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## **Western Balkans countries income convergence in the context of EU membership:**

Opportunity or just a dream for increasing welfare?

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*Abstract:*

*The Western Balkan countries face relatively low levels of income over a longer period of time, indicating insufficient dynamics and intensity of income convergence, compared to the developed EU economies. The issue of income convergence of Western Balkan countries is particularly important in the context of their EU membership. The paper tests the existence and dynamics of income convergence of the Western Balkan Economies using both sigma ( $\sigma$ ) and the beta ( $\beta$ ) measures of real convergence. The evaluation of the appropriateness of the income convergence dynamics of the Western Balkan Economies is derived on the basis of a comparative analysis with the achievements of the New Member States, Baltic countries and EU - 14 in the last 20 years. The results outline that Western Balkan countries are stagnating, they have the slowest convergence and are faced to structural problems. The conclusion is that the membership of the Western Balkans in EU will contribute to faster growth and income convergence of this region.*

**Keywords:** Income convergence, GDP per capita, Convergence rates, Western Balkans countries, Dispersion, Regression

JEL Classification: O47, O11, F43, F15

## *Introduction*

In the 1990s, as other small countries of Eastern Europe implemented reforms progressively and began a rise toward prosperity, parts of the Western Balkans have spent those years in armed conflict and lagged in making structural changes to their legacy socialist systems. In the past two decades all the economies in the Western Balkan countries<sup>1</sup> have made strides in transformation to market economy, reform their public finances and banking systems and rekindled economic growth. Besides these developments the region is still far behind EU economies. The countries are held back by weak institutions, corruption and government dominance in some industries. Western Balkans countries need to tackle their low productivity and speed up reforms in all fundamental areas such as increasing exports, investments, and employment.

The issue of convergence is very important from an economic point of view because it describes the progress of a country towards elimination of disparities in the levels of outputs and income. European developing economies lay their hopes on the expectation that the process of European integration will lead to a significant increase in living standard and thus to approach the level of income in developed European countries. Therefore, this paper aims to model the income convergence of economic development of Western Balkans in the context of European integration aspirations of the region. The key issue in this paper is whether the process of EU membership of Western Balkan countries will accelerate the pace of growth and income convergence and catch up to the living standard of developed European economies?

Income convergence can be proved in two ways and the paper tests the existence and dynamics of income convergence of the Western Balkan Economies using both sigma ( $\sigma$ ) and beta ( $\beta$ ) measures of real convergence. In evaluating the performance of Western Balkan countries (WBC), the so called New Member States<sup>2</sup> and Baltic countries<sup>3</sup> are taken in account. Therefore, an additional objective is to analyze the income convergence not only of WBC in the context of the old EU core, but also to have a clear picture of the income convergence process of NMS and BC compared with EU-14<sup>4</sup>. The discussion will be based on the classical approach of economic convergence for developing countries. The data source is the database of the IMF Outlook (2017) and Eurostat.

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<sup>1</sup> Western Balkan countries (Albania, Bosnia and Herzegovina, Macedonia, Kosovo, Montenegro and Serbia)

<sup>2</sup> New Member States further in paper are analyzed in two groups: Czech Republic, Hungary, Poland, Slovak Republic and Slovenia as NMS 2004, and Romania and Bulgaria NMS 2007.

<sup>3</sup> Baltic countries (Estonia, Lithuania, Latvia)

<sup>4</sup> EU-14 includes EU-15 without Greece

The paper is structured in four sections. After the Introduction, the first section presents the theoretical basis of income convergence. The second section outlines the facts and trends in the real convergence of the Western Balkans countries (WBC), measured according: *GDP per capita* (PPP) and catching up rate. The research methodology is explained in the third section, while the results of the research are presented in the fourth section of the paper. Finally, the conclusions of the research are summarized.

### ***Theoretical framework and literature review of income convergence***

The convergence concept is at the core of growth theories and has been a subject of great importance since the eighteenth century. Convergence is a process describing the progress of a country towards elimination of disparities in the levels of outputs and income. The convergence occurs if relatively poorer countries (or regions) grow faster than relatively richer ones, thereby allowing the former to catch up with the latter ones. As a result, all economies should over time eventually converge in terms of level of income *per capita*.

