BETA CONVERGENCE AMONG FORMER SOCIALIST COUNTRIES

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Abstract

The aim of this paper is to analyze the convergence process among former Socialist countries, the Central and Eastern European (CEE), Western Balkan and Eastern Partnership countries. The relationships between the selected macroeconomic variables and per capita GDP growth rate are econometrically tested to support this research. The analyzed period is 2004-2016, with two sub-periods; 2004-2008 and 2009-2013. The subdivision is made to test if the recent financial crisis affected the absolute and conditional convergence process. The empirical findings support the economic convergence hypothesis. The results show that the recent financial crisis negatively affected only the absolute convergence process. The negative effects of the crisis on conditional convergence are not identified. The poorer countries in the analyzed group should do more to attract investment, as gross fixed capital formation has a clear positive impact on per capita growth in the examined sample of countries.

Keywords: *Beta convergence; Western Balkans; Eastern Partnership; European Union; New Member States; Transition*

JEL codes: *F15, O47, O52*

1. INTRODUCTION

In this paper, the real economic convergence process among the Western Balkan countries; Albania, Bosnia and Herzegovina, FYR Macedonia, Kosovo[1], Montenegro and Serbia; the Eastern Partnership countries; Armenia, Azerbaijan, Belarus, Georgia, Moldova and Ukraine; and the CEE-11, the Central and Eastern European countries that joined the European Union in 2004 (excluding Cyprus and Malta), 2007 and 2013; Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, the Slovak Republic and Slovenia, is analyzed. The focus of the analysis is on absolute (unconditional) and conditional beta convergence in the period 2004-2016, with two sub-periods; 2004-2008 and 2009-2013.

Convergence is defined as a tendency of poor countries to grow faster than rich countries, in per capita terms (Barro and Sala-i-Martin 1992). The European Union (EU) has focused on convergence since the Treaty of Rome (1957), when the common policies to promote "harmonious economic development and balanced expansions" were adopted. The first enlargements in 1973, 1981 and 1986 brought challenges to the European Community, because Ireland, Greece, Portugal and Spain were less developed countries.

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In 1975, the European Regional Development Fund (ERDF) was created. The main objective of the ERDF is to support the projects and activities which reduce the economic disparity within the member states of the European Union (www.europeanfundingne.co.uk). A region is considered less developed if its per capita GDP is less than 75% of the EU average (www.ec.europa.eu/eurostat).

With the fall of the Berlin Wall in 1989, the European Community faced the challenge of ensuring the former Socialist countries went through the transition process successfully. In order for them to do that, the countries had to fulfill the Copenhagen criteria (1993). The gist of the criteria fulfillment is for the countries to be able to function as EU member states. The Central and Eastern European countries transformed from centrally planned to market economies. Eight CEE countries joined the European Union in 2004, together with Cyprus and Malta, followed by Bulgaria and Romania in 2007 and Croatia in 2013. The countries proved that they could cope with the challenges of EU membership and have been able to function in the EU market. Once they join the European Union, the new Member States have to join the Europe's Economic and Monetary Union, the Eurozone; i.e., they have to adopt the euro as their currency. In order to do so, the countries have to fulfill the Maastricht criteria (1992), also known as the convergence criteria.

The next group of countries that is expected to join the Union is the Western Balkan region. These countries have a similar economic history to that of the CEE countries and are currently going through the transition process. However, they are not ready to join the Union any time soon. The countries have signed the Stabilization and Association Agreement (SAA), and four of them (excluding Bosnia and Herzegovina and Kosovo) are candidate countries, while only Kosovo has not undergone visa liberalization with the European Union. Their transition should be faster, because they can leverage the experiences of CEE countries that have undergone through this process, which should be to their advantage.

Another group of countries going through the transition process is the Eastern Partnership group. The Eastern Partnership was established as a specific Eastern dimension of the European Neighborhood Policy (ENP), and was launched at the Prague Summit in 2009 (www.eeas.europa.eu). The Eastern Partnership engagement is focused on four priority areas of cooperation: stronger governance, stronger economy, better connectivity, and stronger society (www.ec.europa.eu). In the period 2014-2017, the Countries benefited from an overall of €2.8 billion of EU funds (www.eeas.europa.eu). A major concern

for the European Union's foreign policy toward the Eastern Partnership includes the establishment of a democratic government, human rights, the rule of law and socio-economic stability in the region (Kharlamova 2015: 30). Even though these countries have special relations with the European Union, econometric analyses of their convergence process are almost nonexistent.

