantitative expansion of tertiary education has come at the price of lower perceived quality, resulting in an outflux of young Slovaks to foreign universities. Currently, only Luxembourg has more students going abroad for higher education, despite the fact that university attendance is largely free of charge in Slovakia (Figure 1.7).

Figure 1.7
Percentage of students enrolled abroad in 2018



Source: OECD (2020)

The tertiary attainment rates are growing but the number of enrolled students in Slovak public universities has been decreasing – from 118 000 in 2013 to 87 000 in 2019. **The falling number of university students is due to the demographic development and the high outflux of young Slovaks to foreign universities**. The number of university graduates decreased from 37 000 to 27 000 over the same period. **Worryingly, the decline of students (graduates) has been the greatest in STEM fields, a decline of 44 % (37 %) for science and 30 % (35 %) for technology study fields** respectively. Only medical fields retain a stable number of students.

Table 1.6
Number of Slovak students graduating from public universities by programme

Study field	2019		%change 2019–2013	
	Students	Graduates	Students	Graduates
Science	4 203	1 477	−44 %	−37 %
Technology	21 493	6 321	−30 %	−35 %
Agriculture	3 272	1 118	−33 %	−23 %
Healthcare	9 401	1 877	1 %	−1 %
Social science	44 710	14 899	−26 %	−27 %
Arts	2 846	891	-17 %	−30 %
Military	912	294	−20 %	−10 %

Source: Slovak Centre of Scientific and Technical Information

Foreigners' children have access to free public schools in Slovakia; school attendance is compulsory until the age of 17. According to school registry data, in the 2019/2020 school year, there were 3 864 foreign children (1 381 in 2013) enrolled in all primary schools and 1 882 foreign students (520 in 2013) enrolled in all secondary schools. In 2019, approximately two in five foreign children were enrolled in schools in Bratislava. With the increasing number of foreigners in Slovakia, the enrolment of children with foreign nationality in primary and secondary schools increases as well. Their numbers have risen across all regions, but mostly in regions with the highest inflow of young foreigners over the period (e.g. the western regions).

In Slovakia, the admission to tertiary education is only possible with passing a school-leaving exam from secondary school (the so-called maturita exam). **Almost half of secondary school pupils enrol at a Slovak university and rates are very even across regions.** It seems that access to tertiary education is not an obvious limitation in Slovakia and universities are open to foreign students. Access to public universities in the Slovak programme is free apart from foreign language programmes, which have tuition fees. In 2019 there were 4 788 foreign students (13 % of all students) admitted to Slovak higher education institutions, most of which are located in Bratislava. The number of foreign students follows a positive trend, increasing from 3 013 (6.8 % of all students) in 2013.

Table 1.7
Enrolment in education by foreign students and school type, changes between 2019 and 2014

School type	Bratislava	Western	Central	Eastern	Slovakia
Year: 2019					
Primary school	1 664	1 147	459	594	3 864
Secondary school	710	423	208	548	1 889
% change 2019–2014					
Primary school	199 %	239 %	110 %	122 %	180 %
Secondary school	297 %	160 %	201 %	403 %	263 %

Source: Own elaboration based on registry data of Slovak Centre of Scientific and Technical Information

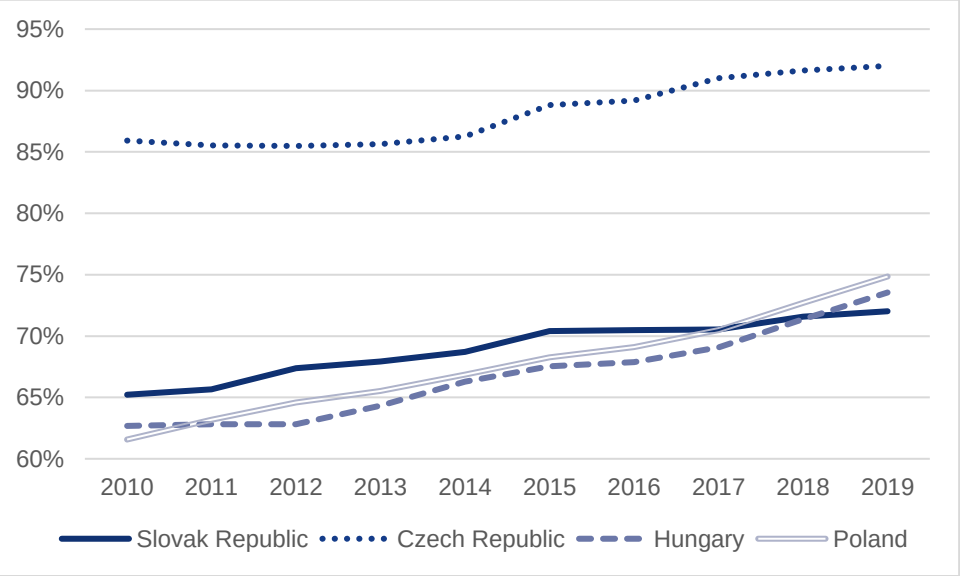
Lifelong learning is still underdeveloped in Slovakia and there is no systematic support for it. The country exhibits one of the lowest participations in education or training among EU-27 countries. The percentage of workers in Slovakia in education or training has increased from 3.1 % in 2013 to 3.6 % in 2019, but it is far below the EU-27 level of 10.8 % in 2019. Slovakia has no counselling facilities for lifelong learning and typically on-the-job training is offered by employers. Companies provide training primarily to employees who are not sufficiently qualified for the position.

1.1.3 Evolution of economic conditions

During the 2010s the economic development in Slovakia was rather sluggish in comparison to neighbouring countries. In 2013, the Slovak economy reached 68 % of EU average GDP per capita in purchasing power standard (PPS). Other countries in Central and Eastern Europe have grown faster than Slovakia since 2013. In 2019, the Slovak economy was at 72 % of the EU average GDP per capita in PPS, and fell behind Hungary and Poland.

The stagnation of the Slovak economy has been interpreted in the context of the 'middle-income trap' – a failure to switch from extensive growth fuelled in mainly downstream FDI towards a growth model based on innovation and higher value-added activities (Myant, 2018). To escape the middle-income trap and to move from low value-added to high value-added industries, countries should focus on improving their competitiveness. Meanwhile, there are other structural problems on the horizon. **The Slovak population, while still relatively young, is ageing quickly and the level of the Slovak youth in maths, reading, information, and communication technology (ICT) skills and digital literacy is decreasing or stagnating at best. The share of jobs threatened by automation is among the highest in OECD.** The deep differences in the country's regional economic development as well as between urban and rural areas threaten to undermine the social fabric of the Slovak society. Little progress has been made in the inclusion of Roma communities (FRA, 2016; EC, 2018). Likewise, the fight against corruption appears to be a project for the long term.

Figure 1.8
GDP per capita in % of EU (in PPS, constant 2017 international $)



Source: Own elaboration based on World Bank data (variable NY.GDP.PCAP.PP.KD_DS2)

The Slovak economy is strongly tied to the EU economic development. Real GDP grew between 2 % and 4 % over recent years. In 2018, Slovakia recorded a +3.8 % growth that slowed down to + 2.3 % in 2019. **The economic growth pushed wages up and unemployment down**. The average national gross monthly wage increased from EUR 824 in 2013 to EUR 1 092 in 2019, or 32 %. The wage growth during this period was weakest in the Bratislava region (29 %) and strongest in the western regions (35 %). Regional disparities in wage differences however remain substantial. The gross monthly wages in Bratislava (EUR 1 359 in 2019) remain on average 160 % above those in the Prešov region and 150 % above wages in the Nitra region.

The unemployment rate has fallen from 13.5 % in 2013 to below 5 % in 2019, a historically record low level although regional disparities remain high. The Bratislava and western regions record unemployment rates below 3%, while the eastern regions register an unemployment rate slightly below 8 %. Interestingly, throughout the years the unemployment rate in Bratislava remains approximately three times lower than in the eastern regions, indicating little convergence between regions.

Table 1.8
Economic conditions in regions: changes between 2019 and 2013

	Bratislava	Western	Central	Eastern
Year: 2019				
Regional GDP per capita	38 836	15 039	13 103	11 848
Gross value added at basic prices	22 833	24 650	15 751	17 261
Number of self-employed	48 082	119 046	91 806	90 086
Labour costs per employee	25 607	18 890	18 298	17 402
% changes 2019–2013				
Regional GDP per capita	12.4 %	17.8 %	21.3 %	26.7 %
Gross value added at basic prices	18.7 %	16.2 %	19.6 %	26.5 %
Number of self-employed	−3.4 %	2.6 %	3.0 %	7.9 %
Labour costs per employee	30.0 %	44.2 %	37.7 %	33.4 %

Source: Own elaboration based on data from Slovak Stat Office

The development of economic conditions is illustrated by regional GDP, gross value added (representing the contribution of labour and capital to the production process), self-employment and labour costs. **The changes between 2013 and 2019 point to some convergence between Bratislava and the other regions.** Regional GDP and gross value added grew faster in poorer regions. The number of self-employed declined in Bratislava while it grew elsewhere, although the interpretation of this trend would require a deeper analysis, due to the risk of some people being involved in bogus self-employment. The labour costs per employee grew most in the western region, likely driven by the high concentration of the automotive industry and the shortage of workers in this region.

The small and medium enterprises (SME) are the backbone of the economy in Slovakia. In 2019 they accounted for 75 % of employment (EU average is 66 %) and 55 % of GDP (EU average is 56 %). In 2019 there were 595 371 SMEs – a record high number in Slovakia (SBA, 2021). Czechia and **Slovakia have more than 100 SMEs per 100 000 inhabitants, which is the highest level in the EU**. The vast majority (97 %) are micro firms with fewer than 10 employees. Slovak SMEs employ 2.5 people on average, below the EU average of 3.9. During the 2014–2018 period, SMEs created 154 000 new jobs (out of which 115 800 were created by micro firms), almost five times the total of 32 000 jobs created by large firms in Slovakia (EC, 2020b).