The discussion of convergence cannot take place without an outline of the basic theory. The convergence concept has evolved from neoclassical growth theory to the new growth theory. The theoretical insights of the neoclassical growth theory are provided in Solow model (1956) and predict income convergence in the long run. In the transition to steady state, economies far “below” steady state will grow faster. Absolute convergence assumes that if the economies share the same steady state, implying having similar technology and features, the economies with low per capita incomes will grow faster. In the long run, the less developed economies will converge to the same income level and grow at the same rate as the developed one. On the other hand, if economies have different structural variables (population growth, investment in capital and the depreciation rate of capital), less developed economies, with lower initial per capita income and capital level, will grow faster than developed economies after controlling for differences in steady state. In this case conditional convergence contends and even though their growth rates will eventually converge over time the level of development between these economies will never equalize. Mankiw, Romer & Weil, (1992) in their paper also examine the implications of the Solow model for convergence in standards of living. The conclusion is that, if population growth and capital accumulation remain constant, than countries converge at about the rate the augmented Solow model predicts. As opposed to the neoclassical model, endogenous growth theories stress the importance of additional variables, besides investments, population growth and depreciation of capital for determining income level and growth and

therefore support the hypothesis of conditional convergence rather than absolute. These theories wish to explain how technology grows within the model by including various processes. Lucas (1988) stress the importance of human capital and R&D for long-run economic growth and conclude that differences in these factors across economies can explain why some regions experience high growth and others do not. Regions that invest more in human capital and in innovation activities will experience higher growth than regions that do not.

In the first decade of the 21 century with the enlargement wave of EU with the Central and Eastern European countries there is increase in the number of relevant papers dedicated to income convergence of the GDP *per capita*, that estimate the presence of  $\beta$ - and  $\sigma$ -convergence and confirm the existence of income convergence theorem. In what follows we list only a selected papers in this field. In the work of Z. Matkowski and M. Próchniak (2004) is empirically tested the income convergence between the transition countries of Central and Eastern Europe (CEE8), as well as between the groups of CEE8 and the EU-15 during the period between 1993 and 2003. The conclusion was that the large gap in development between the countries and the groups of the CEE8 and the EU-15, decreases over time. In the study (Matkowski & Próchniak, 2007), conducted on the same sample, but over a longer period of time, the authors provide evidence for both types of convergence between the the „old” EU and the eight CEE countries that joined in 2004, whereby the catching up appears to have been more intense in the late 1990s and early 2000s. Later studies (Próchniak, 2008; Vojinovic & Oplotnik, 2008; Vojinovic, Acharya & Próchniak 2009, Vojinovic, Oplotnik, and Prochniak 2010) confirm that the patterns of the economic growth of the new member states CEE8 and EU-15 in the 1990s and the first decade of the 21st century were in accordance with the income convergence theory and the results only differ in the estimated speed of this convergence. After adding Bulgaria and Romania to the sample there is significant evidence of absolute convergence of the region and additionally strengthens the conditional convergence of the entire CEE, shows the paper of Szeles and Marinescu (2010). The work of Rapacki and Prochniak (2009) is the most comprehensive in terms of its sample of 27 transition economies and extended time frame (1990-2005). But the authors find evidence of strong and significant  $\beta$ - and  $\sigma$ -convergence only for subsamples (e.g., the eight Central European countries) in certain subperiods 2000-2005. A. Vamvakidis (2009) and L. Cavenaile and D. Dubois (2011) in their works examined the process of income convergence and results showed large differences in the speed of catching up with the average income of the EU developed countries. N. Stanisic (2012) confirms the existence of the income convergence of the CEE10 and the EU-15

countries but emphasizes that the global economic crisis has negative impact on the convergence speed. An undeniable reduction in the gap at the level of development between the „new” and the „old” member states was confirmed in a study by M. Gligorić (2014). Regardless of the numerous studies on the income convergence in the case of the Baltic countries and New Member States, researches on this topic for the Balkan countries economies are rare. In particular the majority of the research do not include all of the Western Balkan countries and the authors used samples as a represents from the full Balkan group (Bjorksten (2000), Sarajevs (2001), Amplatz C. (2004), Fidrmuc and Korhonen (2006), Kutan and Yigit (2004,2005 & 2009), El Ouardighi and Somun-Kapetanovic (2007 and 2009), Bonetto et al. (2009), Del Bo et al. (2010), Sideris (2010), Tsanana et al. (2013), Nenovsky and Tochkov (2014). Ancona (2007) in her study included Mediterranean countries in an attempt to estimate the convergence of income per capita and concluded that the Balkan countries aspiring EU accession have higher growth rate than the EU average during 2000-2004.

