PAPER

International Migration as a Factor of Economic Development of Central, Eastern and Southern Europe

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Abstract This paper provides the analysis and assessment of the impact of international migration on the economies of Central, Eastern and Southern Europe, which are EU Member States, as well as Ukraine due to the geographical proximity and historical similarity with the CEE countries. To achieve this goal, modeling using panel data was chosen, which well approximates the presented data and can be used for further forecasting. The research has found that the GDP per capita of Poland, Slovakia, the Czech Republic, Austria, Slovenia, Spain, Italy, Greece, and Portugal depends on the inward and outward migrant remittance flows, the level of average annual wages and labor productivity. Foreign-born employment rate in these countries on average is not very high, and therefore is not a determinant of the economic situation of the studied countries. Ukraine's integration into international migration processes has increased significantly in recent decade, so a separate linear regression model has been created for Ukraine using the OLS method, based on which Ukraine's GDP per capita depends on migrant remittances inflows and outflows along with unemployment. The study also analyzes the impact of the COVID-19 pandemic on the selected economies and existing risks in the context of international migration. Spain, where the unemployment rate among foreigners rose to 15.3%, suffered the most from the coronavirus crisis. In addition, the countries of Central and Southern Europe depend on migrant workers, who are involved in such important sectors as health and services.

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1. Introduction

At the present stage of the development of international economic relations, much attention is paid to the analysis of international migration processes, because they increasingly affect the economies of both countries of origin and destination of migrants. International migration has a positive effect on migrant donor countries through large remittances, and destination countries receive cheaper labor, which is one of the drivers of changes in the labor market in developed economies. The main factors of migration are primarily economic indicators, namely: GDP per capita, income level, unemployment and employment, tax burden. However, the socio-political situation is also important in making decisions about going abroad.

The Member States of the European Union are the most attractive to foreigners because of their stability in all spheres of life and high level of living standards. The fifth phase of EU enlargement, in which 10 countries joined the Union, facilitated active migration from the new EU members to the old ones by simplifying border crossings, making international migration a major economic issue. The European Union has always had a positive balance of migration, as the number of immigrants exceeded the number of emigrants. In 2019, 4.7% of the total EU population were not its citizens (Eurostat 2021). As of 2020, Germany and Spain were the leaders in this indicator - 543.8 thousand and 498 thousand people respectively, at that time the smallest balance of migration was registered in Poland and Romania. However, the European migration crisis (2015) has led to a significant increase in illegal migration, which is currently one of the most important problems in this area.

The global COVID-19 pandemic has affected both host and migrant supply countries. According to data published by the Organization for Economic Cooperation and Development (OECD, 2021), in the first half of 2020, the issuance of new visas and entry permits to member countries of this organization fell by almost 60% compared to the same period in 2019. In addition, 2020 was marked by an increase in reverse migration. In the short term, mobility will not return to previous levels due to weak labor demand, persistently tight travel restrictions, and the widespread use of telework among highly skilled workers and distance learning. As of March 2021, emigrants from the 20 countries with the highest number of COVID-19 cases accounted for 31% of the total number of international migrants. Moreover, their remittances sent to countries of origin was set at about 37% of the total remittances worldwide (Migration Data Portal, 2021)**.**

Ukraine ranks first in terms of territory size among European countries, but the penultimate place in terms of GDP, which according to statistics in 2020 is USD

142.25 billion, ahead of only Moldova. Ukraine is deeply involved in global migration processes, and from 2002 to 2004 the country recorded a negative balance of interstate migration, in the following years and to this day Ukraine has more immigrants than emigrants. However, according to unofficial data, Ukraine is a "donor" of migrants and an exporter of labor. In general, the Ukrainian diaspora numbers 5.9 million people worldwide and ranks 8th in this indicator. An important step in regulating international migration in the framework of Ukraine's European integration policy was the signing of the Association Agreement in 2014 between Ukraine, on the one hand, and the European Union, on the other hand. In accordance with Section III of this Agreement, both parties will contribute to solving the problems that cause migration, combating illegal migration and human trafficking, cooperation in the field of asylum, effective integration of foreigners, addressing discrimination against migrants, including in the process of employment, etc. (Official web portal of the Parliament of Ukraine, 2021). Within the framework of the above-mentioned topic, the Association Agreement provides for the development of a dialogue on international migration issues between Ukraine and EU Member States.

The signing of a visa-free regime between Ukraine and the European Union on May 17, 2017 has also contributed to the mobility of human resources and the growth of interstate migration between Ukraine and member states. It stipulates that Ukrainians can stay in the Schengen area for up to three months for 180 days, which has led to the fact that some migrants are illegally employed and go to work every six months. As a result, according to the State Statistics Service of Ukraine, as of December 1, 2017, the number of registered unemployed decreased by 9% compared to the same period last year. In addition, the level of average monthly wages increased by 37%.

The approval of the Strategy of the State Migration Policy of Ukraine on July 12, 2017 is an important event for achieving successful European integration of the country, as well as a necessary step in the field of migration under the Association Agreement. It consists of two stages. Currently, Ukraine is in the first stage (2018-2021), which aims to improve regulations in migration policy. As stated in the Strategy, the improvement of Ukrainian migration policy will help improve Ukraine's relations with EU member states and increase immigration flows (Official web portal of the Parliament of Ukraine, 2021).