The demography of Slovak businesses shows a significant growth in recent years. Between 2013 and 2019 the number of SMEs grew by 5.7 % nationally, with the highest rate (7.2 %) in Bratislava, and the lowest (3.6 %) in the western regions. Due to recent changes in corporate taxation, a limited liability partnership (the limited partnership with a general partner) is the preferred form of legal entity for SMEs compared to self-employment. This is documented by the steep growth of limited liability companies over the last five years and the decrease in self-employment.

Table 1.9
SMEs in regions: changes between 2019 and 2013

	Bratislava	Western	Central	Eastern
Year: 2019				
SMEs	130 498	186 618	139 888	138 367
% change 2019–2013				
SMEs	7.2 %	3.6 %	6.1 %	6.7 %

Source: Slovak Business Alliance

1.1.4 Labour market and social conditions

The economy is driven by the manufacturing industry and the automotive sector in particular, with large foreign direct investments. Slovakia is home to several car producers located in Bratislava (Volkswagen), western (Peugeot, Jaguar Land Rover) and central (Kia Motors) regions. Passenger car production was above 1.1 million units in 2019, making Slovakia the largest automobile producer for cars per capita. The automotive industry directly employed over 15 % of the Slovak labour force in 2019, the highest rate in the EU (average is 8.5 %). Car producers employ 130 000 workers directly and another 250 000 workers are employed indirectly in the automotive industry. Manufacturing jobs are mostly concentrated in the western regions.

The regional disparities are salient with respect to the education level of the labour force. In general, the **Slovak labour force is becoming more educated over time, although the regional distribution of workers is not evenly spread with respect to their education levels**. In Bratislava, almost half the labour force has tertiary education while it is only a quarter of the labour force in other regions. In relative terms, regions with fewer tertiary-educated workers in 2013 had increased their numbers the most by 2019. This may point to some convergence between regions, albeit at very slow pace.

Table 1.10
Employment by education level (thousands of workers): changes between 2019 and 2013

Education level	Bratislava	Western	Central	Eastern	Slovakia
Year: 2019					
Primary	50.2	291.7	182.6	188.4	712.9
Secondary	136.7	398.2	299.5	331.6	1 166
Tertiary	164.4	200.1	153.4	186.8	704.7
% changes 2019–2013					
Primary	−18.9 %	−4.3 %	−2.8 %	−20.6 %	−10.0 %
Secondary	1.7 %	5.4 %	13.5 %	22.4 %	11.4 %
Tertiary	38.2 %	40.7 %	36.6 %	59.2 %	43.6 %

Source: Own elaboration based on Labour Force

The **labour market mismatch** measures the efficiency of human capital allocation and has relevance to the KE. Mismatches increase labour productivity gaps and reduce the ability of the economy to fully use the existing stock of human capital. The match between education level and occupation is based on the LFS data using a statistical approach (ILO, 2018). The required level of education in each of the 41 occupation groups (defined by ISCO-2 level) is determined by the median worker. A worker is considered as overeducated or undereducated if the level of education is greater or lower than the level of education of the median worker in the same occupation group. The three education levels considered include primary and lower secondary, upper secondary and tertiary education.

In general, the risk of underqualification is higher for the older generation, while the risk of overqualification is higher for youth. This relates to the high importance of education in today's society. Young cohorts attain higher education than their parents and the required education level in occupations is increasing. In 2013 22 % of occupations required tertiary education, while it was 29 % six years later.

Table 1.11
Labour market mismatches: changes between 2019 and 2013

	Bratislava	Western	Central	Eastern
Year: 2019				
Overeducation				
age 20–34	16 %	16 %	14 %	16 %
age 35–49	11 %	8 %	8 %	12 %
age 50–64	12 %	7 %	8 %	6 %
Undereducation				
age 20–34	10 %	10 %	9 %	8 %
age 35–49	12 %	11 %	9 %	9 %
age 50–64	17 %	13 %	11 %	10 %
% change 2019–2013				
Overeducation				
age 20–34	−35 %	9 %	−24 %	−15 %
age 35–49	−40 %	−16 %	−4 %	50 %
age 50–64	−27 %	12 %	−14 %	−6 %
Undereducation				
age 20–34	47 %	36 %	20 %	−15 %
age 35–49	103 %	56 %	2 %	−12 %
age 50–64	70 %	−11 %	−30 %	−30 %

Source: Own elaboration based on Labour Force Survey

In 2013, Bratislava had the largest overqualification and lowest underqualification rates in comparison to the other regions. Between 2019 and 2013 the regional mismatch differences narrowed and the share of overeducated or undereducated workers became more even between regions in 2019. **The Bratislava**

region currently has the highest risk of underqualification, which points to the high qualification requirements for workers.

Wages in the Slovak economy are rising. The average gross monthly wage grew from EUR 824 to EUR 1 133 (or by 37 %) between 2013 and 2020.[7] Over the same period, the minimum gross wage grew by 71 % from EUR 338 to EUR 580. **In 2020, the minimum wage reached 51 % of the average wage in gross terms and 55 % in net terms.** That is a significant improvement from 2013 (see Table 1.12). Given the large wage disparities between regions, **the ratio of minimum wage to average wage in the eastern regions is much higher**.

The **adequacy of wages** is more important. The interviews with key stakeholders highlighted the problem of the low disposable incomes in Slovakia. Some 10–15 % of employees are formally employed on part-time contracts for pay below the mandatory minimum wage, and presumably receive unofficial income on the side (Palenik, 2019). The number of employees regularly paid below the minimum wage and without other legal income doubled between 2012 and 2019 (Palenik, 2020). The practice is more widespread in accommodation and food, wholesale and retail, and construction sectors. The number of employees regularly receiving a salary below the minimum wage is higher in mostly rural areas with fewer job opportunities. The observations are made based on administrative records and need to be confirmed by labour inspections.

Table 1.12
Minimum wage to average wage comparison (in EUR), 2013–2020

	2013			2020		
	Minimum wage	Average wage		Minimum wage	Average wage	
	(1)	(2)	(1)/(2)	(3)	(4)	(3)/(4)
Gross terms	338	824	41 %	580	1 133	51 %
Net terms	292	637	46 %	476	865	55 %

Source: Own elaboration based on Labour Force Survey

The existing economic disparities between regions also influence the **income poverty and financial difficulties faced by households**. The at-risk-of-income-poverty indicator is based on a relative income comparison, therefore the risk of income poverty is higher in the relatively poorer regions of central and eastern Slovakia. **The groups most affected by income poverty are individuals with lower education and families with children in central and eastern Slovakia.** Between 2013 and 2019, the risk of income poverty declined in richer regions but increased in poorer regions. This result is likely to be attributable to the growing income disparities between regions. The poverty indicator based on relative income may therefore not identify the households coping with financial difficulties in more affluent regions. The bottom panel in Table 1.12 presents the share of households experiencing difficulty or great difficulty in making ends meet. This indicator is based on subjective perceptions of a household's financial situation and it provides contrasting evidence. **Between 2013 and 2019 households in all regions apart from Bratislava improved their financial situation, partly due to increasing wages and stable prices.** The cost of living in Bratislava remains high and one-third of households in Bratislava have to cope with financial difficulties, while these rates are 20 % lower in other regions. The financial difficulties of the tertiary-educated and people aged 25–39 in Bratislava are salient (and have improved only by little since 2013) and are likely to reflect the high housing cost in Bratislava.

[7] Data portal of Slovak Statistical Office, http://datacube.statistics.sk/, variable pr0204qs. Statistics based on the Structure of earnings in the Slovak Republic suggest the wage increased from EUR 912 to EUR 1 262 (or by 38 %) over the period.

Table 1.13
The risk of income poverty and financial difficulty: changes between 2019 and 2013

	Bratislava	West	Central	East
Year: 2019				
Female	4 %	8 %	16 %	17 %
Male	4 %	7 %	15 %	17 %
Age 0–24	5 %	8 %	24 %	26 %
Age 25–39	4 %	6 %	14 %	16 %
Age 40–59	2 %	6 %	13 %	14 %
Age 60+	6 %	9 %	11 %	9 %
Education – primary	17 %	16 %	34 %	38 %
Education – secondary	4 %	6 %	11 %	12 %
Education – tertiary	1 %	3 %	6 %	4 %
% change 2019–2013				
Female	−46 %	−31 %	15 %	10 %
Male	−46 %	−41 %	20 %	6 %
Age 0–24	−56 %	−49 %	20 %	24 %
Age 25–39	−42 %	−40 %	43 %	5 %
Age 40–59	−75 %	−44 %	2 %	−12 %
Age 60+	81 %	36 %	45 %	23 %
Education – primary	9 %	−18 %	41 %	51 %
Education – secondary	−48 %	−31 %	−6 %	−9 %
Education – tertiary	−58 %	−38 %	34 %	−34 %

Source: Own elaboration based on Statistics on Income and Living Conditions

Table 1.14
Financial difficulty: changes between 2019 and 2013

	Bratislava	West	Central	East
Year: 2019				
Female	33 %	26 %	27 %	34 %
Male	32 %	24 %	23 %	32 %
Age 0–24	30 %	22 %	26 %	38 %
Age 25–39	35 %	22 %	24 %	32 %
Age 40–59	26 %	24 %	21 %	31 %
Age 60+	39 %	32 %	31 %	29 %
Education – primary	45 %	46 %	45 %	55 %
Education – secondary	37 %	24 %	23 %	30 %
Education – tertiary	22 %	14 %	12 %	19 %
% change 2019–2013				
Female	6%	−28 %	−23 %	−20 %
Male	−1%	−29 %	−31 %	−24 %
Age 0–24	−11 %	−39 %	−34 %	−15 %
Age 25–39	34 %	−29 %	−27 %	−17 %
Age 40–59	−28 %	−28 %	−32 %	−25 %
Age 60+	37 %	−20 %	−8 %	−33 %
Education – primary	−16 %	−2 %	−8 %	2 %
Education – secondary	9 %	−31 %	−33 %	−29 %
Education – tertiary	−3 %	−34 %	−34 %	−29 %

Source: Own elaboration based on Statistics on Income and Living Conditions
Note: Financial difficulty measures the proportion of households experiencing difficulty or great difficulty in making ends meet.

