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INTERNATIONAL MIGRATIONS AND INCOME CONVERGENCE IN EUROPEAN TRANSITION COUNTRIES

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The subject matter of this paper is the analysis of the influence of international migrations on income convergence in European transition countries in the period 2000-2020. Convergence can be defined as the process of catching up richer countries by poorer ones, consequentially leading to the reduction of disparities in income *per capita* among countries. Theoretically, human migrations are a mechanism of the adjustment of the regional imbalance that contributes to the strengthening of convergence. The regression panel model was used in the research. The research results have shown that, if observed at the level of the entire sample of the countries of Central and Eastern Europe and the Western Balkan countries (CEE-11+WB), there is a positive and statistically significant influence of emigration on income convergence. Also, there is a positive influence of emigration on the income convergence *per capita* of the CEE-11 countries towards the average income of the developed countries of the EU-15. On the other hand, observed only at the level of the Western Balkan countries, there is no statistically significant influence of emigration on income convergence. The contribution of the research study reflects in filling the gap that exists in the literature on this field, since there is no large number of papers that have examined the influence of migrations on income convergence in the CEE-11 countries, as well as the Western Balkan countries.

Keywords: international migrations, income convergence, European transition economies, panel data.

JEL Classification: F22, J61, O15, O47

INTRODUCTION

Economic well-being and the quality of people's lives can be improved through migrations (Sitompul, 2023). Economic migrations are defined as a historically determined movement of a population conditioned by the economic factors such as the level of economic development, the level of the standard of living, the relationship between supply and demand on the factor market and the movement of economic cycles. The so-called push-and-pull approach is used to explain economic migrations. Push factors refer to negative factors (poverty, unemployment, bad living

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conditions, political tensions) in an emigration country that "push" the population to leave the area which they live and work in, or the factors in the emigration country that make difficult entrance to that country for potential immigrants. On the other hand, pull factors are the positive factors that exert an influence on potential immigrants to stay in the country they live and work in, or the factors (better living conditions, higher security, a more regulated society and the like) in the immigration country that attract potential immigrants to come to that particular country in order to satisfy their human, work and existential needs (Bansak, Simpson & Zavodny, 2015).

Disparities in the standard of living are one of the main problems of the modern economy. If countries want to increase their competitiveness and the standard of living, they need to increase their productivity and economic growth, which is the reason why economic policymakers must create high-quality and effective development programs and policies (Bilas & Franc, 2022). Empirical research in income convergence shows whether there is a tendency towards the equalization of the standard of living, which speed it is done at, and which factors it is determined by, which is very important for the new member states that, after their accession to the EU, lagged behind in relation to the developed EU countries. At the same time, the old members of the EU were worried that the expansion of the EU could influence their local labor markets and salaries through new importation channels from the countries with low wages, the movement of production to the East, and the migrant influx.

According to neoclassical theory, emigration is expected to reduce total production, on the one hand, and increase income *per capita*, on the other, thus accelerating the convergence process between countries. The movement of the labor force from the countries with low salaries to the countries with high salaries should lead to a decrease in differences in salaries, and income *per capita* would show a tendency to decrease in the immigration countries and increase in the emigration countries. This is also in compliance with factor availability theory (the Hecksher-Ohlin model). On the other hand, endogenic growth theories and the new model of economic geography emphasize the fact that the emigration of highly qualified employees can reduce human capital supplies, as well as the rate of the income of capital and the labor force. The emigration of qualified employees would reduce the productivity of those who stay. Unlike nonqualified workforce and physical and financial capital, the qualified labor force has the tendency to bring higher income on the scope. Thus, the emigration of such employees would bring great benefits to the countries of reception and it would have disproportionately big negative influences on the productivity and economic results of the countries of origin.

Based on the aforementioned, the subject matter of this paper is the analysis of the relationships between international migrations and income convergence. In accordance with the chosen subject matter, the basic goal of the research study is to examine the influence of international migrations on the income convergence of the European transition countries (the so-called "new" EU, CEE-11 member states: Poland, the Czech Republic, Slovakia, Estonia, Latvia, Lithuania, Hungary, Slovenia, Bulgaria, Romania, and Croatia, and the countries of the Western Balkans: Serbia, Northern Macedonia, and Albania) towards the income realized in the EU-15 group based on the relevant theoretical, methodological and empirical analyses.