In 2013-2016, the migration balance in Ukraine tended to decrease due to a significant reduction in the number of arrivals because of the military conflict in the country (see Figure 1). Since 2017, the number of immigrants and emigrants has been steadily increasing, which is one of the consequences of the introduction of a visa-free regime for citizens of Ukraine. The main drivers of emigration from Ukraine have always been economic factors, namely higher incomes and better education, and since 2014 - the socio-political situation in the country. According to IOM, 76.4% of all migrant workers have found a job.
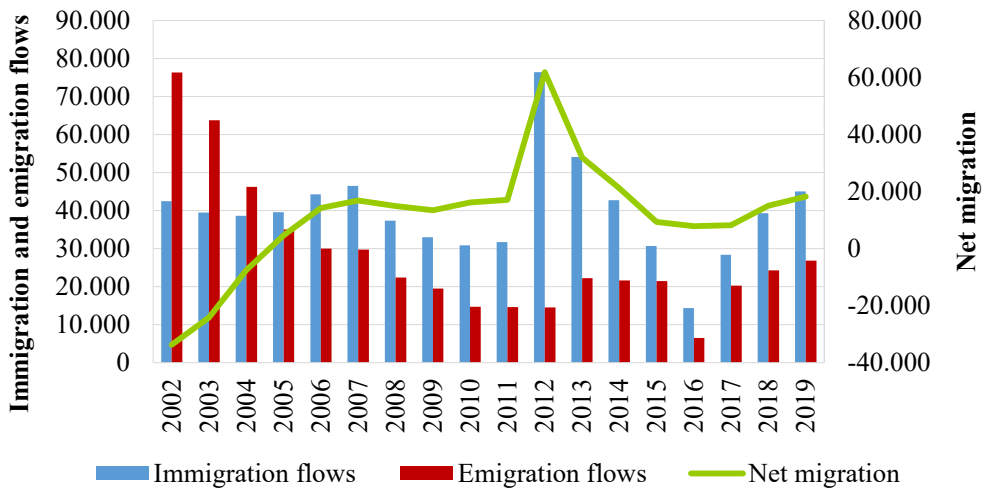
Figure 1. Immigration and emigration flows (on the left axis), net migration (on the right axis) in Ukraine in 2002-2019.

Source: calculated and compiled by the authors based on (Eurostat 2021).

The growing flows of labor migration from Ukraine are influenced by the following factors. First, the devaluation of the national currency from 15.7 to 24.8 hryvnias per US dollar in 2014, and at the peak of the collapse the exchange rate reached even 30 hryvnias per US dollar. Secondly, the mass closure of enterprises due to the military-political situation in the country, as a result of which the unemployment rate increased by 9.3%. For comparison, in 2013 it was 7.2%. Third, too rapid price growth, which did not meet the minimum wage in the country. If in 2013 there was a slight deflation in Ukraine (-0.2%), in 2015 inflation reached 48.7%. Low wages have always been the main driver of labor migration from Ukraine to other countries, especially European ones. According to data published by the State Statistics Service, in Ukraine the average employee receives a salary of USD 258, and abroad – USD 722.

However, the problem of outflow of Ukrainian students abroad is more urgent, as their number has increased more than sevenfold over the last 10 years. As a result, Ukraine is losing its intellectual and innovative potential, as most educational migrants aim for further employment in the destination country. Poland is a priority for Ukrainian students - their share is almost 48% of the total (Sedikova I., Nikolyuk O., 2020). Russia, despite being an aggressor country, still attracts Ukrainian youth and is a second destination for study abroad; it is followed by Germany. According to the results of the Osvita.ua study, if Ukrainian students currently studying abroad remained in Ukraine, it would bring more than UAH 1 billion to the higher education system. On the other hand, Ukrainian students are an important resource for Poland,

as they make up 55% of all foreign students in the country and most of them work on their own to pay for it, which has a positive impact on both the Polish higher education system and the economy of Poland as a whole (Onischenko O., 2018).

This study also examines the countries of Central, Eastern and Southern Europe because of their historical similarities, relatively equal levels of socio-economic development, except for Austria, Italy and Spain, which are leaders in the region, Moreover, CEE countries are in the same geographical region with Ukraine, they are a priority for Ukrainian migrant workers, play an important role in the transformation of its economy and serve as a vector of development and an example of successful improvement and stabilization of the macroeconomic situation.

Table 1. Net Migration in selected EU countries in 2010-2019, number

Country	2010	2012	2014	2016	2018	2019
Bulgaria	-	-2512	-2112	-9329	-3666	-2012
Czech Republic	-12752	-11769	1429	25219	39168	28090
Greece	-1579	-66494	-47791	10332	16440	34439
Spain	-42672	-142553	-94976	87421	334158	454232
Croatia	-4171	-3918	-10220	-22451	-13486	-2422
Italy	380085	244556	141303	143758	175364	153273
Cyprus	15913	-629	-14826	2499	8102	8797
Hungary	12154	10822	12368	13729	34759	38786
Malta	74	4251	9346	8748	17102	20343
Austria	19327	39745	62771	65081	38421	40887
Poland	-62995	-58057	-46024	-28139	24289	44506
Portugal	3815	-37352	-30056	-8348	11570	46055
Romania	-48100	-2920	-36836	-70123	-59083	-31314
Slovenia	-521	644	-490	1051	14928	16213
Slovakia	3383	3416	1713	3885	3955	3632

Source: calculated by authors based on (Eurostat, 2021).

The data presented in Table 1 indicate that most CEE and Southern European countries have been net recipients of migrants over the last 10 years. The exceptions are Bulgaria, Croatia and Romania, whose migration balance is consistently negative, as

they are the poorest countries in the EU and therefore indigenous people emigrate from the country in search of better living conditions.