The main contribution of this paper is that there are not many studies covering this topic, comparing Western Balkans, NMS and BC with EU-14 and it intends to fill this gap. Moreover, it covers a long period of time (1996-2017) and focuses on the level of income convergence of the selected countries before and after their EU accession.

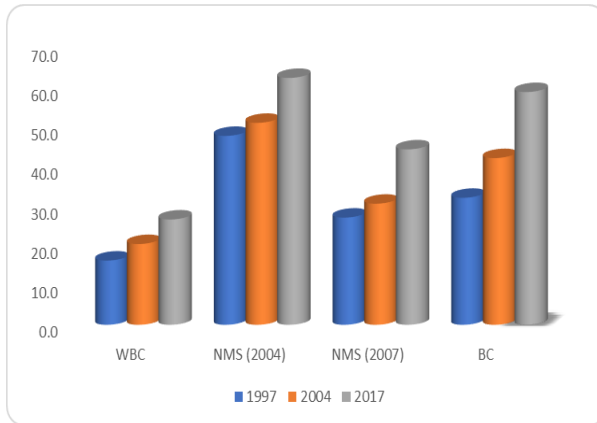
### ***Real convergence or divergence of the Western Balkans – stylized fact***

In this section, a brief analysis of the trends in the real convergence of the Western Balkans countries (WBC) is made, measured according to the two most used indicators of real convergence: GDP per capita calculated according to the purchasing power parity (PPP) and catching up rate. The values and trends of these indicators for the WBC are compared with those of the two groups of new EU Member States (NMS (2004), NMS (2007)) and the Baltics countries (BC), in order to see if the process of joining to EU contributed to accelerating the real convergence. From Graph 1 one can conclude that the WBC in the past 20 years did not realize significant rate of real convergence. Namely, GDP per capita registered a modest increase from 16% in 1997 to 26% in 2017 of the average EU-14 GDP per capita. This increase of 10 percentage points is significantly lower compared to the other groups of countries (NMS (2004), NMS (2007) and BC), with the dynamics of real convergence being the highest in the BC (increase of 27 percentage points). In this comparison, the initial level of convergence should be taken into account: in 1997 the GDP per capita in NMS (2004) was 48%, in NMS (2007) 27%, and in BC 32% of the average in the EU-14, that is a higher starting base than WBC (16%). This is important because according to the neoclassical growth theory, economies

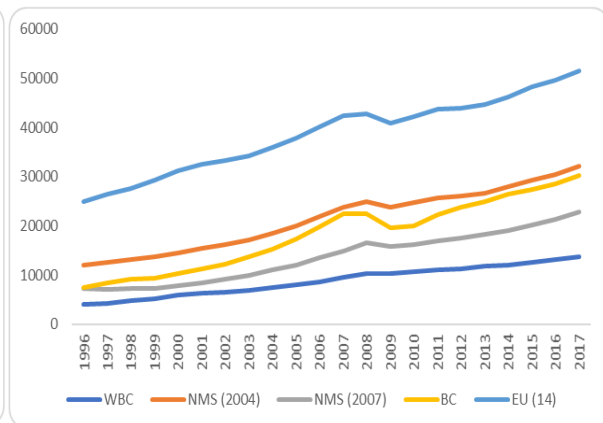
with lower initial level of income tend to grow faster in comparison with economies with higher initial level of income. But this obviously cannot be confirmed by this analysis.