Pursuant to the set subject matter and the research goal, the following hypothesis is tested in the paper:

H1: International migrations have a positive influence on income *per capita* convergence.

The research methods used in the paper are as follows: the descriptive method, the comparative method, the method of analysis and synthesis, and the statistical method (the panel regression model).

The paper is structured into several section. In the literature review section, an insight into the empirical papers that refer to the relationship between international migrations and income convergence is given. The methodology section provides a review of the model used for the empirical analysis and

shows the sources of the data used in the research study. The research results and discussion section provides an empirical analysis and the validation of the hypothesis on the influence of international migrations on income convergence. In the concluding observations, the main results obtained are summed up, and the main limitations of the paper, as well as the recommendations for future research, are given.

LITERATURE REVIEW

Since the 1990s, the studies that have been analyzing the influence of migrations on income *per capita* convergence has increased. However, the results pertaining to effects differ in research as a consequence of applying various research methodologies, data types and the spatial scale of measurement, which such research was carried out on (Ozgen, Nijkamp & Poot, 2010). Also, the effect of migrations on income convergence can be different depending on whether inner or outer migrations are observed. So far, the studies have provided mixed results when analyzing the influence of inner and outer migrations. On the one hand, S. Coulombe and J. F. Tremblay (2009) state that inner and international migrations have a different influence on income convergence. While inner migration has a negative influence on said convergence, international migrations have a positive effect on convergence. On the other hand, K. Enfo, C. Lundh and S. Prado (2014) state that inner and outer migrations have equally contributed to salary convergence in Sweden in the period 1860-1940.

According to the literature, migrations in developed countries will have a significantly small influence on income convergence (BSiM, 2004), whereas such an influence in developing countries will be bigger since migrants generally have lower qualifications and migrate from rural to urban regions (Kirdar & Saracoğlu, 2007). According to the neoclassical principle, immigration should have a negative effect on convergence, and emigration should have a positive effect (Østbye & Westerlund, 2007; Etzo, 2008). R. J. Barro and X. Sala-i-Martin (2004) say that, as long as there is decreasing income to work, employees will be migrating from lower-income regions to higher-income regions, which on its part will lead to a decrease in income *per capita* in destination countries, and an increase in the country of origin, which will result in migrations accelerating income convergence. When there are no obstacles for factor mobility, work and capital move in opposite directions, and both factors decrease disparities in capital per effective labor unit and differences in income *per capita*. The movement of the labor force from poorer to richer regions decreases capital intensity (and increases return on equity) in the immigration country and increases capital intensity (and decreases return on equity) in the emigration country. Thus, if every country uses the same technology, migrations accelerate income convergence (Polese, 1981). However, the migration influence on convergence is not clear when there are heterogeneous flows of the labor force. Moreover, the migration of the labor force to richer regions suppresses demand for goods, services and the factors of production in the regions falling behind. Based on the cumulative causation and circular causality model, the starting inequalities increase disparity. Similar conclusions are drawn in the new economic geography and Krugman's core-periphery model (Wolszczak-Derlacz, 2009).

The mobility of the labor force and the mobility of capital will bring together capital intensity in the emigration country and the immigration country, which is the way how factor mobility influences income convergence. In practice, the effect of net migrations on convergence depends on differences in capital intensity among countries or regions, migrants' skills, the scope in which migrations influence gross investment in fixed capital, the structures of the output and the scope in which migrations influence technological changes (Nijkamp & Poot, 1998). If emigrants possess a significantly bigger human capital than the citizens that stay in the country, more time is necessary for the economy to reach a stable (balanced) condition in the long run. Besides, leaving the labor force from poorer regions can decrease gross investment in fixed capital in those regions. Hence, the disincentive effect of emigration on investments can overpower the effect of emigration on the supply of the workforce and salary, so that

emigration can slow down the increase in salaries, not increase it as is predicted by the neoclassical growth model. If net immigration increases the real growth of income *per capita*, it will lead to the self-reinforcing growth process and possible divergence. As a feature of long-term development, beta convergence needs to be strong enough to be able to compensate for the effect of net migrations on an income increase.