Italy and Spain are leaders in the balance of migration, especially Spain, which until 2014 was a donor country for migrants. Italy is one of the first European countries to which immigrants arrive due to its central position in the Mediterranean. However, from 2018, the number of immigrants arriving by sea is significantly reduced (from 117 th people in 2017 to 34 th people in 2020). The largest numbers of migrants come from Romania (23% of all migrants), Albania (8.4%) and Morocco (8%). According to Caritas-Migrantes, Italy ranks second (following Germany) in the number of foreigners in the EU (almost 9% of the country's total population). However, most immigrants are unskilled, which is not very conducive to Italy's economic development. The primary reasons for leaving the country are the opportunity to earn higher incomes. For comparison, the average wage in Italy in 2019 was 31.6 thousand euros, and in Germany - 42.4 thousand euros (Country Economy, 2021). In addition, more than a third of Italian emigrants are people with higher education. In general, for Italy there is a problem of loss of qualified personnel, because every year emigration flows from the country increase.

After the global financial crisis of 2008-2009, the number of immigrants to Spain decreased significantly due to the slow recovery of the economy, as well as too high unemployment. Nevertheless, since 2014, annual immigration flows in Spain have increased by 48%, with the largest number of foreigners coming from Colombia and Morocco. One of the reasons for immigration to Spain for residents of non-European countries is employment, and for residents of European countries - favorable climatic conditions. The emigration movement from Spain in 2019 was mostly directed to such host countries as the United Kingdom and France. One of the highest unemployment rates in the EU, which is 16.3%, has a positive effect on the decision to emigrate from the country. In 2013, when the minimum migration balance was recorded in Spain, the unemployment rate among the 25-54 age group was almost 27%.

Poland and the Czech Republic, with historically negative migration balances, are now net recipients of migrants, unlike Croatia. If in the Czech Republic the number of emigrants exceeded the number of immigrants only in 2010-2012, in Poland - during the entire period, except 2017-2019.

In recent years, the largest number of Polish emigrants is concentrated in Ukraine, Germany, Great Britain and the Netherlands. Many Polish students choose to study in other EU countries because of their higher level of education and greater career opportunities. In turn, Ukrainian students immigrate to Poland for the same reasons. Also, a large number of Polish nurses, caregivers and workers leave the country in search of work due to low wages. For example, the average basic salary of a nurse in Poland is ≈19.6 thousand euros / year, while in Germany and the Netherlands ≈60.6 thousand euros / year (SalaryExpert, powered by ERI, 2021).

According to Inter Nations, in 2019, the Czech Republic was included in the ranking of the top 10 best countries among 64 destinations for immigrants. Foreigners living in the Czech Republic are satisfied with the country's transport infrastructure, travel opportunities and the general state of the economy. The largest share of immigrants in the Czech Republic are citizens of Ukraine (16.3%), Great Britain (2.5%), Germany (2.2%), Belarus (1.3%) and Russia (0.7%).

Due to the fact that Poland receives the largest number of labor migrants among OECD countries, and the number of emigrants from the country is declining, unemployment in Poland may increase and problems may arise in low-paid sectors in other countries. The main reason for entering the country is employment. As of 2017, 42% of all immigrants were from other EU countries. Labor migration has a positive effect on the Czech labor market, as domestic labor is unable to meet demand due to the mismatch between the needs of the labor market and the professions of graduates and trainees in the Czech Republic, mass undeclared work and strict rules hindering flexible employment.

Since 2010, Croatia has been a migrant donor country, as the number of emigrants from the country surpasses the number of immigrants, and as a result, it has a negative balance of migration. Most people of working age emigrate, and as of 2015, about 50% were aged 20-44. As in Poland, a significant number of doctors are leaving the country, which worries the authorities. Croatia is currently one of the three EU states from which the largest number of health workers emigrate. Immigrants in Croatia are citizens of Bosnia and Herzegovina (12,000), Serbia (4,000) and Kosovo (3,500). Thus, migration flows in the country are closely linked to the former states of the Kingdom of Yugoslavia.

2. Literature review

Over the past two decades, the number of migrants has almost doubled, leading to imbalances in many national economies. In 2020, the total number of migrants amounted to 280.6 million people, or 3.6% of the world's population (Migration data portal, 2021). That is why international migration is the focus of many scientists from different industries and regions of the world, because it restructures not only the demographic and social component of countries, but also economic one. Many scientific studies are devoted to identifying and assessing the influence of international migration on the social-economic development of various countries.

Among the latest relevant studies - the paper of G. Domineze et al. (2020) that provides an analysis of the migrant flows to the EU during the recent years. Econometric analysis reveals that the main drivers of the immigration process in the EU countries are GDP per capita and income levels in EU member states. The authors also consider Ukraine's participation in this process and find that remittances have a significant impact on its balance of payments and final consumption of households in 2019.

I. Herceg et al. (2020) have also made a significant contribution to the study of migration processes in the EU. An econometric evaluation of the model based

on previously presented data from the panel revealed that with each year of EU membership, net emigration from new EU countries to other EU member states increases by 0.0092 percentage points. Immigrants from the new members also tend to move to Western Europe. In addition to the higher level of GDP per capita, the authors of this study identify the inability of young people to find attractive employment in their country of origin after graduation as one of the most important factors of emigration, leading to "brain drain".

J. Soava et al. (2020) consider that the migrant remittance inflows have a positive effect for economic growth, especially in developing countries, and labor employment contributes to their social-economic development. Due to the effective integration of migrants from less developed EU countries into national labor markets of other EU countries, states such as Sweden, the United Kingdom, the Netherlands, Ireland and Portugal have high overall employment levels, in contrast to Italy and Croatia. The authors also warn that in addition to the negative impact of the COVID-19 pandemic on migrant remittances to developing countries, the UK's exit from the EU will also have a negative impact, leading to a deterioration in the balance of payments of recipient remittance countries.

