

## MEASURES AND PERSPECTIVE OF CONVERGENCE OF SLOVAK REPUBLIC TO THE EU

Matej Valach

University of Economics in Bratislava, Slovakia  
matej.valach@euba.sk

Martin Hudcovský

University of Economics in Bratislava, Slovakia  
martin.hudcovsky@eub.sk

### **Abstract:**

Within the European Union is economic and social cohesion one of the main operational priorities. Cohesion is achieved mainly through the promotion of growth-enhancing conditions and reduction of disparities among the levels of development of EU member states which are key targets of the European Cohesion Policy. In the current period further slowdown in economic growth has occurred which has led to the suspension of catch-up process of Slovakia. Real convergence showed poorer results than nominal convergence and recent data on nominal convergence shows that in the current low-inflation environment almost all EU countries could fulfil the inflation criterion. The goal of the paper is to analyse the convergence of the Slovak economy through the development of the main indicators of real and nominal convergence to the EU and an impact assessment on the possible development of the Slovak economy. In the analysis of convergence are also estimates of absolute and conditional convergence and its impact on economic development. The results confirm that catch-up process takes place in the EU, which is influenced by several external factors. They also confirm the reduction of disparities among EU countries, which are generally still higher than the difference between the price index items within these countries.

*Keywords: nominal and real convergence, absolute convergence, conditional convergence, the European Union*

## 1. INTRODUCTION

The 1992 Maastricht Treaty established the European Community which defined the economic and social cohesion as one of the main priorities of the European Union. According to the European Cohesion Policy, cohesion of member states of the EU is a key target which could be mainly achieved through the reduction of disparities between the levels of development of EU regions and Member States.

In recent decades, members of EU took major steps toward economic integration and put forward numerous policy initiatives aimed at the reduction of regional economic disparities, enhancement of competitiveness among EU members and achievement of balanced and sustainable development.

Since the inception of the policy and the first programming period (1989-1993), this objective has often been translated as the promotion of convergence between EU regions, and in spite of the fact that Cohesion Policy aims at more than purely economic convergence, the reduction of regional disparities in the level of development has mainly been measured as the convergence of regional levels of GDP per capita relatively to the EU average. This type of convergence has even become a major aspect in assessing the effectiveness of the European Cohesion Policy (Monfort, 2008).

Solow neoclassical growth model introduced in 1956 predicts that in the long run growth is achievable only through technological progress and cross-country differences in real income per capita diminish as each economy approaches its balanced growth path and overall convergence takes place between these countries. On the other hand, new growth theories (e.g. Romer, 1986, Lucas, 1988) pointed out the absence of convergence between poor and rich countries and this controversy has spread a wide range of definitions of convergence and empirical testing methods.

The most used concepts of convergence, Barro and Sala-i-Martin (1992), and Mankiw, Romer, and Weil (1992), understand  $\beta$ -convergence as a tendency of poorer economies to grow faster than rich ones and by  $\sigma$ -convergence they understand a reduction of disparities among countries in time. These two existing approaches also differ in their focus on whether economies grow at the same rate in steady state (relative convergence) or whether they converge to the same steady-state income level (absolute convergence).

Absolute convergence of performance of surveyed countries notes only dependence between economic growth and the initial value of GDP per capita. On the contrary conditional  $\beta$ -convergence takes into account the impact of other factors as well. Despite differences, these two concepts are closely related (Monfort, 2008).

Formally,  $\beta$ -convergence is necessary but not sufficient for  $\sigma$ -convergence. Intuitively, this is either because economies can converge towards one another but random shocks push them apart or because, in the case of conditional  $\beta$ -convergence, economies can converge towards different steady-states.

The process of  $\beta$ -convergence is relatively widely discussed topic in the literature. The greatest asset is in particular the contribution of Robert J. Barro, who gradually quantified the rate of catch-up process and influence of supporting factors by a variety of ways. His initial estimates were based on cross-sectional analysis of a large number of countries. Despite the wide use,  $\beta$ -convergence has a number of limitations (Quah, 1993) that have led some economists to suggest that the concept of  $\sigma$ -convergence is more revealing of the reality as it directly describes the distribution of income across economies without relying on the estimation of a particular model.

This paper examines the main indicators of real and nominal convergence of Slovakia towards the EU average, as well as the current situation and possible developments in Slovakia. The European Union experienced the partial yearly improvements in the development of the real economy.

Divergences in growth decreased between Member States, but mainly in connection with a slower decline of GDP in the countries most affected by the crisis. However, the euro area still recorded a fall in GDP. Although the Slovak economy annually increased, economic growth was very weak and did not create conditions for further catch-up effect.

In the analysis of convergence are also estimates of absolute and conditional convergence and its impact on economic development. The results confirm that catch-up process takes place in the EU, which is influenced by several external factors. They also confirm the reduction of disparities among EU countries, which are generally still higher than the difference between the price index items within these countries.

The outlook for the real economy expects return to the positive economic growth in all surveyed countries, therefore catch-up process of Slovakia should gradually renew towards the EU average.

