Economic convergence of the Eastern Partnership countries towards the EU-13

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Abstract

The aim of the paper is to analyse if the Eastern Partnership countries converge towards the new Member States of the European Union, the EU-13. Beta convergence, which is based on the neoclassical growth theory, tests the hypothesis that poor countries tend to grow faster than rich countries, in per capita terms. The analysed period is 2004-2016, with two sub-periods: 2004-2008 and 2009-2013. The subdivision is made in order to test the research hypotheses. The first hypothesis is that the recent financial crisis negatively affected the absolute convergence process among the analysed countries. The second hypothesis is that the recent financial crisis negatively affected the conditional convergence process among the countries. The empirical findings support the economic convergence hypothesis, and the convergence rates range 1.6%-3.8%. The results show that the recent financial crisis negatively affected only absolute convergence. Negative effects of the crisis on conditional convergence are not confirmed.

Keywords: Beta convergence; Eastern Partnership; European Union; New Member States; financial crisis

Introduction

In this paper, we analyze the real economic convergence process among the Eastern Partnership countries; Armenia, Azerbaijan, Belarus, Georgia, Moldova and Ukraine, and the countries of Central and Eastern Europe (CEE), the countries that accessed the European Union in 2004, 2007 and 2013; Bulgaria, Croatia, Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, the Slovak Republic and Slovenia. 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.

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Convergence has always been the focus of the European Union (EU). Currently, twenty-eight countries are member states although throughout history there have been countries that were not at the same development level as the EU average. With Ireland's accession in 1973, and the future accession of Greece, Portugal and Spain, the European Regional Development Fund was created in 1975. The Fund's main objective is assisting underdeveloped regions in the catching-up process (Berend, 2016). Even though these countries were less developed, they did not have to go through the transition process and transform from centrally planned to market economies, like the CEE countries.

The transition process started with the fall of the Berlin Wall in 1989 and the collapse of communism. In this process, more than twenty new countries were created. Some characteristics of the centrally planned system were the state ownership of economies, no free trade, controlled inflation, low general government debt and full employment. In order to go through the transition process successfully, transform their economies and join the European Union, the CEE countries had to fulfil various economic, political and institutional criteria, also known as the Copenhagen criteria (1993). These criteria were created so that a country could function as a EU Member State, once it joins the Union. The transition process was successful, and eight CEE countries, together with Cyprus and Malta, joined the EU in 2004, followed by Bulgaria and Romania in 2007 and Croatia in 2013.

Once a new Member State[1] joins the European Union, it eventually has to join Europe's Economic and Monetary Union, i.e., it has to adopt the euro as its currency. In this process, the Maastricht criteria, or the convergence criteria, have to be fulfilled. In the period 2007-2015, seven new Member States adopted the euro as their currency.

The next group of countries expected to join the European Union is the Western Balkans. These countries are currently going through the transition process and have made some progress towards EU membership. But another group of countries that has special relations with the European Union is the Eastern Partnership group, which comprises the countries that declared their independence from the Soviet Union in 1991. Estonia, Latvia and Lithuania are also post-Soviet states; they joined the European Union in 2004 and are already members of the Eurozone. The Eastern Partnership was launched at the Prague Summit in 2009 and it is a specific dimension of the European Neighbourhood Policy (ENP). Its focus is on four priority areas of cooperation: stronger governance, stronger economy, better connectivity, and stronger society. Between 2014 and 2017, the Eastern Partnership countries benefited from an overall of €2.8 billion of EU funds[2]. However, there are

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[1] Countries that have joined the European Union after 2004 are known as the new Member States.

[2] European External Action Service. (2016), *Eastern Partnership*, 19 October, Brussels (retrieved from http://eueuropaeeas.fpfis.slb.ec.europa.eu:8084/headquarters/headquarters-homepage/419/eastern-partnership_en).

concerns for the EU's foreign policy towards the Eastern Partnership, the establishment of a democratic government, human rights, the rule of law and socio-economic stability in the region (Kharlamova, 2015, p. 30). It is important to emphasize that the Eastern Partnership initiative is not a EU accession process, but its aim is to build a common area of shared democracy, prosperity, stability and increased cooperation[3].