F. Fasani, J. Mazza (2020) devoted their research to international migration during the COVID-19 and assessing risks for immigrants in the EU. It was determined that foreign populations in Germany, Spain, Italy and Portugal are at the highest risk of losing their jobs than in Belgium and the United Kingdom. On the other hand, on average, migrants are less at risk of employment than indigenous Europeans. The authors propose to revise the migration policy for migrants, dividing, based on which sectors they are involved: important or "less" important.

Pál Bite et al. (2019) describe international migration in the CEE countries.. In addition to economic factors of migration, the authors also highlight such social factors as history and culture of the country, corruption and nepotism, religion and linguistic features, confirming their importance in previous studies: linguistic, religious and cultural differences negatively affect migration flows by 0.76, 0.29 and 0.34 percent, respectively. From an economic point of view, it was confirmed that labor emigration from CEE countries has a positive effect on the countries of origin of migrants, as their remittances raise standards and quality of life, as well as the purchasing power of recipients. The authors emphasize that remittances should be directed to investment, not consumption.

O. Pikulyk (2019) notes that Ukraine is dominated by the phenomenon of labor emigration, which chooses as destinations Poland, Russia, the Czech Republic and Germany. Ukrainian emigrants are mainly employed in construction, agriculture and households, as well as trade and services. On the one hand, the outflow of human resources from Ukraine reduces tensions in the national labor market and the level of poverty in the country, but, on the other hand, it risks losing the labor and intellectual

share of individuals, which hinders the development of the country in the economic context. The author of the study sees the solution to the above problem in creating favorable conditions for the functioning and development of small and medium-sized businesses in Ukraine, legalization of shadow employment and raising wages, as well as macroeconomic stability. One of the recent researches, published by Mihaela Simionescu (2018), prove the positive impact of emigrants from the new EU countries on the economic growth of the old ones. According to the panel data model, the economic integration of the CEE states is a driver of emigration from the countries of this region to the EU-15.

O. Malynovska's paper "Labor Migration of Ukrainian Citizens Abroad: Challenges and Ways to Respond" (2018) reveals the negative consequences of Ukrainian emigration for their Motherland. Among the main negative effects on the national economy, the author singles out: the loss of part of the labor and intellectual potential, democratic transformations in the state caused by the outflow of educated youth, and the general shortage of workers. According to this study, to solve the migration problem, first of all, it is necessary to improve migration policy and legislation, as well as to raise awareness of the Ukrainian population on migration issues.

The following papers - Dominese et al. (2020, 2021), Lomachynska et al. (2020), and Yakubovskiy et al. (2020) reveal the influence of primary income, which includes remittances of migrants, on the current accounts of the EU countries.

3. Hypothesis, methodology and data

To identify and assess the impact of international migration on the economies of countries of origin and supply of migrants, researchers use a variety of statistical and econometric methods, the most popular of which are the Granger causality test, gravity models, intermediate capability models, linear regressions and panel data models.

Given the topic and features of this study, to model the impact of international migration processes on the economies of Central, Eastern and Southern Europe, the last of these methods of econometric analysis was chosen. First, panel data models allow individual heterogeneity to be taken into account. Second, they contain a large number of observations and thus provide more information, they are characterized by greater variation and less collinearity explain the variables, they give more degrees of freedom and provide greater efficiency of estimates. Third, panel data provide an opportunity to study the dynamics of changes in individual characteristics of population units.

It should be noted that panel data require certain methods of analysis and interpretation. When analyzing panel data, it is necessary to choose which of the panel data models (pooled OLS model, model with fixed effects or model with random effects) is most suitable for a particular situation. The first one assumes that the population units do not have individual differences. The model with fixed effects assumes that each unit of the population has its own specific individual characteristics, which for each

particular object are constant over time. If the population units differ in their individual characteristics, but these differences are random, then in this case it is better to consider a model with random effects.

In general, the model is presented in the following form:

$$Y_{it} = \alpha + \beta_1 x_{1t} + \beta_2 x_{2t} + \ldots + \beta_n x_{it} + v_{it},$$

where

Y_{it} – endogenous, dependent variable;

α – constant;

x_{1t}, x_{2t}..., x_{it} – exogenous variables of the model; $\beta 1$, $\beta 1$, … , βn – regression coefficients;

v_{it} – residuals;

i – number of observations (countries);

t – time variable.

Thus, the hypothesis to be investigated is the hypothesis of the impact of international migration on the economies of Central, Eastern and Southern Europe. The selected group mainly includes countries that are net recipients of migrants, with the exception of Bulgaria, Croatia and Romania. That is why it is advisable to identify the impact of migration on their economies, expressed in terms of GDP per capita. To obtain more accurate models, Romania, Croatia, Bulgaria, Malta and Cyprus were excluded due to the lack of separate data. The following model is proposed to determine the impact of international migration:

$$GDP\ per\ cap = \alpha + \beta_1\ FER + \beta_2\ LP + \beta_3\ AW + \beta_4\ RI + \beta_5\ RO \qquad (1)$$

where

α – Constant

GDP per cap – Gross domestic product per capita

FER – Foreign-born employment rate

LP – Labor productivity

AW – Average wages

RI – Inward remittance flows

RO – Outward remittance flows

Thus, in order to achieve this goal, the data of 10 countries for 20 years (2000-2019) were systematized for the formed group of the Central-Eastern and Southern regions of the EU. A panel structure of data with a total number of 200 observations (1:1-