## 2. METHODOLOGY AND THE DATA

The papers by Barro and Sala-i-Martin (1992) and Mankiw et al. (1992) have triggered a huge amount of literature attempting to empirically detect and measure the extent of  $\beta$ -convergence in various contexts. The methodology used in this paper to measure  $\beta$ -convergence involves estimating a growth equation in the following form:

$$1/T \ln(\Delta y_{it}) = \alpha + \beta \ln(y_{it-1}) + \gamma Z_{it} + u_{it} \quad (1.1)$$

Where:

$y_{it}$  and  $\Delta y_{it}$  are respectively the level and the growth rate of GDP per head in region  $i$  in time  $t$ ;

$Z_{it}$  includes all other factors supposedly affecting the growth rate;

$u_{it}$  is the standard error term; and

$\alpha$ ,  $\beta$  and  $\Delta$  are the parameters to be estimated.

We assume that the convergence occurs when  $0 < \beta$ , and when the coefficient is statistically significant. In order to use of coefficient estimate of  $\beta$  the method of ordinary least square, non-linear model (1.1) should be adjusted as follows:

$$b = \frac{-(1 - e^{-\beta T})}{T} \quad (1.2)$$

$$\beta = \frac{-\ln(1+bT)}{T} \quad (1.3)$$

A negative relationship between the growth rate ( $\Delta y_{it}$ ) and the initial level of GDP per capita ( $y_{it-1}$ ), i.e.  $\beta$  is significant and negative, is the sign of a convergence process. The estimated value of  $\beta$  also indicates the rate at which regions approach their steady state and hence the speed of convergence. Based on this value, the so-called half-life can be computed, i.e. the time span which is necessary for current disparities to be halved. For instance, a value for  $\beta$  of two percent implies a half-life of 28 years. If the value of  $\beta$  is restricted to 0, absolute convergence is assumed (Cuadrado-Roura, 2001, López-Baso, 2003, Yin et al., 2003) while if it is freely estimated, conditional convergence is assumed (Cappelen et al., 2003).

While  $\beta$ -convergence focuses on detecting possible catch-up processes,  $\sigma$ -convergence simply refers to a reduction of disparities among regions in time. The two concepts are of course closely related. The most frequently used summary measures of  $\sigma$ -convergence are the standard deviation or the coefficient of variation of regional GDP per capita.

Sigma convergence occurs when the standard deviation in a given regional group decreases and necessary but not sufficient condition for the existence of sigma-convergence is currently beta-convergence (Barro, R.J., Sala-I-Martin, X., 1995). Sigma convergence is defined by the following formula:

$$\sigma = \sqrt{(1/n) \sum_{i=1}^N [\ln(Y_{it}) - \mu_t]^2} \quad (1.4)$$

Where:

$\mu_t$  is the sample average of values  $\ln Y_{it}$

$\ln(Y_{it})$  is the natural logarithm of GDP per capita in country  $i$  and time  $t$

$n$  is number of observation

We examine convergence between the 28 members of the European Union. Per capita real income is measured by PPS converted annual real GDP per capita at 2005 constant prices from OECD and European Commission database. We have baseline samples from 2005 till 2014. First, we calculate selected indicators of real and nominal convergence and then also estimate absolute and conditional convergence and its impact on economic development.

### 3. REAL CONVERGENCE AND DEVELOPMENT OF THE MAIN INDICATORS

Despite the fact that in 2013 was a further slowdown in global economic growth, in 2014 the average growth rate of EU28 countries, compared to 2013 increased by 1.2 percentage points. The unfavorable development in 2013 was due to sluggish demand in developed countries, high output gap and low inflation. Average economic development of the EU measured by real GDP growth partly improved over the year 2013 and 2014. The average growth rate of the EU28 was positive for both years, as is shown in the Table 1.

**Table 1:** Real growth rate of EU in %

GEO/TIME	EU 28	Belgium	Bulgaria	Czech Republic	Denmark	Germany	Estonia	Ireland
2012	-0,5	0,15	0,24	-0,9	-0,66	0,41	5,18	0,15
2013	0,17	0,02	1,28	-0,53	-0,49	0,3	1,57	1,43
2014	1,36	1,35	1,55	1,98	1,09	1,6	2,91	5,2
GEO/TIME	Greece	Spain	France	Croatia	Italy	Cyprus	Latvia	Lithuania
2012	-6,57	-2,62	0,18	-2,19	-2,82	-2,38	4,01	3,84
2013	-3,9	-1,67	0,66	-0,94	-1,75	-5,36	3,02	3,54
2014	0,77	1,36	0,18	-0,4	-0,44	-2,26	2,84	3,03
GEO/TIME	Luxembourg	Hungary	Malta	Netherlands	Austria	Poland	Portugal	Romania
2012	-0,85	-1,69	2,53	-1,06	0,76	1,56	-4,03	0,64
2013	4,35	1,89	2,64	-0,5	0,32	1,26	-1,13	3,53
2014	4,07	3,67	3,54	1,01	0,35	3,33	0,91	2,78
GEO/TIME	Slovenia	Slovakia	Finland	Sweden	United Kingdom	Ireland		
2012	-2,72	1,6	-1,43	-0,29	1,18	0,15		
2013	-1,06	1,42	-1,12	1,24	2,16	1,43		
2014	3,05	2,41	-0,4	2,33	2,94	5,2		

