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Income and structural convergence of Western Balkans to European Union

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Abstract

This paper aims to model the convergence of economic development of Albania within the Western Balkans and in the context of European integration aspirations of the region. The conclusion of this paper is that the Balkan countries have converged among themselves and toward European Union (EU). But the speed of the convergence is moderated with the hit of global crisis and the recovery still seems difficult to the rate of pre-crisis. As economies in transition that are attempting to converge with the European development stages, the economies of the Balkan countries have to go through structural evolutions that are similar among countries. The variables used in this study are the income per capita, growth rate, sector contribution to GDP growth and the added value per worker in agriculture. The data is measured for the period from 1995 to 2015 in order to establish a substantial data series for trend analysis and understanding if countries in the study are converging or diverging with EU in terms of their income and economies profile. The issue of the productivity and further specialization of their output by using their advantages in resources comes into question.

JEL classification: O4, O5, O13.

Keywords: Economic convergence, economic growth, structural convergence, agriculture, productivity

1. Introduction

For more than 13 years Albania together with other countries of Western Balkans, such as Bosnia and Herzegovina, Macedonia, Montenegro and Serbia[1], have committed to the integration process to EU. The economic criteria that will enable the country to catch up with the standard of EU need to be met alongside a set of political and democratic reforms. The catching up or economic convergence is supported through the establishment of strong institutions and sound macro-economic and fiscal policies support the investment climate. There is already a positive experience of the new EU members that have converged to some extent to the EU standard. There are several empiric studies that have tested the cross-sectional convergence among countries in different regions. Ancona (2007) has included Albania with a set of Mediterranean countries in an attempt to estimate the convergence of income per capita during 2000-2004. The conclusion of that study is that the Balkan countries aspiring EU accession have a growth rate higher than the EU average during 2000-2004.

The aim of this paper is to draw an analysis of the convergence theory for Albania and Balkan region by assessing the speed of GDP per capita, as a precondition for the convergence of incomes, and calculate if it has contributed to diminishing or not the differences in incomes compared to the EU. Additionally, it will assume the catching up time gap based on the predicted economic growth. The convergence is seen at both,

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[1] Kosovo is not considered in this paper as data are not available for the period in study.

income level and structural level, by showing the sectors' contribution transformation in years due to development.

The discussion will be based on the classical approach of economic convergence for developing countries. Data used in this paper are subtracted by the World Bank Data, IMF World Economic Outlook. The countries included in the analysis are: Albania, Bosnia-Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Macedonia, Malta, Montenegro, Poland, Romania, Slovakia, Slovenia and Serbia. The GDP per capita in PPP is converted in natural logarithm as suggested by the literature for the ease of calculations and derivation of standard deviation.

2. Theoretical Approach

The convergence concept is at the core of the growth theories. It has evolved from neoclassical growth theory to the new growth theory. The idea of convergence is to test if the income levels of the poorest countries of the world are getting closer to those of richer countries and it has become a question of great importance for the prosperity in the world. There are debates on the convergence, interpretations, implications, and absorptive capacities within the economic development theories. Myrdal (1957) argues that is more likely that economic inequalities between nations are increasing. According to his model, investments are more likely to take place in already advanced economies, and skilled workers are more likely to move from peripheral to core regions than the other way round. Moreover, both Prebisch (1950) and Singer (1950) in their thesis state the divergence among developed and developing countries will deteriorate over time explained by the deterioration of the terms of trade between primary goods and manufactured products in the long run.

Additionally, economists have been interested to look into both structural and income level convergence. Structural convergence occurs when the convergence of the income per capita of two countries is associated with convergence on sectorial structure. The study of structural convergence can provide a way to examine the process of development in the long run. The existence of convergence suggests that countries follow similar stages of development characterized by the rise and fall of similar types of sectors as income grows and countries may converge to a structural steady state, in which the sectoral mix of outputs becomes more uniform across countries.

The convergence concept comes as a derivation of the Solow model (1956). The main assumption of the model on diminishing returns of the capital supports the presentation of three important derivations, such as: a) a less developed economy (with a lower GDP per capita) tends to grow faster than a more developed one; b) the growth rate tends to diminish with the development of the economy; c) if the economies share the same important features, the less developed economy will tend to converge its revenue to the developed ones. The convergence model gives insights to the developing countries by implying that if they can fulfil some preconditions in terms of political and economic stability, good governance and business climate, they can accelerate their development process and converge to the developed countries or steady states. The Western Balkans region is supposed to benefit from the convergence model due to their commitment to EU membership and the related obligations to build reliable and democratic institutions. Additionally, there are potentials for attracting foreign investments due to geographic location to EU markets, low labour costs combined with relatively well educated people.

The basic equation of the Solow model that describes the drive of the economy toward the steady states is given as:

$$\bar{k}_t = sf(k_t) - (n + x + \delta)k_t \quad \text{or} \quad g_k = s\frac{f(k_t)}{k_t} - (n + x + \delta) \tag{1}$$

where: k - capital per unit of effective labour; $\bar{k}$ - increase of capital per effective labour unit; g_k - growth rate of capital; n - growth rate of population; x - rate of exogenous technical progress; δ - rate of capita depreciation; s - saving rate; $f(k)$ - production function.