10:20) was generated. Based on the above assumptions concerning the impact of international migration processes on the economies of countries, a regression model of the dependence of GDP per capita on chosen indicators was analyzed. The main source of data: Eurostat statistical databases (Eurostat, 2021) and OECD Data (OECD, 2021). An OLS regression model is created to identify and evaluate the impact of international migration on Ukraine's economic development. GDP per capita in Ukraine is assumed to be affected by migrant remittance inflows and outflows, but for a more reliable model, control variables such as annual flows of immigrants and emigrants and the unemployment rate in the country are chosen because most immigrants in Ukraine are low-skilled workers and therefore occupy indigenous jobs. The following model is proposed, which determines the impact of international migration on the economy of Ukraine:

$$GDP\ per\ cap = \alpha + \beta_1 RI + \beta_2 RO + \beta_3 UR + \beta_4 Im + \beta_5 Em \qquad (2)$$

where

α – Constant

GDP per cap – Gross domestic product per capita

RI – Inward remittance flows

RO – Outward remittance flows

Im – Immigration flows

Em – Emigration flows

The time period is 20 years. The main source of data: State Service of Statistics of Ukraine (SSSU, 2021).

4. Results and discussion

EU countries (Poland, Slovakia, Czech Republic, Austria, Slovenia, Spain, Italy, Greece, Portugal) have been selected for the analysis. After creating a regression model with the Pooled method and models with Fixed and Random Effects, a panel diagnostics was conducted to test which model is best suited to reflect the impact of international migration on the economies of these countries.

Three separate tests are used to select an appropriate model. Wald test is used to choose the best one between the Pooled model and the model with Fixed Effects. The Breusch-Pagan test determines the most applicable model between a Pooled model and a model with Random Effects. Hausman test compares models with Fixed and Random Effects. The results of the panel diagnostics of model 1 are presented in table 2.

Table 2. Panel diagnostics of the model 1.

Test	P-value	Interpretation of p-value
Wald test	6,77046e-020	Low p-values indicate a weak null hypothesis about the adequacy of the Pooled panel data model, preferring the model with Fixed Effects
Breusch-Pagan test	3,52012e-009	Low p-values indicate a weak null hypothesis about the adequacy of the Pooled panel data model, preferring a model with Random Effects
Hausman test	8,86589e-012	Low p-values indicate a weak null hypothesis about the adequacy of the model with Random Effects, preferring the model with Fixed Effects

Source: prepared by authors.

Based on the results of panel diagnostics of model 1, according to the Wald Test, the hypothesis about the adequacy of the Pooled model is rejected, preferring the model with Fixed Effects. The Breusch-Pagan test indicates a weak null hypothesis about the adequacy of the Pooled panel data model, preferring a model with Random Effects. The results of Hausman test point that the hypothesis of choosing a model with Fixed Effects is applied, the adequacy of the model with Random Effects is rejected. Therefore, a panel data model with Fixed Effects will be analyzed for selected EU countries.

The results of the empirical verification of the impact of international migration on GDP per capita are presented in table 3:

Table 3. Coefficients and their statistical estimate for the model 1.

Variables	Pooled method	Fixed effects method	Random effects method
	Coefficients (t-statistic)		
const	−15.4088*** (−5.680)	−29.0127*** (−7.657)	−14.4405*** (−4.606)
FER	0.152999*** (3.708)	−0.0568016 (−1.233)	0.0481356 (1.062)
LP	0.143239*** (4.403)	0.515337*** (5.414)	0.159673*** (2.639)
AW	0.589494*** (7.814)	0.683859*** (3.648)	0.670659*** (4.662)
RI	0.0745566 (0.6412)	0.771544*** (4.195)	0.662844*** (3.819)

RO	−0.478651*** (−3.341)	−0.618386*** (−3.733)	−0.540628*** (−3.188)
R^2	0.8341	0.9083	–
$F_{stat.}$	195.095	130.9097	–

*** – statistical significance at 1% level, ** – statistical significance at 5% level, * – statistical significance at 10% level.

Source: prepared by authors.

First, the coefficient of determination R^2 of model 1 with Fixed effects is 0.9083, which means that the variability of the dependent variable GDP per capita by 90.83% is due to selected factors.

Second, the high p-values of the independent variables LP, AW, RI, and RO indicate the "adequacy" of the hypothesis. These variables are statistically significant at 1% (***), pointing that there is only a 1% probability that the independent data coefficients will be zero, and 99% that they will be statistically different from 0. The FER variable is not statistically significant.

Third, the modulus of the Student's coefficients (t-statistics) of the variables LP, AW, RI and RO exceeds the critical value of the coefficient, which also indicates the importance of these factors.

Fourth, Fisher criterion of the model 1 is 130.9097, which is greater than its critical value. Thus, the obtained regression model well approximates the presented data and is "adequate".

After interpreting all the results, we obtain the following empirical model 1:

GDP per cap= -29.01+0.52LP+0.68W+0.77RI-0.62 RO (3)

Thus, from the obtained model 1 we can conclude that the greatest impact on the dependent variable in Central, Eastern and Southern Europe have the migrant remittance inflows, because the β coefficient of this variable is the highest. Based on the signs of the coefficients, an increase in this indicator contributes to the growth in GDP per capita in this group of countries; an increase in remittance outflows leads to a decrease in GDP per capita.

The employment rate of foreigners is not statistically significant due to the fact that in the selected group of EU countries it is not very high, and therefore does not have a significant impact on their economies. β coefficients of labor productivity and the level of average annual wages are 0.52 and 0.68, respectively. As a result, the presented model is reliable and adequate, so it can be used for further forecasting.