Source: Eurostat, own calculations

In the past year, sigma convergence continued in the European Union, i.e. differences among countries measured by the variability of the indicator declined again as is shown in Table 2. We can conclude that the convergence of economic performance among the countries occurred during the mentioned period. The standard deviation of GDP per capita has decreased from 0.56 to 0.36 over the period of time. After slowdown of the convergence process in the years 2010-2013 occurred again in 2014 a slower widening of economic disparity between the concerned countries. The differences in growth have increased between EU countries mainly due to the fact that developed countries recorded a faster increase of GDP growth in 2014.

**Table 2:** The standard deviation of GDP p.c. for the EU28 countries in the surveyed period

TIME	2000	2001	2002	2003	2004	2005	2006	2007
sigma	0,5577	0,5328	0,51029	0,4815	0,4689	0,4467	0,4309	0,4062
TIME	2008	2009	2010	2011	2012	2013	2014	
sigma	0,3802	0,3809	0,3793	0,3714	0,3625	0,3565	0,3578	

Source: Eurostat, own calculations

Positive development of the EU's GDP during the year 2013 resulted in a gradual reversal of the decline in employment and during year 2014 we could see annual growth of employment (Table 3). The differences in the dynamics of employment increased (as in the case of development of GDP). The opposite trend was recorded in Cyprus where employment as well as economic growth reached the lowest values in the EU. The EU unemployment rate was at level of 10.8% in 2013 and in 2014 gradually decline and reached 10.2%. Differences among countries on average slightly rose in the year 2014, particularly in relation to the continued negative developments in the countries with the highest unemployment. Greece had the overall unemployment rate at the level of 26.6%, on the other hand Germany had the unemployment rate at 5% and Austria at the level of 5.7%. In Slovakia unemployment fell to 13.2% in 2014, but remains as one of the highest in the EU. Slovakia like other countries with high overall unemployment, faces the problem with rising long-term unemployment.

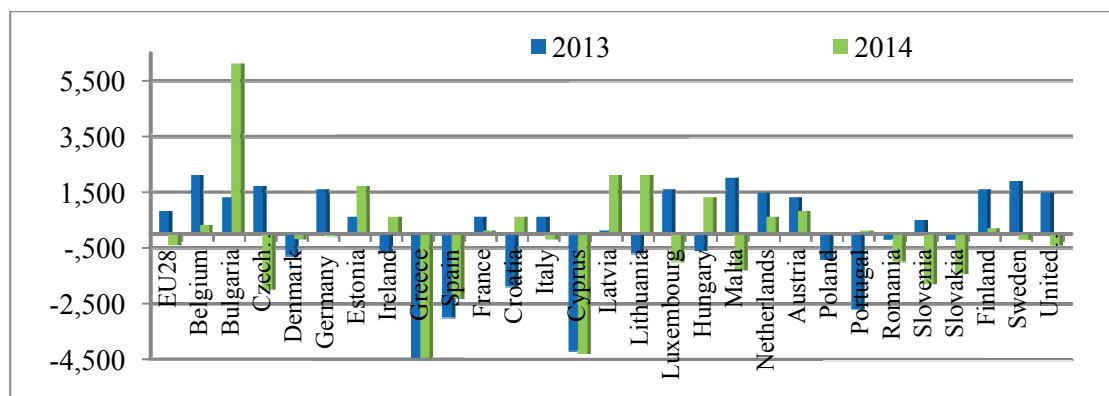
**Table 3:** The unemployment rate for the period from 2012 to 2014, for EU28

GEO/TIME	EU28	Belgium	Bulgaria	Czech Republic	Denmark	Germany	Estonia	Netherlands
2012	10.45	7.55	12.27	7.0	7.5	5.37	10.0	5.85
2013	10.83	8.45	12.97	6.97	6.97	5.27	8.62	7.25
2014	10.23	8.55	11.4	6.1	6.57	4.97	7,32	7.42
GEO/TIME	Spain	France	Croatia	Italy	Cyprus	Latvia	Lithuania	Luxembourg
2012	24.8	9.4	16.03	10.7	11.85	15.05	13.4	5.15
2013	26.1	9.9	17.33	12.17	15.92	11.87	11.77	5.85
2014	24.45	10.3	17.35	12.72	16.12	10.85	10.7	5.85
GEO/TIME	Greece	Austria	Poland	Portugal	Romania	Ireland	Finland	Sweden
2012	24.5	4.87	10.1	15.77	6.8	14.7	7.67	7.97
2013	27.48	5.35	10.35	16.45	7.1	13.1	8.17	8.07
2014	26.55	5.65	9.0	14.07	6.77	11.33	8.62	7.95
GEO/TIME	Malta	United Kingdom	Hungary	Slovenia	Slovakia	Ireland		
2012	6.33	7.9	11.0	11.2	13.95	14.7		
2013	6.34	7.55	10.18	12.1	14.24	13.1		
2014	5.9	6.16	7.73	12.0	13.2	11.33		