Social exclusion is defined in relation to the working capacity of all household members. Poverty and social exclusion are highly prevalent among **Roma communities** who make up around 8 % of the population. Many Roma people live in isolated communities with limited access to education, health, employment and other public services. They attain low educational levels and present low life expectancy. Roma households are not sufficiently captured in the standard household surveys, hence problems specific to Roma households are not visible in many official population statistics.

Households with low working intensity (below 75 % of their available working capacity) are concentrated in the **eastern regions, which is also the poorest region**. The prevalence of low working intensity is higher among young and lower-educated individuals. The geography is important for the labour prospects of the tertiary-educated, because the risk of low work intensity for them in the eastern regions is two times higher than in Bratislava.

Table 1.15
People with low work intensity, 2019

	Bratislava	Western	Central	Eastern
Female	13 %	21 %	26 %	34 %
Male	17 %	23 %	29 %	36 %
Age 0–24	27 %	32 %	42 %	49 %
Age 25–39	18 %	31 %	34 %	43 %
Age 40–59	13 %	24 %	30 %	38 %
Education – primary	30 %	20 %	35 %	46 %
Education – secondary	8 %	19 %	22 %	28 %
Education – tertiary	15 %	19 %	19 %	27 %

Source: Own elaboration based on Statistics on Income and Living Conditions

Note: Social exclusion measures the proportion of households working below 75 % of their available working capacity.

Social capital contributes positively to a well-functioning society. The approximations of social capital are based on the European Social Survey data collected in 2012/13 (6th wave) and in 2019 (9th wave) in Slovakia. The comparison of individual responses from the two waves indicates the changes in levels of social capital.

Social capital takes a multifaceted perspective in the literature and is often measured by the array of indicators as illustrated below. The Bratislava region provides contrasting evidence, that institutional (political) trust has increased over the studied period but trust in other people and religious involvement has declined at the same time. The Bratislava region has improved attitudes towards immigrants.

Interestingly, people in all regions show higher trust in institutions (parliament, justice system, policy, politicians, political parties and the European Parliament) in 2019 relative to 2013. The higher trust in political institutions in Bratislava and western regions is somewhat compensated by a lower trust in other people. Over the same time, the central and eastern regions have become more trusting towards both institutions and other people. **The views towards immigrants have improved in Bratislava, but have become more negative in other regions.**

Religion is another factor to measure people's degrees of social capital. Religious belonging is conducive to social capital by connecting people to one another. Our indicators give a tentative confirmation that the two measures are intertwined. Regions becoming less trusting towards other people also exhibit a drop in religious involvement and in individual religiosity.

Measures of social capital of a community are positively correlated with political turnout, hence the voter turnout in the local elections can indicate the engagement in a community. Based on official election results, the turnout has increased by 10 percentage points for regional election between 2013 and 2017 while it remained identical for municipal elections organised in 2014 and 2018. Turnout in regional elections has increased in all regions by at least 40 %, and that is good news. Except for Bratislava, turnout in municipal elections remained unchanged between the previous two subsequent rounds.

Table 1.16
Social capital level in regions: changes between 2019 and 2013

Indicator	Bratislava	Western	Central	Eastern
% change 2019–2013				
Trust in country's parliament	3.4	3.8	3.6	3.5
Trust in the legal system	4.7	4.2	4.3	3.8
Trust in the police	5.1	5.4	5.1	4.8
Trust in politicians	3.9	3.6	3.1	2.8
Trust in political parties	3.7	3.7	3.5	3.2
Trust in the European Parliament	4.1	4.5	4.5	4.5
Trust in the United Nations	5.0	5.3	4.9	4.7
Trust in people	2.6	3.4	4.5	4.2
Immigration is good for economy	4.2	3.5	3.4	3.8
Belonging to particular religion or denomination	0.7	0.6	0.8	0.8
How religious are you	5.5	5.4	5.8	6.6
% change 2019–2013				
Trust in country's parliament	13 %	35 %	0 %	10 %
Trust in the legal system	37 %	35 %	23 %	28 %
Trust in the police	20 %	37 %	18 %	17 %
Trust in politicians	27 %	43 %	6 %	9 %
Trust in political parties	22 %	46 %	20 %	28 %
Trust in the European Parliament	4 %	39 %	7 %	26 %
Trust in the United Nations	18 %	24 %	10 %	13 %
Trust in people	−20 %	−22 %	4 %	12 %
Immigration is good for economy	13 %	−11 %	−12 %	−5 %
Belonging to particular religion or denomination	−7 %	−16 %	3 %	2 %
How religious are you	−4 %	−10 %	3 %	2 %

Source: Own elaboration based on ESS 6th and 9th rounds.

Note: Trust and immigration questions are measured on scale from 1 to 5, with higher values indicating more trust and a positive effect of immigration. Religious belonging is a yes/no question, and religiosity is measured on the scale from 0 to 10.

Table 1.17
Voter turnout: changes between two subsequent rounds

Indicator	Bratislava	Western	Central	Eastern
Year: 2018				
Voting in municipal election 2018	31 %	26 %	37 %	28 %
Voting in regional election 2017	44 %	49 %	50 %	50 %
% change from last election rounds				
Voting in municipal election	29 %	1 %	−3 %	−1 %
Voting in regional election	45 %	48 %	60 %	41 %

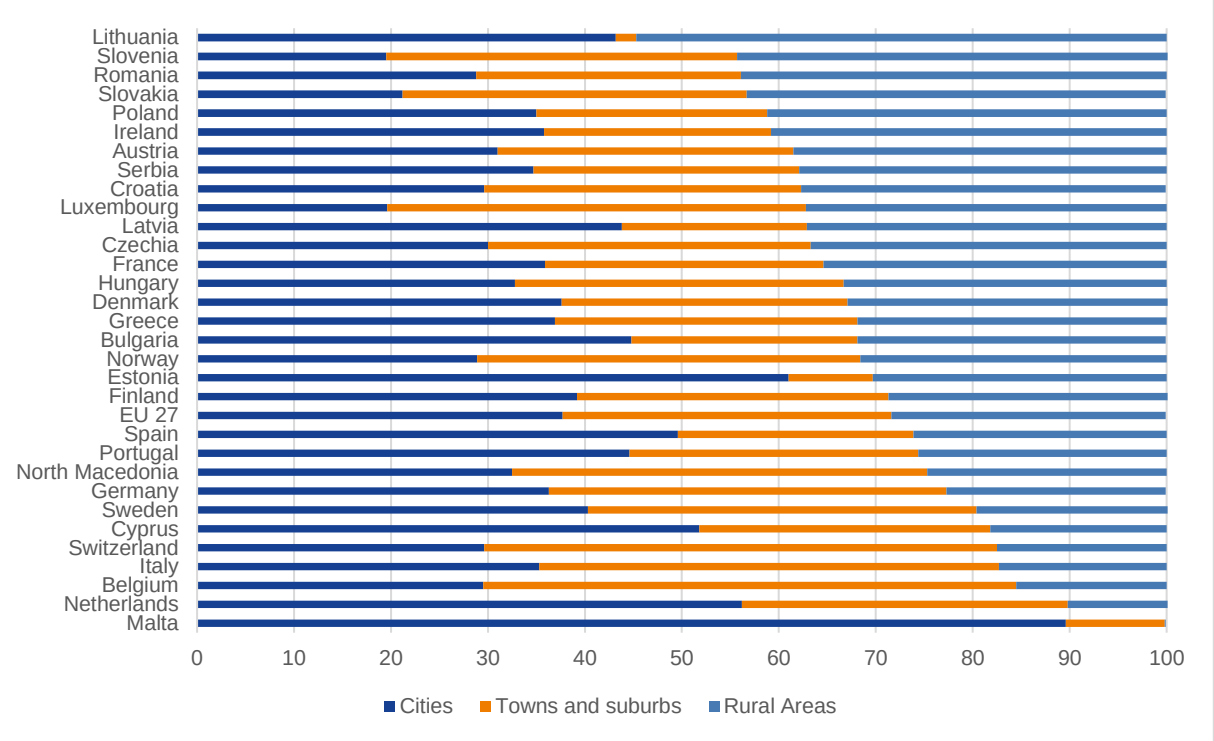
Source: Own elaboration based on official election results.
Note: Election turnout is taken in 2013 and 2017 for regional elections; and in 2014 and 2018 for municipal elections.

1.1.5 Urban/rural areas relations

The country is characterized by predominantly rural regions. Approximately 43 % of the population resides in rural areas, which is the fourth highest share of rural population in the EU. Another 36 % of Slovaks live in small towns and suburban areas, a share that has grown in recent years as suburban areas have expanded in the vicinity of the major cities. In particular, **the two cities in Slovakia with a population of over 100 000 inhabitants** – **Bratislava, the capital located in the west of the country, and Košice**

located in the east – **have experienced urban sprawl dynamics in recent decades**. The rural population of Slovakia covers most of the country's 2 890 municipalities, many of them comprising just a few dozen people. Policy incentives to merge small municipalities have faced resistance from local inhabitants and as a result, have been largely unsuccessful. The co-existence of a large number of very small, depopulating villages and fast-growing urban and suburban areas has created pressure on transportation, provision of public services, social cohesion and other policy areas.