M. Cardenas and A. Ponton (1995) emphasize the fact that migrations negatively influence income convergence in Columbia, whereas F. Gezici and G. J. D. Hewings (2004) do not find any influence of migration on a decrease in regional differences in Turkey at all. On the other hand, M. G. Kırdar and S. D. Saraçog˘lu (2008) established a fact of a negative influence of migrations on the regional rates of income growth and beta convergence in Turkey even when considering endogeneity of migrations. The evidence for the fact that inner migrations contribute to regional divergence, not convergence, is also given by L. Peeters (2008) for Belgium, U. Fratesi and R. M. Percoco (2014) for Italy, C. Cazzuffi and M. Pereira-Lopez (2016) for Mexico, A. Kubis and L. Schneider (2016) for Germany, Đ. Borozan (2017) for Croatia and C. Incalatarau, C. G. Pascariu, A. Duarte, and P. Nijkamp (2021) for Romania. U. Fratesi and R. M. Riggi (2007) analyse European regions and conclude that the migration based on skills can lead to an increase in disparity in income *per capita*, due to which policymakers should be careful when trying to decrease regional disparities by alleviating international migrations. The IMF report written for Serbia says that the emigration of a primarily highly qualified working-age population has an influence on a decrease in the labor force in Serbia and the European Union (IMF, 2019). P. Huber and G. Tondl (2012) examined the relationship between migrations and regional convergence in the European Union in the period 2000-2007 and established a fact that migrations had not had a significant influence on unemployment in the EU, but had had an influence on the GDP *per capita* and productivity. An increase in the immigration rate by 1% influenced the growth of the GDP *per capita* by approximately 0.44%, and the growth of productivity by approximately 0.20% in long run in the immigration region, where a similar decrease in the GDP *per capita* and productivity was perceived. Given the fact that immigration regions are mostly above the average GDP and emigration regions are below the average GDP, this paper emphasizes the fact that migrations will not contribute to convergence. The fact that migrations do not have an influence on convergence was also confirmed in the papers by Y. Vidyattama (2014) for Indonesia and E. Vakulenko (2016) for Russia.

Another group of papers established the fact that there was a positive influence of migrations on economic growth and income convergence. The positive influence of migrations on convergence lies in compliance with the research carried out by A. M. Taylor and J. G. Williamson (1997), who conclude that a massive migration in the second half of the nineteenth century among the OECD countries had an influence on the growth of income *per capita* in the countries with lower income, whereby it was marginally bigger than it would have been if there had been no migrations at all. S. Østbye and O. Westerlund (2006) conducted an analysis for Norway and Sweden, concluding that migrations influence the convergence rate, whereby in Norway, where there is brain drain and where it is the centripetal force, it acts against convergence, whereas in Sweden it is the centrifugal force contributing to convergence, which is in compliance with the brain gain scenario. On the example of the EU countries, J. Wolszczak-Derlacz (2009) confirm that migrations are an important source of convergence. However, the authors did not manage to establish a statistically significant influence of migrations on long-term growth. As the main reason for that, they state the asymmetrical effects of immigration and emigration flows on convergence and emphasize the fact that the problem could be solved using data for gross migration, not net ones. C. Ozgen *et al* (2010) concluded that the effect of net migration on the growth of real income *per capita* was positive, but small. An increase in the net migration rate by 1% (equivalent with an increase in the population growth rate by one percentile point) increases the income *per capita* growth rate by about 0.1%. In the paper, it is further stated that this is a difference in relation to the standard neoclassical mode in which the growth of work supply by 1% would decrease the growth of

income *per capita* by 0.3%. However, with the perfect mobility of capital, this effect would be compensated for by a proportionate increase in the basic capital (by 1%) and the growth of income *per capita* would remain unchanged. Hence, the positive influence of migration on the growth of income *per capita* is more in compliance with the new theories of endogenic growth and the new economic geography than with the neoclassical model. The authors conclude that net migration exerts a positive influence on beta convergence. The positive influence of migration on beta convergence influences was also confirmed in the paper by B. L. Fischer and M. Pfaffermayr (2015), on the example of the European region. The results showed that, without net migration, the estimated beta (conditioned) convergence was 2.7% annually; also, including net migration, it increased by about 2.73%. An OECD research study (2022) also shows that migrations contribute to regional economic convergence inside and among Europe's countries. On average, an increase in the share of migrant population of 10% relates to the growth of income *per capita* by 0.15%. Moreover, it is stated that the effects are stronger for the regions that lag behind, primarily those of the EU countries with lower income. D. Bunea (2012) carried out a comparative analysis of the influence of internal migrations on the process of regional income convergence in five European countries. The results showed the presence of the sigma divergence of income in Hungary and Romania, and sigma convergence in Australia, Spain and Sweden. On the other hand, in all the countries except in Sweden, beta convergence was perceived. In spite of this fact, however, the influence of internal migrations on beta convergence has been quite small. The evidence of the internal migrations influence on regional convergence is also given by A. Maza (2006) for Spain and R. DiCecio and C. S. Gascon (2010) for the USA.