Source: Eurostat, own calculations

Average growth in compensation per employee has slowed down in the EU considerably (from 3.2% in 2009 to -0.4% in 2014). However, differences between countries widened. In Latvia and Lithuania, compensation annually increased by more than 2.1 %, on the other hand in Greece compensation per employee decreased by almost 4,9%. Slovakia has a very similar development than the EU average (compensation per employee fell from 2.8% to -1.2%).

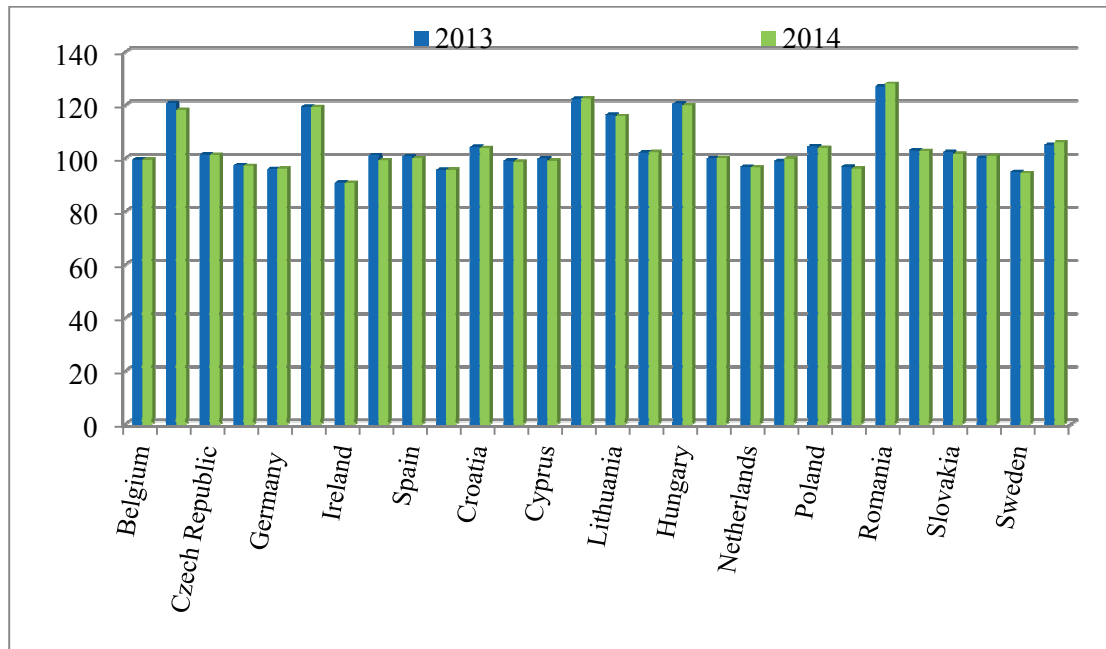
**Picture 1:** Average growth in compensation per employee for EU 28, 2013-2014



Source: Eurostat, own calculations

In the long term it is still true that differences in overall price levels among countries in the EU are lower than in the past. Until the economic crisis, differences were almost continuously decreasing and then slightly increased. Since 2000, the developments of price levels have been also in accordance with the assumptions of the absolute beta convergence. In general, the differences in price levels among EU countries are greater than the differences in price levels of the main components of the price index in each country. This does not apply to a group of new EU member states, where there are differences among individual items greater than the differences among countries.

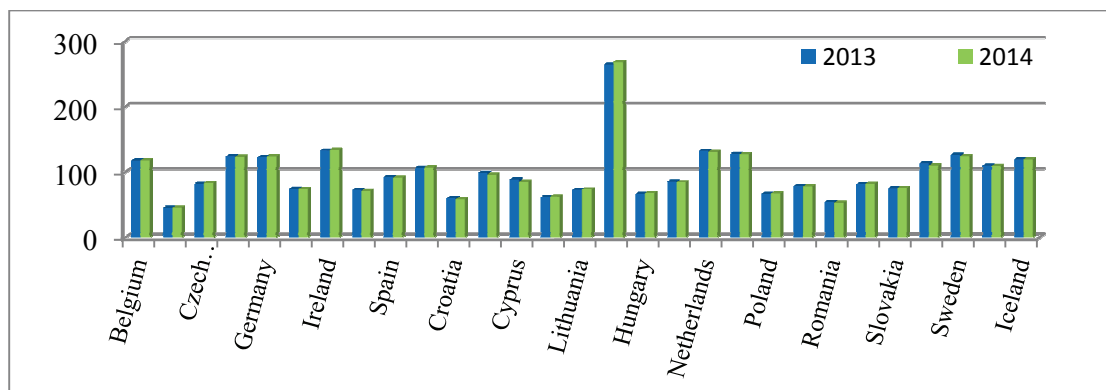
**Picture 2:** Relative price level of the EU28 in %



Source: Eurostat, own calculations

The deceleration of economic growth in Slovakia has led to suspension of catch-up process in terms of performance (at 75.91 % of the EU28 average). In most countries, relative performance continued to decline. However, the differences within the EU28 did not significantly change. The highest GDP in PPS had Luxembourg (268.25% of the EU28 average) and the lowest Bulgaria (45.62% EU).