The main purpose of this research is to analyse absolute and conditional convergence of the real per capita GDP of the Eastern Partnership countries towards the EU-13 Member States. Even though these countries have special relations with the European Union, the econometric analyses of their convergence process are almost non-existent. Other objectives are: to analyse the convergence process between different time periods, because it could show how the recent financial crisis affected convergence, and to analyse the determinants of per capita GDP growth in the group, because the empirical results can serve as a recommendation for countries when they decide which policies they should pursue in order to increase their per capita GDP growth rates.

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 Eastern Partnership countries towards the EU-13 Member States. The second hypothesis is that the recent financial crisis negatively affected the conditional convergence process among the analysed countries.

The paper is organized as follows. The literature review on convergence is presented in Section 1, followed by Methodology and Data in Section 2. In Section 3, the empirical findings on absolute and conditional beta convergence are presented and discussed. The last section concludes the paper.

1. Literature review

Convergence was popularized by Barro and Sala-i-Martin (1992). In their paper, "Convergence", they analyse the U.S. states over various periods between 1840 and 1988. The analysis is 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.

Different empirical studies have analysed the convergence process. Yin *et al.* (2003) analyse convergence in the EU between 1960 and 1995. The results show that the EU-15 countries converged, though not in the period 1980-1985, and that the convergence process has been going strong and uninterrupted. Matkowski and

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[3] European External Action Service (2017), Myths about the Eastern Partnership – Factsheet, 20 November, Brussels (retrieved from http://eueuropaeeas.fpfis.slb.ec.europa. eu:8084/headquarters/headquarters-homepage/35712/myths-about-eastern-partnership-factsheet_en).

Prochniak (2004) investigate if eight accession countries, namely the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, the Slovak Republic and Slovenia converged towards the EU-15 in the period 1993-2001. The results show that the countries reveal strong economic convergence and tend to develop faster than the old Member States. Kaitila (2004) shows that the CEE countries converged conditionally towards the EU-15 in the period 1993-2002 and that higher investment and lower public consumption are the determinants of growth. Jelnikar and Murmayer (2006) confirm convergence in the EU-25 in the period 1995-2007 (predicted value). The EU-10 group moved closer to the average EU-15 income per capita level. Borys *et al*. (2008) analyze if five Western Balkan countries converged towards ten new Member States of the European Union between 1993 and 2005. The results show that the total factor productivity growth has been the main driver of convergence, followed by capital deepening. Labour has contributed only marginally to economic growth. Rapacki and Prochaniak (2009) analyze the effects of the EU enlargement on economic growth in the CEE-10 in the period 1996-2007 and sub-periods 1996-2001 and 2001-2007. They test absolute beta convergence in the EU-25, CEE-10 and EU-15. The results show that the EU enlargement significantly contributed to the economic growth of the CEE-10 countries and that the convergence process accelerated after 2000, as the enlargement was approaching. Vojinović *et al*. (2009) analyse beta convergence in the CEE-10 countries in the period 1992-2006. The results confirm the existence of beta convergence, with the convergence rate of 4.2 per cent in the analysed period. Szeles and Marinescu (2010) study absolute and conditional convergence in the CEE countries. They find both unconditional and conditional convergence. The labour productivity and trade openness have a positive and important role in fostering regional economic convergence, while the exchange rate has a weaker significance and is in a negative relationship with growth. Government debt also has a hardly significant, but positive impact on growth.

Kulhánek (2012) analyses if the Czech Republic, Hungary, Poland, the Slovak Republic and Slovenia converged towards the EU-15 between 1995 and 2011. The results show that the countries converged, but the convergence rate was lower compared to the rate of the new Member States (the EU-12). Dvoroková (2014) analyzes the effects of the global financial crisis on convergence among the EU Member States using cross-sectional linear regression analysis. The results show that the countries converged in the period 2001-2012. The new Member States - Latvia, Lithuania, Bulgaria and Romania achieved high rates of economic growth. However, Portugal, Greece and Spain diverge due to their low growth rates. Dobrinsky and Havlik (2014) provide evidence of differentiated patterns of convergence in the new Member States and the EU, in the pre-accession and the post-accession periods. The results indicate uneven economic convergence within the EU. Forgó and Jevčak (2015) analyse the economic convergence of the CEE countries in the period 2004-2014. They conclude that the countries achieved significant real convergence