The main purpose of this research is to analyze the economic convergence of the Western Balkan and Eastern Partnership countries towards the former Socialist countries that are already members of the European Union. Its other objectives include: to analyze the convergence process between different time periods, because this could show how the recent financial crisis affected convergence, and to analyze the determinants of per capita growth within the group. There are two research hypotheses of this analysis. The first hypothesis is that the recent financial crisis negatively affected the absolute convergence process of the Western Balkan and Eastern Partnership countries towards the CEE countries. The second hypothesis is that the recent financial crisis negatively affected the conditional convergence process among the analyzed countries.

The financial crisis that started in 2008 had negative effects on the economies of the analyzed countries. However, a complete analysis of its effects on the convergence process will be possible once the data for the post-crisis period is available. Therefore, the current results can be considered preliminary.

The paper is organized as follows. The literature review on convergence is presented in Section 2, followed by Methodology and Data in Section 3. In Section 4, the empirical findings on absolute and conditional beta convergence are presented and discussed. Section 5 concludes the paper.

2. LITERATURE REVIEW

Convergence was popularized by Barro and Sala-i-Martin (1992), who analyze the U.S. states over various periods between 1840 and 1988 based on the Solow growth model. The empirical results show the existence of convergence, with the speed of convergence of 2 per cent per year, regardless of the time period. Barro (1991) analyzes the impact of the initial per capita GDP, primary and secondary school enrollments, number of political assassinations, investment rates and measures of distortions in capital markets on per capita GDP growth. The results of this analysis show that education is an important determinant of the growth rate of the economy; investment rate

is strongly positively correlated to growth; the coefficient of the initial level of income is significantly negative once other variables are held constant; and different measures of political instability and market distortions seem to matter in varying degrees. Sala-i-Martin (1994) proves that there is ample evidence of conditional beta convergence. The speed of convergence is remarkably similar across data sets at 2 per cent per year.

Different empirical studies have analyzed beta convergence in Europe. Matkowski and Prochniak (2004) investigate the convergence process of eight accession countries, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, the Slovak Republic and Slovenia towards the EU-15 between 1993 and 2001. The results show that the accession countries reveal strong economic convergence towards the EU and tend to develop faster than the old EU members. Kaitila (2004) shows that the CEE countries converged conditionally towards the EU-15 in the period 1993-2002. Also, higher investment and lower public consumption support the growth in these countries. Jelnikar and Murmayer (2006) confirm convergence in the EU-25 between 1995 and 2007 (predicted value). The EU-10 group moved closer to the average EU-15 income per capita level.

El Ouardighi and Somun-Kapetanovic (2007) analyze the convergence process of five Western Balkan countries towards the EU-27 in the period 1989-2005, with the conclusion that the inequality of income increased and that convergence in per capita GDP ran at a slow annual rate. The authors (2009) expand the analyzed period to 2008. The results show that the Western Balkans converges in the entire period, but there are differences in the convergence patterns across sub-periods. Borys et al. (2008) investigate the convergence process of five Western Balkan countries towards ten CEE countries in the period 1993-2005. The results show that the main drivers of convergence have been total factor productivity growth and capital deepening, whereas labor has contributed only marginally to economic growth. Vojinović et al. (2009) confirm the existence of both sigma and beta convergence in the CEE-10 in the period 1992-2006. Kulhánek (2012) analyzes the convergence process of five CEE countries (the Czech Republic, Hungary, Poland, the Slovak Republic and Slovenia) towards the EU-15 in the period 1995-2011. The results show that the countries converge, but at a lower rate compared to the new Member States (the EU-12) as whole.

Borsi and Metiu (2015) investigate economic convergence in the EU-27. The results suggest that there is no overall real per capita GDP convergence. However, there is club convergence, and regional linkages play a significant role in determining the formation of convergence clubs. Colak (2015) includes thirty-three countries in the convergence analysis; the CEE-10 and SEE-8 countries towards the EU-15. The results show the presence of both absolute and conditional beta convergence for each group of countries. Oblath et al. (2015) analyze economic convergence in the EU-26 (Luxembourg and Croatia are excluded from the analysis) in the period 1999-2013, focusing on the ten Central and East European new members (the EU-10). The analysis shows that that there was a rapid catch-up in both per capita GDP and general price levels of the less developed EU countries until 2008, followed by a significant slow-down. Micallef (2017) shows that relatively poorer countries in the European Union experienced a faster pace of growth compared to the EU-15 countries, supporting the beta measure of convergence.

Alcidi et al. (2018) investigate income convergence in the EU-28 between 2000 and 2015. The analysis shows that the CEE countries led the convergence process, while the Southern regions have systematically underperformed relatively to the EU average. Pipień and Roszkowska (2018) analyze the convergence process of twenty transition countries; eight CEE and twelve CIS countries. The analyses of the estimated beta parameters show that the CEE group has become relatively homogeneous, while substantial heterogeneity among the CIS countries and a lack of similar convergence patterns among them is confirmed.