**Picture 3:** Relative performance of EU countries (GDP per capita in PPS, % of EU28)



Source: Eurostat, own calculations

**Table 4:** The current status and development of the main indicators of real convergence, 2014

	<b>Slovakia</b>	<b>Average of EU28</b>
GDP per capita in PPS (% of EU 28)	75,91	100
Relative price level (% of EU28)	83	100
Real GDP growth (in %)	1.8	0.1
Compensation per employee (growth in %)	-1.2	-0.4
Unemployment rate (%)	13.2	10.23

Source: Eurostat, own calculations

The development recorded in Slovakia in the first two quarters of 2015 indicates that in Slovakia will be achieved only slightly lower growth rate than was estimated in 2014. However, the structure of growth will be different. In the context of political tensions and its direct impact on exports from Slovakia, we will reach lower contribution of foreign demand than expected, but it should be compensated by growth of domestic demand.

On the assumption that the European Commission's forecast of economic growth will fulfilled, the growth rate in Slovakia will accelerate to 3.5% in 2016. Under the following forecasts for 2016, Slovakia could be again included among the fastest growing countries. In this context, we can expect a partial recovery of catch-up process. According to the Commission, the promotion of economic development in the European Union should lead to an increase in employment. In 2016 all the countries (except of Croatia) should record an increase in employment. In Slovakia, we expect the unemployment rate to decrease to 12.9% according to the Commission and by 2016 it could fall to 12.1%. The relative position of the EU will not change; Slovakia will still be one of the EU countries with the highest unemployment rate. Prediction of GDP development suggests that the performance of Slovakia could reach 78.5% of the EU in 2016.

**Table 5:** Perspective of real convergence of Slovakia in indicators

<b>Real Convergence</b>	<b>2015</b>	<b>2016</b>
GDP in PPS (% EU28)	77.8	78.5
Comparable price level (% EU28)	67.1	67.3
Relative labor productivity (% EU28)	84.6	85.1
<b>Economic Growth</b>	<b>2015</b>	<b>2016</b>
Growth rate in Slovakia (in %, constant price)	3.1	3.5
<b>Labor Market</b>	<b>2015</b>	<b>2016</b>
Employment (% change)	0.6	0.6
Unemployment rate (%)	12.9	12.1
Compensation per employee (% change)	2.7	4.1

The expected GDP growth and price levels in Slovakia are derived from Medium-Term Forecast of National Bank of Slovakia (2014). The expected GDP growth and price levels for the EU for year 2015 are derived from the spring forecast of European Commission (2014) and 2016 from Perspective of the IMF (2014).

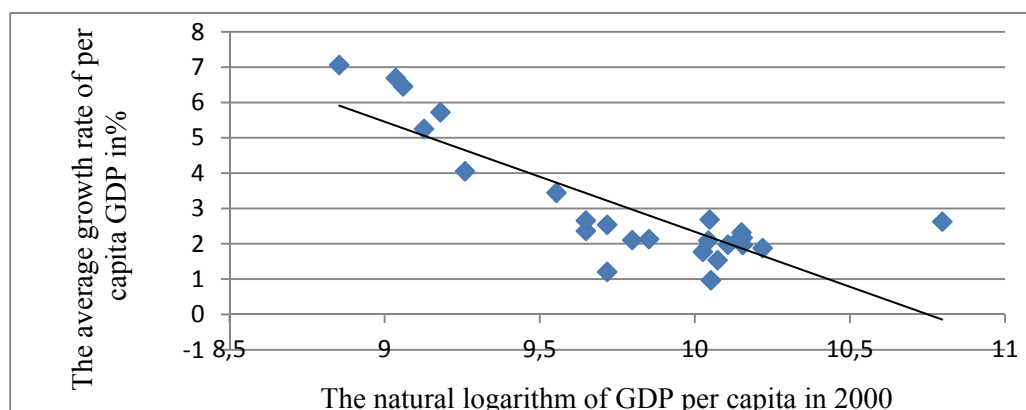
Source: National Bank of Slovakia, European Commission, IMF

Real development of the past years has led to several changes in expected development not only in the EU but also in countries outside the EU. A weaker demand of developed countries and increased geopolitical risks are also reflected in forecast of a lower growth in Slovakia. For example, National Bank of Slovakia decreased its GDP growth forecast from 3.2% to 2.9% compared to 2014. Significant risk towards weaker economic growth is particularly caused by development abroad. The impact of development of these countries to the EU national economies is not symmetric. Slovakia belongs to the group of countries that already suffer from a stronger negative impact of unfavourable geopolitical situation, which can also lead to a lower than initially expected pace of catch-up process.

