

Regional disparities under different types of cohesion policy

Case of Slovakia

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Abstract:

Regional cohesion policy has been presented as one of the main priorities of the European Union and also most of its member-states for a long time. Regional disparities seem to be complicated not only from the national perspective, but often more as international problems. This is also a problem of the Slovak Republic, where regional disparities at the NUTS3 level are greater than at the NUTS2 level. Tackling regional disparities and promoting cohesion are the main objectives of the Slovak cohesion policy and are also included in The Manifesto of the Government of the Slovak Republic.

In this paper, a modelling approach and its results in forecasting the regional cohesion are presented. The regional model of the Institute of Economic Research at the Slovak Academy of Sciences (B_IER_REG), which is connected to the econometric model (B_IER_ECM) allows to analyze and forecast different approaches to the Slovak regional cohesion policy and their influence on the regions of Slovakia. The assumption that strengthened the cohesion policy raises total welfare and weakens total disparities within a country is analyzed.

Three different scenarios will be analyzed in this paper. The baseline scenario presumes that there are no changes in the current regional policy and stem from current assumptions about further economic development without major changes. The cohesion scenario will arise from the assumption of a strong cohesion policy and fast adjustment of the regional disparities. This will be done by using European support funds together with strong and efficient redistribution at regional level. The regional policy will use all possible instruments, such as higher redistribution of distributive taxes to the advantage of the weakest regions. Scenario no. 2 will be oriented to support the regional growth centers together with moderate cohesion policy mainly using the EU support funds. Only those Instruments will be used, which will not restrict the growth of stronger regions. Scenario no. 3, which is developed from scenario no. 2 assumes a symbiotic effect of using support funds together with more efficient regional self-government (quality local regional policy anticipates synergic effects). The comparison of alternative scenarios of further regional development allows analyzing appropriate approaches in applying cohesion policy on both national and regional level.

Key words: Regional Model, Econometrics, Cohesion policy, Disparities, Regional Forecast

JEL Classification: C53, O18, R11

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1. Introduction

The regional cohesion policy is presented in the Slovak Republic as one of the long-term priorities of the national government and is included in the government programme. One of the main objectives of the aforementioned cohesion policy are balancing regional disparities. In this paper, a modelling approach and its results in forecasting the regional cohesion are presented. We use the regional model of the Institute of Economic Research at the Slovak Academy of Sciences in Bratislava (B_IER_REG), which is connected to the econometric model (B_IER_ECM) and allows us to analyze and forecast different approaches to the Slovak regional cohesion policy and their influence on the regions of Slovakia.

The standard and alternative scenarios describe the economic development of the regions in Slovakia on the one hand with their existing divergent dynamic and on other hand on the basis of implementing various regional strategies. The aims of the presented paper is to describe causalities, constrains and impacts of the aforementioned regional strategies and quantify their impact in the intensity of a regional divergence with respect to the development of the national economy.

We assume three different scenarios. The baseline scenario presumes that there are no changes in the current regional policy and stems from current assumptions about further economic development without major changes. Scenario no. 2 will be oriented to support regional growth centres together with a moderate cohesion policy mainly using the EU support funds. Scenario no. 3 which is derived from the scenario no. 2 assumes a symbiotic effect of using support funds together with more efficient regional self-government (quality local regional policy anticipates synergic effects).

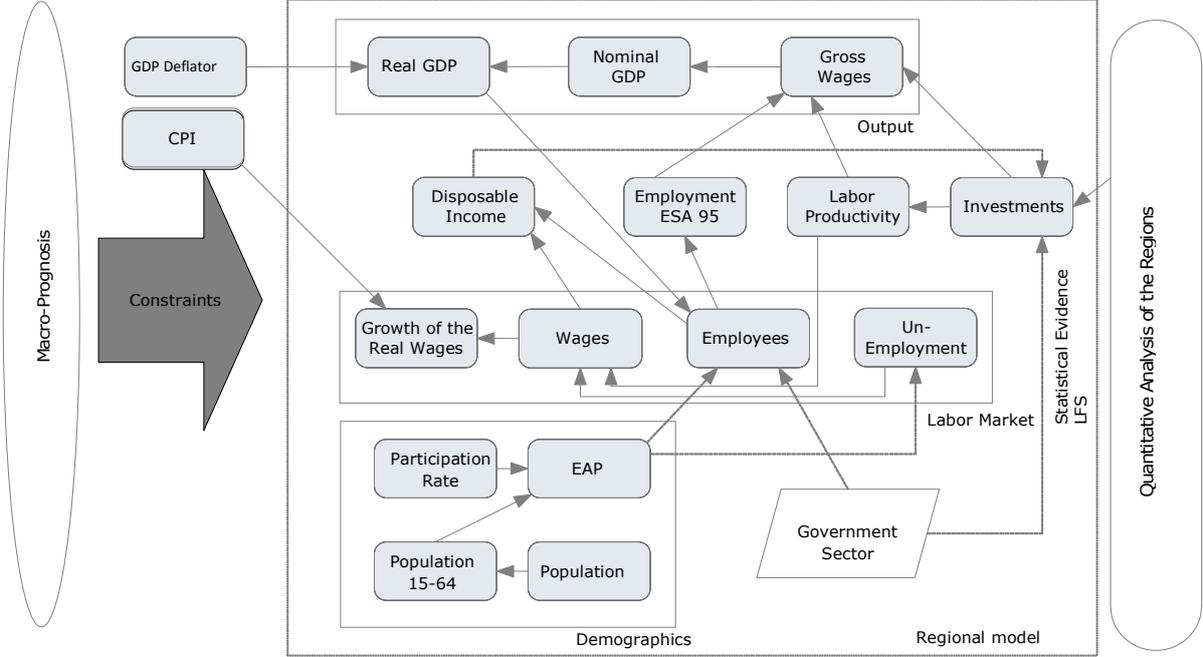
2. Regional model of the Slovak Republic

Regional development in Slovakia is influenced by a set of social and economic considerations. The baseline scenario of the regional model of the Slovak Republic is founded on a so called top-down principle with a feedback to the block of GDP and based on our macro-economic forecasts from the econometric model B_IER_ECM_09q3. The aggregate macroeconomic indicators from the econometric model B_IER_ECM_09q3 are inputs for the regional model as certain restrictions, respectively. This model is based on quarterly data from the first quarter of 1995 to the second quarter of 2009, (58 observations). The medium-term forecast provides us a view until the year 2020. The sources of data are the Statistical Office of Slovakia, the National Bank of Slovakia, the Ministry of Labour, Social Affairs and Family and the Ministry of Finance. The economic development analysis of the regions confirmed the facts already known to the scientific community and provides us some further information about changes and trends in their development throughout the past 10 years. The regional model is divided into the following sections: demographics, labour market and investment. The exogenous and expert input is a qualitative analysis of the expected regions and regional policy.

The regional model of the Slovak Republic (B_IER_REG_09) is based on basic economic relationships (see Figure 1) and takes into account both the supply side and the demand side and is based on annual data for the last 10 years. The model consists of the following blocks: The demographic block, which designates the human capital stock and labour supply on the basis of middle-term forecast.

Both indicators are the same for all variants. The block of the labour market simulates employment, unemployment and wages. They are modelled statistical indicators both on the basis of statistical evidence (registrations) and on the basis of the Labour Force Survey (LFS). The gross output is modelled using employment ESA95 and labour productivity. Furthermore, the productivity is influenced by the level of investments. The level of nominal GDP is calculated on the basis of gross production and the real GDP is calculated from the nominal GDP using the GDP deflator. Exogenous and expert inputs are the qualitative indicators of the regions (current state analysis, analysis of the potential of the regions and future development analysis) and the expected regional policy (the sector of general government). The main results of the regional forecast are real GDP, real wages and basic labour market indicators.