3. METHODOLOGY AND DATA

There are two types of real economic convergence: sigma and beta convergence. Sigma convergence is a simple measure of per capita GDP dispersion among analyzed countries. Beta convergence tests the hypothesis that poor countries grow faster than rich countries in per capita terms and measures the speed of convergence. There are two types of beta convergence; absolute (unconditional) and conditional.

When it is assumed that countries converge to the same steady state, convergence is absolute and the beta coefficient is obtained through a simple regression analysis with one dependent and one independent variable. The dependent variable is the per capita GDP growth rate, while the independent variable is the initial per capita GDP, computed in natural logarithm. The relationship between the initial per capita GDP and per capita GDP growth rate has to be negative. The positive relationship indicates divergence, i.e. rich countries grow faster than poor countries, in per capita terms. This analysis is based on cross-sectional

data, using the average rates for a given period. The cross-sectional data is used because it is free of the distortions caused by business cycles, as well as various demand-side and supply-side random shocks, both internal and external, that deviate the economy from a path towards the steady-state (Vojinović et al. 2009: 127).

$$\Upsilon_{i.0,T} = \alpha_i + \beta \log(Y_{i,0}) + \varepsilon_i \qquad (1)$$

where:
αi – the constant term
β – the convergence coefficient
$\beta < 0$
$\Upsilon_{i.0,\,T}$ – the average annual growth rate of per capita GDP for country i
$Y_{i,\,0}$ – per capita GDP for country i at the beginning of the time interval
$_T$ – the end of the time interval
$_0$ – the beginning of the time interval
ε_i – the stochastic error of the equation.

When it is assumed that the countries are moving towards a different steady state, convergence is conditional. The beta coefficient is obtained using a multiple regression analysis, where the absolute convergence model (1) is expanded with different economic, socio-political or institutional variables. In this analysis, economic variables are the inflation rate, economic openness and gross fixed capital formation, while socio-political variables are general government debt, the unemployment rate and the population growth rate.

$$\Upsilon_{i.0,T} = \alpha_i + \beta_1 \log(Y_{i,0}) +$$
$$+ \beta_2\, EconOp_{i.0,T} + \beta_3\, Inf_{i.0,T} + \qquad (2)$$
$$+ \beta_4\, GFCF_{i.0,T} + \varepsilon_i$$

and

$$\Upsilon_{i.0,T} = \alpha_i + \beta_1 \log(Y_{i,0}) +$$
$$+ \beta_2\, EconOp_{i.0,T} + \beta_3\, Inf_{i.0,T} + \qquad (3)$$
$$+ \beta_4\, GFCF_{i.0,T} + \beta_5\, Debt_{i.0,T} +$$
$$+ \beta_6\, Pop_{i.0,T} + \beta_7\, Unemp_{i.0,T} + \varepsilon_i$$

where:
EO – Economic openness
Inf – Inflation rate
GFCF – Gross fixed capital formation
Debt – General government debt
Pop – Population growth rate
Unemp – Unemployment rate.

In order to investigate relevant model diagnostics, three tests are conducted in all estimated models, the Breusch-Pagan test, which tests the null hypothesis that the variance of the residuals is constant, the multicollinearity test using the variance inflation factor (VIF), and a test on whether there is correlation among the variables.

a. Data

The selected macroeconomic variables used in this analysis are: economic openness, the inflation rate, gross fixed capital formation, general government debt, the unemployment rate and the population growth rate. The transition literature is followed (e.g. Falcetti et al. 2006; Redek and Susjan 2005; Efendic and Pugh 2015; Siljak and Nagy 2018) and the included macroeconomic variables are generally used in macroeconomic modelling in the sample of transition countries. Theoretically, economic openness and gross fixed capital formation have positive estimated coefficients, while the inflation rate, general government debt, the unemployment rate and the population growth rate are expected to have negative estimated coefficients.

Trade and investments were almost nonexistent in the centrally planned economic system, while inflation and the unemployment rate were held artificially low. General government debt is still lower than 60% in most countries of the analyzed group. When the transition started, trade and investments started increasing, together with inflation, unemployment and general government debt. It is important to investigate the impacts of the selected variables on the convergence process, because the empirical results can show what promotes per capita growth and on which aspects the countries should focus their policies. The population growth rate is taken from the Solow growth model.

This research is based on annual data. Table 1 presents the descriptive statistics of the variables used in the estimation of absolute and conditional convergence in the period 2004-2016. The data set includes twenty-three countries.