In this paper we examine the validity of the hypothesis of absolute beta convergence between the EU 28. We assume that the only difference between the countries is the initial capital, i.e. countries are moving to the same steady state, and countries that are situated further away from the steady state point will have higher growth rate.

The advantage of the following formulation of this model is that it can be tested relatively easily by empirical test. This test can be done graphically, if there is paid attention whether there has been specific dependency between these variables, or mathematically by simple econometric model.

**Picture 4:** The relationship between GDP per capita in 2000 and the average growth rate of GDP per capita over the period 2000-2014 for the EU28



Source: Eurostat, own calculation.

**Table 6:** Analysis of the convergence process in the EU28 during the surveyed period

<i>Regression Statistics</i>	
Multiple R	0,828415754
R-Square	0,686272661
Adjusted R-Square	0,672632342
S.E. of regression	0,009051393
Included Observations	28

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	0,004121953	0,004121953	50,31206795	3,16831E-07
Residual	26	0,001884338	8,19277E-05		
Total	27	0,006006291			

<i>Variable</i>	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
b	-0,299405816	0,03835831	7,805500653	6,52572E-08
$\ln(Y_{10})$	0,027798057	0,003919028	-7,093100024	3,16831E-07

Source: Eurostat, own calculations

The value of the coefficient  $\beta$ , on the basis of which it is possible to assess whether the absolute convergence between the EU28 occurred in the concerned years, it is calculated by a the relationship (1.3).  $b = -0,299405816 \Rightarrow \beta = 0,117646973$

The coefficient is in the given interval and from the above figures we can conclude that it is also statistically significant, which means that between the EU25 occurred in the given period to the absolute convergence. In other words, countries with lower economic levels at the beginning of the period had on average higher rates of economic growth.

#### 4. NOMINAL CONVERGENCE AND DEVELOPMENT OF THE MAIN INDICATORS

In an environment of low demand and subdued developments of input prices disinflation continued in Slovakia in 2014. Over the last two years, the harmonized consumer inflation slowed annually from 3.74% to 1.46% in 2013. The downward trend in inflation in 2014 continued and in Slovakia prevailed moderate deflation 0.1%. Since 2013 the decrease in inflation was prevalent in most EU countries, however in comparison with the EU average disinflation in Slovakia had steeper course. During the survey period average annual inflation rate in Slovakia decreased from one of the highest in the EU to one of the lowest. In an environment of low growth of price level almost all EU countries had in 2014



inflation lower than necessary to fulfil the Maastricht criteria. Here should be noted that the compliance with criteria is caused in a large extent by the low interest and low-inflation environment, which shifts the observed values of inflation and interest rates far below the normal level as at the time the criteria had been constructed. Dispersion of values among countries is also lower as a result of this development.

Forecasts by the European Commission (EC 2014) envisaged a gradual acceleration of inflation in 2015

to 1.5%. Current development of the factors affects the development of consumer prices, especially oil prices, and also suggests that inflation in Slovakia could be even lower than the original estimates of the Commission. Average inflation rate in Slovakia is gradually increased however it is predicted that it still be below the reference value calculated on estimates of the European Commission for the EU (1.8% in 2015 and 2.4% in 2016). In this period Slovakia would continue to fulfil the inflation criterion. Also financial results of the public finances in the EU slightly improved in 2014. The average public deficit in the European Union fell to 3.3% of GDP. Spain had the largest annual consolidation of public finances. In order to correct the excessive deficit also Denmark, Czech Republic and Slovakia significantly consolidate the public finances.

Slovakia and eleven other countries have managed to reduce the deficit below 3% of GDP and to meet the required date for the correction. In June 2014 the excessive deficit procedure has ceased to be applied against Slovakia, Czech Republic, Belgium, Denmark, the Netherlands and Austria. The current number of EU countries with excessive deficit has been reduced to eleven.

Deficient management leads to further rise in debt. Only six countries managed with debt at least slightly lower than in 2012. The average debt of the EU exceeded 86.8% of GDP. Strongly negative development of the debt ratio could be observed in Cyprus (22.7 percentage points in 2013 and 5.3 percentage points in 2014), Greece (18.1 percentage points in 2013 and 2.1 percentage points in 2014), but also in Slovenia (16.6 percentage points in 2013 and 10.6 percentage points in 2014) and Croatia (11.4 percentage points in 2013). A further increase in debt has been also recorded in Slovakia (2.5 percentage points in 2013) but in 2014 it decreased by 1 percentage point. The value of debt in Slovakia is still below the Maastricht criterion (60% of GDP). The debt ratio increased to 54.6% of GDP and thereby exceeded other two boundaries of debt brake, what resulted in an obligation to adopt stricter measures. Due to achieving the level of 53%, the salaries of members of the government had been frozen.