Figure 1 – The structure of the Regional model of the Slovak Republic (B_IER_REG_09)



Source: Authors

The changes in the model are modelled through the government sector. We assume in the scenarios which are modelled on the basis of the so called bottom-up principles changes in the structure, volume and efficiency of the public expenditures from domestic and external sources. The parameters of the model were calibrated in the baseline scenario. All these scenarios will be described in detail below.

Scenario No. 1 assumes strong cohesion policy towards a rapid decline of the regional disparities using both the support of the EU funds and the redistribution of public finances. The regional policy will use all available tools such as redistribution of the taxes in favour of the weakest regions.

Scenario No. 2 deals with the support of the development of the regional centres with moderate cohesion policy mainly through support resources. Only those resources will be used that do not penalize the stronger regions.

Scenario No. 3 is based on scenario No. 2, and assumes synergetic effect of the support tools with a greater efficiency of the regional authorities (quality regional policy of the regional government).

We will follow in the baseline scenario and in all other three aforementioned scenarios the expected impact on the welfare of the individual regions and the overall welfare on the national level (GDP growth, development in the weakest region, unemployment rate and wages). At first we will compare these scenarios with the baseline scenario and then they will be compared each other, with an emphasis of allocation efficiency of funds in the regions of Slovakia.

3. Macroeconomic model of the Slovak Republic

Currently, the forecasting of the future development in the world's major economies on the grounds of the global economic recession is a relatively difficult task. This makes it difficult to predict the future development of a small and highly open economy, such Slovakia is. Currently, we can say that the short-term forecast is reviewed with a monthly frequency, generally downward. The stabilization of forecasts can be observed only for few past months. The analysts are cautious when reducing growth especially to a negative value and are prone to accept positive expectations.

The instability of the external and internal factors can determine the future development in the medium term and can induce higher risks when the prognoses are created. The baseline scenario is based on the current state of the internal and external environment and represents the most plausible economic development of Slovakia. The forecast in relation to the requirements of the EU covers the horizon of ten years from 2010 to 2020.

Different scenarios allow us the comparison of the developments in regions at the level NUTS 3 on the basis to different orientations of the regional economic policy. Therefore, the prognostic accuracy of the baseline scenario is not crucial. More important are the differences in the economic development between the aforementioned scenarios.

Econometric model SAS_B_IER_ECM_09q3 was designed in order to create the forecast of the future development of the Slovak economy. It is based on quarterly data, from 1995q1 to 2009q3, which means 59 available observations. Forecast is considered for the medium term until 2015. Our sources of data are the Statistical Office of the Slovak Republic, the National Bank of Slovakia and the Ministry of Finance of the Slovak Republic.

Model is based on macroeconomic principles, is demand-oriented and divided into 5 blocks (labour market block, state budget block, block of prices, foreign trade block and GDP block). Model contains 52 equations. While 31 of these are stochastic, remaining 21 equations are identities. Stochastic equations are of the ECM form³ (error-correction method). In particular equations, integrated time series of the same order are used and long-term equilibrium is described by the co-integration relationships. The structure of the model is in detail described in [5].

4. Demographic changes in Slovakia

The demographic forecast constitutes an important part in our regional model because its results strongly determine the results of the forecast from the regional model. The presented demographic

³ Description of the methodology see: Banjere A., Dolado J., Galbraith J. W. and Hendry, D. F.: Co-Integration, Error correction, and the Econometric Analysis of Non-Stationary Data, Oxford University Press, 2003, ISBN 0-19-828810-7

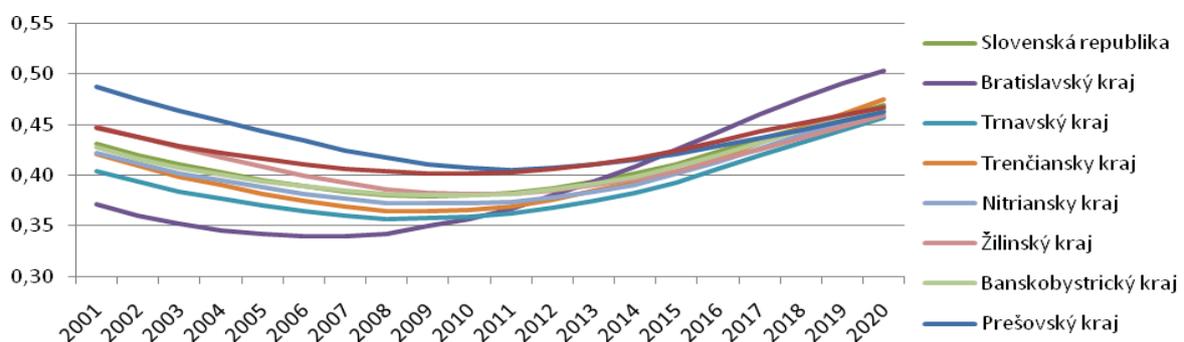
trends are the same for all scenarios. The main output of this block is the forecast of the economically active population, which significantly determines the development of the labour market. Forecast of the population is based on the information from the Demographic Research Centre (Vaňo, 2008).

In terms of regional economies, one of the important factors of the development will be the index of economic dependency ratio, which expresses the amount of persons in pre-and post-working age per a person in working age. The value of this indicator decreased by the year 2009 (Chart 1). Since the year 2010 we expect the economic burden growth on the level of 2.1 % per year. The highest intensity of growth is expected in the Bratislava region on the level of 3.4 % per year. In the past, the largest numbers of economically dependent people were in pre-productive age (children), now the burden shifts under the impact of growing numbers of older people. Currently, the average level of the index of economic burden reaches minimally the level of 0.38.

Figure 2 Slovak NUTS 3 regions



Chart 1 - Index of economic dependency ratio⁴

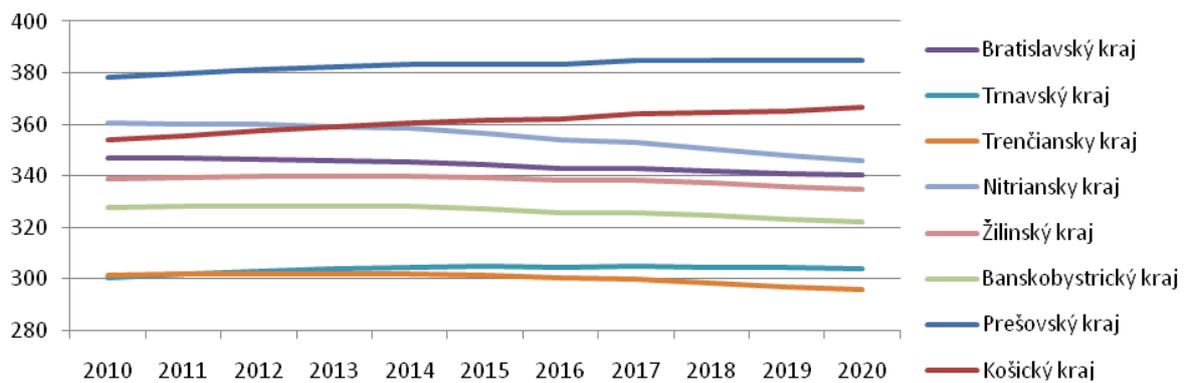


Source: Statistical Office of the Slovak Republic, Demographic Research Centre, Economic Institute of the Slovak Academy of Sciences (authors)

⁴ In this paper also Slovak equivalents for regions are used: Slovenská republika – the Slovak Republic, Bratislavský kraj – Bratislava region, Trnavský kraj – Trnava region, Trenčiansky kraj – Trenčín region, Nitriansky kraj – Nitra region, Žilinský kraj – Žilina region, Banskobystrický kraj – Banská Bystrica region, Prešovský kraj – Prešov region, Košický kraj – Košice region.