towards twelve countries that were members of the Eurozone in 2004. However, the financial crisis had a significant negative effect on the fiscal position of most CEE countries. Borsi and Metiu (2015) suggest that there is no overall real per capita GDP convergence in the EU27. However, there is club convergence, with regional linkages playing 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 towards the EU-15, respectively. The results show the presence of convergence for each group. 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 CEE-10. The analysis shows that there was a rapid catch-up in both per capita GDP and general price levels of the CEE countries until 2008. The process was significantly slowed down by the financial crisis. Micallef (2017) shows that relatively poorer countries in the European Union experienced faster growth, compared to the EU-15 countries. The results support the beta measure of convergence. Grela *et al*. (2017) analyze convergence among twenty-six EU Member States between 1997 and 2014. The results show that there is convergence, but the process was faster in the period 2001–2008 and interrupted by the financial crisis.

Alcidi *et al*. (2018) investigate income convergence in the EU-28 in the period 2000-2015. The analysis shows that the CEE countries led the convergence process, while Southern regions have systematically underperformed compared to the EU average. Pipień and Roszkowska (2018) analyze the convergence process of twenty transition countries: eight CEE and twelve CIS countries. The results show that the CEE group has become relatively homogeneous. At the same time, the substantial heterogeneity among the CIS countries and a lack of similar convergence patterns among them is confirmed. Žuk *et al*. (2018) analyze the sources of economic growth in economies within and outside the European Union. The results show that convergence has been much faster in the EU Member States compared to the Western Balkan countries. Convergence was particularly rapid before the crisis, but slowed down afterwards.

2. Methodology and data

In this research, we analyze the beta convergence of the Eastern Partnership countries towards the EU-13 Member States. The focus is on beta convergence, which can be absolute (unconditional) and conditional. We analyze beta convergence in the period 2004-2016, with two sub-periods: the period before the recent financial crisis between 2004-2008 and the crisis period 2009-2013. Twelve models are estimated, four for each period: the absolute convergence models, the conditional convergence models with economic variables, the conditional convergence models with economic and socio-political variables and the conditional convergence models

with economic and socio-political variables, when Belarus is excluded from the analysis as an outlier[4].

If we assume that countries have similar structures and that they converge to the same steady state, convergence is absolute. The beta coefficient, which captures the rate at which a country's real per capita GDP approaches the steady state, or the speed of convergence, is obtained through a simple regression analysis with one dependent and one independent variable (Equation 1). The dependent variable is the per capita GDP growth rate and the independent variable is the initial level of per capita GDP in the analysed period, computed in natural logarithm.

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

where:
α_i – 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.

The convergence hypothesis tests if poor countries tend to grow faster than rich countries in per capita terms; therefore, the beta coefficient has to be negative. The positive coefficient indicated divergence, i.e., rich countries tend to grow faster than poor countries in per capita terms.

If we assume that countries have different structures, they converge to a different steady state and convergence is conditional. The beta coefficient is obtained through a multiple regression analysis. The absolute convergence model (1) is augmented with various independent variables. In this analysis, we include economic variables: economic openness, the inflation rate and gross fixed capital formation, and socio-political variables, general government debt, the unemployment rate and the population growth rate. Equations (2) and (3) present conditional convergence models:

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

and

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

where:
EconOp – Economic openness

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[4] For further explanation, see p. 10.

Inf – Inflation rate
GFCF – Gross fixed capital formation
Debt – General government debt
Pop – Population growth rate
Unemp – Unemployment rate.

Theoretically, economic openness and gross fixed capital formation have a positive estimated coefficient. The inflation rate, general government debt, the unemployment rate and the population growth rate have a negative estimated coefficient.

In this research, convergence is analysed based on the cross-sectional data, using the average rates for a given period. The cross-sectional data is used for two reasons: first, 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, p. 127); and second, the goal is to find out whether the countries converge or diverge in the analysed period, and not to find a model which could predict the future development of the convergence process. Therefore, this model can be applied only ex post (Dvoroková, 2014, p. 91).