**Graph 1 GDP per capita (in current prices, PPP)**

(EU-14=100, in %)



(in international l dollars)



Source: IMF, EUROSTAT, authors' calculation

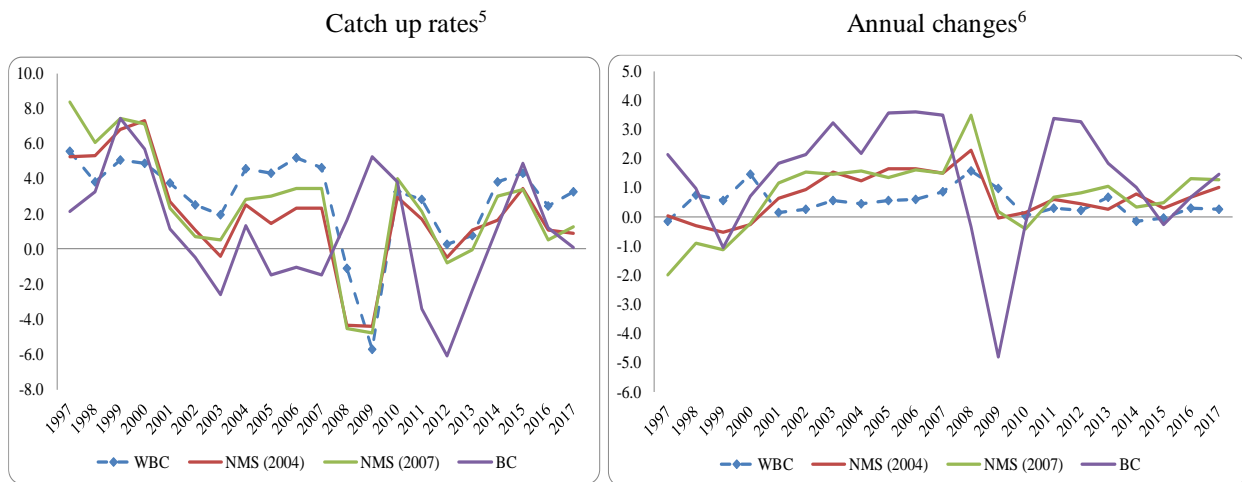
Analyzing the individual periods, the following conclusions can be drawn: the most significant dynamics of real convergence in NMS (2004), NMS (2007) and BC was achieved in the period before and after the EU membership (the difference in dynamics in relation to the WBC was particularly increased in the period after 2004); in the last 5 years, the dynamics of real convergence of the WBC has stagnated which is not the case with other groups of countries that are subject to this analysis. This clearly indicates the positive effects of the EU membership process on the dynamics of real convergence.

The calculation and analysis of catching up rates gives similar conclusions. This rate basically confirms (1) the existence of differences in GDP per capita growth (which is a necessary but not sufficient condition for convergence); and (2) the need for less developed economies to realize positive differences in growth over a long period of time. Such movements are sustainable in the long run only if less developed countries realize not only higher economic growth rates but also rapid rates of improvement of productivity factors and production efficiency. Given that the rate is generally calculated on the basis of historical growth rates, it serves as a framework for ex-post analysis of convergence dynamics. In case of negative catch-up rates disparity between countries concerned and the EU-14 is decreased and vice versa.

As it is shown on Graph 2 WBC realized positive catch up rates almost in the whole period, which means that the disparity between WBC and EU-14 has permanently increased. Compared with the other groups of countries, the WBC realized the highest positive rate on average, i.e. the divergence is greatest in this group of countries. This is particularly noticeable in the period after 2000, when NMS (2004), NMS (2007) and BC have significantly reduced

the dynamics of divergence in relation to EU-14. It corresponds with the period before and after the EU membership. Only in the years during the crisis (2008 and 2009) WBC, as well as NMS (2004) and NMS (2007), realized negative rates, i.e. there was a tendency of decreasing the disparity with respect to EU-14. This is due to the fact that these countries were less affected by the crisis than the more developed EU countries.

**Graph 2 Convergence rates to EU-14 (GDP per capita, PPP, current prices)**



Source: IMF, EUROSTAT, Author's calculation

Still, it has to be noted that catch-up rate observes absolute rather than relative disparity. Positive catch-up rates mean that the disparity between all groups of countries and the EU-14 increases on average, although the difference of GDP per capita with regard to the EU-14 actually decreases. In order to explain the relative disparity the best solution is to observe the difference of GDP per capita in two subsequent years (right graph). Opposite to catch-up rate, the disparity between the observed groups and the EU-14 is diminished in case of positive difference of GDP per capita.