Figure 1.9
Degree of urbanisation of European countries



Source: Eurostat

People residing in Slovak cities face the lowest risk of poverty and social exclusion in the EU although this is based on relative income, which in Eastern Europe generally fails to adequately capture whether households actually have sufficient resources to secure a decent living (Fabo and Guzi, 2019).

Slovakia has the highest number of cross-border commuters as the share of employed population in the EU. Around 5.5 % of the employed population in Slovakia crossed the border to go to work in 2018.[8] The term 'pendlers' was established that refers to workers who have permanent residence in one state, while they have an employment contract in a neighbouring state. The pendlers regularly cross state borders in order to commute to/from a neighbouring state for work. The regular commuting patterns between regions are shown in Table 1.18. Mainly due to suburban development in the metropolitan area of Bratislava, the western regions have the most commuters to Bratislava (7.6 %). In 2019, almost 140 000 workers commuted daily to Bratislava from neighbouring areas that are all in the western regions.[9] In general, the workers in central and eastern regions are more likely to work abroad (most work in Austria and Czechia) than workers in Bratislava and western regions.

[8] https://www.bruegel.org/2020/02/as-the-coronavirus-spreads-can-the-eu-afford-to-close-its-borders/

[9] https://refresher.sk/66353-Do-Bratislavy-pride-priblizne-140-000-cepeckarov-kazdy-den-Podrobna-mapka-aj-s-cislami-prezradza-odkial

Table 1.18
Commuting patterns between region of residence and region/country of work, 2019

Region/country of work	Bratislava	Western	Central	Eastern
Bratislava	98.1 %	7.6 %	2.6 %	1.7 %
Western	1.6 %	91.2 %	1.5 %	0.5 %
Central	0.0 %	0.5 %	93.9 %	0.6 %
Eastern	0.0 %	0.0 %	0.3 %	96.1 %
Austria	0.2 %	0.4 %	0.5 %	0.2 %
Czechia	0.0 %	0.3 %	1.2 %	0.9 %
Other countries	0.1%	0.7 %	0.6 %	0.1 %

Source: Own elaboration based on LFS 2019

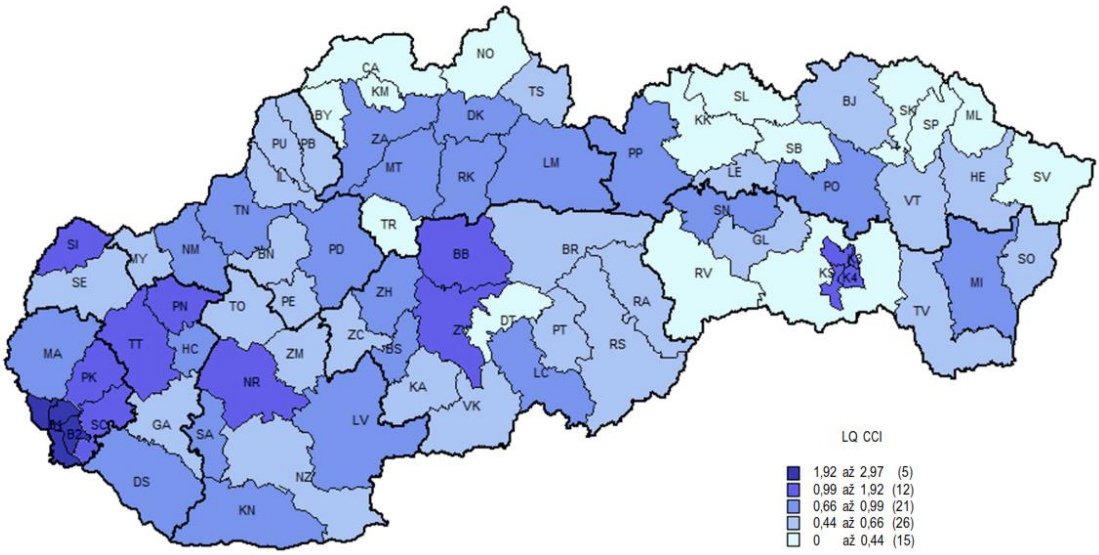
The pandemic has made regular commuting to cities from surrounding rural and semi-urban areas more complicated. This issue became particularly salient for people commuting to Bratislava from locations on the Austrian and Hungarian side of the border, as well as those commuting from rural regions close to the borders with urban centres located in neighbouring countries, due to the closure of borders. Fortunately, there is no difference in internet access between urban and rural localities. Nowadays the fast broadband internet connection has become equally widespread in the rural areas as in the cities.

2 The knowledge economy (KE), and recent trends

The ESPON working definition of knowledge economy (KE), understands KE as an economy 'able to produce new knowledge from technologically advanced sectors and/or functions present in a territorial area and/or where knowledge is obtained through links (formal or informal) with other economies' (Busetti et al., 2017). According to this definition, the KE encompasses both the knowledge production in the territory of Slovakia itself and knowledge transfer from countries closer to the global technology frontier to Slovakia.

Alexy et al. (2018) constructed the composite indicator of creativity based on the measures of talent, technology and tolerance. **Slovakia ranks 26th in creativity among the EU-28 countries and is among the countries that register only a small growth in creativity within the 10-year period 2005–2014.** The geographic distribution of companies in the creative sector (including architecture, marketing, design and fashion design, publishing, ITC services, music, film, photography, television and art services) is unequal (Balog et al., 2014). The majority of companies in the creative and cultural sectors are located in Bratislava (42 %) and the western (25 %) regions compared to 16 % in the eastern regions. These companies are small; three out of four companies are solely owned or with one employee, and less than 5 % of companies employ more than 10 employees.

Figure 2.1
Distribution of the cultural and creative industry in Slovakia, 2010



Source: Balog, et al. (2014)

Note: Darker colours represent higher share of firms engaged in the cultural and creative industry relative to the country average.

Alexy et al. (2018) define two groups of creative occupation (creative core, creative professionals) based on the occupation classification at the 3-digit level (ISCO-08).[10] The concentration of the creative core class in

[10] The creative core includes physicists, chemists and related professionals; mathematicians, statisticians and related professionals; computing professionals; architects, engineers and related professionals; life science professionals; health professionals (except nursing); college, university and higher education teaching professionals; secondary education teaching professionals; primary and pre-primary education teaching professionals; special education teaching

Bratislava is almost double relative to other regions. Since 2013 the employment in creative core occupations has increased most in Bratislava while it has decreased in creative professional occupations. Other regions have recorded the overall growth of employment in creative occupations by 14–16 % since 2013.

Table 2.1
Share of employment in creative occupations, 2013

	Bratislava	Western	Central	Eastern
Year: 2019				
Creative occupations	26 %	16 %	16 %	14 %
- Creative core	9 %	4 %	5 %	5 %
- Creative professionals	17 %	12 %	11 %	10 %
% change 2019–2013				
Creative occupations	1 %	22 %	13 %	17 %
- Creative core	57 %	26 %	10 %	12 %
- Creative professionals	−14 %	21 %	13 %	19 %

Source: Own elaboration based on LFS,

Note: Creative occupation are defined based on Alexy et al. (2018).

The orientation of economy on the manufacturing industry entails high risks in terms of job automation. Nedelkoska and Quintini (2018) show that the **structure of Slovak economy involves the highest risk of job automation among 32 OECD countries** in the study. Less than one-third of jobs are at low risk of automation in Slovakia. The occupations with a rather high risk of automation typically do not require specific skills or require interacting with machines (e.g. machine operators, workers in the processing industry, skilled agricultural workers). To mitigate these risks Slovakia will need to invest into the upskilling and retraining of workers. Other countries (e.g. Korea) prevent the risk of job automation by combining social and creative tasks together with routine tasks. ICT can act like a skill-augmenting technology, and better skilled people make more creative and more productive use of it. The occupations that use ICT more frequently are marked with a lower risk of automation implying that highly educated users of ICT are expected to be in greater need. The study also shows that the high risk of job automation in Slovakia is due to a different organisation of work content in the occupations that makes workers more susceptible to automation relative to other countries.

The domestic knowledge production is related to the development of the so-called **knowledge-intensive activities.** By definition knowledge-intensive activities include economic sectors with most occupations requiring tertiary education.[11] This definition covers a range of sectors, including pharma and electronics manufacturing, ICT, finance, R&D, but also the design and creative industry. The Slovak economy relies largely on manufacturing industries that benefit from developments in the high-tech sector. **Between 2008**

professionals; other teaching professionals; archivists, librarians and related information professionals; social science and related professionals;
Creative professionals include: legislators; senior government officials; traditional chiefs and heads of villages; senior officials of special-interest organisations; directors and chief executives; production and operations department managers; other department managers; general managers; nursing and midwifery professionals; business professionals; legal professionals; religious professionals; physical and engineering science technicians; computer associate professionals; optical and electronic equipment operators; ship and aircraft controllers and technicians; safety and quality inspectors; life science technicians and related associate professionals; modern health associate professionals (except nursing); nursing and midwifery associate professionals; traditional medicine practitioners and faith healers; primary education teaching associate professionals; pre-primary education teaching associate professionals; special education teaching associate professionals; other teaching associate professionals; finance and sales associate professionals; business services agents and trade brokers; administrative associate professionals; customs, tax and related government associate professionals; police inspectors and detectives; social work associate professionals; religious associate professionals.

[11] The list of the section and further methodological details is available at https://ec.europa.eu/eurostat/cache/metadata/Annexes/htec_esms_an8.pdf

and 2019 employment in the high-tech sector grew from 88 000 to 117 200 employees. This represents 4.6 % of total employment in 2019, above the EU level of 4.1 %.[12] In terms of knowledge-intensive services, **Slovakia is roughly on par with the EU in knowledge-intensive, high-tech services and the ICT sector**, but lags behind somewhat with respect to knowledge-intensive market services. In comparison to other countries Slovakia recorded the highest increase in share of employment in technology and knowledge-intensive sectors between 2013 and 2019.