Most remittances from and to selected CEE and Southern European countries are made through informal channels, so their actual volumes are difficult to track. For example, in Spain, despite one of the largest numbers of immigrants in the EU - 13.1% of the total population, the outflow of migrant remittances amounted to only 0.7% of

GDP in 2020 (World Bank, 2021). In Poland, inflows of remittances surpassed outflows during 2000-2017, and since 2018 the country has a negative balance on this indicator. In 2020, remittances to the country amounted to 0.9% of GDP. According to the latest data (2017), most remittances from Poland were sent to France, Germany, Ukraine, Lithuania and Belgium. In general, the largest share belongs to European countries. Due to a much larger reduction in migrant remittance outflows than inflows in the COVID-19 pandemic in Spain and Poland, by 24.6% and 13.2%, respectively, the current account balances in both countries improved (Bank of Spain, National Bank of Poland, 2021). In Croatia, outflows of migrant remittances also decreased by 16.3% along with significant decrease in investment income payments by USD 1.1 billion that helped to improve the balance of primary services by USD 1.2 billion. (National Bank of Croatia, 2021). In the Czech Republic, on the contrary, payments of compensation of employees increased by 1%.

According to the results of the panel data model, the level of employment of foreign population in the studied countries does not affect changes in GDP per capita, due to the low values of this indicator in some countries. The employment rate of migrants in Central, Eastern and Southern Europe is presented in Table 4.

Table 4. Foreign-born rate of employment in selected EU countries in 2010-2019, %.

Country	2010	2012	2014	2016	2017	2018	2019
Czech Republic	78.5	69.2	69.9	80.0	82.7	79.4	86.1
Greece	61.8	43.3	31.1	35.4	42.9	43.0	29.5
Spain	59.9	47.4	53.4	63.5	62.0	67.2	62.7
Croatia	-	-	-	-	-	79.0	79.5
Italy	62.4	58.4	54.4	55.3	53.2	58.9	62.4
Cyprus	78.5	73.1	71.4	65.3	70.0	69.8	73.5
Hungary	68.6	55.1	67.2	69.4	61.9	56.1	58.4
Malta	-	-	93.8	66.5	71.5	80.2	91.0
Austria	64.5	67.1	70.2	72.9	73.9	73.5	70.3
Poland	-	-	87.4	63.3	78.9	83.7	75.9
Portugal	53.2	-	-	78.5	67.7	70.7	74.6
Slovenia	-	71.1	48.8	65.6	65.3	84.5	84.2

Source: calculated by authors based on (OECD, 2021).

The analysis of Table 4 shows that Greece has the lowest level of foreign employment. both among the selected group of countries and throughout the EU. The employment rate of migrants in Italy has been increasing since 2017 and the share of employed migrants is 62.4%. This country has always had a low level of employment also among

the native people in 2019 only 58.1% of people were employed. Moreover, according to ANPAL. the number of foreigners looking for work in Italy has increased to 39.2% for EU citizens and up to 40% for immigrants from non-EU countries.

Spain tended to decrease the share of employed migrants by 2013 (50.7% in 2013 - the lowest value). However, currently the share of employed migrants is 62.7%. During the global financial crisis Spain had one of the highest unemployment rates for both migrants and natives. Unfortunately, the country still has a large percentage of low-skilled labor. but there are also positive changes in the Spanish labor market. According to the Employment Observatory of the National State Employment Service the number of unemployed registered with the state employment services in September 2019 decreased significantly to three million. The presence of foreign workers is an important factor in these indicators. given that they account for 12% of the unemployed and 11% of social security contributions. The largest number of workers from EU Member States who pay social security contributions come from Romania, Italy, the United Kingdom, Bulgaria., Portugal and France.

Due to the COVID-19 pandemic the unemployment rate reached 15.1% among Spanish people and 15.3% among immigrants (Eurostat. 2021). In Spain 2.5 million immigrants work in manufacturing. Most of them are from other European countries, but there also a lot of migrants from South and Central America. So quarantine restrictions negatively affect migrant mobility, which can lead to the economic downturn in Spain.

Poland had a significant decrease in the share of employed migrants in 2004 - to 27.2% when it joined the EU, but since 2005 the figure began to grow rapidly and now it is 75.9%. As Poland has traditionally been a "donor" of migrants, immigrants have a significant impact on its economy, as they occupy the jobs of Polish emigrants who go to other EU countries. A large number of migrant workers in Poland are Ukrainians, who mostly work in low-skilled occupations. Therefore, on the other hand, foreign migrants do not eliminate the phenomenon of "brain drain" from Poland. The country had a low unemployment rate of 3% throughout the period, and it is one of the few states where this figure has hardly changed during COVID-19, but in the second quarter of 2020 it has fallen slightly compared to similar period in the previous year.

International migration processes play an important role for the development of Ukraine's economy, that is confirmed by the results of the regression model, coefficients of which are presented in Table 5.

Table 5. Coefficients and their statistical estimate for the model 2.

Variables	coefficients	Standard error	T-statistic	P-value	Significance
Const	3997.721	714.776	5.593	0.000	***
RI	0.104	0.025	4.149	0.001	***
RO	-0.802	0.227	-3.529	0.003	***

Variables	coefficients	Standard error	T-statistic	P-value	Significance
UR	-3.482	88.463	3.934	0.001	***
Im	0.009	0.008	1.045	0.314	
Em	0.000	0.008	-0.051	0.960	
R^2			0.917		
$F_{stat.}$			42.930		

*** – statistical significance at 1% level. ** – statistical significance at 5% level. * – statistical significance at 10% level.

Source: prepared by authors.