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 models in the period 2004-2016. The data set includes nineteen countries.

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	3.66	2.01	-0.13	8.52
Log (initial per capita GDP)	Natural logarithm of per capita GDP at the beginning of the analysed period	9.27	0.65	7.88	10.17
Economic openness	A sum of exports and imports divided by GDP	123.13	46.58	68.84	278.12
Inflation rate	Measured by the Harmonized Index of Consumer Prices	5.01	4.56	1.35	19.51

Gross fixed capital formation	Measured as a percentage of GDP	24.26	3.41	19.56	31.92
General government debt	The government debt to GDP ratio	39.00	18.50	7.07	74.18
Unemployment rate	A percentage of total labour force	9.00	3.52	0.73	15.17
Unemployment rate (when Belarus is excluded)[5]	A percentage of total labour force	9.46	2.98	5.76	15.17
Population growth	The annual *growth rate* of a *population*	-0.16	0.72	-1.33	1.31

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

The EUROSTAT, World Bank and World Economic Outlook (WEO) databases are the main sources of 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 data from these sources are based on the same measure, therefore, they coincide. Data for economic openness, gross fixed capital formation, inflation, the unemployment rate and the population growth rate are taken from the World Bank's database.

3. Empirical results

We analyze beta convergence of the Eastern Partnership countries towards the EU-13 Member States. The analysed period is 2004-2016. Two sub-periods, 2004-2008 - the period before the recent financial crisis and 2009-2013 - the period of crisis are included in the analysis in order to test whether the recent financial crisis negatively affected absolute and conditional convergence among the analysed countries. Four models 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.

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[5] The official unemployment rate in Belarus is lower than 1%. However, it is estimated that the real rate is more than ten times higher. Therefore, Belarus is excluded from the analysis in Models 10-12 as an outlier.

Table 2. Absolute / unconditional convergence among the Eastern Partnership and EU-13 countries

|	Model 1 2004-2016	Model 2 2004-2008	Model 3 2009-2013
	β	β	β
	(t)	(t)	(t)
Log of initial per capita GDP at PPP	-2.09***	-3.83***	-2.06**
	(-3.81)	(-3.17)	(-2.83)
F statistics (*p*-value)	14.50 (0.0014)	10.07 (0.0056)	8.02 (0.0115)
R²	0.4602	0.3719	0.3205

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

The regression results show that there is absolute convergence among the analysed countries in every period. The beta coefficient in the entire analysed period is -2.09, which means that, if we assume the analysed countries are similar in terms of steady state characteristics, they converge to a common per capita GDP at the rate of 2.09%. The rate is consistent with the reference value of 2% in Barro and Sala-i-Martin's (1992) findings. The convergence rate in the period before the crisis is 3.83%, the highest among the analysed periods. The beta coefficients for these two periods are highly significant (*p*-value=0.001 and *p*-value=0.006). The countries converge at the lowest rate during the crisis period, 2.06%. Therefore, there is not enough evidence to reject the first research hypothesis and we conclude that the recent financial crisis had a negative effect on the absolute convergence process in the analysed group.

Figure 1 indicates convergence among the analysed 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 analysed period was 5.3%. Armenia, Azerbaijan, Belarus and Georgia achieved the highest average per capita growth rates among the analysed 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%), Cyprus (-0.13%), Hungary (1.8%) and Slovenia (1.5%). Among the EU-13 Member States, the highest growth rates were recorded in Romania (4.2%), Latvia (4.2%) and Lithuania (4.7%). Also, the Eastern Partnership countries do not act as a club with Estonia, Latvia and Lithuania, the only post-Soviet states that have joined the European Union.