The EUROSTAT, World Bank and World Economic Outlook (WEO) databases are the main sources of data

Table 1: Descriptive statistics

Variables	Description	Mean	Standard Deviation	Minimum Value	Maximum Value
Per capita GDP growth	Annual percentage growth rate of GDP per capita based on constant local currency	3.79	1.63	1.44	8.52
Log (initial per capita GDP)	Natural logarithm of per capita GDP at the beginning of the analyzed period	9.07	0.56	7.88	10.03
Economic openness	A sum of exports and imports divided by GDP	108.10	28.11	68.84	166.17
Inflation rate	Measured by the Harmonized Index of Consumer Prices	4.81	4.27	1.79	19.51
Gross fixed capital formation	Measured as a percentage of GDP	24.47	3.42	19.56	31.92
General government debt	The government debt to GDP ratio	35.92	16.47	5.54	71.72
Unemployment rate	A percentage of total labor force	13.51	9.18	0.73	38.88
Unemployment rate (Belarus excluded from the analysis)[2]	A percentage of total labor force	14.09	8.95	5.76	38.88
Population growth	The annual *growth rate* of a *population*	-0.25	0.58	-1.33	1.31

Source: Author's calculations based on World Bank, World Economic Outlook and EUROSTAT data

for this analysis. The absolute convergence analysis is based entirely on the World Bank's data. Data for general government debt, as a percentage of GDP, are obtained from EUROSTAT for the EU Member States, and from the World Economic Outlook database for the non-EU countries. The inflation rates for Bosnia and Herzegovina and Kosovo are also obtained from the WEO database. Data for economic openness, gross fixed capital formation, the unemployment rate and the population growth rate are taken from the World Bank's database.

4. EMPIRICAL RESULTS

In this research, beta convergence of the Western Balkan and Eastern Partnership countries towards the CEE countries is analyzed for the full period 2004-2016 and two sub-periods; 2004-2008, the period before the crisis and 2009-2013, the crisis period. The subdivision is made in order to test the research hypotheses whether the recent financial crisis negatively affected absolute and conditional convergence among the analyzed countries. Four equations are estimated for each period: the absolute convergence models (Models 1-3), the conditional convergence models with economic variables (Models 4-6) and the conditional convergence models with economic and socio-political variables (Models 7-12). The regression results for absolute convergence are presented in Table 2.

The regression results show that there is absolute convergence among the former Socialist countries in every analyzed period. The beta coefficient in the

Table 2: Absolute / unconditional convergence of the former Socialist countries

	Model 1 2004-2016	Model 2 2004-2008	Model 2' 2004-2008	Model 3 2009-2013
	β (t)	β (t)	β (t)	β (t)
Log of initial per capita GDP at PPP	-1.52** (-2.85)	-2.33* (-1.85)	-2.33* (-1.92)	-1.82*** (-2.92)
F statistics (p-value)	8.13 (0.0096)	3.42 (0.0785)	3.70 (0.0680)	8.52 (0.0082)
R^2	0.2790	0.1400	0.1400	0.2886

Source: Author's calculations based on World Bank data
Note: *** $p<0.01$, ** $p<0.05$, *$p<0.1$

entire analyzed period is -1.52, so assuming that the countries in the analyzed group are similar in terms of steady state characteristics, they converge to a common per capita GDP at the rate of 1.52%. The convergence rate of 2.33% in the period 2004-2008 is the only rate higher than the reference value of 2%, from the Barro and Sala-i-Martin (1992) findings. The convergence rate in the crisis period is 1.82%. Therefore, there is not enough evidence to reject the first research hypothesis and it is concluded that the recent financial crisis had a negative effect on the absolute convergence process in the analyzed group.

There is no autocorrelation or multicollinearity present in the estimated models. However, the issue of heteroskedasticity is detected in Model 2. In order to correct this issue, a regression with a heteroscedasticity robust standard error is estimated (Model 2'). The convergence rate remains the same in both models.

Figure 1 indicates convergence among the analyzed countries during the period 2004-2016. The Figure plots per capita GDP in 2004 (X-axis) against the average annual growth rate of per capita GDP in the period 2004-2016 (Y-axis) and shows a negative relation between the variables, i.e. the regression line has a downward slope. The Figure also shows a high degree of dispersion among the Eastern Partnership countries. The group's average per capita growth rate in the analyzed period was 5.3%. Armenia, Azerbaijan, Belarus and Georgia achieved the highest average per capita growth rates among the analyzed

countries (5.5%, 8.5%, 5.0% and 6.5%, respectively), while Ukraine (1.9%) is among the countries with the lowest average per capita growth rates, together with Croatia (1.4%), Hungary (1.8%) and Slovenia (1.5%). On the other hand, the Western Balkan countries act as a club. The groups' average growth rate in the analyzed period was 3.3%, only 0.1 percentage point higher than the average rate in the CEE countries. Among the CEE countries, the highest respective growth rates were recorded in Romania (4.2%), Latvia (4.2%) and Lithuania (4.7%), while the highest average growth rate among the Western Balkan countries was recorded in Albania (4.0%). At the same time, the Czech Republic (2.4%), Croatia, Hungary and Slovenia were the only CEE countries that grew slower, on average, than the Western Balkan countries.