The forecast of the economically active population is based on the population in working age and on the development of the participation rate. A more modest decline in the number of economically active population opposite the number of working-age population is influenced with a slight increase in participation rate of the population, in other words, the rate of economic activity. One of the main determinants is the gradually increasing retirement age and the increasing group of older people. On the grounds of this analysis the retirement age has to be increased because of the increase of the average age and the increase of life expectancy. Aging population will also increase and this fact will significantly influence the increasing pressure on public finances (Radvanský, Kvetan, 2008 [4]). The highest growth of the participation rate is expected in the Košice region in relation to the current low level of participation rate in this region and the expected support funds and support ALMP⁵.

Chart 2 – Forecast of the economically active population, in thousands of persons, LFS



Source: Statistical Office of the Slovak Republic, Demographic Research Centre, Economic Institute of the Slovak Academy of Sciences (authors)

The number of economically active population will reach its peak in the year 2014. This will be affected by the reduced number of people of working age and a by slight increase in the participation rate. A further increase could be achieved only by system changes, for example with rising the retirement age. We assume gradual decline of the economically active population in all regions except Eastern Slovakia. On the ground of a slightly different demographic structure in these regions we can expect a slight increase in the number of EAP in the future⁶.

5. Baseline scenario

The baseline scenario assumes the most probable trends of regional development without significant fluctuations. The main factors having the influence on regional development will be demographic projections and the attempts of cohesion policies with significantly proclamative nature (government

⁵ Active Labour Market Policy – Aggregate of support components to allow an easier access to labour market for unemployed people

⁶ The growing number of working-age population in Eastern Slovakia is mainly influenced with the rising number of Roma population.

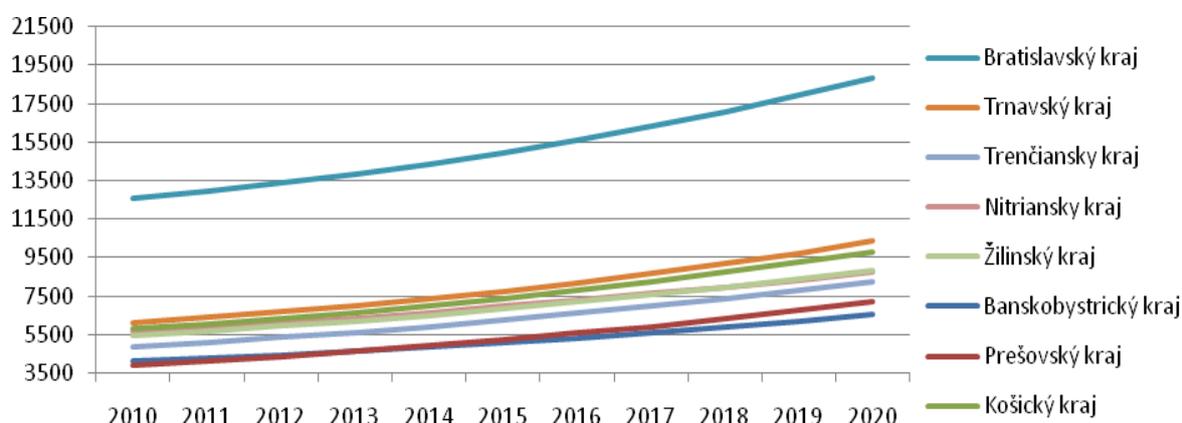
spending will be somewhat of cohesive nature). Other factors will follow the commonly expected trends.

Table 1 – Real GDP forecast from 2010 to 2020, in mil. Eur, c. p. 2000

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Slovak Republic	48644	50541	52613	54928	57509	60385	63525	66955	70571	74452	78547
Bratislava region	12596	12971	13375	13822	14324	14905	15560	16299	17087	17939	18851
Trnava region	6134	6399	6690	7008	7363	7758	8193	8668	9189	9746	10341
Trenčín region	4880	5107	5354	5617	5915	6240	6595	6983	7386	7812	8265
Nitra region	5683	5898	6117	6367	6653	6960	7291	7637	7983	8346	8725
Žilina region	5466	5697	5929	6201	6504	6834	7196	7586	7978	8403	8842
Banská Bystrica region	4121	4265	4438	4640	4843	5082	5319	5600	5889	6205	6528
Prešov region	3931	4132	4355	4618	4914	5219	5561	5916	6316	6738	7189
Košice region	5832	6071	6355	6656	6994	7386	7812	8266	8743	9264	9807

Source: Economic Institute of the Slovak Academy of Sciences (authors)

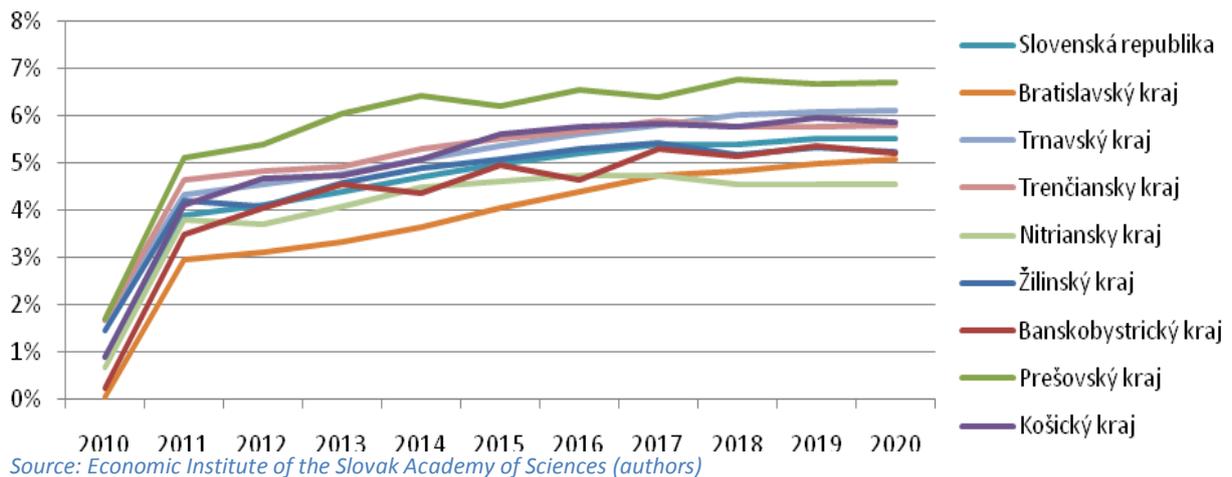
Chart 3 - Real GDP forecast from 2010 to 2020, in mil. Eur, c. p. 2000



Source: Economic Institute of the Slovak Academy of Sciences (authors)