As shown on Graph 2 (right), average annual changes of GDP per capita of all groups of countries show the decrease of disparity in relative amounts with regard to the EU-14 average almost in the whole period. In general, WBC recorded relatively lower positive rates, indicating a lag in real convergence compared to NMS (2004), NMS (2007) and BC. This is particularly pronounced in the period 2001-2008, i.e. in the pre-accession period and in the years of formal membership, which points to the positive effects of the EU membership.

<sup>5</sup>  $R_{catch-up} = 100 * \frac{y_{it} - y_t^*}{(y_{it-1} - y_{t-1}^*)}$ ; where  $y_{it}$  is GDP per capita by PPS of a country  $i$  in year  $t$ ;  $y_{t-1}^*$  is the average GDP per capita by PPS of EU-28 in year  $t$ ;  $\Delta$ - is difference between  $t$  и  $t-1$ .

<sup>6</sup>  $\Delta GDP_{i,t}^{pc} = \frac{y_{i,t}}{y_t^*} - \frac{y_{i,t-1}}{y_{t-1}^*}$ ; where  $y_{i,t}$  is GDP per capita measured by purchasing power standard of a country  $i$  in year  $t$ , and  $y_t^*$  is the average of EU-14 in year  $t$ .



### ***Methodology***

In literature there are two basic measures of the process of real convergence, known as  $\sigma$ -convergence and  $\beta$ -convergence. The paper will empirically test the existence of both types of income convergence from 1996 to 2017. As the measure of income *per capita*, the GDP *per capita* was used, adjusted by the purchasing power parity of the currency.

The sigma indicator shows the tendency of reducing the differences in the level of income per capita between different countries over time (Barro and Sala-i Martin 2003, Barro et al. 1991). The two most common methods for calculating sigma are the standard deviation and the coefficient of variation of per capita income. If the dispersion, or spread, of per capita incomes among countries is decreasing, the countries incomes level are converging. The coefficient of the variation of the real GDP *per capita* (measured by the purchasing power parity) will be used in this paper as the measure of the dispersion of the development level among the observed countries. The following equation is used to calculate the coefficient of variation of the real GDP *per capita* (PPP):

$$CV(GDPpc) = \text{the standard deviation (GDPpc)} / \text{the arithmetic mean (GDPpc)}$$

The beta income convergence shows the tendency of poorer countries to approach the level of development of richer countries (the usual tendency of poorer countries to grow faster than more developed countries), i.e. when there is a negative correlation between the initial level of income *per capita* and the rates of economic growth in a period of time. The realization of this convergence depends on internal economic policies and other country specific factors, and fundamentally shows how long the convergence process will last. In order to prove the *beta* convergence, the following regression equation was tested on a sample of the Western Balkan countries and the New Member States and on the sample of the Western Balkan countries and the Baltic countries:

$$growth_{i,t} = \beta_0 + \beta_1 dist_{i,t-1} + \beta_2 dist_{i,t-1} \times WBC + \beta_3 WBC + u_{it}$$

In the equation  $growth_{i,t}$  represents the growth rate of the real GDP *per capita* (PPP) of a country in the period  $t$ ;  $dist_{i,t-1}$  the gap in the real GDP *per capita* between a country and the EU-14 average in the previous period, and the WBC is a dummy variable taking the value of 1 for the countries belonging to the Western Balkans region, and 0 for the countries belonging to the NMS or BC. New independent variable presenting the product of  $dist_{i,t-1}$  and the dummy variable WBC – is included in this model. This additional variable examines whether and to what extent the eventual convergence of the WBC group is different in the speed compared to

the convergence of the NMS and BC group, i.e. whether belonging to the WBC group modifies the impact the income gap has on the rate of the economic growth of the GDP *per capita*.

### Results

The descriptive statistics of the *growth* and the *distance* variables for WBC and NMS are presented in Table 1. All of the observed variables have a normal distribution (tested with the Shapiro-Wilk test). The post-estimation testing showed that there were no problems of multicollinearity (VIF < 10) and autocorrelation (Durbin-Watson test).