Based on the Solow model, and Cobb Douglass production function, Barro and Sala-i-Martin (1990) have approximated the transitional growth process in the neoclassical model as in the followings:

$$(1/T) \cdot \log(y_{it} / y_{i,t-T}) = x_i^* + \log(\hat{y} / \hat{y}_{i,t-T}) \cdot (1 - e^{-\beta T})/T + \mu_{it} \tag{2}$$

Where, i indexes the economy, t indexes time, y_{it} is the output per capita, x^* is the steady state per capita growth rate, $\hat{y}_{it}$ is output per effective worker, $\hat{y}_i^*$ is the steady state level of output per worker, T is the length of observations interval, the coefficient β is the rate of convergence, and μ_{it} is an error term. The coefficient β indicates the rate at which $\hat{y}_{it}$ approaches to the steady state. Matkowski and Prochniak (2004) have simplified the evaluation of the value of β through a simplified equation of rate of growth:

$$g_y \approx \beta(\ln y^* - \ln y_t) \tag{3}$$

The parameter β gives information on the speed of convergence or the distance covered annually from the steady state. The following regression equation is estimated to calculate β in a cross country analysis of empirical data:

$$\frac{1}{T}\ln\frac{y_T}{y_0} = \alpha_0 + \alpha_1 \ln y_0 \tag{4}$$

This equation allows to estimate whether there is or not a convergence trend. The dependent variable is the average annual growth rate of real GDP per capita between period T and 0 while the independent variable is the GDP per capita level in period 0. If the slope of regression is negative (parameter α_1) than β convergence exists as the GDP growth rate is negatively correlated with the initial income level. This confirms that the less developed economies in the region grew faster than the more developed economies.

Then, we can calculate the value of β from the equation.

$$\beta = -\frac{1}{T}\ln(1+\alpha_1 T) \tag{5}$$

In addition to β coefficient for defining the concept of convergence, the classical literature also presents another concept that is σ convergence. σ convergence involves a decline over time in the cross-sectional dispersion of per capita income. β convergence is a precondition to have σ convergence, but the reverse is not always true. The concept of σ convergence can be defined as a group of economies that are converging in the sense of σ, if the dispersion of their real per capita GDP levels tends to decrease over time:

$$\sigma_{t+T} < \sigma_t \tag{6}$$

where σ_t is the time t standard deviation of $\log(y_{i,t})$ across countries *i*.

2.1 Income Convergence among Balkan Countries and new EU members

The estimation of the convergence among Balkan countries is done by considering some similarities in their economic and political development in the context of their commitment to the EU integration process. The initial year of the research is 1995 when the countries in the Western Balkan region and in the Central and East Europe (CEE) have started to show some positive signs of economic recovery following the post-communist era. Bulgaria, Croatia and Romania, already members of EU are also included in the group of countries in the Balkan region, with the aim of verifying the convergence in this region and whether EU membership has influenced the growth rates of these three countries or not. Bulgaria and Rumania have accessed the EU in 2007 where the GDP per capita in PPP was respectively 12521 USD and 13160 USD, consisting in 41% and 43% of the GDP per capita of the EU in that year. In addition, the speed of convergence in the other set of countries of the thirteen newest EU members is also estimated for comparison purposes.