Table 3 presents the individual convergence process of each country in the analyzed group from 2004 to 2016.

The results show that, among the Eastern Partnership group, all countries converge, except Ukraine. Due to its low per capita growth rate, the country diverges. The Western Balkan countries, apart from Serbia and Kosovo, all converge. The only CEE countries with per capita GDP lower than the group's average; Bulgaria and Romania, also converge. Estonia, Latvia, Lithuania, Poland and the Slovak Republic diverge due to their higher average per capita growth rates (3.1%, 4.2%, 4.7%, 3.9% and 4.0% respectively).

Figure 1: Absolute beta convergence in the Western Balkan, European Partnership and CEE countries, 2004-2016
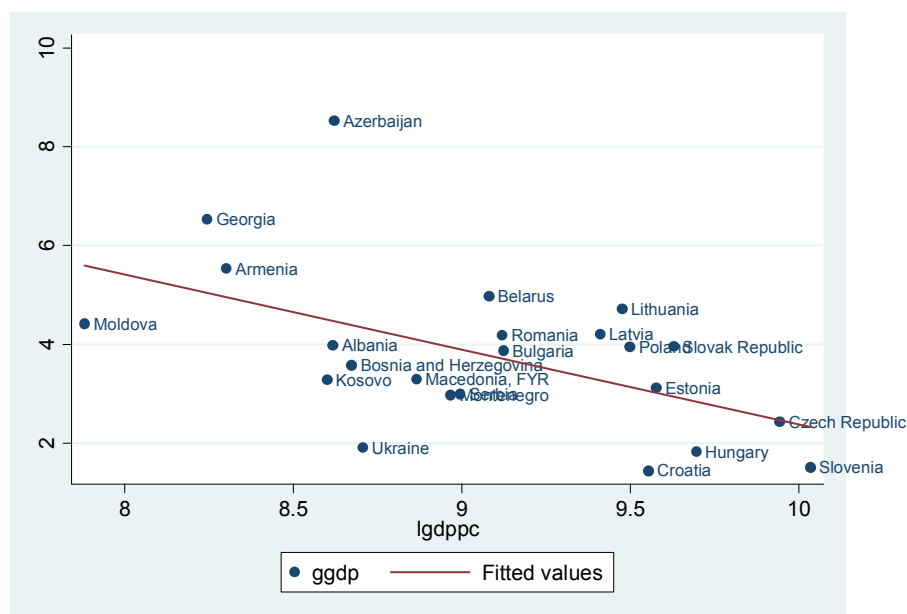
Source: Author's calculations based on World Bank data

Table 3: The convergence process of the former Socialist countries

Country	GDP per capita in PPP (CEE-WB-EP=100)		Change	Convergence Process
	2004	2016		
Albania	55	60	+5	Converges from below
Armenia	40	45	+5	Converges from below
Azerbaijan	55	87	+32	Converges from below
Belarus	87	91	+4	Converges from below
Bosnia and Herzegovina	58	62	+4	Converges from below
Bulgaria	91	98	+7	Converges from below
Croatia	140	120	-20	Converges from above
The Czech Republic	207	177	-30	Converges from above
Estonia	144	149	+5	Diverges
FYR Macedonia	70	76	+6	Converges from below
Georgia	38	50	+12	Converges from below
Hungary	162	136	-26	Converges from above
Kosovo	54	51	-3	Diverges
Latvia	122	131	+9	Diverges
Lithuania	130	152	+22	Diverges
Moldova	26	27	+1	Converges from below
Montenegro	78	89	+11	Converges from below
Poland	133	141	+8	Diverges
Romania	91	119	+28	Converges from below
Serbia	80	74	-6	Diverges
The Slovak Republic	151	155	+4	Diverges
Slovenia	227	169	-58	Converges from above
Ukraine	60	42	-18	Diverges

Source: Author's calculations based on World Bank data

a. Robustness Checks

Nine conditional convergence models are estimated in this analysis; three models with economic variables (Models 4-6) and six models with economic and socio-political variables (Models 7-12). The selected macroeconomic variables represent the aspects each country has to improve or stabilize in its transition process. The empirical results can serve as recommendations for countries when they are formulating and implementing policies that could increase per capita growth.

Table 4 presents the regression results for conditional convergence models with economic variables in the analyzed periods.

The regression results show that, when economic variables are included in the models, the analyzed countries converge in the period 2004-2016 at the rate of 1.42%. In the period before the crisis, the beta coefficient is negative, but statistically insignificant, so this is an indication that the countries do not converge. However, the countries converge at the rate of 1.83% during the crisis period, which is the highest rate among the analyzed periods. Based on these

results, it can be concluded that the recent financial crisis did not negatively affect the conditional convergence process, when economic variables are included in the models.