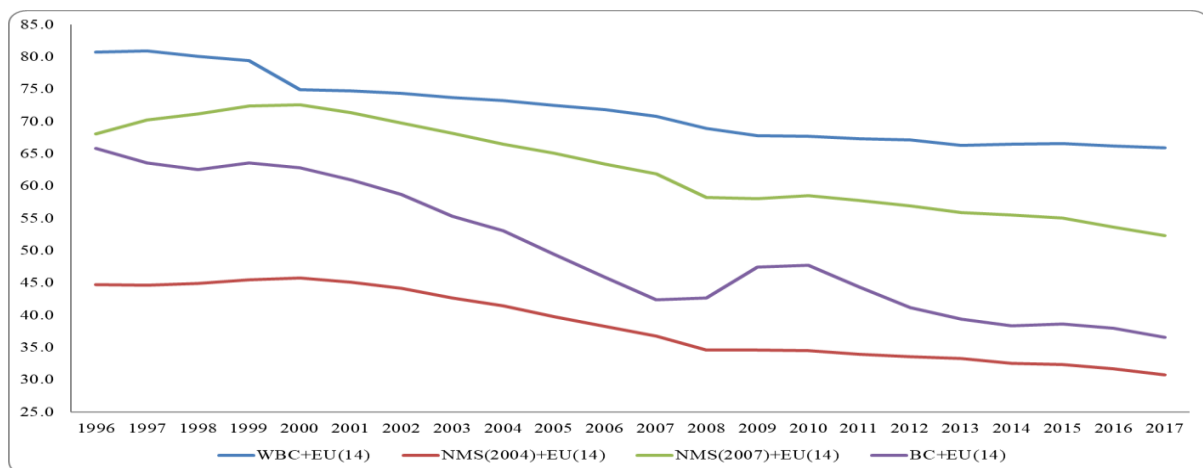
**Table 1** Descriptive statistics of variables for WBC and NMS

	Descriptive statistics				
	Num observations	Mean	Standard Deviation	Minimum	Maximum
<b>Growth</b>	273	0.053	0.038	-0.088	0.213
<b>Dist</b>	273	-0.638	0.162	-0.888	-0.299

Source: IMF, Author's calculation

In the Graph 3 are shown the results using the  $\sigma$ -convergence approach measured by the coefficient of variation. The first thing to be pointed out is that the biggest decrease is noted in the case of BC+ EU-14, especially in the period after 2000 (pre-accessioned period) until the outbreak of the crises.

**Graph 3** The dispersion of the GDP *per capita* ( $\sigma$  -convergence)



Source: IMF, Author's calculation

If we analyze the overall results Graph 3 shows that there is moderate decrease in the differences in the level of income per capita between the chosen groups and this decrease is the smallest in the WBC + EU-14. Even though Western Balkans were almost on the same level as the NMS (2007) their income dispersion is the slowest, in particular in the period before and in the first period after the accession of NMS (2007) in EU. It is evident in case of NMS that the dispersion was mainly decreased also during the period between 2000-2008, which corresponds with the period of pre and post - accession in the EU. The overall results of  $\sigma$  -

convergence once again lead us to the conclusion that the EU membership process has positive effect on the dynamics of real convergence.

The testing of the  $\beta$ -convergence was concluded with regression equation and it was tested out for the three sub-periods: 1997-2000 (Model 1), 2001-2008 (Model 2) and 2009-2017 (Model 3), as well as for the entire observed period (Model 4). The results of the tested regression for WBC and NMS and WBC and BC are shown in Table 2.

**Table 2** Results of regression analysis ( $\beta$ -convergence)

	Results of regression WBC and NMS									Results of regression WBC and BC							
	1997-2000		2001-2008		2009-2017		1997-2017			1997-2000		2001-2008		2009-2017		1997-2017	
	Coef	P value	Coef	P value	Coef	P value	Coef	P value		Coef	P value	Coef	P value	Coef	P value	Coef	P value
Dist	0.055	0.431	-0.078	0.013	-0.051	0.136	-0.081	0.001	Dist	-0.199	0.549	-0.189	0.044	-0.054	0.721	-0.237	0.000
Dummy	-0.494	0.003	0.110	0.171	-0.027	0.658	-0.166	0.001	Dummy	-0.366	0.212	0.151	0.197	-0.029	0.797	-0.096	0.144
Dumm*dist	-0.659	0.002	0.171	0.099	-0.018	0.829	-0.192	0.003	Dumm*dist	-0.406	0.311	0.283	0.077	-0.016	0.933	-0.035	0.706
N	52		104		117		273		N	36		72		81		189	
R <sup>2</sup>	0.262		0.081		0.027		0.108		R <sup>2</sup>	0.203		0.215		0.007		0.168	
Probability	0.001		0.024		0.390		3.47E-08		Probability	0.05		0.000		0.949		0.000	

Source: IMF, Author's calculation

The statistical validity of the model is measured by the coefficient of determination  $R^2$ , as well as its statistical significance measured by the probability or risk of error that the coefficient is not significant ( $p < 0.05$  significant).