2.1.1 β convergence

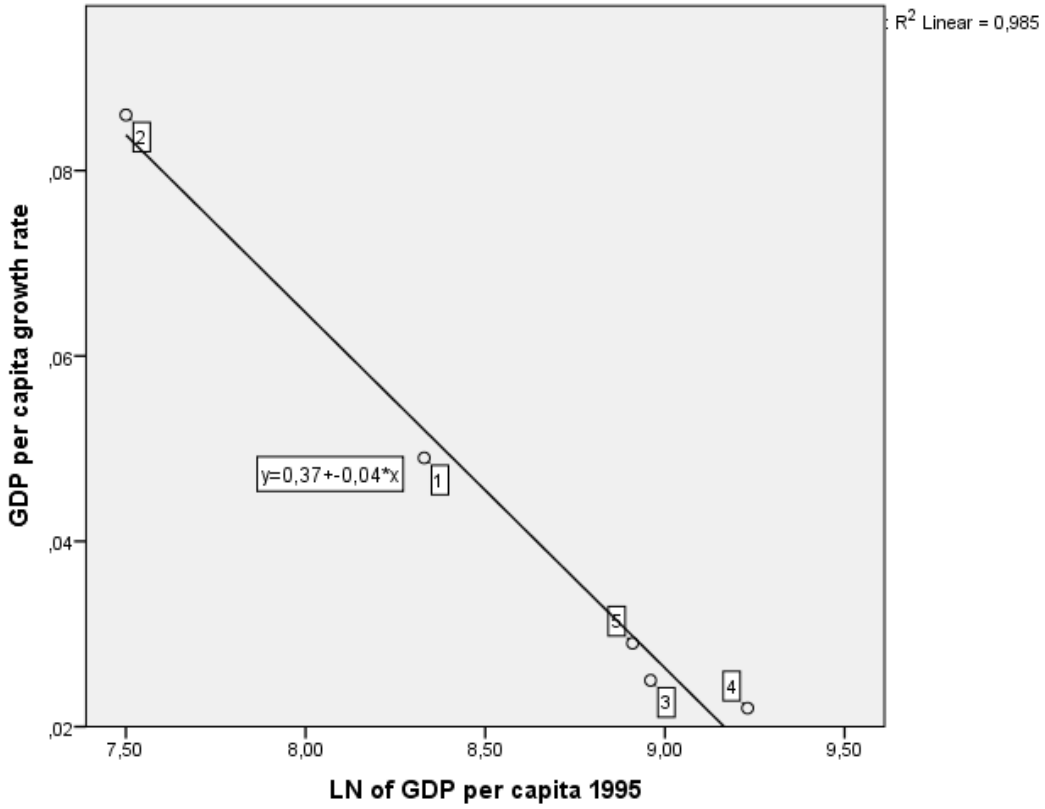
The concept of β convergence relates to poor economies growing faster than rich ones. The neoclassical model predicts that each economy converges towards its steady state and speed of convergence relates inversely with distance from the initial condition. In other words, the model predicts conditional convergence in the sense that a smaller initial value of real per capita income tends to generate a higher rate of growth per capita. The higher the absolute value of β, the greater the responsiveness of the average growth rate to the gap between y* and y(0), so the more rapid the convergence to the steady state.

For the estimation of absolute convergence, β convergence, for the Western Balkans countries (Albania, Bosnia & Herzegovina, Macedonia, Montenegro, Serbia) is used the regression equation (4), where the dependent variable is the average annual growth of GDP per capita per each country for the period 1995 – 2015 and the independent variable is natural logarithm of 1995 GDP per capita per each country. The regression results are given in the Table 1 below, where β is also calculated through the equation (5).

Table 1: Regression results for β convergence

Period	α0	α1	tα0	tα1	R2	β-conv.	Beta
1995-2015	3,71	-0,038	15,778	-14,022	0,980	Yes	0,071
	(0,001)	(0,001)					

Figure 1: Regression plot for Western Balkans - GDP per capita growth rate over the period 1995-2015 and the Log of 1995 GDP per capita



1. Albania, 2. Bosnia&Herzegovina, 3. Macedonia, 4. Montenegro, 5. Serbia

Authors' calculations; Source: World Development Indicators

The regression's results confirm the existence of β convergence as α_1 has a negative value. Therefore, the negative relation between the growth and the initial level of income per capita is confirmed. The speed of convergence is estimated at 7,1% higher than the average growth rate of the EU as well as the region. The average annual growth of GDP per capita for the EU countries during this period has been 1,5% , confirming once again that the less developed Balkan region grew more rapidly during 1995-2015. The positioning of the countries toward each other and the regression line are shown in the regression plot in Figure 1.

As it is seen in the positioning in the scatter plot in Figure 1, countries that have experienced the major growth were Bosnia-Herzegovina and Albania, the poorest

countries with the lowest level of GDP per capita in PPP[2] in 1995, 1810 USD and 2759 USD, respectively. The β convergence at 7,1% is significant, showing a relatively fast speed of convergence compared to the general trend of 2% reported by empirical studies on bigger regions and group of countries in Barro and Sala-i-Martin (1992). Referring to the "*rule of 72*" (it is used in finance and investment for calculating the time to double the initial capital), Albania with the calculated speed of convergence, would need approximately 10 years to double its 2015 GDP per capita.

In order to understand the convergence pace for the thirteen new EU member states for the period 1995 – 2015 the same analysis is carried out concerning β convergence. Table 2, shows the regression's results for the new EU member states, including Croatia which accessed the EU in 2013, whereas the Figure 2 demonstrates the regression plot.