Figure 1. Absolute beta convergence among the Eastern Partnership and EU-13 countries, 2004-2016
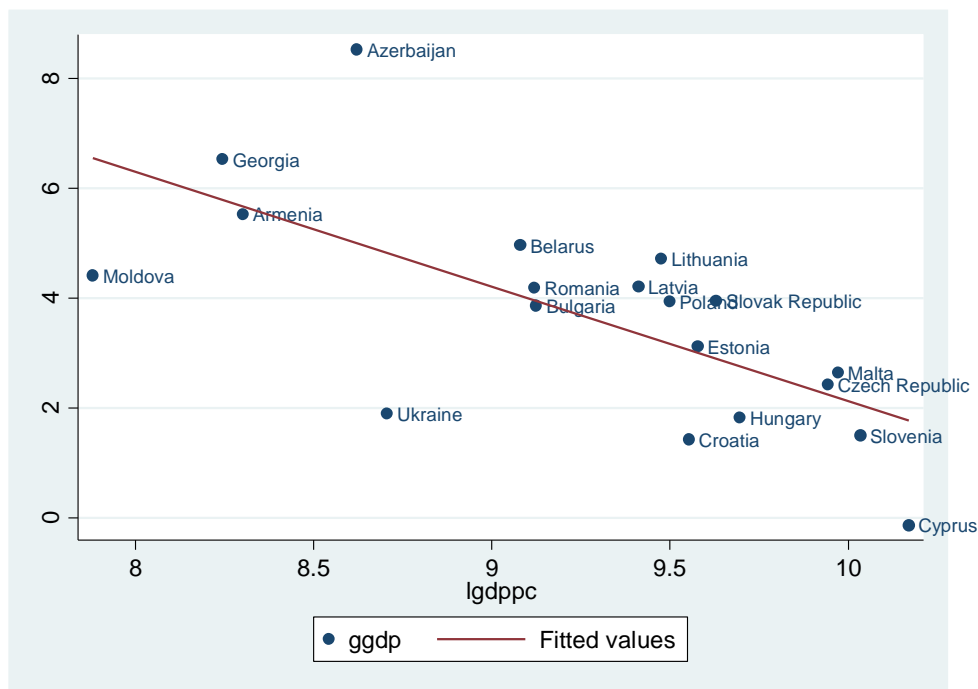
Source: Authors' calculations based on World Bank data

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

Table 3. The convergence process among the analysed countries

Country	GDP per capita in PPP (EP-EU-13=100)		Change	Convergence Process
	2004	**2016**		
Armenia	32	38	+6	Convergence from below
Azerbaijan	44	74	+30	Convergence from below
Belarus	70	77	+7	Convergence from below
Bulgaria	73	83	+10	Convergence from below
Croatia	112	101	-11	Convergence from above
Cyprus	208	139	-69	Convergence from above
The Czech Rep.	166	150	-16	Convergence from above
Estonia	115	126	+11	Divergence
Georgia	30	43	+13	Convergence from below
Hungary	129	115	-14	Convergence from above
Latvia	97	111	+14	Convergence from below
Lithuania	104	128	+24	Divergence
Malta	170	163	-7	Convergence from above
Moldova	21	23	+2	Convergence from below
Poland	106	119	+13	Divergence
Romania	73	101	+28	Convergence from below
The Slovak Rep.	121	131	+10	Divergence
Slovenia	181	143	-38	Convergence from above
Ukraine	48	35	-13	Divergence

Source: Author's calculations based on World Bank data

The results show that all countries of the Eastern Partnership group converge, except Ukraine. Due to its low per capita growth rate, the country diverges. Estonia, Lithuania, Poland and the Slovak Republic diverge due to their higher average per capita growth rates (3.1%, 4.7%, 3.9% and 4.0%, respectively). Bulgaria (3.9%), Latvia and Romania converge from below for the same reason, but the countries' initial per capita GDP is lower compared to the initial per capita GDP of the aforementioned countries. The remaining EU-13 Member States converge from above.

Conditional convergence

We estimate nine conditional convergence models; three models when only economic variables are included in the analysis (Models 4-6) and six models comprising both economic and socio-political variables (7-12). Table 4 presents the regression results for models with economic variables in the analysed periods.

The regression results show that when economic variables are included in the models, the analysed countries converge in the entire analysed period at the rate of 2.13%. The rate during the crisis period is 2.21%. For the period before the crisis, the beta coefficient is negative, but statistically insignificant. The results indicate that the countries do not converge between 2004 and 2008. It can be concluded that the recent financial crisis did not negatively affect the conditional convergence process, when economic variables are included.