Tables 5 and 6 present the regression results, when economic and socio-political variables are included in the models. Models 7-9 include Belarus in the analysis, while in Models 10-12 the country is excluded as an outlier.

The results for conditional convergence, when economic and socio-political variables are included in the models, show that the countries converge in the periods 2004-2016 and 2009-2013. When Belarus is included in the analysis, the convergence rate in the entire analyzed period is 1.58%, compared to 2.24% when the country is excluded. During the crisis period, the countries, together with Belarus, converge at the rate of 1.55% and at the rate of 2.02% when the country is excluded. Even though the beta coefficients are negative in the pre-crisis period for both models, they are not statistically significant and the countries do not converge. Therefore, it can be concluded that the crisis did not have a negative effect on the conditional

Table 4: Conditional convergence of the former Socialist countries, when economic variables are included in the models

	Model 4 2004-2016	Model 5 2004-2008	Model 5'	Model 6 2009-2013
	β (t)	β (t)	β (t)	β (t)
Log of initial per capita GDP at PPP	-1.42* (-2.05)	-0.79 (-0.59)	-0.79 (-0.59)	-1.83** (-2.46)
Economic openness (%)	0.001 (0.07)	-0.02 (-0.58)	-0.02 (-0.59)	0.003 (0.19)
Gross fixed capital formation (% of GDP)	0.15 (1.63)	0.33** (2.35)	0.33* (1.85)	0.05 (0.50)
Inflation rate (annual %)	-0.004 (-0.05)	0.40* (2.09)	0.40* (1.84)	0.05 (0.62)
F statistics (p-value)	2.71 (0.0631)	3.97 (0.0176)	1.79 (0.1749)	2.45 (0.0837)
R^2	0.3757	0.4686	0.4686	0.3523

Source: Author's calculations based on World Bank and World Economic Outlook data
Note: *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 5: Conditional convergence of the former Socialist countries, when economic and socio-political variables are included in the models

	Model 7 2004-2016	Model 8 2004-2008	Model 8' 2004-2008	Model 9 2009-2013
	β (t)	β (t)	β (t)	β (t)
Log of initial per capita GDP at PPP	-1.58** (-2.29)	-2.08 (-1.23)	-2.08 (-0.99)	-1.55* (-1.81)
Economic openness (%)	-0.01 (-0.52)	-0.03 (-0.96)	-0.03 (-0.84)	0.0004 (0.03)
Gross fixed capital formation (% of GDP)	0.05 (0.50)	0.15 (0.81)	0.15 (1.00)	0.04 (0.35)
Inflation rate (annual %)	-0.08 (-0.95)	0.16 (0.59)	0.16 (0.72)	0.05 (0.61)
General government debt (% of GDP)	-0.04* (-1.95)	-0.07 (-1.62)	-0.07* (-2.03)	-0.02 (-1.05)
Population growth (annual %)	0.16 (0.32)	1.99* (1.81)	1.99 (1.15)	-0.21 (-0.37)
Unemployment rate (annual %)	-0.08* (-1.93)	-0.14 (-1.24)	-0.14 (-1.47)	-0.01 (-0.16)
F statistics (p-value)	2.70 (0.0502)	3.28 (0.0255)	3.55 (0.0187)	1.42 (0.2696)
R^2	0.5578	0.6047	0.6047	0.3979

Source: Author's calculations based on World Bank, World Economic Outlook and EUROSTAT data
Note: *** $p<0.01$, ** $p<0.05$, * $p<0.1$

convergence process in the analyzed group and the second research hypothesis is rejected.

Three economic variables are included in the analysis; economic openness, the inflation rate and gross fixed capital formation, and three socio-political variables; general government debt, the unemployment rate and the population growth rate. When only economic variables are included in the models, gross fixed capital formation and the inflation rate have a positive impact on per capita growth in the pre-crisis period. Economic openness has positive estimated coefficients in the periods 2004-2016 and 2009-2013, but it is not a statistically significant variable, therefore it is not a determinant of growth in the analyzed periods.

When economic and socio-political variables are included in the models, general government debt and the unemployment rate have a negative impact on per capita growth rate in the entire analyzed period

Table 6: Conditional convergence of the former Socialist countries, when economic and socio-political variables are included in the models, excluding Belarus