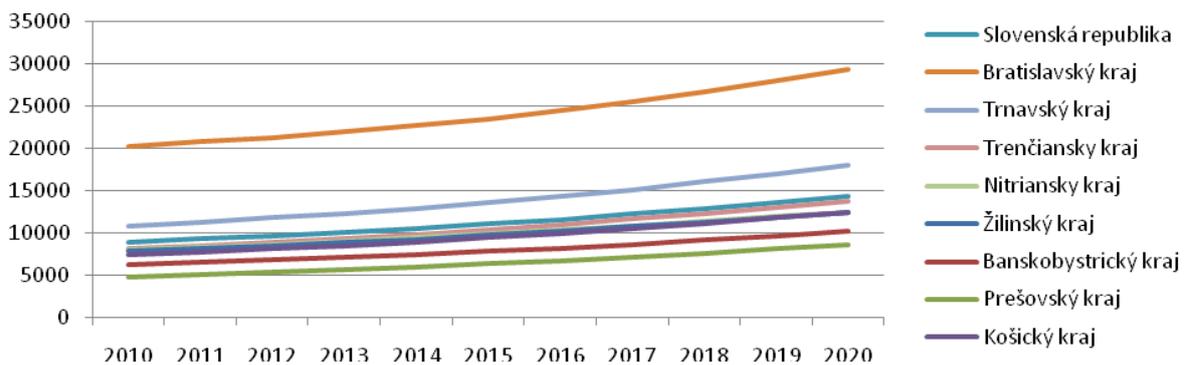
Production distribution through the regions of Slovakia is very unbalanced; a large part of the GDP production is created by a small number of large enterprises. Another factor affecting the production and GDP formation is the level of employment in regions. The highest level of GDP creation is in the Bratislava region which is economically the strongest region of Slovakia having the highest number of employees. This is due to its urban character and the status of the capital, the governing institutions and corporations with high portion of value added are concentrated there. Other regions are considerably more balanced in all of the relevant aspects. During the 2010-2020 periods, the expected annual GDP growth in Slovakia is 4.5 % in average. The highest level of GDP creation is expected in the Bratislava region, at an average level of 25 % of the Slovak total GDP. On the other hand, the lowest average share of the GDP formation in the period described can be expected in the Prešov region (9 %) and the Banská Bystrica region (8 %). The highest average annual GDP growth is expected in the Prešov region at 5.8 % and the lowest one in the Bratislava region at 3.7 %.

Chart 4 - Real GDP growth forecast from 2010 to 2020, yearly changes



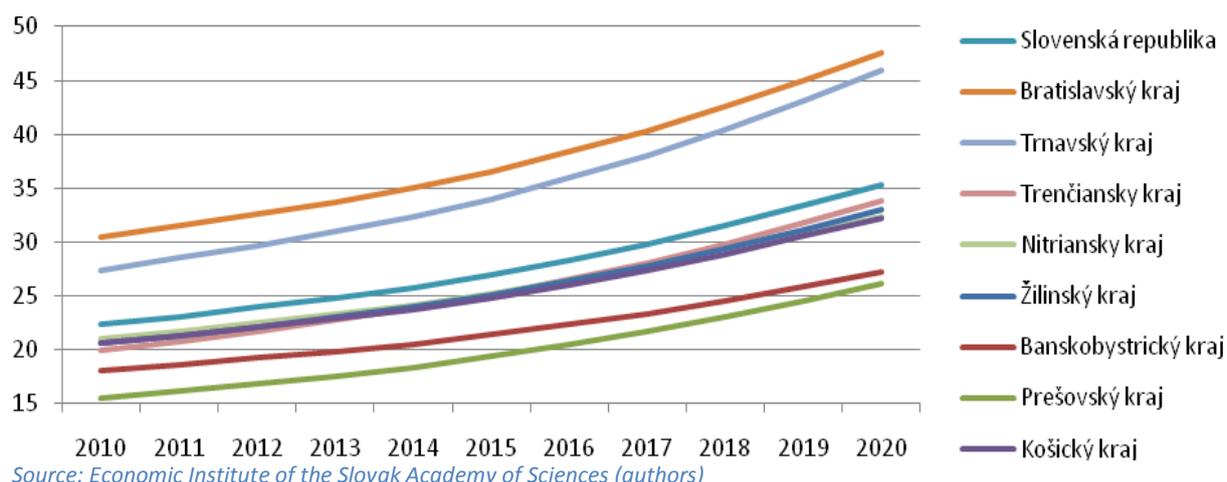
Slovakia is a small open economy, and due to this fact and complicated global economy development an expectation of substantial slowdown in the Slovak economy would be appropriate. For the year 2010, an assumption of the persistence of global economic problems with a slight recovery in the second half of the year is applied. From this reason we expect the recovery of global economy from recession in the following years. The period after 2010 will encounter a gradual re-expansion of economic processes, which will positively influence the expected GDP growth (Chart 4). The highest average annual GDP growth is expected in the Prešov region at 5.8 % and the lowest in the Bratislava region at 3.7 %. Significantly higher growth in the Prešov region will slightly influence its cohesion in long-term, as region production has increased in comparison to significantly lower baseline.

Chart 5 – GDP per Capita, in mil. Eur, c. p. 2000



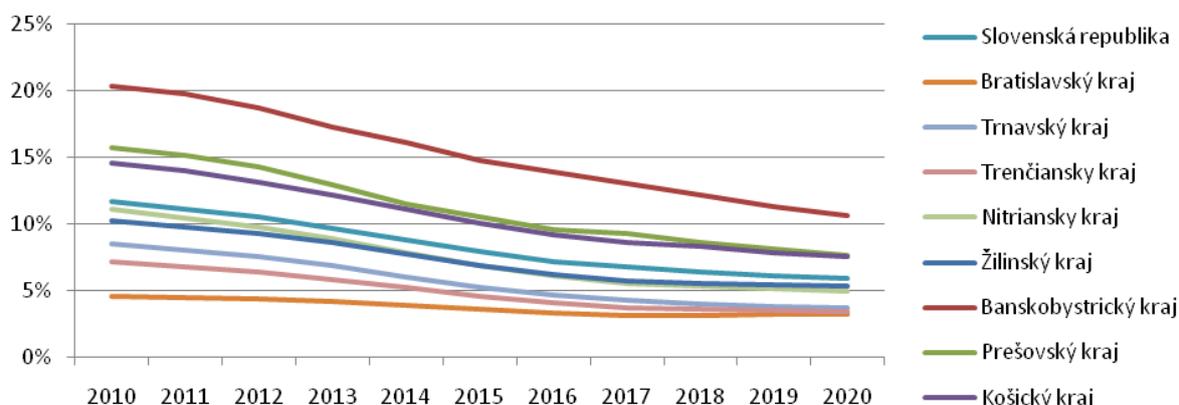
The highest per capita GDP (in constant prices) is expected in the Bratislava region at the level of about 24,000 Euros on average, the lowest one in the Prešov region, with an average of 6,500 Euros. This indicator creates a significantly distorted picture of regional economic strength, because the essential part of Bratislava region GDP is produced by commuter employees from other regions, who produce output in the Bratislava region, but a considerable portion of consumption is spent in their home regions. In the Bratislava region almost a quarter of workforce consists of commuter employees. A better comparison indicator of the regional strength is the labour productivity under the ESA (by the site of workplace).