Table 2.2
Share of employment in technology and knowledge-intensive sectors, 2013–2019

	Austria	Czechia	Hungary	Poland	Slovakia	EU-27
2019						
High-technology sectors, including manufacturing	1.1	1.5	2.6	0.7	1.4	1.1
ICT	3	3.2	2.9	2.6	3	3.1
Knowledge-intensive high-technology services	2.8	3.3	3.1	2.6	3.2	3
Knowledge-intensive market services	6.5	5.2	4.5	4.8	4.4	6.3
% change 2019–2013						
High-technology sectors, including manufacturing	0 %	−17 %	4 %	−13 %	8 %	0 %
ICT	11 %	14 %	0 %	24 %	36 %	11 %
Knowledge-intensive high-technology services	4 %	18 %	11 %	24 %	39 %	11 %
Knowledge-intensive market services	8 %	2 %	−12 %	9 %	13 %	9 %

Source: Eurostat variable htec_emp_nat2

Manufacturing remains prominent in the Slovak economy and following the economic transformation of the 1990s, it tends to be centred on large, highly productive foreign-owned plants in particular in the automotive and electronics industries. The important examples include the Volkswagen plant in Bratislava, the Stellantis Trnava plant, the KIA plant in Žilina, Jaguar Land Rover in Nitra and Samsung in Galanta. The domestic companies take the role of suppliers to large production plants and they are less important from the KE perspective. More important for KE development are international corporations that established their offices in Slovakia including IBM, AT&T, Amazon, Johnson Controls and Deutsche Telekom. Drahokoupil and Fabo (2020) further point to Slovak companies with a significant KE component, including the internet security company Eset, GPS navigation systems supplier Sygic or gaming company Pixel Federation.

In addition to knowledge production, **knowledge transfer** is an important element of KE. Historically, the main driver of knowledge transfer to Slovakia has been the large influx of **foreign direct investments**, particularly in the automotive sector. In recent years, however, the inflow of investments has waned while structurally they remained focused on the downstream activities without substantial added value being generated in Slovakia (OECD, 2019a). The knowledge spillovers from foreign direct investments thus remain limited.

The potential for substantive knowledge transfer from immigration is limited in Slovakia. Immigration is generally not supported and there is no immigration strategy oriented on highly skilled immigrants. The higher inflows of immigrants in recent years are driven by labour shortages in some industries. The new arrivals are dominated by young migrants staying on a temporary basis. In contrast, Slovakia has experienced a major **brain drain** since joining the EU in 2004. Young people leave Slovakia to seek better paid employment or for university education. Among EU countries, Slovakia has the second highest share of students in tertiary education enrolled abroad. The share of students who choose to leave Slovakia for university study has increased from 12 % in 2012 to 17 % in 2019. Martinák and Varsik (2020) find that **most Slovak students enrolled in Czech universities study ICT (20 %), engineering (17 %) or medicine (15 %) programmes**. In contrast, the enrolments of foreign students in Slovak universities are low and therefore cannot compensate the outflow of students. In addition, Martinák and Varsik (2020) show that best performing graduates at secondary schools have a higher probability of leaving the country for study. Most

[12] Figures refer to employment in high-technology manufacturing and knowledge-intensive, high-technology services, based on Eurostat (variable htec_emp_nat2).

Slovak students are enrolled in Czech universities (70 %), also because they have no problem taking courses taught in Czech, and Czech universities have a high reputation.

Digital skills have become essential in many domains of our lives. In the information society, citizens need to be able to manage huge amounts of information with the help of ICT. The capacity to manage information and solve problems in a technology-rich environment is relevant to many social contexts and work situations. To foster digital literacy and to ensure that citizens attain sufficient digital skills, governments should adopt strategies with concrete actions.

The state of **digitalisation and the progression in digitisation over the last five years in Slovakia are below the EU average**. The Digital Economy and Society Index (DESI) monitors country performance in digital connectivity, digital skills, online activity and digital public services. DESI scores based on 2019 data put Slovakia in the bottom third in all categories and the **worst performance is recorded in integration of digital technology (business digitisation and e-commerce) and the digital public services category (e-Government).**

Table 2.3
Digital Economy and Society Index (Slovakia progress in % of EU-28)

	2015	2016	2017	2018	2019	2020
Connectivity	93 %	93 %	97 %	95 %	89 %	95 %
Human capital	84 %	88 %	89 %	90 %	92 %	85 %
Use of the internet	95 %	90 %	96 %	94 %	93 %	92 %
Integration of digital technology	96 %	93 %	87 %	95 %	83 %	79 %
Digital public services	61 %	57 %	70 %	78 %	76 %	77 %

Source: https://digital-agenda-data.eu/

Slovakia ranks in the bottom third among OECD countries in adults with high computer skills. Based on the Survey of Adult Skills (PIAAC) 63 % of working age adults have at least basic proficiency in ICT tools, below the OECD average of 71 %. The level of computer skills proficiency at the highest level in Slovakia (26 %) lags behind the advanced economies (OECD average is 30 %). **More than one-third of adults (37 %) in Slovakia have no or only limited ability to use computers, which is the third worst outcome in the EU**.

Table 2.4
Proficiency in problem solving in technology-rich environments among adults, 2018

	Basic skills	Advanced skills	At least basic skills	No computer experience
OECD	43	30	73	27
Slovakia	38	26	63	37

Source: OECD, Survey of Adult Skills (PIAAC) 2018, https://doi.org/10.1787/1f029d8f-en

Slovakia shows **low levels of R&D expenditure in comparison with the neighbouring countries and one of the lowest in the EU overall**. The ratio of R&D expenditure financed from both public and private sources in relation to GDP is 0.83 % compared to the EU average of 2.2 %. This gap is mainly driven by the low private sector R&D expenditure, which is just 0.45 % of GDP compared to the EU average of 1.46 %. Since 2018, the deduction allowance for R&D expenditure has been expanded so this may motivate greater R&D investment by the private sector.

The specialisation of Slovak SMEs in the knowledge-intensive services and high-tech manufacturing sectors is one of the lowest in the EU (EC, 2020b). During 2012–2018, the proportion of SMEs that employed ICT specialists dropped from 22 % to 15 %, and over the same period SMEs reported they were training their staff in ICT skills less often. **The innovation rate in Slovakia ranks below the EU average and even decreased up to 2018** (EC, 2020b). The limited access to national R&D is the most cited obstacle by SMEs. The change in legislation enacted in 2018 allows companies to deduct up to 200 % of their R&D expenses in 2000 (an increase from the 35 % limit before 2017) to foster Industry 4.0 developments. The most recent outlook of the European Commission (before the outbreak of Covid-19) highlights the innovation potential of SMEs in Slovakia (one of the highest in the EU) and the capacity to add more jobs to the economy.

3 Institutions and policies in relation to knowledge

The key strategic document of the Slovak government describing the country's strategy vis-à-vis the knowledge economy is the **National employment strategy of the Slovak Republic until 2020**.[13] The key objective outlined in the strategy is achieving the 'goals of growth, employment and quality of life' through removal of barriers to creation of sustainable jobs.

The key problems identified in the strategy include insufficient job creation resulting in unemployment and low wage levels. Furthermore, the strategy stresses that lack of skills and a skilled workforce led to the emigration of skilled workers and uneven socio-economic levels across Slovak regions. As a result, unemployment is concentrated particularly in eastern Slovakia and in the south of central Slovakia, creating uneven opportunities for job seekers based on their residence. According to the strategy, unemployment negatively affects in particular young and low-educated workers with insufficient skills to find employment.

The Slovak labour market was for long time characterised by a high share of the long-term unemployed. The strategy document specified the measures to effectively address the long-term unemployment through: i) improving the management of public employment services, ii) the provision of personalised counselling and activation measures, iii) targeted measures for the most disadvantaged jobseekers, including the Roma, and iv) improving the provision of childcare facilities to foster women's employment. The problem of long-term unemployment is less pronounced today, however problems relating to the childcare provision or Roma integration are as acute now as a decade ago (EC, 2018).

The strategy document recognises several challenges faced by the Slovak economy in adapting to the knowledge-based economy paradigm. In particular, the document mentions the low innovation activity of the Slovak domestic firms as an important problem. The knowledge economy rests on two pillars – domestic knowledge production and knowledge transfer from abroad (Busetti et al., 2017). In this respect, the development of the knowledge economy in Slovakia can be considered imbalanced, because innovation is mainly imported although some recent evidence suggests that some domestic companies are potentially more agile in incorporating digital skills than international firms (Drahokoupil and Fabo, 2020).

Importantly, the strategy document recognises the regional dimension of the knowledge economy and existing differences in the knowledge intensity of regional economies in Slovakia. These differences were attributed to a range of factors, including infrastructure development, exposure to globalisation, geography and localisation of foreign direct investment.

The solutions presented in the strategy represent a combination of focus on improving the regulatory framework to enable the gradual increase of knowledge intensity of local production, and a focus on the development of skills in the workforce. Many of the solutions outlined in the strategy document still remain valid nowadays. For instance, the better preparation of graduates for work and a closer monitoring of labour market skill needs, lifelong learning development and programmes for a better integration of Roma in the labour market.

In the following sections, the tax and labour regulation framework is presented to illustrate the institutional underpinning of KE development in Slovakia. In addition, the institutional framework and practice of education and immigration systems is discussed in depth with regards to generation of human capital in the country.

The regulatory framework on business creation and taxation in the region

The tax system in Slovakia differs between personal income and capital assets income. **Personal income is taxed** at the rate of 19 % for a tax base not exceeding the threshold of around EUR 37 000, and 25 % for income above the threshold. Nonetheless, to estimate the actual tax burden, it is necessary to deduct the

[13] https://www.employment.gov.sk/sk/praca-zamestnanost/podpora-zamestnanosti/narodna-strategia-zamestnanosti/

progressively decreasing deducible amount and add the social security payment. According to the OECD report Taxing Wages 2020 (OECD, 2020b), the tax wedge for an average worker in Slovakia is 41.9 % of the labour cost, similar to rates in neighbouring countries.