	Model 10 2004-2016	Model 11 2004-2008	Model 11' 2004-2008	Model 12 2009-2013
	β (t)	β (t)	β (t)	β (t)
Log of initial per capita GDP at PPP	-2.24** (-2.84)	-2.08 (-1.19)	-2.08 (-1.00)	-2.02** (-2.24)
Economic openness (%)	-0.01 (-0.71)	-0.03 (-0.96)	-0.03 (-0.85)	-0.003 (-0.24)
Gross fixed capital formation (% of GDP)	-0.08 (-0.63)	0.15 (0.79)	0.15 (0.98)	-0.03 (-0.23)
Inflation rate (annual %)	-0.28* (-1.83)	0.15 (0.53)	0.15 (0.67)	-0.27 (-1.06)
General government debt (% of GDP)	-0.04** (-2.25)	-0.07 (-1.52)	-0.07* (-1.86)	-0.02 (-0.95)
Population growth (annual %)	0.25 (0.51)	2.01 (1.76)	2.01 (1.13)	-0.11 (-0.21)
Unemployment rate (annual %)	-0.13** (-2.53)	-0.14 (-1.18)	-0.14 (-1.40)	-0.02 (-0.46)
F statistics (p-value)	3.16 (0.0318)	2.88 (0.0439)	2.92 (0.0419)	1.47 (0.2559)
R^2	0.6124	0.5898	0.5898	0.4232

Source: Author's calculations based on World Bank, World Economic Outlook and EUROSTAT data
Note: *** $p<0.01$, ** $p<0.05$, *$p<0.1$

for both models. The inflation rate is a statistically significant variable in the same period when Belarus is excluded from the analysis, while the population growth rate has a positive impact on per capita growth in the pre-crisis period, when Belarus is included in the analysis. None of the selected macroeconomic variables are determinants of growth in the period 2009-2013.

Consistent with the results of absolute convergence analysis, there is no multicollinearity or correlation among the included variables. Again, heteroskedasticity occurs in all pre-crisis conditional convergence models. When the regressions with heteroskedasticity robust standard errors are estimated, the results for the conditional convergence rates remain the same. The difference occurs in the determinants of growth in the models when economic and socio-political variables are included. The population growth rate is a determinant of per capita growth only in the original model, when Belarus is included in the analysis. However, general government debt is a determinant in the corrected models, when Belarus is included and excluded.

The analyzed countries are former or current transition countries. The economic transformation from centrally planned to market economies started with the fall of the Berlin Wall in 1989. While the transition for the CEE countries ended when they joined the European Union, the Western Balkan and Eastern Partnership countries are still going through this process. Five selected macroeconomic variables are included in the analysis because they represent the characteristics of the transition process. The population growth rate is taken from the Solow growth model.

One of the characteristics of the non-market system was the state ownership of the economy. The companies were state-owned and did not act according to the market laws, but according to the five-year plans. They did not sell their products on the market and did not gain profit from their activities (Berend 2016). Going through the path towards EU membership, the CEE countries had access to the pre-accession funds, which they used to raise technological standards and animal hygiene, welfare regulations, environmental requirements; to improve employment opportunities and professional skills, and infrastructure. It was expected that the countries would produce labor intensive products, but foreign direct investments, mainly from the old Member States, have made it possible to increase the technological content and quality of products, so they specialized in capital-intensive products (European Commission 2009).

In the transition period 1995-2003, the economic openness rate in the CEE countries was 91.9% and increased to 113% in the first years after the enlargement, 2004-2008. In the same period the Western Balkan countries had an average economic openness rate of 87.8%, while the Eastern Partnership countries' rate was 104.3%. During the crisis, the rate in the CEE countries increased to 123.3%, remained stable at 87.7% in the Western Balkans, and decreased to 98.1% in the Eastern Partnership countries.

In the period 2004-2008, the average gross fixed capital formation rate was 25.4% in the Western Balkans, 2 percentage points lower than in the CEE region and 3.7 percentage points lower than in the Eastern Partnership countries. During the crisis period, the rate decreased to 22.3% in the CEE region, 23.2% in the Western Balkans, and 24.5% in the Eastern Partnership countries.

In the centrally planned economic system, all prices were fixed. They were not influenced by supply and demand, but were changed by central authorities according to policy requirements. After the period of low inflation rates, the former Socialist countries started to lose control over inflation and fell into a period of hyper-inflation in the late 1980s and early 1990s (Berend 2016). Inflation started stabilizing in the countries of Central Europe and the Baltics in 1996. In 1997, the inflation rate reached its peak at 1058% in Bulgaria and 154% in Romania.

In the first years after the enlargement, 2004-2008, the average inflation rate was 5.3% in the CEE countries, 4.7% in the Western Balkans and 10.6% in the Eastern Partnership countries. The rate decreased to 2.8% in the CEE region, 3.3% in the Western Balkans and 9% in Eastern Partnership countries. Every new member state of the European Union eventually has to join the Eurozone, or adopt the euro as its currency. In order to do so, a country must fulfill the convergence criterion on price stability, so that "an average rate of inflation, observed over a period of one year before the examination that does not exceed by more than 1.5 percentage points that of, at most, the three best performing Member States in terms of price stability" (European Central Bank 2016: 6). Since five out of eleven CEE countries joined the Eurozone between 2007 and 2015 (Slovenia in 2007, the Slovak Republic in 2009, Estonia in 2011, Latvia in 2013 and Lithuania in 2015), this is one of the reasons for the decrease in the rate in the region.