Chart 6 – Labour Productivity (ESA95), thousand Euros



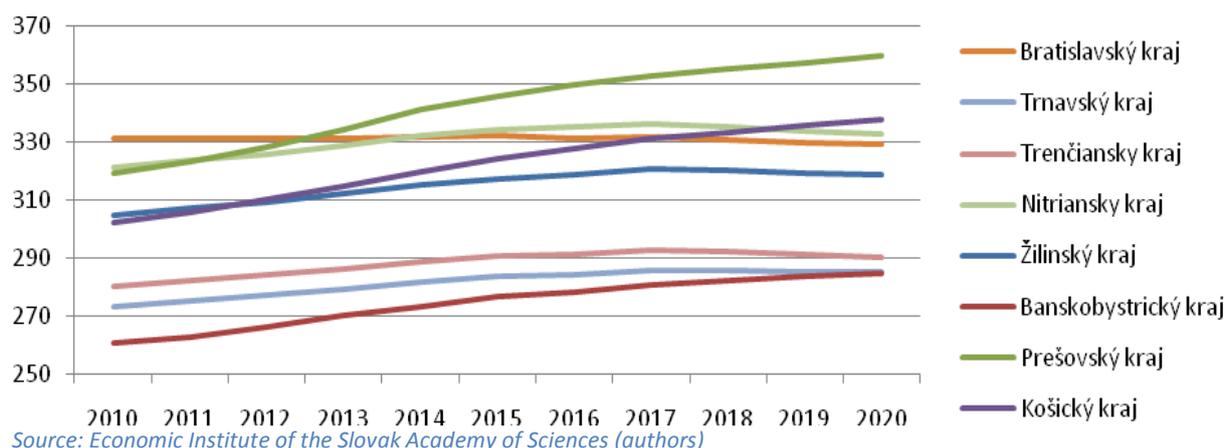
The expected real labour productivity is calculated as a ratio of GDP on employed by the national accounts (ESA), which takes into account the place of work. In the upcoming period, we expect a gradual increase in the labour productivity in Slovakia. The highest productivity is expected in Trnava and Bratislava regions and the lowest one in Prešov and Banská Bystrica regions. The highest growth in 2020 compared to 2010 is expected in the Bratislava region with an increase of 17,000 €, which is in contrast with the lowest growth of 9,100 € in the Prešov region.

Chart 7 – Unemployment rate (LFS)



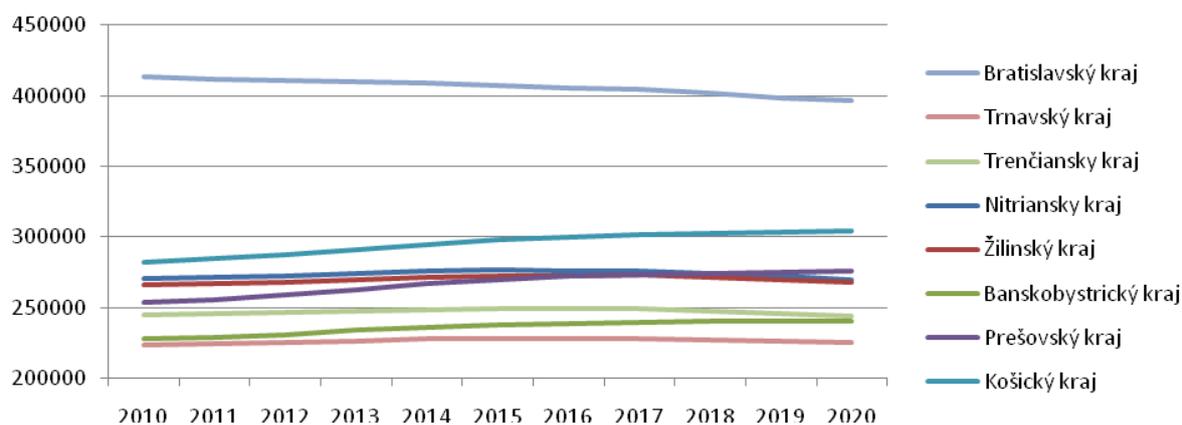
In the period starting from in 2010 we expect a downward trend of unemployment in the Slovak Republic. This trend will be affected by global economic growth implicating the same trend in the Slovak economy, resulting in new jobs creation. It is also influenced by demographic factors, namely by foreseen aging of the population in Slovakia and the decline of the economically active population. For this reasons, economies striving to lower unemployment do not need to create as many jobs as in the case of higher level of economically active population. The lowest unemployment rate is expected in the Bratislava region, which should reach an average rate of 3.75 % over the period analysed, the highest unemployment rate is expected in the Banská Bystrica region, in which it will vary around 15.3 % on average. In year 2020 compared to 2010 the highest decline in unemployment by almost 10 percentage points is expected in the Banská Bystrica region.

Chart 8 – Employment (LFS), thousands of persons



The expected growing number of workers reflects the development in unemployment (Chart 8). The highest increase in the number of workers in 2020 compared to 2010 representing nearly 13 % difference is expected in the Prešov region, followed by the Košice and Banská Bystrica regions. On the other hand, we do not see a rapid fall in unemployment in these regions due to demographic growth. a partial cohesion policy has to be focused on job creation in these regions. The decrease in the number of employees occurs only in the Bratislava region in 2020, almost by 1 %, compared to 2010. Expected average annual growth in the number of persons employed by the year 2020 will be around 0.6 %.

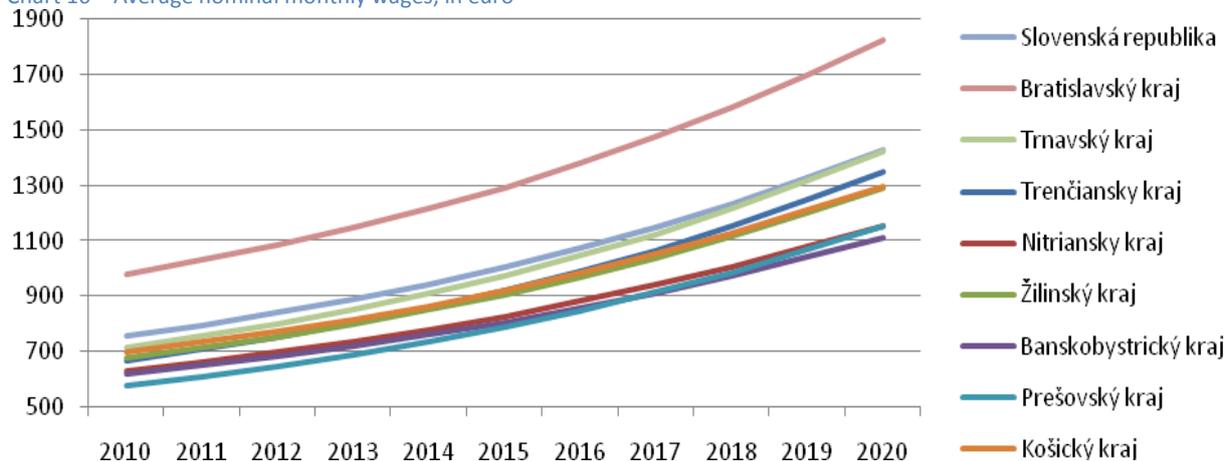
Chart 9 - Employees (ESA95), persons



The highest number of employees is expected in the Bratislava region according to ESA methodology. This is mainly due to the fact that in this region there is the highest generation of new jobs, and those are also occupied by employees from other regions. In the same time Bratislava is, with the status of the capital city, home to many nationwide institutions and government. However, the expected number of employees in this region will decline, in contrast to rest of the regions, because of the relatively higher labour costs, decline of economically active population and the lack of available workers, at the same time this will result in lower labour migration to this region due to growth and job opportunities in the surrounding regions (especially in the Trnava region). In 2020, the expected number of employees according to the ESA methodology is 4 % less than the number in 2010. In other regions, we expect an increase in the numbers of employees, which will be determined by a

higher new job creation and a gradual economic convergence to the Bratislava region. The highest growth in 2020 compared to 2010 is most likely to occur in the Košice region 8 %, Prešov region 9 % and Banská Bystrica region 5 %.