The migration behavior and characteristics of migrants significantly influence convergence (Greenwood, 1975). The size effect and the composite effect are the main two influences of the labor force migration. The big emigration of the qualified labor force can harm the scope and productivity of the labor force region and be beneficial for the region that imports the labor force (the immigration region). This migration can be constant and may not stop over time. For example, in the USA, a real wage gap between rural and urban areas has shown perseverance in the period 1890-1941 in spite of continuous one-direction migration flows to urban areas (Wiliamson, 1991). There are many examples which illustrate how ignoring the heterogeneity of the labor force can annul the effect of migrations on growth (Shioji, 2001). So, the influence of migrations on regional inequalities is all but clear if migrants' skills are not explicitly taken into account. Migrants with more human capital are expected to seek possibilities of employment in wider geographical areas and are more mobile than those with less human capital. Migrations can be a mechanism of adjustment that can benefit all regions, but they can also serve only the immigration country. Heterogeneous work can compensate for the effect of the migration size by changing the relationship between the qualified and unqualified labor force (Etzo, 2008). Migrants' skills determine how a migration will influence economic possibilities in the emigration country when there is migration of one part of the population to another place (Borjas, 1999). The qualified labor force inflow leads to the growth of productivity in immigration region (the immigration country). Migrations offer opportunities for employees to increase their own benefits, but they can also influence the growth of regional differences in income *per capita* at the aggregate level, depending on migrants' skills (Fratesi & Riggi, 2007).

METHODOLOGY AND DATA

When choosing the sample, the decision was to observe the "new" member countries of the EU and the countries of the Western Balkans, which there is available data for. The sample consists of 14 European countries, of which 11 are the EU members, whereas the remaining three countries are the candidates: the Republic of Serbia, Northern Macedonia, and Albania. The research was carried out for the three groups of countries: the entire sample of the CEE-11 +WB, as well as separately for the group CEE-11 and the Western Balkans. The analysis period covers a

period of 20 years with the data in five-year intervals in accordance with the availability of periodically published emigration data starting from 2000, only to be followed by those retrieved for the years 2005, 2010, and 2015, ending with the year 2020 as the last year with available data at the time of conducting the research study. The World Bank and the United Nations are the data sources.

Table 1 explains the variables used in the research study and the data source.

The panel data with the character of balanced macro-data were used in the research study, and the model formed is included in the group of linear panel models. Greater opportunities for identifying and measuring the effects that cannot be established by the comparable data of only several units of observation or the time data of only one unit of observation are the advantage of using panel data (Baltagi, 2005). Apart from the mentioned, C. Hsiao (2003) also states that the advantage of using panel data also lies in the possibility of controlling individual heterogeneity, providing several and more quality pieces of information, greater variability, greater efficacy and lesser collinearity between the variables. A panel model based on fixed effects was often used in the empirical papers (Etzo, 2008; Bunea, 2012, Borozan, 2017) that examined the relationships between observed economic variables, because, according to B. H. Baltagi (2005), research is limited to a precisely defined group of entities, not randomly drawn from a larger population. The choice of this model for conducting empirical analysis is also justified by the limited number of the years of observation, which rules out the possibility of using one of the dynamic models and time series

To test the influence of international migrations on income convergence, the following equation is used:

Table 1 The name of the variable, the description and the source

The name of the variable	Description	Source
Development relation (y_{it}/y_{EU15})	This variable shows the relationship between the gross domestic product *per capita* of the Central and Eastern European country, the so-called "new" member countries of the EU and the Western Balkan countries, and the average gross domestic product of developed EU countries.	The World Bank (2023)
Secondary school enrollment	It is measured as a relationship between the total population enrollment of all ages and the population which officially corresponds to the demonstrated education rate.	The World Bank (2023)
Final public spending	It shows the annual percentage growth of public spending based on the constant local currency. The aggregates are based on the constant (permanent) prices expressed in American dollars. General public spending includes all the current expenditures of the state on the purchase of goods and services (including employees' compensations). Moreover, it also includes most of the expenses for national security and defense.	The World Bank (2023)
The investment rate	The gross fixed capital formation expressed as a percentage of the GDP includes the improvement of land, machines and equipment supplies, facilities and the construction of roads, railways and so forth, including hospitals, schools, private living space and the business space.	The World Bank (2023)
The emigrant share in the total population	It shows the percentage of the population that emigrates from the country of origin to the host country in the total population of the country of origin.	United Nations Department of Economic and Social Affairs (2020)
Trade openness	It is measured as an export-import share in the gross domestic product.	The World Bank (2023)

Source: Authors

$$y_{i,t} / y_{EU15,t} = \beta + \beta_1 MIG_{it} + \beta_k X_{itk\,t} + \varepsilon_i + \nu_t + u_{it} \quad (1)$$

where:

$y_{i,t}$ - is the GDP *per capita* of the country *i* in the time *t*,

$y_{EU15,t}$ - the average GDP *per capita* of the country *j* in the time *t*,

MIG_{it} - the share of the emigrants in the total population in the country *i* in the time *t*,

X_{kit} - the control variables,

ε_i - the individual effects,

ν_t - the time effects (t = 2000… 2020),

u_{it} - the random error with null value and a constant variance.

The control variables X_{kit} include secondary school enrollment expressed as the percentage of the total number of citizens, the final public spending as the percentage of the GDP, the investment rate as the percentage of the GDP, and trade openness.

The influence exerted by the independent variables on the dependent variable is estimated using the fixed effects model and the random effects model. For the purpose of choosing an adequate and representative model, the choice between the fixed effects model and the random effects model was made using the Hausman test.

After the corresponding model had been selected, the existence of the autocorrelation problem and heteroscedasticity was examined by doing the following tests: the Wooldridge test for identifying the problem of autocorrelation and the Wald test for identifying the problem of heteroscedasticity with the fixed effects model and the Breusch and Pagan Langrangian multiplier test for the random effects model.

For the purpose of drawing a valid statistical conclusion when some assumptions of the basic regression model are infringed, relying on robust standard errors is a usual thing to do (Hoechle, 2007). The most popular way of estimating a covariance matrix was developed by P. J. Huber (1967), F. Eicker (1967), and H. White (1980). On condition that residuals are independently arranged, the standard errors obtained with the help of this estimator are consistent even when the residuals are heteroscedastic. In Stat consistent or "White", standard errors are obtained by choosing the option vce (robust).

It is possible to mitigate the assumption on independently arranged residuals to a certain degree (Huber, 1967; White, 1980; Arellano, 1987; Rogers, 1994). Their generalised estimator provides consistent standard errors if the residuals are correlated among themselves, but uncorrelated among clusters. The command *cluster ()* in Stata enables the calculation of the so-called Rodgers or grouped standard errors.

RESULTS AND DISCUSSION

The results of the descriptive statistics with the explanation of the arithmetic mean value, the standard deviation, the minimum and maximum values, skewness and kurtosis are shown in Table 2.

During the period 2000-2020, the average share of the GDP *per capita* of the CEE-11 and Western Balkan countries in the average GDP *per capita* of the EU-15 was 45%, the average share of emigrants in the total population was 12.7%, the average enrollment in secondary school was reported to be 95.7%, the average public spending was 18.09% of the GDP, the average investment rate as a percentage of the GDP was 23.03%, and average trade openness was 109.5%. The lowest share of the GDP *per capita* in the average GDP *per capita* of the EU-15 was 13.6% in Albania in 2000, while the highest was 75.6% in the Czech Republic in 2020. The minimum percentage of emigrants in the total population was 3.2% in Croatia in 2000, and the maximum was achieved in Albania in 2020, totaling 44%. Albania had the lowest secondary school enrollment in 2000 (at 71.08%), and Estonia had the highest in 2020 (115.6%). The minimum public consumption was 9.69% of the GDP in Albania in 2000, and the maximum was 22.4% of the GDP in Lithuania in 2000. In 2000, Serbia had the lowest investment rate expressed as a percentage of the GDP (12.2%), while the maximum rate of 37.9% was recorded in Albania in 2005. The lowest trade

Table 2 The descriptive statistics (2000-2020)