Table 2: Regression results for 13 new EU member countries

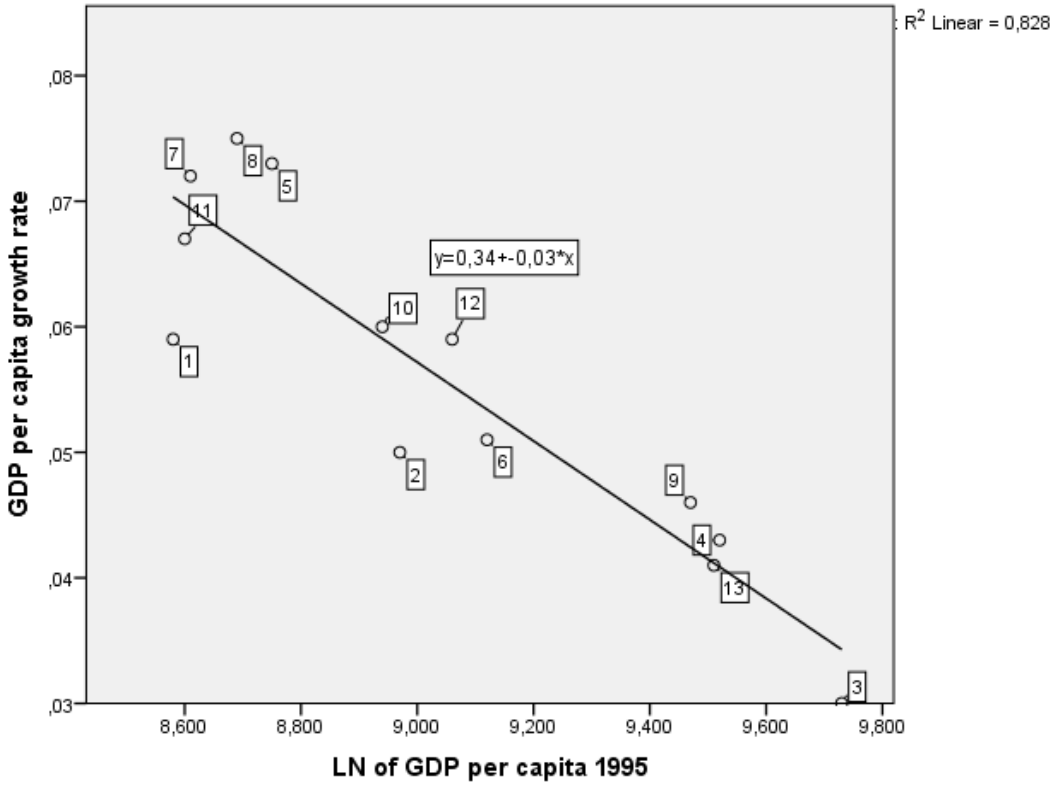
Period	α_0	α_1	$t_{\alpha 0}$	$t_{\alpha 1}$	R^2	**β-conv.**	**Beta**
1995-2015	0,339 (0,039)	-0,031 (0,004)	8,702	-7,276	0,828	Yes	0,048

The negative α_1 confirms the existence of β convergence calculated at 4,8%, lower than the calculations Meksi, Xhaja (2015) at 5.5%. In a 2004 study by Matkowski and Prochniak the β parameter of the eight CEE countries that accessed the EU in 2004 was estimated at 3,4% for the period 1993-2003. The speed of convergence in the 13th last EU members is lower that the speed of convergence of five Western Balkan countries, confirming thus, the less developed economies that have started from a really low GDP per capita have increased their GDP per capita at a faster pace than the developed economies.

Figure 2 shows a negative correlation between the average annual GDP per capita growth rate over the period 1995-2015 and the initial GDP per capita level.

[2] constant 2011 international $

Figure 2: Regression graph for 13 newest member of EU GDP per capita growth rate over the period 1995-2015 and the ln GDP per capita in 1995



1.Bulgaria, 2. Croatia, 3. Cyprus, 4. Czech Republic, 5. Estonia, 6. Hungaria, 7. Latvia, 8. Lithuania, 9. Malta, 10. Poland. 11. Rumania, 12. Slovak Rep., 13. Slovenia

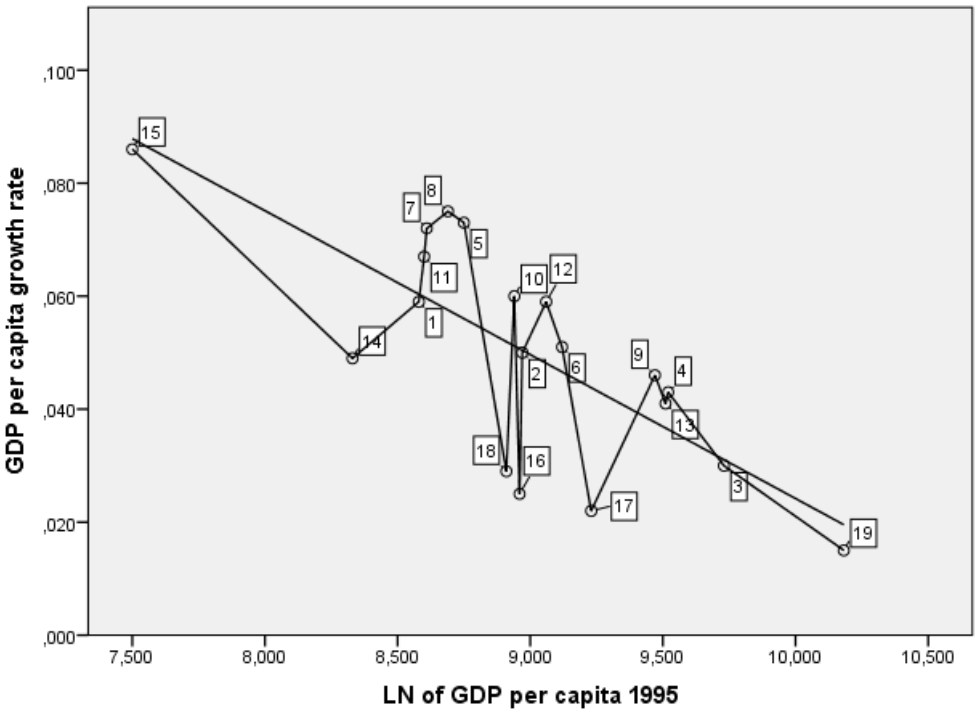
Authors' calculations; Source: World Development Indicators