Under current rules of fiscal responsibility after exceeding 55% of GDP, the Ministry of Finance began to bind 3% of the total state budget, and suspended the possibility of providing funding from the Government Office and Government reserve.

The average fiscal deficit should gradually decline to 2.3% of GDP in 2015. The number of euro area countries with deficits should increase to thirteen in accordance with the fiscal rules. EU deficit will drop at a similar pace to 2.5% of GDP. The only country with excessive deficits will most likely be Cyprus. In general we can expect that in the next two years nominal convergence will continue in the European Union. Almost all countries will meet the inflation criterion and three quarters of countries will manage with acceptable government deficits.

**Table 7:** Indicators of nominal convergence of EU 28

GEO/TIME	Inflation rate %			Public deficit* (% of GDP)			Government debt (% of GDP)		
	2012	2013	2014	2012	2013	2014	2012	2013	2014
<b>European Union (28)</b>	2,64	1,5	0,56	4,2	3,2	2,9	83,7	85,5	86,8
<b>Belgium</b>	2,62	1,19	0,54	4,1	2,9	3,2	103,8	104,4	106,5
<b>Bulgaria</b>	2,39	0,39	-1,61	0,7	0,9	2,8	18,0	18,3	27,6
<b>Czech Republic</b>	3,53	1,33	0,41	3,9	1,2	2	44,6	45,0	42,6
<b>Denmark</b>	2,37	0,43	0,34	3,7	1,1	-1,2	45,6	45,0	45,2
<b>Germany</b>	2,16	1,59	0,78	-0,1	-0,1	-0,7	79,3	77,1	74,7

<b>Estonia</b>	4,21	3,24	0,48	0,2	0,2	-0,6	9,7	10,1	10,6
<b>Ireland</b>	1,97	0,46	0,37	8,1	5,8	4,1	121,7	123,2	109,7
<b>Greece</b>	1,04	-0,86	-1,39	8,7	12,3	3,5	156,9	175,0	177,1
<b>Spain</b>	2,43	1,53	-0,19	10,3	6,8	5,8	84,4	92,1	97,7
<b>France</b>	2,22	0,99	0,61	4,8	4,1	4	89,6	92,3	95,0
<b>Croatia</b>	3,35	2,33	0,22	5,3	5,4	5,7	69,2	80,6	85,0
<b>Italy</b>	3,25	1,28	0,25	3	2,9	3	123,1	128,5	132,1
<b>Cyprus</b>	3,1	0,38	-0,27	5,8	4,9	8,8	79,5	102,2	107,5
<b>Latvia</b>	2,29	0,01	0,69	0,8	0,7	1,4	40,9	38,2	40,0
<b>Lithuania</b>	3,17	1,17	0,24	3,1	2,6	0,7	39,8	38,8	40,9
<b>Luxembourg</b>	2,9	1,7	0,69	-0,1	-0,9	-0,6	21,9	24,0	23,6
<b>Hungary</b>	5,66	1,71	0,02	2,3	2,5	2,6	78,5	77,3	76,9
<b>Malta</b>	3,23	0,98	0,77	3,6	2,6	2,1	67,4	69,2	68,0
<b>Netherlands</b>	2,82	2,56	0,32	4	2,3	2,3	66,5	68,6	68,8
<b>Austria</b>	2,57	2,11	1,46	2,2	1,3	2,4	81,5	80,9	84,5
<b>Poland</b>	3,66	0,8	0,08	3,7	4	3,2	54,4	55,7	50,1
<b>Portugal</b>	2,78	0,44	-0,15	5,6	4,8	4,5	125,8	129,7	130,2
<b>Romania</b>	3,38	3,2	1,38	2,9	2,2	1,5	37,3	38,0	39,8
<b>Slovenia</b>	2,81	1,92	0,37	4	14,9	4,9	53,7	70,3	80,9
<b>Slovakia</b>	3,74	1,46	-0,1	4,2	2,6	2,9	52,1	54,6	53,6
<b>Finland</b>	3,16	2,22	1,21	2,1	2,5	3,2	52,9	55,8	59,3
<b>Sweden</b>	0,93	0,44	0,21	0,9	1,4	1,9	36,6	38,7	43,9
<b>United Kingdom</b>	2,84	2,52	1,51	8,3	5,7	5,7	83,7	85,5	86,8

\*- means surplus

Source: Eurostat, own calculation

## 5. CONCLUSION

In terms of real convergence, we can certainly conclude direction to return to the condition in the past, so convergence. Return of Slovakia to the higher dynamic shows so far only estimates of future developments. In 2013, Slovakia has lost the position of one of the fastest growing countries of the EU. Current development indicates that Slovakia will belong to the second third of the EU countries in terms of amount of annual growth in real GDP for 2015 and 2016. In this connection, we can expect a partial recovery of catch-up process in terms of performance and productivity. Economic growth should result in a decrease of unemployment and higher wage dynamics will lead to an increase in unit labour costs in Slovakia. However, the dynamics of their growth will still belong among the lower in the EU. On the contrary, the unemployment rate will also be one of the highest of the EU countries.