Capital assets are taxed at the flat rate of 19 % (or 15 % for the self-employed earning an annual income up to EUR 100 000). Dividend income was not subject to taxation until 2017, when a 7 % tax was levied on all dividend income paid out of profits arising from the year 2017 and later. Recognising its underdog position in promoting KE, **Slovakia has aggressively increased its tax allowance for R&D in recent years**. Before 2018, tax deductions were limited to 25 % of eligible investments in R&D. The maximum threshold has been increased to 100 % in 2018, 150 % from 2019 and 200 % in the following years (OECD, 2019c). In 2017, 163 companies took advantage of this tax allowance in 2017 in the total amount of around EUR 40 million.[14]

The Business Alliance of Slovakia highlights that the position of Slovakia has stagnated and even deteriorated in some dimensions over recent years in the international rankings measuring formal and informal business environment rules. **In 2020 Slovakia ranked 32th among 45 countries in the Europe region in the Economic Freedom index** published by the Heritage Foundation (Miller et al., 2021). Slovakia is also less successful in building a business-friendly environment, **ranking 29th among 34 high-income economies in the Doing Business index (World Bank, 2020)**. Neighbouring countries Czechia, Hungary and Poland rank above Slovakia.

The Paying Taxes score according to the Doing Business report by the World Bank is less favourable for Slovakia when compared to OECD high-income countries (80.6 vs 84.3). In addition to tax, prospective entrepreneurs in Slovakia are also held back by **bureaucratic barriers**. For instance, the score for starting businesses in this report is 84.8 in Slovakia, substantially lower than the 91.3 average for the high-income countries. **Slovakia fares particularly poorly with respect to obtaining construction permits**, where it was awarded only 59.4 points compared to the 75.6 average for the high-income countries.

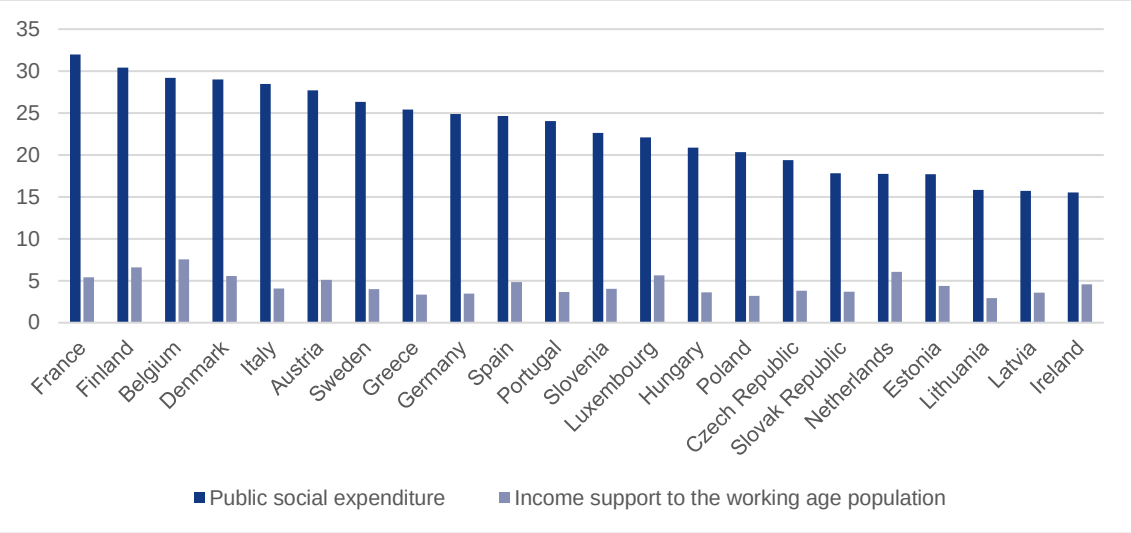
Labour market regulation, the welfare system and policies

Labour regulation in Slovakia is characterised by a rapid series of back and forth shifts between liberalisation and deliberalisation of the labour code, according to political developments (Fabo and Sedlakova 2017). The employment legislation in Slovakia provides higher protection to workers with a regular contract than the OECD average. Nonetheless, the existing duality in the labour market includes a high share of precarious working arrangements and bogus self-employment. The latter is motivated by the interest of companies, and in some cases of the workers themselves, to save on payroll expenses and achieve higher net earnings. Companies may ask workers to obtain a business license so they can invoice them instead of hiring them as dependent workers. Unfortunately, the evidence on forced and unforced relationships with self-employed people is not available since these practices are difficult to prove.

The size of Slovakia's welfare spending is rather low relative to the OECD average (Figure 3.1). The basic material benefit available for people with an income under the subsistence minimum is only € 66 per month. There is also a modest amount available for those seeking to acquire or maintain skills through occasional work or study. Additional resources are available for moving for work and starting a business.

[14] https://www.pwc.com/sk/en/investments-and-radi-support-in-sk/rad-super-deduction.html

Figure 3.1
Public social expenditure (% GDP): 2017 or latest year available



Source: OECD

Immigration regulatory framework and policies

On the level of declarations, Slovakia recognises the importance of migrants to develop the knowledge economy (Ministry of Interior, 2011). Nonetheless, as a matter of practical policy, migration tends to be seen primarily through the prism of security. This is reflected by the key position of the Bureau of Border and Foreign Police, rather than civilian officials in dealing with immigration matters. There have been repeated complaints by foreigners finding themselves unable to get an appointment or communicate in English.[15]

The number of migrants arriving in Slovakia is increasing and this trend is likely to continue in the future. Many migrants are becoming permanent residence permit holders, which signals a shift from a temporary and fluctuating nature of migration towards one in which immigrants more often settle. The successful integration of immigrants and their children is vital for social cohesion, and also contributes to the population's acceptance of further immigration. The Migrant Integration Policy Index (MIPEX) measures the quality of legal frameworks to promote migrant integration. MIPEX is based on a wide range of 167 policy sub-indicators determined on the basis of leading experts on integration policies in eight policy areas: labour market mobility, family reunion, education, long-term residence, political participation, access to citizenship, health and anti-discrimination (Solano and Huddleston, 2020). The overall **MIPEX score for Slovakia has changed only by two points from 35 to 37 (out of 100), between 2013 and 2019.** The average MIPEX score was 48 for EU-28 and 56 for OECD countries in 2019.[16] Based on MIPEX, Slovak integration policies are worse than in other countries in Central and Eastern Europe (Austria scores 46, Czechia 50, Hungary 43 and Poland 40).

Public attitudes towards migrants

Public views are important contributors to immigrants' social and economic integration into the host country. Kriglerová et al. (2020) document that **70 % of Slovak citizens oppose immigration, these perceptions**

[15] https://spectator.sme.sk/c/20180270/faq-non-eu-citizens-dealing-with-immigration-authorities.html

[16] https://www.mipex.eu/key-findings

are persistent over time and have not changed since 2012. The high opposition to migration is likely related to the very little interaction of the Slovak population with foreigners. The dominant narrative is that migrants take jobs from Slovaks and push wages down. The economic benefits of migration are perceived only by one-fifth of respondents. Most respondents would generally support the immigration of highly qualified workers (e.g. doctors) from culturally close countries. Respondents also agree that it is important that foreigners learn the Slovak language and that language courses and integration support should be freely provided to migrants and their children.

Slovakia was not affected by the high inflows of refugees arriving in the European Union in 2015 and 2016, yet the topic of migration resonated strongly in public discussions. Migration also became a source of polarisation during the parliamentary election in 2018 and the presidential election in 2019. According to Eurobarometer surveys, **Slovaks hold some of the most negative attitudes in the European Union towards immigrants and refugees.** Most of the Slovak respondents perceive migration as a problem and express a negative attitude towards immigrants. In 2016, Slovakia together with the other Central and Eastern European countries ranked among the 10 countries least accepting of migrants among 138 countries in the Migration Acceptance Index prepared by the Gallup World Poll.[17]

Public awareness about migration issues in Slovakia has been below the EU average (EC, 2020c). Slovaks tend to overestimate the numbers of migrants and refugees in the country (often as much as four times higher than reality), in part because of incomplete or biased information presented in the media. **One in five Slovaks (22 %) report that they feel well informed about immigration and integration-related matters** compared to the EU average of 37 % (EC, 2020c).

2030 Agenda for Sustainable Development

The Slovak government is committed to achieving 17 agreed objectives of the 2030 Agenda for Sustainable Development. 'Leave no-one behind' is the guiding principle of the Agenda and will be considered in the process of the national employment strategy. The pandemic slowed economic growth, increased unemployment and has had a damaging effect on many people. The economic fluctuations caused by the pandemic have a greater influence on vulnerable groups residing in poorer regions and on less affluent households.