Table 4. Conditional convergence of the Eastern Partnership and EU-13 countries, when economic variables are included in the models

	Model 4 2004-2016	Model 5 2004-2008	Model 6 2009-2013
	β	β	β
	(t)	(t)	(t)
Log of initial per capita GDP at PPP	-2.13***	-1.69	-2.21**
	(-3.08)	(-1.04)	(-2.70)
Economic openness (%)	0.004	-0.01	0.01
	(0.47)	(-0.58)	(0.99)
Gross fixed capital formation (% of GDP)	0.22*	0.46**	0.01
	(1.94)	(2.38)	(0.04)
Inflation rate (annual %)	-0.09	0.22	0.08
	(-0.96)	(0.79)	(0.68)
F statistics (*p*-value)	4.80 (0.0120)	5.44 (0.0074)	2.49 (0.0906)
R²	0.5784	0.6087	0.4160

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

Three economic variables are included in this research: economic openness, gross fixed capital formation and inflation rate. Among the selected macroeconomic variables, gross fixed capital formation is the only determinant of per capita growth in the periods 2004-2016 and 2004-2008. As expected, it has a positive impact. This finding is also confirmed by Yin *et al.* (2003), Kaitila (2004), Borys *et al.* (2008), Rapacki and Procniak (2009), Vojinović *et al.* (2009) and Dobrinsky and Havlik (2014). Economic openness and inflation rate are not statistically significant variables in the analysed periods.

Tables 5 and 6 present the regression results for conditional convergence, with economic and socio-political variables included in the analysis. The selected socio-political variables are general government debt, the population growth rate and the unemployment rate. Belarus is excluded from the analysis in Models 10-12 as an outlier because of its unemployment rate.

The data for Models 7-9 are derived from the official statistics. The official unemployment rate in Belarus in the analysed period is 0.7%. However, the country's National Statistics Committee counts as unemployed only those who register with employment agencies. Since the people who are unemployed but do not register with the agencies are not included in the statistics, it is estimated that the real unemployment rate varies from 5% to above 10%. People do not register with the agencies for two reasons. First, the level of unemployment benefits is extremely low. Second, people looking for jobs have to participate in public work programs, such as seasonal agricultural works or street sweeping and the payment is very low (Preiherman, 2012).

Table 5. Conditional convergence of the Eastern Partnership and EU-13 countries, when economic and socio-political variables are included in the models

	Model 7 2004-2016	Model 8 2004-2008	Model 9 2009-2013
	β(t)	β(t)	β(t)
Log of initial per capita GDP at PPP	-1.59*	-2.17	-1.52
	(-1.92)	(-1.06)	(-1.60)
Economic openness (%)	0.01	-0.002	0.01
	(0.62)	(-0.10)	(1.18)
Gross fixed capital formation (% of GDP)	0.08	0.18	-0.09
	(0.53)	(0.55)	(-0.52)
Inflation rate (annual %)	-0.02	0.17	0.14
	(-0.12)	(0.46)	(0.96)
General government debt (% of GDP)	-0.05	-0.11	-0.04
	(-1.65)	(-1.29)	(-1.43)
Population growth (annual %)	0.45	2.00	-0.22
	(0.73)	(1.71)	(-0.28)
Unemployment rate (annual %)	0.08	0.23	0.03
	(0.48)	(0.84)	(0.20)
F statistics (*p*-value)	3.08 (0.0467)	3.75 (0.0252)	1.71 (0.2043)
R^2	0.6623	0.7046	0.5214

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

Table 6. Conditional convergence of the Eastern Partnership and EU-13 countries, when economic and socio-political variables are included in the models, excluding Belarus