Chart 10 – Average nominal monthly wages, in euro



Source: Economic Institute of the Slovak Academy of Sciences (authors)

The wage growth is determined by the labour productivity growth and the unemployment rate. The highest average wage growth in the next ten years is expected in the Prešov region (Chart 10). It is mainly due to the lowest baseline and the expected higher job creation. Nevertheless, this region together with the Nitra and Banská Bystrica regions, will still have the lowest average monthly wage. The relatively high average wage increases can be expected in economically stronger regions of Western Slovakia, to which we can also add the Žilina region. Despite the strong city of Košice, Košice as a region is unable to 'shift' wages and will not achieve above average growth.

6. Comparison of scenarios

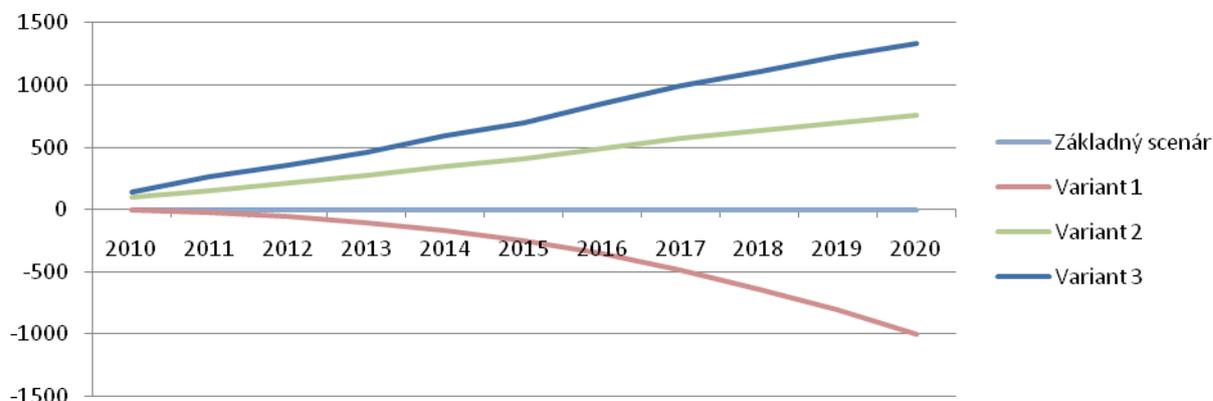
By comparing the results of the scenarios, we can evaluate the best scenario in terms of the anticipated benefits for Slovakia as well as for different regions. In this case the most eagerly awaited comparison will be the comparison of the weakest regions and the improvement of their potential convergence to the rest of Slovakia.

The comparison of the GDP of Slovakia from the baseline scenario with the other scenarios is in the Chart 11. The scenario No. 1 shows a lower GDP growth during the period 2009-2020 by nearly 1 billion Euros. Table 2 contains the cumulative changes during this period. In the first scenario there is an accumulated loss of the GDP on the level of 2 percentage points. At the same time there is a real convergence of the Banská Bystrica region to other regions of Slovakia. In the scenario No. 2 there is a higher overall GDP growth on the level of 1.2 percentage points and we can note very slow real convergence between the strongest and weakest regions (Bratislava region and Banská Bystrica region). In terms of expected development the third scenario appears to be the most interesting. We can see in this scenario a relatively temperate cohesion with the highest growth, which can be determined by several factors. In the Bratislava region, with a low unemployment and a declining number of economically active populations, the model predicts a strong growth based on increasing labour productivity instead of an extensive growth (increasing the number of jobs). For this reason it is less complicated to achieve growth in regions with higher unemployment by creating new jobs.

The cumulative growth of the GDP at constant prices for 10 years is higher by 2.3 percentage points, (around 1.33 billion Euros). In comparison to the first scenario there is a slower reduction in the

differences. The quality of the workforce in the regions is also different. There is a largest concentration of people with tertiary education in surroundings of university towns. In terms of cohesion, it is important and interesting to follow the development of the more detailed breakdown LAU1 (districts), because intra-regional disparities are in some cases much greater than between the regions. A good example is the comparison of the districts in the Banská Bystrica region on the north and the south.

Chart 11. - Comparison of the GDP of Slovakia between the baseline scenario and other scenarios, in bill. Euros, c. p. 2000



Source: Economic Institute of the Slovak Academy of Sciences (authors)

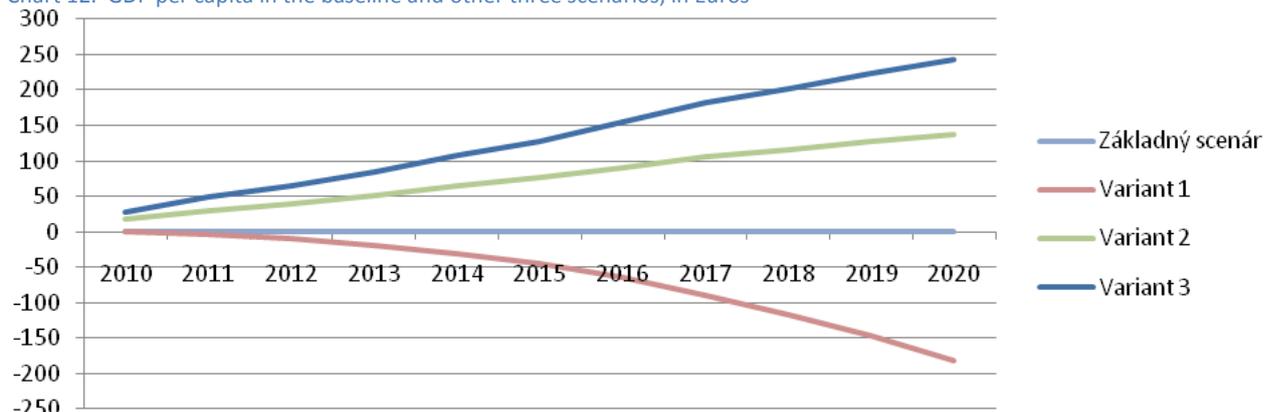
Table 2 - Comparison of the shares of different regions on the GDP in 2020 and the cumulative change in GDP between 2010-2020

	Baseline Scenario		Scenario No. 1		Scenario No. 2		Scenario No. 3	
	Share on GDP	dGDP (c. p.)	Share on GDP	dGDP (c. p.)	Share on GDP	dGDP (c. p.)	Share on GDP	
Slovak Republic		-2,0		1,2		2,3		
Bratislava region	24,00 %	-1,5	24,09 %	1,2	23,98 %	2,1	23,96 %	
Trnava region	13,17 %	-0,6	13,30 %	1,2	13,16 %	2,3	13,15 %	
Trenčín region	10,52 %	-5,0	10,31 %	1,3	10,51 %	2,3	10,51 %	
Nitra region	11,11 %	-3,7	10,97 %	1,1	11,11 %	2,1	11,11 %	
Žilina region	11,26 %	-3,5	11,14 %	1,2	11,26 %	2,3	11,26 %	
Banská Bystrica region	8,31 %	0,5	8,46 %	1,2	8,33 %	2,3	8,35 %	
Prešov region	9,15 %	-1,9	9,17 %	1,4	9,16 %	2,6	9,17 %	
Košice region	12,49 %	-1,1	12,56 %	1,3	12,50 %	2,4	12,51 %	

Source: Economic Institute of the Slovak Academy of Sciences (authors)

When we compare the GDP per capita at the national level we achieve the same results as in the case of GDP (Chart 12). However it is interesting to compare the development of this indicator on regional level. In the first scenario, the GDP per capita increases in the Banská Bystrica region by 46 Euros, while in the Bratislava region it falls by 270 Euros in the case of a greater cohesion. Due to the higher overall growth in the third scenario the growth of the GDP per capita in the Banská Bystrica region occurs by 218 Euros compared to € 443 in the Bratislava region, which leads to a slower cohesion, but from the standpoint of the development in the Banská Bystrica region we can note improvement in this region in contrary to the first scenario.