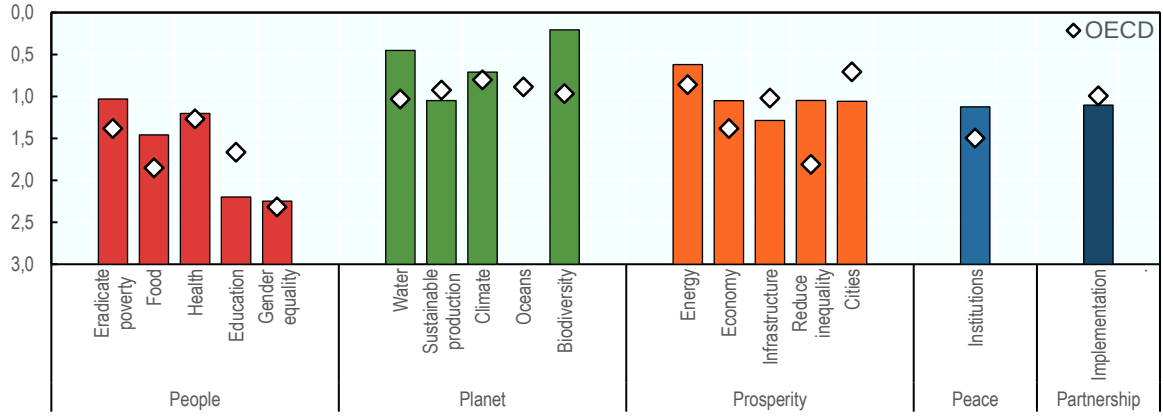
Progress and obstacles to the implementation of Agenda 2030 are measured by 169 targets and 244 indicators that specify the content of 17 goals. Slovakia currently has data available to measure the progress in 98 out of the 169 targets. As of 2019, Slovakia had achieved 15 targets and made good progress on many other targets. For example, targets currently achieved relate to water stress (target 6.4) and strong GDP growth (8.1). However, Slovakia is still far from meeting 5 % of the targets including high disparities in education (4.5), violence against women is high (5.2), and consumption of tobacco is of concern in most OECD countries (3.a).

When aggregated at the goal level, **Slovakia is on average closest to achieving goals on water and biodiversity (goals 6 and 15) and energy (goal 7),** and **outperforms relative to the OECD average in poverty eradication (1), the economy (8), reducing inequality (10), climate (13) and institutions (16).**

Conversely, Slovakia is **furthest from reaching the goals on gender equality (5) and education (4).** It is important to underscore that this assessment is based on currently available data and some data is missing on cities (11), sustainable production (12) and reducing inequality (10). Results could change if a more complete data set were available.

[17] https://news.gallup.com/poll/216377/new-index-shows-least-accepting-countries-migrants.aspx

Figure 3.2
Slovakia's average distance to Sustainable Development targets in 2019, by goal



Source: OECD, dx.doi.org/10.1787/888933963956

Note: The chart shows the average distances to reach each goal measured in standardised units with 0 indicating that the target has already been achieved. Bars show the current level of achievement of Slovakia based on available data, and diamonds show the OECD average distance. Targets are clustered by goal, and goals are clustered according to the 5Ps (people, planet, prosperity, peace and partnership) of the 2030 Agenda.

4 The effects of the Covid-19 pandemic

The progress of the epidemic in Slovakia can be divided into several phases. The first wave of the pandemic started in March 2020 when the first cases were identified. Due to resolute measures taken, including a lockdown, closure of schools and strict border closures including mandatory quarantine of all arrivals from abroad in state-run facilities, there were only 28 casualties by May 2020 and no additional ones through to the end of July. While the economy has been hit hard by the lockdown measures, the favourable epidemiological situation allowed for the reopening of the economy and a summer largely without restrictions, which allowed the economy to catch up. The second wave of the pandemic appeared after the reopening of schools and the mass return of Slovaks from holidays in September 2020. This time, however, Slovakia chose to prioritise the economy and implemented lighter restrictions compared to the situation in the spring. The pace of the epidemic gradually accelerated and by the end of the year, the number of victims had increased to over 2 000 with over a half of them recorded in December. In light of this development, Slovakia entered another hard lockdown in the beginning of January 2021. There is no doubt that the pandemic will have a devastating impact on Slovakia in terms of both economy and loss of human life.

Between 2015 and 2019, Central and Eastern European countries encountered a positive economic growth accompanied with a decreasing unemployment rate. The Covid-19 pandemic has reversed these positive trends. With the start of the pandemic the Slovak government adopted several measures to support employment, enterprises, bank guarantees and struggling households during the pandemic. The Slovak Ministry of Finance estimates the total amount of financial support aimed to cushion the consequences of the pandemic from March to December 2020 equalled 5.8 % of GDP. In spite of these measures, **unemployment has increased from below 5 % in February to 7.6 % in December**. The number of unemployed increased from 137 000 in January to 227 000 at the end of December 2020, of which 80 000 were unemployed longer than 12 months. A **decreasing trend is observed in the number of vacancies** registered by the employment offices, from 90 000 reported in February to 66 000 in December.

Jobs have become scarce in 2020. Data published by Profesia.sk, the major job portal in Slovakia covering about 80 % of the job advertisement market, **show the reduction of posted job opportunities by 25 % in 2020 relative to 2019**.[18] Although in January 2020 firms posted 4 % more job opportunities than in January 2019, until the end of 2020 firms posted 62 000 fewer job opportunities in total than the year before. Not surprisingly, demand for posted job vacancies in 2020 increased and vacancies in the public sector were demanded the most (by 140 % more than in 2019). The pandemic hence provides a unique opportunity for the state administration to recruit the best candidates from a large pool of applicants. Demand for jobs in customer support and telecommunication increased by more than 80 %.

Cupák, Klacso and Šuster (2020) studied the financial vulnerability of Slovak households in spring 2020. They found that **10 % of households are without financial savings, 20 % of households have savings sufficient for one month and half of the households have financial savings sufficient for living on for a maximum of six months.** Households with members employed in the retail and service sector are the most vulnerable; one-third have savings only for a month and two-thirds would last less than six months.

The economic crisis initiated by the global pandemic was expected to accelerate business failures and bankruptcies (Amankwah-Amoah et al., 2020). In contrast to these expectations **the number of new businesses emerging in Slovakia during 2020 (15 621) was five times larger than the number of businesses that closed down (3 330)** during that year. This surprising development can be explained by the results of a survey conducted by the Business Alliance of Slovakia (SBA, 2020), according to which most enterprises managed the adverse impact of the pandemic through leaning on the reserves generated in the good times, curbing investment and in some cases, laying off workers and decreasing salaries. Only 2.4 % reported they had suspended their business activities in 2020.[19]

[18] Based on statistics presented at the conference on 28 January 2021 (www.profesia.live/trhprace_prezentacie)

[19] https://www.alianciapas.sk/2020/12/15/prieskum-o-aktualnej-situacii-podnikatelov-pocas-druhej-vlny/

The pandemic forced many employers to adopt **remote work arrangements** as a common form of work. To facilitate teleworking, the Slovak government amended the Labour Code in March 2020 (effective from 1 April 2020). Before the amendment, the right to teleworking was based exclusively on a mutual agreement between the employee and the employer. Since April 2020, teleworking is granted upon the request of the employee unless there are other operational restrictions, while employers may temporarily order teleworking without the employees' consent under two conditions: (i) the employee can perform the job tasks from home, and (ii) jobs tasks do not have to be carried out at the official workplace or carrying out job tasks at the official workplace is risky.

The expansion of teleworking largely depends on the employment structure and sectoral specialisation. Whereas many high-skilled jobs in knowledge and ICT-intensive services could be done at home, very few jobs in agriculture, manufacturing and the service sector could be. Dingel and Neuman (2020) estimate the share of jobs that could be done from home with existing technologies is 36 % at the EU-27 level. In **Slovakia 29 % of jobs are estimated to be suitable to be performed at home** (see Column 1 in Table 4.1). Access to teleworking is greater among workers who use computers or electronic devices. Data from the EU survey on ICT usage among workers show that **half of workers in Slovakia use ICT equipment at work** while it is two-thirds in the EU (see Column 2 in Table 4.1). **The share of employed people working from home regularly, or at least some of the time before the spread of Covid-19 was 10 % in Slovakia** and 15 % at the EU-27 level (see Column 3 in Table 4.1). The spread of Covid-19 acted as an exogenous shock to work organisation and increased the prevalence of teleworking. The first round of Eurofound's Living, Working and Covid-19 survey (Eurofound, 2020) organised in April 2020 collected more than 60 000 responses and identified 40 % of workers in the EU working from home during the peak of lockdown restrictions, which increased to 46 % in June/July 2020. **In Slovakia, 30 % started teleworking due to the outbreak of Covid-19 and the rate remained constant** (see Columns 4 and 5 in Table 4.1). It should be noted that the survey is not representative of the population and captures more educated and younger workers, who might be in a better position to work from home. Yet **findings point to lower use of ICT at work and a lower prevalence of teleworking in Slovakia.**

Table 4.4
Top business areas with the largest drop in vacancies in 2020 relative to 2019

Country	Employment teleworkability	Use of ICT at work	Prevalence of telework in 2019	Telework in April 2020	Work from home in June/July 2020
	(1)	(2)	(3)	(4)	(5)
EU-27	36	67	15.2	39	46
SK	29	52	9.7	31	32

Source: Own elaboration based on Dingel and Neuman (2020), Eurostat, Eurofound (2020)
Note: (1) figures adopted from Dingel and Neuman (2020); (2) the share of individuals who use computers, laptops, smartphones, tablets or other portable devices at work from Eurostat (variable isoc_iw_ap); (3) the share of employed working from home from Eurostat (variable lfsa_ehomp); (4) the share of started to work from home as a result of the Covid-19 situation from Eurofound (2020); (5) the share of workers indicating working from home from Eurofound (2020). Individual weights are applied.

The structure of the regional economy is an important factor to evaluate the effects of Covid-19 in 2020. Jurašeková (2021) finds that **in Bratislava**, which is nearly entirely urban, **54 % of jobs can be performed through teleworking, while in other regions the share varies between 27 % and 38 %.** The job portal *profesia.sk* reported that **Bratislava recorded the largest decline in job offers relative to other regions** (a decline of 32 % in Bratislava compared to 15 %–24 % elsewhere). The largest drop in posted vacancies occurred in finance and telecommunication sectors, and in human resource management positions that affected Bratislava more than other regions. The labour market in Bratislava is very dynamic so it is natural that the general hiring freeze is more salient there. In December the largest number of vacancies posted at *profesia.sk* were available in the Bratislava region (29 %) and the least in the eastern regions (below 10 %).