Herein, it is noted that Latvia, Bulgaria and Romania started approximately at the same level of GDP per capita in 1995, the poorest in this set of countries, but Beta convergence is more confirmed in Latvia and Romania case, with an impressive average growth. Following the logic of our analysis let's look at the behaviour of the other parameter, σ convergence to see if the beta convergence has affected the disparities of incomes per capita in the Balkan Countries considering that the EU is also growing in the said period.

2.1.2 σ convergence

Our empirical analysis confirmed the β convergence among Balkan countries, but also among the new EU member states. Figure 3 positions together all eighteen countries that were analysed and indicates the EU value of GDP per capita in PPP. The graph provides insight on the differences in the development and the income per capita among the countries in the study. Again, the negative relation among the initial level of income and the growth rate is confirmed, but at a lower speed (β=3,4%) as the set of countries is more diversified in the development stage. The growth is seen to be higher for less developed countries in Europe, such as Bosnia-Herzegovina and Albania.

Figure 3: GDP per capita growth rate over the period 1995-2015 and the ln of 1995 GDP

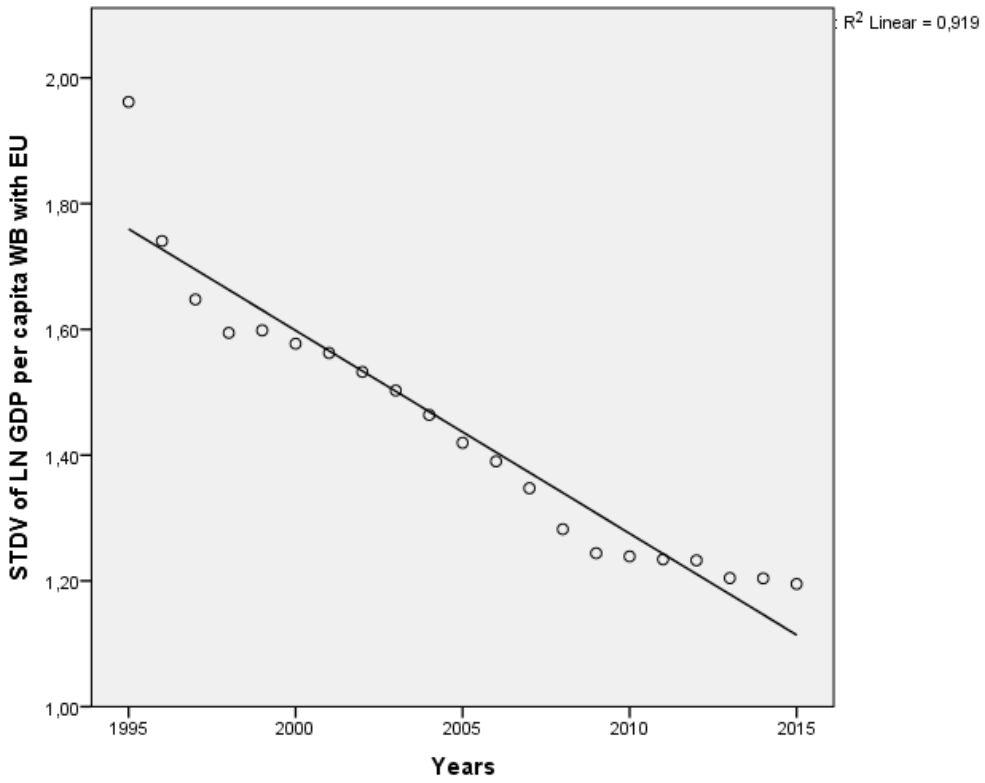


1. Bulgaria, 2. Croatia, 3. Cyprus, 4. Czech Rep., 5. Estonia, 6.Hungary, 7. Latvia, 8. Lithuania, 9. Malta, 10.Poland, 11. Romania, 12. Slovak Rep., 13. Slovenia, 14. Albania, 15. Bosnia & Herzegovina, 16. Macedonia, 17. Montenegro, 18. Serbia, 19. EU

Authors' calculations; Source: World Development Indicators

However, in order to estimate if their income per capita has converged with other countries in the Balkans and how it is situated toward the EU, parameter σ is assessed through the calculation of the standard deviation for the log of capita per GDP toward EU for the period 1995-2015. σ convergence exists if the trend line slope of the regression of standard deviation GDP per capita and the time period has a negative coefficient, meaning that the income dispersion tends to diminish. The regression results confirm conditional convergence as the coefficient of the regression slope is negative, α_1=-0,032 (see Figure 4).