Chart 12. GDP per capita in the baseline and other three scenarios, in Euros



Source: Economic Institute of the Slovak Academy of Sciences (authors)

We can see in the Table 3 that these changes have a significant impact on the GDP, on the level of 0.1 percent, which represents a numerical difference in hundreds of million Euros. A long period of a higher overall GDP growth facilitates faster convergence of Slovakia to the more advanced EU countries.

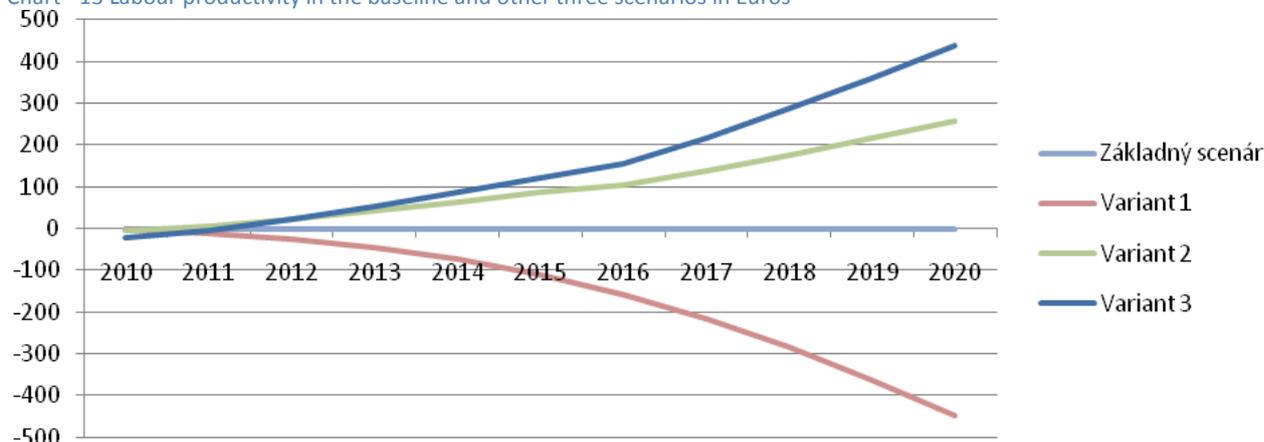
Table 3 Expected GDP growths in the baseline and other three scenarios

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Baseline Scenario	0,90 %	3,90 %	4,10 %	4,40 %	4,70 %	5,00 %	5,20 %	5,40 %	5,40 %	5,50 %	5,50 %
Scenario No. 1	0,88 %	3,86 %	4,04 %	4,31 %	4,59 %	4,87 %	5,05 %	5,22 %	5,21 %	5,31 %	5,30 %
Scenario No. 2	1,11 %	4,00 %	4,19 %	4,50 %	4,81 %	5,08 %	5,30 %	5,48 %	5,44 %	5,55 %	5,52 %
Scenario No. 3	1,20 %	4,13 %	4,26 %	4,58 %	4,89 %	5,13 %	5,39 %	5,55 %	5,49 %	5,59 %	5,55 %

Source: Economic Institute of the Slovak Academy of Sciences (authors)

In terms of the labour productivity (Chart 13) a reduction in the overall labour productivity occurs in the first scenario in comparison with the baseline scenario. It is caused both by the strong influence of the cohesion policy financed through public resources and a faster increase in the number of jobs in sectors with lower added value. On the contrary, the growth caused by better allocation and efficiency of resources evocate a higher overall productivity.

Chart - 13 Labour productivity in the baseline and other three scenarios in Euros



Source: Economic Institute of the Slovak Academy of Sciences (authors)

In the case of supporting the strong cohesion at the expense of the strongest regions there is a stronger decline in the overall unemployment rate. This leads to a transfer of jobs with low added value to more assisted regions. In terms of reviving the economy, there is a faster decline in the unemployment rate in the scenarios No. 2 and No. 3 (Table 4). At the level of total unemployment at

around 5 % some regions achieve the natural rate of unemployment, and/or appear the problem of structural unemployment, when the needs of the labour market are not satisfied. At the same time, in some regions we find an equally important problem, the so-called long-term unemployment, to employ people with reduced work habits is a very difficult problem. Another interesting factor is the decline in the number of economically active population. In some regions the unemployment rate will decrease without new job creation. We expect this in the Nitra region, where the number of economically active population will decrease by more than 10,000 persons between the years 2014-2020 despite a slight increase in participation rate.

Table 4 Unemployment rate (LFS), baseline and other three scenarios

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Baseline Scenario	11,7 %	11,2 %	10,6 %	9,7 %	8,8 %	7,9 %	7,2 %	6,9 %	6,4 %	6,1 %	5,9 %
Scenario No. 1	11,7 %	11,2 %	10,6 %	9,7 %	8,8 %	7,9 %	7,2 %	6,9 %	6,4 %	6,1 %	5,9 %
Scenario No. 2	11,5 %	10,9 %	10,3 %	9,4 %	8,5 %	7,6 %	6,8 %	6,4 %	6,1 %	5,9 %	5,7 %
Scenario No. 3	11,3 %	10,7 %	10,1 %	9,2 %	8,2 %	7,3 %	6,5 %	6,1 %	5,8 %	5,6 %	5,5 %

Source: Economic Institute of the Slovak Academy of Sciences (authors)

The highest expected employment growth will be in 2015 (Table 5). As long as the unemployment rate will fluctuate approximately on the level of 7 %, the reduction of this rate will be difficult. Also a gradual decline of the economically active population starts in all regions except the Košice and Prešov regions. The highest growth of the number of employees by the LFS will be in the scenario No. 3, in which the number of workers will reach the level of 2,550 thousand persons in 2020.

Table 5 Employees (LFS), baseline and other three scenarios, thousand persons

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Baseline Scenario	2393	2411	2433	2458	2485	2505	2518	2532	2535	2537	2539
Scenario No. 1	2393	2411	2433	2458	2485	2505	2518	2532	2535	2537	2539
Scenario No. 2	2398	2418	2440	2466	2494	2515	2528	2542	2544	2544	2545
Scenario No. 3	2403	2424	2447	2473	2502	2523	2538	2551	2551	2551	2550

Source: Economic Institute of the Slovak Academy of Sciences (authors)

To compare the efficiency of different scenarios, it can be useful to compare the developments in the weakest regions on the basis of unemployment and GDP. In the case of the Banská Bystrica region in all scenarios a higher GDP will be reached than in the baseline scenario. Despite this the overall higher GDP growth in Slovakia in the scenario No. 3 overcomes the effects of the strong cohesion policy from scenario No. 1. We can see a similar development in the case of the Prešov region, but the strong cohesion policy in this region will not have sufficient impact on the higher growth of the GDP.