	Model 10 2004-2016	Model 11 2004-2008	Model 12 2009-2013
	β(t)	β(t)	β(t)
Log of initial per capita GDP at PPP	-2.46**	-2.11	-2.52*
	(-2.69)	(-1.04)	(-1.99)
Economic openness (%)	0.005	-0.002	0.01
	(0.54)	(-0.10)	(0.90)
Gross fixed capital formation (% of GDP)	-0.14	0.21	-0.11
	(-0.75)	(0.66)	(-0.64)
Inflation rate (annual %)	-0.28	0.15	-0.42
	(-1.41)	(0.40)	(-0.84)
General government debt (% of GDP)	-0.07**	-0.11	-0.04
	(-2.34)	(-1.23)	(-1.33)
Population growth (annual %)	0.59	2.20*	-0.16
	(1.02)	(1.87)	(-0.21)
Unemployment rate (annual %)	0.07	0.38	0.01
	(0.43)	(1.24)	(0.04)
F statistics (*p*-value)	3.92 (0.0256)	3.76 (0.0292)	1.68 (0.2195)
R^2	0.7330	0.7246	0.5409

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

The results for conditional convergence, when economic and socio-political variables are included in the models, show that the analysed countries converge only in the period 2004-2016 at the rate of 1.59%. For the analysed sub-periods, the beta coefficients are negative, but not statistically significant. When Belarus is excluded from the analysis, the countries converge in the period 2004-2016 at the rate of 2.46% and in the period 2009-2013 at the rate of 2.52%. Consistent with the results for conditional convergence, when economic variables are included in the analysis, the beta coefficient for the pre-crisis period is negative, but not statistically significant. Based on the results, it can be concluded that the recent financial crisis did not have a negative impact on the conditional convergence process among the analysed countries. Therefore, we reject the second research hypothesis.

When Belarus is included in the analysis, none of the selected economic or socio-political variables are determinants of growth in the analysed periods. When Belarus is excluded as an outlier, general government debt and the population growth rate are the only determinants of growth. General government debt is a statistically significant variable in the entire analysed period and, as expected, has a negative impact on per capita growth. The result coincides with the results from Checcherita-Westphal and Rother (2012) and Dobrinsky and Havlik (2014) analyses. The previous studies, such as Mankiw *et al.* (1992), Yin *et al.* (2003) and Szeles and Marinescu (2010), have shown that the population growth rate has a negative impact on per capita growth. However, this research shows that the population growth rate has a positive impact and is a determinant of growth in the period 2004-2008.

Conclusion

In this paper, we analyze the convergence process of the Eastern Partnership countries - Armenia, Azerbaijan, Belarus, Georgia, Moldova and Ukraine - towards the thirteen new Member States of the European Union. The analysed 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 analysed: absolute (unconditional) and conditional convergence.

The empirical results suggest that there is absolute convergence of the Eastern Partnership countries towards the EU-13 Member States in every analysed period. The recent financial crisis had a negative effect on the convergence process, since the convergence rate in the period 2009-2013 is the lowest among the analysed periods. Therefore, there is not enough evidence to reject the first research hypothesis.

Analysing the convergence process of individual countries between 2004 and 2016, the results show that Ukraine is the only Eastern Partnership country that diverges due to its lower growth rate. At the same time, Estonia, Lithuania, Poland and the Slovak Republic, members of the EU-13 group, diverge due to higher growth rates.

When economic variables are included, the regression results for conditional convergence models show that the convergence rate in the period of crisis is higher than the rate in the entire analysed period. The countries do not converge in the pre-crisis period.

When economic and socio-political variables are included in the models, the countries converge only in the period 2004-2016. However, when Belarus is excluded from the analysis as an outlier, the beta coefficient for the pre-crisis period is not statistically significant and the convergence rate is the highest during the crisis period. Therefore, the second research hypothesis is rejected.

When economic variables are included in the models, gross fixed capital formation is the only determinant of per capita growth and has a positive impact on the conditional convergence process. Among socio-political variables, general government debt has a negative impact on per capita growth, while the population growth rate has a positive impact. Economic openness, the inflation rate and the unemployment rate are not statistically significant variables in the analysed periods.

According to the empirical results of this research, the countries should pursue policies that will open their economies to more investments and decrease the general government debt. The analysis has neither shown that economic openness promotes per capita growth in the analysed group, nor that inflation and unemployment have negative impacts on the convergence process. However, this does not imply that the countries should not pursue policies promoting trade, or that they should not stabilize their inflation or unemployment rates. Improvements in these areas could lead to higher per capita growth rates and, eventually, to a faster convergence process.

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