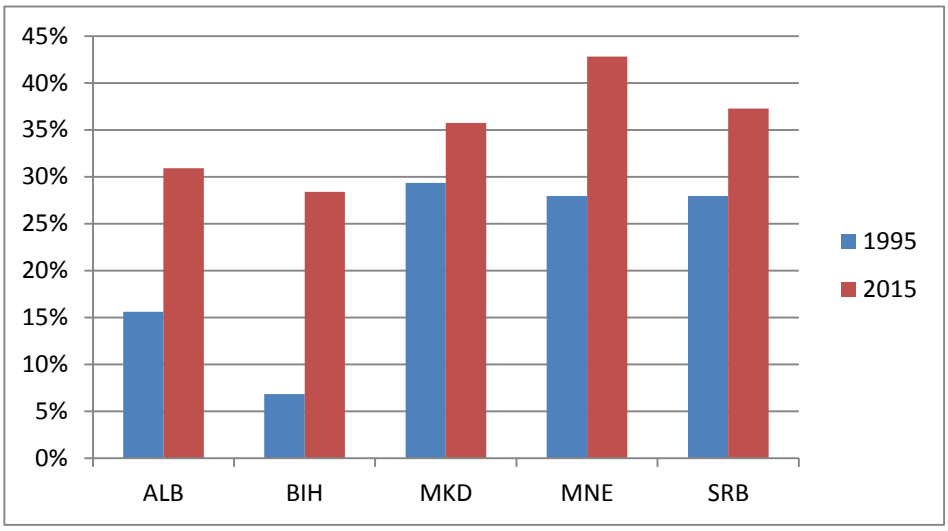
Figure 4: Regression Graph for Standard deviation of LN GDP per capita WB to EU, 1995-2015



Authors' calculations; Source: World Development Indicators

Thus, the GDP per capita of Western Balkans is narrowing the gap with the GDP per capita of EU. Figure 5 provides a picture of the catching up process of the share of GDP per capita of Balkan countries toward GDP per capita of EU, respectively in 1995 and 2015.

Figure 5: Share of GDP per capita of Balkan countries to EU GDP per capita



Authors' calculations; Source: World Development Indicators

The disparities in the income per capita among countries in the Balkans toward EU have diminished. There is an impressive narrow on the income gap for the poorest countries of the region, such as Bosnia and Herzegovina and Albania although they are still lagging far from the EU GDP per capita.

2.2 Estimation of time gap to EU

In this estimation experiment we have attempted to calculate the catching up of the Western Balkans to the EU, where all countries are growing. In such case, we considered the GDP per capita in 2015 for both EU and other countries and the foreseen growth rate of IMF for the period 2016-2020. The results of estimations are presented in Table 4 below. To calculate the time gap we use the following formula:

$$y_{T,EU} = y_{2012,EU}(1+g)^T = y_{T,Alb} = y_{2012,Alb}(1+g)^T \quad (6)$$

Table 4: Time Gap calculations

Country	GDP per capita in 2015 in PPP (current international $)	Expected annual growth 2016-2020 (%)	Time Gap (years)	Assumed annual growth 2016 – 2020 (%)	Time Gap (years)
Albania	11479	3,9	60	5%	39
Bosnia &Herzegovina	10852	3,5	62	5%	41
Macedonia	14076	3,3	69	5%	33
Montenegro	16050	3,5	53	5%	28
Serbia	14112	3,2	74	5%	33
EU	38702	1,8		1,8%	

Authors' calculation, source: World Development Indicators, World Economic Outlook

Despite their positive growth even in the midst of a global crisis and sluggish economic growth, Albania and other Balkan countries still need considerable time to reach the EU average income. The current pace of growth limits the convergence. In the table is made an assumption of a 5% growth in the region and is seen the substantial reduction in the time gap in particular for Serbia. Thus, the countries need to consider their economic policies to accelerate growth through effective structural reforms, establishment of strong and reliable institutions, political stability and improvement of business climate are deemed necessary to guide the economic recovery and convergence.

3. Structural Convergence

In the above section the existence of the income convergence among Balkan Countries and EU average is confirmed although the gap is still large. The classical theory of growth suggests that the development brings changes in the structure of economy and the sectors' contribution to growth. The productivity level tends to grow with the progress of technology and improvement of the human skills capacities. The economic model attempts to shift from labour intensive sectors to more industrialised and high-tech economies. The Balkan countries have seen a change in the evolution of their economies and sectors from 1995 to 2015. In particular, in Albania is noted the drastic reduction of agriculture's contribution to the increase of services, as also a result of the speed of convergence. Figure 6 and 7 below show that Balkan countries pay high attention to agriculture, where the sector counts for approximately 10% of the GDP, as compared to the relatively modest role the same sector plays in GDP in other EU countries (an average contribution of about 1,7 of the GDP). The existence of the convergence suggests that countries follow similar stages of development characterized by the rise and fall of similar types of sectors. As income grows, countries may converge to a structural steady state, in which the sectoral mix of outputs becomes more uniform across them and can better integrate within their supply chains.