The adjusted coefficient of determination R^2 of model 2 is 0.917, which means that the variability of the dependent variable GDP per capita by 91.7% is explained by this set of independent variables.

According to the results of model 2, the p-values of the variables RI, RO and UR showed that they are statistically significant at the level of 1% (***). Const is also statistically significant at 1%, so it should be included in the regression equation. The independent variables of annual immigration and emigration flows (Im and Em) were statistically insignificant.

The critical value of Student's t-test in this case at a significance level of 1% is equal to 2.98. The modulus of the Student's coefficients of all selected variables exceed the critical value, which also means that they are significant.

The value of the Fisher criterion indicates the adequacy of the model as a whole. $F_{stat.}$ of model 2 is 42.930, which is greater than the critical value, which is 2.96. Thus, we can claim that the hypothesis of insignificance of this regression model is rejected. After interpreting all the results, we obtain the following empirical model 2:

GDP per cap=3997.21+ 0.10RI-0.80RO-3.48UR (4)

The results of model 2 show the remittances of migrants have a positive impact on GDP per capita in Ukraine. Outflows of migrants' remittances and the unemployment rate, on the contrary, have a negative effect on the dependent variable, with a change in the unemployment rate by 1 standard deviation leading to a change in GDP per capita of Ukraine by 3.48 standard deviations.

In general, migrant remittances are of great importance to the Ukrainian economy, as their volumes are so large that they can be compared to foreign exchange inflows under other balance of payments items (see Figure 2). Money transfers are one of the main channels for foreign currency to enter the country and contribute to the relative stability of the dollar. The balance of primary incomes in Ukraine has always been positive. Although, both in terms of investment income and in terms of wages income

far outweighs payments, the latter has a much larger share. Most of these cash inflows are in dollars (76.6%). as well as in euros (22.6%) and Russian rubles (0.2%) (National bank of Ukraine, 2021). The impact of remittances on Ukraine's economic growth is particularly noticeable in 2015-2016, when their amount doubled, and the GDP growth rate changed from 9.8% to 2.2%. Also in 2019, the Ukraine repaid the debt to the IMF in the amount of USD 1.6 billion, while the hryvnia revalued. Clearly, the increase in migrant remittance inflows have had a short-term positive impact on the Ukrainian economy, as most of them are saved and spent on consumption, and only 1% are invested. Nevertheless, migrant remittances increase effective demand in the country, which contributes to GDP growth.

Ukraine is the leader in Europe and Central Asia in the amount of remittances received from migrants in monetary terms, but in percentage terms to GDP it ranked 9th in 2019. Inward remittances to Ukraine have almost doubled in the last five years as a result of many Ukrainians leaving their homeland due to Russia's occupation policy on Ukrainian territory. In 2020, remittances to Ukraine amounted to 8.2% of GDP, while outward remittances – to only 0.4% of GDP. In 2015, remittance flows from Russia accounted for more than 25% of the total, and in 2021 - less than 10%. Currently, the largest share is occupied by remittances from Poland (28.3%), the United States (10.8%), the United Kingdom (8.5%) and the Czech Republic (6.4%) (Ministry of Finance of Ukraine, 2021). Therefore, migrant remittances are of great importance for the Ukrainian economy as their volumes significantly exceed other channels of foreign currency inflow to Ukraine (see Figure 2).
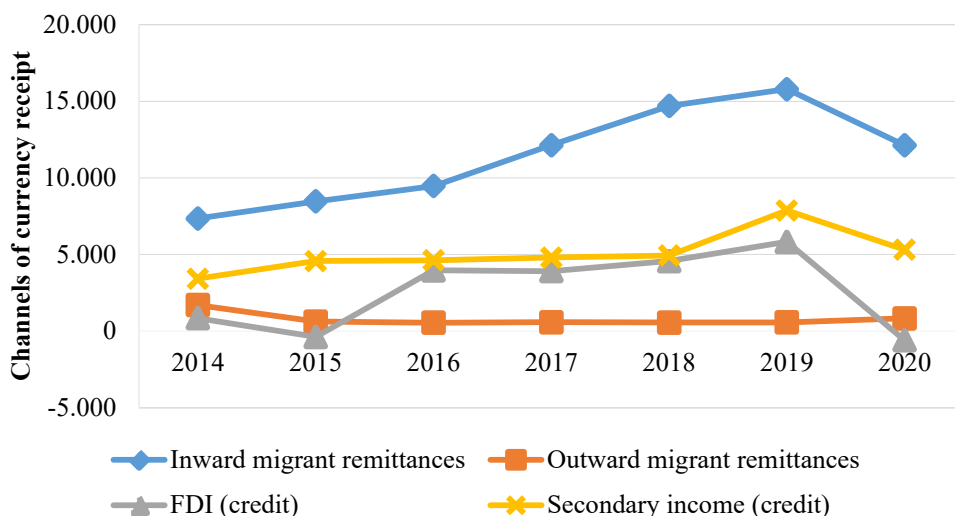

Figure 2. Volumes of migrant remittances. as well as foreign exchange earnings through other channels to Ukraine in 2014-2020, USD million.

Source: calculated and compiled by the authors.

Graphical analysis shows that the volume of inward migrant remittances in 2019 amounted to USD 15.8 billion, and the receipt of current transfers (secondary income), which include humanitarian assistance, monetary donations, etc. - USD 7.9 billion. In other words, remittances exceed the inflow of current transfers almost twice and almost three times the inflow of FDI.