The regional impact of Covid-19 on employment varied depending on the structure of the economy. The adverse effects of the pandemic fell harshly on sectors depending on personal interactions such as hospitality, culture and entertainment, public transport and retail, all of which were directly targeted by the

lockdown restrictions. The other sectors were not significantly affected by lockdown restrictions and managed a smooth integration of IT solutions for telework.

Table 4.2
Top business areas with the largest drop in vacancies in 2020 relative to 2019

Business area	Drop in posted vacancies
Tourism, gastro, hospitality	48 %
Services	44 %
Administrative	37 %
Customer Support	34 %
Telecom	34 %
Quality management	32 %

Source: Profesia.sk
Note: Only sectors with at least 1 000 posted vacancies in 2020 are considered

The pandemic accentuated the long-term problems in the Slovak education system, including the overloaded educational programmes, interregional and social inequalities in access to education, and less focus on developing digital competences for students and teachers. Slovak schools were closed from 16 March until 1 June 2020, and teaching was provided remotely via online learning platforms. Ostertágová and Čokyna (2020) show that **52 000 (7.5 %) students in primary and secondary schools were not able to attend online classes in spring 2020** due to a lack of electronic devices or internet connection, and another 130 000 students (18 %) were not educated online. The quality of education in the online environment was often insufficient: the majority of students only communicated with teachers through emails without talking to or seeing them; the student attendance in online lectures was only passive; most teachers gave students individual assignments much more than group assignments. The study by Ostertágová and Čokyna (2020) finds that the digital competences of teachers were insufficient as only 1 out of 5 teachers had sufficient digital competencies, and 80 % required training. The study estimates that **only around one-fifth of children received a proper education via an online platform, including regular interactions with teachers**.

By September 2020 the schools' readiness for online teaching had not improved. Only in October 2020 did the Ministry of Education approve EUR 6 million extra funding for acquisition of technical equipment for primary and lower secondary schools. Depending on the size, schools received between EUR 500 and EUR 4 500 for necessary hardware purchases. Schools need to establish uniform rules for online communication and continuous IT, methodological guidance and teaching materials. Activities to inspire teachers leading online classes and help for students to attend remote education should be fostered.

5 Conclusions and policy recommendations

In detail, Slovakia needs to implement policies to move from low value-added to high value-added industries. The economy is largely dependent on the car manufacturing industry, which is export-oriented and increases the vulnerability of the Slovak economy to external shocks (e.g. Brexit, the US–China trade relationship and the Covid-19 emergency). Improvements in the overall innovation environment are required. Slovakia needs to improve the skills and adaptability of the labour force to new trends in digitalisation and automation technologies. Efforts and policy priorities need to be refocused on the in-house innovation and R&D activities developed by SMEs.

The new government established in 2018 has already adopted hundreds of law amends or supplements that reduce the administration burden on businesses and citizens. The **tax allowance for R&D expenditure** has been expanded and it is likely to motivate larger R&D investment by the private sector. The further simplification of administrative obligations on SMEs will likely foster their performance. A recent report by the European Commission highlights the innovation potential of SMEs in Slovakia and the capacity to add more jobs to the economy (EC, 2020b).

Slovakia could also take steps to support lifelong education and training by creating a national network of training providers to support SMEs. It would require modernising the quality and relevance of VET (vocational education and training) to match labour market needs. The **dual scheme** combining education and employment is an example of such efforts. In parallel, Slovakia could prioritise education systems to produce more graduates from the STEM disciplines (science, technology, engineering and mathematics) in the labour markets. The **national campaigns such as 'ICT skills for employees'** may be effective in improving digital competences and increasing SMEs' motivation to create ICT-intensive jobs. The higher demand for workers with digital competences after the pandemic will increase the need for learning opportunities.

In the survey organised by the Slovak Business Agency (SBA, 2021) the **most serious problems to businesses reported by SMEs are related to legislation** (law enforcement, the long-term instability and ambiguity of laws), and **corruption**. The education quality of the labour force as an obstacle to the development of business is also increasingly cited in recent years. This is confirmed by the low ranking of Slovakia in the international comparison of adults' skills.

The **adults' proficiency in computer skills** even at the highest level lags behind the advanced economies and **more than one-third of the adult population have no or only limited ability to use computers**. The transition towards the information society would require also changes in the school curricula fostering ICT competences from an early age. Government policy should also make the **education system more inclusive and equitable**. Access to early childhood programmesand a high-quality education should be available to all students irrespective of their socio-economic status and location. Socio-economic inequalities in educational outcomes in Slovakia are above the OECD average. The pandemic has exposed and often amplified the existing inequalities in the education system. **Better access to quality education for all children could be achieved by increasing participation in early childhood education particularly in more deprived areas. The government should allocate more funding to school districts with problems of poverty, social exclusion and higher early school-leaving rates.**

The Slovak economy is at the **highest risk of losing jobs to automation among the OECD countries**. Slovakia has a large automotive industry producing more cars per capita than any other state in the world, and car manufacturers are increasingly looking to automate production. According to the International Federation of Robotics, **Slovakia is among 20 countries in the world with the highest robot density in the manufacturing industry** (169 robots per 10 000 employees in 2019). The pandemic accelerates the pace of modernisation and digitalisation of productions; this is a very likely scenario in Slovakia given the record low unemployment and growing labour shortages before the outbreak of Covid-19.

The potential of the skilled labour force could be used more effectively. Younger women are more likely than younger men to attend tertiary education, but female labour force participation is visibly below the male labour force participation; women's careers are restrained after childbirth. To **unlock the potential of women**, studies recommend reducing maximum parental leave, while expanding affordable and quality

childcare (Kalíšková and Münich, 2012; OECD, 2019a). The enrolment rates in early childhood education particularly for children under the age of three remains substantially below the OECD average.

Regional development suffers from a **lack of coordination between national and local authorities**. There are already several examples of effective collaboration between stakeholders at the local level that stimulated the innovation, and used local resources to develop sustainable businesses. Such an approach is more efficient than top-down directive initiatives and investments. The **capacity of municipalities should be strengthened** by providing incentives for the merging of very small municipalities, and provision of technical assistance from the central government.

Targeted public funding to support the quality of the domestic research systems and top-performing universities is also necessary to attract qualified Slovaks living abroad. The best graduates of secondary schools are increasingly leaving Slovakia for study abroad; the quality of university education is the main reason. Because the gains from return migration for the economy are substantial, **the government should adopt measures to attract more Slovaks back home.** Efforts to facilitate the return of skilled Slovaks have been limited so far.

The pre-Covid-19 economy was booming, pushing wages up and reducing the unemployment rate. The labour market was tight and vacancy rates were at historically high levels across the country. The good shape of the economy has decreased the pressure on the national governments to implement needed reforms. As a result, the development of the Slovak economy has been stagnant vis-à-vis the EU average and Slovakia has lost its position among the most successful countries in the region.

The Slovak government is committed to achieving 17 agreed objectives of the 2030 Agenda for Sustainable Development. ‘Leave no-one behind’ is the guiding principle of the Agenda and shall be considered in the process of national employment strategy. Poverty and social exclusion are highly prevalent among Roma communities. Many Roma people live in isolated communities with limited access to education, health, employment and other public services. Roma households are not sufficiently captured in the standard household surveys, hence problems specific to Roma households are not visible in many official population statistics. The pandemic slowed economic growth, increased unemployment and has had a damaging effect on many people. **The policies promoting integration and social cohesion will be even more important in the post-pandemic period.**

The key issues identified in the report are:

- The population is ageing fast.
- Strong emigration of, in particular, young and educated citizens and the insufficient level of skilled immigration means that recent immigration is dominated by young migrants between 16 and 24 years old.
- Performance of the youth in the international comparisons of learning outcomes is poor; the performance gaps between advantaged and disadvantaged students (based on their socio-economic status) in Slovakia are among the highest in OECD.
- The share of working age adults with at least basic proficiency in ICT tools lags behind advanced economies.
- Slovak universities are not competitive internationally and therefore less appealing to young Slovaks, who seek education abroad much more often than their peers in other European countries.
- The education system is underfinanced in comparison to other countries.
- There is a low level of investment in R&D, in particular in the corporate sector.
- There is a lack of policies to attract and integrate highly skilled migrants.
- Social exclusion in particularly affecting the Romani people, who are not captured in the standard household surveys.
- Both the quality and usage of digital public services is among the lowest in the EU.

Finally, the report identified the following factors that hinder the successful implementation of reforms:

- Widespread corruption and lack of trust in the judiciary;

- Negative public attitude towards immigrants;
- Bias for centralised, top-down approach to development.

To address these issues, Slovakia should consider the following in particular:

- Offer technical assistance and cut red tape to help local authorities and entrepreneurs develop knowledge economy using the locally available resources.
- Increase the skills of the population using targeted (re)training programmes, lifelong learning and upgrade the universities to enable them to compete internationally.
- Improve social inclusion in education and at the workplace, in particular focusing on the Roma population.
- Deal with an immigration policy responsive to labour market needs targeted to highly skilled foreigners from outside the EU immigrating with an EU Blue Card.
- Promote policies to facilitate the return of Slovaks living in foreign countries.

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Annex

A1 List of stakeholders interviewed:

Project leader of Modernisation of local self-government, Banská Bystrica region

Governmental expert on regional development, Bratislava region

Labour union official, Bratislava region

Representative of Working Poor civic movement, Bratislava region

Academic scholar with expertise in regional development, Bratislava region

Representative of the Council for Budget Responsibility, Bratislava region

Member of Prešov City Council, Prešov region

Academic scholar with expertise on the labour market and migration, Bratislava region

Academic scholar with expertise on poverty measurement, Košice region

Representative of the International Organisation for Migration, Bratislava region

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