The countries did not inherit high general government debt from the previous system. The average general government debt rate, as a percentage of GDP, in the analyzed group was 35.9% between 2004 and 2016. The CEE countries that are not members of the Eurozone have to maintain lower debt because another convergence criterion is that a country's general government debt rate must not exceed 60% of GDP. In 2016, only Croatia, Hungary and Slovenia's debt rate exceeded the reference value. Due to the recent financial crisis, the average general government debt rate increased from 27.7% in the CEE region, 30.0% in the Western Balkan and 19.9% in Eastern Partnership countries in the period before the crisis to 42.2%, 37.4% and 30.4% , respectively, in the crisis period.

Another characteristic of the centrally planned system was full employment. Economic and political crisis led to the collapse of the regime in the period 1989-1991. With the fall of GDP of 25-30% in the period 1989-1993, unemployment jumped from zero to 13-20% in the CEE region and to 50% in Yugoslavia's successor states (Berend 2016). The differences in rates are still noticeable. The average unemployment rate in the Western Balkans was 28.4% in the pre-crisis period, and decreased to 25.3% in the crisis period. In the CEE region the rate increased from 8.7% to 11.2% and in the Eastern Partnership countries it increased from 7.7% to 9.0%.

The data for the Eastern Partnership countries are derived from official statistics. The official unemployment rate in Belarus in the analyzed period is 0.7%, but the National Statistics Committee counts as unemployed only those who register with employment agencies. People who are unemployed, but do not register with employment agencies are not included in the statistics. Hence, it is estimated that the real unemployment rate varies from 5% to above 10%. There are two reasons why people do not register. The first reason is that the level of unemployment benefits is extremely low. The second reason is that people who are looking for jobs have to participate in public work programs, which can include seasonal agricultural works or street sweeping and the payment is very low (Preiherman 2012).

All countries have experienced a decline in population growth. While in the Western Balkans the rate decreased from -0.04% in the period 2004-2008 to -0.1% in the period 2009-2013 and increased from -0.4% to -0.1% in the Eastern Partnership countries, it remained constant at -0.4% in the CEE region.

5. CONCLUSION

The paper investigates the convergence process of transition countries, the Western Balkan and Eastern Partnership countries, towards eleven former transition countries that are already Member States of the European Union, the CEE countries. The analyzed

period is 2004-2016 with two sub-periods; the pre-crisis period 2004-2008 and the crisis period 2009-2013. Two types of beta convergence are analyzed, absolute (or unconditional) and conditional convergence.

The empirical results suggest that there is absolute convergence of the Western Balkan and Eastern Partnership countries towards the CEE countries in every analyzed period. The recent financial crisis had a negative impact on the convergence process, since the convergence rate in the period 2009-2013 is lower than the rate in the period 2004-2008. Therefore, there is not enough evidence to reject the first research hypothesis.

Analyzing the convergence process of individual countries between 2004 and 2016, the results show that Serbia, Kosovo and Ukraine diverge, due to their lower growth rates.

The regression results for conditional convergence models, when economic variables are included, show that the convergence rates in the crisis period are the highest. When economic and socio-political variables are included in the models, the highest convergence rates are throughout the entire analyzed period. However, the beta coefficients for the pre-crisis period are not statistically significant in the estimated models. Therefore, the second research hypothesis is rejected, which means that the recent financial crisis did not have a negative impact on the conditional convergence process in the analyzed group.

When economic variables are included in the models, gross fixed capital formation and the inflation rate have a positive impact on per capita growth. Among the socio-political variables, general government debt and the unemployment rate have a negative impact. Economic openness and the population growth rate are not statistically significant variables in the estimated models.

The analyzed countries are former or current transition countries, and for most of them the datasets are not complete. Commonly used variables in convergence analyses are foreign direct investments, savings rate, the corruption index and primary and secondary school enrollment. These variables could not be used in the research, which is one limitation of this study.

This study shows that economic openess does not promote per capita growth in the analyzed group. However, this does not imply that the countires should decrease their efforts in openning their economies and promoting trade, which is one of the main aspects and benefits of EU membership. According to the empirical results of the study, the countries should pursue policies that will open their economies to more investments, decrease unemployment rates and general government debt and stabilize inflation.

Improvements in these areas will lead to higher per capita growth rates. As a result, convergence will be faster and the countries could eventually catchup with the living standard of the European Union.

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(Endnotes)

1 "This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence" (European Commission 2015)

2 The official unemployment rate in Belarus is lower than 1%. However, it is estimated that the real rate is more than ten times higher. For further explanation, see p. 21