The main indicators of real convergence suggest prevailing partial reduction of disparities among EU countries. Relatively poorer Baltic countries showed the highest growth, but the average beta convergence of the EU was very low. The current pace of catch-up process can be considered as negligible in comparison with the long-term estimates of the absolute and conditional convergence of the EU. This applies also to Slovakia.

Besides from public debt developments, nominal convergence indicators show some of the best, if not the best values in the history. Low inflationary environment due to low demand and increased pressure to consolidate public finances have created the conditions for parallel implementation inflation and fiscal criteria in most countries (including Slovakia).

Recent developments confirm that nominal convergence, respectively improvement of fulfilment of the Maastricht criteria in member states and candidate countries is a reasonable prospect of real convergence. Nominal criteria were defined in order to assess in particular the rate of price and macroeconomic stability. It should be also noted that the current development of indicators of nominal

convergence is broadly given by low interest and low inflation environment, which is a result of policy actions aimed at mitigating the impact of the debt crisis.

## ACKNOWLEDGMENT

This article is a part of research project VEGA 1/0313/14: The relationship between efficiency and social justice - implications for economic policy.

This article is a part of research project VEGA 1/0975/15: Macroeconomic and microeconomic manifestations and consequences of inflation and deflation.

This article is a part of research project VEGA 1/0431/16: Economic growth and social and environmental impacts.

## REFERENCE LIST

1. Barro, R. J., and X. Sala-i-Martin (1997). Technological diffusion, convergence, and growth. *Journal of Economic Growth* 2, 1–27.
2. Barro, R. J. and X. Sala-i-Martin (1992). Convergence. *Journal of Political Economy* 100 (2), 223–251.
3. Cappelen, A., Castellacci, F., Fagerberg, J. and Verspagen, B. (2003), “The Impact of EU Regional Support on Growth and Convergence in the European Union”, *Journal of Common Market Studies*, 41,621-644.
4. Cuadrado-Roura, J. (2001), “Regional Convergence in the European Union. From Hypothesis to the Actual Trends”, *Annals of Regional Science*, 35, 333-356.
5. European Commission, 2014: Report from the Commission – Finland: Report prepared in accordance with Article 126(3) of the Treaty
6. European Commission, 2014: European Economic Forecast - Spring 2014,
7. International Monetary Fund, 2014: World Economic Outlook Update July 2014, An Uneven Global Recovery Continues.
8. International Monetary Fund, 2014a: World Economic Outlook April 2014, Recovery Strengthens, Remains Uneven.
9. Institute for Management Development, 2014: World Competitiveness Scoreboard 2014,
10. López-Bazo, E. (2003), “Growth and Convergence Across Economies. The Experience of the European Regions”, in Fingleton, B., Eraydin, A. and Paci, R. (eds.) *Regional Economic Growth, SMEs and the Wider Europe*, Aldershot et al., Ashgate, 49-74.
11. Mankiw, N. G., D. Romer, and D. N. Weil (1992). A contribution to the empirics of economic growth. *Quarterly Journal of Economics* 107 (2), 407–437.
12. Mihály, T.B., Norbert, M., *The evolution of economic convergence in the European Union*, Discussion Paper Deutsche Bundesbank, No 28/2013, Retrieved from [https://www.bundesbank.de/Redaktion/EN/Downloads/Publications/Discussion\\_Paper\\_1/2013/2013\\_08\\_13\\_dkp\\_28.pdf? blob=publicationFile](https://www.bundesbank.de/Redaktion/EN/Downloads/Publications/Discussion_Paper_1/2013/2013_08_13_dkp_28.pdf? blob=publicationFile)
13. Monfort, P., 2008, *Convergence of EU regions: Measures and evolution*, Working paper, A series of short papers on regional research and indicators produced by the Directorate-General for Regional Policy, European Union, Regional Policy, n° 01/2008
14. NBS, 2013: Strednodobá predikcia (P2Q-2013), jún 2013,
15. NBS, 2014: Strednodobá predikcia (P3Q-2014), september 2014, Národná banka Slovenska.
16. Romer, P. M. (1986). Increasing returns and long run growth. *Journal of Political Economy* 94, 1002–1037.
17. Lucas, R. E. (1988). On the mechanism of economic development. *Journal of Monetary Economics* 22, 3–42.
18. OECD, 2014: Economic Policy Reforms 2014: Going for Growth Interim Report, OECD.
19. Quah, D. (1993). “Empirical Cross-Section Dynamics in Economic Growth”, *European Economic Review*, 37, (2–3), 1353–1375.
20. Solow, R. M. (1956). A contribution to the theory of economic growth. *Quarterly Journal of Economics* 70 (1), 65–94.
21. Yin, L., Zestos, G. and Michelis, L. (2003), “Economic Convergence in the European Union”, *Journal of Economic Integration*, 18, 188-213.