	The development ratio	Emigrants share in the total population in %	Secondary school enrollment in %	Final public spending in %	The investment rate in %	Trade openness in %
The number of observations	70	70	70	70	70	70
The arithmetic mean	44.993	0.127	95.674	18.098	23.039	109.515
The standard deviation	15.999	0.094	9.568	2.636	4.317	34.116
Minimum	13.582	0.032	71.08	9.692	12.201	22.492
Maximum	75.597	0.441	115.61	22.433	37.919	184.417
Skewness	-0.019	1.534	-0.137	-1.344	0.706	0.053
Kurtosis	1.914	4.849	2.625	4.890	4.219	2.415

Source: Authors

openness of 22.5% of the GDP was in Serbia in 2000, and the maximum trade openness of 184% of the GDP was reported in Slovakia in 2020. The values of the skewness and kurtosis coefficient indicate that there is a deviation from the normal distribution for all the analyzed variables.

For the purpose of checking the correlation and the nature of the relationship between the independent variables, Pearson's coefficient correlation was applied. Table 3 accounts for the results of the correlation analysis, which show that there is a slight or insignificant correlation between the independent variables, except between the final public spending and emigrant share in the total population variables, where there is strong correlation (r = -0.79). However, since no correlation exceeds 0.8 in each single case, it can be concluded that there is no multicollinearity problem.

The fixed effects method was used for the evaluation of the independent variables on the dependent variable in the period 2000-2020 in the two groups of countries: the CEE-11 + the Western Balkans and the CEE-11 (the Hausman test: chi2(5) = 42.08 and prob>chi2 = 0.000; chi2(5) = 19.97 and prob>chi2 = 0.001). In the group of the Western Balkan countries, the random effects method was used (the Hausman test: chi2(5) = 7.24 and prob>chi2 = 0.2031).

Before interpreting the obtained evaluation marks in Table 4, the results of testing autocorrelation and heteroscedasticity are shown. In the two groups of countries, the CEE-11 + WB and CEE-11, the results of testing the presence of heteroscedasticity show that the null hypothesis on the nonexistence of heteroscedasticity is not accepted, i.e. there is heteroscedasticity and the variance of the residual deviations is not equal. The null hypothesis is accepted in the WB group. The results of testing the presence of autocorrelation show that the null hypothesis on the nonexistence of autocorrelation in the two groups of countries is not accepted and it is concluded that there is autocorrelation, i.e. the random errors are mutually correlated. On the other hand, there is no autocorrelation in the Western Balkan group.

After solving the heteroscedasticity and autocorrelation problems, the indicators obtained during the analysis, the panel regressions and the regression coefficients are given in Table 5.

The results of the conducted panel regression for the CEE-11 + the Western Balkans, the CEE-11 and the Western Balkans group of countries in the period 2000-2020 are as follows:

- First, observed at the level of the entire sample of the CEE-11 + the Western Balkans within the time interval under observation from 2000 to 2020, there is a positive and statistically significant influence of emigration on income convergence. The growth of emigration by 1% will have an influence on an increase in the GDP share *per capita*

Table 3 The correlation matrix

	The emigrant share in the total population	Secondary school enrollment	Final public spending	The investment rate	Trade openness
The emigrant share in the total population	1				
Secondary school enrollment	-0.3179	1			
Final public spending	-0.7959	0.3103	1		
The investment rate	0.1604	-0.213	-0.2954	1	
Trade openness	-0.2893	0.4037	0.3261	0.0934	1

Source: Authors

Table 4 The results of the diagnostic checks

	The Wald test for groupwise heteroskedasticity/the Breusch and Pagan Langrangian multiplier test for random effects	The Wooldridge test for autocorrelation
CEE-11+WB	chi2(14)=106.51 prob>chi2 =0.000	F(1,13)=22.880 prob>F=0.000
CEE-11	chi2(11)=569.20 prob>chi2 =0.000	F(1,10)=16.244 prob>F=0.002
WB	chibar2(01)=0.000 prob>chi2 =1.000	F(1,2)=0.817 prob>F=0.4615