From the observed data the results indicate that Model 3 (2009-2017) can be rejected as statistically unreliable, due to the outbreak of the global economic crisis in both cases. In the case of WBC and NMS the value of the coefficient for *disti*,  $t-1$  is positive only in Model 1, however the value of this coefficient is statistically insignificant. The value is statistically significant ( $p < 0.05$ ) only in Model 2 and Model 4 and in both models' coefficient value has negative sign i.e. the smaller the gap in development between the countries of WBC and NMS groups and the EU-14 average, on the other hand, the higher the achieved growth rates of the GDP *per capita*. This is important because according to the neoclassical growth theory the convergence would be proven if  $\beta_1$  has positive value. These results obviously do not confirm this theory. Analyzing the case of WBC and BC the coefficient for *disti*,  $t-1$  shows similar results and leads us to same conclusions. The coefficient value is statistically significant only in the Model 2 and Model 4 but has negative sign which doesn't prove the existence of income convergence between WBC and BC.

The coefficient for the variable determining a country's belonging to the WBC region is statistically significant in the Model 1 and Model 4 in the case of WBC and NMS and it has negative value which indicates that at the same income gap level, the growth rate of the GDP *per capita* (PPP) was higher for the countries of the NMS group than for the Western Balkan countries. In other words, catching up with the average GDP *per capita* achieved in the EU-14 was faster in the case of the NMS than in the case of Western Balkan. On the other hand, this variable is not statistically significant in any period in the case of WBC and BC. Additionally, we have confirmed that if we do the same regression for NMS and BC, in the entire period, the result is that the growth rate *per capita* (PPP) was higher for the countries of the BC group than for the NMS group.

The third coefficient for the variable  $disti_{t-1} \times WBC$  shows the extent to which a country's belonging to the WBC region moderates, i.e. changes the strength of the relationship existing between the income gap and the achieved growth rates of the GDP *per capita*. In the case of WBC and NMS this variable is statistically significant in Model 1, Model 4 (with significance level of  $p < 0.05$ ) and in Model 2 (with significance level of  $p < 0.1$ ). The coefficient has positive value only in Model 2, which indicates that the growth of the countries of the WBC, at the same income gap level, was faster than in the NMS group only in the period before the global crises. In Model 1 and Model 4 the coefficient has negative value which means that growth was faster in the NMS countries. In the case of WBC and BC this variable is not statistically significant.

## *Conclusion*

Having the same level of income standard of the developed EU economies is the main aim and expectation of 18 million people living in Western Balkans. The experience of the Baltic countries has confirmed that best route to prosperity for small countries is to integrate within the global economy. The results of this study outline that Western Balkan countries have the slowest convergence and are facing structural problems. The second conclusion is that the EU membership process has the biggest positive effect on the dynamics of real convergence in the analyzed countries.

The testing of the *sigma* concept of income convergence points to the slowest existence of income convergence in the WBS compared to NMS (2004), NMS (2007) and BC with the EU-14. In addition, it is evident that the dispersion was mostly decreased in Baltic countries and New Member state and I both cases was achieved in the period before and after their EU membership.

The results of the conducted regression analysis or the  $\beta$  – convergence approach shows that the existence of the  $\beta$  convergence cannot be confirmed. Hence, on the matter of equality of the speed of catching up with the average EU-14 GDP *per capita* between the Western Balkan states and the NMS and WBC and BC can be dismissed.

The paper suggests inevitable reform process for deeper structural transformation of less developed countries in order to speed the catch-up, improve productivity factors, private enterprise climate and production efficiency. This is the only path to restart and accelerate the income convergence between Western Balkans and most developed EU countries.

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