Figure 6: Sectors contribution in 1995

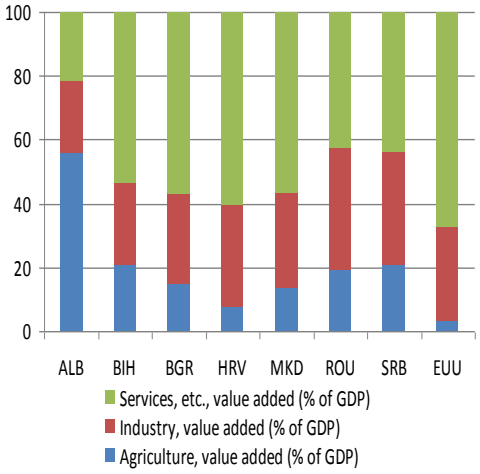
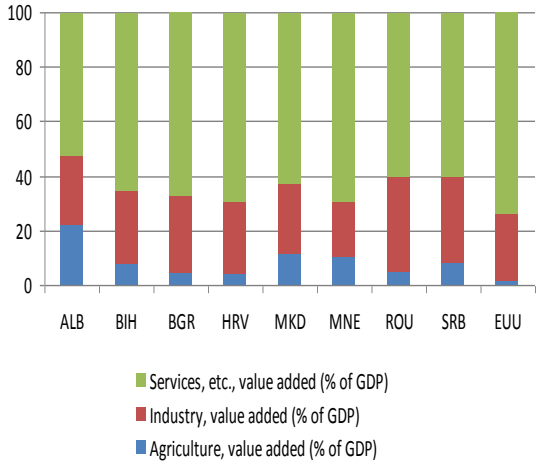


Figure 7: Sectors contribution in 2015



Source: World Bank – World Development Indicators

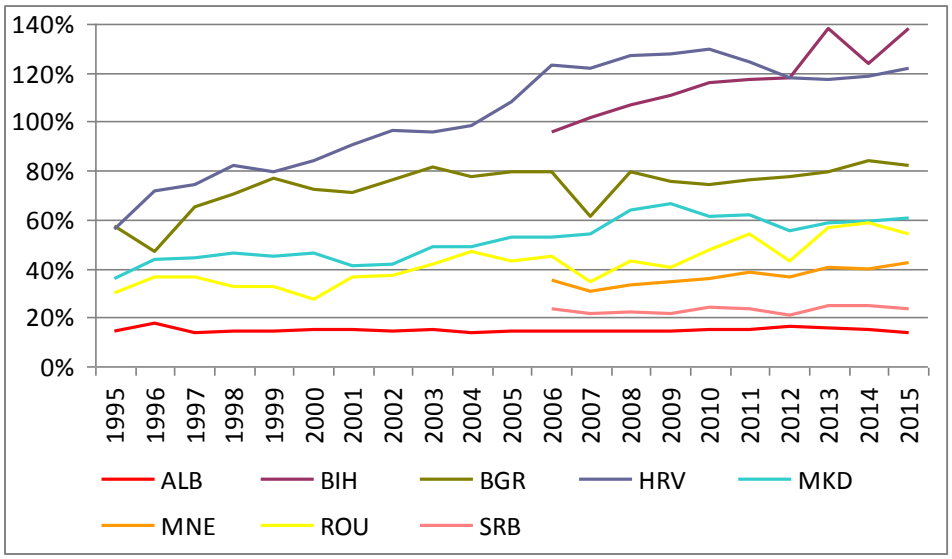
The experienced decline in the agriculture contribution to GDP is expected to give positive results in the productivity of the sector. Productivity measures are included as variable in the production function and are emphasized in the analysis of economic growth. Productivity is commonly defined as a ratio of a volume measure of output to a volume measure of input. In this paper, as a proxy estimation of the productivity in agriculture sector within countries from 1995 – 2015 is used the indicator of agriculture value added per worker. Figure 8 shows the dispersion of the variable for each Balkan country, including those already EU members, from EU value. Slovenia is not included in the graph, because it has a very high level of productivity, much more than EU. The data for Serbia and Montenegro start from 2005.

However, is evident that Albania has the largest productivity gap in the region and the largest share of agriculture in the economic activities, followed by Serbia and

Montenegro. Thus, these countries need to design appropriate policies to boost investments and improve skills in agro-industry by exploring their potentials better and by complementing the added value chain in the sector. The EU pre-accession funds, the facilitation of exchange of goods and services together with the enforcement of good governance and establishment of democratic institutions may create an attractive environment for business development, not only for one country specifically, but for the entire region.

More specifically for Albania, the domestic economy is heavily relying on the contribution of the agriculture sector that accounts at approximately 20% of the GDP for the last five years. The share of the sector in economic activity becomes more evident as the sector employs some 50% of the workforce. In the majority of cases it is an unpaid job carried out by members of the same family. The sector, as noted, suffers from a really low level of productivity that is due to the widespread informality and problems faced with land registration and informal buildings.