As a result of the quarantine on March 11, 2020 due to the COVID-19 pandemic, many Ukrainian labor migrants returned to their homeland, which ultimately led to a decrease in remittances. 10% of migrant workers managed to arrive in Ukraine, and 10%, who planned to go to work abroad, decided to stay in Ukraine. At the end of March 2020, about 20% of Ukrainian workers employed in the construction industry in Poland returned to Ukraine. However, in the IV quarter of 2020, income under the item "compensation of employees" even slightly exceeded the figure for the same period in 2019. This is due to significant reductions in many EU countries for migrants (seasonal workers) in late summer - early autumn.

Due to the COVID-19 pandemic, many migrants have returned to Ukraine and cannot find work that has led to the rise in unemployment rate, which is a socio-economic risk. If in 2019 this indicator was recorded at 8.8%, then in the second quarter of 2020 it was 9.6%, which is the peak value for the whole year. On average, in 2020 the unemployment rate was 9.5%. Such an unplanned return of Ukrainian migrants has increased the pressure on the Ukrainian labor market, as the labor force looking for work has increased in number. According to Ukrinform, 17% of the workforce were hidden unemployed, ie their employment was reduced or they were on unplanned leave. If in November 2019 3 unemployed people applied for 1 job, in the same period of 2020 – 6 people, and the number of vacancies decreased by 34%.

Moreover, the solvency of those households that are dependent on remittances from their relatives who previously worked abroad has decreased. This can reduce consumer spending and investment. Thus, in addition to the fact that because of the introduction of quarantine in Ukraine many people lost their jobs ($\approx$ 8%), they were joined by migrant workers who returned from abroad and also became unemployed. However, as of June 2020, some countries have eased the conditions for migrants. For example, Italy temporarily legalized migrants working in the agricultural sector, and Finland planned to bring 9.000 Ukrainian migrants to harvest.

In a crisis in neighboring countries due to a pandemic, there may be an influx of immigrants to Ukraine from these countries. At the same time, the flow of migrants may increase not only from countries - traditional suppliers of migrants to Ukraine, but also from EU countries. For instance, Hungary, which is the last European country to impose quarantine restrictions, may suffer much more from overdue actions, which in turn will be one of the drivers of Hungarian emigration to Ukraine. In 2020, Hungary's GDP decreased by 5%, and the unemployment rate rose from 3.4% to 4.3%. Nonetheless, according to the European Commission, in 2021 the Hungarian economy

will recover from the crisis, showing GDP growth of 5%, but unemployment in the country will still remain at the same level. Slovakia's GDP in 2020 decreased by 4.8%, and the unemployment rate increased by 6.7%. In addition, it is expected that in 2021 it will be 7.4%. Hence, it is quite possible that in the short term, due to the constant reduction of jobs, Ukraine will become a host country for migrants from Hungary and Slovakia (Yakubovskiy S., Kachanovska M., 2020).

Along with the existence of many risks for Ukraine, the positive consequences of the pandemic can also be identified. Restrictions in Europe have contributed to the outflow of Ukrainian applicants is decreasing. Thus, the introduction of restrictions on entry into the EU has significantly influenced the decision of entrants to study at European universities. The favorable fact is that in this case Ukraine does not lose its "intelligence", so it is likely that these students will stay in their country and in the future will improve the economic situation of their homeland, working here and not abroad.

5. Conclusion

The study found that Bulgaria, Croatia, and Romania have traditionally been donor countries to migrants, but the trend in Poland, the Czech Republic, and Spain has changed, and they are now net recipients of migrants. In this context, the key factors of immigration to selected countries of Central and Eastern Europe have been identified: climatic conditions and employment, but for the most part these factors attract migrants from non-European countries.

In order to model the impact of international migration processes on the economic development of selected EU countries, a panel data model was constructed. The economic significance of the obtained model for the countries of Central, Eastern and Southern Europe, which are members of the EU, is as follows: labor productivity, the level of average annual wages and remittances has a positive impact on GDP per capita, and outward remittances negatively affect the dependent variable. The employment rate of migrants is not statistically significant, and therefore does not influence GDP per capita. In addition, the inward remittances have a much greater effect on the economies of these countries, due to the fact that in some countries their volumes are much larger than the volume of outflows.

The analysis of the impact of COVID-19 on international migration allows us to conclude that the pandemic has increased unemployment among indigenous and foreign populations. For example, in Spain among migrants the figure reached a record 15.3% in 2020, and in Poland, on the contrary, it even decreased slightly.

Given that Ukraine is increasingly integrating into the international economic relations, interstate migration has become an important component of the economy that can influence its further development. Although according to official data, Ukraine is a net recipient of migrants, in reality the number of departures exceeds the number of arrivals. The main reasons for emigration from Ukraine are higher incomes and the socio-political

situation in the country. Moreover, due to the intensification of educational migration, there are risks of losing potentially highly skilled labor and innovation potential of Ukraine. At the same time, it should be emphasized that labor migration has much more positive consequences, because of the large volumes of remittances of migrants coming to Ukraine increase effective demand and stabilize the exchange rate. In order to practically confirm the importance of external migration for Ukraine, a regression model was created and the impact of incomes and outflows of migrant remittances, as well as the unemployment rate on GDP per capita was established.

Thus, based on the results of regression analysis of the obtained models, it could be concluded that international migration processes are an important and integral factor in the development of countries 'economies, having a mostly positive effect on them.
The COVID-19 pandemic has led to the repatriation of a large number of Ukrainian labor migrants, which has created additional tensions in the labor market and increased unemployment. Furthermore, the balance of «compensation of employees» of the balance of payments deteriorated as a result of a reduction in migrant remittances, although the overall current account balance improved. Therefore, it is necessary to state the importance of external migration at the present stage of development of Ukraine's economy.

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