Source: Authors

of the CEE-11 and the Western Balkan countries in the average GDP *per capita* of the EU-15 by 0.87%. Trade openness also has a positive and statistically significant influence on income convergence. If trade openness increases by 1%, the GDP share *per capita* of the CEE-11 and the Western Balkans will increase in the average GDP *per capita* of the EU-15 by 0.22%. The secondary school enrollment, final public spending as a percentage of the GDP and the investment rate as a percentage of the GDP variables have no statistically significant influence on the income convergence of the CEE-11 and the Western Balkan countries towards the average income of the developed countries of the EU-15. Some of the factors responsible for the absence of a statistically significant effect of the enrollment in secondary school variable on income convergence are the quality of education in transition countries, an insufficiently good education system, a mismatch between graduates' competencies and their real jobs, and brain drain from these countries. One of the possible reasons why the investment rate had no influence on income convergence was that investment in the transition countries was not capable of producing a growth higher than the growth in the EU, which may further indicate that investment spending in these countries was either insufficient or inefficient, or both. A lack of gross capital formation was particularly pronounced in the first decade of the transition, when the state-owned enterprises that were dominant in the economy were closed, restructured or privatized. In addition, widespread corruption, the wasteful use of resources, rigged government tenders for public projects, poor quality and wrong investment

Table 5 The evaluated model specifications

The variable	The development ratio		
	FE CEE-11+WB	FE CEE-11	FE WB
The emigrant share in the total population	0.8751** (0.3305)	1.211** (0.3499)	-0.0211 (0.6071)
Secondary school enrollment	0.2609 (0.2032)	0.2264 (0.2142)	0.3977** (0.0617)
Final public spending	0.1102 (0.9731)	0.1443 (1.2362)	0.6095** (0.2486)
The investment rate	0.1857 (0.2054)	0.2469 (0.2730)	0.0282 (0.1165)
Trade openness	0.2200** (0.0446)	0.2528** (0.0534)	0.1435** (0.0151)
The constant	-21.4333 (32.6245)	-20.8218 (39.700)	-30.6469 ** (9.9506)
The number of observations	70	55	15
R^2	0.7203	0.7773	0.929
F	12.01	20.67	1.62

Note: The standard errors are given in brackets, * p<0.1; ** p<0.05; *** p<0.01.

Source: Authors

priorities certainly reduced the effectiveness of the funds invested in promoting growth. The chosen model is representative, which is confirmed by the F value of the statistics of 12.01. The value of determination coefficient of 0.720 implies that 72% of the variable variability accounts for the GDP *per capita* of the CEE-11 and the Western Balkan countries share in the average GDP *per capita* of the EU-15 explained by the model.

- Second, in the period 2000-2020, the CEE-11 group of countries also showed a positive and statistically significant influence of emigration on the income convergence *per capita* of the CEE-11 countries towards the average income of the developed countries of the EU-15. The growth of emigration by 1 % would impact the growth of the GDP share *per capita* of the CEE-11 countries in the average GDP *per capita* of the EU-15 by 1.21%. Trade openness also positively and significantly influenced income convergence. If trade openness increases by 1%, the GDP share *per capita* of the CEE-11 and the Western Balkan countries will increase in the average GDP *per capita* of the EU-15 by 0.25%. The variables: secondary school enrollment, final public spending as a percentage of the GDP, the investment rate as a percentage of the GDP has no statistically significant influence on income convergence. The chosen model is representative, which is confirmed by the F value of the statistics of 20.67. The coefficient determination value of 0.777 implies that 77.7% of variability variable is the GDP share *per capita* of the CEE-11 and the Western Balkan countries in the average GDP *per capita* of the EU-15, as is explained by the model.
- Third, there is no statistically significant effect of emigration on income convergence in the group of countries of the Western Balkans in the period 2000-2020. The investment rate does not have any significant statistical influence on the variable, i.e. income convergence, either. Secondary school enrollment, final public spending and trade openness have a statistically significant and positive influence on income convergence.