Table 6 GDP per capita in the weakest regions, in Euros

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
BB - Baseline Scenario	6328	6559	6835	7157	7480	7861	8239	8687	9148	9654	10175
BB - Scenario No. 1	6335	6582	6871	7202	7533	7915	8292	8738	9197	9701	10221
BB - Scenario No. 2	6355	6597	6881	7214	7551	7942	8337	8798	9263	9775	10297
BB - Scenario No. 3	6370	6627	6917	7257	7606	8002	8414	8884	9353	9871	10393
PO - Baseline Scenario	4866	5102	5363	5671	6018	6374	6772	7186	7652	8142	8665
PO - Scenario No. 1	4862	5093	5349	5650	5985	6329	6713	7115	7570	8051	8570
PO - Scenario No. 2	4881	5125	5392	5707	6063	6427	6836	7261	7732	8229	8758
PO - Scenario No. 3	4890	5142	5413	5734	6097	6466	6884	7318	7794	8297	8829

Source: Economic Institute of the Slovak Academy of Sciences (authors)

As mentioned in the description of each scenario, a strong cohesion policy will have the largest effect on job creation directly in the region (Table 7). Significant influence of this factor is also the reducing of the unemployment rate in reducing the need for work migration. In the case of scenario No. 1 in the Banská Bystrica region the employment will increase in 2020 by 10,000 persons as compared to the third scenario. In the case of the Prešov region this difference will be smaller (3,000). The scenarios No. 2 and No. 3 will only slightly affect the reallocation in favour of these regions. However, they are expected to create fewer jobs but with higher added value.

Table 7 Employment (ESA95) in the weakest regions, persons

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
BB – Baseline Scenario	228073	228969	231029	233826	235877	238032	238364	239777	239953	240156	240297
BB - Scenario No. 1	229388	231588	234906	238875	242075	245292	246683	249161	250361	251538	252634
BB - Scenario No. 2	229105	230231	232396	235336	237577	239806	240406	241737	241597	241547	241382
BB - Scenario No. 3	229885	231396	233657	236730	239146	241444	242291	243546	243114	242831	242383
PO - Baseline Scenario	253502	255741	258662	262833	267359	269800	271968	273156	274290	274814	275518
PO - Scenario No. 1	254060	256842	260303	264958	269859	272700	275221	276858	278413	279367	280504
PO - Scenario No. 2	254351	256770	259779	264055	268669	271177	273513	274690	275572	275915	276392
PO - Scenario No. 3	254992	257720	260811	265182	269878	272449	274939	276106	276756	276932	277199

Source: Economic Institute of the Slovak Academy of Sciences (authors)

We expect the lowest unemployment rate in the Banská Bystrica region in scenario No. 1. Although the highest GDP growth and wages growth in this region can be linked to the third scenario. On the grounds of the results in the case of the Prešov region the highest performance will be achieved in the third scenario (Table 8).

Table 8 Unemployment rate (LFS) in the weakest regions

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
BB - Baseline Scenario	20,4 %	19,8 %	18,7 %	17,3 %	16,1 %	14,8 %	13,9 %	13,0 %	12,2 %	11,4 %	10,6 %
BB - Scenario No. 1	20,1 %	19,3 %	18,1 %	16,5 %	15,2 %	13,8 %	12,8 %	11,9 %	11,0 %	10,1 %	9,2 %
BB - Scenario No. 2	20,0 %	19,3 %	18,2 %	16,8 %	15,5 %	14,2 %	13,2 %	12,3 %	11,6 %	10,9 %	10,2 %
BB - Scenario No. 3	19,7 %	18,9 %	17,8 %	16,3 %	15,0 %	13,6 %	12,5 %	11,7 %	11,1 %	10,4 %	9,8 %
PO - Baseline Scenario	15,8 %	15,1 %	14,3 %	13,0 %	11,5 %	10,6 %	9,6 %	9,3 %	8,6 %	8,1 %	7,7 %
PO - Scenario No. 1	15,7 %	15,0 %	14,1 %	12,8 %	11,3 %	10,4 %	9,4 %	9,1 %	8,4 %	7,9 %	7,4 %
PO - Scenario No. 2	15,5 %	14,8 %	13,9 %	12,6 %	11,1 %	10,1 %	9,1 %	8,8 %	8,2 %	7,7 %	7,4 %
PO - Scenario No. 3	15,3 %	14,5 %	13,6 %	12,2 %	10,7 %	9,7 %	8,6 %	8,3 %	7,8 %	7,4 %	7,1 %

Source: Economic Institute of the Slovak Academy of Sciences (authors)

7. Conclusion

In this paper we present the basic regional forecast of Slovakia at the level of the NUTS III regions. We have discussed the three scenarios using different types of regional and cohesion policies.

The regional demographic forecast showed that in terms of the aggregate indicators the best will be the demographic development in the Prešov region (after the Košice region). It has the best development of the working age population and also the number of economically active population. Conclusions from this positive demographic outlook of the Prešov region must be accepted with respect to its internal disparities, such as the particular problems of the Roma population.

This phenomenon is not studied statistically enough and therefore it is not possible to specify its impact on the regional development exactly. Anyway, the success of the regional cohesion policy in Eastern and Southern Slovakia will strongly depend on the use of a potential employment of the growing Roma population.

The worst development in terms of the aggregate indicators is forecasted in the Bratislava and Nitra regions. For example, the largest decline in the working age population is forecasted in the Nitra region, the largest increase in the aging index is forecasted in the Nitra and Bratislava regions, the highest growth index of the economic burden will be also in the Bratislava region. The highest values of the index of an economic dependency is expected in the Bratislava, Trenčín and Nitra regions and in the case of the economically active population we expect similar development. The Bratislava region will therefore reinforce its regional strategy in order to its further demographic development and continue to enhance the quality of its workforce towards the production of increasingly higher levels of added value.

Even more difficult is the situation in the Nitra region, especially in its peripheral parts, which have a negative population growth, low competitive mining sector and industry, as well as services and agriculture sectors, which are not economic drivers recently. The situation at the labour market throughout the south of Central and Eastern Slovakia is difficult from the point of view of marginalized groups (Roma and Hungarian populations).

From a demographic point of view of the Žilina, Trenčín and Trnava regions have relatively stable prospect. With a reasonable regional strategy they can have very good prospects for the further development of cohesion.

The exact impact of regional policy is very difficult to quantify and analyze and the presented paper does not seek to fulfil this task. It is more important to predict the essential trends of potential development to identify key implications and constraints under various conditions, which will evaluate the best scenario. We assumed three different scenarios of possible developments of regional policy. None of the aforementioned scenarios was simultaneously the best on the basis of all analyzed variables.

Scenario No. 1 was oriented onto the strong cohesion policy towards a rapid reduction of regional disparities, both using the EU support funds as well as redistribution of public finances. The assumption of using all of the available resources of regional policy, such as higher taxes, redistribution of shares in favour of the weakest regions led to a lower national productivity and labour reallocation. In this scenario there is a higher cohesion within the national level but at the expense of an overall growth. The economy has lost a part of the total output of GDP in comparison to the baseline scenario with slightly lower overall productivity. Achieving a lower unemployment in the economically less powerful regions and increasing employment rate under the ESA95 methodology are considered as a highly favourable development.

Scenario No. 2 assumed higher development of regional centres with moderate cohesion policy, mainly through the use of supporting resources. There were used only resources which have no negative impact on stronger regions. The labour market development was slightly better than in scenario No. 1 and achieves a higher productivity. This scenario was clearly overcome by the third scenario.

Scenario No. 3 is based on the second scenario. We expect synergetic effect of the supporting tools and resources with greater efficiency of the regional authorities. This variant showed the best results in almost all observed indicators. Higher overall increase pulled weaker regions to grow faster than in the cohesion scenario with higher labour productivity and wage growth. In the weakest regions, the model predicts creation of jobs similar to those created in the cohesion scenario, but the overall economic effect achieved is clearly higher for weaker regions.

In terms of sustainable regional cohesion, scenario number three seems to be the most suitable. It is oriented towards encouraging the development of regional centres in parallel with high quality and coherent regional policy. This depends on leaving sufficient space to the regional authorities to create national and regional strategies on the one hand and to use this space for focusing on the quality of the strategies for regional authorities on the other hand.

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