Figure 8: Dispersion of Agriculture value added per worker of Balkan countries with EU



Source: World Bank Data

Thus, the agricultural landscape is characterised by many fragmentised farms, limited access to financing from both, private and public sources, limited access to services and markets that also question the quality of the products. Farmers seem generally not aware or, in the best cases, confused about government laws and rules to avoid informality and the benefits associated with that.

Although, there are some initiatives already in place by the government and donors through subsidizing schemes to support the development of the farmers, the government capacities designated for this purpose are limited and often not close enough to assist the farmer. More coordinated efforts from public and private sector will actually contribute to a better use of the potentials of this sector.

4. Conclusions:

Balkan countries have experienced higher growth rates but slower convergence in comparison with the new EU member states. The impact of the global crisis continues to be felt in the Balkan countries, evidenced in still low rates of growth after 2009, has further increased the gap with the EU. The sector convergence of candidate countries of the Western Balkans still lags behind from the EU and the last member, Croatia, in particular, on the productivity terms, as experienced in the Agriculture sector. The question is whether these countries have to re-estimate their tools and approaches to address potentials for development, such as on the accumulation of resources and productivity measures, as well as on instruments of better collaboration among themselves to contribute to the economic convergence of the region. The world is not flat; therefore the convergence is a dynamic process that requires a proactive role of public and private policies to establish strong and reliable institutions, to guarantee political stability, to promote the business climate in order to further guide economic development and welfare.

References

Ancona G. (2007), *Le economie Mediterranee tra convegenza e divergenza*, Istituto Italiano di Cultura, Barcelona

Barro R. J., Sala-i-Martin X. (1990), 'Economic Growth and Convergence across the United States', *Working Paper*, 3419

Barro R. J., Sala-i-Martin X. (1991), 'Convergence across states and regions', *Brookings Papers on Economic Activity*.

Barro R. J., Sala-i-Martin X. (1992), 'Convergence', *Journal of Political Economy*, 100(2), Apr.

Barro R. J. (1991), 'Economic Growth in a Cross section of Countries', *The Quarterly Journal of Economics*, 106(2), May, 407-443

Caselli F. (2006), 'The Marginal Product of Capital', *IMF Working Paper*

IMF, *World Economic Outlook 2013*

Islam N. (2003), 'What have we learnt from the Convergence Debate', *Journal of Economic Surveys*, 17(3)

Kuadri Makroekonomik Fiskal, 2015- 2017, Ministria e Financave

Mankiw G., Romer D., Weil D. N. (1992), *A contribution to the Empirics of Economic Growth*

Matkowski Z., Prochniak M. (2004), 'Real Economic convergence in the EU Accession countries', *International Journal of Applied Econometrics and Quantitative Studies*., 1-3

Meksi E. (2007), *Financing for Development, Case of Albania*, briefings organized by Parliamentarian for Global Action, New York, October 23-24

Meksi E., Xhaja E. (2015), 'Economic EU Convergence of Albania and Other Balkan Countries', *Journal Global Policy and Governance*, 4(1)

Mutz C., Ziesemer T. (2005), 'Prebisch-Singer: Debates, Growth Model and Estimates', *MERIT-Infonomics Research Memorandum series*

Myrdal G. (1957), *Economic Theory and Underdeveloped Regions*

Perkins D. H., Radelet S., Lindauer D. L. (c2006), *Economics of Development*, sixth edition, W. W. Norton & Co., New York.

Prebisch R. (1950), *The Economic Development of Latin America and its Principal Problems,* United Nations Department of Economic Affairs, Lake Success, New York

Prebisch R. (1959) 'Commercial Policy in the Underdeveloped Countries', *The American Economic Review*, 49(2), Papers and Proceedings of the Seventy - first Annual Meeting of the American Economic Association, published by: American Economic Association

Sala-i-Martin X. (1990), 'Lectures Notes on Economic Growth (I): Introduction to the Literature and Neoclassical Models', *Nber Working Papers Series*, 3563

Sala-i-Martin X. (1995), 'The Classical Approach to Convergence Analysis', *Economics Working Paper*, 117

Sardadvar S. (2013), *Does the neoclassical growth model predict interregional convergence? On the impact of free factor movement and the implications for the European Union*, Department of Socioeconomics, Institute for Economic Geography and GIScience, Vienna University of Economics and Business, Austria

Singer H. W. (1950), 'The Distribution of Gains between Investing and Borrowing Countries', *The American Economic Review* , 40(2), Papers and Proceedings of the Sixty-second Annual Meeting of the American Economic Association

Wacziarg R. (2001), *Structural Convergence*, Stanford University, Prepared for the International Seminar on Macroeconomics in Dublin, Ireland, June 8-9

Weil D. N. (2013), *Economic Growth*, 3rd, Pearson Addison-Wesley, Boston, MA.

World Bank, *World Development Indicators*