This result is not surprising since this region is massively left by the working-age population, primarily a highly qualified population, which contributes to a decrease in the labor force and productivity in these countries. Since 2012, 6% of the working-age population has left the region. Only in 2019, 480 people from the Western Balkans - a region of 18 million citizens - obtained a long-term residential permit in the European Union on a daily basis. Predominantly encouraged by economic uncertainty at home, the emigration from the countries of the Western Balkans has been intensified during the last decade. The World Bank's report stated that most of the emigrants from this region are of an age between 20 and 39 (more than a third of young people are unemployed in this region) and highly educated. Hence, this brain drain will have long-term negative effects on competitiveness, the economic growth of the economies and the income convergence of the countries of the Western Balkans with the developed countries of the EU. Apart from unemployment, the significant challenge that most of the countries of the Western Balkans are faced with is the poverty of employees and uncertain working conditions due to the generally inadequate protection of the workers' rights (especially in the private sector), low salaries and unpromising opportunities for a carrier. According to the World Bank, people in the European Union have on average three times larger income than the people living in the countries of the Western Balkans. According to the speed of the growth of the income *per capita* in the period 1995-2015, the countries of the Western Balkans need about 60 years to come closer to the average income in the EU. The workers in the region of the Western Balkans are still faced with "the trap of low salaries and high taxes" due to poorly progressive income taxes and a generally high social insurance contribution.

The positive influence of migration on income convergence is consistent with the results obtained in the research studies carried out by A. M. Taylor and J. G. Williamson (1997) in the OECD countries, S. Østbye and O. Westerlund (2006) for Sweden, A. Maza (2006) in Spain, J. Wolszczak-Derlacz (2009) for the member states of the European Union, R. DiCecio and C. S. Gascon (2010) in the USA, D. Bunea (2012) in Austria, Spain, Hungary and Romania, B. L. Fischer and M. Pfaffermayr (2015) on the example of the European regions, the OECD (2022) for Europe. The impact of migration on regional divergence is consistent with the results of M. Cardenas and A. Ponton (1995) for Colombia, M. G. Kırdar and S. D. Saraçog˘lu (2008) for Turkey, L. Peeters (2008) for Belgium, U. Fratesi i R. M. Percoco (2014) for Italy, C. Cazzuffi and M. Pereira-Lopez (2016) for Mexico, A. Kubis and L. Schneider (2016) for Germany, Đ. Borozan (2017) for Croatia, IMF (2019) for Serbia. That migration does not have a statistically significant effect on income convergence was confirmed in the papers F. Gezici and G. J. D. Hewings (2004) for Turkey, P. Huber and G. Tondl (2012) for the countries of the European Union, Y. Vidyattama (2014) for Indonesia, and E. Vakulenko (2016) for Russia, which is in accordance with the conclusion of this research study regarding the absence of a statistically significant influence of international migration on the convergence of the income of the countries of the Western Balkans towards the income of the developed economies of the EU.

CONCLUSION

Human migrations have always been a constituent part of the European experience and influenced the economic, social and political situations in European societies. Today, they represent a very important question in the European politics. Moreover, Europe played a key role in the development of the set of rules and norms by which human mobility inside the region was and is regulated. The results of this research study have proven the presence of a positive and statistically significant influence of migration on income convergence in the period 2000-2020 in the two analyzed groups of countries: the CEE-11 + the Western Balkans and the CEE-11. Namely, a greater share of emigrants in the total population contributes to the decrease in the gap in development among the stated groups of countries and the developed economies of the European Union. On the other hand,

the influence of international migrations on income convergence is not proven in the Western Balkans group of countries, i.e. emigration does not have a statistically significant influence on the decrease in the gap income *per capita* among the countries of the Western Balkans and the developed economies of the European Union. The reason for the non-existence of a statistically significant relationship between migrations and income convergence in this group of countries is the consequence of the mass migration of the young and working-age population, mostly highly educated. In the long run, this has a negative influence on the supply of the labor force, productivity, competitiveness, economic growth and income convergence in these countries. In accordance with the obtained results, the initial hypothesis can partially be accepted.

The most significant limitation of this research study reflects in the deficiency of the data for certain countries of the Western Balkans, due to which fact it was impossible to include them in the analysis. Furthermore, the period in which the effects of the global economic crisis and the debt crisis in the Eurozone were expressed had a great influence on the obtained research results. In such conditions, a significant cyclic movement of certain variables is possible in relation to their long-term trend. Besides, during the 1990s, the countries of the Western Balkans faced many social and political problems, even conflicts, which had influenced their income to a great extent, the other variables included in the analysis and the research results obtained in this study as well.

One of the recommendations for future research in the relationship between international migrations and income convergence is to take into account migrants' educational structure, i.e. to examine whether there is a difference in the influence of the migration of highly qualified and low-qualified population on income convergence. Since human capital is recognized as one of the important determinants of economic development, the "brain drain" phenomenon should be analysed in future research as one of the aspects of international migrations.

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